A data-driven approach to green investments:
environmental performance, mispricing, and momentum

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Abstract

This study aims to investigate the relationship between environmental performance of companies and their stock market performance. It has substantially contributed to the crucial endeavour of estimating the implications of environmental performance, momentum, and mispricing on a vast array of subsamples, portfolio construction techniques, and asset pricing models, decidedly demonstrating their importance and carving a place for environmental long-minus-short portfolios in the established "zoo of factors". Through the analysis of the data related to the greenhouse gas emissions, water usage, and waste intensity from 6,391 companies, two sets of systematic risks factors were found represented by environmental performance and momentum; the outperformance of greener stocks observed in most of the samples was confirmed; the explanatory power of the environmental variables was determined, while the existence of environmental predictive power was denied. Established outcomes are contrasting with most of the literature observed in the SRI field, providing a detailed description on evidence occurring in multiple regional-, country-, status-, and sector- wise samples. The study has substantial implications for corporate social responsibility, empirical finance, asset pricing, and green finance literature as well as for individual and institutional investors and policymakers.

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Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this commentary has been approved. Approval has been sought and granted through the Researcher's submission to Northumbria University's Ethics Online System on 27/08/2021.

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1. Introduction

Socially Responsible Investing was continuously developing for decades, implementing its values to the stakeholders of the financial markets. Since 90’s its progress was intensified by evolving and increasing Environmental, Social and Governance (ESG) data, which were exposed by technological progress that increased capabilities of data collection, storage, and processing. According to the Global Sustainable Investment Alliance, socially responsible investing reached 35.3 trillion dollars in 2021[1], which is approximately 35.9% of assets under management, being concentrated mainly (80%) in the United States and Europe. However, according to the report, the growth of sustainable investing amount is also observed in multiple regions, such as Canada, Japan, and Australia.

The environmental impact of human activity, being a significant part of the SRI, is an anxious subject uniting the global community, which found its manifestation in several directions triggering debates and action widely in the society. More intensively than ever, the economies of various countries, communities, and businesses are setting goals towards the development of greener initiatives, driving related investments that sets achievable inspirational goals.

One of the main reasons for such attention towards the environmental sustainability is caused by importance of its consequences. First of all, the high-profile issue of the air pollution, which is caused mainly by the greenhouse gas emission and the result of the human activity. Such issue,

[1] Global Sustainable Investment Alliance (2021) *Global Sustainable Investment Alliance Review*

according to Institute for Health Metrics and Evaluation, became top three[2] cause of death in 2019. In addition, greenhouse gas emission also causes the widely discussed issue of the climate change which is associated with a stimulated evolution and efficiency of policymaking approach, as well as technological progress. In 2021, the 26th Glasgow Climate Change Conference took place, during which initiatives related to ESG in general and green finance in particular were discussed. Delegates attended the conference from all over the world, representing 90 countries. The ideological core of this conference revolved around the formation of a list of initiatives and setting goals related to the contribution to climate change. This environmentally oriented approach has long been one of the main stakeholder concerns. The key stakeholders are companies and shareholders whose interest in this topic is at the intersection of non-financial and financial benefits from socially responsible activities and generated information, which is more related to the environment. Such an event specifically covers the environmental area of socially responsible investments, which is the study's primary concern, highlighting the importance of the topic through the scale of the involved number of economies, companies, participants, and its financial magnitude and managerial relevance.

The second widely discussed issue is associated with water availability and its utilisation efficiency. According to the World Wildlife Fund, more than one billion people all around the world struggle to access the water sources. While, according to the study brought by Institute for Health Metrics and

[2] Global Burden of Disease Collaborative Network (2019). *Global Burden of Disease Study*. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2021

Evaluation, more than two billion people do not have access to safe water[3], while more than one million people die annually due to the water scarcity[4]. In addition, water related issues were intensively spotlighted after the events appeared in 2022 during the summer, during which, the heatwave affected most of the countries all around the globe, causing an anomalous temperature peaks reaching historical record levels. Such events caused droughts in multiple regions of Europe and North America.

With regards to the one more key aspects of the environmental impact, that is a waste generation. According to the report, delivered by the World Bank Group, the estimated amount of generated waste in 2016 reached 2 billion tons, and will increase to the value of 3.4 billion tons by 2050, which exceeds the capacity of existing and projected waste management and processing capabilities. Taking into account these ramifications, such inputs place the waste generation issue in line with other global environmental threats.

From the perspectives of financial markets, socially responsible investing field develops preventing approaches to encourage investment flows to reach companies corresponding to the established everyday-improving standards. This field was subject to a prolonged study in the finance academic literature from multiple perspectives, including such examples as behavioural finance, asset pricing, company valuation, and performance evaluation, which are the primary areas of this research's contribution.

This work aims to fill in the gaps in academic literature associated with systematic environmental risks, including raw environmental performance

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[3] Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2021.

[4] Vatter J. (2019) *Drought risk. The Global Thirst for Water in the Era of Climate Crisis.* WWF Germany, Berlin

and momentum, with an inclusion of machine learning techniques. It also covers environmental predictive and explanatory power through the implementation of the value driver regression, contributing to the stock valuation field of study. In addition, work also considers ESG-rating momentum for portfolio structuring and determination of related risks.

The research contribution is defined by incorporation of raw environmental data on greenhouse gas emission, water usage, and waste generation, for portfolio structuring and company valuation purposes, which remains uncovered area in academic literature. Such approach aims to encourage researchers to investigate further into the undisclosed information contained in the raw data. Research also claims to establish two new sets of risk factors, including environmental performance and momentum, which could be used for stock's description and analysis. It also contributes to the company valuation through application of related data and subsequent representation of environmental information capabilities in term of price explanation. This work also contributes to the ratings-related literature showing filling in the gap associated with ESG momentum.

With regards to the observed findings, the research illuminates the outperformance of greener stocks within multiple subsamples based on the regions, economic statuses, countries, and sectors. It also develops robust and easy to apply GHG-, water-, and waste- based momentum and performance risk-factors. Dealing with outcomes established on the ESG momentum, in most samples stocks with upgraded ratings outshine the ones with downgrades; however, in several cases, the U-shaped performance was observed. Further work's findings are associated with the significant contribution of environmental variables to the conventional company valuation models, accompanied by determination of misprising observed in multiple samples.

With regards to the structure of the research, it consists of four main chapters, one of which consists of five empirical chapters: first main chapter is literature review, which covers the analysis of related literature related to multipole areas, including the ESG, the SRI, behavioural finance, financial management and accounting, and other related theoretical framework, it also highlights the existing literature gaps[5] and establishes the tested hypothesis; next, second chapter, methodology and data, represent description of the utilised approaches, processing tools, and the disclosure of the analysed data, as well as its sources; following are five empirical sections, which cover the analysis of the estimation, where first section represent performance of brown and green stocks, while second section is related to brown minus green factor models based on environmental performance, third section investigates environmental momentum in factor models and performance evaluation, forth section covers results appeared in the ESG momentum, and fifth section captures the outcomes inspired by the results of value regression models and related portfolios; and the final section is a conclusion chapter that covers main findings, the hypothesis outcomes, research's contribution, key practical and theoretical implications, and further study recommendations.

[5] For convenience, the literature corresponding to the empirical chapters' findings is covered within the summaries of each section.

2. Chapter on literature review

The voluminous body of established academic literature is very rich in research representing the fields of SRI and green finance. This academic sub-discipline was most developed in the period from 1990 to 2000 when in-depth studies of the performance of socially responsible or ethical funds began. These studies were mostly addressed in an attempt to identify the characteristics, performance, and risks of such funds and whether there is a trade-off between SRI and non-SRI funds. In addition to this, the studies have observed investors' behaviour related to SRI and their willingness to "pay for doing good". Studies from the perspective of using social responsibility information for the purposes of achieving financial benefits most often show a significant and weaker or equal performance compared to the market or matched non-SRI funds. However, academic literature was also contributed to by research with opposite results, arguing that SRI is a worthy alternative that allows investors to get non-financial benefits and achieve financial outperformance compared to the market. Most of these optimistic studies were based on the ESG indices, e.g., Domini Social Index, which gained substantial popularity during the period from 1995 to 2000 when they received attention due to novelty and comparable performance to the alternative financial instruments.

In more recent periods, several studies, according to their additional observations and findings, have studied the stages of SRI funds' development and formation and how their performance has changed over time, identifying two significant stages of evolution that include:

1. The formative stage since 1990-1995, in which most funds learned how to evaluate social responsibility, underperforming the alternatives;

2. The second stage between 1995-2005, in which ethical funds mostly achieved the goal of going in line with non-ethical funds in terms of performance and risks;

The further time period when well-established proxies of social responsibility and evolving methods of evaluation and measures battled for achieving better performance compared to the market and non-SRI funds.

However, despite all the achievements in the SRI studies, there has been no clear consensus established in the academic literature concerning if there is an additional risk related to socially responsible disclosure, including environmental effects. Such scepticism about the perspectives of socially responsible companies has been expressed in parallel with tangent academic fields related to accounting and financial management.

Similar studies have been more focused on studying the effect of social and environmental activities and raw information related to pollution, emissions data, and other information related to ESG.

Compared to the investment literature, research in the field of financial management and accounting observed more clear relationships between companies' performance and the ESG data. For example, studies evaluating the effect of investments in ESG initiatives observed increased costs in the short-term that were paid off long-term, making companies that are interested in social responsibility a more attractive asset in terms of investment prospects due to the growth of such indicators as ROA, ROE, and ROS with a time lag.

In addition to the investigations related to linkage between the amount of direct investment in ESG initiatives and R&D and economic performance, one of the most popular areas of research is the evaluation of the effects of ESG information disclosure, which included the outperformance of the companies with better disclosure scores in terms of companies' financial performance. However, it was also observed that the is a linkage between what type of information was reported; if, for example, the environmental performance was worse than previously observed periods, the financial performance worsened. The opposite situation appeared in the scenarios where disclosed environmental performance was historically better or similar.

Refining the discussion of ESG disclosure, multiple papers observed the effect of the raw data related to pollution or emissions on the financial performance of the companies. According to the findings of most research, significant outcomes and clear relationships were observed related to financial performance and various environmental variables, such as the amount of toxic chemicals emission, waste intensity, greenhouse gas emission, and water usage.

In addition to examining the raw environmental data and the effects of socially responsible activities on companies' economic performance, a relationship has been established between socially responsible companies and management quality in the academic literature. In fact, there has been a dependence between the number of ESG initiatives implemented and companies' economic performance and that such initiatives and the success of their implementation are signals that predict the direction of future performance.

Thus, in the academic literature, one can trace a certain inconsistency in the logic, within which, while the literature in the field of accounting and management establishes a common methodology for the interpretation and possible usage of the information related to ESG, social responsibility and green finance, towards its implementation for achieving better economic performance and better financial results; investment, asset-pricing, and portfolio management-related literature is still struggling to apply such information in order to achieve investments' returns enjoying non-financial benefits by doing good.

In order to achieve a greater understanding of the extent of research in the directions described above, it is necessary to consider in more detail the research in the previously described directions.

The recent academic literature from disciplines related to empirical finance demonstrates an abundance of studies that survey the importance of ESG in various areas of society. The topics of social responsibility and environmental friendliness permeate all possible information channels, inducing people to transform everyday behaviour, not only domestic but also financial. This topic has not bypassed the academic field, in which researchers from various disciplines have been studying the possible consequences of neglecting responsible behaviour for a long time.

One example of the direction of such research is research in the field of carbon risk. Bansal et al. (2017) investigate long-risk associated with temperature fluctuations. The study's primary concern is the relationship between the macroeconomy and global warming, which they find to be a significant source of economic risk. To investigate the existence of the risk factor, they applied a long-run risks model to the sample consisting of data related to temperature dynamics, consumption growth, stock market data, and the negative temperature elasticity of equity prices. Bansal et al. (2017) observed temperature fluctuations, especially low-frequency temperature risks, being a significant sour of economic risk due to their negative and significant effect on equity valuation. They also call for an immediate and sustained reduction in carbon emissions due to its long-run impact through the temperature on economic growth.

The study covers several fields of study, including green finance, asset pricing, stock valuation, performance evaluation, and event studies. Research in these areas of knowledge also includes several theoretical areas, including stakeholder theory, market efficiency theory, portfolio theory, and factor modelling. Despite their isolation and autonomy, these theories interact with each other, which became the foundation of theoretical conceptualisation in this work.

The quantitative study of green finance is based mainly on the analysis of relevant environmental variables and ideologically originates in stakeholder theory, namely through the relationship of financial market stakeholders and information related to green finance. In this case, the financial market stakeholders are the participants in the activities of companies and their shareholders, while the information associated with green finance is the quantifiable effect of the companies' activities with regards to the environment.

Stakeholder theory claims that whatever the ultimate aim of the corporation or other form of business activity is, managers and entrepreneurs must take into account the legitimate interests of those groups and individuals who can affect (or be affected by) their activities (Freeman 1994, Donaldson and Preston 1995)

For a long time, the direction of green finance has been actively developing not only in the academic literature but also in the media, which leads to the fact that, depending on the interpretation of stakeholder theory, this direction should be considered as an essential field of improvement and taken into account by managers when planning the company's activities and adjusting existing approaches. The study is neutral about the research results in the field, using the main ideas and testing them quantitatively. The conceptual core of the research in terms of stakeholder theory are Freeman et al. (2004) and Sundaram and Inkpen (2004). These works aggregate many views and approaches led by thoughts in stakeholder theory, and from the combination draw a blurred line between two visions that are reflected and originate in many debatable works in a field. The study does not identify itself with any one group. It equally criticises and agrees with the ideas found in each group, directly linking these concepts with the socially responsible investing field of study, going deeper to green investment.

Stakeholder theory permeates the entire work due to its ideological component and influence on the positioning of the study. The starting point of the study is that the information generated by a company in the field of green finance can influence additional value and risks for stakeholders. The main goal is the development of environmental friendliness in line with other management objectives, which can be sources for achieving the maximisation of shareholder value. Given the debatability of this area, the study, by analogy with the works covered, evaluates the significance of green finance information on the value of the company.

Moving from the stakeholder theory closer to the main direction of research, namely the potential of SRI, it is worth citing the amount of historically growing interest of the academic analysis in this direction. Thus, having been most developed in the post-1990s, the literature and approach to research continue to evolve. This study's major feature is to consider the outcomes of investing in the SRI assets is a greater focus on SRI proxies, such as f SRI funds, ratings, and indices. Such proxies have enabled the rapid development of quantitative analysis due to the availability of aggregated ESG data within multiple companies. In addition to the availability and amount of data, a significant advantage is the simplicity in the interpretation of models' outcomes. Well-established evaluation methods applied to this area have long been the main source of information for assessing the prospects of enjoying financial and non-financial benefits.

The first example of such work in the field of SRI is Luther et al. (1992). In this paper, ethical funds in the UK are analysed. Their sample consisted of data related to 15 ethical funds in the time frame between 1984 and 1990. According to their results, ethical funds slightly outperform the market. The Jensen's alphas of ethical funds have a mean of 0.03% per month (not significantly different from 0). They also found that ethical funds have high portfolio weights on companies with small market capitalisation.

Luther et al. (1992) exemplify the application of an approach to the evaluation of the performance of the SRI funds that was weirdly used in multiple pieces of research that was brought in later time periods. Such papers examined different data samples in various time periods, creating the foundation for understanding SRI behaviour for the stakeholders.

Luther and Matatko (1994) investigated a more comprehensive sample of the period between 1984 and 1992 of UK ethical trusts, continuing research in ethical funds. These updated results also concluded that ethical funds are more allocated towards small-cap companies. However, despite previous results, they observed underperformance of ethical funds compared to the UK market. They also tried to apply benchmarks to monitor the specific behaviour of ethical funds; however, Luther and Matatko (1994) achieved results similar to their previous paper. No matter what benchmark was applied, mean abnormal returns are insignificant and only slightly differ from 0.

Another paper in a similar field was produced by Hamilton and Statman (1993). They investigated 32 socially responsible funds in two time periods between 1981 and 1985 and from 1986 and 1990 and compared their performance to 320 non-SRI funds that were randomly selected. For 17 SRI funds established before 1985, the average alpha is −0.06% per month, which is higher than the average monthly alpha (−0.14%) of 170 non-SRI funds (the difference is not significant). Meanwhile, for the 15 SRI funds with a shorter history that were established after 1985, the average alpha is −0.28% per month, which is significantly worse than the average monthly alpha (−0.04%) of the corresponding 150 non-SRI funds. Such results reflect the studies of Luther et al. (1992) and Luther and Matatko (1994) but in a different market.

Cohen et al. (1995) took an approach that is quite different from the approaches of most works in this period in a similar academic field. As part of their study, they used data from companies in the S&P 500 and their data related to environmental performance. In their study, Cohen et al. (1995) formed two portfolios of "green" and "brown" companies. They determined the greenness of the companies based on the collected information about the companies from the data sample. To avoid the sector-mix effect, they formed groups based on companies' industries according to the S&P index, which brought the total number of groups to 85. Within each group, companies were sorted by environmental variables. After this sorting, Cohen et al. (1995), using median scores of the environmental variables, split the industries' lists of companies into two polar groups, one with better environmental performance and with worse environmental performance. In order to avoid affecting median companies, they were excluded from the sample list. These groups were used as criteria for portfolio structure and portfolios' performance analysis. Such procedure was applied to determine if there exist a penalty for investing in green stocks. According to their results, they observed either no penalty or positive abnormal returns from green companies. They also sought to determine what comes first, financial performance or environmental performance. The result appeared to be that by choosing industrial "leaders" in environmental performance, investors can achieve similar or better performance than investors choosing the environmental laggards.

Mallin et al. (1995), similarly to Luther et al. (1992) and Luther and Matatko (1994), investigate ethical trust funds on the UK market. The data was collected from the Finstat for 29 SRI funds and 29 non-SRI funds matched by fund size and age. The unique addition of this research is an application of unusual data, such as negative and positive criteria of being ethical. They labelled funds that do not invest in specific industries, like alcohol, tobacco, and gambling, as using negative screening criteria. As positive criteria, data was used related to whether the stocks are environmentally friendly. The Financial Times All Share Actuaries Index was used as a benchmark for market return. Analyses based on comparison of ethical funds' performance to benchmark and non-ethical funds led to the conclusion that ethical funds underperform alternatives that match the results of Luther et al. (1992), Luther and Matatko (1994), and Hamilton and Statman (1993). However, not all the results are that pessimistic regarding ethical funds. According to Mallin et al. (1995), both ethical and non-ethical trusts tend to underperform the market on a risk-adjusted basis, while interestingly, ethical funds tend to outperform non-ethical funds.

Gregory et al. (1997) continued the investigation of ethical funds' performance and went more profound in examining the small-cap factor and its effect on the performance. Taking a similar approach as Luther et al. (1992), Luther and Matatko (1994), Hamilton and Statman (1993) and Mallin et al. (1995), they analysed 18 UK funds in the broader time period (from 1986–1994). As well as Mallin et al. (1995), Gregory et al. (1997) also matched 18 non-SRI funds by fund size, age, investing area, and fund type. Gregory et al. (1997) did not observe any changes compared to previously mentioned studies; however, they observed the exposure of the small-cap factor more clearly, and they also claimed the insignificant effect of the SRI factor.

Continuing investigation of the SRI effect on funds' performance, Goldreyer et al. (1999) also contributed to the field by expanding the sample size and time frame. They analysed funds in groups by equity, bond, and balanced types of investment orientation. The research outcome was based on 49 US SRI funds and matched 180 non-SRI funds in the time period between 1981 and 1997. Their findings are similar to previous research in the area; however, Goldreyer et al. (1999) also concluded that SRI funds with positive screening outperform those who do not use this type of screening, but this does not affect SRI fund’s underperformance compared to their non-SRI counterparts.

Statman (2000) looked at the performance of the Domini Social Index and compared it to S&P 500 in the time frame between 1990 and 1998. In this most apparent article, the analysis of the Domini index in this time period was a reasonably popular direction of study. This article demonstrates how DSI outpaces S&P 500; however, the difference is insignificant. Statman (2000) describes with great enthusiasm the optimistic achievement of the SRI portfolio over non-SRI, unfortunately, has weak academic and statistical argumentation behind it. Contrary to the previously described list of similar studies, this work demonstrates how socially responsible investors get their wish by receiving ideological pleasure and better performance. Compared to previous research, such outcomes looks overly optimistic. Such results could be due to the methodology that the DSI applies. First, more than half of included companies (250) were taken from S&P 500 and were augmented by 50 SRI companies and 100 non-S&P 500 companies to balance industries. The difference in performance could be caused by the market mix but not by the SRI stocks. Evidence from recent statistics also shows that findings are valid only for the analysed time period; according to the up-to-date performance comparison, the DSI alpha is not only significant and negative, but its beta is also statistically close to one.

Schröder (2004) also studied SRI funds and indices. This research is a combination of the review of previous literature and new findings. In this research, the sample consisted of 46 SRI funds from several markets: US, Germany, and Switzerland, while the analysed time period is between 1990 and 2002. In addition to funds, 10 SRI indices were also investigated and compared to MSCI Index as a benchmark (list of indices included Calvin Index that includes US companies; FTSE4Good Europe 50, which is concentrated on European companies; FTSE4Good Global 100, that consists of worldwide companies; FTSE4Good US 100, that included companies only from the US; Naturaktien-index (NAI) with worldwide companies;

S&P 500 Environment Services including US stocks; World – DS Environmental Control one more index that includes companies from all around the globe; DJSI World, also with a portfolio based on worldwide companies; DJSI Stoxx that includes companies from Europe; and Domini 400 Social Index, that consist of US companies). Schröder (2004) findings were more optimistic than Luther et al. (1992), Luther and Matatko (1994), Hamilton and Statman (1993), and Mallin et al. (1995) on the fund analysis side, while results for indices study were opposite to the findings of Statman (2000). According to the research results, SRI funds mostly underperform the non-SRI funds; however, the underperformance is not significant that led to the conclusion that there is no significant financial effect of SRI investing. At the same time, the outcome of the analyses of the indexes is more exhaustive regarding the representation of the SRI effect of the investment opportunities. According to the results, only two (Calvin and FTSE4Good Europe) out of ten indices showed similar or better performance compared to the benchmark, while other indices significantly underperform the market. Such exhaustive research summarised achievements of almost all previous studies showing a bigger picture of the SRI's effect on the market, going in line with the scepticism of most results and arguing with optimistic ones. However, this research could be continued by observing a more exhaustive list of country-specific sectors and indices.

Kreander et al. (2005) continued the path of Mallin et al. (1995), Luther et al. (1992), Luther and Matatko (1994), and Gregory et al. (1997). Different from Schröder (2004), this study concentrated on the analysis of SRI funds specifically; however, this research went further in exploring funds from various countries, like Germany (eight funds), Netherlands (four funds), Sweden (14 funds) and UK (34 funds). In order to make an additional contribution to the field, Kreander et al. (2005) also went deeper in terms of used time periods, using weekly returns. The time frame of the research includes data from 1995 to 2001; the Financial Times World Index (FTWI) was chosen as a benchmark in order to check the ability of SRI funds to outpace the market. Results of the taken approach and data sample were similar to previous studies: SRI funds and non-SRI funds underperform the market significantly; however, the comparison of the two groups of funds leads to the conclusion that there is almost no difference between ethical and non-ethical funds, that means that investors can consider such alternative having non-financial benefits from their investments.

In their similar research, Bauer et al. (2005) expanded the sample size; in addition, they investigated the possible effect of the funds' groups. They extended the characterisation of the SRI and non-SRI funds by their area of operation: international and domestic. Their sample covered four countries: Germany with data related to 16 ethical and 114 conventional international funds; the UK with 20 ethical and 300 conventional domestic funds, and 12 ethical and 96 conventional international funds; and the United States with data related to 50 ethical and 2806 conventional domestic funds, as well as five ethical and 1068 conventional international funds. In addition to the increased data sample, Bauer et al. (2005) also applied a four-factor model (Carhart, 1997) that could lead to a better description of the SRI funds' behaviour compared to their conventional counterparts. As a result of the research, there were several findings that augment the existing picture of the position of the SRI funds on the market:

1. There is no evidence of a statistically significant difference in returns between SRI and non-SRI funds even after applying the Carhart (1997) four-factor model.

2. There is a difference in investment styles between two types of funds that was concluded by measuring exposure to market return variability resulting in the finding that SRI funds are less exposed.

3. According to their findings, ethical mutual funds also tend to be more growth-oriented or less value-oriented.

One more find is that, according to the analysis of sub-periods, SRI funds were under-performing the conventional ones at the beginning of the 1990s that goes in line with previously mentioned research of related time-period; however, after some period of adaptation, they achieved the similar to non-SRI funds' performance over the 1998–2001 period. Finally, Bauer et al. (2005) also compared SRI indexes and standard indexes performance in explaining ethical mutual fund returns and found a surprising result that standard indices explanatory power is better than the SRI ones. Despite the significant increase in the amount of analysed data compared to previous studies, due to its increased availability, this sample could still be not representative enough that could affect the results.

Geczy et al. (2021) test the optimisation of the allocation of SRI funds in investors' portfolios with different preferences and analyses the performance of SRI funds applying the Fama-French (1993) three-factor model and the Carhart (1997) four-factor model. Their analysed sample included data related to 35 SRI and 894 non-SRI funds in the time frame between 1963 and 2001. According to their results, the costs of the SRI constraint can be as little as 1 or 2 bps per month in certainty-equivalent terms, but only when investors adhere rather strongly to a belief in the

CAPM and maintain complete disbelief in manager skill, or when their minimum allocation to SRI funds is small. When the investor's beliefs shift toward multifactor models like the Fama-French (1993) three-factor model or the Carhart (1997) four-factor extension, or when the investor admits the possibility that fund managers have stock-picking skills, the costs associated with socially responsible investing can be economically significant. The cost of the SRI constraint is incredibly high for investors who insist on allocating their entire mutual fund investments to socially responsible funds, but it is also quite substantial for the average SRI investor who (according to Silby, 2002) allocates only one-third to that subset of funds.

By choosing a path in which studies can be carried out separately for each country, Bauer et al. (2006) continued the tradition of SRI fund analysis. In their study, Bauer et al. (2006) surveyed the previously underexplored market of Australia. After collecting information on 25 ethical funds and 281 non-ethical funds between 1992 and 2003, they conducted studies similar to Bauer et al. (2005), grouping funds on the basis of domestic and international. According to their study, domestic ethical funds underperform conventional domestic funds by −1.56% per year, and international ethical funds outperform their conventional peers by 3.31% per year; however, these results are not statistically significant. These results are on par with the results of all previously described studies in this academic field.

The following paper on the topic of the performance of SRI funds in a long series of articles observing various markets appeared to be the review of Canadian ethical funds brought by Bauer et al. (2007). In addition to a well-established approach of measuring the SRI effect, they applied expanded methods by performance measurement approaches in the spirit of Carhart (1997) and Ferson and Schadt (1996). Reinforcing the previous paper, they collected data related to eight SRI funds and matched 267 non-SRI funds. However, their findings aligned with the outcomes of similar papers investigating different markets: the difference between the SRI funds and non-SRI funds in average alphas is insignificant (−0.21% vs −0.18% per month).

Apart from comparisons of performance for SRI and non-SRI funds, Barnett and Salomon (2006) developed a relatively new method for investigating the perspectives of the SRI funds and their interdependences regarding the number of ways how companies can be screened. Based on data from 67 SRI funds of the US in the time frame between 1992 and 2000 (originally, sample's time frame included period between 1972 and 2000, however, due to not an exhaustive number of funds available in early periods, the decision was to reduce the observed years). Their main findings included the relationship between the number of social screens used by funds: according to their observations, implementation of new screens leads to the decrease in the fund's annual return; however, it rebounds as the number of screens reaches a maximum. Another outcome that was achieved is a clear consequence of the implication of new screenings and their types, like, for example, according to the conclusion by Barnett and Salomon (2006), the financial costs of increasing equal employment opportunity and diversity, as well as environmental performance to levels adequate to pass the screening standards of SRI funds (above and beyond what is mandated by law) may outweigh their financial benefits.

Brzeszczynski and McIntosh (2014) evaluated performance of the SRI portfolio based on UK companies listed in Global-100 Most Sustainable Corporations in the

World and compared it to the FTSE100 and FTSE4GOOD indexes. In addition, they applied the Fama–French three-factor and Carhart four-factor models in order to test if the SRI factor can be consistently explained by conventional factors other than the market factor. Portfolio was structured using data related to more than 50 companies in timeframe between 2000 and 2010; however, due to the changes in the "Global-100" list, the average number of companies used for portfolio structuring is about 32 in period 2000-2006 and more than 16 in further time window. This equally weighted SRI portfolio was rebalanced on a yearly basis. Brzeszczynski and McIntosh (2014) also considered most of the features of the portfolio simulations, such as various transactions costs, dividends or mergers and acquisitions. Dealing with their findings, they observed the outperformance of the SRI portfolio compared to benchmarks in most of the applied subsets and additional conditions. The annual average returns of the SRI outpaced the FTSE100 and FTSE4GOOD indexes on 5.26% and 5.69%, respectively. Brzeszczynski and McIntosh (2014) also found that the SRI portfolios cannot be consistently explained by conventional factors other than the market factor.

As an extension of the 2014 study, Brzeszczynski et al. (2016) focused on the study of energy and resource companies. The Sample was created based on a similar approach taken by Brzeszczynski and McIntosh (2014). Based on data from the Global-100 list companies from 2005 to 2015 inclusive and filtering out companies that meet the criteria of the target sector, they collected data on 53 companies for analysis. Similar to the previous study, this paper uses similar methodologies to identify the SRI effect and its investment potential and compares the performance to such benchmarks, such as S&P Global 1200 Index, MSCI World Energy Index, FTSE4GOOD Global 100 Index, and FTSE ET50 Index. In addition to the investment component, Brzeszczynski et al. (2016) applied the Fama–French three-factor and Carhart four-factor models to identify the possibility of explaining the performance of the analysed portfolio by established factors. Dealing with their findings, similarly to the previous paper, they mainly observed statistically insignificant outperformance compared to all indexes in the approach that considers dividends, while the exclusion of the dividends leads to the underperformance of the SRI portfolio. The specific features of the sector could explain such an effect of dividends due to the tendency of the energy and recourses-oriented firms to be conservative. However, compared to the results of the previous paper, such a change in performance could signal an existing heterogeneity in applied methodology for portfolio creation.

Ashwin Kumar et al. (2016) brought the research on the comparison of the performance and risk of 157 companies with “good” ESG scores based on the Dow Jones Sustainability Index with 809 randomly selected companies. This paper covers the timeframe of weekly data from the beginning of 2014 until the end of 2015. This research complements the group of optimistic studies similar to Statman (2000) that should be treated with scepticism due to insufficient theoretical background and methodology. According to Ashwin Kumar et al. (2016), they provide evidence of the linkage between the ESG factor and stock performance and that ESG factors bring lower volatility leading to higher risk-adjusted returns; however, even starting from the sample construction and later through the methodology and interpretation results, such results could be affected by too many factors. The stock selection process of the ESG companies is not clear and randomised choice of non-ESG companies, and even if they are skewed towards the average in the market, this can lead to sample selection bias. In addition, according to the methodology, they equally weighted portfolios in order to avoid the effect of companies with large market capitalisation, which leaves multiple additional questions to the validity of the papers' results.

Baker et al. (2018) investigated green bonds and found that a subset of investors is willing to sacrifice some return to hold green bonds. They also analyse the need of considering risks related to moving towards a low-carbon economy for portfolio and risk management. In order to achieve this, they analysed a sample including 2,083 green US municipal bonds in the time frame between 2010 and 2016. In addition, they also considered 19 green US corporate bonds issued between 2014 and 2016. To measure the carbon risk and investors' preference for non-financial benefits, Baker et al. (2018) apply a simple asset pricing framework. According to the findings, green bonds are issued at a premium, with yields lower by several basis points. Additional observation they came up with is that green bond ownership is more concentrated. They also found that subsample of bunds that certified by third parties outperform both in the pricing and ownership effects compared to bonds without such certification. As an explanation of such results, Baker et al. (2018) claim that there is a cluster of investors that are willing to sacrifice some financial to enjoin non-financial benefits (which was also supported by Wong et al, 2021; Ben-Amar and McIlkenny, 2015).

Brzeszczynski et al. (2019) is a continuation of the SRI approach that was originally taken by Brzeszczynski and McIntosh (2014) and Brzeszczynski et al. (2016). This approach implies the study of a portfolio that includes companies from the Global-100 list related to the energy and resource-oriented sectors. The final sample consisted of 56 companies and their data in the timeframe between February 2005 and January 2016. Similarly, to mentioned papers, Brzeszczynski et al. (2019) apply the comparison of the SRI portfolio's performance to several indexes (S&P Global 1200, S&P Global 1200, MSCI World/Energy, FTSE4GOOD, and FTSE ET50). Portfolio's performance evaluation uses two approaches with and without considering dividends. Analogously to Brzeszczynski and McIntosh (2014) and Brzeszczynski et al. (2016), this paper examines the possible effects of conventional factors on the SRI energy and resource companies by applying the Fama–French three-factor and Carhart four-factor models. Dealing with the findings in Brzeszczynski et al. (2019), despite previous results in this sample and approach, the outcomes are less optimistic regarding the SRI portfolio's performance compared to indexes. They observed neither consistently superior nor consistently inferior differences in raw returns. Supporting Brzeszczynski et al. (2016), these finds align with the importance of dividends in the SRI portfolio. On behalf of the implication of the factor models, according to the results, the market is the main factor statically significant in most of the observed time periods, while value and momentum effects are significant in the broader time scale. It is worth paying attention to the declining practical level of the performance of the SRI portfolios that are visible through Brzeszczynski and McIntosh (2014), Brzeszczynski et al. (2016) and Brzeszczynski et al. (2019), a similar effect may be the result of the assumptions in the methodology that defines the SRI portfolio. In these papers, the source of SRI companies is "Global 100 Most Sustainable Corporations in the World", provided by Corporate Knights Inc, which has a scoring methodology measuring companies and evaluating their score that was not considered in the research. In addition, multiple factors can expose such systems similarly to rating agencies (Berg et al., 2019).

Alda (2020) continued investigating the relationship between SRI and matched non-SRI funds. In this research, Alba (2020) determined if SRI concerns affect traditional management. Analogously to similar papers, this research is affected by data availability; however, their sample consisted of 22 SRI and 221 conventional UK domestic equity pension funds, and the sample's time frame includes years from 2016 until 2018. Despite previously covered papers, this work is restricted by the pension segment. Dealing with research findings, Alba (2020) observed increased costs and usage of recourses in funds applying more demanding ESG strategies; however, SRI funds outpace the conventional ones in terms of returns. Regarding the similarity between the two types of funds, it is worth noting that the paper's results represent the linkage between ESG concerns of these funds, showing that non-SRI funds are also considering such factors; however, due to more strict ESG policies, SRI funds have higher scores. Despite such promising results, Alba (2020) is concerned that heterogeneity could affect such outcomes.

Summing up the interim conclusion on the academic literature in the field of the SRI, it is worth noting the evident lack of consensus on whether investing based on the ESG information is a worthy alternative to the market or non-SRI assets, whether there are additional risks associated with the desire to "doing good while receiving well". Based on the existing literature, two main groups of findings can be distinguished that argue for the lack of the expected consensus: the first group of studies is quite sceptical about the possible outperformance of the SRI assets; this is observed in the frequent insignificance of the results and in usual underperformances or slightly different performance compared to the market or investment alternatives; the second group shows quite optimistic results, which significantly differ from the results of the first group, demonstrating outperformance of SRI assets or any existence of additional costs and risks. Such a controversial result provides space for discussion of possible reasons for such findings.

The main question that raises doubts is the reason for such frequent use of the ESG proxies without an in-depth study of the features of each of them. Without any doubt, in empirical finance, various tools allow identifying deviations of any dimension and types, which may have various causes. However, taking the efficient market hypothesis into account and assuming that different sectors and markets can be affected in different proportions by the four market efficiency approaches, then the analysis of portfolios built on the basis of objective methodologies provided by the sources of aggregation, then the random shares of portfolios, to a lesser extent associated with SRI may be subject to market risk or random walk, even though some studies show significant alpha in factorial models of some samples, that could be an effect of heterogeneity bias.

Moving away from commonly used proxies and applying more targeted information was realised by Cohen et al. (1995). As described earlier, environmental variables are considered when forming a portfolio. However, a portfolio structuring methodology based on dividing into strictly two groups, which include only green or brown companies, based on the median value of an environmental variable without considering possible "grey" companies, can lead to distortion of the results.

While the investment and portfolio management literature struggles to form a consensual position with regards to contribution, perspectives and opportunities provided by the ESG information flow, different fields of studies, such as management accounting, analysed same area in parallel. Despite approach taken in most of the investment research, most paper covered in this section analysed the ESG information in more straightforward manner, avoiding proxies and investigating the direct effects of socially responsible activities and generated information with wider response periods considered. The examples of such activities and information are following: ESG disclosure, emissions, and pollution intensity, as well as effects of socially responsible management systems and approaches.

Even from a management perspective, the question of the advisability of adhering to environmentally friendly policies has been analysed. So, for example, Ambec and Lanoie (2008) built a system of business benefits from a management position that is the result of integrating green policies into company activities (supporting Nordhaus, 1993; Nordhaus and Yang, 1996; Wong et al, 2021; Blacconiere and Patten, 1994; Arjaliès, 2010; Cubilla-Montilla et al, 2020; Reinhardt, 1999; Reinhardt, 1999). They came up with several key areas of benefits including: (1) better access to certain markets; (2) differentiating products; (3) selling pollution-control technology; (4) risk management and relations with external stakeholders; (5) cost of material, energy, and services; (6) cost of capital; and (7) cost of labour. Judge and Douglas (1998) observed the connection between integration of environmental issues into the management process and financial performance of the companies. This linkage was found by analysing the 196 firms listed in the World Environmental Directory in 1992. This sample was achieved by companies' initiative because the full sample was expected to include 725 companies, which could lead to the effect of self-selection bias.

Another paper related to the effect of environmental management systems was produced by Melnyk et al. (2003). In this particular paper, they investigate the ability of the companies to perform financially better while reducing the amount of produced waste. Using data provided by a survey of North American managers, they compared the performance of the companies with formal but uncertified environmental management systems to having a formal, certified system. Using the survey method, Melnyk et al. (2003) collected 1,510 usable responses. According to the study results, there is a significant linkage between EMS and company performance. Such results were already observed in Judge and Douglas (1998). However, self-selection bias could affect these results as well due to the data collection process and methodology itself. Despite the possibility of such an issue, these piece of research and previously mentioned ones drive attention to the topic of environmentally friendly management and finance through the presentation of increased evolution of both data availability and range of applied methods.

Hart and Ahuja (1996) investigate pollution prevention activities and economic performance. The results were based on regression models of a data sample of 127 companies listed in the S&P 500 and involved in mining, manufacturing, and production of some kind. Main variables included data regarding emission reduction, R&D intensity, advertising intensity, capital intensity and leverage and such dependant variables as ROA, ROE, and ROS. The time period of collected data is between 1989 and 1993 years. Checking every year and the lagging effect, they found that there is a better economic performance within one or two years after the activity. However, they also conclude that in the end, companies with higher amount of emissions better performance.

Another paper related to environmental activism was published by Sharma and Vredenburg (1998). Similar to a previous paper by Hart and Ahuja (1996), they observed the positive and significant impact of environmental activism on companies' performance, benefits, and organisational capabilities. However, these findings were observed on different markets compared to Hart and Ahuja (1996); their sample included 99 Canadian firms from sectors related to oil and gas. This research adds to the value of past research precisely by identifying similar results but in a different market.

Another similar example but in a different sector was observed by Sharma and Vredenburg (1998). In their paper chemical industry was analysed from the perspective of implementation of environmentally friendly policies. According to their result that was based on participation in the reduction toxic release program, companies achieved the goal of its reduction, that led to significant decrease in ROI in short term perspectives; however, companies enjoyed a significant long-term increase in profitability. Such results were based on the analysis of 123 US firms.

Russo and Fouts (1997) investigated the relationship between environmental and economic performances. The resource-based quantitate analyse is based on the companies' data listed in the environmental ratings by the Franklin Research and Development Corporation (FRDC) for the time period between 1991 and 1992. The final sample of the research consists of 243 US companies from different sectors. To investigate the data and test the hypothesis of positive connection between two types of performances and moderation of this relationship caused by industry differences, Russo and Fouts (1997) apply three regression models with different input variables. Results indicated that "it pays to be green", and such relationship is getting stronger with industry's growth. They also claim that aggressive move towards greenness will lead to multiple benefits that can affect the company's financial and non-financial aspects, such as flexibility and becoming more entrepreneurial on a number of key dimensions mentioned in the research.

Cordeiro and Sarkis (1997) found that in the short-term perspectives, there is a penalty for being environmentally proactive, which goes in line with Cohen et al. (1995), Worrell et al. (1995), and Hart and Ahuja (1996). However, short-term penalties have an offset in the long-term perspective. They also observed a significant negative relationship between environmental activism industry analyst 1- and 5-year earnings-per-share performance forecasts. These results are based on the analysis of data related to 523 US companies for the year 1992 from various sectors that were adjusted in the model.

Gilley et al. (2000), contrary to previous papers (Cohen et al.,1995; Worrell et al., 1995; Hart and Ahuja, 1996; Cordeiro and Sarkis, 1997). In this paper, they analysed the sample of 71 events of corporate environmental initiatives using event study methodology that was split into two main groups: product-driven initiatives and process-driven initiatives. According to their results, there were almost no significant effects of such initiatives on stock performance. In addition, observations conclude that different environmental initiatives had their own unique implications.

Konar and Cohen (2001) analysed data related to 321 US manufacturing firms listed in the S&P 500 in 1989. Using the regression model, they observed the effect of lawsuits and toxic chemical disclosure. According to the outcomes of their research, there is a significant negative effect of the poor environmental performance on the company intangible assets and vice versa, while good environmental performance also leads to the increase in the companies' assets. Konar and Cohen (2001) also covered the review of the lawsuits; however, their effect was found as insignificant from the economic perspective, while findings related to toxic emission were both statistically and economically significant.

Despite such results, Konar and Cohen (2001) are questioning the motivation for environmental performance from companies' perspectives. They link thoughts regarding this question to the second possible way of interpretation of their findings, where observed results could be a proxy of management quality.

King and Lenox (2001) analysed 652 U.S. manufacturing firms over the time period 1987–1996. Several outcomes of their work include evidence of an association between pollution reduction and financial gain, but they could not prove the direction of causality. Another finding is that firms in cleaner industries have a higher Tobin's q, but they could not rule out possible confounding effects from fixed firm attributes. Moreover, they could not show that firms that move to cleaner industries improve their financial performance. In addition, they concluded that companies with a lower amount of emissions in their industries enjoy better financial performance compared to companies with a more significant amount. However, the epitaph of this paper raises a more important question than "Does it pay to be green?".

However, one year later, King and Lenox (2002) analysed an updated sample that included 614 US manufacturing companies using environmental data such as the amount of waste generation, waste prevention, waste treatment and waste transfer. Applying the regression model, they found that lower emission in the preceding time period is associated with significantly higher performance in the observed year. In addition, they found a significant positive relationship between waste prevention with ROA. Compared to the previous paper (King and Lenox, 2001), where different types of environmental information were used, this paper represents an implementation of various waste-related data that leads to significant results related to companies' performance and opens the door to testing a similar hypothesis using new environmental data.

Wagner et al. (2002) used the simultaneous equation system to the relationship between the environmental and economic performance. The sample included 37 companies and financial and environmental (environmental performance are SO2 emissions, NOx emissions and COD emissions) data for years from 1995 to 1997 in the paper manufacturing industry from several countries: Germany, Italy, Netherlands, and United Kingdom. They observed a negative relationship between environmental and economic performance in the industry. However, due to the sample size and specific sector, these results should be complemented with a similar analysis of other industries with a broader range of data to avoid the effect of heterogeneity in the sample.

Another research that applied the simultaneous equation system is Al-Tuwaijri et al. (2004). This paper analysed the relations among economic performance, environmental performance, and environmental disclosure. Their sample included data related to 198 firms listed in IRRC Environmental Profiles Directory. One of the main advantages of this paper is the application of quantitative measures. This research complements studies based on environmental data such as emission amount disclosure scores. Applied methodology of simultaneous equation system led to several findings:

1. The study observed a significantly positive relation between good environmental performance and more extensive quantifiable disclosure of environmental information.

2. The significantly positive relationship observed between environmental performance and economic performance, that good environmental performance

and economic profitability go hand-in-hand, that economic performance and environmental performance are both related to the quality of management.

3. Find that good environmental performance discloses (within their definition of environmental disclosure) more pollution-related environmental information than poor performers.

This finding is consistent with discretionary disclosure theory's "good news" explanation. In addition, Al-Tuwaijri et al. (2004) observed a positive relation between past environmental disclosure and current environmental performance.

Analyses of 278 Japanese companies from various sectors provided by Nakao et al. (2007) accompanies previously covered research that claims the positive relationship between firms' environmental performance and financial performance. The sample covers financial data for the time period between 1999 and 2003. The application of two multiple regression models to the sample led to the observation of the positive relationship between environmental and financial performances (however, this relationship appeared in later time periods). Such an approach was also applied to the different samples consisting of companies with mixed environmental and financial performance, where similar results appeared. Nakao et al. (2007) also found that if a company improves its environmental performance and score, it increases intangible assets by 4-6 billion yen.

Boulatoff and Boyer (2009) represent research on the financial performance of companies that contribute to ecological sustainability. Using the sustainable business website as a source of environmental data for companies from categories such as biofuel, efficiency, energy storage, fuel cells, geothermal, recycling, green chemicals, renewable energy project development, solar, transpiration, water, and wind. Boulatoff and Boyer (2009) collected data for 310 stocks and defined them as environmental firms. Financial data was extracted from Bloomberg for each stock and included price-to-earnings ratio, earnings per share, investments (capital expenditures to assets), and risk measures such as Altman's Z-score and debt to equity and five-year stock returns. In order to determine the effect of environmental information, the performance of the listed companies is compared to NASDAQ counterparts.

Regarding the main findings and results, there are several directions of outcomes of the research. First, going in line with methodology stylisation, Boulatoff and Boyer (2009) discovered that there are differences in performance between samples grouped by countries and sectors. They link the differences to the amount of capital expenditures that are clustered by sectors. They also found that there is a significant and positive effect of the cost of capital, EPS, and capital expenditures on stock performance; however, regarding the comparison of environmental stocks with NASDAQ, according to the results, environmental stocks perform worse, which goes in line with other studies, like Renneboog et al. (2008) and is opposite to the findings of Brzeszczynski and McIntosh (2014) and Brzeszczynski et al. (2016). In addition to the subpar performance, Boulatoff and Boyer (2009) observed higher volatility of green stocks. Looking from a different angle, they also found that the green stocks have higher R&D and capital expenditures and better corporate governance than the average NASDAQ company.

One of the main reasons for such an outcome regarding underperformance of the green stocks, according to Boulatoff and Boyer (2009), lies in the prolonged payback of investments that is opposite to the findings and results covered previously covered research. However, they also suggest that these results may even be improved with time.

Benjamin et al. (2020) investigated the effect of waste disclosure on companies' cash holdings. This research is one more example in which environmental data can be applied as a potential source of financial and non-financial benefits of a company. In this case, Benjamin et al. (2020) observed a data sample that included 2,083 firm-year observations. Such a sample was collected for companies listed in S&P 500 in the time period between 2010 and 2015 and included data related to financial and ESG aspects. The OLS model was used as a baseline estimation for the outcomes. Their main finding is that there is a significant positive linkage between waste disclosure and cash holdings; however, this connection is observed better in industries with high sensitivity to environmental information. They also observed a stronger relationship between these variables in companies with stronger corporate governance. Dealing with the interpretation of such results that could be more related to the investment area, such positive relationship could have a transitional effect within which companies with higher amounts of cash holdings and, according to Benjamin et al. (2020), higher waste disclosure could be associated with a conservative minus aggressive factor, due to it being an inherent behaviour of conservative companies to increase cash holdings.

Summing up the findings of the covered analysis of the ESG related information, it is evident that this area of study is more representative in terms of measuring the effects and relationships to the financial performance provided by such information. However, most of the findings claim that in case of successful implementation of the ESG initiatives or good environmental performance, they initially have a negative impact on companies' financial performance, leading to a pay-off in a more extended period and resulting in the possibility of enjoying better financial performance while “doing good". These findings also observed a linkage between quality management and the degree of companies’ SRI orientation.

Such outcomes represent stronger and clearer relation between financial performance and ESG information leading to questioning if the investment field of study takes everything possible from interpretation of ESG data.

Dealing with the wisdom that can be absorbed from tangent academic areas, ESG information can be of various forms; it can be raw data regarding the emissions or pollution, company activities that have or imply an effect on ESG, or various proxies expressed in company screenings by funds or ESG indices. Without any doubt, in each direction, it is possible to conduct research in order to identify the availability of additional information and the degree of market sensitivity to it. The academic literature's experience in analysing the potential of SRI advantage is concentrated around aggregated information in the form of SRI funds or indices, the results of which show mixed findings. In contrast, the analysis of raw data in the field of accounting and management leads to more representative results. This trend motivates the use of similar ESG variables for stocks' performance evaluation and for purposes of portfolio structuring.

In addition to the main scope of the literature described earlier, additional branches in the scope of SRI related literature were also considered in the research.

The ESG ratings are one of the most widely used tools for assessing the SRI suitability of companies. This direction is actively studied in the contemporary literature. These studies raise the question of the appropriateness of using separate ratings.

Friede et al. (2015) analysed 2,200 studies that were released between 1970 and 2015 to evaluate the financial effect of ESG information. This paper's main findings include evidence of long-term and stable ESG impact, which differs in regional and sector-based submarkets. In addition, they concluded that a deeper understanding of ESG criteria and their proper integration into the investment process is needed to obtain the full potential of such information.

Dorfleitner et al. (2015) compared three widely used ESG rating approaches. They annually investigate ESG related data from three sources: the ASSET4 database of Thomson Reuters' Datastream, the KLD ratings provided by MSCI ESG STATS, and the ESG data set of Bloomberg Sustainability. Overall, the analysed data sample included data for more than 8,500 companies. This study is one of the first to quantify such a voluminous amount of information in order to compare the outcomes of ESG ratings' scores. The key finding of the study is an evident lack in the convergence of ESG measurements. Dorfleitner et al. (2015) reveal obvious distinctions in the scoring approaches and the significant difference in the CSR definition in all three rating methodologies. Findings like this are extremely important for research-oriented research of the SRI based on such proxy as ESG ratings. Dorfleitner et al. (2015) claim that the variability in methodologies and interpretations of ESG in different rankings provides enough heterogeneity to allow the selection of a ranking that could better reflect the concepts and ideas of the study. This fact is also critical for investors and managers who orient their activities and make decisions based on the ESG rating database. Dorfleitner et al. (2015) also recommend analysing the ratings' methodology more profound to stick with the most suitable one to both, managers who are challenged in case a company is interested in better performance in each rating, and investors searching for better path to do good while earning.

Giese et al. (2019) analysed the MSCI ESG rating data and financial variables and provided a link between ESG information and the valuation and performance of companies by examining three transmission channels within a standard discounted cash flow model. According to a study of the three transmission channels using MSCI ESG Ratings of 1,600 companies between January 2007 to May 2017, Giese et al. (2019) concluded that ESG information could positively influence company valuation and performance through their systematic risk profile and their idiosyncratic risk profile.

The feasibility of using the MSCI Rating was also examined by Berg et al. (2019). In this study, quantitative analyses of the similarity of the performance of the six ESG rating agencies (MSCI, KLD, RobecoSAM, Sustainalytics, Vigeo-Eiris, and Asset4) was produced. After analysing more than 700 indicators and ratings of more than 900 companies between 2014 and 2017, they concluded that there exist significant differences in approaches outputs between mentioned ratings. One of the main findings is that it is practically impossible to find two rating agencies that measure the exact same attribute for the same firm. Berg et al. (2019) also observed very large heterogeneity at the firm level. Their research results are the model combining various ratings to achieve an aggregated rating applying OLS and several machine learning tools such as Random Forest and Neural Network.

Gibson et al. (2019) investigated the disagreement in firms' ESG ratings. The analysed sample consisted of data related to companies in S&P 500 in the timeframe between 2013 and 2017 and rating data from six prominent ESG ratings:

Asset 4 (now Refinitiv ESG), Sustainalytics, Inrate, Bloomberg, MSCI KLD, and MSCI IVA. Analogously to Berg et al. (2019), they observed a significant difference in rating scores between agencies (average correlation is about 0.46). The observed governance correlation in the sample was lowest (0,19), while environmental was highest (0.43); however, the divergence of the ESG components is sector dependent. They also observed a relationship between company size and level of disagreement where larger companies have a higher disagreement. Gibson et al. (2019) test several hypotheses; first is the risk-based hypothesis which is based on the idea of payoffs for higher riskiness of stock with a higher level of disagreement in the ESG ratings; while second is the optimism-bias hypothesis, where lower stock returns is an outcome of the high ESG rating difference. According to the findings, they observed evidence supporting both hypotheses. On behalf of the environmental component, the positive relationship was represented between rating disagreement and stock returns that could be an outcome of environmental factor being a source of priced risk.

Kaiser (2020) investigated the financial performance of the ESG-based portfolios formed on an explicit sample of 2,585 stocks from Europe and the US in the timeframe between 2002 and 2015. Testing various compilations, Kaiser (2020) concluded that the inclusion of the ESG information could perform in mixed results; however, it's possible to achieve better ESG scores while increasing risk-adjusted performance. In addition, according to the findings observed in the paper and Kaiser's conclusion, European companies are affected by the rating information compared to US stocks.

Gyönyörová et al. (2021) continued questioning the validity of various ESG ratings. In the research, the consistency between multiple ESG ratings

(Sustainalytics, RobecoSAM, Bloomberg, ISS, and CDP) of companies in the S&P Global 1200 index in the time frame between 2016 and 2020. According to their findings, ESG ratings cannot provide the same information on the companies; however, the relationship within the ratings exists. Gyönyörová et al. (2021) claim that despite the similarity in scoring methodology, due to considerable stability among data-provider factors and the instability of cross-dimensional factors, separate usage of ESG ratings and consideration of them being valid sours of the non-financial information for achieving ESG based performance is unlikeable. They also observed substantial interference of regional and legal-specific factors on the scores signalling heterogeneous nature, while sector wised analyses did not have similar signs. Gyönyörová et al. (2021) note that analyses are based mainly on the large-cap companies' data due to a lack of data related to small-caps where further research is needed. In conclusion of Gyönyörová et al. (2021) note they recommend using multiple sources of the ESG data and critically assessing the validity of ESG data to avoid the risk of being misled.

While most of the research is concentrated on the effect of ESG ratings on financial performance or the determination of the validity of such ESG proxies, Clementino and Perkins (2021) investigate how companies react to the ESG ratings, going deeper into the possible origin of the inconsistency in ESG ratings' performance. This research covers Italian companies from multiple sectors and is based on interviewing 18 suitable according to the research design respondents. While most studies in the field are driven by the effect of the ESG ratings of companies' economic and financial performance as well as investment perspectives, this study concentrates on disclosing the company's internal response and initiatives' motivations driven by participation in ratings and being scored. Despite all the limitations coming from a number of respondents, sector diversification, and only one country observed, research results unveiled some exciting companies' reflections on the effects of the ESG ratings. According to respondents, in most cases, the existence of the ESG rating impact on companies' sustainable performance was denied, while others shared a piece of information on the increased number of initiatives in multiple areas of the ESG; however, the main reason for such changes was a challenge of achieving better scores in ratings. One of the outcomes of the research also led to the conclusion that most companies rarely acknowledge CSR practices if there is no external public or internal pressure or concern. Such results show the view on the ESG ratings from managers' and companies' perspectives highlighting the possible reasons mixed outcomes of investigations of investment perspectives of companies and portfolios based on ratings' information.

Conducted research by Barth et al. (2020) studied the connection between environmental, social and governance (ESG) practices and the credit default swaps (CDS). They used two sources (MSCI Intangible Value Assessment and Refinitiv ESG) as a source of the ESG data and IHS Markit for CDS data. The final sample consisted of data related to 470 firms or 33,909 firm-month observations (72% of observations are US firms) in the time frame between January 2007 and March 2019. According to the results, higher ESG ratings reduce credit risks in US and European companies, being a U-shaped across ESG quantiles. Dealing with quotative findings, Barth et al. (2020) observed that change in ratings by one standard deviation leads to reduction of the CDS spreads on 4%, 8%, and 3% for low, medium, and high ESG companies accordingly.

Nagy et al. (2016) analysed the performance of ESG momentum-based portfolios in the period between 2007 and 2015, and the sample was built on the MSCI ESG rating database. According to their results, ESG momentum-based portfolio outperforms the benchmark significantly; they also observed the relationship between environmental portfolios and the price momentum factor. While in addition to the analyses of the ESG momentum, they tested the ESG Tilt strategy, which is based on the initial level of the ESG score. While the ESG tilt portfolio underperformed the momentum-based, it was also associated with lower volatility stocks.

Chen and Yang (2020) investigated the ESG momentum effect in the Taiwanese market. Their sample consisted of 913 company years, in the timeframe between 2010 and 2017. Applying different types of trading strategies, Chen and Yang (2020) observed the outperformance of ESG momentum-based trading strategies with their maximum values in the short run (up to 10 and 18 months depending on the specification); however, reversal is prominent in the long-run. Such findings evidence that investors' overaction is associated with better ESG performance and, according to the results, it is mainly contributed by environmental and social information.

Consolandi et al. (2020) analysed the relationship between financial performance and the ESG momentum, which, according to the methodology, is based on the change in related scores. Moreover, they applied the Gini index to compare the overall performance of the ESG information. The investigated sample combines information related to 731 companies split within 11 sectors. According to their result, the ESG momentum appeared significant and positive in all estimations; however, the outcomes based on the Gini index enclosure appeared slightly significant in terms of the coefficient's value while less statistically significant. They also observed better performance of ESG portfolios compared to the market. In addition, they documented the positive relationship between the ESG materiality acts and the concentration of risk factors. Despite the better performance of the Gini index, taking into account the provided methodology, its better performance could result from heterogeneity bias.

Heinkel et al. (2001) investigate the effect of ethical investing on corporate behaviour in a risk-averse equilibrium model. They conducted a world where three types of firms exist (acceptable, fitting the green investors' requirements; unacceptable, not fitting the green investors' requirements; reformed, companies that moved from being unacceptable to acceptable) that may or may not change the status at specific cost making them suitable for more investors; and two types of investors (green, that does not tolerate unacceptable companies, and neutral, that have no preferences) with constant absolute risk aversion. They also include several areas for optimisation from both companies and investors, perspectives creating the simulation based on empirically reasonable parameters. The outcome of such model indicates that roughly 25% of green investors are needed to cause the companies to change, while, according to the research and empirical evidence, only 10% of investments are socially responsible, which is far not enough to encourage companies to go clean.

Another simulation model was produced by Pástor et al. (2020). The paper analysed the effects of sustainable investing in a highly tractable equilibrium model. This study's approach is different from Heinkel et al. (2001): Pástor et al. (2020) utilise a more complex model more comprehensive in its flexibility, verity, and possible outcomes of the simulation. Compared to the previously described simulation, this research approach is more concentrated on the investors' portfolios and industry level, while Heinkel et al. (2001) covered deeper the firm's reflection on the investors' behaviour. Pástor et al. (2020) approach resulted in several outcomes: (1) green stocks have negative alphas, while brown stocks have positive alphas, especially when risk aversion is low and the average ESG preference is strong; however, if the ESG concerns get unexpectable stronger, this results into outperformance of green stocks; (2) sustainable investing generates positive social impact by leading firms to become greener and by inducting more real investment by green firms and less investment by brown firms; (3) investors with higher ESG tastes "pay for doing good" less than they are willing to; (4) ESG industry increase in dispersion of ESG preferences.

Renneboog et al. (2006) researched the difference in investing behaviour between those interested in SRI funds and non-SRI funds. They investigate the data related to 410 SRI and matched by fund age, size, load fees and risk exposures for 680 non-SRI funds from 17 countries around the world in the time period between 1992 and 2003. This gives an understanding of the behaviour, interests, and priorities of investors in the analysed period. According to the results of Renneboog et al. (2006), investors interested in SRI funds care less about the funds' risks and fees. In contrast to the situation and motivations of investors in non-SRI funds, the main driver of raising funds is the fund's activity, the volume of research, and positioning. There is an additional relationship between the flow of money and the types of screenings funded, such that SRI funds with more screenings have higher expected returns. The study also shows that SRI investors are less affected by past underperformance and are willing to pay for the management of portfolios consistent with their social objectives.

Bialkowski and Starks (2016) analysed the difference in demand between SRI and conventional funds. To combine the research, they used several data sources (such as Bloomberg, Morningstar, CRSP, MSCI KLD ESG Research, Investment Company Institute, and SEC EDGAR). This paper's sample includes data related to 117 SRI US domestic funds combined with 1,617 non-SRI US domestic funds in the time frame between 1999 and 2011 utilising both matched and complete sample approaches. According to the findings observed in the paper, Bialkowski and Starks (2016) determined that SRI funds attracted more flows of investments on average compared to the conventional funds, while these flows were consistently positive in most of the observed years. They also show that the significant corporate environmental disasters do not have linkage with the SRI funds' statistically significant inflows. In addition, this research covered the comparison of ESG scores between two types of funds based on the MSCI ESG ratings, and results show that SRI funds outpace conventional ones in almost all categories but community and diversity, while ESG profiles of SRI funds are also more persistent through time.

Barber et al. (2021) also investigated an impact investing and whether investors are willing to pay for impact holds and non-financial benefits. According to the description of the methodology of data collection, this paper avoids inclusion of the green washing investments, those consider investing in specific industries with positive externalities, like health, education, or clear energy. Barber et al. (2021) collected data related to 24,000 investments by about 3,500 investors in time frame between 1995 and 2014. This sample covers 4,659 including 159 impact funds. Their research outcome results provide compelling evidence that investors are willing to pay for nonpecuniary characteristics of investments (2.5 to 3.7 ppts in expected excess IRR); however, they observed an underperformance of impact funds compared to traditional ones (4.7 ppts lower).

The event study method is one of the most popular methods in empirical finance. This method was used in the analysis of events associated with ESG data. A feature of this method is the flexibility of application to various information.

Hamilton (1995) observed the significant negative returns on the date toxic release inventory emission information is published by the company. In this study, the effect of the release of the data related to the Toxics Release Inventory (TRI) by the Environment Protection Agency (EPA) on the stock performance was investigated. Hamilton (1995) measured the exposure of such data on the publication date (June 19, 1989). The analysed sample consisted of 436 companies US firms. In this study, the event study methodology was applied, and according to the results, companies with high values of emissions were most affected. Findings indicate that during the publication of the information, the abnormal returns of the companies reported were significant and negative (-0.00284), and these drops were related to reported amount emissions. There is also evidence of differences in losses between companies that previously had published their environmental performance and companies which had not: according to the findings, firms with exposure at Superfund sites had reduced effect of the event; however, abnormal returns of such stocks were -0.00373 that is largest in subsamples. In addition, Hamilton (1995) observed the outcomes of such publication from a journalist's point of view: according to the research, companies with higher values of emissions were likely covered in the news and had a more significant drop (-0.00358).

Klassen and McLaughlin (1996) analyse the links between environmental management and performance to the financial performance of firms. Using event study methodology, they concentrated on revealing the effect of management signals to the public through firm-specific environmental events on the performance of a stock. Significant positive abnormal stock returns were observed after the positive events and the opposite for negative effects. They also observed the average increase in market value after the positive events on $80.5 million, while the average effect of negative events on market value was decreased by $390 million.

The event study methodology was also applied by Gilley et al. (2000), where it was used to determine if there is an effect of environmental initiatives on companies' performance. This paper was mentioned and described earlier. The outcome of the applied model led to an insignificant effect of observed events, and it was concluded that a unique event has a unique implication and effect on the performance.

The factor models presented are among the most used tools in imperial finance. The Fama and French three-factor model and the five-factor model are the most used. Since the advent of this approach, it has been actively used to search for new factors that could characterize portfolios and their composition. This method is also actively used in the field of green finance.

In a study by Puopolo et al. (2015), the event studies approach was used to analyse the effects of application environmental information, and in this case, green score, or environmental ranking that Newsweek Green Rankings provided for the 500 biggest publicly traded companies in the USA by revenue, market capitalization, and the number of employees. This paper's sample was based on the yearly ratings of the listed companies for the time period between 2009 and 2014. As part of their study, Puopolo et al. (2015) analysed each year and each company to evaluate the effect of the Green Score. As a result, they concluded that the findings demonstrate that there is no linear relationship between the aforementioned elements; thus, the "green behaviour" does not affect the financial return, i.e., the remuneration required by investors. In the reasons for this effect, they highlight the lack of time for the market to interpret this information and form conclusions. In most cases, investors are not aware of the existence of such a ratio. The authors see the second possible explanation for these results as the effect of the sample itself: since this rating is formed on the basis of the largest companies, they can be large enough to be autonomous from this factor. These factors may indeed exist, however, even taking into account the risk of a possible self-selection bias, since, judging by the methodology, companies independently provided data for rating formation. The main reason for these results may be the interpretation of the data for rating purposes. The study by Berg et al. (2019) has previously been described the difference of the outputs of the ratings was demonstrated and how inconsistent they can be. In addition, Berg et al. (2019) pointed out the possible existence of the risk of a compromised methodology. The chosen methodology can indeed highlight the influence and significance of such factors as environmental information; however, the choice of such a proxy variable could critically affect the models' outcomes. Regarding the first possible explanation of such results, it is worth noting that similar studies from a related discipline have already demonstrated the ability of the market and the company to respond to similar ratings (Cohen et al., 1995;

Worrell et al., 1995; Hart and Ahuja, 1996; Cordeiro and Sarkis, 1997; Al-Tuwaijri et al., 2004; Nakao et al., 2007; etc.).

Halbritter and Dorfleitner (2015) investigated the relationship between ESG related data and financial performance by applying the Carhart (1997) four-factor model as well as cross-sectional Fama and MacBeth (1973) regressions. The analysed sample included data from 1991 to 2012 of several ESG ratings such as ASSET4, Bloomberg, and KLD for the US market. Halbritter and Dorfleitner (2015) tried to determine such a relationship based on the analyses of the performance of low- and high- ESG companies. Ranking samples on a yearly basis in groups for each of the ESG providers, they created portfolios picking top and bottom 20% companies in period t-1 and applying the capitalisation-weighted method. After calculating the difference in monthly returns for pairs of portfolios based on each ESG rating, and application of two approaches, they did not observe a significant difference in returns of companies featuring high and low ESG rating levels. Halbritter and Dorfleitner (2015) also did not observe abnormal returns in a best-in-class approach utilising sector-specific sampling. Despite such findings in portfolio performance, they observed a significant effect of some ESG variables in cross-section; however, this effect depends on the applied ESG rating.

Görgen et al. (2018) analysed the effect of Greenhouse gas related information on the financial market. Setting the main goal to determine the relationship between carbon risk and stock prices, their researched sample consisted of data from 1,657 companies in 43 countries and 55 carbon risk proxies in the time frame between 2010 and 2017. Görgen et al. (2018) also tried to develop a Carbon Risk Factor and quantify Cardon Risk with Carbon Beta, and they tried to demonstrate possible

Carbon Beta application for various stakeholders. According to the results, they observed a significant increase in the explanatory power of baseline models (such as the Fama-French and the Carhart models) in single stock regression. Despite such results, the approach taken for the determination of the Carbon Risk Score is arbitrary and unnecessarily sophisticated. According to the methodology, Görgen et al. (2018) split the proxies into three main groups: Value Chain, Public Perception and Adaptability Subscores. For each company and period of time they label proxies with zero or one where zero is assigned if the value of the specific variable is below the median value and one if it is above, which is similar to Cohen et al. (1995). As a next step, they calculate the average score with the groups and calculate the final score using weights (0.7, 0.15, 0.15 for Value Chain, Public Perception and Adaptability Subscores; accordingly, such weights are based on the group's importance). Dealing with the findings of Görgen et al. (2018), research claims that represented the BmG factor explains systematic variation in returns similarly to the conventional factors. They also observed the inexistence of risk premium associated with the carbon risk. The main reason for such an outcome, according to Görgen et al. (2018), is the difficulties in the prediction and quantification of carbon risk. In addition, they share an unclear review on the performance of green compared to brown stocks: according to their conclusion, brown stocks are associated with higher returns; however, relatively brown stocks underperform brown ones, while green stocks outperform brown stocks while getting greener.

Hübel and Scholz (2018), similarly to Halbritter and Dorfleitner (2015), investigated ESG ratings and their exposures to measure ESG risks and their possible implication for asset management. The Thomson Reuters ESG database was considered a primary source of the ESG data. They applied Fama and French (2015) five-factor model extended with the momentum factor (Carhart, 1997) to utilise the risk exposure using a data sample that consists of between 918 and 1,113 stock data, depending on the analysed year, in the time frame between 2003 and 2016. Hübel and Scholz (2018) also considered using components separately (Environmental, Social, and Governance) for portfolio creation and measuring risk exposure. According to their methodology, they use medians and terciles as breakpoints for labelling companies with high or low rating groups, similar to previously described research. However, one of the features of this research is the application of a size factor to combined portfolio returns calculation: in this research, monthly returns are calculated in groups for each ESG component for small and big companies by capitalisation. The final return is calculated as the difference between the returns of the four portfolios, half of the sum of the monthly returns of the portfolios of low-rated companies with large and small caps and half of the sum of the monthly returns of large and small companies with high ratings. Such a method is applied for each of the three components. The final version of the factor model includes baseline elements of the Fama and French five factors, Carhart's momentum factor, and three ESG factors. Dealing with findings in Hübel and Scholz (2018), they observed stocks with low ratings outperforming stocks with high ratings, highly social companies outperformed companies with low ratings in periods of the crisis. Also, by extending the CAPM model based on Fama and French factor models and Carhart's momentum factor with ESG factors, they observed a significant increase in the explanatory power of stock returns. On behalf of performance evaluation, ESG based portfolios underperform the market, while the Environmental component is best performing compared to Social or

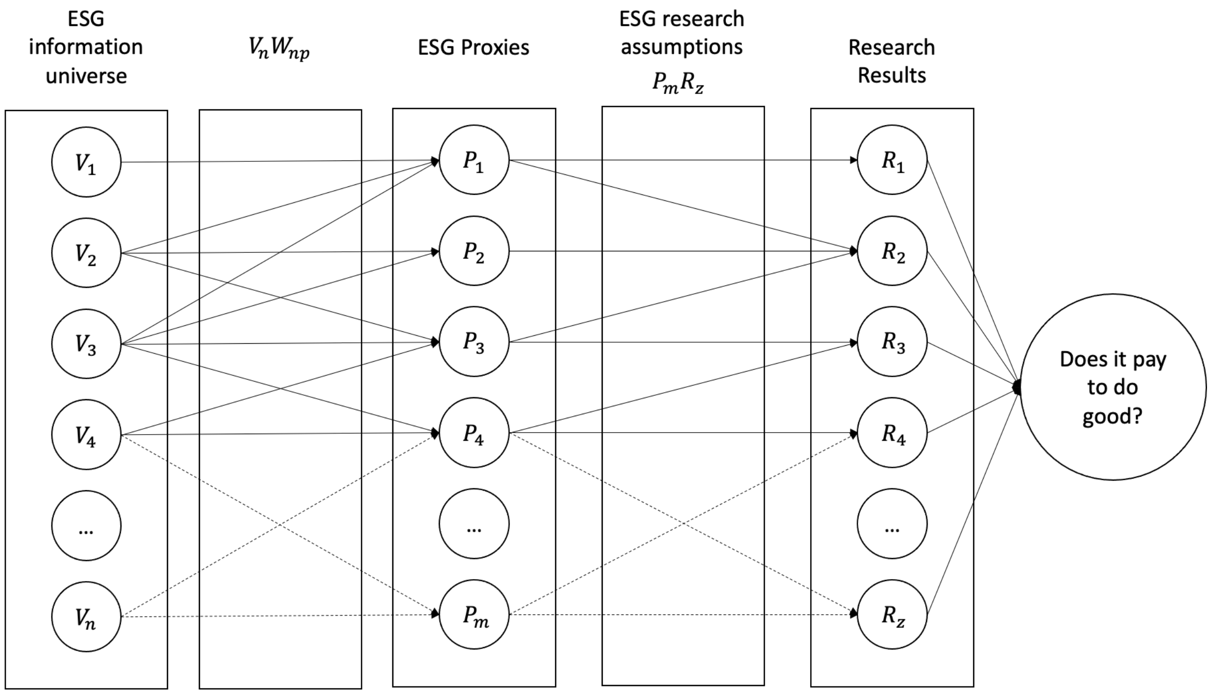
Governance. They also represent some evidence of ESG sensitive stocks being riskier compared to other stocks. According to Hübel and Scholz (2018), such results from environmental perspectives are due to the increasing awareness of the investors regarding risk exposure. They claim that taking into account the ESG factors can help avoid related risks that argue with the results of most research in the field. Considering the individuality and characteristics of each rating, which were described earlier, such a result is questionable, and additional robustness checks should be considered utilising analogous ESG data sources.

Dealing with the literature review summary, the academic literature on ESG is both rich and comprehensive (appendix 1 – summary table of the literature review). However, investment literature stagnates with a stable demonstration of the SRI effect, while accounting and management literature shows positive results from ESG information in various fields. There can be many reasons for such outcomes; however, from the research point of view, the critical effect influencing the heterogeneity of the results is the baseline methodology of data collection and processing.

Most of the studies analysed are based on various indices, ratings or portfolios composed by SRI funds, which are assumed to be ESG proxies. Such an analysis of the ESG proxies is the basis for building hypotheses and conclusions regarding the feasibility and prospects of ESG investing.

From the standpoint of Data Science and Machine Learning, this approach allows for an additional factor that can affect models' outputs. Taking the helicopter view on the systematic approach taken by most papers will result in the scheme shown in Chart N.

Chart 1. Scheme of data flows in current literature.



In these scenarios, ESG proxies (Pm) are the results of the transformation of available ESG information in the observable data universe (Vn), according to the methodology (VnMnp), which is determined by specific proxy. Further, academic works of literature investigate and analyse them using chosen approaches (PmRz), resulting in the conclusion regarding the status and perspectives of the ESG. Currently, as previously mentioned, in the investment-oriented scope of academic literature, SRI has an ambiguous assessment.

Looking at this approach from the perspective of machine learning, namely from the point of view of neural networks, it turns out that the ESG information universe is an input layer that contains raw data. ESG Proxies – the first layer that combines weighted variables (VnWnp) by unique methodology, resulting in proxies like ESG indexes, SRI funds or portfolios, and ESG ratings. This Proxy Layer is the source of the information for the final layer, provided by the academic dimension, that perform (utilising specific weights PmRz) this information into the unique conclusions, or, in terms of machine learning, the output layer.

Implementing the studied literature to establish such a view, one can come to the conclusion that each literature with similar sources and approaches is a particular configuration of weights in such a system. However, in this system, there is a flaw that can significantly impact the existing lack of consensus in the results of academic work: applied conventional methods towards variables pre-weighted by proxies leaves no opportunities for calibration and optimisation of the input layer. Such effect causes each model created from specific or multiple proxies to result in a new outcome that could be assigned to the particular group of the results.

Thus, this study calls into question the appropriateness of using an additional proxy layer in exploring ESG information. Delegating part of the tasks associated with the evaluation of the variables, most of the work is reduced to assessing whether ESG proxies are capable of transferring such information through their methodology. Most of the academic literature forms a group that demonstrates the SRI's statistical insignificance, showing underperformance of such actives. The second group observes similar performance and behaviour compared to the market or alternative assets. In contrast, the third group finds evidence that ESG-based portfolios outpace non-ESG. Such behaviour in outcomes is similar to the possible performance of underfitted models. The study implies the rejection of additional methodology that could not be controlled in order to achieve a state that is similar to works in accounting and management, in which the use of raw data and avoiding proxies led to stable significant results that are applicable for considering ESG disclosure as valuable source of additional financial information.

With regards to the main tested hypothesis, the explicit list provided bellow:

- H1.0.: Environmental portfolios perform on par with their less environmentally friendly counterparts.

  H1.1: Environmental portfolios outperform their less environmentally friendly counterparts.

- H2.0.: Environmental performance is not a source of systematic risk.

  H2.1.: Environmental performance can be considered as a source of systematic risk.

- H3.0.: Environmental momentum is not a source of systematic risk.

  H3.1.: Environmental momentum is a source of systematic risk.

- H4.0.: ESG momentum upgrades and downgrades cannot be considered as sources of the systematic risk.

  H4.1.: ESG momentum upgrades and downgrades can be considered as sources of the systematic risk.

- H5.0.: Environmental information does not have explanatory power for companies' value.

  H5.1.: Environmental information improve the explanatory power for companies' value.

- H6.0.: Environmental information does not have predictive power for stock returns.

  H6.1.: Environmental information have predictive power for stock returns.

3. Methodology and Data

Green Finance, which is the primary concern of the research in terms of empirical analysis, is the source of hypothesis development. The rationales for such assumptions are the possibility of a connection between companies' environment-oriented information and financial performance in each possible aspect. Such a starting point becomes the basis for hypotheses that cover limitless research questions and the ever-expanding areas of information being explored, including the relationship between the companies' environmental behaviour and the possibility of it being the source of financial information (such as the existence of risk premium or explanatory power).

The initial challenge of the quantitative study is to determine the limitations of the observed informational universe primarily by prioritising the analysed environmental variables suitable for research design and principles of data quality. The logic supporting the search for environmental proxies is predominantly based on the historical experience of conventional factors' determination, such as Fama and French five factors or the momentum factor.

The best-fit approach established the original methodology of such factors. Recent literature observes and criticises the conventional approaches to factor determination, suggesting the alternatives that have better or similar performance in both applicability and findings' interpretation. However, none of the applied environmental factor proxies appeared to be consentaneous, despite the prolonged development of the field. Multiple sources evidence the richness of the investigated information universe through multi-oriented proxies' tests. Such proxies are covered in the academic literature, representing the analysis presented in the literature review chapter and identifying issues in the very origin of the most frequently applied environmental indicators. Early works related to the field misled the development of green finance by establishing proxies produced by rating agencies and financial indexes as the primary source of environmental information. The main challenge of the chapter is to overview and rethink the protracted trend of the aggregated proxies' utilisation through observation of the abundant environmental informational universe and identification of key variables.

Both academia and practice will benefit from the analysis and comparison of key environmental performance indicators and variables utilised by companies, rating agencies and other proxies. The synthesised conventional and novel methodologies with the raw variables result in the main contribution of the thesis originates.

According to a literature review, the most common environment-oriented ratings are utilising various types of variables, performing mixed scores that are divergent within agencies. The first step in this study is to identify key environmental performance metrics, including greenhouse gas and CO_2 volume, water usage and waste intensity. These indicators combine qualities that satisfy the design and requirements of quantitative analysis. Compared to other possible environmental metrics, these metrics are the most common in the academic literature and in company-published information. Bloomberg is the primary source where historical emissions information is regularly aggregated and updated, making it a useful source of information. To avoid heterogeneity, each of the analysed variables is calculated as an amount per sale of revenue. In the case of the greenhouse gas and CO_2 variable, Bloomberg defines it as the total metric tonnes of greenhouse gases (GHG) and total carbon dioxide (CO_2) emitted per million of the company's sales revenue. With regards to water usage, it is defined as cubic meters of water consumed per million of sales revenue. Moreover, waste intensity is waste generated per sales calculated as metric tonnes of waste, both hazardous and non-hazardous, per million of the company's sales revenue. These ratios are calculated based on data items disclosed in company filings.

In order to achieve set goals and to test the raised hypothesis, a full sample available in Bloomberg was extracted for each individual variable, covering companies from all sectors and countries starting from the very beginning of the disclosure in 2004 until the end of 2021. Table 1 below represents the annual number of observations related to environmental information.

Table 1. Annual number of environmental observations.

Year	Observations			Total observations	Number of unique companies	Variable disclosure per unique company
	GHG & CO2 Emission Intensity per Sales	Water Intensity per Sales	Waste per Sales			
2004	1		1	2	1	2.00
2005	34	33	44	111	65	1.71
2006	167	167	201	535	294	1.82
2007	384	424	480	1,288	707	1.82
2008	666	740	860	2,266	1,251	1.81
2009	817	923	1,025	2,765	1,505	1.84
2010	949	1,086	1,189	3,224	1,710	1.89
2011	1,109	1,249	1,315	3,673	1,919	1.91
2012	1,266	1,376	1,466	4,108	2,101	1.96
2013	1,507	1,515	1,619	4,641	2,381	1.95
2014	1,813	1,694	1,793	5,300	2,745	1.93
2015	2,052	1,856	1,931	5,839	3,008	1.94
2016	2,361	2,063	2,104	6,528	3,343	1.95
2017	2,675	2,247	2,340	7,262	3,669	1.98
2018	3,142	2,516	2,679	8,337	4,196	1.99
2019	3,664	2,780	3,038	9,482	4,835	1.96
2020	3,987	2,910	3,203	10,100	5,114	1.97
2021	3,359	2,372	2,768	8,499	4,294	1.98
Overall	29,953	25,951	28,056	83,960	6,391	1.95

According to the collected sample, the number of disclosures increases annually, as well as the number of unique companies, including environmental performance, to annual reports. Additionally, the disclosed variable per company also shows an uptrend highlighting the importance of such variables to the stakeholders.

Dealing with the observations split into countries, the collected sample consists of companies from 92 countries. In addition to the opportunity to investigate each specific economy, such an exhaustive sample gives an opportunity to analyse data applying additional grouping rules, including analyses of the companies related to the developed or emerging countries, perform regionally based findings where the grouping approach is similar to the conventional method established by Fama and French and widely used in related academic literature. This approach implies analysing the sample in groups in accordance with the following regions: the Asia Pacific excluding Japan, North America, Europe, Japan, US, while the rest of the world can be considered as the emerging market.

Despite the number of covered countries, not all of them have a sufficient number of observations to perform the results; in such cases, thresholds are enforced depending on the applied methodology. The further table shows the sample size by country.

Table 2. Sample size by countries.

Sector	Observations				Unique Companies
	GHG & CO2 Emission Intensity per Sales	Waste per Sales	Water Intensity per Sales	All Variable	
United States	5,409	3,112	3,011	6,003	1,005
Japan	2,113	5,876	7,201	7,863	782
Britain	3,631	1,356	1,626	3,967	586
Taiwan	1,974	1,627	1,573	2,344	355
China	994	1,063	1,027	1,698	432
France	1,165	910	1,147	1,552	187
Australia	1,294	647	623	1,384	195

Canada	1,227	708	696	1,359	206
Germany	718	744	876	1,100	152
Brazil	805	785	743	1,066	128
South Korea	1,023	639	673	1,063	154
Hong Kong	874	533	599	1,026	196
South Africa	876	589	430	1,001	111
Switzerland	549	592	658	860	118
India	685	587	458	837	144
Italy	554	603	685	811	137
Sweden	485	317	446	765	122
Spain	486	436	566	677	88
Finland	312	355	478	555	67
Russia	187	331	364	444	58
Netherlands	297	224	301	428	59
Malaysia	285	239	231	414	77
Singapore	258	269	177	390	85
Mexico	300	312	250	383	55
Norway	276	104	208	376	71
Thailand	276	290	271	365	58
Denmark	217	222	220	333	49
Indonesia	125	183	118	237	48
Poland	80	122	198	230	49
Other countries	2,478	2,176	2,202	3,607	617
Grand total	29,953	25,951	28,056	43,138	6,391

Meanwhile, table 3 represents the companies' split on regions and economic status mentioned previously. Overall, the sample size gives room for testing different subsampling rules, allowing for evaluating the effect of environmental information flow in most possible market conditions.

Table 3. Number of unique companies by regions and economy level.

Regions	Economy level		Total
	Developed	Emerging	
Asia Pacific ex Japan	513	1347	1860
Europe	1789	258	2047
Japan	782		782
Latin America		221	221
Middle East and Africa	18	190	208
North America	1216	57	1273

Total	4318	2073	6391

In addition to the country-wise sampling, sector-based sampling is considered in the research, providing an extra robustness check that is needed because of the existing possibility of the sector-mix effect. The collected sample includes companies related to 11 sectors that also can be split into three meta-sectors. The services group includes such sectors as Financials, Information Technology, Health Care, Communication Services, and Utilities; while the production meta-sector consists of companies Industrials, Consumer Discretionary, Consumer Staples, and Real Estate sectors. Moreover, the third group, that is extraction, combines companies from the Materials and Energy sectors. In a few cases, companies are associated with multiple sectors or do not assign to any, and such companies are not considered in the analysed sample to prevent double counting. Depending on the applied method, intra- and inter- sector approaches are considered for portfolio structuring hedging such effect. The table below represents the sector-based sample split.

Table 4. Number of observations and unique companies by sectors.

Sector	Observations				Unique Companies
	GHG & CO2 Emission Intensity per Sales	Waste per Sales	Water Intensity per Sales	All Variable	
Communication Services	1,427	846	1,016	3,289	263
Consumer Discretionary	3,507	2845	3,188	9,540	801
Consumer Staples	2,409	2333	2,538	7,280	520
Energy	1,699	1272	1,255	4,226	333
Financials	3,508	2215	2,050	7,773	669
Health Care	1,413	1505	1,634	4,552	340
Industrials	5,227	4,716	5,678	15,621	1,212
Information Technology	2,953	2580	3,058	8,591	835

Materials	4,071	4330	4,553	12,954	433
Real Estate	1,914	1629	1,327	4,870	644
Utilities	1,756	1629	1,683	5,068	304
Grand Total	29,884	25,900	27,980	83,764	6,354

Despite the intense concentration on the environmental variables, the research also covers the analysis of the widely used MSCI ESG rating and the effect of companies' changes in score, contributing to the relevant developing literature. Due to the unavailability of the rating data in Bloomberg, it was obtained manually from the official website. The final sample covers 2,842 unique companies from 52 countries and all sectors in the timeframe between the end of 2016 and the end of 2022.

Since the main challenge established in the related analysis is to identify the effect of the rating change, observations are inspired by the event of the rating change, which number equals 2,841. The further table represents the sample's number of observations and unique companies by country.

Table 5. Sample size and unique companies by countries.

Countries	Number of Companies	Count of Upgrades	Count of Downgrades
US	623	210	669
CN	598	162	296
JP	259	72	201
IN	104	36	61
KR	99	38	75
CA	87	15	69
GB	84	17	63
TW	81	24	59
HK	76	23	61
FR	64	20	36
AU	63	18	43
BR	47	13	29
ID	22	15	14
Other Countries	634	150	425
Grand Total	**2841**	**813**	**2101**

Similar to the previous sample associated with environmental variables, in the case of the MSCI ESG ratings, additional grouping rules can be applied, including the sample splits on economic status and regions. However, in order to perform a deeper analysis of the well-established source of ESG information and achieve better contribution, several extra grouping rules can be applied, such as dividing companies by initial rating levels, growth and size factors and mixed approaches.

Furthermore, for additional robustness and prevention of sector-mix effects, the utilised methodology can be applied to meta-sectors, including extraction, production, and services sectors. A detailed view of the meta-sectors sample size is provided in the table below. The reason for establishing findings based on meta-sectors but not on the separate sector is to ensure educate sample size and statistical power.

Table 6. Unique companies by sectors and meta-sectors.

Sector	Extraction	Production	Services
Financials	-	-	444
Industrials	-	403	-
Information Technology	-	-	361
Consumer Discretionary	-	300	-
Materials	273	-	-
Health Care	-	-	270
Consumer Staples	-	234	-
Communication Services	-	-	169
Real Estate	-	152	-
Utilities	-	-	132
Energy	103	-	-
Total	**376**	**1,089**	**1,376**

Additional sample-related summaries can be found in the appendix, including such information as a sample size by initial rating levels, time-series of rating changes and sample split by grouping rules mentioned previously.

With regards to financial data, it was extracted from Bloomberg for each of the samples. For stocks related to the environmental sample, there are 1,078,141 company-month items, whereas the object consists of price, total return index with dividends reinvested, shares outstanding, revenue, book value per share, and earnings per share. Moreover, for the case of the ESG rating sample, this value equals 166,786 similarly structured observations; however, it also includes the rating value itself. Overall, the combination of fundamental and financial information brings the whole volume of data to more than 4.5 million items. Considering the research design and data structure, the SQL-based storage was considered for its keeping. Features of the SQL database provide incomparable data management advantages and efficient components linkage between the tables. The structure of the dataset is provided in the appendix.

Moving from data storage to its processing, due to the number of observations and possible sampling specifications, the Python programming language was considered the best fit to cope with the established challenges. Its flexibility, applicability, and user-friendliness in terms of developing opportunities make this tool outstanding and irreplaceable for data analysis. Moreover, multiple valuable libraries can be utilised to support the developing process, such as the psycopg2, which provides a connection to databases similar to those previously covered; pandas, which is one of the best tools to process tables; the NumPy library, which can handle most of the data transformation; the machine-learning oriented library named sklearn, which enables to perform clusterisation, classification and regression models and includes such algorithm as K-nearest neighbours, that can be widely used in the portfolio structuring; and the statsmodels that emulates the Stata software. In addition to libraries oriented towards data processing, such libraries as matplotlib and seaborn were used for data visualisation.

Overall, the combined application of the SQL-based data storage and developed pipelines of functions using python is one of the best configurations for quantitative research, enabling a structured and efficient data interaction approach.

With regards to methodologies which can be applied to the collected samples, there can be multiple approaches utilised depending on the tested hypotheses. Dealing with previously covered environmental information, it can be used for portfolio structuring, and companies split on green, brown, and grey stocks. Several ways to define brown and green stocks can be utilised with the collected data, including the conventional method for factor construction, which implies strict division into subgroups by selecting the N% (in this study, 10%, 30%, 50%) of the available sample sorted by the values of the analysed variable is used for baseline estimations. The 10/90 and 30/70 breakdown are very common in Fama-French risk factor research (Fama and French, 1993, 2015), while the 50/50 breakdown is an intuitive procedure that sorts stocks based on the sample median. However, this study augments and challenges the aforementioned approach with models applying an advanced technique for portfolio structuring grounded in machine learning classification tools.

Such tools are consistently developing and are widely used in all industries that apply analysis and data processing in their business operations. The primary machine learning method used to structure portfolios in the study is the K Nearest Neighbours Classifier (KNN) algorithm. The KNN tool demonstrates high performance and efficiency in classifying objects in multidimensional observations. Recent literature defines the KNN as a helpful tool that can be utilised for stock prediction and clusterisation tasks; however, no papers imply it for portfolio structuring purposes.

It is based on calculating the distances between the training set and validated observations. As a distance function, the Minkowski function is used due to its dimensionality flexibility. The function is provided further:

$$(Minkowski) = \left(\sum_{i=1}^{k}(|x_i - y_i|)^q\right)^{1/q}$$

Where q is a number of dimensions, and i is the index of the observed dimension's value. Using such an approach, the sample can be split into three groups based on stocks' environmental performance: close to the median, best performers, and worst performers (e.g., environmentally neutral, green, and brown stocks).

The assignment of the validated observation to a class occurs by counting the votes of the K nearest elements of the training set. As an example, if the K value is 1 in two-dimensional space, then the class of the point will be determined by the class of the nearest training observations, forming Voronoi cells.

Application of such approach to the environmental variables, green, brown and grey portfolios are defined by the variables' values proximity to most opposite values of the training set, instead of dividing into equal subsamples, which is an outcome of the classic approach. Furthermore, the list of grey companies is determined by closeness to the median value of the sample.

Going deeper into the technical specification of the KNN application, the training set for the pre-processed sample is defined as the vector of values [0, median, 1], where 0 value represents green stocks, 1 illustrates brown stocks, and the median value represents a starting point for the grey stocks cluster. Such vector is displayed in one-dimensional space, becoming a navigation tool for the KNN algorithm in identifying the observation's cluster. While the research utilises such training set as a baseline, multiple extensions can be applied in order to test the wider hypothesis, likewise replacement of the median with mean or mode values, usage of the larger number of clusters, such mid green and mid brown, implying investigation of samples' quintiles. Going further, such an approach can be applied to the multiple-dimensions analysis, where several variables can be used for stock clusterisation, affecting the training set's input vector.

Moving further to the stages of application of the KNN, investigated data should be pre-processed to fit the training set terms, which, in the case of the research, are the possibility of fitting the window between 0 and 1. Such conditions can be reached by scaling data using the MinMax approach using the following formula:

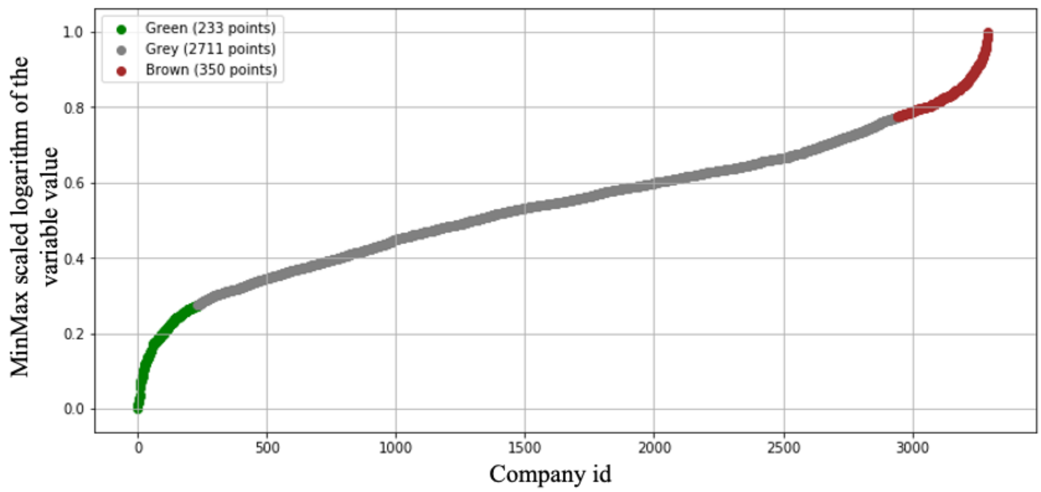
$$x_i' = \frac{x_i - x_{min}}{x_{max} - x_{min}}$$

Where x_i is the value of the variable in observation i, x_{max} and x_{min} represent the maximum and minimum variables' value in the sample, and x_i' is the scaled variable's value of the observation.

However, depending on the variables' characteristics, the additional prior stages could be considered, such as logarithmisation of the sample's variables, which is considered in the case of the analysis of the raw data. Such a stage can be applied in order to treat the outliers, which can affect the clusterisation procedure, however necessary to consider in portfolio construction. Resulting vector is distributed between 0 and 1 and can be fit in the training vector resulting two-dimensional distribution whereas x-axis represent unique observations, while y-axis is the projection of the training set with values between 0 and 1. Following, utilisation of the KNN will assign each observation with the cluster/label depending on the closest item from the training set (utilising $Minkowski$ formula for distance which was mentioned previously) resulting the new vector of clusters/labels, which, taking into account the primary idea of prepared training set are going in line with either green, brown or grey stocks and should be considered for portfolio construction.

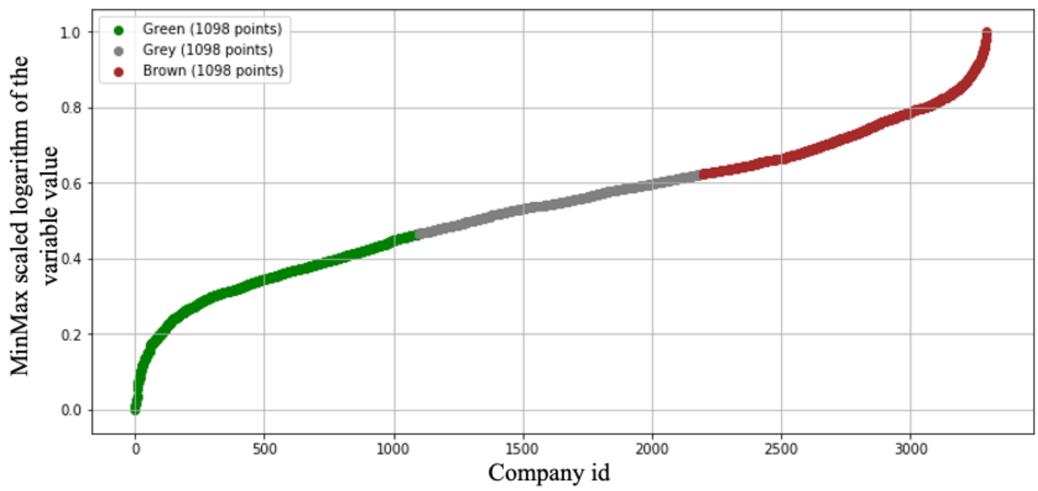
Example of how the chosen approach clusters the actual study's data is shown in the chart below. This classification is based on a sample grouped by companies with data related to greenhouse gas emissions in 2017. The values are logarithmised and scaled using the MinMax method. Also, the chart represents the argumentation for including described approach, which is based on the difference between the outcomes of the KNN method and the classic method applied to the same sample. The class concentrated in the corner with high Y values labelled as "brown" companies, and its sample size consists of 350 companies, while companies with low variable values are labelled as green companies and include 233 companies.

Figure 2. Example of the K nearest neighbours algorithm application.



On the contrary, the classic model splits the companies into wider subsamples that can be affected by heterogeneity. The study also tests this hypothesis by applying conventional and machine learning methods to determine the Brown minus Green factor.

Figure 3. Example of the 30/70 method application.



Overall, the decision to test multiple portfolio structuring techniques to statistically and economically significant subsample can provide robust hypothesis tests and answers for research questions.

While previously covered portfolio structuring approaches imply utilisation of the raw environmental data, it can also be used for companies split into three types of portfolios involving differences in environmental performance, which can be determined by calculating the annual percentage change of the respective variable. In such a way, the study can also account for the ESG momentum.

With regards to the portfolios established on rating changes, six possible combinations can be considered in the research: downgraded, upgraded, unchanged, and three different portfolios based on their returns' differences in pairs, where the downgraded portfolio includes stocks with a negative change in rating, the upgraded portfolio consists of the companies which rating was upgraded, and unchanged portfolio includes stock which rating remain the same compared to the previous month. This constitutes the calendar-time portfolio approach to generating inferences prominently used in empirical finance research since Jaffe (1974) and Mitchell and Stafford (2000). Most recently, Shanaev and Ghimire (2021) applied calendar-time portfolios to ESG rating changes in the United States and argued this is a more appropriate technique to estimate ESG momentum compared to conventional event studies as the frequency of data (ESG ratings) is monthly. This study expands upon Shanaev and Ghimire (2021) by considering a global sample, updating the time horizon until year-end 2021, and estimating the effects across subsamples.

Moving further to the Fama and French factor models can be applied to obtain the risks associated with environmental CSR performance. In the case of the research, six specifications can be enforced, including baseline, the CAPM, three- (Fama and French, 1992), four- (Carhart, 1997), six- (Fama and French, 2015, augmented with momentum), and eight- (Fama and French, 2015, augmented with momentum, short- and long-term momentum) factor models. The formula for the six-factor model that can be utilised in the research is following while the CAPM, three-, four-, and eight- factor models can be found in the appendix:

$$R_{ESGPt} = a + bMKTRF_t + sSMB_t + hHML_t + wRMW_t + cCMA_t + mWML_t + \mathcal{E}_t$$

Where R_{ESGPt} is the return of the portfolio, that was structured with accordance to the sample's setup.

Such setup is defined by the investigated country or country-group, sector, and the investigated proxy, which in the scenario of the research can be either one of the extracted environmental variables, including greenhouse gas intensity, water usage, and waste intensity, their derivatives, such as difference in the performance, or the rating-based indicators, including their upgrades, downgrades, and permanence. Monthly returns can be considered for each analysed value-weighted portfolio, while rebalancing frequency depends on the sample type, where annual and monthly rebalancing can be applied to environmental-based and rank-based portfolios, respectively. Further interpretation of coefficients depends on the analysed proxy. In the case of environmental variables, alpha can be utilised to measure the "Brown-minus-Green" risk factor observed in a specific subsample, while in the ESG rank approach, it reveals the effect of rating changes of any type. $MKTRF_t$ is total excess market portfolio return at time t, and β-coefficient demonstrates the difference in market risk for brown and green portfolios as well as for downgraded, upgraded and constancy stocks in case of environmental variables and ESG ratings, respectively; SMB_t is the return of a diversified portfolio of small stocks minus large stocks, with the coefficient sign and value showing the systematic difference in size between brown and green companies or downgrades, upgrades and unchanged stocks; HML_t is the difference between the returns on diversified portfolios of stock with high and low book-to-market ratios, while the respective estimator represents the value-growth spread between brown and green companies or rating-based portfolios; RMW_t is the difference between the returns on diversified portfolios of stocks with robust and weak operating profitability, and the coefficient is showing the attribution of ESG portfolios performance to the profitability factor; CMA_t is the difference between the returns on diversified portfolios of the stocks of low and high investment firms, which are referred to as conservative and aggressive, and the estimator represents if brown or green portfolios (or downgrades, upgrades and unchanged portfolios) are comparatively more conservative or aggressive; WML_t is the difference between the returns of winners and losers stocks, while the coefficient demonstrates whether performance persistence effects are pronounced for ESG portfolios.

Further, the significance of the coefficients is evaluated utilising a t-test, where Huber-White heteroskedasticity-consistent standard errors are applied (White, 1980).

Since the possible number of the tested hypothesis through the application of such approaches towards the previously mentioned subsample can reach more than ten thousand, the research will benefit from applying multiple hypothesis testing, which will help to illuminate if the estimation outcomes are not the result of the data mining. Various approaches can be applied to multiple hypothesis testing, such as the Bonferroni test (as in Harvey et al. 2016), the Holm (Holm–Bonferroni method, as in Harvey et al. 2016), the Chow-Denning test (Chow and Denning, 1993), the Wilson harmonic mean (Wilson, 2019), and the standard coverage test (Kupiec, 1995). While the Bonferroni test is criticised since it can be very conservative, meaning that it may have a high probability of failing to reject the null hypothesis even when there is a real effect present. In addition, it assumes that the tests are independent, which is different from the research's approach since hypotheses are tested using shared stocks. The formula for Bonferroni test is following:

$$P_{Bonferroni} = \min{(p_n, 1)}$$

Where p_n(p or p_i in following formulas) is a confidence level of the estimation n. Similar limitations are valid in the case of the Holm method and the Chow-Denning test, which are variations of the Bonferroni method, despite being different from the original method in the way of processing p-values (with the application of rank in the case of the Holm and considering probability in the Chow-Denning test). Formulas for calculating Holm and Chow-Denning tests are following:

$$P_{Holm} = \min{(p_n * rank(p_n),1)} \qquad P_{Chow-Dennis} = 1 - (1 - p_n)^n$$

Meanwhile, the Wilson harmonic mean and the standard coverage test are more suitable in the scenario when dependant multiple hypothesis testing is in order which is the case of the research. Following formulas are used in case of such tests:

$$P_{Wilson} = \frac{n}{\sum_{i=1}^{n} 1/p_i} \qquad Z = \frac{\hat{p} - p}{\sqrt{\frac{p(1-p)}{n}}} \sim N(0,1)$$

Where $\hat{p}$ is a percentage of the significant outcomes in n estimations.

Despite being more suitable for dependent multiple-hypothesis testing, mentioned approaches are criticised for overvaluation of the outcomes with weak significance, which can result in more optimistic outcomes. The utilisation of these methods will allow for making a combined conclusion on the hypothesis.

In addition to establishing the environmental-based risk factor, each of the portfolio groups can be compared through their performance evaluation; moreover, they also can be compared with commonly used and ESG-related benchmarks.[6] Using measures like average monthly return, the Sortino ratios and the modified Sharpe, the outcome of such analysis can determine if environmentally friendly portfolios can be an alternative provider of better or comparable financial performance.

Calculation of the Sortino ratio – a refinement of the Sharpe ratio robust to downside risk and distribution asymmetry (Sortino and Satchell, 2001) – can be performed utilising following formula:

$$Sortino\ ratio = \frac{r_p - r_f}{\sigma_d}$$

Where r_p is the portfolio return, r_f is the risk-free rate, and σ_d is the semideviation of portfolio returns.

Further, to evaluate portfolio performance subject to non-normality, distribution asymmetry and heavy tails, this study utilises the Modified Sharpe ratio with modified VaR (MVaR), as in Favre and Galeano (2002). In order to calculate this measure, the following formula can be applied:

$$Modified\ Sharpe\ ratio = \frac{r_p - r_f}{r_f - MVar}$$

Where MVar (modified value-at-risk) is calculated as following:

$$MVar = \overline{r_p} - \sigma\left(z + \frac{(z^2 - 1)Skewness}{6} + \frac{(z^3 - 3z)Kurtosis}{24} - \frac{(2z^3 - 5z)Skewness^2}{36}\right)$$

[6] W1SGI Index, KLD400 Index, ECO Index, SPX Index, SPGLOB Index, MXWO Index, UKX Index, 4GL1 Index, ET50 Index, MXWOOEN Index, SGES Index, RAY Index

Where $\overline{r_p}$ – mean return of the portfolio, σ – standard deviation of the returns, z – probability value for the 95% confidence level; and Skewness and Kurtosis are calculated using formulas:

$$Skewness = \frac{\sum_i^N \left(r_{pi} - \overline{r_p}\right)^3}{(N-1)\sigma^3} \qquad Kurtosis = \frac{\sum_i^N \left(r_{pi} - \overline{r_p}\right)^4}{(N-1)\sigma^4}$$

Furthermore, the value driver regression model can be implemented to identify the share price's environmental impact and variables' explanatory power. This approach can also be used for various sets of observations, which include various dependent variables. In addition to the previously mentioned sample split into country-based groups and sectors, observation can be split by years with such an approach. The combined rules can also be investigated: by observation's belonging to a sector, country and year simultaneously. The full sample model can be created to analyse the overall effect without any clustering.

For additional robustness, subsamples are considered for analysis with sample sizes larger than companies. This procedure is necessary to avoid overfitting and multicollinearity, preserve the degrees of freedom in the extended model, and to increase the general validity of the results.

The main estimation technique employed is value driver regression, as in Liu et al. (2002). The baseline estimation includes the conventional financial value drivers from the company's books:

$$1 = \alpha_{st}\frac{1}{P_{it}} + \beta_{1st}\frac{EpS_{it}}{P_{it}} + \beta_{2st}\frac{REV_{it}}{Sh_{it}P_{it}} + \beta_{3st}\frac{BVpS_{it}}{P_{it}} + \frac{\varepsilon_{it}}{P_{it}}$$

where P_{it} – share price, EpS_{it} – earnings per share, Sh_{it} – shares outstanding, $BVpS_{it}$ – book value of equity per share, and REV_{it} – annual revenue of the ith company in fiscal year t. Model parameters α, β_1, β_2, and β_3 can vary by year t, sector s, or both, depending on the estimation. The weighted least squares approach divides all parameters by the price P_{it} to avoid heteroskedasticity and naturally model market pricing errors as a percentage of total market value, making the dependent variable vector $y_{it} = \frac{P_{it}}{P_{it}} = 1$.

This basic model will be used to retrieve the baseline r_R^2 that measures the explanatory power of the value driver regression utilising financial variables only as inputs. It is later compared with an extended r_U^2 from a model that uses both financial and environmental impact variables to assess the explanatory power of the latter via a baseline F test.

To reveal the isolated effect of greenhouse gas and CO_2 emission intensity on the explanatory power, the following regression model is resorted to:

$$1 = \alpha_{st}\frac{1}{P_{it}} + \beta_{4st}\frac{Em_{it}REV_{it}}{Sh_{it}P_{it}} + \beta_{1st}\frac{EpS_{it}}{P_{it}} + \beta_{2st}\frac{REV_{it}}{Sh_{it}P_{it}} + \beta_{3st}\frac{BVpS_{it}}{P_{it}} + \frac{\varepsilon_{it}}{P_{it}}$$

where Em_{it} - total greenhouse gas and CO_2 emission intensity per million USD of sales revenue of the ith company in fiscal year t. β_4 measures the impact of emission intensity on company valuation. If investors are socially conscious and derive non-pecuniary utility from holding stocks of environmentally friendly companies (as in the augmented CAPM model of Baker et al., 2018), β_4 is expected to be negative and significant. However, for markets with imperfect information and incomplete disclosure, greenhouse gas emission intensity can be used by investors as a proxy of unobserved financial variables and thus positively contribute to price formation. The approach of this study allows testing for these effects across sectors and years differentially. It is suspected that β_4 will turn out negative and significant for sectors where environmental friendliness is relatively more important for corporate public image (such as energy, materials, and industrials), and for later years in the sample, reflecting the steady growth of environmental sentiment in the investors' community.

Analogously, β_5 and β_6 can be used to analyse the effect of the water usage intensity per sales and waste intensity per sales, respectively, via the following model estimations:

$$1 = \alpha_{st}\frac{1}{P_{it}} + \beta_{5st}\frac{WIpS_{it}REV_{it}}{Sh_{it}P_{it}} + \beta_{1st}\frac{EpS_{it}}{P_{it}} + \beta_{2st}\frac{REV_{it}}{Sh_{it}P_{it}} + \beta_{3st}\frac{BVpS_{it}}{P_{it}} + \frac{\varepsilon_{it}}{P_{it}}$$

$$1 = \alpha_{st}\frac{1}{P_{it}} + \beta_{6st}\frac{WpS_{it}REV_{it}}{Sh_{it}P_{it}} + \beta_{1st}\frac{EpS_{it}}{P_{it}} + \beta_{2st}\frac{REV_{it}}{Sh_{it}P_{it}} + \beta_{3st}\frac{BVpS_{it}}{P_{it}} + \frac{\varepsilon_{it}}{P_{it}}$$

where $WIpS_{it}$ and WpS_{it} – total water intensity and waste intensity per million USD sales of the ith company in fiscal year t. As greenhouse gas emissions is a more publicised source of environmental impact, this study expects β_5 and β_6 to have a less pronounced impact on share valuations, and the unobserved financial content of these variables could turn the signs positive, especially for the estimations in earlier years. However, sector-specific estimates could reveal the relative importance of environmental variables and reflect investor preferences and perceptions. As such, water-intensive sectors (such as industrials or healthcare) could see a negative and significant value of β_5.

In addition to the study of the indicators separately, their joint contribution to the stock price formation is also examined via the extended model.

$$1 = \alpha_{st}\frac{1}{P_{it}} + \beta_{4st}\frac{Em_{it}REV_{it}}{Sh_{it}P_{it}} + \beta_{5st}\frac{WIpS_{it}REV_{it}}{Sh_{it}P_{it}} + \beta_{6st}\frac{WpS_{it}REV_{it}}{Sh_{it}P_{it}} + \beta_{1st}\frac{EpS_{it}}{P_{it}} + \beta_{2st}\frac{REV_{it}}{Sh_{it}P_{it}} + \beta_{3st}\frac{BVpS_{it}}{P_{it}} + \frac{\varepsilon_{it}}{P_{it}}$$

The result of each of the regressions is compared with the baseline model result, which was created based on an identical sample. For each pair of regressions, baseline r_R^2 and extended r_U^2 are considered according to the following formula:

$$r^2 = 1 - \frac{\sum_i (y_i - \hat{y}_i)^2}{\sum_i (y_i - \bar{y}_i)^2}$$

Next, each pair r_R^2 and r_U^2 is checked for the significance of the improvement in the model explanatory power achieved by including the environmental variables via the baseline F-test:

$$F_{stat} = \frac{(r_U^2 - r_R^2)/q}{(1 - r_U^2)/(N-k)} \sim F(q, N-k)$$

Where r_U^2 and r_R^2 are the R-squared values for the extended and baseline models, respectively, q – count of variables added (three in the extended model corresponding to greenhouse gas, water, and waste intensity), N – number of observations, k – total number of variables in the extended models (seven). Such an F-statistic allows to test the null hypothesis of environmental variables having no additional explanatory power over the share price formation against the alternative hypothesis of them yielding informational content for investors.

In addition to evaluating environmental variables' explanatory power, calculated coefficients of the value regression models can also be used to identify the environmental predictive power by comparing the trading strategies outcomes established on extended and baseline models.

Despite the variety of possible outcomes based on the implementation of the value driver regression model, such an approach has several limitations which should be considered and adjusted in while results interpretation and conclusion-making. Value driver regression relies on certain statistical assumptions, such as the normality of the errors and the independence of the errors, which may not always hold in practice. If these assumptions are violated, the results of the regression may be biased or inaccurate. Value driver regression assumes that the relationships between the value drivers and the value of the company or investment are linear. Not meeting the assumption can cause misleading results of the regression. Value driver regression can be sensitive to the presence of multi-collinearity among the value drivers, which occurs when two or more value drivers are highly correlated. Further, although the value driver regression is cross-sectional and therefore is theoretically not subject to serial correlation prominent in regressions with price data, error terms can be persistent (in terms of over- and undervaluation of stocks) and manifest themselves as endogeneity. Finally, although the regression technique corrects for heteroskedasticity directly via dividing regressors by the price, the nature of pricing errors can be more nuanced. This can lead to unstable and inaccurate results.

The findings based on the described data and methods are provided in further empirical chapters.

4. Empirical Chapter

4.1. Performance of brown and green portfolios

Concerning investment performance observed in full sample and GHG pollution (see Table 8), in accordance with raw performance, environmentally friendly companies robustly perform better than less environmentally friendly ones. In addition, similar findings are observed in Sortino ratio, while findings for modified Sharpe ratio are less representative (green stocks outperform less environmentally friendly stocks in 3 out of 4 specifications). With regards to the model with the best performance, the 50/50 approach performs best in both green and brown groups. Additionally, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (8.8% and 7.22%), Sortino measure (0.4259 and 0.3441) and MVaR-adjusted performance (1.1077 and 0.8316). Judging by raw return, the green portfolio mostly exceeds the benchmark (in 9 out of 12 cases), while brown stocks portfolio behave worse (in 4 out of 12 cases). Adhering to modified Sharpe ratio, the green portfolio most often performs better than the market benchmark (in 7 out of 12 cases), whereas less environmentally friendly stocks behave worse (in 4 out of 12 cases).

Considering investment performance observed in water usage (see Table 8), judging by raw return, less environmentally friendly companies universally underperform green ones. Additionally, similar findings are associated with modified Sharpe ratio, while outputs for Sortino measure are less representative (environmentally friendly companies outshine brown companies in 3 out of 4 specifications). Concerning the best-performing model, the 50/50 approach performs best in both green and brown groups. In addition, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw return, environmentally friendly outperform less environmentally friendly stocks (7.6% and 7.19%). Judging by Sortino measure, less environmentally friendly counterparts outshine green (0.374 and 0.3393). In relation to MVaR-Sharpe, green beat less environmentally friendly stocks (0.9307 and 0.8102). Judging by non-adjusted performance, the green portfolio seldom outperforms the market index (in 5 out of 12 cases), while less environmentally friendly stocks portfolio perform worse (in 4 out of 12 cases). In accordance with modified Sharpe ratio, the green portfolio exceeds half of the benchmark (in 6 out of 12 cases), whereas less environmentally friendly counterparts behave worse (in 4 out of 12 cases).

Considering investment performance occurring in total waste, in accordance with simple return (see Table 8), green stocks always perform better than brown ones. Furthermore, similar results observed in Sortino measure and MVaR-Sharpe. Regarding the best-performing model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 (in Sortino measure and modified Sharpe ratio). Furthermore, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (10.33% and 7.04%), downside risk-adjusted performance (0.4364 and 0.3359) and MVaR-adjusted performance (1.0717 and 0.8087). Adhering to raw performance, the green portfolio in most cases performs better than the market benchmark (in 10 out of 12 cases), while stocks with poor environmental performance portfolio perform worse (in 4 out of 12 cases). Adhering to MVaR-adjusted performance, the green portfolio most often outpaces the market benchmark (in 7 out of 12 cases), whereas brown stocks behave worse (in 4 out of 12 cases).

Regarding financial performance observed in companies from developed countries and GHG emissions (see Table 10), judging by non-adjusted performance, brown stocks consistently lag behind green ones. Additionally, similar findings occurring in Sortino ratio and MVaR-adjusted performance. Concerning the model with the best performance, the 50/50 approach performs best in both green and brown groups. Additionally, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (10.0% and 7.72%), Sortino measure (0.4838 and 0.3675) and MVaR-Sharpe (1.2925 and 0.9236). Adhering to raw return, the environmentally friendly portfolio often performs better than the benchmark (in 9 out of 12 cases), while brown stocks portfolio perform worse (in 4 out of 12 cases). In accordance with MVaR-adjusted performance, the green portfolio mostly beats the benchmark (in 9 out of 12 cases), whereas less environmentally friendly counterparts perform worse (in 4 out of 12 cases).

In terms of investment performance observed in water intensity per sales (see Table 10), judging by raw performance, brown companies consistently underperform green ones. Further, similar outputs are occurring in modified Sharpe measure, whereas findings for Sortino measure are less representative (environmentally friendly stocks exceed brown stocks in 3 out of 4 specifications). Considering the best model, the 50/50 approach performs best in both green and less environmentally friendly groups. Further, regarding the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to raw return, green outpace less environmentally friendly counterparts (8.52% and 7.78%, respectively). According to Sortino measure, brown stocks exceed green (0.413 and 0.3892, respectively). According to MVaR-adjusted performance, green outshine less environmentally friendly stocks (1.0674 and 0.9371, accordingly). Judging by non-adjusted performance, the green portfolio outperforms half of the market index (in 6 out of 12 cases), while brown stocks portfolio behave worse (in 5 out of 12 cases). Judging by MVaR-Sharpe, the environmentally friendly portfolio in most cases exceeds the market benchmark (in 7 out of 12 cases), whereas less environmentally friendly counterparts behave worse (in 4 out of 12 cases).

Concerning investment performance occurring in waste efficiency (see Table 10), judging by raw return, less environmentally friendly stocks always show lower returns than environmentally friendly ones. Moreover, similar outputs occurring in Sortino ratio and modified Sharpe ratio. In terms of the model with the best returns, within green portfolios, the 10/90 model performs better compared to others (in raw performance and MVaR-Sharpe), while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Further, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (11.2% and 7.93%), Sortino measure (0.4505 and 0.4058) and modified Sharpe ratio (1.1693 and 0.9491). In relation to raw return, the green portfolio robustly outshines the market, while less environmentally friendly counterparts portfolio behave worse (in 5 out of 12 cases). In accordance with modified Sharpe measure, the green portfolio most often beats the market index (in 7 out of 12 cases), while stocks with poor environmental performance perform worse (in 4 out of 12 cases).

In terms of financial performance associated with stocks from emerging countries and GHG pollution (see Table 12), adhering to non-adjusted performance, environmentally friendly stocks perform the same as brown ones (in 2 out of 4 specifications). Further, similar results occurring in Sortino measure and modified Sharpe measure. Concerning the model with the best returns, the 50/50 approach performs best in both environmentally friendly and brown groups. Furthermore, concerning the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (5.77% and 3.56%), Sortino measure (0.2217 and 0.1146) and modified Sharpe ratio (0.446 and 0.2489). In accordance with raw performance, the green portfolio rarely performs better than the market (in 5 out of 12 cases), whereas stocks with poor environmental performance portfolio perform worse (in 4 out of 12 cases). In relation to modified Sharpe measure, the green portfolio rarely beats the broad market index (in 5 out of 12 cases), while brown stocks behave worse (in 4 out of 12 cases).

Regarding investment performance occurring in water intensity per sales (see Table 12), in relation to simple return, brown stocks often beat environmentally friendly ones. Further, similar findings associated with downside risk-adjusted performance and modified Sharpe ratio. Regarding the best model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Moreover, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by raw performance, stocks with poor environmental performance outshine green (6.55% and 4.87%, accordingly).

Judging by Sortino ratio, brown stocks beat environmentally friendly (0.2458 and 0.1695, accordingly). Adhering to MVaR-adjusted performance, less environmentally friendly counterparts outshine green (0.4738 and 0.3748). In relation to raw performance, the green portfolio seldom performs better than the market benchmark (in 5 out of 12 cases), while less environmentally friendly stocks portfolio perform the same. In relation to modified Sharpe ratio, the environmentally friendly portfolio seldom beats the broad market index (in 4 out of 12 cases), while less environmentally friendly stocks perform better (in 5 out of 12 cases).

Considering investment performance occurring in total waste (see Table 12), in relation to raw return, brown companies behave indistinguishable from green ones (in 2 out of 4 models). In addition, similar results associated with Sortino ratio and modified Sharpe measure. With regards to the best model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Furthermore, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (6.56% and 3.54%), Sortino measure (0.2659 and 0.1037) and MVaR-Sharpe (0.4471 and 0.2439). According to non-adjusted performance, the environmentally friendly portfolio seldom outshines the broad market index (in 5 out of 12 cases), whereas stocks with poor environmental performance portfolio behave worse (in 4 out of 12 cases). According to modified Sharpe measure, the green portfolio unfrequently outperforms the market benchmark (in 5 out of 12 cases), while less environmentally friendly stocks behave worse (in 4 out of 12 cases).

In terms of financial performance observed in companies from developed countries excluding the United States and GHG emissions (see Table 14), according to non-adjusted performance, environmentally friendly companies frequently outshine less environmentally friendly ones (in 3 out of 4 models). Additionally, similar results occurring in Sortino measure and modified Sharpe ratio. Regarding the best model, the 50/50 approach performs best in both green and brown groups. Furthermore, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (6.78% and 5.58%), downside risk-adjusted performance (0.3051 and 0.2366) and MVaR-Sharpe (0.7258 and 0.521). Adhering to simple return, the green portfolio seldom outpaces the broad market index (in 4 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave the same. Judging by MVaR-adjusted performance, the green portfolio seldom outpaces the market (in 4 out of 12 cases), whereas less environmentally friendly stocks behave similarly.

With regards to financial performance associated with water usage intensity (see Table 14), in accordance with simple return, green stocks robustly underperform brown ones. In addition, similar outputs observed in Sortino measure and MVaR-adjusted performance. Dealing with the model with the best performance, the 50/50 approach performs best in both environmentally friendly and brown groups. Additionally, concerning the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw return, brown stocks beat green (6.35% and 5.83%). Judging by Sortino ratio, less environmentally friendly counterparts perform better than environmentally friendly (0.3071 and 0.2481, respectively). In accordance with modified Sharpe measure, stocks with poor environmental performance outperform green (0.6622 and 0.6227, respectively). Adhering to simple return, the green portfolio unfrequently exceeds the market (in 4 out of 12 cases), whereas brown stocks portfolio behave similarly. Adhering to modified Sharpe measure, the environmentally friendly portfolio unfrequently outshines the market (in 4 out of 12 cases), whereas brown stocks perform similarly.

Regarding investment performance occurring in waste efficiency (see Table 14), according to raw performance, green companies consistently are inferior to brown ones. Furthermore, similar findings are occurring in downside risk-adjusted performance, whereas results for modified Sharpe ratio are more representative (environmentally friendly stocks beat brown companies in 1 out of 4 models). In terms of the model with the best returns, the 50/50 approach performs best in both environmentally friendly and brown groups. In addition, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to non-adjusted performance, stocks with poor environmental performance outshine green (6.81% and 6.48%, accordingly). In accordance with Sortino ratio, less environmentally friendly stocks outshine environmentally friendly (0.3227 and 0.3056, accordingly). According to MVaR-Sharpe, green outshine brown stocks (0.7284 and 0.7261, respectively). Adhering to raw performance, the environmentally friendly portfolio seldom outperforms the market (in 4 out of 12 cases), while less environmentally friendly stocks portfolio perform similarly. According to MVaR-Sharpe, the green portfolio unfrequently outperforms the market (in 4 out of 12 cases), whereas less environmentally friendly stocks perform the same.

In terms of investment performance associated with European stocks and GHG and CO2 emission intensity (see Table 16), in relation to raw return, green stocks consistently show lower returns than brown ones. Further, similar results associated with downside risk-adjusted performance and MVaR-Sharpe. Dealing with the model with the best returns, the 50/50 approach performs best in both environmentally friendly and less environmentally friendly groups. Additionally, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to raw return, less environmentally friendly stocks perform better than green (4.57% and 4.48%). In accordance with downside risk-adjusted performance, less environmentally friendly stocks outperform environmentally friendly (0.1765 and 0.1709, accordingly). In accordance with modified Sharpe measure, less environmentally friendly counterparts outpace green (0.4003 and 0.3784, respectively). In relation to non-adjusted performance, the environmentally friendly portfolio unfrequently performs better than the market index (in 4 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave the same. Judging by MVaR-adjusted performance, the environmentally friendly portfolio unfrequently outshines the market index (in 4 out of 12 cases), whereas stocks with poor environmental performance perform the same.

Considering financial performance associated with water use intensity (see Table 16), according to raw performance, brown stocks consistently outperform green ones. Moreover, similar results occurring in Sortino ratio and MVaR-adjusted performance. Regarding the best-performing model, the 50/50 approach performs best in both environmentally friendly and brown groups. Additionally, considering the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to non-adjusted performance, less environmentally friendly stocks perform better than green (5.59% and 3.43%, respectively). Judging by Sortino measure, less environmentally friendly counterparts exceed green (0.2356 and 0.1085, respectively). In accordance with MVaR-adjusted performance, brown stocks outshine environmentally friendly (0.5356 and 0.2474). Judging by raw return, the green portfolio seldom exceeds the market benchmark (in 4 out of 12 cases), while less environmentally friendly stocks portfolio behave similarly. Adhering to MVaR-Sharpe, the green portfolio rarely beats the market (in 4 out of 12 cases), and brown stocks perform the same way.

Regarding financial performance associated with waste efficiency (see Table 16), in relation to non-adjusted performance, less environmentally friendly companies robustly exceed green ones. Concerning the best model, the 50/50 approach performs best in both environmentally friendly and less environmentally friendly groups. Moreover, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to simple return, less environmentally friendly stocks outperform environmentally friendly (6.81% and 6.25%). Judging by downside risk-adjusted performance, less environmentally friendly counterparts exceed green (0.2796 and 0.271, respectively). According to modified Sharpe measure, less environmentally friendly counterparts outperform environmentally friendly (0.6944 and 0.6209, respectively). According to simple return, the environmentally friendly portfolio rarely exceeds the market benchmark (in 4 out of 12 cases), while less environmentally friendly stocks portfolio perform similarly. Adhering to

MVaR-Sharpe, the green portfolio unfrequently beats the market (in 4 out of 12 cases), whereas less environmentally friendly stocks perform the same.

Considering financial performance associated with companies related to the Asia Pacific region excluding the Japan and GHG emissions (see Table 18), in relation to simple return, less environmentally friendly stocks universally show lower returns than environmentally friendly ones. Additionally, similar outputs are observed in Sortino measure, whereas outputs for MVaR-adjusted performance are less representative (environmentally friendly stocks exceed brown stocks in 3 out of 4 models). Regarding the best-performing model, the 50/50 approach performs best in both green and less environmentally friendly groups. Furthermore, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (8.25% and 7.3%), downside risk-adjusted performance (0.3793 and 0.2719) and MVaR-Sharpe (0.831 and 0.636). According to simple return, the environmentally friendly portfolio frequently outperforms the broad market index (in 9 out of 12 cases), while stocks with poor environmental performance portfolio behave worse (in 5 out of 12 cases). Judging by MVaR-Sharpe, the environmentally friendly portfolio performs better than half of the broad market index (in 6 out of 12 cases), while less environmentally friendly counterparts perform worse (in 4 out of 12 cases).

Considering financial performance associated with water usage intensity (see Table 18), in relation to raw return, brown companies robustly beat environmentally friendly ones. With regards to the best model, the 30/70 approach performs best in both green and less environmentally friendly groups. Further, considering the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to raw return, less environmentally friendly stocks outperform environmentally friendly (12.16% and 7.05%). Judging by Sortino ratio, brown stocks outshine green (0.4604 and 0.2829, accordingly). Adhering to MVaR-Sharpe, less environmentally friendly counterparts exceed environmentally friendly (1.0174 and 0.6104, accordingly). According to raw return, the green portfolio rarely outshines the benchmark (in 5 out of 12 cases), while brown stocks portfolio behave better (in 12 out of 12 cases). According to MVaR-adjusted performance, the green portfolio seldom exceeds the market index (in 4 out of 12 cases), whereas brown stocks perform better (in 7 out of 12 cases).

Considering investment performance occurring in waste intensity per sales (see Table 18), according to simple return, green companies in most cases exceed less environmentally friendly ones (in 3 out of 4 models). Furthermore, similar findings occurring in Sortino ratio and modified Sharpe ratio. In terms of the best-performing model, within green portfolios, the 30/70 model performs better compared to others (in downside risk-adjusted performance and modified Sharpe measure), while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Furthermore, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (7.19% and 6.69%), downside risk-adjusted performance (0.2939 and 0.2301) and modified Sharpe ratio (0.7387 and 0.5498). Judging by raw return, the green portfolio outpaces half of the broad market index (in 6 out of 12 cases), whereas less environmentally friendly stocks portfolio perform worse (in 5 out of 12 cases). Adhering to modified Sharpe ratio, the green portfolio rarely beats the benchmark (in 5 out of 12 cases), while less environmentally friendly counterparts behave similarly.

Considering financial performance observed in companies from the North America and GHG pollution (see Table 20), according to non-adjusted performance, environmentally friendly stocks consistently outpace brown ones. In addition, similar findings associated with Sortino ratio and MVaR-adjusted performance. Considering the model with the best performance, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Moreover, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (17.47% and 8.82%), downside risk-adjusted performance (0.7594 and 0.4093) and MVaR-Sharpe (1.7451 and 1.2656). Adhering to simple return, the environmentally friendly portfolio robustly beats the broad market index, while less environmentally friendly stocks portfolio perform worse (in 6 out of 12 cases). Judging by MVaR-Sharpe, the green portfolio consistently outshines the broad market index, whereas less environmentally friendly stocks perform worse (in 9 out of 12 cases).

In terms of financial performance observed in water usage (see Table 20), in accordance with non-adjusted performance, environmentally friendly stocks robustly beat brown ones. Contrastingly, outputs associated with Sortino ratio and MVaR-adjusted performance are less representative (green companies exceed brown companies in 3 out of 4 and 3 out of 4 specifications). Dealing with the best model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 (in raw performance and modified Sharpe ratio). In addition, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (10.36% and 7.97%), Sortino ratio (0.4609 and 0.367) and modified Sharpe ratio (1.2453 and 1.0417). In relation to raw performance, the environmentally friendly portfolio frequently outperforms the benchmark (in 10 out of 12 cases), while brown stocks portfolio behave worse (in 6 out of 12 cases). In relation to modified Sharpe ratio, the environmentally friendly portfolio mostly performs better than the market index (in 9 out of 12 cases), whereas stocks with poor environmental performance behave worse (in 7 out of 12 cases).

With regards to investment performance associated with total waste (see Table 20), according to raw return, brown stocks robustly underperform green ones. In addition, similar outputs associated with Sortino measure and MVaR-adjusted performance. In terms of the model with the best performance, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Furthermore, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (14.27% and 8.11%), downside risk-adjusted performance (0.5692 and 0.3977) and modified Sharpe measure (1.5028 and 1.0533). According to raw return, the environmentally friendly portfolio consistently outpaces the market, while less environmentally friendly counterparts portfolio perform worse (in 8 out of 12 cases). Judging by modified Sharpe ratio, the green portfolio most often beats the market (in 11 out of 12 cases), whereas less environmentally friendly stocks perform worse (in 8 out of 12 cases).

Dealing with investment performance observed in Latin American sample and GHG emissions, adhering to simple return (see Table 22), less environmentally friendly stocks always underperform green ones. In addition, similar findings associated with Sortino measure and MVaR-adjusted performance. Considering the model with the best performance, within green portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Additionally, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (-0.83% and -2.02%), Sortino ratio (-0.0561 and -0.1047) and MVaR-Sharpe (-0.1134 and -0.197). In accordance with non-adjusted performance, the environmentally friendly portfolio never outpaces the benchmark, whereas brown stocks portfolio behave the same. Adhering to modified Sharpe ratio, the green portfolio never beats the market, whereas less environmentally friendly stocks behave the same.

Regarding investment performance occurring in water usage intensity (see Table 22), according to simple return, green stocks universally outperform less environmentally friendly ones. Moreover, similar findings are associated with MVaR-Sharpe, while results for Sortino measure are less representative (environmentally friendly companies beat brown stocks in 3 out of 4 specifications). With regards to the best model, the 30/70 approach performs best in both green and brown groups. Furthermore, considering the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with non-adjusted performance, environmentally friendly outperform less environmentally friendly counterparts

(6.33% and 5.34%). In accordance with Sortino measure, less environmentally friendly stocks perform better than environmentally friendly (0.1831 and 0.165). In accordance with MVaR-Sharpe, environmentally friendly beat less environmentally friendly counterparts (0.3227 and 0.3195). In accordance with raw performance, the green portfolio seldom beats the market (in 3 out of 12 cases), while less environmentally friendly counterparts portfolio perform the same. In relation to MVaR-adjusted performance, the green portfolio unfrequently outpaces the benchmark (in 3 out of 12 cases), while less environmentally friendly counterparts perform similarly.

Dealing with investment performance associated with waste intensity per sales (see Table 22), in relation to non-adjusted performance, environmentally friendly companies perform the same as brown ones (in 2 out of 4 models). Dealing with the best-performing model, the 10/90 approach performs best in both environmentally friendly and less environmentally friendly groups. In addition, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to non-adjusted performance, less environmentally friendly stocks outshine green (6.28% and 6.23%, accordingly). Adhering to downside risk-adjusted performance, environmentally friendly outperform stocks with poor environmental performance (0.1897 and 0.185, respectively). According to modified Sharpe ratio, environmentally friendly outpace brown stocks (0.3519 and 0.3112, accordingly). Judging by simple return, the green portfolio rarely performs better than the market index (in 3 out of 12 cases), whereas less environmentally friendly stocks portfolio perform the same. Judging by modified Sharpe measure, the environmentally friendly portfolio seldom exceeds the benchmark (in 3 out of 12 cases), whereas less environmentally friendly stocks perform similarly.

With regards to financial performance associated with stocks from the Middle East and North African countries and GHG and CO2 emission intensity (see Table 24), according to non-adjusted performance, less environmentally friendly stocks always are inferior to green ones. Further, similar findings associated with downside risk-adjusted performance and modified Sharpe ratio. In terms of the model with the best returns, the KNN approach performs best in both green and less environmentally friendly groups. Moreover, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (14.84% and 9.17%), Sortino measure (0.6606 and 0.3331) and modified Sharpe ratio (1.5896 and 0.5709). In accordance with raw return, the environmentally friendly portfolio often outperforms the market index (in 9 out of 12 cases), while less environmentally friendly stocks portfolio behave worse (in 4 out of 12 cases). Adhering to modified Sharpe measure, the environmentally friendly portfolio performs better than half of the market benchmark (in 6 out of 12 cases), whereas less environmentally friendly stocks behave worse (in 3 out of 12 cases).

Concerning financial performance observed in water usage intensity (see Table 24), judging by simple return, environmentally friendly companies universally exceed brown ones. Furthermore, similar outputs associated with downside risk-adjusted performance and modified Sharpe measure. Regarding the best-performing model, within green portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Moreover, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (9.42% and 4.04%), Sortino ratio (0.4825 and 0.109) and MVaR-Sharpe (1.0126 and 0.1844). Judging by raw performance, the green portfolio unfrequently outshines the broad market index (in 4 out of 12 cases), while brown stocks portfolio perform worse (in 3 out of 12 cases). According to MVaR-adjusted performance, the green portfolio rarely exceeds the market index (in 5 out of 12 cases), while brown stocks perform worse (in 3 out of 12 cases).

Regarding investment performance occurring in waste intensity per sales (see Table 24), in accordance with simple return, less environmentally friendly companies robustly are inferior to environmentally friendly ones. Additionally, similar results observed in downside risk-adjusted performance and MVaR-adjusted performance. Considering the best model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 (in downside risk-adjusted performance and modified Sharpe ratio). In addition, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (4.5% and -3.61%), Sortino ratio (0.1602 and -0.131) and MVaR-adjusted performance (0.406 and -0.2099). Judging by non-adjusted performance, the green portfolio rarely outperforms the benchmark (in 3 out of 12 cases), whereas brown stocks portfolio behave worse (in 0 out of 12 cases). Adhering to modified Sharpe measure, the environmentally friendly portfolio rarely beats the benchmark (in 3 out of 12 cases), while stocks with poor environmental performance behave worse (in 0 out of 12 cases).

Regarding investment performance associated with United States companies and greenhouse gas intensity (see Table 26), judging by non-adjusted performance, less environmentally friendly companies universally show lower returns than environmentally friendly ones. In addition, similar results are observed in Sortino ratio, whereas outputs for modified Sharpe measure are less representative (green stocks beat brown stocks in 3 out of 4 specifications). Dealing with the best model, the 50/50 approach performs best in both environmentally friendly and brown groups. Additionally, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (12.54% and 9.57%), downside risk-adjusted performance (0.6314 and 0.4667) and modified Sharpe ratio (1.7048 and 1.3608). In accordance with raw performance, the green portfolio universally performs better than the market benchmark, while brown stocks portfolio behave worse (in 8 out of 12 cases). In accordance with MVaR-adjusted performance, the green portfolio always outperforms the market, while less environmentally friendly counterparts behave worse (in 9 out of 12 cases).

In terms of financial performance associated with water intensity per sales (see Table 26), judging by raw return, environmentally friendly companies always perform better than less environmentally friendly ones. Nevertheless, results associated with Sortino measure and MVaR-Sharpe are less representative (green stocks outpace brown companies in 1 out of 4 and 3 out of 4 models, accordingly). Considering the best model, within environmentally friendly portfolios, the 50/50 model performs better compared to others (in downside risk-adjusted performance and MVaR-Sharpe), while within less environmentally friendly portfolios, the best performing model is the KNN (in non-adjusted performance and Sortino measure).

Additionally, regarding the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw performance, green perform better than brown stocks (10.51% and 10.15%, accordingly). According to Sortino measure, stocks with poor environmental performance outperform environmentally friendly (0.5314 and 0.4833, respectively). Judging by MVaR-Sharpe, environmentally friendly outperform less environmentally friendly stocks (1.2753 and 1.0757). In relation to raw return, the environmentally friendly portfolio often exceeds the benchmark (in 10 out of 12 cases), whereas less environmentally friendly stocks portfolio perform worse (in 9 out of 12 cases). Judging by MVaR-adjusted performance, the green portfolio often performs better than the broad market index (in 9 out of 12 cases), whereas less environmentally friendly stocks perform similarly.

Dealing with financial performance occurring in total waste (see Table 26), in accordance with raw return, brown companies always lag behind green ones. Moreover, similar findings observed in Sortino ratio and MVaR-adjusted performance. With regards to the model with the best returns, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Furthermore, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (16.63% and 10.08%), downside risk-adjusted performance (0.6651 and 0.518) and modified Sharpe measure (1.9312 and 1.4518). Judging by simple return, the green portfolio robustly outperforms the market, whereas less environmentally friendly stocks portfolio behave worse (in 9 out of 12 cases). Adhering to modified Sharpe measure, the environmentally friendly portfolio robustly outpaces the benchmark, whereas less environmentally friendly counterparts perform worse (in 10 out of 12 cases).

Dealing with investment performance associated with Japanese stocks and GHG pollution (see Table 28), according to raw return, brown stocks robustly are inferior to environmentally friendly ones. Further, similar outputs observed in Sortino measure and MVaR-adjusted performance. In terms of the model with the best returns, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Furthermore, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (4.21% and 3.23%), downside risk-adjusted performance (0.1713 and 0.1393) and modified Sharpe measure (0.4059 and 0.2961). Adhering to raw performance, the environmentally friendly portfolio seldom performs better than the market (in 4 out of 12 cases), while less environmentally friendly counterparts portfolio behave the same. In accordance with modified Sharpe ratio, the environmentally friendly portfolio rarely outperforms the benchmark (in 4 out of 12 cases), whereas stocks with poor environmental performance perform the same.

In terms of investment performance occurring in water usage (see Table 28), according to non-adjusted performance, less environmentally friendly stocks perform similar to environmentally friendly ones (in 2 out of 4 specifications). In addition, similar results are associated with modified Sharpe ratio, whereas results for Sortino ratio are more representative (green stocks beat brown companies in 3 out of 4 models). Concerning the best model, within green portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Further, considering the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw performance, green exceed brown stocks (3.86% and 3.85%, respectively). According to Sortino measure, green outpace less environmentally friendly stocks (0.2012 and 0.1713, respectively). Adhering to modified Sharpe ratio, less environmentally friendly counterparts exceed environmentally friendly (0.4244 and 0.3931). Judging by simple return, the green portfolio rarely exceeds the market (in 4 out of 12 cases), whereas stocks with poor environmental performance portfolio behave similarly. In relation to modified Sharpe ratio, the environmentally friendly portfolio unfrequently outperforms the broad market index (in 4 out of 12 cases), while stocks with poor environmental performance behave similarly.

Concerning financial performance associated with total waste (see Table 28), according to raw return, green companies often perform better than less environmentally friendly ones (in 3 out of 4 specifications). In addition, similar findings associated with downside risk-adjusted performance and modified Sharpe measure. Considering the model with the best performance, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Additionally, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (5.36% and 4.35%), downside risk-adjusted performance (0.2622 and 0.2257) and modified Sharpe measure (0.6396 and 0.4683). In relation to raw return, the green portfolio unfrequently outpaces the market (in 4 out of 12 cases), whereas brown stocks portfolio perform the same. Judging by MVaR-adjusted performance, the green portfolio unfrequently outshines the broad market index (in 4 out of 12 cases), while stocks with poor environmental performance behave similarly.

Dealing with investment performance occurring in companies from United Kingdom and GHG emissions (see Table 30), judging by simple return, green stocks mostly fall behind brown ones. However, findings occurring in Sortino ratio and modified Sharpe ratio are less representative (green stocks outshine less environmentally friendly stocks in 0 out of 4 and 0 out of 4 specifications, respectively). Regarding the model with the best performance, the 10/90 approach performs best in both environmentally friendly and less environmentally friendly groups. Further, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to raw return, green beat less environmentally friendly stocks (7.55% and 7.47%, respectively). According to Sortino ratio, stocks with poor environmental performance beat environmentally friendly (0.2755 and 0.2246, respectively). According to modified Sharpe ratio, brown stocks perform better than green (0.5654 and 0.5528, accordingly). Judging by non-adjusted performance, the environmentally friendly portfolio outperforms half of the broad market index (in 6 out of 12 cases), while less environmentally friendly stocks portfolio perform the same. Adhering to modified Sharpe ratio, the green portfolio rarely performs better than the market benchmark (in 4 out of 12 cases), while less environmentally friendly stocks perform similarly.

Concerning financial performance observed in water usage (see Table 30), according to simple return, green companies robustly fall behind less environmentally friendly ones. Moreover, similar outputs observed in Sortino ratio and MVaR-adjusted performance. Concerning the best model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Furthermore, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to non-adjusted performance, less environmentally friendly counterparts outshine environmentally friendly (9.66% and 1.64%, accordingly). According to Sortino ratio, less environmentally friendly counterparts exceed environmentally friendly (0.4811 and 0.0268). Judging by modified Sharpe ratio, less environmentally friendly stocks outpace environmentally friendly (0.8359 and 0.0604, accordingly). In relation to non-adjusted performance, the environmentally friendly portfolio rarely outperforms the market benchmark (in 1 out of 12 cases), whereas stocks with poor environmental performance portfolio behave better (in 9 out of 12 cases). Adhering to MVaR-adjusted performance, the green portfolio unfrequently beats the market index (in 2 out of 12 cases), whereas brown stocks behave better (in 6 out of 12 cases).

In terms of financial performance occurring in waste intensity per sales (see Table 30), adhering to raw performance, green companies robustly lag behind brown ones. Additionally, similar findings associated with Sortino ratio and MVaR-Sharpe. Regarding the model with the best performance, within green portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 (in non-adjusted performance and MVaR-Sharpe). Additionally, concerning the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, less environmentally friendly counterparts beat environmentally friendly (9.46% and 1.32%, respectively). In relation to Sortino measure, brown stocks outshine environmentally friendly (0.2823 and 0.0157, respectively). In relation to modified Sharpe measure, stocks with poor environmental performance outshine green (0.7164 and 0.0349, accordingly). Adhering to non-adjusted performance, the green portfolio seldom performs better than the market benchmark (in 1 out of 12 cases), while less environmentally friendly counterparts portfolio behave better (in 9 out of 12 cases). In relation to MVaR-adjusted performance, the environmentally friendly portfolio unfrequently exceeds the broad market index (in 1 out of 12 cases), whereas less environmentally friendly counterparts perform better (in 4 out of 12 cases).

With regards to investment performance observed in Chinese sample and greenhouse gas intensity (Table 32), according to non-adjusted performance, green companies most often underperform brown ones. Moreover, similar results observed in downside risk-adjusted performance and modified Sharpe ratio. In terms of the model with the best performance, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. Additionally, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to simple return, less environmentally friendly stocks outshine environmentally friendly (15.45% and 8.07%, accordingly). According to Sortino ratio, less environmentally friendly counterparts perform better than environmentally friendly (0.586 and 0.3019, accordingly). According to MVaR-adjusted performance, less environmentally friendly stocks outperform green (1.1864 and 0.7843). Adhering to raw return, the green portfolio rarely outpaces the market benchmark (in 3 out of 12 cases), whereas brown stocks portfolio perform better (in 4 out of 12 cases). Judging by MVaR-adjusted performance, the environmentally friendly portfolio unfrequently outshines the benchmark (in 3 out of 12 cases), whereas less environmentally friendly stocks perform similarly.

Considering financial performance occurring in water intensity per sales (Table 32), in relation to simple return, environmentally friendly companies behave indistinguishable from brown ones (in 2 out of 4 models). Moreover, similar results associated with Sortino ratio and modified Sharpe ratio. Regarding the model with the best performance, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Further, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to non-adjusted performance, stocks with poor environmental performance outshine environmentally friendly (13.54% and 6.44%). In relation to downside risk-adjusted performance, less environmentally friendly stocks outshine green (0.5036 and 0.2277, accordingly). Adhering to modified Sharpe ratio, less environmentally friendly stocks exceed green (1.0863 and 0.4489). In relation to non-adjusted performance, the environmentally friendly portfolio rarely outpaces the benchmark (in 4 out of 12 cases), while stocks with poor environmental performance portfolio perform better (in 9 out of 12 cases). According to MVaR-Sharpe, the environmentally friendly portfolio unfrequently exceeds the market benchmark (in 3 out of 12 cases), whereas less environmentally friendly counterparts behave better (in 5 out of 12 cases).

Regarding financial performance observed in waste efficiency (Table 32), in relation to non-adjusted performance, brown stocks mostly beat environmentally friendly ones. In addition, similar outputs occurring in downside risk-adjusted performance and MVaR-Sharpe. Concerning the best model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 30/70 (in raw performance and Sortino measure). Additionally, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw return, brown stocks outshine environmentally friendly (8.15% and 6.26%). Judging by Sortino ratio, stocks with poor environmental performance perform better than environmentally friendly (0.3459 and 0.2045). In accordance with MVaR-adjusted performance, stocks with poor environmental performance exceed environmentally friendly (0.6424 and 0.5167, accordingly). According to simple return, the green portfolio unfrequently exceeds the market benchmark (in 3 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform similarly. Judging by modified Sharpe measure, the environmentally friendly portfolio rarely beats the benchmark (in 3 out of 12 cases), whereas brown stocks perform the same.

With regards to financial performance associated with Taiwanese companies and greenhouse gas emissions (see Table 34), adhering to raw performance, green companies most often are inferior to less environmentally friendly ones. In addition, similar results are occurring in modified Sharpe measure, while results for Sortino measure are less representative (environmentally friendly companies outpace brown companies in 0 out of 4 specifications). Considering the model with the best returns, the 50/50 approach performs best in both environmentally friendly and less environmentally friendly groups. Furthermore, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by non-adjusted performance, stocks with poor environmental performance outpace green (17.85% and 9.32%). Adhering to downside risk-adjusted performance, brown stocks outperform green (1.0216 and 0.5224, respectively). According to modified Sharpe measure, less environmentally friendly stocks exceed environmentally friendly (1.9716 and 1.2268, respectively). Adhering to raw performance, the environmentally friendly portfolio unfrequently exceeds the market (in 4 out of 12 cases), whereas stocks with poor environmental performance portfolio behave better (in 12 out of 12 cases). In accordance with modified Sharpe ratio, the green portfolio unfrequently outshines the market (in 4 out of 12 cases), while stocks with poor environmental performance perform better (in 8 out of 12 cases).

With regards to investment performance associated with water use intensity (see Table 34), in relation to raw return, green stocks often are inferior to brown ones. In terms of the model with the best returns, within green portfolios, the 10/90 model performs better compared to others (in raw return and downside risk-adjusted performance), while within less environmentally friendly portfolios, the best performing model is the 30/70 (in raw performance and Sortino measure). Further, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to non-adjusted performance, stocks with poor environmental performance outperform environmentally friendly (21.82% and 18.11%, respectively). In accordance with downside risk-adjusted performance, stocks with poor environmental performance beat green (1.1531 and 1.1343). According to modified Sharpe measure, brown stocks perform better than environmentally friendly (2.1529 and 1.8619). In relation to raw return, the green portfolio universally beats the broad market index, while brown stocks portfolio behave the same. Adhering to MVaR-adjusted performance, the green portfolio unfrequently outshines the market benchmark (in 4 out of 12 cases), while less environmentally friendly stocks perform better (in 6 out of 12 cases).

Dealing with investment performance associated with total waste, in accordance with simple return (see Table 34), green companies perform the same as brown ones (in 2 out of 4 estimations). Additionally, similar results associated with Sortino measure and modified Sharpe measure. Regarding the best-performing model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. In addition, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to non-adjusted performance, less environmentally friendly counterparts outpace environmentally friendly (18.2% and 16.35%, respectively). Adhering to Sortino measure, less environmentally friendly stocks beat environmentally friendly (1.0657 and 0.9039, accordingly). In accordance with MVaR-Sharpe, brown stocks outshine green (1.9767 and 1.8713). In relation to raw return, the environmentally friendly portfolio consistently outpaces the market, while brown stocks portfolio perform similarly. Judging by modified Sharpe ratio, the environmentally friendly portfolio in most cases beats the market (in 8 out of 12 cases), while brown stocks behave similarly.

In terms of financial performance observed in Canadian stocks and GHG and CO2 emission intensity (see Table 36), adhering to simple return, brown companies robustly underperform environmentally friendly ones. Further, similar findings associated with downside risk-adjusted performance and MVaR-Sharpe. In terms of the best model, the 30/70 approach performs best in both environmentally friendly and less environmentally friendly groups. Moreover, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (8.33% and 2.07%), Sortino ratio (0.3062 and 0.0411) and MVaR-Sharpe (0.72 and 0.093). In relation to raw performance, the green portfolio mostly beats the benchmark (in 9 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave worse (in 3 out of 12 cases). Adhering to modified Sharpe measure, the environmentally friendly portfolio unfrequently outpaces the benchmark (in 5 out of 12 cases), while less environmentally friendly stocks behave worse (in 3 out of 12 cases).

With regards to financial performance occurring in water use intensity (see Table 36), judging by simple return, brown stocks robustly lag behind environmentally friendly ones. Furthermore, similar results occurring in Sortino ratio and MVaR-Sharpe. With regards to the best-performing model, the 10/90 approach performs best in both green and brown groups. Moreover, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (11.01% and -3.23%), Sortino measure (0.5243 and -0.1665) and modified Sharpe ratio (1.3276 and -0.3044).

According to raw performance, the environmentally friendly portfolio rarely outpaces the market benchmark (in 5 out of 12 cases), while brown stocks portfolio perform worse (in 0 out of 12 cases). In relation to modified Sharpe ratio, the environmentally friendly portfolio rarely beats the market (in 5 out of 12 cases), while stocks with poor environmental performance perform worse (in 0 out of 12 cases).

Concerning investment performance occurring in waste intensity (see Table 36), in relation to raw performance, less environmentally friendly companies robustly show lower returns than environmentally friendly ones. Additionally, similar results associated with Sortino ratio and modified Sharpe ratio. Regarding the model with the best returns, within green portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. Additionally, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (8.19% and -3.03%), downside risk-adjusted performance (0.3983 and -0.1077) and modified Sharpe ratio (1.0519 and -0.1539). According to simple return, the green portfolio seldom outpaces the market benchmark (in 4 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave worse (in 0 out of 12 cases). According to MVaR-adjusted performance, the environmentally friendly portfolio unfrequently performs better than the market (in 4 out of 12 cases), whereas brown stocks behave worse (in 0 out of 12 cases).

Dealing with investment performance associated with Hong Kong companies and greenhouse gas emissions (see Table 38), according to non-adjusted performance, green stocks mostly beat brown ones (in 3 out of 4 specifications). Moreover, similar outputs are associated with Sortino measure, while findings for MVaR-Sharpe are less representative (green companies perform better than brown stocks in 2 out of 4 estimations). Regarding the model with the best returns, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Additionally, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to non-adjusted performance, brown stocks perform better than environmentally friendly (6.91% and 5.77%). According to Sortino measure, less environmentally friendly stocks outperform environmentally friendly (0.3612 and 0.2529, respectively). In relation to MVaR-Sharpe, stocks with poor environmental performance exceed green (1.0155 and 0.4688, respectively). According to simple return, the green portfolio seldom exceeds the broad market index (in 3 out of 12 cases), whereas stocks with poor environmental performance portfolio perform the same. In accordance with MVaR-adjusted performance, the environmentally friendly portfolio seldom performs better than the broad market index (in 3 out of 12 cases), whereas less environmentally friendly stocks behave better (in 4 out of 12 cases).

Regarding financial performance observed in water usage (see Table 38), in relation to raw performance, green stocks most often beat less environmentally friendly ones (in 3 out of 4 estimations). However, results observed in downside risk-adjusted performance and modified Sharpe ratio are less representative (environmentally friendly companies outshine brown stocks in 2 out of 4 and 2 out of 4 specifications, accordingly). Concerning the best model, the 10/90 approach performs best in both green and brown groups. Moreover, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to non-adjusted performance, green outshine less environmentally friendly stocks (8.52% and 8.44%). In accordance with Sortino ratio, less environmentally friendly counterparts outpace environmentally friendly (0.552 and 0.3517, accordingly). In relation to MVaR-Sharpe, less environmentally friendly stocks exceed environmentally friendly (1.1404 and 0.667, respectively). Adhering to non-adjusted performance, the environmentally friendly portfolio rarely beats the market benchmark (in 3 out of 12 cases), whereas less environmentally friendly stocks portfolio behave similarly. In relation to MVaR-Sharpe, the green portfolio seldom exceeds the market index (in 4 out of 12 cases), while less environmentally friendly counterparts behave the same.

Dealing with investment performance observed in total waste (see Table 38), according to raw performance, green companies robustly outpace less environmentally friendly ones. Additionally, similar results associated with downside risk-adjusted performance and modified Sharpe measure. In terms of the model with the best returns, the KNN approach performs best in both environmentally friendly and less environmentally friendly groups. Furthermore, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (9.01% and 7.35%), downside risk-adjusted performance (0.4695 and 0.3308) and MVaR-adjusted performance (1.0146 and 0.644). According to raw return, the green portfolio unfrequently performs better than the market benchmark (in 3 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave similarly. Adhering to MVaR-adjusted performance, the environmentally friendly portfolio seldom outshines the market index (in 3 out of 12 cases), while less environmentally friendly stocks behave similarly.

In terms of financial performance occurring in Australian sample and GHG emissions (see Table 40), according to non-adjusted performance, less environmentally friendly companies always show lower returns than green ones. Additionally, similar outputs associated with Sortino measure and modified Sharpe ratio. With regards to the best model, within green portfolios, the 10/90 model performs better compared to others (in simple return and downside risk-adjusted performance), while within less environmentally friendly portfolios, the best performing model is the 50/50 (in Sortino ratio and modified Sharpe ratio). Additionally, concerning the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (11.22% and 7.69%), Sortino ratio (0.3968 and 0.2304) and modified Sharpe ratio (0.9125 and 0.5103). In accordance with raw performance, the environmentally friendly portfolio universally outshines the market, whereas less environmentally friendly stocks portfolio behave worse (in 6 out of 12 cases). Adhering to MVaR-Sharpe, the green portfolio most often outpaces the market (in 7 out of 12 cases), whereas brown stocks behave worse (in 4 out of 12 cases).

In terms of financial performance observed in water use intensity (see Table 40), adhering to raw performance, less environmentally friendly companies mostly lag behind green ones (in 1 out of 4 estimations). In addition, similar results are observed in Sortino ratio, while outputs for modified Sharpe ratio are more representative (environmentally friendly stocks beat brown companies in 4 out of 4 models). Considering the model with the best returns, within green portfolios, the

10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the KNN in each measure. Additionally, considering the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to raw performance, less environmentally friendly stocks outshine green (21.25% and 15.47%, accordingly). Judging by Sortino measure, less environmentally friendly counterparts outpace green (0.8236 and 0.5217, respectively). In relation to MVaR-adjusted performance, environmentally friendly exceed stocks with poor environmental performance (1.2982 and 1.1549, respectively). Judging by raw return, the green portfolio mostly outperforms the broad market index (in 9 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave better (in 12 out of 12 cases). In relation to MVaR-Sharpe, the environmentally friendly portfolio seldom outshines the benchmark (in 5 out of 12 cases), whereas brown stocks behave similarly.

Concerning investment performance occurring in total waste (see Table 40), in accordance with non-adjusted performance, green stocks behave on par with less environmentally friendly ones (in 2 out of 4 models). In terms of the model with the best returns, within environmentally friendly portfolios, the 50/50 model performs better compared to others (in Sortino measure and modified Sharpe ratio), while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Moreover, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by raw performance, brown stocks outshine green (19.68% and 12.71%). Adhering to Sortino ratio, less environmentally friendly counterparts outperform green (0.9162 and 0.5095, respectively). In accordance with MVaR-Sharpe, less environmentally friendly stocks outpace environmentally friendly (1.5805 and 1.3671, accordingly). Adhering to raw return, the green portfolio beats half of the market benchmark (in 6 out of 12 cases), while less environmentally friendly stocks portfolio behave better (in 12 out of 12 cases). In relation to modified Sharpe ratio, the green portfolio rarely outpaces the market index (in 5 out of 12 cases), while less environmentally friendly stocks perform better (in 6 out of 12 cases).

Concerning financial performance occurring in companies from France and GHG emissions (see Table 41), adhering to raw return, less environmentally friendly companies always are inferior to environmentally friendly ones. Further, similar findings observed in Sortino ratio and modified Sharpe measure. With regards to the best-performing model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Additionally, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (15.31% and 5.91%), downside risk-adjusted performance (0.5866 and 0.258) and modified Sharpe measure (1.1341 and 0.5029). In relation to raw return, the green portfolio most often outperforms the market (in 9 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform worse (in 3 out of 12 cases). Judging by MVaR-Sharpe, the green portfolio seldom exceeds the market (in 5 out of 12 cases), while stocks with poor environmental performance behave worse (in 3 out of 12 cases).

Dealing with investment performance associated with water usage (see Table 41), in relation to raw performance, less environmentally friendly stocks universally fall behind green ones. Additionally, similar results associated with Sortino ratio and MVaR-Sharpe. In terms of the model with the best returns, within environmentally friendly portfolios, the 50/50 model performs better compared to others (in Sortino measure and modified Sharpe ratio), while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Furthermore, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (6.15% and 1.37%), Sortino ratio (0.2018 and 0.0178) and MVaR-adjusted performance (0.4451 and 0.0306). Adhering to simple return, the environmentally friendly portfolio seldom outshines the market (in 5 out of 12 cases), whereas stocks with poor environmental performance portfolio behave worse (in 3 out of 12 cases). In accordance with modified Sharpe measure, the environmentally friendly portfolio seldom outshines the benchmark (in 5 out of 12 cases), whereas less environmentally friendly counterparts behave worse (in 3 out of 12 cases).

Dealing with investment performance observed in waste intensity per sales (see Table 41), in relation to raw return, environmentally friendly stocks consistently outshine brown ones. Moreover, similar findings associated with Sortino measure and MVaR-Sharpe. Regarding the model with the best returns, the 50/50 approach performs best in both green and brown groups. Additionally, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (6.31% and 1.28%), Sortino measure (0.2547 and 0.012) and modified Sharpe measure (0.5246 and 0.0258). Judging by non-adjusted performance, the green portfolio rarely exceeds the market index (in 5 out of 12 cases), while less environmentally friendly stocks portfolio behave worse (in 3 out of 12 cases). According to MVaR-Sharpe, the green portfolio seldom outperforms the market index (in 5 out of 12 cases), whereas stocks with poor environmental performance behave worse (in 3 out of 12 cases).

With regards to investment performance observed in South Korean stocks and air pollution intensity (see Table 44), according to simple return, environmentally friendly stocks often lag behind less environmentally friendly ones. In addition, similar outputs observed in downside risk-adjusted performance and modified Sharpe ratio. Considering the best-performing model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. In addition, considering the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by simple return, brown stocks outpace green (12.11% and 0.86%, accordingly). Adhering to downside risk-adjusted performance, less environmentally friendly stocks beat green (0.5572 and -0.0062). According to MVaR-Sharpe, less environmentally friendly counterparts outperform green (1.0041 and -0.0132, accordingly). Adhering to raw return, the green portfolio never performs better than the market index, while less environmentally friendly stocks portfolio perform better (in 8 out of 12 cases). In relation to MVaR-adjusted performance, the environmentally friendly portfolio never outperforms the market index, while less environmentally friendly stocks behave better (in 4 out of 12 cases).

Considering investment performance associated with water usage (see Table 44), according to simple return, brown companies frequently outshine green ones. Further, similar results observed in Sortino measure and MVaR-Sharpe.

Considering the best-performing model, the KNN approach performs best in both green and brown groups. In addition, considering the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with non-adjusted performance, less environmentally friendly stocks outshine green (10.63% and 1.39%). In relation to Sortino measure, less environmentally friendly stocks exceed environmentally friendly (0.4636 and 0.017). Adhering to MVaR-adjusted performance, less environmentally friendly stocks outshine environmentally friendly (0.8484 and 0.0348, respectively). In relation to non-adjusted performance, the environmentally friendly portfolio rarely exceeds the market (in 2 out of 12 cases), while stocks with poor environmental performance portfolio behave better (in 5 out of 12 cases). In relation to modified Sharpe measure, the green portfolio unfrequently exceeds the market index (in 2 out of 12 cases), while stocks with poor environmental performance behave better (in 4 out of 12 cases).

Dealing with financial performance associated with total waste (see Table 44), judging by non-adjusted performance, environmentally friendly companies mostly beat less environmentally friendly ones (in 3 out of 4 models). Moreover, similar results observed in downside risk-adjusted performance and modified Sharpe measure. Regarding the best-performing model, the 50/50 approach performs best in both environmentally friendly and brown groups. Additionally, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw return, stocks with poor environmental performance outpace green (6.37% and 4.45%, accordingly). Adhering to downside risk-adjusted performance, less environmentally friendly stocks perform better than environmentally friendly

(0.2572 and 0.1553). In accordance with modified Sharpe ratio, brown stocks exceed environmentally friendly (0.4583 and 0.3137, accordingly). In accordance with raw performance, the green portfolio seldom outperforms the benchmark (in 3 out of 12 cases), while less environmentally friendly counterparts portfolio perform better (in 4 out of 12 cases). In relation to modified Sharpe measure, the green portfolio seldom exceeds the market benchmark (in 3 out of 12 cases), while brown stocks behave the same.

With regards to investment performance observed in German sample and GHG emissions (see Table 46), adhering to simple return, environmentally friendly stocks universally outperform brown ones. Contradicting earlier findings, findings observed in Sortino ratio and MVaR-Sharpe are less representative (green companies outshine brown companies in 3 out of 4 and 3 out of 4 estimations, accordingly). In terms of the model with the best performance, the 50/50 approach performs best in both green and less environmentally friendly groups. Furthermore, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (8.52% and 6.52%), Sortino measure (0.3577 and 0.2505) and modified Sharpe measure (0.726 and 0.5451). In relation to simple return, the green portfolio rarely performs better than the market index (in 4 out of 12 cases), while brown stocks portfolio behave worse (in 3 out of 12 cases). Adhering to MVaR-adjusted performance, the green portfolio seldom outpaces the market (in 3 out of 12 cases), while less environmentally friendly counterparts perform similarly.

Concerning investment performance occurring in water usage (see Table 46), adhering to non-adjusted performance, brown stocks always exceed environmentally friendly ones. Further, similar results observed in Sortino measure and MVaR-adjusted performance. Considering the model with the best returns, within environmentally friendly portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the KNN in each measure. Additionally, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to simple return, brown stocks outpace green (5.12% and 2.77%, respectively). In accordance with Sortino measure, less environmentally friendly stocks outpace green (0.1521 and 0.0619, respectively). In accordance with modified Sharpe ratio, brown stocks perform better than green (0.3699 and 0.1597, respectively). Adhering to raw performance, the green portfolio unfrequently beats the broad market index (in 4 out of 12 cases), whereas stocks with poor environmental performance portfolio behave better (in 5 out of 12 cases). Adhering to MVaR-Sharpe, the green portfolio rarely exceeds the market benchmark (in 4 out of 12 cases), whereas stocks with poor environmental performance behave the same.

With regards to financial performance associated with total waste (see Table 46), according to raw return, green companies consistently outpace less environmentally friendly ones. Furthermore, similar outputs associated with Sortino ratio and MVaR-adjusted performance. Regarding the best model, within green portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Additionally, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (4.84% and 2.16%), Sortino measure (0.1693 and 0.0486) and MVaR-adjusted performance

(0.3401 and 0.1005). According to simple return, the green portfolio seldom outshines the benchmark (in 5 out of 12 cases), while brown stocks portfolio perform worse (in 4 out of 12 cases). In relation to modified Sharpe ratio, the green portfolio rarely exceeds the market (in 4 out of 12 cases), whereas less environmentally friendly counterparts behave worse (in 3 out of 12 cases).

With regards to investment performance occurring in Indian companies and greenhouse gas intensity (see Table 48), judging by simple return, green companies universally perform better than less environmentally friendly ones. Moreover, similar findings observed in Sortino ratio and modified Sharpe ratio. With regards to the model with the best performance, within green portfolios, results are mixed, while within brown portfolios, the best performing model is 10/90 in each measure. Furthermore, with regards to the comparison between the grouped portfolios' performances and benchmarks, there does not exist a best-performing green portfolio, whereas there appears to be a best-performing brown portfolio. Judging by simple return, the less environmentally friendly counterparts portfolio rarely outpaces the market benchmark (in 4 out of 12 cases), and adhering to MVaR-Sharpe, the brown stocks portfolio unfrequently exceeds the broad market index (in 3 out of 12 cases).

Dealing with financial performance observed in water usage intensity (see Table 48), in relation to simple return, green companies consistently outperform less environmentally friendly ones. Further, similar results occurring in downside risk-adjusted performance and modified Sharpe ratio. Concerning the best model, within green portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Moreover, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (13.73% and 9.5%), Sortino measure (0.624 and 0.3648) and modified Sharpe measure (1.272 and 0.6339). According to raw return, the environmentally friendly portfolio in most cases outshines the broad market index (in 9 out of 12 cases), whereas less environmentally friendly stocks portfolio behave worse (in 4 out of 12 cases). Adhering to MVaR-Sharpe, the environmentally friendly portfolio rarely outperforms the market (in 5 out of 12 cases), while stocks with poor environmental performance behave worse (in 4 out of 12 cases).

In terms of financial performance associated with waste efficiency (see Table 48), in accordance with raw return, green stocks in most cases outpace less environmentally friendly ones (in 3 out of 4 estimations). Further, similar results occurring in downside risk-adjusted performance and MVaR-Sharpe. Considering the best model, the 30/70 approach performs best in both environmentally friendly and less environmentally friendly groups. In addition, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (16.06% and 14.12%), downside risk-adjusted performance (0.6711 and 0.5413) and MVaR-adjusted performance (1.5659 and 1.2211). In relation to simple return, the environmentally friendly portfolio in most cases exceeds the market benchmark (in 8 out of 12 cases), whereas brown stocks portfolio behave worse (in 7 out of 12 cases). In relation to modified Sharpe measure, the environmentally friendly portfolio rarely exceeds the market benchmark (in 4 out of 12 cases), whereas less environmentally friendly stocks perform the same.

Regarding financial performance associated with stocks from Italy and greenhouse gas intensity (see Table 50), judging by non-adjusted performance, environmentally friendly companies often outshine less environmentally friendly ones (in 3 out of 4 models). Nevertheless, outputs observed in Sortino ratio and MVaR-Sharpe are less representative (environmentally friendly stocks outshine less environmentally friendly stocks in 1 out of 4 and 2 out of 4 estimations, respectively). In terms of the best-performing model, the 10/90 approach performs best in both green and brown groups. In addition, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to simple return, brown stocks outperform green (9.86% and 6.48%, respectively). In relation to downside risk-adjusted performance, brown stocks exceed environmentally friendly (0.4268 and 0.2132, respectively). Adhering to MVaR-Sharpe, stocks with poor environmental performance outpace environmentally friendly (0.7422 and 0.4629, respectively). Judging by non-adjusted performance, the green portfolio rarely outperforms the market benchmark (in 3 out of 12 cases), while brown stocks portfolio behave the same. In accordance with MVaR-Sharpe, the environmentally friendly portfolio unfrequently outshines the market (in 2 out of 12 cases), while less environmentally friendly counterparts perform better (in 3 out of 12 cases).

Concerning investment performance observed in water intensity per sales (see Table 50), according to non-adjusted performance, environmentally friendly stocks robustly underperform less environmentally friendly ones. Moreover, similar findings observed in Sortino measure and MVaR-adjusted performance. Regarding the best-performing model, the 10/90 approach performs best in both green and brown groups. Furthermore, concerning the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw performance, stocks with poor environmental performance outpace green (7.23% and 6.59%). According to Sortino measure, stocks with poor environmental performance outshine green (0.2612 and 0.1636, respectively). Judging by MVaR-adjusted performance, less environmentally friendly counterparts outshine green (0.475 and 0.3434). In relation to raw return, the green portfolio seldom outshines the market (in 3 out of 12 cases), while less environmentally friendly stocks portfolio behave the same. In relation to modified Sharpe ratio, the green portfolio seldom performs better than the broad market index (in 3 out of 12 cases), while brown stocks perform similarly. With regards to financial performance observed in waste intensity (see Table 50), according to non-adjusted performance, green companies universally lag behind brown ones. Further, similar findings observed in Sortino measure and modified Sharpe measure. Regarding the model with the best returns, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Furthermore, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with non-adjusted performance, less environmentally friendly stocks outpace environmentally friendly (7.44% and 4.11%). Judging by downside risk-adjusted performance, brown stocks outperform green (0.2372 and 0.1041, respectively). According to MVaR-Sharpe, brown stocks exceed green (0.514 and 0.2294, respectively). Judging by simple return, the green portfolio rarely exceeds the market benchmark (in 2 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform better (in 4 out of 12 cases). According to modified Sharpe ratio, the green portfolio unfrequently outshines the market index (in 1 out of 12 cases), whereas stocks with poor environmental performance perform better (in 3 out of 12 cases).

In terms of financial performance observed in Brazilian companies and GHG emissions (see Table 52), adhering to raw return, less environmentally friendly companies most often perform better than environmentally friendly ones. Contradicting earlier findings, findings observed in Sortino measure and MVaR-adjusted performance are less representative (green companies outperform brown companies in none of the specifications, accordingly). Concerning the model with the best performance, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Furthermore, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, stocks with poor environmental performance outpace environmentally friendly (0.77% and -1.26%, accordingly). Judging by Sortino measure, stocks with poor environmental performance outperform environmentally friendly (-0.0075 and -0.0637). In relation to MVaR-adjusted performance, brown stocks exceed environmentally friendly (-0.0131 and -0.1272). Adhering to non-adjusted performance, the environmentally friendly portfolio never performs better than the market, while brown stocks portfolio behave similarly. In accordance with modified Sharpe measure, the environmentally friendly portfolio never beats the broad market index, while stocks with poor environmental performance perform similarly.

Considering investment performance observed in water usage (see Table 52), in accordance with raw performance, brown stocks mostly outshine environmentally friendly ones. Additionally, similar findings associated with Sortino ratio and MVaR-Sharpe. With regards to the model with the best performance, the 10/90 approach performs best in both environmentally friendly and less environmentally friendly groups. In addition, concerning the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to raw performance, less environmentally friendly counterparts outpace green (8.85% and 5.78%, accordingly). In accordance with downside risk-adjusted performance, stocks with poor environmental performance outpace green (0.2878 and 0.1478). Judging by MVaR-adjusted performance, stocks with poor environmental performance perform better than green (0.427 and 0.2674, accordingly). In accordance with raw return, the environmentally friendly portfolio seldom outperforms the market index (in 3 out of 12 cases), whereas less environmentally friendly stocks portfolio behave better (in 4 out of 12 cases). Adhering to MVaR-Sharpe, the green portfolio seldom outpaces the market benchmark (in 3 out of 12 cases), while brown stocks behave similarly.

In terms of financial performance associated with waste intensity (see Table 52), in accordance with non-adjusted performance, environmentally friendly stocks perform similar to less environmentally friendly ones (in 2 out of 4 estimations). In contrast, results observed in downside risk-adjusted performance and MVaR-adjusted performance are less representative (green stocks outperform brown stocks in 1 out of 4 and 1 out of 4 models). Considering the model with the best performance, within green portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Moreover, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw performance, less environmentally friendly stocks exceed environmentally friendly (4.97% and 4.22%, accordingly). Adhering to downside risk-adjusted performance, stocks with poor environmental performance perform better than green (0.1234 and 0.1004, respectively). Adhering to modified Sharpe measure, less environmentally friendly stocks outshine green (0.2099 and 0.1917). In accordance with non-adjusted performance, the green portfolio unfrequently outshines the market index (in 2 out of 12 cases), while brown stocks portfolio behave better (in 3 out of 12 cases). According to MVaR-Sharpe, the green portfolio never performs better than the market, while less environmentally friendly stocks behave the same.

Considering investment performance associated with companies associated with Sweden and GHG emissions (see Table 54), according to raw performance, environmentally friendly stocks always lag behind brown ones. Furthermore, similar outputs associated with Sortino ratio and modified Sharpe measure. Concerning the model with the best performance, the 50/50 approach performs best in both green and less environmentally friendly groups. Moreover, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to raw return, brown stocks outperform environmentally friendly (11.01% and 7.08%, respectively). Adhering to Sortino ratio, stocks with poor environmental performance outperform green (0.4952 and 0.3887). Judging by modified Sharpe ratio, less environmentally friendly counterparts perform better than environmentally friendly (1.1898 and 0.6504). In accordance with non-adjusted performance, the environmentally friendly portfolio rarely exceeds the market (in 3 out of 12 cases), whereas brown stocks portfolio behave similarly. In accordance with modified Sharpe measure, the green portfolio seldom beats the market benchmark (in 3 out of 12 cases), whereas less environmentally friendly counterparts perform better (in 4 out of 12 cases).

In terms of investment performance occurring in water usage (see Table 54), in accordance with simple return, brown companies behave indistinguishable from green ones (in 2 out of 4 models). Nevertheless, results observed in Sortino ratio and modified Sharpe measure are less representative (green companies perform better than brown companies in 0 out of 4 and 0 out of 4 models, accordingly). In terms of the best-performing model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Moreover, regarding the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to raw return, less environmentally friendly stocks exceed green (12.58% and 11.04%, accordingly). According to Sortino ratio, stocks with poor environmental performance outshine environmentally friendly (0.618 and 0.5039). Adhering to MVaR-adjusted performance, less environmentally friendly counterparts beat environmentally friendly (1.2931 and 0.8667, respectively). In relation to raw return, the environmentally friendly portfolio rarely outpaces the market (in 5 out of 12 cases), whereas stocks with poor environmental performance portfolio perform better (in 8 out of 12 cases). According to modified Sharpe ratio, the green portfolio unfrequently exceeds the market (in 4 out of 12 cases), while less environmentally friendly stocks perform better (in 5 out of 12 cases).

Considering financial performance associated with total waste (see Table 54), judging by non-adjusted performance, brown stocks behave similar to green ones (in 2 out of 4 models). Further, similar results occurring in Sortino measure and modified Sharpe ratio. Dealing with the model with the best performance, within green portfolios, the 30/70 model performs better compared to others (in Sortino ratio and modified Sharpe measure), while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Additionally, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by raw performance, stocks with poor environmental performance exceed environmentally friendly (10.93% and 8.56%). Judging by Sortino ratio, stocks with poor environmental performance outpace green (0.4864 and 0.4395). According to MVaR-Sharpe, less environmentally friendly stocks outpace environmentally friendly (0.9509 and 0.8271, respectively). Adhering to simple return, the green portfolio unfrequently performs better than the market (in 4 out of 12 cases), while less environmentally friendly stocks portfolio behave better (in 5 out of 12 cases). Adhering to modified Sharpe measure, the environmentally friendly portfolio rarely beats the market index (in 4 out of 12 cases), whereas stocks with poor environmental performance behave similarly.

With regards to investment performance observed in Switzerland's stocks and GHG emissions (see Table 56), judging by simple return, less environmentally friendly stocks consistently exceed green ones. Additionally, similar outputs observed in Sortino measure and modified Sharpe measure. Concerning the best model, within green portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, results are mixed. In addition, with regards to the comparison between the grouped portfolios' performances and benchmarks, there is a green portfolio with the best performance. In relation to non-adjusted performance, the green portfolio rarely outshines the market index (in 4 out of 12 cases), and according to MVaR-Sharpe, the environmentally friendly portfolio unfrequently beats the benchmark (in 4 out of 12 cases), while there appears to be no brown portfolio that performs the best.

Regarding investment performance associated with water usage intensity (see Table 56), adhering to non-adjusted performance, green companies in most cases are inferior to brown ones. Furthermore, similar findings associated with downside risk-adjusted performance and MVaR-Sharpe. With regards to the model with the best returns, within green portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Moreover, concerning the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to non-adjusted performance, less environmentally friendly stocks outperform green (9.58% and 8.72%, respectively). Judging by downside risk-adjusted performance, stocks with poor environmental performance outpace green (0.4845 and 0.2257, respectively). Judging by MVaR-adjusted performance, stocks with poor environmental performance exceed green (1.2526 and 0.6594, accordingly). In accordance with raw return, the green portfolio mostly beats the broad market index (in 9 out of 12 cases), whereas brown stocks portfolio perform similarly. In accordance with MVaR-Sharpe, the environmentally friendly portfolio rarely exceeds the market (in 5 out of 12 cases), whereas brown stocks perform better (in 9 out of 12 cases).

Considering financial performance observed in total waste (see Table 56), in accordance with raw performance, brown companies behave similar to environmentally friendly ones (in 2 out of 4 models). In addition, similar findings associated with Sortino measure and modified Sharpe ratio. In terms of the model with the best returns, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Additionally, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw performance, environmentally friendly outshine less environmentally friendly stocks (11.47% and 10.53%). In accordance with Sortino measure, less environmentally friendly stocks beat green (0.5199 and 0.4399, respectively). In accordance with MVaR-Sharpe, stocks with poor environmental performance beat environmentally friendly (1.302 and 1.1217). In accordance with raw performance, the green portfolio universally outshines the broad market index, while less environmentally friendly counterparts portfolio behave worse (in 9 out of 12 cases). In relation to modified Sharpe measure, the environmentally friendly portfolio often exceeds the benchmark (in 9 out of 12 cases), whereas brown stocks perform similarly.

Concerning investment performance occurring in South African sample and greenhouse gas emissions (see Table 58), in accordance with non-adjusted performance, less environmentally friendly stocks consistently show lower returns than environmentally friendly ones. Additionally, similar results observed in downside risk-adjusted performance and MVaR-adjusted performance. Regarding the best model, the 50/50 approach performs best in both environmentally friendly and less environmentally friendly groups. Additionally, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (9.06% and 4.59%), Sortino ratio (0.3238 and 0.1336) and MVaR-adjusted performance (0.6872 and 0.2404). According to raw performance, the environmentally friendly portfolio seldom beats the market benchmark (in 4 out of 12 cases), while less environmentally friendly stocks portfolio behave worse (in 2 out of 12 cases). Adhering to MVaR-adjusted performance, the green portfolio rarely exceeds the market benchmark (in 3 out of 12 cases), while less environmentally friendly stocks perform worse (in 2 out of 12 cases).

In terms of investment performance occurring in water usage intensity (see Table 58), according to non-adjusted performance, green stocks always perform better than brown ones. Furthermore, similar findings observed in Sortino ratio and modified Sharpe measure. Concerning the best-performing model, within green portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 30/70 in each measure. Furthermore, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (4.61% and 1.64%), downside risk-adjusted performance (0.1136 and 0.0219) and modified Sharpe measure (0.2387 and 0.0369). In accordance with simple return, the green portfolio unfrequently beats the benchmark (in 3 out of 12 cases), whereas brown stocks portfolio behave worse (in 0 out of 12 cases). According to modified Sharpe ratio, the green portfolio unfrequently exceeds the market index (in 3 out of 12 cases), whereas less environmentally friendly stocks behave worse (in 0 out of 12 cases).

Considering investment performance observed in waste intensity (see Table 58), adhering to simple return, less environmentally friendly stocks often underperform environmentally friendly ones (in 1 out of 4 models). Furthermore, similar findings observed in Sortino measure and modified Sharpe measure. Regarding the model with the best performance, the 10/90 approach performs best in both green and brown groups. Moreover, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw performance, less environmentally friendly stocks outpace environmentally friendly (3.39% and 1.84%). Judging by Sortino measure, stocks with poor environmental performance outperform environmentally friendly (0.0651 and 0.023). Judging by MVaR-adjusted performance, brown stocks exceed environmentally friendly (0.1086 and 0.0636, accordingly). Adhering to non-adjusted performance, the environmentally friendly portfolio seldom performs better than the benchmark (in 2 out of 12 cases), while brown stocks portfolio behave the same. Judging by modified Sharpe measure, the environmentally friendly portfolio rarely performs better than the benchmark (in 2 out of 12 cases), while brown stocks behave the same.

Considering financial performance occurring in Spanish companies and greenhouse gas emissions (see Table 60), according to raw return, brown stocks universally outpace environmentally friendly ones. Further, similar outputs observed in Sortino ratio and MVaR-Sharpe. Dealing with the best model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. In addition, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to simple return, less environmentally friendly stocks outshine green (12.59% and 0.33%, accordingly). In accordance with Sortino measure, stocks with poor environmental performance outperform green (0.5519 and -0.028, accordingly). In accordance with MVaR-Sharpe, brown stocks outshine environmentally friendly (1.1806 and -0.0463, respectively). Judging by simple return, the environmentally friendly portfolio never outperforms the market, while less environmentally friendly stocks portfolio perform better (in 8 out of 12 cases). Judging by modified Sharpe ratio, the green portfolio never beats the market, while brown stocks perform better (in 4 out of 12 cases).

In terms of financial performance associated with water usage (see Table 60), judging by simple return, brown companies robustly perform better than environmentally friendly ones. Furthermore, similar results occurring in Sortino ratio and modified Sharpe ratio. With regards to the best model, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. In addition, considering the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to simple return, less environmentally friendly counterparts exceed green (10.29% and 0.64%, respectively). Adhering to Sortino measure, brown stocks outperform environmentally friendly (0.4427 and -0.0115, accordingly). Adhering to modified Sharpe ratio, stocks with poor environmental performance exceed green (0.8705 and -0.0194). According to simple return, the green portfolio never outperforms the market index, while less environmentally friendly stocks portfolio behave better (in 6 out of 12 cases). In relation to modified Sharpe measure, the green portfolio never outshines the broad market index, whereas less environmentally friendly stocks perform better (in 4 out of 12 cases).

In terms of financial performance associated with waste intensity per sales (see Table 60), adhering to non-adjusted performance, less environmentally friendly companies mostly perform better than environmentally friendly ones. Further, similar findings associated with Sortino ratio and MVaR-Sharpe. In terms of the model with the best returns, within green portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the KNN in each measure. Additionally, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to non-adjusted performance, brown stocks beat environmentally friendly (10.97% and 4.21%, respectively). In accordance with downside risk-adjusted performance, less environmentally friendly stocks outperform green (0.4354 and 0.1009). In accordance with modified Sharpe ratio, less environmentally friendly counterparts outperform environmentally friendly (0.8034 and 0.1869). In relation to raw return, the green portfolio seldom outperforms the benchmark (in 2 out of 12 cases), whereas stocks with poor environmental performance portfolio behave better (in 4 out of 12 cases). In accordance with MVaR-Sharpe, the green portfolio never outshines the benchmark, whereas less environmentally friendly stocks perform better (in 4 out of 12 cases).

Concerning financial performance occurring in portfolios established on stocks from Singapore and GHG and CO_2 emission intensity (see Table 62), judging by non-adjusted performance, less environmentally friendly stocks in most cases outperform environmentally friendly ones. Moreover, similar findings observed in

Sortino ratio and modified Sharpe ratio. Dealing with the model with the best performance, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Moreover, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (12.73% and 3.36%), downside risk-adjusted performance (0.8109 and 0.1035) and modified Sharpe measure (1.5857 and 0.297). In accordance with non-adjusted performance, the environmentally friendly portfolio rarely outperforms the market benchmark (in 3 out of 12 cases), while stocks with poor environmental performance portfolio behave similarly. According to modified Sharpe measure, the environmentally friendly portfolio unfrequently outshines the market (in 4 out of 12 cases), whereas less environmentally friendly stocks perform worse (in 3 out of 12 cases).

Dealing with financial performance associated with water usage (see Table 62), in relation to raw performance, brown companies perform indistinguishable from green ones (in 2 out of 4 estimations). Furthermore, similar results associated with downside risk-adjusted performance and MVaR-adjusted performance. Dealing with the model with the best returns, within green portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Moreover, considering the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, green outpace brown stocks (8.58% and 7.64%, respectively). According to downside risk-adjusted performance, environmentally friendly outperform stocks with poor environmental performance (0.36 and 0.3429). In accordance with modified Sharpe measure, less environmentally friendly stocks outperform green (0.9258 and 0.6544). According to raw performance, the environmentally friendly portfolio seldom outshines the broad market index (in 3 out of 12 cases), whereas brown stocks portfolio perform the same. According to modified Sharpe measure, the green portfolio rarely beats the market index (in 2 out of 12 cases), whereas less environmentally friendly stocks perform better (in 3 out of 12 cases).

In terms of financial performance associated with waste intensity (see Table 62), in relation to non-adjusted performance, environmentally friendly companies behave indistinguishable from brown ones (in 2 out of 4 estimations). In addition, similar results associated with Sortino ratio and MVaR-adjusted performance. Regarding the model with the best returns, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. In addition, concerning the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (2.23% and 0.79%), Sortino ratio (0.0534 and -0.0087) and MVaR-adjusted performance (0.0991 and -0.0181). Adhering to raw return, the green portfolio never outpaces the benchmark, while stocks with poor environmental performance portfolio behave the same. Judging by MVaR-Sharpe, the green portfolio never performs better than the broad market index, while brown stocks perform the same.

With regards to financial performance observed in Malaysian companies and greenhouse gas emissions (see Table 64), in relation to raw performance, less environmentally friendly companies always exceed environmentally friendly ones.

Further, similar outputs associated with downside risk-adjusted performance and modified Sharpe ratio. Dealing with the best model, within environmentally friendly portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Moreover, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, less environmentally friendly stocks beat environmentally friendly (5.73% and 1.37%, accordingly). According to Sortino ratio, brown stocks outshine environmentally friendly (0.3624 and 0.0232). According to modified Sharpe ratio, less environmentally friendly stocks outshine green (0.5955 and 0.0421, respectively). Adhering to raw return, the environmentally friendly portfolio unfrequently outshines the market benchmark (in 2 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave the same. Adhering to MVaR-Sharpe, the environmentally friendly portfolio unfrequently beats the market benchmark (in 2 out of 12 cases), whereas brown stocks behave similarly.

Considering financial performance associated with water use intensity (see Table 64), judging by raw return, environmentally friendly companies always fall behind brown ones. Additionally, similar outputs associated with Sortino measure and modified Sharpe measure. Regarding the best-performing model, within environmentally friendly portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. Additionally, concerning the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw return, stocks with poor environmental performance beat green (16.2% and 4.56%, accordingly). Adhering to Sortino measure, less environmentally friendly stocks exceed environmentally friendly (1.2877 and 0.2387). Adhering to modified Sharpe measure, brown stocks exceed green (0.9902 and 0.4215, respectively). According to non-adjusted performance, the green portfolio rarely exceeds the market benchmark (in 2 out of 12 cases), while stocks with poor environmental performance portfolio perform better (in 6 out of 12 cases). Adhering to modified Sharpe ratio, the environmentally friendly portfolio rarely performs better than the benchmark (in 2 out of 12 cases), while less environmentally friendly counterparts perform better (in 3 out of 12 cases).

Dealing with financial performance associated with total waste (see Table 64), adhering to simple return, green stocks in most cases underperform less environmentally friendly ones. Further, similar results occurring in Sortino measure and MVaR-Sharpe. With regards to the model with the best performance, within green portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 30/70 in each measure. Furthermore, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to simple return, less environmentally friendly counterparts exceed environmentally friendly (11.71% and 4.27%, accordingly). Adhering to Sortino ratio, less environmentally friendly counterparts exceed green (0.5774 and 0.293, respectively). According to MVaR-adjusted performance, stocks with poor environmental performance outpace environmentally friendly (1.3317 and 0.3974, accordingly). According to raw performance, the green portfolio unfrequently beats the market benchmark (in 2 out of 12 cases), whereas stocks with poor environmental performance portfolio behave better (in 3 out of 12 cases). Adhering to modified Sharpe ratio, the environmentally friendly portfolio unfrequently performs better than the benchmark (in 2 out of 12 cases), while less environmentally friendly stocks perform better (in 3 out of 12 cases).

Concerning financial performance associated with Norwegian companies and greenhouse gas intensity (see Table 66), judging by raw performance, brown stocks frequently show lower returns than green ones (in 1 out of 4 models). In addition, similar results are associated with downside risk-adjusted performance, whereas outputs for MVaR-Sharpe are more representative (green companies outpace brown companies in 4 out of 4 models). Considering the best model, within green portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the KNN in each measure. Moreover, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (17.3% and 12.24%), downside risk-adjusted performance (0.6592 and 0.494) and modified Sharpe ratio (1.5373 and 0.8312). Judging by simple return, the environmentally friendly portfolio often outshines the market benchmark (in 11 out of 12 cases), whereas brown stocks portfolio behave worse (in 6 out of 12 cases). According to modified Sharpe measure, the environmentally friendly portfolio seldom outshines the market (in 4 out of 12 cases), while less environmentally friendly counterparts behave worse (in 3 out of 12 cases).

Regarding financial performance occurring in water usage (see Table 66), according to non-adjusted performance, less environmentally friendly companies frequently exceed green ones. Further, similar findings occurring in downside risk-adjusted performance and modified Sharpe ratio. Concerning the best-performing model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the KNN in each measure. Moreover, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with non-adjusted performance, less environmentally friendly stocks beat environmentally friendly (62.17% and 36.46%). According to downside risk-adjusted performance, less environmentally friendly counterparts outpace environmentally friendly (3.8591 and 2.409, accordingly). Judging by modified Sharpe measure, stocks with poor environmental performance outpace environmentally friendly (7.1049 and 6.0766). Adhering to simple return, the environmentally friendly portfolio frequently outpaces the market (in 10 out of 12 cases), while brown stocks portfolio behave better (in 12 out of 12 cases). Judging by modified Sharpe measure, the environmentally friendly portfolio exceeds half of the market (in 6 out of 12 cases), whereas less environmentally friendly stocks perform better (in 9 out of 12 cases).

Regarding investment performance occurring in waste efficiency (see Table 66), in accordance with raw return, environmentally friendly companies mostly outshine brown ones (in 3 out of 4 specifications). Furthermore, similar results observed in downside risk-adjusted performance and modified Sharpe measure. Considering the model with the best performance, within environmentally friendly portfolios, the 30/70 model performs better compared to others (in Sortino measure and modified Sharpe ratio), while within brown portfolios, the best performing model is the 50/50 in each measure. Additionally, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to raw performance, less environmentally friendly stocks perform better than green (15.63% and 9.07%, accordingly). In relation to downside risk-adjusted performance, less environmentally friendly stocks outpace environmentally friendly (0.6368 and 0.4008, respectively). In accordance with modified Sharpe measure, less environmentally friendly counterparts outpace green (1.2278 and 0.7749). Adhering to raw performance, the environmentally friendly portfolio unfrequently beats the broad market index (in 3 out of 12 cases), while less environmentally friendly stocks portfolio perform better (in 6 out of 12 cases). Adhering to modified Sharpe ratio, the green portfolio rarely outshines the market benchmark (in 3 out of 12 cases), while stocks with poor environmental performance perform better (in 4 out of 12 cases).

Concerning investment performance occurring in Finnish stocks and GHG emissions (Table 68), in relation to raw performance, green stocks in most cases underperform brown ones. Furthermore, similar findings are occurring in downside risk-adjusted performance, while outputs for MVaR-Sharpe are less representative (environmentally friendly stocks outpace brown companies in 0 out of 4 estimations). Dealing with the best-performing model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 (in downside risk-adjusted performance and MVaR-adjusted performance). Moreover, concerning the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw return, environmentally friendly outshine less environmentally friendly stocks

(13.88% and 11.38%). According to Sortino measure, stocks with poor environmental performance exceed environmentally friendly (0.5461 and 0.5242, respectively). In accordance with MVaR-adjusted performance, less environmentally friendly counterparts perform better than green (1.2674 and 0.9712, accordingly). Adhering to simple return, the environmentally friendly portfolio mostly outpaces the broad market index (in 7 out of 12 cases), while stocks with poor environmental performance portfolio behave worse (in 3 out of 12 cases). According to MVaR-adjusted performance, the environmentally friendly portfolio unfrequently outshines the market index (in 4 out of 12 cases), while brown stocks behave similarly.

With regards to financial performance occurring in water intensity per sales (Table 68), in relation to raw return, green stocks frequently outperform brown ones (in 3 out of 4 models). In addition, similar results are observed in modified Sharpe measure, whereas findings for Sortino measure are more representative (environmentally friendly stocks exceed brown stocks in 4 out of 4 specifications). Concerning the best model, the 50/50 approach performs best in both environmentally friendly and brown groups. Additionally, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (14.06% and 11.57%), downside risk-adjusted performance (0.7863 and 0.5444) and modified Sharpe ratio (1.6997 and 1.2105). In accordance with raw return, the green portfolio most often outperforms the market (in 7 out of 12 cases), whereas brown stocks portfolio perform worse (in 3 out of 12 cases). Adhering to MVaR-adjusted performance, the green portfolio unfrequently performs better than the broad market index (in 4 out of 12 cases), while stocks with poor environmental performance behave the same.

Dealing with investment performance associated with waste intensity (Table 68), judging by raw return, brown companies in most cases beat environmentally friendly ones. Additionally, similar outputs associated with Sortino measure and modified Sharpe ratio. Dealing with the best model, the 50/50 approach performs best in both environmentally friendly and brown groups. Additionally, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, less environmentally friendly stocks outperform green (15.53% and 5.62%). In relation to downside risk-adjusted performance, stocks with poor environmental performance beat environmentally friendly (0.633 and 0.1939, accordingly). In accordance with modified Sharpe ratio, brown stocks outperform green (1.0916 and 0.395, respectively). Adhering to raw return, the green portfolio unfrequently outperforms the broad market index (in 3 out of 12 cases), while stocks with poor environmental performance portfolio perform better (in 9 out of 12 cases). In relation to MVaR-Sharpe, the environmentally friendly portfolio unfrequently exceeds the broad market index (in 3 out of 12 cases), whereas less environmentally friendly counterparts behave better (in 5 out of 12 cases).

In terms of financial performance observed in companies from Netherlands and GHG pollution (see Table 70), in accordance with raw performance, less environmentally friendly stocks mostly exceed environmentally friendly ones. In addition, similar results are observed in modified Sharpe measure, while results for downside risk-adjusted performance are less representative (green stocks beat less environmentally friendly stocks in 0 out of 4 models). Considering the best-performing model, within green portfolios, the 50/50 model performs better compared to others (in Sortino ratio and modified Sharpe measure), while within brown portfolios, the best performing model is the KNN in each measure. Additionally, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by raw return, less environmentally friendly stocks beat environmentally friendly (15.81% and 6.87%, respectively). Judging by Sortino ratio, brown stocks outshine green (0.6958 and 0.236, accordingly). In relation to MVaR-adjusted performance, less environmentally friendly stocks outshine green (1.5472 and 0.5469). According to raw performance, the environmentally friendly portfolio seldom beats the market (in 3 out of 12 cases), while brown stocks portfolio behave better (in 10 out of 12 cases). In accordance with modified Sharpe ratio, the green portfolio unfrequently beats the market (in 3 out of 12 cases), while brown stocks behave better (in 4 out of 12 cases).

Dealing with financial performance occurring in water usage (see Table 70), in relation to raw return, environmentally friendly companies mostly are inferior to brown ones. Additionally, similar outputs are observed in Sortino measure, while outputs for MVaR-Sharpe are less representative (green companies perform better than less environmentally friendly stocks in 0 out of 4 models). Regarding the model with the best returns, within green portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 30/70 (in downside risk-adjusted performance and MVaR-adjusted performance). Moreover, concerning the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to simple return, less environmentally friendly stocks beat green (18.06% and 16.72%, accordingly). Judging by downside risk-adjusted performance, less environmentally friendly counterparts exceed environmentally friendly (0.9124 and 0.802). Adhering to MVaR-adjusted performance, less environmentally friendly counterparts outperform environmentally friendly (2.1085 and 1.614, respectively). Adhering to raw return, the green portfolio most often outshines the market index (in 11 out of 12 cases), whereas less environmentally friendly stocks portfolio behave better (in 12 out of 12 cases). Adhering to modified Sharpe measure, the green portfolio rarely exceeds the benchmark (in 4 out of 12 cases), while brown stocks behave better (in 8 out of 12 cases).

Concerning investment performance observed in waste intensity per sales (see Table 70), according to raw performance, brown stocks frequently show lower returns than environmentally friendly ones (in 1 out of 4 models). Additionally, similar outputs are associated with modified Sharpe measure, whereas results for Sortino measure are less representative (green companies exceed brown companies in 2 out of 4 models). With regards to the model with the best returns, within green portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 (in Sortino measure and MVaR-Sharpe). Further, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (20.3% and 11.59%), Sortino measure (1.0472 and 0.6458) and MVaR-Sharpe (2.1248 and 1.3491). Adhering to raw performance, the green portfolio universally outshines the benchmark, while brown stocks portfolio perform worse (in 7 out of 12 cases). Judging by modified Sharpe measure, the green portfolio most often outperforms the benchmark (in 9 out of 12 cases), whereas less environmentally friendly stocks behave worse (in 4 out of 12 cases).

Regarding financial performance observed in Thailand's companies and GHG emissions (see Table 72), adhering to non-adjusted performance, environmentally friendly stocks always underperform less environmentally friendly ones. Moreover, similar outputs observed in Sortino ratio and MVaR-Sharpe. Dealing with the best model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Furthermore, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to non-adjusted performance, less environmentally friendly stocks perform better than green (7.5% and 2.55%). According to downside risk-adjusted performance, less environmentally friendly stocks exceed green (0.2822 and 0.082). In relation to modified Sharpe measure, stocks with poor environmental performance beat environmentally friendly (0.4707 and 0.1424, respectively). Adhering to simple return, the environmentally friendly portfolio rarely performs better than the benchmark (in 2 out of 12 cases), while less environmentally friendly stocks portfolio perform better (in 3 out of 12 cases). Judging by MVaR-adjusted performance, the green portfolio rarely outperforms the market index (in 2 out of 12 cases), while brown stocks behave better (in 3 out of 12 cases).

Concerning investment performance observed in water usage (see Table 72), judging by raw performance, environmentally friendly stocks always show lower returns than less environmentally friendly ones. Moreover, similar findings occurring in Sortino ratio and modified Sharpe ratio. Regarding the model with the best performance, the KNN approach performs best in both green and less environmentally friendly groups. Moreover, concerning the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, less environmentally friendly stocks outpace green (8.95% and 6.23%). According to Sortino measure, stocks with poor environmental performance outperform green (0.35 and 0.2525, respectively). In accordance with MVaR-adjusted performance, stocks with poor environmental performance outpace environmentally friendly (0.6565 and 0.5545). Judging by non-adjusted performance, the environmentally friendly portfolio seldom outshines the market index (in 3 out of 12 cases), while less environmentally friendly stocks portfolio behave similarly. In accordance with modified Sharpe ratio, the green portfolio unfrequently exceeds the market benchmark (in 3 out of 12 cases), while less environmentally friendly stocks perform the same.

Considering investment performance observed in waste intensity (see Table 72), adhering to simple return, less environmentally friendly companies perform the same as green ones (in 2 out of 4 specifications). Additionally, similar findings observed in Sortino ratio and MVaR-adjusted performance. With regards to the model with the best returns, within green portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. In addition, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (10.81% and 10.66%), Sortino ratio (0.5181 and 0.4705) and MVaR-adjusted performance (1.0265 and 1.0217). Adhering to raw return, the green portfolio seldom beats the market index (in 3 out of 12 cases), while less environmentally friendly counterparts portfolio perform the same. Adhering to MVaR-Sharpe, the green portfolio rarely outpaces the market benchmark (in 3 out of 12 cases), whereas less environmentally friendly counterparts behave similarly.

Considering investment performance associated with Russian sample and greenhouse gas emissions (see Table 74), in accordance with non-adjusted performance, brown companies always exceed green ones. Additionally, similar results associated with Sortino measure and modified Sharpe ratio. With regards to the best-performing model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 30/70 (in simple return and Sortino ratio). Further, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw performance, brown stocks perform better than environmentally friendly (24.97% and 13.29%, respectively). According to Sortino ratio, less environmentally friendly counterparts outperform green (0.9936 and 0.4609). In relation to modified Sharpe measure, less environmentally friendly stocks perform better than environmentally friendly (2.1671 and 1.1561). Adhering to raw return, the green portfolio rarely outpaces the market (in 4 out of 12 cases), whereas brown stocks portfolio perform better (in 11 out of 12 cases). In accordance with modified Sharpe measure, the environmentally friendly portfolio seldom performs better than the benchmark (in 3 out of 12 cases), whereas less environmentally friendly counterparts behave better (in 7 out of 12 cases).

Concerning investment performance occurring in water usage intensity (see Table 74), in relation to raw performance, brown companies robustly outperform environmentally friendly ones. Additionally, similar results observed in downside risk-adjusted performance and modified Sharpe measure. Concerning the best model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the KNN in each measure. Furthermore, considering the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to raw performance, stocks with poor environmental performance outshine environmentally friendly (15.84% and 4.55%, respectively). In accordance with Sortino measure, less environmentally friendly stocks outpace green (0.64 and 0.1147, accordingly). According to modified Sharpe measure, less environmentally friendly stocks outshine environmentally friendly (1.2065 and 0.247, accordingly). In accordance with raw return, the environmentally friendly portfolio unfrequently outpaces the market benchmark (in 2 out of 12 cases), whereas stocks with poor environmental performance portfolio perform better (in 8 out of 12 cases). In accordance with MVaR-Sharpe, the green portfolio rarely exceeds the broad market index (in 2 out of 12 cases), while less environmentally friendly stocks perform better (in 4 out of 12 cases).

Dealing with financial performance observed in total waste (see Table 74), in accordance with raw return, green companies robustly show lower returns than less environmentally friendly ones. Furthermore, similar outputs are associated with downside risk-adjusted performance, whereas outputs for MVaR-adjusted performance are more representative (environmentally friendly stocks outperform less environmentally friendly stocks in 1 out of 4 estimations). In terms of the best model, within environmentally friendly portfolios, results are mixed, while within brown portfolios, the best performing model is 10/90 (in non-adjusted performance and Sortino measure). Furthermore, dealing with the comparison between the grouped portfolios' performances and benchmarks, there is no best-performing green portfolio, whereas there is a brown portfolio that performs the best. Judging by non-adjusted performance, the less environmentally friendly counterparts portfolio mostly outpaces the market (in 8 out of 12 cases), and in relation to MVaR-Sharpe, the brown stocks portfolio seldom beats the market index (in 4 out of 12 cases).

Concerning investment performance occurring in, Mexico companies and GHG emissions, in accordance with non-adjusted performance (see Table 76), environmentally friendly stocks most often beat brown ones (in 3 out of 4 models). Moreover, similar results observed in downside risk-adjusted performance and modified Sharpe ratio. Regarding the best model, the KNN approach performs best in both environmentally friendly and less environmentally friendly groups. Further, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (9.86% and 5.68%), Sortino ratio (0.3259 and 0.157) and modified Sharpe ratio (0.7845 and 0.3693). In relation to raw performance, the environmentally friendly portfolio rarely outperforms the market (in 3 out of 12 cases), while brown stocks portfolio perform the same. According to modified Sharpe measure, the environmentally friendly portfolio seldom outshines the market (in 3 out of 12 cases), whereas less environmentally friendly stocks perform the same.

Regarding investment performance occurring in water use intensity (see Table 76), judging by non-adjusted performance, less environmentally friendly companies behave the same as environmentally friendly ones (in 2 out of 4 estimations).

Furthermore, similar findings occurring in Sortino measure and modified Sharpe measure. Dealing with the best-performing model, the KNN approach performs best in both green and less environmentally friendly groups. Moreover, regarding the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw return, less environmentally friendly stocks exceed green (8.1% and 5.76%, accordingly). Adhering to downside risk-adjusted performance, brown stocks beat environmentally friendly (0.2627 and 0.2395, respectively). In accordance with MVaR-Sharpe, brown stocks outshine environmentally friendly (0.4645 and 0.4619). Judging by non-adjusted performance, the environmentally friendly portfolio seldom performs better than the market benchmark (in 3 out of 12 cases), while brown stocks portfolio behave similarly. In accordance with MVaR-Sharpe, the environmentally friendly portfolio rarely beats the market index (in 3 out of 12 cases), whereas brown stocks behave similarly.

Dealing with investment performance observed in waste efficiency (see Table 76), adhering to non-adjusted performance, less environmentally friendly companies often exceed environmentally friendly ones. Further, similar results observed in downside risk-adjusted performance and MVaR-Sharpe. Regarding the best model, the KNN approach performs best in both environmentally friendly and less environmentally friendly groups. Furthermore, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (10.96% and 7.83%), downside risk-adjusted performance (0.3714 and 0.2434) and MVaR-Sharpe (0.6416 and 0.4726). Judging by non-adjusted performance, the environmentally friendly portfolio rarely beats the market benchmark (in 3 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave the same. Adhering to MVaR-Sharpe, the environmentally friendly portfolio seldom outpaces the benchmark (in 3 out of 12 cases), while stocks with poor environmental performance behave the same.

Dealing with investment performance associated with Industrials sector and GHG emissions (see Table 78), adhering to non-adjusted performance, green stocks always lag behind brown ones. Additionally, similar outputs occurring in Sortino measure and MVaR-adjusted performance. In terms of the best-performing model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 (in simple return and MVaR-Sharpe). Moreover, regarding the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, brown stocks outshine environmentally friendly (9.39% and 8.21%, respectively). Judging by Sortino ratio, less environmentally friendly stocks outpace green (0.372 and 0.3135, respectively). According to MVaR-Sharpe, stocks with poor environmental performance beat green (1.0679 and 0.8628, accordingly). In relation to raw performance, the green portfolio often outpaces the market index (in 9 out of 12 cases), whereas brown stocks portfolio perform similarly. In accordance with MVaR-Sharpe, the environmentally friendly portfolio in most cases outperforms the broad market index (in 7 out of 12 cases), whereas stocks with poor environmental performance behave better (in 9 out of 12 cases).

Concerning financial performance associated with water usage (see Table 78), in relation to raw performance, less environmentally friendly stocks most often are inferior to green ones (in 1 out of 4 specifications). Furthermore, similar outputs associated with Sortino measure and MVaR-adjusted performance. Considering the model with the best performance, within green portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Moreover, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (8.56% and 7.64%), downside risk-adjusted performance (0.3573 and 0.2997) and modified Sharpe measure (0.9638 and 0.79). In relation to raw performance, the environmentally friendly portfolio mostly exceeds the market index (in 9 out of 12 cases), while less environmentally friendly counterparts portfolio behave worse (in 7 out of 12 cases). Judging by modified Sharpe measure, the environmentally friendly portfolio frequently beats the market benchmark (in 7 out of 12 cases), whereas stocks with poor environmental performance behave worse (in 6 out of 12 cases).

Considering investment performance occurring in waste efficiency (see Table 78), in relation to non-adjusted performance, environmentally friendly stocks mostly fall behind less environmentally friendly ones. Further, similar outputs occurring in Sortino measure and modified Sharpe ratio. Regarding the best-performing model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. In addition, concerning the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by simple return, brown stocks outpace environmentally friendly (8.31% and 5.94%, accordingly).

Adhering to Sortino measure, brown stocks exceed environmentally friendly (0.3357 and 0.2238, accordingly). Judging by modified Sharpe measure, less environmentally friendly stocks beat green (0.9394 and 0.5676). Judging by raw return, the environmentally friendly portfolio rarely beats the market index (in 4 out of 12 cases), while stocks with poor environmental performance portfolio behave better (in 9 out of 12 cases). In accordance with modified Sharpe measure, the green portfolio unfrequently outshines the market index (in 4 out of 12 cases), whereas less environmentally friendly stocks behave better (in 7 out of 12 cases).

Regarding financial performance associated with Materials sector and greenhouse gas intensity (see Table 80), in accordance with non-adjusted performance, green stocks most often exceed less environmentally friendly ones (in 3 out of 4 specifications). Regarding the model with the best returns, within environmentally friendly portfolios, the KNN model performs better compared to others (in non-adjusted performance and modified Sharpe measure), while within less environmentally friendly portfolios, the best performing model is the 30/70 in each measure. In addition, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (13.29% and 7.42%), Sortino ratio (0.5843 and 0.2375) and MVaR-Sharpe (1.6397 and 0.5905). In relation to raw performance, the green portfolio universally outperforms the market index, while brown stocks portfolio behave worse (in 7 out of 12 cases). Adhering to modified Sharpe ratio, the environmentally friendly portfolio consistently beats the market, while less environmentally friendly stocks behave worse (in 4 out of 12 cases).

Concerning financial performance associated with water usage (see Table 80), according to raw return, green stocks always exceed brown ones. Moreover, similar outputs occurring in Sortino ratio and modified Sharpe measure. Dealing with the best model, the 10/90 approach performs best in both green and less environmentally friendly groups. Further, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (13.23% and 5.93%), downside risk-adjusted performance (0.4929 and 0.2373) and MVaR-Sharpe (1.7502 and 0.4261). In accordance with raw return, the green portfolio robustly exceeds the market benchmark, whereas stocks with poor environmental performance portfolio behave worse (in 4 out of 12 cases). Adhering to MVaR-Sharpe, the environmentally friendly portfolio always outpaces the market benchmark, whereas less environmentally friendly counterparts behave worse (in 4 out of 12 cases).

Considering investment performance associated with total waste (see Table 80), adhering to raw return, brown companies frequently show lower returns than green ones (in 1 out of 4 specifications). Additionally, similar findings associated with Sortino ratio and modified Sharpe measure. Considering the model with the best performance, the 50/50 approach performs best in both green and less environmentally friendly groups. In addition, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (8.73% and 6.94%), downside risk-adjusted performance (0.3807 and 0.2215) and modified Sharpe measure (0.8468 and 0.4806). In accordance with simple return, the green portfolio frequently exceeds the broad market index (in 9 out of 12 cases), whereas brown stocks portfolio perform worse (in 5 out of 12 cases). In accordance with modified Sharpe ratio, the green portfolio often outperforms the market (in 7 out of 12 cases), whereas stocks with poor environmental performance behave worse (in 4 out of 12 cases).

Regarding investment performance occurring in Consumer Discretionary sector and greenhouse gas intensity (see Table 82), in relation to non-adjusted performance, green companies robustly outpace less environmentally friendly ones. Moreover, similar outputs observed in Sortino measure and modified Sharpe ratio. In terms of the best model, within green portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 (in downside risk-adjusted performance and MVaR-Sharpe). Additionally, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (12.67% and 8.18%), Sortino ratio (0.4999 and 0.3715) and modified Sharpe measure (1.2488 and 0.7381). Judging by raw performance, the environmentally friendly portfolio universally outshines the market index, while less environmentally friendly counterparts portfolio perform worse (in 9 out of 12 cases). Judging by modified Sharpe ratio, the green portfolio often outperforms the benchmark (in 9 out of 12 cases), whereas brown stocks perform worse (in 6 out of 12 cases).

Dealing with financial performance observed in water intensity per sales (see Table 82), adhering to simple return, less environmentally friendly stocks perform indistinguishable from environmentally friendly ones (in 2 out of 4 models). Furthermore, similar results associated with Sortino ratio and modified Sharpe ratio. With regards to the best model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the KNN (in raw performance and

Sortino ratio). In addition, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (9.58% and 8.95%), downside risk-adjusted performance (0.4172 and 0.3087) and MVaR-Sharpe (0.7929 and 0.6402). In accordance with simple return, the green portfolio in most cases outperforms the market (in 9 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform the same. According to modified Sharpe ratio, the green portfolio exceeds half of the broad market index (in 6 out of 12 cases), while less environmentally friendly stocks behave worse (in 4 out of 12 cases).

Regarding investment performance associated with waste efficiency (see Table 82), according to non-adjusted performance, less environmentally friendly stocks universally are inferior to green ones. Furthermore, similar outputs associated with Sortino measure and MVaR-adjusted performance. Regarding the model with the best performance, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Furthermore, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (12.48% and 9.02%), Sortino measure (0.5561 and 0.3107) and modified Sharpe measure (1.0952 and 0.6392). According to raw return, the environmentally friendly portfolio always exceeds the market, while less environmentally friendly counterparts portfolio behave worse (in 9 out of 12 cases). In accordance with modified Sharpe measure, the green portfolio often performs better than the market (in 9 out of 12 cases), whereas stocks with poor environmental performance behave worse (in 4 out of 12 cases).

Considering financial performance occurring in Financials sector and greenhouse gas emissions (see Table 84), in accordance with simple return, brown companies universally underperform environmentally friendly ones. Additionally, similar outputs occurring in Sortino measure and modified Sharpe ratio. Considering the model with the best performance, the 10/90 approach performs best in both green and less environmentally friendly groups. Further, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (3.25% and 2.81%), downside risk-adjusted performance (0.0777 and 0.0596) and modified Sharpe measure (0.1842 and 0.1559). In relation to raw performance, the green portfolio seldom outpaces the broad market index (in 4 out of 12 cases), whereas stocks with poor environmental performance portfolio perform worse (in 3 out of 12 cases). Adhering to MVaR-adjusted performance, the environmentally friendly portfolio rarely performs better than the market benchmark (in 4 out of 12 cases), whereas stocks with poor environmental performance behave worse (in 2 out of 12 cases).

With regards to investment performance occurring in water usage (see Table 84), adhering to raw performance, brown companies universally fall behind green ones. Moreover, similar findings observed in Sortino measure and MVaR-Sharpe. Concerning the model with the best performance, within green portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 30/70 in each measure. Moreover, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (3.97% and -1.93%), Sortino ratio (0.1134 and -0.1054) and modified Sharpe ratio (0.2505 and -0.2417). Adhering to raw return, the green portfolio seldom outperforms the market (in 4 out of 12 cases), while brown stocks portfolio behave worse (in 1 out of 12 cases). In relation to modified Sharpe measure, the environmentally friendly portfolio seldom outperforms the benchmark (in 4 out of 12 cases), while brown stocks behave worse (in 0 out of 12 cases).

Regarding financial performance observed in waste intensity (see Table 84), in relation to raw performance, brown companies always lag behind environmentally friendly ones. Additionally, similar results observed in Sortino ratio and MVaR-Sharpe. With regards to the model with the best performance, the 30/70 approach performs best in both environmentally friendly and brown groups. Furthermore, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (3.48% and 1.48%), downside risk-adjusted performance (0.0889 and 0.0162) and MVaR-adjusted performance (0.2022 and 0.0382). In relation to raw performance, the environmentally friendly portfolio unfrequently outshines the benchmark (in 4 out of 12 cases), while less environmentally friendly counterparts portfolio perform worse (in 3 out of 12 cases). According to modified Sharpe ratio, the green portfolio unfrequently performs better than the market benchmark (in 4 out of 12 cases), whereas stocks with poor environmental performance perform worse (in 3 out of 12 cases).

Regarding financial performance occurring in Information Technology sector and GHG pollution (see Table 86), in accordance with raw performance, less environmentally friendly companies in most cases perform better than green ones.

Additionally, similar outputs are occurring in downside risk-adjusted performance, whereas findings for modified Sharpe ratio are less representative (green companies outperform brown stocks in 0 out of 4 models). Concerning the model with the best returns, within green portfolios, the 30/70 model performs better compared to others (in Sortino ratio and MVaR-Sharpe), while within brown portfolios, the best performing model is the 50/50 (in Sortino measure and modified Sharpe measure). Furthermore, regarding the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to simple return, stocks with poor environmental performance outshine green (15.06% and 14.62%, accordingly). In accordance with downside risk-adjusted performance, stocks with poor environmental performance outshine environmentally friendly (0.6802 and 0.6557). In accordance with modified Sharpe measure, stocks with poor environmental performance beat green (1.7822 and 1.4635). Judging by non-adjusted performance, the green portfolio always exceeds the market benchmark, while stocks with poor environmental performance portfolio perform the same. In relation to MVaR-adjusted performance, the environmentally friendly portfolio most often outpaces the market index (in 11 out of 12 cases), while less environmentally friendly stocks perform better (in 12 out of 12 cases).

In terms of investment performance occurring in water use intensity (see Table 86), judging by non-adjusted performance, environmentally friendly stocks most often outperform brown ones (in 3 out of 4 models). Further, similar results occurring in downside risk-adjusted performance and modified Sharpe ratio. Considering the model with the best performance, the 30/70 approach performs best in both environmentally friendly and brown groups. Furthermore, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (15.07% and 14.34%), Sortino ratio (0.6192 and 0.602) and modified Sharpe measure (1.6722 and 1.4594). In accordance with raw performance, the green portfolio always outpaces the market index, whereas less environmentally friendly stocks portfolio perform the same. In accordance with MVaR-Sharpe, the environmentally friendly portfolio consistently beats the benchmark, whereas less environmentally friendly counterparts perform worse (in 11 out of 12 cases).

With regards to investment performance occurring in total waste (see Table 86), in accordance with simple return, green companies always outpace brown ones. Additionally, similar findings occurring in downside risk-adjusted performance and MVaR-Sharpe. Dealing with the best-performing model, the 30/70 approach performs best in both environmentally friendly and less environmentally friendly groups. Additionally, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (17.36% and 14.17%), Sortino ratio (0.7364 and 0.6029) and MVaR-adjusted performance (1.9931 and 1.4167). In accordance with non-adjusted performance, the green portfolio universally outperforms the market, whereas less environmentally friendly stocks portfolio behave the same. Adhering to modified Sharpe measure, the environmentally friendly portfolio consistently beats the benchmark, while brown stocks behave worse (in 11 out of 12 cases).

Regarding investment performance associated with Consumer Staples sector and greenhouse gas emissions (see Table 88), judging by non-adjusted performance, environmentally friendly companies robustly beat less environmentally friendly ones. Additionally, similar findings are associated with Sortino measure, whereas outputs for MVaR-Sharpe are less representative (green companies outperform brown stocks in 3 out of 4 models). Concerning the best-performing model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Further, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (10.74% and 8.37%), downside risk-adjusted performance (0.7095 and 0.5211) and MVaR-Sharpe (1.4955 and 1.2778). In accordance with raw return, the environmentally friendly portfolio robustly beats the market, while less environmentally friendly stocks portfolio perform worse (in 9 out of 12 cases). In relation to modified Sharpe measure, the environmentally friendly portfolio universally beats the broad market index, while brown stocks perform worse (in 9 out of 12 cases).

Concerning financial performance occurring in water intensity per sales (see Table 88), in relation to non-adjusted performance, less environmentally friendly stocks universally underperform green ones. Further, similar findings observed in downside risk-adjusted performance and MVaR-Sharpe. With regards to the model with the best returns, the 50/50 approach performs best in both green and brown groups. Additionally, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (8.01% and 5.65%), downside risk-adjusted performance (0.466 and 0.2746) and MVaR-Sharpe (1.1125 and 0.6789). In accordance with raw performance, the green portfolio frequently outshines the benchmark (in 9 out of 12 cases), while less environmentally friendly counterparts portfolio behave worse (in 5 out of 12 cases). In relation to MVaR-adjusted performance, the green portfolio in most cases outperforms the market benchmark (in 9 out of 12 cases), whereas less environmentally friendly counterparts perform worse (in 5 out of 12 cases).

Concerning financial performance observed in total waste (see Table 88), in relation to raw return, green stocks perform the same as brown ones (in 2 out of 4 models). Regarding the model with the best returns, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 (in Sortino ratio and MVaR-adjusted performance). Additionally, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (10.06% and 7.15%), downside risk-adjusted performance (0.4695 and 0.4188) and MVaR-adjusted performance (1.1484 and 1.015). Judging by simple return, the environmentally friendly portfolio frequently outperforms the benchmark (in 9 out of 12 cases), while less environmentally friendly stocks portfolio behave worse (in 6 out of 12 cases). In accordance with modified Sharpe ratio, the environmentally friendly portfolio most often exceeds the market (in 9 out of 12 cases), while stocks with poor environmental performance perform similarly.

With regards to investment performance associated with Real Estate sector and GHG pollution (see Table 90), adhering to non-adjusted performance, less environmentally friendly companies mostly perform better than environmentally friendly ones. Moreover, similar outputs are observed in modified Sharpe ratio, whereas results for Sortino ratio are less representative (green companies outpace less environmentally friendly companies in 0 out of 4 models). In terms of the best-performing model, the 10/90 approach performs best in both environmentally friendly and less environmentally friendly groups. Further, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by raw return, environmentally friendly exceed brown stocks (16.19% and 13.98%). In accordance with Sortino measure, less environmentally friendly stocks outshine green (0.7675 and 0.7199, respectively). According to MVaR-adjusted performance, less environmentally friendly counterparts beat green (1.5017 and 1.3037, accordingly). In accordance with raw performance, the green portfolio always outshines the market, while brown stocks portfolio behave worse (in 9 out of 12 cases). In accordance with modified Sharpe measure, the green portfolio rarely performs better than the broad market index (in 5 out of 12 cases), while less environmentally friendly stocks perform better (in 6 out of 12 cases).

Concerning financial performance occurring in water intensity per sales (see Table 90), adhering to raw return, green stocks always underperform less environmentally friendly ones. Furthermore, similar results occurring in Sortino measure and MVaR-Sharpe. Concerning the model with the best performance, the KNN approach performs best in both green and brown groups. Furthermore, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to raw return, stocks with poor environmental performance outshine green (16.34% and 14.19%, accordingly). Judging by Sortino ratio, less environmentally friendly counterparts perform better than environmentally friendly (0.8677 and 0.6419, accordingly). In relation to modified Sharpe measure, less environmentally friendly stocks outpace environmentally friendly (1.6634 and 1.5399). Adhering to raw performance, the green portfolio mostly beats the market (in 9 out of 12 cases), whereas brown stocks portfolio perform better (in 12 out of 12 cases). According to MVaR-Sharpe, the environmentally friendly portfolio performs better than half of the market benchmark (in 6 out of 12 cases), whereas less environmentally friendly counterparts behave the same.

Regarding financial performance observed in waste efficiency (see Table 90), in relation to non-adjusted performance, green companies often underperform brown ones. Further, similar results occurring in Sortino measure and modified Sharpe ratio. Concerning the model with the best performance, within green portfolios, the KNN model performs better compared to others (in raw return and downside risk-adjusted performance), while within brown portfolios, the best performing model is the 10/90 in each measure. Moreover, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, stocks with poor environmental performance exceed green (15.17% and 8.75%, accordingly). According to downside risk-adjusted performance, stocks with poor environmental performance beat environmentally friendly (0.5855 and 0.341, respectively). In relation to modified Sharpe measure, brown stocks outpace environmentally friendly (1.1677 and 0.6567, respectively). Judging by non-adjusted performance, the environmentally friendly portfolio unfrequently outperforms the market (in 4 out of 12 cases), while brown stocks portfolio perform better (in 10 out of 12 cases). Judging by MVaR-Sharpe, the green portfolio unfrequently outpaces the broad market index (in 3 out of 12 cases), whereas less environmentally friendly counterparts perform better (in 5 out of 12 cases).

In terms of financial performance associated with Health Care sector and GHG pollution (see Table 92), in relation to non-adjusted performance, green stocks universally outperform brown ones. Furthermore, similar findings observed in Sortino ratio and MVaR-adjusted performance. Dealing with the best model, the 50/50 approach performs best in both environmentally friendly and brown groups. Furthermore, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (11.82% and 9.26%), Sortino ratio (0.7161 and 0.5198) and modified Sharpe measure (1.6399 and 1.2413). Adhering to simple return, the environmentally friendly portfolio consistently beats the market benchmark, whereas less environmentally friendly counterparts portfolio behave worse (in 9 out of 12 cases). In relation to MVaR-adjusted performance, the green portfolio universally exceeds the market index, while less environmentally friendly stocks behave worse (in 9 out of 12 cases).

Concerning financial performance observed in water intensity per sales (see Table 92), in relation to non-adjusted performance, green stocks frequently outpace brown ones (in 3 out of 4 specifications). Additionally, similar results are observed in downside risk-adjusted performance, whereas results for MVaR-Sharpe are more representative (environmentally friendly stocks exceed brown stocks in 4 out of 4 specifications). Dealing with the model with the best returns, the 50/50 approach performs best in both green and brown groups. In addition, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (10.38% and 8.96%), Sortino measure (0.6201 and 0.5169) and modified Sharpe ratio (1.4702 and 1.2012). In relation to raw performance, the environmentally friendly portfolio universally outperforms the broad market index, while less environmentally friendly counterparts portfolio behave worse (in 9 out of 12 cases). In accordance with MVaR-adjusted performance, the green portfolio robustly outshines the market benchmark, whereas less environmentally friendly counterparts behave worse (in 9 out of 12 cases).

Considering investment performance associated with waste intensity per sales (see Table 92), adhering to raw return, green stocks consistently outpace brown ones. Moreover, similar outputs are occurring in Sortino ratio, whereas findings for modified Sharpe measure are less representative (green companies outshine brown stocks in 3 out of 4 specifications). Considering the model with the best returns, within environmentally friendly portfolios, results are mixed, while within brown portfolios, the best performing model is 50/50 (in downside risk-adjusted performance and modified Sharpe ratio). Moreover, considering the comparison between the grouped portfolios' performances and benchmarks, there is no green portfolio that performs the best, whereas there appears to be a brown portfolio that performs the best. Adhering to raw performance, the less environmentally friendly counterparts portfolio often exceeds the market benchmark (in 9 out of 12 cases), and in accordance with modified Sharpe measure, the brown stocks portfolio frequently outpaces the market index (in 9 out of 12 cases).

Regarding investment performance observed in Energy sector and GHG and CO2 emission intensity (see Table 94), in accordance with raw return, less environmentally friendly stocks frequently outperform environmentally friendly ones. Furthermore, similar results occurring in downside risk-adjusted performance and MVaR-Sharpe. Considering the best-performing model, within environmentally friendly portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. Moreover, concerning the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to raw return, stocks with poor environmental performance beat green (4.66% and 1.69%). In relation to Sortino measure, less environmentally friendly counterparts outperform environmentally friendly (0.1223 and 0.0306, accordingly). In accordance with modified Sharpe measure, less environmentally friendly stocks exceed green (0.2817 and 0.0642, respectively). In accordance with raw performance, the green portfolio unfrequently outshines the benchmark (in 3 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform better (in 5 out of 12 cases). Judging by MVaR-adjusted performance, the green portfolio seldom outperforms the market (in 3 out of 12 cases), whereas stocks with poor environmental performance perform better (in 5 out of 12 cases).

Regarding financial performance associated with water intensity per sales (see Table 94), according to raw performance, less environmentally friendly stocks in most cases exceed green ones. In addition, similar outputs occurring in Sortino measure and MVaR-adjusted performance. Concerning the best model, within green portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Moreover, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (2.45% and 0.98%), downside risk-adjusted performance (0.0469 and -0.0008) and modified Sharpe ratio (0.0961 and -0.0016). In relation to raw return, the environmentally friendly portfolio unfrequently beats the market index (in 4 out of 12 cases), whereas stocks with poor environmental performance portfolio perform worse (in 2 out of 12 cases). In relation to modified Sharpe ratio, the green portfolio rarely outpaces the broad market index (in 3 out of 12 cases), whereas brown stocks behave worse (in 2 out of 12 cases).

Considering financial performance observed in waste intensity per sales (see Table 94), adhering to simple return, brown companies perform similar to green ones (in 2 out of 4 models). In addition, similar findings associated with Sortino measure and modified Sharpe ratio. In terms of the model with the best performance, within green portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Additionally, concerning the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (5.85% and 0.91%), Sortino ratio (0.197 and -0.0032) and MVaR-adjusted performance (0.3893 and -0.0075). Adhering to simple return, the green portfolio unfrequently outshines the benchmark (in 5 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave worse (in 2 out of 12 cases). Judging by modified Sharpe ratio, the green portfolio rarely performs better than the broad market index (in 5 out of 12 cases), whereas less environmentally friendly stocks behave worse (in 2 out of 12 cases).

Dealing with investment performance occurring in Utilities sector and GHG and CO_2 emission intensity (see Table 96), adhering to raw return, less environmentally friendly companies perform similar to environmentally friendly ones (in 2 out of 4 models). Moreover, similar results are occurring in Sortino measure, while results for modified Sharpe ratio are less representative (environmentally friendly companies exceed less environmentally friendly stocks in 1 out of 4 models). Dealing with the model with the best returns, within environmentally friendly portfolios, the 50/50 model performs better compared to others (in downside risk-adjusted performance and MVaR-Sharpe), while within brown portfolios, the best performing model is the KNN in each measure. Furthermore, concerning the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw performance, less environmentally friendly stocks beat environmentally friendly (4.67% and 3.79%). In relation to Sortino ratio, stocks with poor environmental performance perform better than green (0.2135 and 0.18, accordingly). In relation to MVaR-Sharpe, less environmentally friendly stocks outpace environmentally friendly (0.7108 and 0.3972, respectively). Judging by simple return, the environmentally friendly portfolio rarely outpaces the market (in 5 out of 12 cases), whereas stocks with poor environmental performance portfolio perform similarly. Adhering to modified Sharpe measure, the environmentally friendly portfolio seldom beats the market benchmark (in 5 out of 12 cases), whereas stocks with poor environmental performance perform better (in 6 out of 12 cases).

Considering investment performance observed in water intensity per sales (see Table 96), in accordance with raw performance, green companies behave the same as brown ones (in 2 out of 4 models). Additionally, similar outputs are observed in MVaR-adjusted performance, whereas results for Sortino measure are more representative (environmentally friendly stocks perform better than brown stocks in 3 out of 4 estimations). Regarding the best-performing model, the KNN approach performs best in both environmentally friendly and brown groups. Further, concerning the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (9.32% and 6.29%), Sortino measure (0.4763 and 0.2718) and MVaR-Sharpe (0.9509 and 0.7507). Adhering to raw return, the green portfolio frequently outpaces the benchmark (in 9 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform worse (in 4 out of 12 cases). Adhering to modified Sharpe ratio, the green portfolio often performs better than the market index (in 7 out of 12 cases), while stocks with poor environmental performance behave worse (in 6 out of 12 cases).

Concerning investment performance occurring in waste intensity (see Table 96), according to raw return, environmentally friendly stocks most often perform better than less environmentally friendly ones (in 3 out of 4 estimations). Further, similar results associated with downside risk-adjusted performance and MVaR-adjusted performance. In terms of the best model, the 10/90 approach performs best in both green and brown groups. Additionally, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (3.46% and 3.15%), downside risk-adjusted performance (0.134 and 0.1037) and MVaR-adjusted performance (0.2785 and 0.2748). Adhering to raw performance, the environmentally friendly portfolio rarely outpaces the market index (in 4 out of 12 cases), while less environmentally friendly stocks portfolio perform the same. Adhering to MVaR-adjusted performance, the green portfolio seldom outperforms the market (in 4 out of 12 cases), whereas brown stocks perform the same.

Concerning investment performance associated with Communication Services sector and greenhouse gas emissions (see Table 98), in accordance with simple return, less environmentally friendly companies frequently show lower returns than green ones (in 1 out of 4 estimations). However, findings observed in Sortino measure and MVaR-adjusted performance are less representative (environmentally friendly stocks outperform brown stocks in 2 out of 4 and 2 out of 4 estimations). With regards to the model with the best returns, the 50/50 approach performs best in both environmentally friendly and brown groups. Additionally, concerning the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw performance, brown stocks outperform environmentally friendly (12.82% and 9.82%). According to Sortino measure, less environmentally friendly stocks beat green (0.8578 and 0.5356, accordingly). In accordance with MVaR-Sharpe, brown stocks outpace green (1.9491 and 1.0536). According to non-adjusted performance, the green portfolio seldom performs better than the benchmark (in 4 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform better (in 9 out of 12 cases). Judging by MVaR-Sharpe, the green portfolio rarely performs better than the market (in 5 out of 12 cases), whereas stocks with poor environmental performance perform better (in 9 out of 12 cases).

Regarding financial performance observed in water usage (see Table 98), in accordance with raw performance, green companies consistently show lower returns than brown ones. In addition, similar results are associated with MVaR-Sharpe, whereas findings for Sortino ratio are more representative (environmentally friendly stocks perform better than brown companies in 1 out of 4 estimations). Dealing with the best model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 30/70 in each measure. In addition, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw return, less environmentally friendly counterparts outshine green (10.77% and 8.65%, accordingly). In relation to Sortino ratio, stocks with poor environmental performance exceed green (0.6571 and 0.5286). According to MVaR-adjusted performance, stocks with poor environmental performance outpace green (1.3513 and 1.1029, accordingly). In relation to simple return, the green portfolio rarely outpaces the market (in 4 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave better (in 5 out of 12 cases). Judging by MVaR-Sharpe, the green portfolio unfrequently exceeds the market index (in 5 out of 12 cases), whereas less environmentally friendly stocks behave similarly.

Concerning financial performance associated with waste intensity (see Table 98), judging by raw performance, green stocks behave the same as brown ones (in 2 out of 4 estimations). In addition, similar results observed in downside risk-adjusted performance and modified Sharpe ratio. In terms of the model with the best performance, within green portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. In addition, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to simple return, less environmentally friendly stocks exceed green (12.53% and 8.64%, accordingly). According to Sortino measure, less environmentally friendly counterparts perform better than green (0.693 and 0.4619, accordingly). Judging by MVaR-adjusted performance, less environmentally friendly counterparts beat green (1.3873 and 1.0257, accordingly). Adhering to raw performance, the green portfolio in most cases performs better than the market index (in 9 out of 12 cases), whereas brown stocks portfolio perform better (in 12 out of 12 cases). In relation to MVaR-adjusted performance, the green portfolio most often performs better than the market (in 9 out of 12 cases), whereas brown stocks perform better (in 10 out of 12 cases).

To summarise the empirical chapter, the overlook of all samples' highlights is needed. In the case of the full sample portfolios, greener stocks outshine brown ones in each estimation, including the GHG-, water- and waste-based in each portfolio structuring approach, evidencing the capability of "receiving well while doing good" (supporting the meta-analysis provided by Revelli and Viviani, 2015, and results of performance evaluation brought by Brammer et al., 2006; Kempf and Osthoff, 2007; Maiti, 2021; Borgers et al., 2015; Ashwin et al., 2016; Verheyden et al., 2016; Cohen et al.,1995; Statman, 2000; Alda, 2020; and the opposite to results evidenced by Hamilton and Statman, 1993; Rudd, 1981; Goldreyer et al., 1999; Schröder, 2004; Kreander et al., 2005; Bauer et al., 2005; Hartzmark and Sussman, 2019; Bolton and Kacperczyk, 2021; Wagner et al., 2002; supporting Al-Tuwaijri et al., 2004; Nakao et al., 2007; Boulatoff and Boyer, 2009; Benjamin et al., 2020; Giese et al., 2019). However, despite such outperformance of environmentally friendly stocks, they are still exceeded by most of the compared benchmarks, including the S&P 500 (providing mixed support to the results obtained by Luther and Matatko, 1994; Mallin et al., 1995; Schröder, 2004; Kreander et al., 2005; Geczy et al., 2021; Brzeszczynski et al., 2016; and contradicting to the evidence observed in Statman, 2000; Brzeszczynski and McIntosh, 2014; Ashwin Kumar et al., 2016; Geczy et al., 2021; Chong and Phillips, 2016).

Regarding the sample consisting of the developed countries, results are similar to the full sample in terms of green stocks' outperformance; however, the difference in performance is more noticeable, which is also valid for its comparison with the benchmarks. Meanwhile, findings observed in the emerging companies are less representative and show mixed outcomes, with brown stocks outperforming greener stocks in more than half cases. In addition, these portfolios significantly underperform most of the benchmarks. Dealing with results based on the developed countries, excluding the United States, portfolios' performance is similar to emerging samples, evidencing the importance of the US stocks.

Dealing with regional-based estimations, in the case of the European portfolios, results are contributing to the less environmentally friendly stocks' outperformance (contrasting with findings observed by Ibikunle and Steffen, 2017; Muñoz et al., 2014, however, in case of this study, the performance evaluation was applied towards the different types of SRI funds), while in cases of samples established on companies associated with the Middle East and North Africa, North America, Latin America, Pacific countries excluding Japan, greener stocks outperform brown ones in almost every case excluding the water intensity based portfolios observed in the Pacific sample.

Concerning the country-wise specifications, three clusters are observed. The first group, which represents the samples advanced by environmentally friendly stocks, includes such countries as Canada (contrasting with evidences provided by Bauer et al., 2007), France (supporting Arjaliès, 2010), India, South Africa, Australia (contradicting to Jones et al., 2008; Bauer et al., 2006; and contributing to the suggestion of encouraging the disclosure brought by Rankin et al., 2011; Subramaniam et al., 2015), the United States (contradicting to Climent and Soriano, 2011; Muñoz et al., 2014), Hong Kong, Japan (contributing to Nakao et al., 2007), and Germany (refute Schröder, 2004; Bauer et al., 2005; Kreander et al. ; 2005). The second group unites the estimations with mixed performances, which consists of companies related to Norway, Mexico, Netherlands (corresponding to Kreander et al. 2005), Singapore, and South Korea.

The third group combines cases of the less environmentally stocks outshining the greener portfolios and includes portfolios associated with Taiwan, China (arguing with call for disclosure obtained by Liu and Anbumozhi, 2009), Finland, Switzerland (going in line with findings observed in Schröder, 2004), Brazil (supporting Kouloukoui et al, 2019), Italy, Sweden (corresponding to Kreander et al., 2005), Thailand, Malaysia, Spain, Russia, and United Kingdom (contrasting with evidences of Luther et al., 1992; supporting Luther and Matatko, 1994; Mallin et al., 1995; Gregory et al., 1997; Goldreyer et al., 1999).

Dealing with a sector-wise approach, such sectors as Financials, Materials, Consumer Staples, Health Care, Consumer Discretionary, Utilities, and Information Technology are mostly dominated by greener stocks in terms of financial performance; meanwhile, brown stocks prevail in Communication Services, Energy, Industrials and Real Estate sectors.

An additional outcome of the compared results is that the portfolio's performance depends on the structuring approach, whereas the k-nearest neighbours, the 10/90 and the 30/70, better illuminate the benefits of environmental performance information utilisation.

4.2. Environmental performance in factor models

In terms of the results created on all sectors, all countries, and greenhouse gas emissions (see Table 7), each of the conventional factors are explaining portfolios' performances in each approach. Dealing with the environmental factor, 3 out of 4 estimations' results are significant, evidencing all environmentally friendly portfolios beat on the alphas (-0.2792*, -0.4191* and -0.5888*, in 50/50, 30/70 and KNN models). Regarding the CAPM factor, 2 out of 4 results are significant, suggesting all green portfolios are higher beta (-0.1203* and -0.1695**, in 10/90 and KNN models, accordingly). Concerning the small-minus-big factor, 3 out of 4 models' results are significant, suggesting that all brown portfolios consist of smaller-cap companies (0.4166***, 0.4079* and 0.3508***, in 30/70, KNN and 50/50 models, respectively). Considering the HML, all estimations are significant, demonstrating that all brown portfolios are value-oriented (0.8634***, 0.6498***, 0.6088*** and 0.4559***, in 10/90, KNN, 30/70 and 50/50 specifications, respectively). Regarding the RMW factor, all models' results are significant, showing that all environmentally friendly portfolios consist of weak stocks (1.0987***, 0.9179***, 0.7806*** and 0.509***, in KNN, 10/90, 30/70 and 50/50 models, accordingly). Dealing with the CMA, 3 out of 4 findings are significant, demonstrating that all green portfolios have positive CMA exposure (-0.4029*, -0.5778* and -0.8243*, in 50/50, 30/70 and 10/90 specifications, accordingly). Regarding the momentum factor, all findings are significant, evidencing that all less environmentally friendly portfolios include winner stocks (0.6084***, 0.492***, 0.3092*** and 0.1886***, in KNN, 10/90, 30/70 and 50/50 estimations). Adhering to Corrected Akaike information criterion (see Table 99), the 30/70, the 50/50, and the KNN estimations perform best in the six-factor model whereas the 10/90 model's best fit is the eight-factor specification (the brown-minus-green factors: -0.4191*, -0.2792*, -0.5888*, and -0.4362).

Concerning the findings created on and water use intensity (see Table 7), most of the conventional factors are explaining portfolios' performances in each approach. Regarding the environmental factor, significant brown results are inferior to on the risk-adjusted terms; however, only one approach is significant (-0.4248* in KNN specification). Considering the SMB factor, 3 out of 4 models' results are significant, suggesting all brown portfolios consist of smaller-cap stocks (0.4854***, 0.3788** and 0.3303***, in 30/70, 10/90 and 50/50 specifications, respectively). Concerning the HML, all estimations are significant, indicating that all brown portfolios are value-oriented (0.4617***, 0.3842**, 0.2525* and 0.229**, in 10/90, KNN, 30/70 and 50/50 estimations). Regarding the RMW factor, all estimations are significant, illuminating all less environmentally friendly portfolios consist of the most profitable firms (0.8103***, 0.7588***, 0.5916*** and 0.4764***, in KNN, 10/90, 30/70 and 50/50 models). With regards to the WML, 3 out of 4 models' results are significant, enforcing all brown portfolios are positively exposed to momentum (0.3041***, 0.2033** and 0.1517**, in KNN, 10/90 and 50/50 estimations, accordingly). Judging by Akaike criterion (see Table 99), each portfolio specification performs best in the six-factor estimation (the environmental factors for the 10/90, the 30/70, the 50/50, and the KNN models: -0.3712, -0.2174, -0.1882, and -0.4248*, respectively).

Concerning the outputs created on and total waste (see Table 7), most of the conventional factors are explaining portfolios' performances in each approach. In terms of the size effect, all results are significant, implying all environmentally friendly portfolios consist of smaller-cap stocks (0.7855***, 0.5318*, 0.5033*** and 0.3123**, in 10/90, KNN, 30/70 and 50/50 models, accordingly). Regarding the high-minus-low factor, 3 out of 4 estimations' results are significant, enforcing all brown portfolios are value-oriented (0.7729***, 0.4982*** and 0.2954**, in 10/90, 30/70 and 50/50 estimations, respectively). With regards to the RMW, 2 out of 4 estimations' results are significant, illuminating all brown portfolios consist of the most profitable firms (0.4677*** and 0.2567**, in 30/70 and 50/50 estimations, accordingly). Considering the investment factor, 3 out of 4 estimations are significant, illuminating all green portfolios are positively exposed to the investment factor (-0.3236**, -0.5178* and -0.8731*, in 50/50, 30/70 and 10/90 specifications). Concerning the WML, 3 out of 4 estimations are significant, evidencing that all brown portfolios are positively exposed to momentum (0.3972***, 0.2146** and 0.1776***, in 10/90, 30/70 and 50/50 estimations, accordingly). There are no significant results in terms of the brown-minus-green factor. According to Akaike criterion (see Table 99), the six-factor estimation is the best fit in the 30/70 and the 50/50 estimations whereas the three-factor specification in the KNN and the eight-factor estimation in the 10/90 estimation (the BMG: -0.2087, -0.1458, -0.2961, and -0.2598, accordingly).

Dealing with the results inspired by stocks from developed countries and air pollution intensity (see Table 9), most of the conventional factors are explaining portfolios' performances in each approach. Dealing with the environmental factor, 3 out of 4 estimations' results are significant, implying all environmentally friendly portfolios exceed on the risk-adjusted terms (-0.3581**, -0.564** and -0.7198**, in 50/50, 30/70 and KNN models, accordingly). Concerning the market beta, significant green estimations have higher beta; however, only one approach is significant (-0.1554** in KNN model). Concerning the small-minus-big factor, 2 out of 4 estimations' results are significant, implying all brown portfolios consist of small-caps (0.404** and 0.3136***, in 30/70 and 50/50 specifications, accordingly). Concerning the HML factor, all estimations' results are significant, evidencing all environmentally friendly portfolios consist of companies with lower book-to-market values (0.8389***, 0.6715***, 0.6698*** and 0.3998***, in 10/90, 30/70, KNN and 50/50 specifications, accordingly). Dealing with the RMW, all estimations' results are significant, evidencing that all environmentally friendly portfolios consist of the least profitable firms (0.9237***, 0.9234***, 0.7727*** and 0.5673***, in KNN, 30/70, 10/90 and 50/50 models, accordingly). Considering the WML factor, all findings are significant, evidencing all green portfolios are negatively exposed to momentum (0.6509***, 0.4964***, 0.3385*** and 0.2072***, in KNN, 10/90, 30/70 and 50/50 models, accordingly). Judging by Akaike information criterion (see Table 99), the six-factor model is the best fit in the 30/70 and the 50/50 models whereas in the 10/90 and the KNN specifications best fit is the eight-factor model (the BMG factor: -0.564**, -0.3581**, -0.4326, and -0.6847**, accordingly).

Concerning the results inspired by water usage (see Table 9), most of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG, significant brown model results fall behind on the risk-adjusted terms; however, only one approach is significant (-0.4576* in KNN model). In terms of the SMB factor, 2 out of 4 estimations are significant, indicating that all brown portfolios consist of smaller-cap stocks (0.464*** and 0.3206**, in 30/70 and 50/50 estimations, respectively). Dealing with the value premium, all models' results are significant, illuminating all green portfolios are negatively exposed to the value effect (0.4918***, 0.3768**, 0.2424* and 0.227*, in 10/90, KNN, 30/70 and 50/50 specifications, respectively). Regarding the operating profitability factor, all models' results are significant, showing that all brown portfolios are positively exposed to RMW (0.7387***, 0.6759***, 0.61*** and 0.504***, in KNN, 10/90, 30/70 and 50/50 models, accordingly). Regarding the momentum, all findings are significant, showing that all brown portfolios include winner stocks (0.3338***, 0.2596***, 0.1908*** and 0.1801**, in KNN, 10/90, 50/50 and 30/70 estimations, accordingly). Judging by Akaike criterion (see Table 99), each portfolio estimation performs best in the six-factor estimation (the environmental factor for the 10/90, the 30/70, the 50/50, and the KNN models: -0.4169, -0.3282, -0.2246, and -0.4576*, accordingly).

Concerning the findings inspired by total waste (see Table 9), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the size factor, all results are significant, showing that all brown portfolios consist of smaller-cap companies (0.7477**, 0.6832**, 0.4924*** and 0.287**, in 10/90, KNN, 30/70 and 50/50 specifications, accordingly). Dealing with the value effect, 3 out of 4 findings are significant, evidencing all brown portfolios are value-oriented (0.69**, 0.4629** and 0.2645**, in 10/90, 30/70 and 50/50 estimations, accordingly). Regarding the profitability anomaly, 2 out of 4 estimations' results are significant, illuminating all brown portfolios are positively exposed to RMW (0.4548*** and 0.2556**, in 30/70 and 50/50 models, respectively). In terms of the CMA, significant environmentally friendly results are positively exposed to the investment factor; however, only one approach is significant (-0.7522* in 10/90 estimation). Regarding the WML, 3 out of 4 estimations' results are significant, enforcing all brown portfolios include winner stocks (0.4094***, 0.2357** and 0.1614**, in 10/90, 30/70 and 50/50 models, accordingly). There are no significant results in terms of the BMG. In accordance with Akaike information criterion corrected for small sample size (see Table 99), the six-factor specification is the best fit in the 30/70 and the 50/50 models while in the 10/90 and the KNN models best fit is the eight-factor estimation (the environmental factor: -0.2282, -0.139, -0.3617, and -0.0813, respectively).

In terms of the outputs established on companies from emerging countries and GHG pollution (see Table 11), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the size premium, all estimations' results are significant, implying all green portfolios consist of large caps (0.7592***, 0.5736*, 0.3258* and 0.3168**, in 10/90, KNN, 30/70 and 50/50 models, respectively). Concerning the RMW, 2 out of 4 estimations' results are significant, evidencing that all green portfolios are positively exposed to RMW (-0.645*** and -1.0145***, in 50/50 and 30/70 specifications, respectively). There are no significant results in terms of the BMG. According to Akaike information criterion corrected for small sample size (see Table 99), the 30/70, the 50/50, and the KNN specifications perform best in the six-factor estimation while the 10/90's best fit is the three-factor model (the BMG factor: 0.1427, 0.0641, -0.0638, and -0.2873, respectively).

Dealing with the outputs created on water use intensity (see Table 11), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the small-firm effect, 2 out of 4 models' results are significant, illuminating all brown portfolios consist of small stocks (0.86*** and 0.6873**, in 10/90 and KNN specifications). Considering the investment factor, significant green estimations are negatively exposed to the investment factor; however, only one approach is significant (0.9462*** in KNN specification). Concerning the momentum, significant environmentally friendly estimation results consist of winner companies; however, only one approach is significant (-0.4256** in KNN specification). There are no significant results in terms of the BMG factor. In accordance with Akaike information criterion (see Table 99), the 10/90, the 30/70, and the 50/50 models perform best in the three-factor model whereas the KNN best fit is the six-factor specification (the brown-minus-green factor: -0.1747, -0.0141, -0.2623, and 0.3773).

Concerning the outputs created on total waste (see Table 11), almost none of the conventional factors are explaining portfolios' performances in each approach. Dealing with the brown-minus-green factor, significant less environmentally friendly findings show lower returns than on the alphas; however, only one approach is significant (-0.8657** in 10/90 model). Dealing with the high-minus-low factor, significant brown estimations are value-oriented; however, only one approach is significant (0.7538** in KNN estimation). In accordance with Corrected Akaike information criterion (see Table 99), the four-factor estimation is the best fit in the 10/90 and the 30/70 models, while the three-factor model in the KNN and the baseline model in the 50/50 estimation (the brown-minus-green factor: -0.8769**, -0.3923, -0.0031, and 0.3187*, accordingly).

Dealing with the outputs formed on companies from developed countries excluding the United States and GHG pollution (see Table 13), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG factor, significant environmentally friendly findings outperform on the risk-adjusted terms; however, only one approach is significant (-0.4107* in 30/70 specification). Considering the market beta, significant environmentally friendly results are lower beta; however, only one approach is significant (0.0707* in 50/50 estimation). Dealing with the small-firm effect, significant less environmentally friendly estimations consist of small-caps; however, only one approach is significant (0.2014* in 50/50 specification). With regards to the momentum, all estimations are significant, demonstrating that all brown portfolios consist of winner companies (0.4533***, 0.3793**, 0.2828** and 0.1805**, in KNN, 10/90, 30/70 and 50/50 models). Judging by Akaike information criterion (see Table 99), each portfolio estimation performs best in the four-factor specification (the BMG for the 10/90, the 30/70, the 50/50, and the KNN models: -0.2268, -0.3716, -0.2121, and -0.4246, accordingly).

Regarding the findings inspired by water usage intensity (see Table 13), several of the conventional factors are explaining portfolios' performances in each approach. Considering the size factor, significant brown estimations are positively exposed to the size effect; however, only one approach is significant (0.1939* in 30/70 specification). With regards to the profitability factor, significant environmentally friendly results are negatively exposed to RMW; however, only one approach is significant (0.2406* in 50/50 specification). Regarding the momentum, all estimations are significant, suggesting that all brown portfolios have higher WML exposure (0.2917***, 0.2406**, 0.2069** and 0.168**, in KNN, 10/90, 30/70 and 50/50 estimations, accordingly). There are no significant results in terms of the brown-minus-green factor. In accordance with Akaike criterion (see Table 99), each portfolio specification performs best in the four-factor estimation (the BMG factor for the 10/90, the 30/70, the 50/50, and the KNN specifications: 0.0874, -0.0538, -0.0847, and -0.1798, respectively).

Regarding the results based on waste intensity (see Table 13), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the CAPM factor, significant green estimation results are less risky; however, only one approach is significant (0.1164** in 30/70 specification). Regarding the momentum, all results are significant, showing that all less environmentally friendly portfolios are positively exposed to momentum (0.412***, 0.2276*, 0.1835** and 0.1424**, in 10/90, KNN, 30/70 and 50/50 specifications, accordingly). There are no significant results in terms of the BMG factor. In relation to Akaike criterion (see Table 99), the 10/90, the 30/70, and the 50/50 models perform best in the four-factor specification whereas the KNN best fit is the eight-factor estimation (the BMG: 0.0073, -0.0913, -0.0691, and 0.2872, accordingly).

Considering the findings formed on stocks from the Europe and GHG and CO2 emission intensity (see Table 15), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the BMG, 3 out of 4 estimations' results are significant, illuminating all green portfolios outpace on the risk-adjusted terms (-0.3654**, -0.5744** and -0.8018**, in 50/50, 30/70 and KNN specifications, respectively). Considering the profitability anomaly, all estimations' results are significant, suggesting that all less environmentally friendly portfolios are positively exposed to RMW (1.0682***, 0.935***, 0.9115*** and 0.6639***, in KNN, 10/90, 30/70 and 50/50 specifications, accordingly). Concerning the conservative-minus-aggressive factor, significant environmentally friendly results include firms that invest aggressively; however, only one approach is significant (0.4535* in 30/70 model). Considering the WML factor, all results are significant, suggesting all environmentally friendly portfolios consist of loser companies (0.5014***, 0.4819***, 0.3035** and 0.1318*, in KNN, 10/90, 30/70 and 50/50 specifications). According to Akaike criterion (see

Table 100), each portfolio estimation performs best in the six-factor specification (the brown-minus-green factor for the 10/90, the 30/70, the 50/50, and the KNN estimations: -0.6711, -0.5744**, -0.3654**, and -0.8018**, respectively).

Regarding the results based on water intensity per sales (see Table 15), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the brown-minus-green factor, 2 out of 4 estimations are significant, evidencing all green portfolios exceed on the risk-adjusted terms (-0.3806* and -0.5521*, in 30/70 and 10/90 specifications, respectively). With regards to the robust-minus-weak factor, all estimations' results are significant, illuminating all less environmentally friendly portfolios consist of the most profitable firms (1.0763***, 0.8627***, 0.8405*** and 0.6095***, in 10/90, 30/70, KNN and 50/50 estimations). Considering the conservative-minus-aggressive factor, 3 out of 4 models' results are significant, implying all brown portfolios have positive CMA exposure (0.384*, 0.3792* and 0.3375**, in 30/70, 10/90 and 50/50 specifications). Considering the WML, all models' results are significant, demonstrating that all green portfolios include loser stocks (0.3514***, 0.3327***, 0.2127** and 0.1686**, in 10/90, KNN, 30/70 and 50/50 models, respectively). Adhering to Akaike information criterion (see

Table 100), each portfolio specification performs best in the six-factor specification (the BMG for the 10/90, the 30/70, the 50/50, and the KNN models: -0.5521*, -0.3806*, -0.229, and -0.4599, accordingly).

Considering the outputs inspired by waste efficiency (see Table 15), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG factor, significant environmentally friendly model results outpace on the risk-adjusted terms; however, only one approach is significant (-0.4369** in 30/70 specification). Dealing with the market factor, 2 out of 4 results are significant, suggesting that all brown portfolios are high-beta stocks (0.0892*** and 0.0467**, in 30/70 and 50/50 models, accordingly). In terms of the value effect, significant less environmentally friendly findings consist of value stocks; however, only one approach is significant (0.2196** in 50/50 model). Regarding the RMW factor, 3 out of 4 estimations are significant, showing that all brown portfolios are positively exposed to RMW (0.8473**, 0.6049*** and 0.3553***, in 10/90, 30/70 and 50/50 specifications). Regarding the CMA factor, significant green findings are positively exposed to the investment factor; however, only one approach is significant (-0.3122*** in 50/50 model). Dealing with the WML factor, 3 out of 4 estimations' results are significant, evidencing all brown portfolios include winner stocks (0.2516**, 0.226*** and 0.179***, in 10/90, 30/70 and 50/50 models, accordingly). In accordance with Akaike information criterion (see

Table 100), the eight-factor model is the best fit in the 10/90 and the 30/70 models whereas the three-factor estimation in the KNN and the six-factor specification in the 50/50 specification (the environmental factor: -0.3653, -0.4267**, -0.0707, and -0.2489, respectively).

Concerning the outputs established on companies related to the Asia Pacific region excluding Japan and GHG and CO2 emission intensity (see Table 17), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the market beta, 2 out of 4 estimations' results are significant, suggesting that all brown portfolios have higher beta (0.127** and 0.0754*, in 30/70 and 50/50 specifications). In terms of the operating profitability factor, significant green estimations consist of the most profitable firms; however, only one approach is significant (-0.3642* in 50/50 model). Regarding the conservative-minus-aggressive factor, significant less environmentally friendly estimation results have negative CMA exposure; however, only one approach is significant (-0.322** in 50/50 model). There are no significant results in terms of the environmental factor. Adhering to Akaike information criterion (see

Table 100), the 10/90, the 30/70, and the KNN models perform best in the eight-factor estimation while the 50/50's best fit is the six-factor estimation (the BMG factor: -0.1897, 0.1513, 0.1328, and 0.1205, respectively).

In terms of the outputs inspired by water usage (see Table 17), almost none of the conventional factors are explaining portfolios' performances in each approach. Regarding the market beta, 2 out of 4 estimations' results are significant, evidencing all brown portfolios are high-beta stocks (0.1096* and 0.0925*, in 30/70 and 50/50 estimations, accordingly). There are no significant results in terms of the BMG. In relation to Corrected Akaike criterion (see

Table 100), the 10/90, the 50/50, and the KNN estimations perform best in the CAPM whereas the 30/70's best fit is the four-factor specification (the brown-minus-green factor: 0.0302, 0.2568, 0.2123, and 0.3172, respectively).

Regarding the outputs formed on waste intensity (see Table 17), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the market beta, 3 out of 4 findings are significant, demonstrating that all brown portfolios are riskier (0.1604*, 0.1447** and 0.0988**, in 10/90, 30/70 and 50/50 models, accordingly). Concerning the size factor, significant brown estimation results consist of smaller-cap stocks; however, only one approach is significant (0.4404* in KNN specification). In terms of the HML factor, significant green estimation results consist of growth stocks; however, only one approach is significant (1.0792*** in KNN specification). Considering the RMW, significant green estimations are negatively exposed to RMW; however, only one approach is significant (0.867** in KNN estimation). There are no significant results in terms of the brown-minus-green factor. In accordance with Akaike criterion (see

Table 100), the six-factor specification is the best fit in the 50/50 and the KNN specifications while the three-factor model in the 10/90 and the CAPM in the 30/70 model (the BMG factor: 0.1717, -0.6062, -0.1878, and -0.155, respectively).

In terms of the findings created on companies from the North America and greenhouse gas emissions (see Table 19), most of the conventional factors are explaining portfolios' performances in each approach. With regards to the market risk, 2 out of 4 results are significant, implying all green portfolios are higher beta (-0.2499** and -0.288***, in 10/90 and KNN estimations, accordingly). With regards to the SMB factor, 3 out of 4 findings are significant, illuminating all brown portfolios consist of smaller-cap companies (0.3979***, 0.3602*** and 0.2545**, in 50/50, 30/70 and KNN models, respectively). With regards to the value factor, all results are significant, evidencing that all environmentally friendly portfolios consist of companies with lower book-to-market values (0.8996***, 0.7853***, 0.6996*** and 0.4179***, in 10/90, KNN, 30/70 and 50/50 specifications). Dealing with the RMW factor, all results are significant, evidencing all environmentally friendly portfolios are negatively exposed to RMW (0.7716***, 0.6822***, 0.5643*** and 0.5404**, in 30/70, 10/90, 50/50 and KNN models). In terms of the conservative-minus-aggressive factor, 2 out of 4 estimations' results are significant, implying all green portfolios have positive CMA exposure (-0.553* and -0.6723*, in 30/70 and 10/90 models, respectively). Concerning the WML, all results are significant, illuminating all green portfolios include loser stocks (0.4461***, 0.4229***, 0.2644*** and 0.1547**, in KNN, 10/90, 30/70 and 50/50 models). There are no significant results in terms of the brown-minus-green factor. Judging by Akaike information criterion corrected for small sample size (see

Table 100), each portfolio model performs best in the six-factor estimation (the BMG for the 10/90, the 30/70, the 50/50, and the KNN models: -0.6025, -0.4303, -0.2779, and -0.2792, respectively).

With regards to the findings created on water use intensity (see Table 19), most of the conventional factors are explaining portfolios' performances in each approach. In terms of the market factor, 2 out of 4 models' results are significant, implying all green portfolios are higher beta (-0.2392*** and -0.3319**, in 50/50 and 10/90 specifications, accordingly). Concerning the size premium, 3 out of 4 findings are significant, suggesting all brown portfolios consist of smaller-cap stocks (0.4284***, 0.3639* and 0.3521**, in 30/70, KNN and 50/50 specifications, respectively). Dealing with the HML, 3 out of 4 findings are significant, indicating that all brown portfolios are positively exposed to the value effect (0.7302***, 0.4719* and 0.465***, in KNN, 10/90 and 30/70 specifications, respectively). With regards to the profitability anomaly, all estimations' results are significant, evidencing all green portfolios are negatively exposed to the profitability factor (0.6631**, 0.5988*, 0.5129*** and 0.4308**, in KNN, 10/90, 30/70 and 50/50 estimations). In terms of the conservative-minus-aggressive factor, 2 out of 4 findings are significant, suggesting all green portfolios have positive CMA exposure (-0.5038* and -0.987*, in 30/70 and KNN models). In terms of the WML, 2 out of 4 estimations' results are significant, implying all brown portfolios consist of winner companies (0.3269** and 0.3145**, in 10/90 and KNN models, respectively). There are no significant results in terms of the environmental factor. Judging by Akaike criterion (see

Table 100), the 10/90, the 30/70, and the KNN estimations perform best in the eight-factor estimation while the 50/50's best fit is the six-factor specification (the BMG factor: 0.0244, -0.2036, -0.3199, and -0.1038, accordingly).

Dealing with the findings based on waste intensity (see Table 19), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the small-minus-big factor, 3 out of 4 estimations are significant, evidencing all brown portfolios consist of smaller-cap companies (0.6879***, 0.399*** and 0.2587***, in KNN, 30/70 and 50/50 estimations, accordingly). Concerning the HML factor, 2 out of 4 results are significant, implying all brown portfolios consist of value stocks (0.2979** and 0.2022*, in 30/70 and 50/50 specifications, respectively). Regarding the RMW factor, 2 out of 4 results are significant, showing that all brown portfolios are positively exposed to RMW (0.2797* and 0.2643**, in 30/70 and 50/50 models, respectively). Concerning the conservative-minus-aggressive factor, significant environmentally friendly estimations are negatively exposed to the investment factor; however, only one approach is significant (0.7152** in KNN model). There are no significant results in terms of the brown-minus-green factor. According to Akaike criterion (see

Table 100), the six-factor specification is the best fit in the 50/50 and the KNN estimations while in the 10/90 and the 30/70 estimations best fit is the three-factor model (the brown-minus-green factor: -0.1988, -0.52, -0.4843, and -0.2039, accordingly).

Considering the outputs inspired by companies from the Latin America and greenhouse gas emissions (see Table 21), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the size factor, all findings are significant, evidencing all less environmentally friendly portfolios consist of smaller-cap companies (0.7094**, 0.7073***, 0.5842** and 0.4366**, in 10/90, KNN, 30/70 and 50/50 models). Dealing with the HML, 3 out of 4 findings are significant, suggesting that all brown portfolios are value-oriented (0.6995**, 0.6744* and 0.645*, in 50/50, 30/70 and KNN estimations). In terms of the profitability anomaly, significant green estimation results are negatively exposed to RMW; however, only one approach is significant (0.7776* in 10/90 estimation). Concerning the CMA factor, significant green estimation results include firms that invest conservatively; however, only one approach is significant (-1.5188*** in 10/90 model). Dealing with the momentum, significant brown estimations consist of loser companies; however, only one approach is significant (-0.334** in 10/90 specification). There are no significant results in terms of the BMG. Adhering to Akaike information criterion (see

Table 100), the 30/70, the 50/50, and the KNN specifications perform best in the three-factor estimation whereas the 10/90's best fit is the six-factor model (the BMG factor: -0.2314, -0.189, -0.4989, and 0.002, respectively).

Regarding the results formed on water use intensity (see Table 21), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the SMB factor, 2 out of 4 findings are significant, evidencing that all brown portfolios are exposed to smaller-cap companies (0.7547** and 0.4282*, in 30/70 and 50/50 models, accordingly). Considering the profitability anomaly, 2 out of 4 models' results are significant, demonstrating that all brown portfolios consist of robust stocks (0.8595* and 0.6777*, in 30/70 and KNN models). There are no significant results in terms of the BMG factor. In accordance with Corrected Akaike information criterion (see

Table 100), the three-factor specification is the best fit in the 10/90 and the 30/70 specifications while the CAPM in the KNN and the baseline specification in the 50/50 estimation (the BMG factor: -0.0627, -0.1779, -0.4487, and -0.2467).

Dealing with the findings created on waste efficiency (see Table 21), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the SMB factor, 2 out of 4 estimations are significant, showing that all brown portfolios consist of small stocks (0.6592** and 0.5416**, in 30/70 and 50/50 specifications, accordingly). Dealing with the robust-minus-weak factor, 2 out of 4 results are significant, showing that all brown portfolios are positively exposed to RMW (1.2055*** and 0.7903**, in 50/50 and 30/70 models). There are no significant results in terms of the brown-minus-green factor. Judging by Akaike criterion (see

Table 100), the baseline specification is the best fit in the 10/90 and the 30/70 estimations while the three-factor model in the KNN and the six-factor specification in the 50/50 model (the environmental factor: 0.0504, -0.3111, -0.277, and -0.2797).

Considering the outputs established on companies from the Middle East and Africa and GHG emissions (see Table 23), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the market factor, significant environmentally friendly findings are riskier; however, only one approach is significant (-0.3446*** in 50/50 specification). Considering the value premium, significant green estimation results consist of growth stocks; however, only one approach is significant (0.4508* in 50/50 model). Considering the RMW, 3 out of 4 estimations' results are significant, demonstrating that all green portfolios consist of the most profitable firms (-0.842**, -1.0648** and -1.4848***, in 50/50, 30/70 and 10/90 specifications, accordingly). With regards to the investment factor, significant green estimation results have positive CMA exposure; however, only one approach is significant (-0.632* in 50/50 specification). There are no significant results in terms of the BMG. According to Akaike information criterion corrected for small sample size (see

Table 100), the six-factor specification is the best fit in the 30/70 and the 50/50 estimations whereas the CAPM in the KNN and the eight-factor model in the 10/90 model (the brown-minus-green factor: -0.2757, 0.0234, -0.4247, and -0.3614, accordingly).

With regards to the findings based on water usage intensity (see Table 23), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the market risk, significant brown estimation results have higher beta; however, only one approach is significant (0.2711* in 30/70 model). With regards to the SMB factor, significant brown estimations consist of large caps; however, only one approach is significant (-0.9859* in 10/90 specification). Dealing with the value effect, significant green results are growth-oriented; however, only one approach is significant (0.5938* in 50/50 model). In terms of the profitability anomaly, significant less environmentally friendly model results are negatively exposed to the profitability factor; however, only one approach is significant (-0.7654* in 50/50 specification). There are no significant results in terms of the brown-minus-green factor. Adhering to Akaike information criterion corrected for small sample size (see

Table 100), the CAPM is the best fit in the 30/70 and the KNN models while the four-factor model in the 10/90 and the three-factor model in the 50/50 estimation (the brown-minus-green factor: -0.5702, -0.2806, -0.411, and -0.5128, respectively).

In terms of the findings based on total waste (see Table 23), almost none of the conventional factors are explaining portfolios' performances in each approach. With regards to the SMB, 2 out of 4 models' results are significant, implying results are mixed depending on chosen models (0.9186** and -1.374**, in KNN and 10/90 estimations). Regarding the robust-minus-weak factor, significant environmentally friendly model results are positively exposed to RMW; however, only one approach is significant (-1.3831** in KNN specification). There are no significant results in terms of the BMG. Judging by Akaike criterion (see

Table 100), the CAPM is the best fit in the 30/70 and the 50/50 specifications whereas the six-factor model in the KNN and the three-factor estimation in the 10/90 model (the BMG: -0.7388, -0.3241, 0.1296, and -0.1518, respectively).

Concerning the findings created on the United States companies and GHG and CO2 emission intensity (see Table 25), most of the conventional factors are explaining portfolios' performances in each approach. In terms of the environmental factor, 2 out of 4 results are significant, enforcing all green portfolios perform better than on the alphas (-0.314* and -0.5312*, in 50/50 and 30/70 estimations, accordingly). With regards to the CAPM factor, 3 out of 4 estimations are significant, evidencing that all green portfolios are riskier (-0.09*, -0.2614** and -0.2927**, in 50/50, KNN and 10/90 estimations, respectively). In terms of the size effect, all models' results are significant, demonstrating that all brown portfolios consist of smaller-cap stocks (0.3228***, 0.313***, 0.2801* and 0.2745***, in KNN, 50/50, 10/90 and 30/70 models, accordingly). Concerning the RMW, 3 out of 4 models' results are significant, demonstrating that all brown portfolios are positively exposed to the profitability factor (0.5878***, 0.479** and 0.3892***, in 30/70, 10/90 and 50/50 estimations, respectively). With regards to the WML factor, 3 out of 4 findings are significant, indicating that all brown portfolios are positively exposed to momentum (0.2538***, 0.1458** and 0.119**, in 10/90, KNN and 30/70 specifications). In relation to Akaike information criterion (see Table 101), the 10/90, the 30/70, and the 50/50 models perform best in the six-factor estimation while the KNN best fit is the four-factor model (the brown-minus-green factor: -0.3729, -0.5312*, -0.314*, and -0.1461, accordingly).

Regarding the outputs inspired by water use intensity (see Table 25), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the market risk, 3 out of 4 results are significant, enforcing all green portfolios have higher beta (-0.2081***, -0.2227*** and -0.2666**, in 30/70, 50/50 and KNN estimations, accordingly). Regarding the SMB factor, 3 out of 4 estimations are significant, indicating that all brown portfolios consist of small stocks (0.3556**, 0.3556*** and 0.203*, in KNN, 30/70 and 50/50 estimations, respectively). Dealing with the profitability factor, all estimations are significant, evidencing that all less environmentally friendly portfolios consist of robust stocks (0.5174*, 0.476**, 0.4324* and 0.377**, in 10/90, 30/70, KNN and 50/50 models). With regards to the CMA factor, significant less environmentally friendly results include firms that invest conservatively; however, only one approach is significant (0.5579* in KNN estimation). Considering the momentum factor, significant environmentally friendly results consist of loser companies; however, only one approach is significant (0.2291** in 10/90 specification). There are no significant results in terms of the environmental factor. According to Akaike information criterion (see Table 101), the 10/90, the 50/50, and the KNN specifications perform best in the eight-factor estimation whereas the 30/70's best fit is the six-factor estimation (the BMG factor: -0.4171, -0.0798, -0.1431, and -0.0529, accordingly). In terms of the outputs formed on waste intensity (see Table 25), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the market factor, 3 out of 4 models' results are significant, indicating that all green portfolios are high-beta stocks (-0.0964**, -0.1804*** and -0.1916*, in 50/50, 30/70 and KNN estimations, accordingly). In terms of the size factor, 3 out of 4 estimations' results are significant, implying all brown portfolios consist of smaller-cap companies (0.3687**, 0.3199*** and 0.1609**, in KNN, 30/70 and 50/50 models, respectively). With regards to the HML, significant green estimations are growth-oriented; however, only one approach is significant (0.4604** in KNN model). Regarding the operating profitability factor, 3 out of 4 models' results are significant, suggesting that all brown portfolios consist of robust stocks (0.5252*, 0.388** and 0.2585**, in 10/90, 30/70 and 50/50 estimations). There are no significant results in terms of the BMG. Adhering to Corrected Akaike criterion (see Table 101), the 10/90, the 30/70, and the 50/50 estimations perform best in the six-factor specification while the KNN best fit is the four-factor model (the BMG factor: -0.5767, -0.1674, -0.131, and -0.2042).

With regards to the outputs created on Japanese companies and GHG pollution (see Table 27), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the market risk, 2 out of 4 models' results are significant, suggesting that all green portfolios have higher beta (-0.2606*** and -0.2701***, in KNN and 10/90 specifications, accordingly). Considering the size factor, 3 out of 4 models' results are significant, showing that all brown portfolios are exposed to smaller-cap companies (0.4174***, 0.4024*** and 0.2867*, in 30/70, 50/50 and 10/90 specifications). Considering the CMA, significant green model results are negatively exposed to the investment factor; however, only one approach is significant (0.5583* in 10/90 estimation). There are no significant results in terms of the BMG factor. Judging by Akaike information criterion (see Table 101), the three-factor specification is the best fit in the 30/70 and the 50/50 specifications while the CAPM in the KNN and the eight-factor specification in the 10/90 estimation (the brown-minus-green factor: -0.3108*, -0.1408, -0.3506, and -0.4898).

With regards to the outputs created on water use intensity (see Table 27), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the SMB, significant brown results consist of small stocks; however, only one approach is significant (0.1936** in 30/70 model). Dealing with the value factor, significant green estimations consist of growth stocks; however, only one approach is significant (0.3066** in 10/90 specification). Concerning the RMW factor, 3 out of 4 estimations are significant, indicating that all brown portfolios consist of robust stocks (0.7066**, 0.5066* and 0.3956**, in KNN, 10/90 and 30/70 specifications, accordingly). Dealing with the momentum, significant brown estimation results include loser stocks; however, only one approach is significant (-0.1671* in 10/90 specification). There are no significant results in terms of the brown-minus-green factor. Judging by Akaike information criterion (see Table 101), the baseline specification is the best fit in the 50/50 and the KNN estimations whereas in the 10/90 and the 30/70 specifications best fit is the six-factor specification (the BMG factor: 0.0196, 0.0217, -0.2257, and -0.1577).

In terms of the outputs established on total waste (see Table 27), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the BMG, significant environmentally friendly estimations outshine on the risk-adjusted terms; however, only one approach is significant (-0.2835* in 30/70 estimation). Concerning the market risk, 2 out of 4 findings are significant, indicating that all green portfolios have higher beta (-0.1568** and -0.2636***, in 10/90 and KNN models). Considering the SMB factor, 2 out of 4 models' results are significant, enforcing all brown portfolios consist of smaller-cap companies (0.3074*** and 0.1801***, in 30/70 and 50/50 estimations, accordingly). Concerning the robust-minus-weak factor, significant environmentally friendly model results are negatively exposed to RMW; however, only one approach is significant (0.5155** in KNN model). Regarding the conservative-minus-aggressive factor, all findings are significant, enforcing all green portfolios include firms that invest aggressively (0.7402***, 0.5184***, 0.4692** and 0.2044*, in KNN, 30/70, 10/90 and 50/50 specifications, accordingly). In relation to Akaike information criterion (see Table 101), each portfolio specification performs best in the six-factor specification (the BMG for the 10/90, the 30/70, the 50/50, and the KNN models: 0.0923, -0.2835*, -0.1527, and -0.2929, respectively).

Regarding the findings inspired by Chinese companies and greenhouse gas intensity (see Table 31), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the SMB factor, significant less environmentally friendly results are exposed to smaller-cap companies; however, only one approach is significant (0.4882* in 30/70 estimation). With regards to the HML, 2 out of 4 estimations are significant, evidencing that all brown portfolios are value-oriented (1.0326* and 0.5988*, in 10/90 and 50/50 estimations, respectively). Regarding the operating profitability factor, 2 out of 4 models' results are significant, showing that all brown portfolios consist of the most profitable firms (1.3662** and 0.7552**, in 10/90 and 50/50 models, accordingly). There are no significant results in terms of the BMG. Adhering to Akaike information criterion (see Table 101), each portfolio estimation performs best in the baseline specification (the BMG factor for the 10/90, the 30/70, the 50/50, and the KNN specifications: 1.449, 0.6394, 0.1705, and -0.0143, accordingly).

With regards to the findings created on water usage intensity (see Table 31), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the environmental factor, significant less environmentally friendly estimation results underperform on the risk-adjusted terms; however, only one approach is significant (-1.0798** in 30/70 model). Dealing with the market risk, 3 out of 4 results are significant, suggesting that all green portfolios have higher beta (-0.2231**, -0.2575** and -0.2849**, in KNN, 30/70 and 50/50 specifications, respectively). Considering the profitability factor, 3 out of 4 estimations are significant, evidencing that all brown portfolios consist of robust stocks (0.8069***, 0.6482** and 0.597**, in 30/70, KNN and 50/50 specifications, accordingly). Dealing with the CMA, significant less environmentally friendly estimation results have negative CMA exposure; however, only one approach is significant (-0.685** in KNN estimation). With regards to the momentum factor, significant environmentally friendly results consist of loser companies; however, only one approach is significant (0.3377* in 10/90 model). Judging by Corrected Akaike information criterion (see Table 101), the 10/90, the 30/70, and the 50/50 models perform best in the CAPM while the KNN best fit is the eight-factor specification (the BMG: 0.9291*, -0.5715, -0.1834, and -0.2717, accordingly).

Dealing with the findings established on waste intensity (see Table 31), several of the conventional factors are explaining portfolios' performances in each approach. Considering the small-firm effect, significant environmentally friendly findings consist of smaller-cap stocks; however, only one approach is significant (-0.807* in 10/90 model). Regarding the high-minus-low factor, 2 out of 4 results are significant, implying all brown portfolios are value-oriented (1.1628*** and 0.649*, in KNN and 30/70 estimations, accordingly). Considering the robust-minus-weak factor, 3 out of 4 estimations are significant, demonstrating that all brown portfolios are positively exposed to RMW (1.3192**, 1.0369** and 0.6283*, in 10/90, KNN and 30/70 models). There are no significant results in terms of the BMG. According to Corrected Akaike criterion (see Table 101), the baseline estimation is the best fit in the 30/70 and the 50/50 models whereas in the 10/90 and the KNN models best fit is the three-factor estimation (the brown-minus-green factor: 0.4587, 0.0846, 0.2687, and -0.1899, respectively).

Concerning the findings inspired by companies from Taiwan and greenhouse gas emissions (see Table 33), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the brown-minus-green factor, significant green results underperform on the alphas; however, only one approach is significant (0.6021** in 50/50 estimation). Considering the CAPM factor, 2 out of 4 findings are significant, evidencing all brown portfolios are riskier (0.117* and 0.0954*, in 30/70 and 50/50 estimations, accordingly). Considering the value effect, significant environmentally friendly findings consist of companies with high book-to-market ratios; however, only one approach is significant (-0.3075* in 30/70 specification). Concerning the conservative-minus-aggressive factor, all estimations are significant, showing that all green portfolios include firms that invest aggressively (0.6833*, 0.6225*, 0.5799*** and 0.3969**, in 10/90, KNN, 30/70 and 50/50 estimations, respectively). According to Akaike information criterion corrected for small sample size (see Table 101), each portfolio specification performs best in the baseline model (the BMG factor for the 10/90, the 30/70, the 50/50, and the KNN specifications: -0.0695, 0.496, 0.6814**, and 0.5432, accordingly).

Regarding the outputs formed on water intensity per sales (see Table 33), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the market risk, 3 out of 4 findings are significant, showing that all brown portfolios are higher beta (0.1466*, 0.1357** and 0.1296**, in

10/90, 50/50 and 30/70 models). In terms of the momentum factor, significant environmentally friendly results consist of loser companies; however, only one approach is significant (0.4215* in KNN specification). There are no significant results in terms of the environmental factor. In accordance with Akaike information criterion corrected for small sample size (see Table 101), the baseline estimation is the best fit in the 30/70 and the KNN models whereas in the 10/90 and the 50/50 models best fit is the CAPM (the environmental factor: 0.6086, 0.0877, -0.5164, and 0.5571*).

With regards to the outputs established on waste intensity (see Table 33), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the brown-minus-green factor, significant brown estimations perform better than on the risk-adjusted terms; however, only one approach is significant (0.6842** in 50/50 estimation). Dealing with the operating profitability factor, significant less environmentally friendly results consist of weak stocks; however, only one approach is significant (-0.4028* in 30/70 model). In terms of the CMA factor, all results are significant, illuminating all environmentally friendly portfolios have negative CMA exposure (0.7576*, 0.6729***, 0.6011* and 0.428**, in 10/90, 30/70, KNN and 50/50 models, accordingly). According to Akaike information criterion (see Table 101), each portfolio specification performs best in the baseline estimation (the environmental factor for the 10/90, the 30/70, the 50/50, and the KNN estimations: -0.7512*, 0.0068, 0.6588**, and -0.3831).

In terms of the outputs inspired by Canadian companies and GHG pollution (see Table 35), several of the conventional factors are explaining portfolios' performances in each approach. Considering the size premium, 3 out of 4 results are significant, suggesting that all brown portfolios are positively exposed to the size effect (0.7358**, 0.4478** and 0.3619**, in 10/90, 30/70 and 50/50 estimations, respectively). With regards to the value factor, significant less environmentally friendly estimation results consist of companies with high book-to-market ratios; however, only one approach is significant (0.4326* in 30/70 specification). Considering the profitability factor, significant environmentally friendly results consist of weak stocks; however, only one approach is significant (0.953* in 10/90 model). Considering the momentum, significant less environmentally friendly results include winner stocks; however, only one approach is significant (0.3655** in 30/70 specification). There are no significant results in terms of the brown-minus-green factor. Judging by Akaike information criterion (see Table 102), the six-factor model is the best fit in the 10/90 and the 30/70 estimations whereas the CAPM in the KNN and the eight-factor specification in the 50/50 specification (the BMG factor: -0.4572, -0.5323, 0.0265, and -0.5206, accordingly).

In terms of the outputs inspired by water usage (see Table 35), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG, 3 out of 4 models' results are significant, demonstrating that all green portfolios beat on the risk-adjusted terms (-0.769*, -0.9369* and -1.166**, in 50/50, 30/70 and 10/90 models). Regarding the SMB factor, all models' results are significant, demonstrating that all environmentally friendly portfolios consist of large caps (0.6534**, 0.6433***, 0.596** and 0.5649*, in 30/70, 10/90, 50/50 and KNN specifications, respectively). Dealing with the HML, significant environmentally friendly findings consist of companies with high book-to-market ratios; however, only one approach is significant (-0.7034* in KNN specification). Dealing with the profitability anomaly, significant environmentally friendly estimation results are negatively exposed to RMW; however, only one approach is significant (0.7074** in 10/90 model). Judging by Akaike information criterion corrected for small sample size (see Table 102), the eight-factor model is the best fit in the 30/70 and the KNN models whereas in the 10/90 and the 50/50 estimations best fit is the baseline estimation (the BMG factor: -0.9347*, -0.9377, -0.9783*, and -0.9065**, respectively).

With regards to the findings created on waste efficiency (see Table 35), almost none of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG, significant brown findings lag behind on the risk-adjusted terms; however, only one approach is significant (-0.755** in 50/50 estimation). Regarding the size premium, significant green model results consist of smaller-cap stocks; however, only one approach is significant (0.3668* in 50/50 specification). According to Akaike information criterion (see Table 102), best fir models for the 10/90, the 30/70, the 50/50, and the KNN models are the eight-factor estimation, the baseline estimation, the four-factor specification, and the CAPM, accordingly (the BMG: -0.3906, -0.7597, -0.7416*, and -0.7075).

Considering the findings formed Hong Kong companies and air pollution intensity (see Table 37), most of the conventional factors are explaining portfolios' performances in each approach. In terms of the brown-minus-green factor, significant environmentally friendly estimation results outshine on the alphas; however, only one approach is significant (-1.2073** in KNN estimation). Considering the market factor, all estimations' results are significant, suggesting that all brown portfolios are less risky (-0.2925**, -0.2989***, -0.313* and -0.3134***, in 30/70, 50/50, 10/90 and KNN specifications, respectively). In terms of the profitability factor, 3 out of 4 results are significant, evidencing that all brown portfolios consist of robust stocks (0.9103**, 0.8067** and 0.6061**, in KNN, 10/90 and 30/70 specifications, accordingly). Regarding the investment factor, 3 out of 4 estimations are significant, enforcing all brown portfolios have positive CMA exposure (0.6214**, 0.5126** and 0.4924**, in 10/90, 50/50 and 30/70 specifications, accordingly). In terms of the WML factor, 3 out of 4 estimations' results are significant, suggesting all brown portfolios include winner stocks (0.512***, 0.2837** and 0.2547**, in KNN, 30/70 and 50/50 estimations, accordingly). Judging by Corrected Akaike information criterion (see Table 102), the 30/70, the 50/50, and the KNN models perform best in the six-factor estimation while the 10/90's best fit is the eight-factor model (the environmental factor: -0.617, -0.6095, -1.2073**, and -0.1455, accordingly).

In terms of the results established on water usage intensity (see Table 37), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the brown-minus-green factor, significant environmentally friendly findings outshine on the alphas; however, only one approach is significant (-0.5774* in 30/70 specification). Regarding the market factor, 2 out of 4 estimations are significant, evidencing that all green portfolios are riskier (-0.2507*** and -0.3585**, in 30/70 and 10/90 estimations, accordingly). Considering the SMB factor, 3 out of 4 models' results are significant, suggesting that all brown portfolios consist of small caps (0.9285***, 0.3967*** and 0.1951*, in KNN, 30/70 and 50/50 estimations, respectively). Regarding the profitability anomaly, 3 out of 4 results are significant, enforcing all brown portfolios are positively exposed to the profitability factor (0.8325**, 0.4381*** and 0.3771**, in KNN, 30/70 and 50/50 estimations). In terms of the CMA, 3 out of 4 findings are significant, suggesting that all brown portfolios have positive

CMA exposure (0.713*, 0.5457** and 0.3148*, in KNN, 30/70 and 50/50 specifications). Regarding the WML factor, significant brown estimations are positively exposed to momentum; however, only one approach is significant (0.2825** in 30/70 model). In accordance with Akaike criterion (see Table 102), the 30/70, the 50/50, and the KNN specifications perform best in the six-factor specification while the 10/90's best fit is the CAPM (the BMG factor: -0.5774*, 0.0663, -0.5423, and -0.0215, accordingly).

Regarding the findings established on waste efficiency (see Table 37), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the CAPM factor, 2 out of 4 findings are significant, indicating that all brown portfolios are high-beta stocks (0.203** and 0.1797**, in 30/70 and 50/50 models, accordingly). Dealing with the CMA, significant brown estimations have negative CMA exposure; however, only one approach is significant (-0.4589* in 50/50 model). There are no significant results in terms of the BMG. According to Akaike information criterion corrected for small sample size (see Table 102), the CAPM is the best fit in the 30/70 and the 50/50 estimations whereas in the 10/90 and the KNN estimations best fit is the baseline specification (the BMG: -0.3501, -0.4166, -0.0944, and -0.0875).

With regards to the results inspired French companies and greenhouse gas intensity (see Table 41), most of the conventional factors are explaining portfolios' performances in each approach. Concerning the BMG, all results are significant, demonstrating that all green portfolios outpace on the alphas (-0.604***, -0.9598**, -1.111*** and -1.2978***, in 50/50, KNN, 30/70 and 10/90 specifications, respectively). Regarding the market factor, all estimations' results are significant, illuminating all environmentally friendly portfolios are riskier (-

0.1505***, -0.1743**, -0.2867*** and -0.3063***, in 50/50, 30/70, KNN and 10/90 estimations). Concerning the small-minus-big factor, 2 out of 4 estimations are significant, suggesting that all brown portfolios consist of smaller-cap companies (0.5902** and 0.3181*, in 10/90 and 30/70 estimations, accordingly). With regards to the profitability factor, all estimations are significant, implying all brown portfolios are positively exposed to the profitability factor (1.6295***, 1.5368***, 0.8621*** and 0.7973***, in 10/90, KNN, 30/70 and 50/50 estimations, respectively). With regards to the conservative-minus-aggressive factor, all models' results are significant, evidencing that all less environmentally friendly portfolios include firms that invest conservatively (1.1127**, 1.0971***, 0.9422*** and 0.7503***, in 10/90, 30/70, KNN and 50/50 estimations, accordingly). With regards to the WML, significant green estimation results are negatively exposed to momentum; however, only one approach is significant (0.2283* in 10/90 estimation). According to Akaike information criterion corrected for small sample size (see Table 102), each portfolio model performs best in the six-factor estimation (the brown-minus-green factor for the 10/90, the 30/70, the 50/50, and the KNN estimations: -1.2978***, -1.111***, -0.604***, and -0.9598**, accordingly).

Concerning the outputs formed on water use intensity (see Table 41), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the environmental factor, all models' results are significant, suggesting all less environmentally friendly portfolios show lower returns than on the risk-adjusted terms (-0.7797***, -1.1054***, -1.1468*** and -2.0394***, in 50/50, KNN, 30/70 and 10/90 models). With regards to the CAPM factor, significant environmentally friendly results are higher beta; however, only one approach is significant (-0.0969** in 50/50 model). Dealing with the small-firm effect, significant brown estimation results are exposed to larger-cap companies; however, only one approach is significant (-0.5043* in 10/90 model). In terms of the value effect, significant environmentally friendly estimation results consist of growth stocks; however, only one approach is significant (0.7484** in 10/90 model). In terms of the profitability anomaly, all models' results are significant, enforcing all less environmentally friendly portfolios are positively exposed to RMW (2.1809***, 1.4977***, 1.1672*** and 0.8291***, in 10/90, KNN, 30/70 and 50/50 models). Considering the momentum factor, significant less environmentally friendly findings include winner stocks; however, only one approach is significant (0.4503*** in 10/90 model). Adhering to Corrected Akaike criterion (see Table 102), each portfolio specification performs best in the six-factor estimation (the BMG factor for the 10/90, the 30/70, the 50/50, and the KNN models: -2.0394***, -1.1468***, -0.7797***, and -1.1054***, accordingly).

Dealing with the findings inspired by waste intensity (see Table 41), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the BMG factor, 3 out of 4 estimations are significant, illuminating all green portfolios beat on the alphas (-0.4559**, -0.8534*** and -0.9613*, in 50/50, 30/70 and 10/90 models). Regarding the market factor, significant less environmentally friendly results are higher-beta; however, only one approach is significant (0.1575** in 30/70 estimation). Regarding the profitability anomaly, significant less environmentally friendly estimation results consist of the most profitable firms; however, only one approach is significant (0.5117* in 30/70 estimation). Considering the momentum, significant less environmentally friendly model results include loser stocks; however, only one approach is significant (-

0.246* in KNN estimation). According to Akaike information criterion (see Table 102), the baseline specification is the best fit in the 50/50 and the KNN specifications while the four-factor estimation in the 10/90 and the CAPM in the 30/70 specification (the BMG factor: -0.3852**, -0.2721, -0.838, and -0.6829***). Regarding the findings based South Korean stocks and greenhouse gas intensity (see Table 43), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the brown-minus-green factor, significant less environmentally friendly findings outshine on the risk-adjusted terms; however, only one approach is significant (0.7444* in 50/50 specification). Considering the market factor, significant environmentally friendly findings have lower beta; however, only one approach is significant (0.1632** in 30/70 model). Concerning the SMB factor, significant green estimations consist of smaller-cap stocks; however, only one approach is significant (-0.2606* in 30/70 model). Considering the investment factor, significant brown model results consist of conservative stocks; however, only one approach is significant (0.5131* in KNN specification). In relation to Corrected Akaike information criterion (see Table 102), the 10/90, the 50/50, and the KNN specifications perform best in the baseline model while the 30/70's best fit is the CAPM (the BMG: 0.0714, 0.9674***, 0.4424, and 0.4502, accordingly).

Regarding the findings based on water usage (see Table 43), almost none of the conventional factors are explaining portfolios' performances in each approach. In terms of the small-minus-big factor, significant brown estimation results consist of smaller-cap companies; however, only one approach is significant (-0.4084** in 50/50 model). With regards to the momentum, 2 out of 4 estimations' results are significant, evidencing all brown portfolios include winner stocks (0.4123* and

0.3084*, in 10/90 and 30/70 estimations). There are no significant results in terms of the BMG factor. Judging by Akaike information criterion corrected for small sample size (see Table 102), each portfolio model performs best in the baseline estimation (the brown-minus-green factor for the 10/90, the 30/70, the 50/50, and the KNN estimations: -0.166, 0.7415, 0.8695**, and 0.7329, respectively).

Considering the outputs based on waste intensity per sales (see Table 43), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the market factor, significant brown results are high-beta stocks; however, only one approach is significant (0.1473* in 10/90 model). With regards to the RMW factor, significant green results consist of the least profitable firms; however, only one approach is significant (1.0902** in KNN specification). In terms of the investment factor, significant brown model results consist of aggressive stocks; however, only one approach is significant (-1.1789* in KNN model). There are no significant results in terms of the BMG. In relation to Akaike information criterion (see Table 102), the baseline estimation is the best fit in the 50/50 and the KNN estimations while in the 10/90 and the 30/70 specifications best fit is the CAPM (the brown-minus-green factor: 0.1679, -0.4079, -0.1214, and -0.0286).

In terms of the results established on German companies and GHG and CO2 emission intensity (see Table 45), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the BMG factor, all estimations are significant, indicating that all brown portfolios fall behind on the alphas (-0.4523*, -0.6323**, -0.9631** and -1.438**, in 50/50, 30/70, KNN and 10/90 models, respectively). Concerning the RMW factor, 3 out of 4 estimations are significant, implying all brown portfolios consist of the most profitable firms

(1.2745***, 0.8208*** and 0.6565***, in KNN, 30/70 and 50/50 specifications, accordingly). Dealing with the conservative-minus-aggressive factor, significant less environmentally friendly results have positive CMA exposure; however, only one approach is significant (0.771* in KNN specification). With regards to the WML factor, significant environmentally friendly model results include loser stocks; however, only one approach is significant (0.262** in 30/70 estimation). According to Akaike criterion (see Table 103), the six-factor estimation is the best fit in the 50/50 and the KNN specifications whereas in the 10/90 and the 30/70 estimations best fit is the eight-factor model (the BMG: -0.4523*, -0.9631**, -1.3399**, and -0.5886**).

In terms of the results formed on water usage intensity (see Table 45), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the high-minus-low factor, significant environmentally friendly estimation results are value-oriented; however, only one approach is significant (-0.7304* in 10/90 model). Considering the RMW, 3 out of 4 results are significant, illuminating all brown portfolios consist of the most profitable firms (1.1136***, 1.0784*** and 0.7257***, in 30/70, KNN and 50/50 estimations). With regards to the conservative-minus-aggressive factor, 2 out of 4 results are significant, implying all brown portfolios have positive CMA exposure (1.7911** and 0.406**, in 10/90 and 50/50 models). Considering the momentum, all estimations' results are significant, implying all environmentally friendly portfolios are negatively exposed to momentum (0.3154*, 0.2862**, 0.2495* and 0.1732*, in 10/90, 30/70, KNN and 50/50 estimations, accordingly). There are no significant results in terms of the BMG factor. In relation to Corrected Akaike information criterion (see Table 103), the 30/70, the 50/50, and the KNN estimations perform best in the eight-factor estimation whereas the 10/90's best fit is the six-factor specification (the environmental factor: -0.4076, -0.2822, -0.3159, and -0.369).

Considering the findings inspired by waste intensity per sales (see Table 45), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the brown-minus-green factor, 2 out of 4 findings are significant, evidencing all green portfolios exceed on the alphas (-1.0115** and -1.2127***, in KNN and 10/90 estimations). Dealing with the market factor, significant less environmentally friendly model results are higher-beta; however, only one approach is significant (0.2162** in KNN specification). Regarding the SMB factor, significant green model results consist of large stocks; however, only one approach is significant (0.5162** in 10/90 estimation). In terms of the HML, 2 out of 4 findings are significant, showing that all brown portfolios consist of value stocks (0.7377** and 0.6218*, in 50/50 and 30/70 specifications). Concerning the operating profitability factor, 3 out of 4 findings are significant, suggesting all brown portfolios are positively exposed to the profitability factor (0.9045**, 0.827** and 0.6553*, in 30/70, 50/50 and 10/90 estimations). Concerning the investment factor, significant green estimation results include firms that invest conservatively; however, only one approach is significant (-0.8471** in KNN estimation). With regards to the momentum factor, 3 out of 4 estimations are significant, indicating that all brown portfolios have higher WML exposure (0.461***, 0.3318** and 0.2202**, in KNN, 30/70 and 50/50 specifications, respectively). In relation to Akaike information criterion (see Table 103), the eight-factor model is the best fit in the 30/70 and the 50/50 estimations while the six-factor estimation in the KNN and the four-factor estimation in the 10/90 model (the BMG: -0.5573, -0.4104, -1.0115**, and -0.9974**).

Dealing with the findings formed India stocks and air pollution intensity (see Table 47), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the environmental factor, significant brown estimations underperform on the risk-adjusted terms; however, only one approach is significant (-0.9503** in 50/50 model). Regarding the market risk, all estimations are significant, showing that most less environmentally friendly portfolios are high-beta stocks (0.6901***, 0.5814***, 0.2343*** and -0.2393*, in KNN, 30/70, 50/50 and 10/90 specifications, accordingly). Dealing with the SMB factor, 2 out of 4 estimations' results are significant, evidencing that all brown portfolios are exposed to smaller-cap companies (0.3787** and 0.3312*, in 50/50 and 30/70 models, accordingly). Judging by Akaike information criterion (see Table 103), each portfolio estimation performs best in the CAPM (the BMG factor for the 10/90, the 30/70, the 50/50, and the KNN specifications: -0.2757, -0.6522, -0.7744**, and -0.8283, respectively).

In terms of the findings created on water use intensity (see Table 47), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the brown-minus-green factor, significant brown estimation results fall behind on the alphas; however, only one approach is significant (-0.8866* in 30/70 specification). Dealing with the market risk, all results are significant, evidencing that all green portfolios are lower-beta (0.7052***, 0.6064***, 0.5963*** and 0.2186**, in 10/90, 30/70, KNN and 50/50 estimations, accordingly). Regarding the value effect, significant less environmentally friendly estimations consist of value stocks; however, only one approach is significant (1.1087** in KNN estimation). With regards to the RMW factor, significant environmentally friendly findings consist of the least profitable firms; however, only one approach is significant (0.8739* in KNN model). Judging by Akaike criterion (see Table 103), each portfolio specification performs best in the CAPM (the BMG factor for the 10/90, the 30/70, the 50/50, and the KNN estimations: -0.457, -0.6493, -0.1848, and -0.752).

Concerning the outputs created on waste efficiency (see Table 47), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the market beta, 2 out of 4 results are significant, evidencing all brown portfolios have higher beta (0.5307*** and 0.2036**, in 10/90 and 30/70 models, respectively). Regarding the SMB factor, significant less environmentally friendly findings consist of smaller-cap stocks; however, only one approach is significant (0.8223** in 10/90 estimation). Considering the operating profitability factor, significant less environmentally friendly estimation results consist of the most profitable firms; however, only one approach is significant (0.5836* in 50/50 specification). There are no significant results in terms of the environmental factor. According to Akaike information criterion (see Table 103), the baseline estimation is the best fit in the 50/50 and the KNN estimations while in the 10/90 and the 30/70 estimations best fit is the CAPM (the environmental factor: -0.2949, 0.1649, -0.1002, and -0.2031, respectively).

With regards to the findings formed on Brazilian stocks and GHG and CO2 emission intensity (see Table 51), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG factor, significant less environmentally friendly results outperform on the risk-adjusted terms; however, only one approach is significant (1.0444* in 10/90 model). Considering the size effect, 2 out of 4 results are significant, illuminating all brown portfolios are positively exposed to the size effect (0.565* and 0.4103*, in 10/90 and 50/50 specifications, accordingly). With regards to the high-minus-low factor, all findings are significant, showing that all green portfolios consist of growth stocks (1.1537**, 0.9519**, 0.9333* and 0.9101**, in 10/90, KNN, 30/70 and 50/50 models). Considering the conservative-minus-aggressive factor, significant less environmentally friendly model results consist of aggressive stocks; however, only one approach is significant (-1.0357** in 10/90 specification). Concerning the WML factor, significant green results have higher WML exposure; however, only one approach is significant (-0.4733** in 10/90 specification). According to Corrected Akaike information criterion (see Table 103), the 30/70, the 50/50, and the KNN specifications perform best in the three-factor estimation whereas the 10/90's best fit is the six-factor estimation (the environmental factor: -0.0834, 0.2076, -0.1231, and 1.0444*).

Concerning the results inspired by water usage (see Table 51), several of the conventional factors are explaining portfolios' performances in each approach. Considering the SMB, 3 out of 4 estimations are significant, enforcing all brown portfolios consist of smaller-cap companies (0.861***, 0.7182** and 0.427*, in KNN, 30/70 and 50/50 estimations, respectively). Concerning the CMA factor, significant environmentally friendly estimation results consist of conservative stocks; however, only one approach is significant (-0.8075* in 30/70 estimation). There are no significant results in terms of the brown-minus-green factor. According to Akaike information criterion corrected for small sample size (see Table 103), the 10/90, the 30/70, and the 50/50 models perform best in the baseline model while the KNN best fit is the eight-factor specification (the environmental factor: 0.1801, -0.2292, -0.069, and -0.2999, accordingly).

Dealing with the results inspired by waste intensity (see Table 51), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the small-minus-big factor, 3 out of 4 estimations' results are significant, showing that all brown portfolios consist of smaller-cap companies (1.1729***, 0.7389** and 0.6284*, in KNN, 30/70 and 50/50 estimations, respectively). Regarding the RMW factor, 2 out of 4 models' results are significant, showing that all brown portfolios are positively exposed to the profitability factor (1.2674*** and 1.0807***, in KNN and 50/50 models). Concerning the CMA, 2 out of 4 estimations are significant, demonstrating that all green portfolios are positively exposed to the investment factor (-0.8314** and -1.1597**, in 50/50 and KNN models). There are no significant results in terms of the BMG. According to Akaike information criterion (see Table 103), the six-factor specification is the best fit in the 50/50 and the KNN estimations while the baseline specification in the 10/90 and the three-factor estimation in the 30/70 estimation (the brown-minus-green factor: -0.4394, -0.3342, 0.6094, and -0.3747, respectively).

With regards to the findings inspired by companies from Sweden and greenhouse gas emissions (see Table 53), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the HML, 2 out of 4 results are significant, demonstrating that all brown portfolios consist of companies with high book-to-market ratios (0.9463* and 0.7426**, in KNN and 50/50 models). Dealing with the robust-minus-weak factor, 2 out of 4 estimations' results are significant, implying all brown portfolios are positively exposed to the profitability factor (1.069*** and 0.8016*, in 50/50 and 30/70 estimations). Regarding the investment factor, 3 out of 4 results are significant, illuminating all green portfolios include firms that invest conservatively (-0.9764**, -1.0121* and -1.6466**, in

50/50, 30/70 and KNN specifications, respectively). There are no significant results in terms of the brown-minus-green factor. In accordance with Corrected Akaike information criterion (see Table 103), the eight-factor model is the best fit in the 30/70 and the 50/50 models whereas in the 10/90 and the KNN specifications best fit is the baseline specification (the environmental factor: 0.062, 0.1509, 0.8743, and 0.7575, respectively).

In terms of the findings inspired by water usage intensity (see Table 53), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the brown-minus-green factor, significant less environmentally friendly estimations exceed on the risk-adjusted terms; however, only one approach is significant (0.5826** in 50/50 estimation). With regards to the market factor, significant brown estimation results have higher beta; however, only one approach is significant (0.5048** in 10/90 specification). Dealing with the size factor, 3 out of 4 results are significant, implying all green portfolios consist of smaller-cap stocks (-0.8365**, -1.2215*** and -1.275**, in 30/70, KNN and 10/90 estimations, accordingly). Dealing with the RMW, significant brown estimations consist of the least profitable firms; however, only one approach is significant (-1.0548** in 30/70 model). In accordance with Corrected Akaike information criterion (see Table 103), the three-factor estimation is the best fit in the 10/90 and the KNN estimations while the six-factor estimation in the 30/70 and the baseline specification in the 50/50 model (the brown-minus-green factor: 0.3903, 0.1543, 0.3969, and 0.4057*, accordingly).

Considering the findings inspired by waste intensity (see Table 53), almost none of the conventional factors are explaining portfolios' performances in each approach. Concerning the small-firm effect, significant green estimations consist of small-caps; however, only one approach is significant (-1.0054** in 10/90 model). With regards to the RMW, 2 out of 4 estimations' results are significant, evidencing all brown portfolios consist of the most profitable firms (0.7262** and 0.6395**, in 30/70 and 50/50 estimations, accordingly). There are no significant results in terms of the environmental factor. According to Akaike information criterion corrected for small sample size (see Table 103), best fir models for the 10/90, the 30/70, the 50/50, and the KNN estimations are the three-factor estimation, the CAPM, the six-factor specification, and the baseline specification (the environmental factor: -0.0757, -0.0814, -0.1288, and -0.1226, accordingly).

Considering the outputs formed on Switzerland's stocks and air pollution intensity (see Table 55), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the high-minus-low factor, 3 out of 4 findings are significant, indicating that all green portfolios consist of value stocks (-0.7082**, -0.9619*** and -1.0053***, in KNN, 30/70 and 50/50 estimations, accordingly). Concerning the profitability factor, significant green findings consist of the least profitable firms; however, only one approach is significant (0.7952* in KNN model). With regards to the investment factor, 2 out of 4 estimations are significant, enforcing all brown portfolios are positively exposed to the investment factor (1.1419*** and 1.057**, in 50/50 and 30/70 specifications). There are no significant results in terms of the BMG. According to Akaike criterion (see Table 104), the eight-factor estimation is the best fit in the 30/70 and the KNN specifications while the baseline specification in the 10/90 and the six-factor estimation in the 50/50 specification (the BMG: -0.1486, 0.1168, 0.6527, and 0.1238, accordingly).

In terms of the findings established on water intensity per sales (see Table 55), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the market beta, significant environmentally friendly results are riskier; however, only one approach is significant (-0.2215** in KNN specification). In terms of the size factor, significant green findings consist of smaller-cap stocks; however, only one approach is significant (1.3583* in 10/90 specification). Considering the HML, 2 out of 4 estimations' results are significant, enforcing all green portfolios are positively exposed to the value effect (-0.794*** and -1.0636***, in 50/50 and 30/70 estimations). In terms of the RMW, significant brown findings are positively exposed to RMW; however, only one approach is significant (0.7779* in KNN specification). In terms of the CMA, 3 out of 4 findings are significant, evidencing that all brown portfolios include firms that invest conservatively (1.0965***, 0.9555*** and 0.9136**, in 30/70, 50/50 and KNN models, respectively). Concerning the WML, significant environmentally friendly model results consist of loser companies; however, only one approach is significant (0.4347** in 30/70 specification). There are no significant results in terms of the BMG. Judging by Akaike criterion (see Table 104), the 30/70, the 50/50, and the KNN estimations perform best in the six-factor specification whereas the 10/90's best fit is the four-factor specification (the BMG factor: -0.2856, -0.274, -0.1482, and -1.1473, accordingly).

In terms of the outputs inspired by waste intensity (see Table 55), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the BMG factor, significant green estimations outperform on the risk-adjusted terms; however, only one approach is significant (-0.7848** in KNN estimation). Concerning the market factor, 2 out of 4 results are significant, illuminating all brown portfolios are high-beta stocks (0.2525* and 0.1283**, in 10/90 and 50/50 estimations, accordingly). Regarding the small-firm effect, 3 out of 4 results are significant, enforcing all brown portfolios are exposed to smaller-cap companies (1.2751***, 0.5241*** and 0.5057***, in 10/90, 50/50 and 30/70 estimations, accordingly). Regarding the value effect, significant brown model results are growth-oriented; however, only one approach is significant (-0.6615** in KNN estimation). Concerning the RMW factor, significant environmentally friendly estimations are negatively exposed to RMW; however, only one approach is significant (0.9833*** in 30/70 model). Considering the investment factor, significant less environmentally friendly findings have positive CMA exposure; however, only one approach is significant (0.8382** in 30/70 specification). With regards to the momentum, 2 out of 4 estimations' results are significant, evidencing that all brown portfolios consist of winner companies (0.3694* and 0.1785*, in 30/70 and 50/50 specifications). According to Corrected Akaike criterion (see Table 104), the six-factor estimation is the best fit in the 30/70 and the 50/50 models whereas the four-factor estimation in the KNN and the three-factor specification in the 10/90 specification (the BMG factor: -0.4303, -0.1161, -0.6469*, and -0.5054).

Regarding the findings inspired by companies from Singapore and air pollution intensity (see Table 61), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the market beta, significant brown results have higher beta; however, only one approach is significant (0.5335*** in 10/90 model). With regards to the small-minus-big factor, significant green estimations are exposed to larger-cap companies; however, only one approach is significant (0.6781** in 10/90 model). Regarding the conservative-minus-aggressive factor, significant green estimation results have positive CMA exposure; however, only one approach is significant (-0.6754* in 30/70 estimation). With regards to the WML factor, significant green estimation results consist of winner companies; however, only one approach is significant (-0.4897* in 10/90 model). There are no significant results in terms of the BMG factor. Adhering to Akaike information criterion corrected for small sample size (see Table 104), the baseline estimation is the best fit in the 30/70 and the KNN specifications while the four-factor model in the 10/90 and the three-factor specification in the 50/50 specification (the BMG: 0.037, 0.4147, -0.5818, and 0.3417, respectively).

Concerning the results formed on water intensity per sales (see Table 61), almost none of the conventional factors are explaining portfolios' performances in each approach. Concerning the market risk, significant brown model results are less risky; however, only one approach is significant (-0.1326* in 50/50 estimation). With regards to the HML factor, significant environmentally friendly results consist of companies with high book-to-market ratios; however, only one approach is significant (-1.5757*** in KNN estimation). There are no significant results in terms of the BMG. According to Akaike information criterion corrected for small sample size (see Table 104), the 30/70, the 50/50, and the KNN estimations perform best in the three-factor estimation whereas the 10/90's best fit is the baseline estimation (the BMG: 0.3465, 0.3465, -0.2409, and 0.0727, accordingly).

Regarding the findings formed on total waste (see Table 61), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the environmental factor, significant green model results exceed on the risk-adjusted terms; however, only one approach is significant (-0.9776* in

30/70 estimation). In terms of the CAPM factor, significant brown results have lower beta; however, only one approach is significant (-0.279* in KNN estimation). In relation to Akaike information criterion (see Table 104), the 10/90, the 30/70, and the 50/50 specifications perform best in the baseline model whereas the KNN best fit is the CAPM (the environmental factor: 0.0814, -0.454, -0.1636, and 0.8019, respectively).

In terms of the outputs inspired by Norwegian stocks and greenhouse gas intensity (see Table 65), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG, significant less environmentally friendly findings exceed on the alphas; however, only one approach is significant (1.4927* in KNN estimation). In terms of the small-firm effect, significant green estimation results consist of small-caps; however, only one approach is significant (-0.933* in KNN model). Considering the value factor, significant brown estimation results consist of growth stocks; however, only one approach is significant (-1.0713* in KNN model). In terms of the CMA, 2 out of 4 findings are significant, demonstrating that all brown portfolios have positive CMA exposure (1.0545*** and 0.8788*, in 50/50 and 30/70 estimations, accordingly). In terms of the momentum, significant brown model results include loser stocks; however, only one approach is significant (-0.8323** in KNN model). Judging by Akaike information criterion corrected for small sample size (see Table 105), the baseline model is the best fit in the 10/90 and the 30/70 specifications whereas the four-factor model in the KNN and the three-factor model in the 50/50 estimation (the BMG: -0.9225*, -0.3477, 1.0659, and 0.0606, accordingly).

Regarding the findings created on water usage intensity (see Table 65), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the brown-minus-green factor, significant green results are inferior to on the alphas; however, only one approach is significant (7.3886** in KNN model). Concerning the market factor, 2 out of 4 estimations' results are significant, demonstrating that results are mixed depending on chosen models (0.8409** and -1.5091**, in 50/50 and KNN models, accordingly). Adhering to Akaike criterion (see Table 105), the CAPM is the best fit in the 50/50 and the KNN models whereas in the 10/90 and the 30/70 specifications best fit is the baseline estimation (the BMG: -1.6804*, 6.2094**, 0.5083, and 1.0508, respectively).

With regards to the results established on waste efficiency (see Table 65), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG, significant less environmentally friendly results outpace on the alphas; however, only one approach is significant (1.0547* in 50/50 specification). With regards to the market factor, significant green model results are riskier; however, only one approach is significant (-0.3674** in 10/90 model). In terms of the size factor, significant green results are negatively exposed to the size effect; however, only one approach is significant (0.8743*** in 50/50 estimation). Regarding the value effect, significant brown results consist of companies with lower book-to-market values; however, only one approach is significant (-1.8831** in KNN estimation). Dealing with the profitability anomaly, significant brown estimations are negatively exposed to RMW; however, only one approach is significant (-1.5029* in KNN specification). With regards to the conservative-minus-aggressive factor, significant green findings are negatively exposed to the investment factor; however, only one approach is significant (0.8978** in 50/50 specification). Adhering to Akaike criterion (see Table 105), the three-factor specification is the best fit in the 50/50 and the KNN models whereas in the 10/90 and the 30/70 estimations best fit is the baseline specification (the BMG factor: 0.8562, -0.7126, -0.5441, and -0.1597, accordingly).

Dealing with the findings based on Netherland's stocks and air pollution intensity (see Table 69), several of the conventional factors are explaining portfolios' performances in each approach. Considering the CAPM factor, 3 out of 4 estimations' results are significant, evidencing that all green portfolios are higher-beta (-0.3209***, -0.3727*** and -0.4638**, in 30/70, 50/50 and KNN models, accordingly). Regarding the value factor, significant brown model results consist of companies with lower book-to-market values; however, only one approach is significant (-1.61** in 10/90 estimation). Regarding the RMW factor, 2 out of 4 estimations' results are significant, evidencing that all brown portfolios consist of robust stocks (1.3615*** and 1.1737**, in 50/50 and 30/70 specifications). In terms of the CMA, significant environmentally friendly estimations have negative CMA exposure; however, only one approach is significant (2.0354** in 10/90 model). There are no significant results in terms of the brown-minus-green factor. Adhering to Akaike information criterion (see Table 105), the three-factor specification is the best fit in the 10/90 and the 30/70 models while the CAPM in the KNN and the six-factor estimation in the 50/50 specification (the environmental factor: -0.333, 0.7459, 0.8904, and 0.1412, respectively).

With regards to the findings created on water usage intensity (see Table 69), several of the conventional factors are explaining portfolios' performances in each approach. Considering the value factor, 2 out of 4 results are significant, illuminating all green portfolios are value-oriented (-1.1991*** and -2.4221***, in 30/70 and KNN models). Regarding the profitability anomaly, 2 out of 4 estimations are significant, enforcing results are mixed depending on chosen estimations (1.0746*** and -2.1241***, in 50/50 and KNN specifications, respectively). Dealing with the investment factor, 2 out of 4 findings are significant, showing that all brown portfolios include firms that invest conservatively (1.2825** and 1.0901*, in 30/70 and 50/50 models). Concerning the momentum factor, significant brown findings consist of winner companies; however, only one approach is significant (0.676** in 10/90 specification). There are no significant results in terms of the BMG. In accordance with Corrected Akaike information criterion (see Table 105), the six-factor model is the best fit in the 30/70 and the 50/50 estimations whereas the three-factor model in the KNN and the four-factor estimation in the 10/90 estimation (the BMG: 0.5216, -0.4639, 0.5948, and 0.9597).

In terms of the findings established on waste intensity per sales (see Table 69), several of the conventional factors are explaining portfolios' performances in each approach. Considering the brown-minus-green factor, 2 out of 4 estimations' results are significant, enforcing all environmentally friendly portfolios exceed on the risk-adjusted terms (-0.6394* and -0.9232*, in 50/50 and 30/70 estimations, accordingly). Concerning the value factor, significant less environmentally friendly results consist of companies with lower book-to-market values; however, only one approach is significant (-1.6758** in 10/90 model). In terms of the robust-minus-weak factor, 2 out of 4 estimations are significant, suggesting all brown portfolios consist of robust stocks (0.9058** and 0.8778***, in 30/70 and 50/50 estimations, respectively). Regarding the CMA, 2 out of 4 estimations' results are significant, implying all brown portfolios have positive CMA exposure (1.6517* and 0.7949*, in 10/90 and 50/50 models, accordingly). In relation to Akaike criterion (see Table 105), the eight-factor model is the best fit in the 30/70 and the 50/50 models while the three-factor model in the KNN and the baseline model in the 10/90 model (the environmental factor: -1.0222**, -0.7094*, -0.5277, and 0.5613, accordingly).

Concerning the findings formed on Russian companies and GHG emissions (see Table 73), almost none of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG factor, significant green results are inferior to on the alphas; however, only one approach is significant (1.4583* in 50/50 specification). With regards to the SMB, significant green findings consist of large stocks; however, only one approach is significant (0.6097** in 50/50 estimation). In terms of the investment factor, significant environmentally friendly results include firms that invest aggressively; however, only one approach is significant (1.6983*** in 50/50 specification). Adhering to Akaike information criterion (see Table 105), each portfolio specification performs best in the baseline specification (the environmental factor for the 10/90, the 30/70, the 50/50, and the KNN models: 0.3671, 1.5432*, 0.7945, and 1.1057).

In terms of the outputs formed on water usage (see Table 73), several of the conventional factors are explaining portfolios' performances in each approach. Considering the environmental factor, 2 out of 4 estimations are significant, indicating that all brown portfolios exceed on the alphas (1.6413* and 0.7181**, in 10/90 and 50/50 models, respectively). Considering the CAPM factor, significant less environmentally friendly findings are lower-beta; however, only one approach is significant (-0.2366** in 30/70 model). In terms of the size effect, significant green model results consist of small-caps; however, only one approach is significant (-0.9229* in 10/90 model). Considering the RMW factor, significant less environmentally friendly estimations are negatively exposed to RMW; however, only one approach is significant (-2.035*** in KNN specification). According to Corrected Akaike criterion (see Table 105), the 10/90, the 30/70, and the KNN models perform best in the CAPM whereas the 50/50's best fit is the baseline model (the BMG: 1.7202**, 0.7615, 1.2739, and 0.4705, respectively).

In terms of the results inspired by waste efficiency (see Table 73), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the CAPM factor, significant green estimation results are higher-beta; however, only one approach is significant (-0.2478* in 30/70 specification). In terms of the conservative-minus-aggressive factor, 2 out of 4 estimations are significant, enforcing all green portfolios have positive CMA exposure (-1.085** and -1.4741**, in 50/50 and 30/70 estimations, respectively). Regarding the WML, significant environmentally friendly model results are negatively exposed to momentum; however, only one approach is significant (0.5058* in 50/50 model). There are no significant results in terms of the BMG. In accordance with Corrected Akaike information criterion (see Table 105), the baseline estimation is the best fit in the 10/90 and the KNN models whereas the CAPM in the 30/70 and the six-factor specification in the 50/50 specification (the BMG factor: 1.3907, 0.4059, 0.6616, and -0.1025, respectively).

Results based on stock associated with United Kingdom, Australia, Italy, South Africa, Spain, Malaysia, Finland, Thailand and Mexico, do not show any significance of the brown minus green factor (see Tables 101-105).

With regards to the outputs based on Industrials sector and air pollution intensity (see Table 77), several of the conventional factors are explaining portfolios' performances in each approach. Considering the market beta, 2 out of 4 estimations' results are significant, demonstrating that all green portfolios are riskier (-0.1378** and -0.1735**, in 30/70 and KNN models, accordingly). Considering the value factor, 2 out of 4 estimations' results are significant, showing that all brown portfolios are value-oriented (0.5431* and 0.3133**, in KNN and 30/70 estimations, accordingly). Regarding the operating profitability factor, 2 out of 4 results are significant, suggesting all brown portfolios consist of robust stocks (0.6496** and 0.27*, in KNN and 50/50 models, respectively). There are no significant results in terms of the BMG factor. Judging by Corrected Akaike information criterion (see Table 106), the three-factor specification is the best fit in the 10/90 and the 30/70 specifications while the eight-factor specification in the KNN and the CAPM in the 50/50 specification (the BMG factor: 0.3959, 0.1074, 0.5303, and 0.2541**, accordingly).

Concerning the outputs established on water use intensity (see Table 77), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG factor, significant green estimation results exceed on the risk-adjusted terms; however, only one approach is significant (-0.6479** in KNN model). In terms of the SMB, 3 out of 4 models' results are significant, evidencing most green portfolios consist of small stocks (0.3229*, -0.362* and -0.765***, in 50/50, KNN and 10/90 estimations, respectively). In terms of the value effect, significant brown estimation results are positively exposed to the value effect; however, only one approach is significant (0.4624*** in 30/70 estimation). Dealing with the conservative-minus-aggressive factor, significant less environmentally friendly results have negative CMA exposure; however, only one approach is significant (-0.425*** in 30/70 specification). Dealing with the WML, significant environmentally friendly findings consist of loser companies;

however, only one approach is significant (0.1704** in 50/50 estimation). Judging by Corrected Akaike information criterion (see Table 106), best fir models for the 10/90, the 30/70, the 50/50, and the KNN models are the three-factor estimation, the eight-factor model, the six-factor model and the CAPM, respectively (the brown-minus-green factor: -0.2374, -0.1748, 0.105, and -0.6528**, respectively).

In terms of the results inspired by waste intensity per sales (see Table 77), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the market beta, significant green estimation results have higher beta; however, only one approach is significant (-0.2223** in KNN specification). Dealing with the SMB factor, significant brown findings consist of smaller-cap stocks; however, only one approach is significant (0.2976* in 30/70 specification). Dealing with the robust-minus-weak factor, 2 out of 4 estimations are significant, suggesting that all green portfolios are positively exposed to RMW (-0.6759* and -0.7784*, in 10/90 and KNN models, accordingly). Concerning the CMA factor, 2 out of 4 models' results are significant, implying all brown portfolios include firms that invest conservatively (1.1578** and 0.9142**, in 10/90 and KNN models). Concerning the WML factor, significant environmentally friendly model results have higher WML exposure; however, only one approach is significant (-0.3002** in 10/90 model). There are no significant results in terms of the environmental factor. Judging by Akaike information criterion corrected for small sample size (see Table 106), best fir models for the 10/90, the 30/70, the 50/50, and the KNN specifications are the six-factor model, the three-factor model, the baseline model, and the eight-factor model, accordingly (the environmental factor: 0.0094, 0.0221, 0.2137, and 0.5651, respectively).

Regarding the results inspired by Materials sector and GHG and CO2 emission intensity (see Table 79), most of the conventional factors are explaining portfolios' performances in each approach. Concerning the BMG, significant less environmentally friendly model results underperform on the alphas; however, only one approach is significant (-0.6225* in KNN model). Considering the market factor, all findings are significant, enforcing all brown portfolios have higher beta (0.3485***, 0.3406***, 0.1441** and 0.0776**, in KNN, 10/90, 30/70 and 50/50 models, accordingly). Dealing with the value effect, all results are significant, showing that all less environmentally friendly portfolios consist of companies with high book-to-market ratios (0.9868***, 0.8758***, 0.8383*** and 0.546***, in 10/90, 30/70, KNN and 50/50 specifications). With regards to the CMA factor, all estimations' results are significant, showing that all environmentally friendly portfolios include firms that invest conservatively (-0.6859**, -1.0108***, -1.0834*** and -1.2606**, in 50/50, KNN, 30/70 and 10/90 models, accordingly). In terms of the WML, 2 out of 4 results are significant, enforcing all brown portfolios are positively exposed to momentum (0.2278** and 0.2132**, in 30/70 and 50/50 models, accordingly). Judging by Akaike information criterion (see Table 106), each portfolio estimation performs best in the six-factor specification (the BMG factor for the 10/90, the 30/70, the 50/50, and the KNN models: -0.5661, 0.1071, 0.1512, and -0.6225*, respectively).

With regards to the outputs formed on water use intensity (see Table 79), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the market beta, significant environmentally friendly findings have lower beta; however, only one approach is significant (0.1793*** in 30/70 specification). Regarding the SMB, significant green results consist of large-caps; however, only one approach is significant (0.3034** in 50/50 specification). With regards to the value effect, 2 out of 4 models' results are significant, illuminating all brown portfolios consist of value stocks (0.5626** and 0.5133**, in KNN and 30/70 models). Concerning the robust-minus-weak factor, significant environmentally friendly findings consist of robust stocks; however, only one approach is significant (-0.4382* in 10/90 model). In terms of the WML factor, significant brown findings consist of loser companies; however, only one approach is significant (-0.1503** in 50/50 estimation). There are no significant results in terms of the BMG. Adhering to Akaike information criterion corrected for small sample size (see Table 106), the 10/90, the 30/70, and the KNN models perform best in the three-factor specification while the 50/50's best fit is the four-factor estimation (the environmental factor: -0.3905, -0.2305, -0.475, and -0.2005).

In terms of the findings created on total waste (see Table 79), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the CAPM factor, significant brown estimations are high-beta stocks; however, only one approach is significant (0.186* in 30/70 specification). Concerning the value factor, 2 out of 4 findings are significant, demonstrating that all brown portfolios consist of value stocks (0.4933* and 0.4752*, in 30/70 and 50/50 specifications, respectively). With regards to the CMA factor, 3 out of 4 models' results are significant, enforcing all green portfolios have positive CMA exposure (-0.9813*, -1.0087** and -1.2755*, in 30/70, 50/50 and 10/90 models). There are no significant results in terms of the BMG factor. According to Akaike information criterion corrected for small sample size (see Table 106), the 10/90, the 30/70, and the KNN estimations perform best in the CAPM while the 50/50's best fit is the eight-factor specification (the BMG: 0.0383, -0.117, 0.0514, and 0.1, accordingly).

Considering the findings based on Consumer Discretionary sector and GHG pollution (see Table 81), several of the conventional factors are explaining portfolios' performances in each approach. Considering the environmental factor, significant brown estimation results fall behind on the risk-adjusted terms; however, only one approach is significant (-0.5028* in 30/70 specification). Concerning the CAPM factor, significant brown estimation results are riskier; however, only one approach is significant (0.2288* in 10/90 model). Regarding the momentum, 2 out of 4 findings are significant, showing that all green portfolios have higher WML exposure (-0.2075* and -0.4996**, in 30/70 and KNN estimations, respectively). Judging by Akaike information criterion corrected for small sample size (see Table 106), the four-factor model is the best fit in the 30/70 and the KNN estimations while the six-factor specification in the 10/90 and the CAPM in the 50/50 estimation (the environmental factor: -0.3309, 0.1014, -0.6619, and -0.129).

Concerning the findings inspired by water usage (see Table 81), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the HML factor, 3 out of 4 findings are significant, enforcing all brown portfolios consist of companies with high book-to-market ratios (0.8733**, 0.8581*** and 0.5346*, in 10/90, KNN and 30/70 estimations, accordingly). With regards to the profitability anomaly, significant less environmentally friendly findings consist of the most profitable firms; however, only one approach is significant (0.9667** in KNN model). Considering the WML factor, all models' results are significant, evidencing all environmentally friendly portfolios are positively exposed to momentum (-0.1636**, -0.3517**, -0.3666** and -0.4911**, in 50/50, 30/70, 10/90 and KNN models, accordingly). There are no significant results in terms of the environmental factor. Adhering to Akaike information criterion (see Table 106), the 10/90, the 30/70, and the 50/50 models perform best in the four-factor model whereas the KNN best fit is the six-factor estimation (the BMG: 0.6721, -0.0403, -0.0407, and 0.2262, respectively).

Regarding the results based on waste intensity (see Table 81), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the conservative-minus-aggressive factor, significant less environmentally friendly estimations are positively exposed to the investment factor; however, only one approach is significant (0.9628* in 30/70 specification). Regarding the WML, significant environmentally friendly findings include winner stocks; however, only one approach is significant (-0.4166* in KNN specification). There are no significant results in terms of the BMG factor. Adhering to Corrected Akaike information criterion (see Table 106), the four-factor specification is the best fit in the 10/90 and the KNN specifications whereas the eight-factor model in the 30/70 and the baseline estimation in the 50/50 estimation (the brown-minus-green factor: -0.3293, -0.0741, -0.2722, and -0.174).

Concerning the results inspired by Financials sector and GHG emissions (see Table 83), almost none of the conventional factors are explaining portfolios' performances in each approach. In terms of the market factor, significant less environmentally friendly model results are lower-beta; however, only one approach is significant (-0.2279** in 10/90 estimation). In terms of the profitability anomaly, significant brown model results consist of weak stocks; however, only one approach is significant (-0.4966** in 50/50 model). There are no significant results in terms of the environmental factor. In accordance with Akaike information criterion (see Table 106), each portfolio model performs best in the three-factor specification (the BMG factor for the 10/90, the 30/70, the 50/50, and the KNN estimations: 0.303, 0.0527, -0.0506, and 0.2013, respectively).

Dealing with the findings based on water usage intensity (see Table 83), almost none of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG factor, 2 out of 4 findings are significant, indicating that all environmentally friendly portfolios exceed on the risk-adjusted terms (-0.3667* and -0.9268*, in 50/50 and KNN estimations, accordingly). In accordance with Corrected Akaike information criterion (see Table 106), the baseline model is the best fit in the 10/90 and the KNN models whereas the three-factor estimation in the 30/70 and the eight-factor model in the 50/50 estimation (the brown-minus-green factor: -0.3358, -0.9032**, -0.3106, and -0.3907**).

Dealing with the results created on waste efficiency (see Table 83), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the small-firm effect, significant brown estimation results consist of large stocks; however, only one approach is significant (-1.0177* in KNN model). In terms of the value factor, significant brown findings are positively exposed to the value effect; however, only one approach is significant (0.2803* in 50/50 specification). Dealing with the CMA, significant green estimations are positively exposed to the investment factor; however, only one approach is significant (-0.8735* in 10/90 estimation). There are no significant results in terms of the brown-minus-green factor. In accordance with Corrected Akaike criterion (see Table 106), the three-factor model is the best fit in the 30/70 and the 50/50 estimations while the four-factor estimation in the KNN and the baseline model in the 10/90 model (the BMG: -0.0589, -0.0536, 0.0919, and -0.1972).

Regarding the results inspired by Real Estate sector and GHG pollution (see Table 89), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the value factor, significant environmentally friendly results are positively exposed to the value effect; however, only one approach is significant (-0.7196*** in 10/90 specification). Regarding the operating profitability factor, 3 out of 4 estimations' results are significant, suggesting that all brown portfolios are positively exposed to the profitability factor (0.8094***, 0.7437*** and 0.3936***, in KNN, 30/70 and 50/50 estimations). Considering the WML factor, significant brown findings are positively exposed to momentum; however, only one approach is significant (0.2245* in 10/90 model). There are no significant results in terms of the brown-minus-green factor. In relation to Akaike information criterion corrected for small sample size (see Table 107), the six-factor model is the best fit in the 30/70 and the 50/50 specifications whereas the baseline specification in the KNN and the four-factor estimation in the 10/90 estimation (the environmental factor: -0.0464, 0.1759, 0.1165, and -0.2786).

With regards to the findings created on water usage intensity (see Table 89), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the market factor, significant brown estimations have higher beta; however, only one approach is significant (0.3135* in 10/90 specification). Considering the value factor, significant brown estimation results consist of companies with high book-to-market ratios; however, only one approach is significant (0.7531** in 10/90 model). In terms of the profitability anomaly, 2 out of 4 findings are significant, showing that all brown portfolios are positively exposed to the profitability factor (0.7717** and 0.5995*, in 30/70 and 50/50 models). With regards to the WML, significant less environmentally friendly model results are positively exposed to momentum; however, only one approach is significant (0.4189** in 10/90 specification). There are no significant results in terms of the BMG. In accordance with Akaike criterion (see Table 107), the 30/70, the 50/50, and the KNN estimations perform best in the baseline specification whereas the 10/90's best fit is the CAPM (the BMG factor: 0.1925, 0.2587, 0.0921, and -0.2193, accordingly).

Considering the findings inspired by waste intensity (see Table 89), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the BMG, significant brown estimations lag behind on the risk-adjusted terms; however, only one approach is significant (-0.9318** in KNN estimation). Dealing with the market risk, 3 out of 4 findings are significant, suggesting that all brown portfolios have higher beta (0.3215***, 0.2051** and 0.126*, in KNN, 30/70 and 50/50 specifications). Regarding the HML, significant less environmentally friendly estimation results are positively exposed to the value effect; however, only one approach is significant (0.5514* in KNN specification). With regards to the robust-minus-weak factor, significant brown estimation results consist of the most profitable firms; however, only one approach is significant (1.3013*** in KNN estimation). With regards to the momentum factor, significant green results consist of loser companies; however, only one approach is significant (0.3331** in KNN specification). Judging by Akaike information criterion corrected for small sample size (see Table 107), the CAPM is the best fit in the 30/70 and the 50/50 specifications while the eight-factor specification in the KNN and the baseline specification in the 10/90 model (the BMG factor: -0.0134, -0.0095, -0.9784**, and 0.5752, accordingly).

Concerning the findings inspired by Health Care sector and GHG emissions (see Table 91), almost none of the conventional factors are explaining portfolios' performances in each approach. With regards to the operating profitability factor, significant green results consist of robust stocks; however, only one approach is significant (-0.5199* in 30/70 estimation). With regards to the WML, significant environmentally friendly findings consist of loser companies; however, only one approach is significant (0.3621* in KNN estimation). There are no significant results in terms of the BMG factor. In accordance with Corrected Akaike information criterion (see Table 107), the baseline model is the best fit in the 10/90 and the 50/50 estimations while the four-factor specification in the KNN and the six-factor specification in the 30/70 model (the brown-minus-green factor: -0.3991, -0.2081, -0.8509*, and -0.2484, accordingly).

In terms of the outputs inspired by water intensity per sales (see Table 91), almost none of the conventional factors are explaining portfolios' performances in each approach. Concerning the market beta, significant green estimation results are lower-beta; however, only one approach is significant (0.2363* in 10/90 model). With regards to the high-minus-low factor, significant brown results are growth-oriented; however, only one approach is significant (-0.5586* in KNN model). Dealing with the RMW, significant green results are negatively exposed to the profitability factor; however, only one approach is significant (0.4613** in 30/70 estimation). There are no significant results in terms of the BMG factor. In relation to Corrected Akaike criterion (see Table 107), the baseline model is the best fit in the 30/70 and the 50/50 models while the eight-factor specification in the KNN and the CAPM in the 10/90 model (the brown-minus-green factor: 0.0232, -0.116, -0.5917, and -0.3177, accordingly).

With regards to the findings formed on total waste (see Table 91), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG, significant environmentally friendly findings outshine on the alphas; however, only one approach is significant (-0.2958** in 50/50 model). Considering the market risk, 2 out of 4 models' results are significant, showing that all brown portfolios are higher-beta (0.1535* and 0.0759*, in 10/90 and 50/50 estimations). In terms of the small-firm effect, all estimations are significant, illuminating all less environmentally friendly portfolios consist of smaller-cap companies (-0.2893**, -0.4396**, -0.4811* and -0.5476*, in 50/50, 30/70, KNN and 10/90 models, respectively). Dealing with the conservative-minus-aggressive factor, significant brown findings have negative CMA exposure; however, only one approach is significant (-0.7115* in 10/90 specification). Judging by Akaike information criterion corrected for small sample size (see Table 107), the three-factor model is the best fit in the 30/70 and the 50/50 estimations whereas the baseline model in the KNN and the eight-factor estimation in the 10/90 estimation (the BMG: -0.2763, -0.2109*, -0.1232, and -0.63, accordingly).

In terms of the outputs formed on Energy sector and air pollution intensity (see Table 93), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the BMG, significant less environmentally friendly estimations perform better than on the risk-adjusted terms; however, only one approach is significant (0.7114* in 10/90 model). Considering the SMB, significant environmentally friendly findings consist of smaller-cap companies; however, only one approach is significant (0.5394* in

30/70 model). Regarding the conservative-minus-aggressive factor, significant environmentally friendly model results include firms that invest conservatively; however, only one approach is significant (-0.6005* in KNN model). Judging by Corrected Akaike criterion (see Table 107), the eight-factor specification is the best fit in the 30/70 and the 50/50 estimations whereas in the 10/90 and the KNN specifications best fit is the baseline estimation (the BMG factor: 0.1904, -0.0029, 0.5197, and 0.364).

In terms of the results formed on water usage intensity (see Table 93), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the BMG factor, significant brown estimation results outperform on the risk-adjusted terms; however, only one approach is significant (0.6074* in KNN estimation). Concerning the market risk, 2 out of 4 estimations are significant, indicating that all green portfolios are riskier (-0.1939** and -0.2672**, in KNN and 10/90 specifications). Considering the size premium, 2 out of 4 models' results are significant, evidencing all green portfolios are positively exposed to the size effect (-0.5399* and -0.796**, in KNN and 10/90 models, accordingly). Dealing with the CMA, significant environmentally friendly model results include firms that invest conservatively; however, only one approach is significant (-1.2182*** in 50/50 model). Concerning the momentum, 2 out of 4 estimations are significant, evidencing all green portfolios include winner stocks (-0.262* and -0.2884***, in KNN and 50/50 estimations, accordingly). In accordance with Corrected Akaike information criterion (see Table 107), the four-factor specification is the best fit in the 30/70 and the KNN specifications while the three-factor specification in the 10/90 and the six-factor model in the 50/50 model (the BMG: 0.1438, 0.5008, -0.0979, and 0.2198).

Regarding the results inspired by total waste (see Table 93), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the HML, significant environmentally friendly results consist of companies with lower book-to-market values; however, only one approach is significant (0.4829** in 30/70 model). In terms of the profitability factor, significant brown estimations consist of the most profitable firms; however, only one approach is significant (0.746** in 30/70 model). Dealing with the investment factor, significant less environmentally friendly estimations include firms that invest conservatively; however, only one approach is significant (1.0068** in KNN estimation). Concerning the momentum factor, 2 out of 4 models' results are significant, enforcing results are mixed depending on chosen specifications (0.2059** and -0.296*, in 50/50 and KNN estimations, accordingly). There are no significant results in terms of the BMG. Adhering to Akaike information criterion (see Table 107), the 10/90, the 30/70, and the KNN specifications perform best in the baseline estimation while the 50/50's best fit is the eight-factor estimation (the BMG: -0.6898, 0.152, -0.2656, and -0.046, respectively).

Considering the findings based on Communication Services sector and air pollution intensity (see Table 97), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the market risk, 2 out of 4 findings are significant, suggesting all green portfolios are higher-beta (-0.3417*** and -0.3749***, in 10/90 and KNN specifications). In terms of the SMB factor, significant environmentally friendly model results are positively exposed to the size effect; however, only one approach is significant (-0.964*** in KNN model). In terms of the profitability factor, 2 out of 4 findings are significant, evidencing that all brown portfolios are positively exposed to RMW (0.9918*** and

0.7819***, in 50/50 and 30/70 models, accordingly). In terms of the CMA factor, significant less environmentally friendly findings are positively exposed to the investment factor; however, only one approach is significant (0.9127*** in 30/70 estimation). Regarding the momentum factor, significant less environmentally friendly estimation results consist of winner companies; however, only one approach is significant (0.2563** in 30/70 model). There are no significant results in terms of the brown-minus-green factor. Adhering to Akaike criterion (see Table 107), the 10/90, the 30/70, and the KNN models perform best in the eight-factor model while the 50/50's best fit is the six-factor model (the brown-minus-green factor: -0.1824, -0.161, -0.0369, and -0.0224, respectively).

Considering the findings based on water usage intensity (see Table 97), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the market beta, significant brown estimations are high-beta stocks; however, only one approach is significant (0.1897* in KNN estimation). Considering the size factor, significant environmentally friendly estimations consist of small stocks; however, only one approach is significant (-0.3327* in 50/50 specification). Concerning the value factor, 2 out of 4 models' results are significant, evidencing all brown portfolios are positively exposed to the value effect (0.6499** and 0.3744*, in 30/70 and 50/50 estimations, respectively). Considering the robust-minus-weak factor, significant brown findings consist of weak stocks; however, only one approach is significant (-1.1511*** in KNN estimation). Regarding the investment factor, significant less environmentally friendly estimations are negatively exposed to the investment factor; however, only one approach is significant (-0.815* in 30/70 specification). There are no significant results in terms of the BMG. In accordance with Akaike information criterion corrected for small sample size (see Table 107), best fir models for the 10/90, the 30/70, the 50/50, and the KNN specifications are the CAPM, the eight-factor estimation, the three-factor specification, and the six-factor model (the BMG: -0.3342, 0.1719, 0.1428, and 0.1889, accordingly).

Concerning the outputs established on total waste (see Table 97), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the BMG, significant less environmentally friendly estimations lag behind on the alphas; however, only one approach is significant (-0.4425* in 50/50 model). Adhering to Corrected Akaike criterion (see Table 107), each portfolio specification performs best in the baseline estimation (the environmental factor for the 10/90, the 30/70, the 50/50, and the KNN specifications: 0.1457, -0.108, -0.4265*, and 0.6334, accordingly).

Results based on stock associated with Information Technology, Consumer Staples and Utilities, do not show any significance of the brown minus green factor (see Tables 106-107).

Dealing with the summary of the empirical chapter, systematic environmental risk factor due to the market's mispricing appears in the full sample approach, based on the greenhouse gas emotion in each six-factor-based estimation except the 10/90 model, where alphas are significant and negative (supporting evidence of Maiti, 2021 and contributing to possible extension and improvement of conventional factor approach Ammann et al., 2022; Asness and Frazzini, 2013; Li et al., 2022; Basu, 1983; Jaffe et al. 1989; Koh, 20202; and contrasting with evidences from Wagner et al., 2002; supporting Al-Tuwaijri et al., 2004; Nakao et al., 2007; Boulatoff and Boyer, 2009; Benjamin et al., 2020; Giese et al., 2019; supporting evidences observed Görgen et al., 2018). An additional outcome in the full sample is the significant alpha in water-based estimation established on the KNN approach, which is also negative and significant (such performance contributes to the conclusions observed in Olsthoorn et al, 2001; Benjamin et al., 2020; whereas environmental variables can provide information on companies' financial performance and, therefore, be a source of systematic risk). In addition, according to the Akaike information criterion, the best fit is the six-factor factor model.

Moving further to the sample consisting of developed countries, the performance of factor-based models is similar to the one observed in the full sample; however, more significant coefficients in the GHG variables-based findings appeared not only in a six-factor model but also in the eight-factor. Similarly, the water-related risk appears significant in the KNN estimations. Additionally, in the case of developed countries, according to the Akaike criterion, best fit models are shared between six- and eight-factor approaches.

Dealing with the emerging sample, only significant factors are observed in the waste-based portfolios, whereas the 10/90 model's alphas are negative and significant in the four-, six- and eight-factor models. In addition, according to the results established on the baseline approach, the coefficient appeared positive and significant, corresponding to the ESG premises. Meanwhile, findings observed in the GHG and water-based estimations do not show any significant results.

In the case of the developed countries, excluding the United States, according to the results, the only significant estimation is the outcome of the greenhouse gas risk factor observed in the 30/70 model, which is the only significant and negative alpha. In addition, the Akaike criterion indicates that, in this case, the best fit is the four-factor model.

Considering the findings established on region-wise samples, significant negative alphas appear based on the European sample in each investigated environmental variable and mostly in six- and eight-factor approaches (arguing with Muñoz et al, 2014; Ibikunle and Steffen, 2017). However, in the case of Europe, the evidence of the greenhouse gas risk factor is supported stronger compared to previously covered findings since it has negative and significant coefficients in each estimation, excluding the 10/90 portfolios applied to the six- and eight-factor models. Similar is observed in the water-based samples; however, in the 10/90 and the 30/70 approaches. Each remaining region appears without significant results, with the exception of the Nort American region, where significant and negative alphas appear in the GHG- and waste-related tests. However, its results show weak evidence of environmental risk factors via significant coefficients that appeared only in the zero-factor estimation and the CAPM.

Dealing with country-wise findings, the results can be combined into several groups, where the first one is related to the greenhouse gas risk factor. In cases of the United States (which is opposite to findings observed in Bauer et al., 2005; Schröder, 2004; Goldreyer et al., 1999; Bolton and Kacperczyk, 2021; Climent and Soriano, 2011), Japan (contributing to Nakao et al., 2007), Hong Kong, Australia (contrasting with Jones et al, 2008; while corresponding to call for the GHG disclosure manifested by Rankin et al, 2011; Subramaniam et al, 2015), France, Germany (refute Schröder, 2004; Bauer et al., 2005; Kreander et al. ; 2005), India, Singapore, and Norway, alphas appear significant and negative. Additionally, French and German (Schröder, 2004; Kreander et al., 2005) estimations show the strong significance of environmental risk, appearing almost in each estimation. The opposite is observed in such samples established on stocks associated with Taiwan, South Korea, Brazil (arguing with call for disclosure highlighted Kouloukoui et al, 2019), Switzerland, Spain, Netherlands (going in line with Kreander et al. ,2005), and Russia, where alphas rarely appear significant; however, having a positive sign. Regarding the findings observed in established water intensity, significant and negative coefficients appear in samples inspired by stocks associated with China (in the 30/70 approach, supporting the call for disclosure from Liu and Anbumozhi, 2009), Canada (contrasting with Bauer et al., 2007), Hong Kong, France (contributing to Arjaliès, 2010), and Norway (in the 50/50 specification). It is worth noting that, similar to the French GHG-based portfolios, the results occurring in this subsample show strong evidence of environmental risk factors. Meanwhile, the opposite is observed in the United Kingdom (which does not go in line with evidence provided by Luther et al., 1992; meanwhile supporting Luther and Matatko, 1994; Mallin et al., 1995; Gregory et al., 1997; Goldreyer et al., 1999), China (in the 10/90 model, arguing with the call for disclosure from Liu and Anbumozhi, 2009), Taiwan, South Korea, Sweden (going in line with Kreander et al., 2005), Spain, Norway (in the KNN specification), Netherlands (supporting Kreander et al., 2005), and Russia.

With regards to the results established utilising the waste usage variable, significant and negative results appear in samples related to Japan (contributing to Nakao et al., 2007), Taiwan (the 10/90 model), Canada (which argues with Bauer et al., 2007), France (supporting Arjaliès, 2010), Germany (refute Schröder, 2004; Bauer et al., 2005; Kreander et al., 2005), Switzerland, Singapore, and the Netherlands (arguing with Kreander et al. 2005). While results appear in the United Kingdom (contradicting to Luther et al., 1992; supporting Luther and Matatko, 1994; Mallin et al., 1995; Gregory et al., 1997; Goldreyer et al., 1999), Taiwan (the 50/50 approach), Spain, Malaysia, Norway, Finland, and Russia, have positive and significant coefficients.

Meanwhile, judging by the Akaike criterion, the best-fit model cannot be established since the divergence in the outcomes depends on a subsample.

Dealing with evidence observed in sector-wise subsamples, the significance of the air pollution variable is discovered in such sectors as Industrials, Real Estate, and Energy, having positive signs, while in Materials, Consumer Discretionary and Staples, and Health Care sectors, coefficients are negative. With regards to the water intensity, its coefficients appear only with negative signs in Industrials, Materials, and Financials sectors. While waste performance appeared significant in Information Technology, Real Estate, Health Care and Communications Services, being negative in each case.

Overall, environmental performance shows contradictory results in terms of its interpretation since most of the alphas appear with negative signs, evidencing mispricing of the environmental information. Such information can be considered as a source of systematic risk according to the multiple hypothesis tests (contributing to possible extension and improvement of conventional factor approach Ammann et al., 2022; Asness and Frazzini, 2013; Li et al., 2022; Basu, 1983; Jaffe et al. 1989; Koh, 20202); however, additional data transformation is needed to reveal its potential, which is why the additional chapter orientated towards the environmental momentum was considered. While these findings highlight the ability of the market to interpret and adjust to the environmental performance, the further chapter investigates if the market can reflect the change in the environmental performance and the existence of related risk-factor.

4.3. Environmental momentum as a source of systematic risk and an opportunity for better financial performance

In terms of the outputs formed on full sample and shift in greenhouse gas performance (see Table 7), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the brown-minus-green factor, all models' results are significant, suggesting that all environmentally friendly portfolios exceed on the alphas (-0.272**, -0.4428**, -0.6717* and -0.9405***, in 50/50, 30/70, KNN and 10/90 specifications, respectively). In terms of the market beta, significant brown results are high-beta stocks; however, only one approach is significant (0.119* in 30/70 specification). Dealing with the HML factor, significant brown estimations consist of companies with high book-to-market ratios; however, only one approach is significant (0.26* in 30/70 estimation). Concerning the WML factor, 2 out of 4 estimations' results are significant, showing that all green portfolios consist of winner companies (-0.1497*** and -0.2819**, in 50/50 and KNN specifications, accordingly). Adhering to Akaike information criterion, the four-factor specification is the best fit in the 50/50 and the KNN estimations whereas in the 10/90 and the 30/70 models best fit is the three-factor estimation (the BMG: -0.2625**, -0.7028*, -1.1186***, and -0.4666***, respectively).

In terms of investment performance findings observed in shift in greenhouse gas performance (see Table 8), judging by raw performance, less environmentally friendly companies always are inferior to green ones. Further, similar results occurring in Sortino measure and modified Sharpe measure. Regarding the best-performing model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Further, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (13.01% and 5.2%), Sortino ratio (0.5119 and 0.1853) and MVaR-Sharpe (1.3261 and 0.4532). Adhering to simple return, the environmentally friendly portfolio always exceeds the market benchmark, while less environmentally friendly counterparts portfolio perform worse (in 5 out of 12 cases). Adhering to modified Sharpe ratio, the environmentally friendly portfolio mostly outshines the market index (in 9 out of 12 cases), while less environmentally friendly counterparts perform worse (in 5 out of 12 cases).

In terms of the outputs created on water usage intensity difference (see Table 7), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the BMG factor, significant green model results beat on the alphas; however, only one approach is significant (-0.3743** in 30/70 specification). In terms of the market beta, 3 out of 4 results are significant, showing that all brown portfolios are higher-beta (0.1748***, 0.1704*** and 0.1013***, in 30/70, 10/90 and 50/50 models, respectively). Regarding the HML factor, 3 out of 4 models' results are significant, evidencing all brown portfolios consist of companies with high book-to-market ratios (0.6629***, 0.4119** and 0.3411**, in KNN, 30/70 and 50/50 models, accordingly). Considering the CMA factor, 2 out of 4 results are significant, evidencing that all green portfolios are positively exposed to the investment factor (-0.5464** and -0.8452***, in 50/50 and KNN models, respectively). Regarding the momentum, 3 out of 4 results are significant, implying all brown portfolios are positively exposed to momentum (0.3183***, 0.2526*** and 0.2313***, in 30/70, 50/50 and 10/90 specifications, respectively). In accordance with Akaike information criterion, the 30/70, the 50/50, and the KNN models perform best in the six-factor specification while the 10/90's best fit is the four-factor specification (the brown-minus-green factor: -0.3743**, -0.0921, -0.4735, and -0.1544, respectively).

Considering investment performance results occurring in shift in water usage intensity (see Table 8), judging by non-adjusted performance, environmentally friendly companies robustly outshine brown ones. In addition, similar results occurring in Sortino ratio and modified Sharpe ratio. Considering the model with the best performance, within green portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Additionally, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (8.64% and 5.73%), Sortino measure (0.468 and 0.2255) and MVaR-Sharpe (1.0578 and 0.6295). Judging by non-adjusted performance, the green portfolio in most cases beats the market (in 9 out of 12 cases), while stocks with poor environmental performance portfolio perform worse (in 5 out of 12 cases). According to modified Sharpe measure, the green portfolio frequently outpaces the benchmark (in 9 out of 12 cases), while less environmentally friendly stocks perform worse (in 5 out of 12 cases).

Concerning the outputs established on change in waste intensity performance (see Table 7), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG factor, 2 out of 4 estimations' results are significant, implying all environmentally friendly portfolios exceed on the risk-adjusted terms (-0.2739* and -0.8305**, in 50/50 and 10/90 models, accordingly). Dealing with the market factor, 2 out of 4 estimations are significant, indicating that all brown portfolios are high-beta stocks (0.185*** and 0.1735**, in 50/50 and 30/70 specifications, accordingly). Concerning the size factor, significant green findings are positively exposed to the size effect; however, only one approach is significant (-0.4545* in KNN specification). In terms of the value premium, significant environmentally friendly estimations consist of growth stocks; however, only one approach is significant (0.4801** in 10/90 model). Considering the CMA, significant brown findings consist of aggressive stocks; however, only one approach is significant (-0.9995** in 10/90 specification). With regards to the momentum, significant environmentally friendly estimation results are positively exposed to momentum; however, only one approach is significant (-0.2846* in KNN model). In accordance with Corrected Akaike information criterion, the 10/90, the 30/70, and the 50/50 models perform best in the CAPM whereas the KNN best fit is the four-factor estimation (the BMG: -0.9365**, -0.3963**, -0.3469**, and -0.6008, accordingly).

In terms of financial performance outputs occurring in waste intensity per sales difference (see Table 8), adhering to raw performance, less environmentally friendly companies always fall behind green ones. Moreover, similar findings observed in Sortino ratio and MVaR-adjusted performance. With regards to the model with the best returns, the 50/50 approach performs best in both green and less environmentally friendly groups. Moreover, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (6.65% and 3.09%), downside risk-adjusted performance (0.2833 and 0.0815) and modified Sharpe measure (0.6709 and 0.2771). In accordance with raw performance, the green portfolio outpaces half of the market (in 6 out of 12 cases), whereas stocks with poor environmental performance portfolio behave worse (in 4 out of 12 cases). In accordance with MVaR-adjusted performance, the green portfolio rarely performs better than the market index (in 5 out of 12 cases), while brown stocks perform similarly.

Dealing with the outputs formed on companies from developed countries and shift in air pollution performance (see Table 9), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the brown-minus-green factor, 3 out of 4 findings are significant, suggesting all green portfolios outshine on the alphas (-0.2146*, -0.4648** and -0.7522**, in 50/50, 10/90 and KNN models, accordingly). Concerning the market factor, significant environmentally friendly findings are low-beta stocks; however, only one approach is significant (0.116** in 50/50 estimation). Considering the HML factor, significant green results are negatively exposed to the value effect; however, only one approach is significant (0.3921* in 10/90 estimation). In terms of the momentum factor, 2 out of 4 findings are significant, suggesting that all green portfolios include winner stocks (-0.1519** and -0.3165***, in 50/50 and KNN specifications). Judging by Akaike criterion, the four-factor estimation is the best fit in the 50/50 and the KNN models whereas in the 10/90 and the 30/70 estimations best fit is the three-factor specification (the brown-minus-green factor: -0.1914*, -0.7542**, -0.6788***, and -0.3872**, accordingly).

Considering financial performance outputs observed in GHG emissions change (see Table 10), adhering to simple return, green companies robustly outpace less environmentally friendly ones. In addition, similar findings occurring in Sortino measure and modified Sharpe ratio. Considering the model with the best returns, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Moreover, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (12.64% and 7.03%), downside risk-adjusted performance (0.5137 and 0.2614) and modified Sharpe ratio (1.5145 and 0.6565). Judging by simple return, the green portfolio robustly beats the broad market index, while brown stocks portfolio behave worse (in 6 out of 12 cases). According to MVaR-adjusted performance, the environmentally friendly portfolio often outshines the market index (in 11 out of 12 cases), whereas less environmentally friendly counterparts behave worse (in 5 out of 12 cases).

Considering the results created on change in water use intensity performance (see Table 9), several of the conventional factors are explaining portfolios' performances in each approach. Considering the BMG factor, significant environmentally friendly findings beat on the alphas; however, only one approach is significant (-0.273* in 30/70 estimation). Dealing with the CAPM factor, 3 out of 4 estimations' results are significant, demonstrating that all brown portfolios have higher beta (0.1827***, 0.1653*** and 0.1361***, in 30/70, 10/90 and 50/50 estimations, accordingly). With regards to the value premium, 2 out of 4 estimations are significant, enforcing all brown portfolios consist of value stocks (0.3965** and 0.3291*, in 30/70 and 10/90 estimations, respectively). In terms of the CMA, significant less environmentally friendly model results include firms that invest aggressively; however, only one approach is significant (-0.3904* in 10/90 specification). Regarding the momentum, all results are significant, suggesting all less environmentally friendly portfolios have higher WML exposure (0.4082***, 0.2917***, 0.224** and 0.1955***, in KNN, 30/70, 50/50 and 10/90 specifications). In accordance with Akaike information criterion corrected for small sample size, the 10/90, the 50/50, and the KNN models perform best in the four-factor model while the 30/70's best fit is the six-factor estimation (the BMG: 0.0392, -0.1439, -0.7808**, and -0.273*, accordingly).

Regarding financial performance results observed in water usage intensity change (see Table 10), according to simple return, brown companies often lag behind environmentally friendly ones (in 1 out of 4 models). Moreover, similar outputs observed in downside risk-adjusted performance and MVaR-adjusted performance. In terms of the model with the best performance, within green portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Furthermore, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (9.09% and 7.62%), Sortino ratio (0.477 and 0.3239) and modified Sharpe ratio (1.1241 and 0.8766). Adhering to raw return, the environmentally friendly portfolio often outpaces the benchmark (in 9 out of 12 cases), whereas brown stocks portfolio perform worse (in 6 out of 12 cases). According to modified Sharpe measure, the green portfolio often outshines the market (in 9 out of 12 cases), while stocks with poor environmental performance perform worse (in 6 out of 12 cases).

Considering the outputs inspired by change in total waste performance (see Table 9), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the environmental factor, 3 out of 4 estimations are significant, indicating that all green portfolios outpace on the alphas (-0.3105*, -1.0415*** and -1.0895***, in 30/70, 10/90 and KNN models). Regarding the market risk, all estimations are significant, suggesting all brown portfolios have higher beta (0.2366*, 0.2088***, 0.1941*** and 0.1768*, in 10/90, 30/70, 50/50 and KNN models, respectively). In relation to Akaike information criterion, the 10/90, the 30/70, and the KNN models perform best in the CAPM while the 50/50's best fit is the three-factor estimation (the BMG: -1.0707***, -0.373**, -1.3276***, and -0.2346).

In terms of financial performance findings occurring in change in waste intensity per sales performance (see Table 10), adhering to non-adjusted performance, green stocks always outperform less environmentally friendly ones. Furthermore, similar findings occurring in downside risk-adjusted performance and modified Sharpe measure. Concerning the best-performing model, the 50/50 approach performs best in both environmentally friendly and less environmentally friendly groups. In addition, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (6.86% and 3.82%), Sortino measure (0.2878 and 0.1053) and modified Sharpe measure (0.6883 and 0.3854). In relation to non-adjusted performance, the green portfolio performs better than half of the market benchmark (in 6 out of 12 cases), while stocks with poor environmental performance portfolio behave worse (in 4 out of 12 cases). In relation to MVaR-adjusted performance, the environmentally friendly portfolio unfrequently outperforms the market (in 5 out of 12 cases), while stocks with poor environmental performance behave worse (in 4 out of 12 cases).

In terms of the findings created on stocks from emerging countries and shift in greenhouse gas performance (see Table 11), almost none of the conventional factors are explaining portfolios' performances in each approach. In terms of the small-minus-big factor, significant brown estimation results consist of large stocks; however, only one approach is significant (-0.5668* in KNN specification). With regards to the RMW, 2 out of 4 estimations' results are significant, illuminating all green portfolios consist of robust stocks (-0.9473** and -0.995**, in 10/90 and KNN specifications, respectively). There are no significant results in terms of the brown-minus-green factor. In relation to Akaike information criterion, the 10/90, the 30/70, and the 50/50 estimations perform best in the CAPM whereas the KNN best fit is the baseline model (the brown-minus-green factor: -0.9928**, -0.3057, -0.1333, and -0.6523, respectively).

Concerning financial performance findings associated with GHG and CO2 emission change (see Table 12), judging by raw performance, green stocks always outpace brown ones. Additionally, similar findings observed in Sortino measure and modified Sharpe ratio. Regarding the model with the best performance, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Moreover, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (8.07% and 5.25%), Sortino measure (0.3368 and 0.2111) and MVaR-adjusted performance (0.7739 and 0.4091). Judging by raw performance, the green portfolio rarely outperforms the market benchmark (in 4 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform similarly. Judging by modified Sharpe ratio, the green portfolio seldom exceeds the market index (in 4 out of 12 cases), while stocks with poor environmental performance behave worse (in 3 out of 12 cases).

Concerning the findings established on shift in water usage performance (see Table 11), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the small-firm effect, significant brown findings consist of large-caps; however, only one approach is significant (-0.4247** in 30/70 specification). Dealing with the HML factor, significant green estimation results consist of growth stocks; however, only one approach is significant (0.7836* in KNN specification). With regards to the robust-minus-weak factor, 3 out of 4 findings are significant, implying all green portfolios are positively exposed to the profitability factor (-0.4678**, -0.5528* and -0.6087*, in 50/50, 30/70 and 10/90 estimations, respectively). In terms of the CMA factor, 2 out of 4 findings are significant, evidencing that all green portfolios have positive CMA exposure (-0.9855** and -1.328**, in 30/70 and KNN specifications, accordingly). There are no significant results in terms of the brown-minus-green factor. Judging by Akaike criterion, the six-factor model is the best fit in the 30/70 and the 50/50 specifications whereas the CAPM in the KNN and the baseline model in the 10/90 specification (the BMG: 0.4982, -0.0438, 0.2015, and 0.3378).

Regarding financial performance outputs observed in change in water usage performance, according to non-adjusted performance (see Table 12), environmentally friendly stocks frequently underperform brown ones. Concerning the model with the best performance, within green portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 (in Sortino measure and MVaR-Sharpe). Additionally, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (6.83% and 5.73%), downside risk-adjusted performance (0.3335 and 0.2089) and MVaR-Sharpe (0.6388 and 0.4245). According to non-adjusted performance, the environmentally friendly portfolio unfrequently outpaces the market index (in 4 out of 12 cases), while brown stocks portfolio perform the same. Judging by MVaR-Sharpe, the environmentally friendly portfolio rarely beats the broad market index (in 4 out of 12 cases), whereas less environmentally friendly stocks behave worse (in 3 out of 12 cases).

Dealing with the findings created on total waste change (see Table 11), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the brown-minus-green factor, 2 out of 4 models' results are significant, indicating that all green portfolios outperform on the alphas (-0.4205* and -0.5127*, in 50/50 and 30/70 specifications, respectively). In terms of the market beta, significant green estimations are riskier; however, only one approach is significant (-0.3062** in KNN specification). Concerning the value factor, significant environmentally friendly findings are negatively exposed to the value effect; however, only one approach is significant (0.3752* in 30/70 model). Concerning the robust-minus-weak factor, significant brown estimations consist of weak stocks; however, only one approach is significant (-0.4945** in 50/50 estimation). Judging by Corrected Akaike criterion, the 10/90, the 30/70, and the 50/50 models perform best in the baseline estimation while the KNN best fit is the CAPM (the environmental factor: -0.2552, -0.441*, -0.5079***, and -0.605, respectively).

With regards to financial performance outputs observed in waste intensity difference (see Table 12), judging by non-adjusted performance, less environmentally friendly stocks universally lag behind green ones. Furthermore, similar outputs associated with downside risk-adjusted performance and modified Sharpe measure. Considering the model with the best performance, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. In addition, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (9.47% and 2.88%), Sortino ratio (0.4425 and 0.0962) and MVaR-Sharpe (0.8905 and 0.1656). According to simple return, the green portfolio seldom exceeds the market (in 4 out of 12 cases), whereas less environmentally friendly stocks portfolio perform worse (in 2 out of 12 cases). According to modified Sharpe ratio, the green portfolio unfrequently outpaces the broad market index (in 4 out of 12 cases), while less environmentally friendly counterparts behave worse (in 3 out of 12 cases).

Concerning the results inspired by companies from developed countries excluding the United States and shift in GHG emissions performance (see Table 13), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the size premium, 2 out of 4 results are significant, suggesting all green portfolios consist of smaller-cap stocks (-0.2612** and -0.337*, in 30/70 and 10/90 estimations). Dealing with the value effect, 2 out of 4 findings are significant, demonstrating that all brown portfolios are value-oriented (0.5765** and 0.4605**, in 10/90 and 30/70 specifications). Regarding the CMA, 2 out of 4 estimations' results are significant, suggesting that all green portfolios include firms that invest conservatively (-0.3349** and -0.9608**, in 50/50 and 10/90 estimations, respectively). With regards to the WML factor, significant environmentally friendly results have higher WML exposure; however, only one approach is significant (-0.1486** in 50/50 specification). There are no significant results in terms of the BMG. According to Akaike criterion, the six-factor model is the best fit in the 10/90 and the 30/70 estimations while the four-factor estimation in the KNN and the eight-factor model in the 50/50 estimation (the BMG: -0.0354, 0.0698, 0.3483, and -0.0296, respectively).

Considering financial performance findings associated with air pollution difference (see Table 14), in relation to non-adjusted performance, less environmentally friendly stocks most often are inferior to green ones (in 1 out of 4 specifications). Additionally, similar findings occurring in downside risk-adjusted performance and MVaR-adjusted performance. Considering the best model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Moreover, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (7.17% and 4.53%), Sortino ratio (0.3175 and 0.1393) and modified Sharpe measure (0.7504 and 0.3048). In accordance with raw return, the green portfolio performs better than half of the benchmark (in 6 out of 12 cases), whereas brown stocks portfolio behave worse (in 4 out of 12 cases). According to modified Sharpe ratio, the green portfolio rarely exceeds the market (in 5 out of 12 cases), while brown stocks behave worse (in 4 out of 12 cases).

Considering the results established on shift in water usage performance (see Table 13), several of the conventional factors are explaining portfolios' performances in each approach. Considering the environmental factor, 2 out of 4 estimations are significant, enforcing all green portfolios beat on the risk-adjusted terms (-0.3087* and -0.9932*, in 30/70 and KNN models, accordingly). Dealing with the market factor, all results are significant, demonstrating that all environmentally friendly portfolios are less risky (0.304***, 0.242***, 0.1928*** and 0.1347***, in KNN, 10/90, 30/70 and 50/50 estimations). Regarding the size factor, significant brown estimation results are positively exposed to the size effect; however, only one approach is significant (0.7684** in KNN estimation). Dealing with the WML factor, significant less environmentally friendly results have higher WML exposure; however, only one approach is significant (0.1748** in 50/50 specification). According to Corrected Akaike criterion best fir models for the 10/90, the 30/70, the 50/50, and the KNN estimations are the three-factor specification, the CAPM, the four-factor estimation, and the eight-factor specification, respectively (the BMG factor: 0.0712, -0.2596, -0.336*, and -1.1117**, accordingly).

Concerning financial performance findings occurring in shift in water intensity per sales (see Table 14), judging by raw performance, environmentally friendly stocks mostly perform better than brown ones (in 3 out of 4 models). Additionally, similar results associated with Sortino measure and MVaR-Sharpe. With regards to the best-performing model, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. Further, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (6.29% and 3.96%), Sortino measure (0.3081 and 0.1363) and modified Sharpe measure (0.6779 and 0.32). According to raw performance, the green portfolio seldom exceeds the market (in 5 out of 12 cases), whereas brown stocks portfolio perform worse (in 4 out of 12 cases). In accordance with MVaR-adjusted performance, the green portfolio rarely outperforms the market index (in 5 out of 12 cases), while less environmentally friendly counterparts perform worse (in 4 out of 12 cases).

In terms of the results created on shift in total waste performance (see Table 13), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the brown-minus-green factor, significant less environmentally friendly model results are inferior to on the risk-adjusted terms; however, only one approach is significant (-0.5428* in 10/90 specification). Concerning the CAPM factor, 3 out of 4 estimations are significant, suggesting all brown portfolios are high-beta stocks (0.2148*, 0.2147*** and 0.1824***, in 10/90, 30/70 and 50/50 estimations). Concerning the investment factor, significant brown estimations are negatively exposed to the investment factor; however, only one approach is significant (-1.1228** in 10/90 model). According to Akaike information criterion corrected for small sample size, the 30/70, the 50/50, and the KNN specifications perform best in the eight-factor model while the 10/90's best fit is the six-factor specification (the BMG factor: -0.1621, -0.0222, -0.5446, and -0.5428*).

Regarding investment performance findings occurring in shift in waste intensity per sales performance (see Table 14), in relation to simple return, less environmentally friendly companies robustly underperform environmentally friendly ones. In addition, similar findings observed in Sortino ratio and modified Sharpe measure. Dealing with the best-performing model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. In addition, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (3.66% and 0.74%), Sortino measure (0.1369 and -0.01) and MVaR-Sharpe (0.3127 and -0.0345). In accordance with simple return, the green portfolio unfrequently performs better than the market benchmark (in 4 out of 12 cases), while less environmentally friendly counterparts portfolio perform worse (in 3 out of 12 cases). In relation to modified Sharpe measure, the environmentally friendly portfolio seldom exceeds the benchmark (in 4 out of 12 cases), while brown stocks behave worse (in 3 out of 12 cases).

In terms of the outputs based on companies from the Europe and GHG and CO2 emission difference (see Table 15), almost none of the conventional factors are explaining portfolios' performances in each approach. Regarding the brown-minus-green factor, significant brown findings outpace on the alphas; however, only one approach is significant (0.8841** in KNN estimation). In terms of the HML factor, significant brown estimations consist of companies with high book-to-market ratios; however, only one approach is significant (0.3477* in 50/50 specification). With regards to the profitability factor, significant environmentally friendly results consist of robust stocks; however, only one approach is significant (-0.7098** in 10/90 estimation). According to Akaike information criterion corrected for small sample size best fir models for the 10/90, the 30/70, the 50/50, and the KNN models are the six-factor specification, the three-factor estimation, the eight-factor estimation, and the four-factor specification, accordingly (the BMG: 0.3155, 0.0364, 0.1756, and 0.7168**).

In terms of investment performance findings associated with GHG pollution difference (see Table 16), in accordance with non-adjusted performance, less environmentally friendly stocks often underperform environmentally friendly ones (in 1 out of 4 specifications). Furthermore, similar findings observed in Sortino ratio and modified Sharpe ratio. Regarding the model with the best performance, within environmentally friendly portfolios, the 10/90 model performs better compared to others (in raw return and MVaR-adjusted performance), while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Furthermore, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by non-adjusted performance, stocks with poor environmental performance exceed environmentally friendly (13.81% and 10.13%, accordingly). In relation to downside risk-adjusted performance, less environmentally friendly stocks outpace green (0.5321 and 0.4231, respectively). In relation to modified Sharpe ratio, less environmentally friendly stocks exceed green (1.0987 and 1.0229). Adhering to raw performance, the environmentally friendly portfolio seldom performs better than the benchmark (in 4 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform better (in 9 out of 12 cases). Judging by MVaR-Sharpe, the environmentally friendly portfolio unfrequently beats the market index (in 4 out of 12 cases), whereas less environmentally friendly stocks perform better (in 5 out of 12 cases).

In terms of the results established on change in water usage intensity (see Table 15), most of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG, 2 out of 4 estimations' results are significant, evidencing all green portfolios outshine on the risk-adjusted terms (-0.3898* and -1.0014**, in 50/50 and KNN models). Dealing with the CAPM factor, 3 out of 4 estimations' results are significant, showing that all brown portfolios are higher-beta (0.3089**, 0.1629* and 0.1538**, in KNN, 10/90 and 30/70 estimations, accordingly). With regards to the small-firm effect, significant brown model results consist of small-caps; however, only one approach is significant (0.5579** in KNN model). Concerning the HML, 2 out of 4 estimations are significant, evidencing all brown portfolios consist of value stocks (0.5344*** and 0.4335*, in 50/50 and 30/70 specifications). Dealing with the profitability anomaly, 2 out of 4 models' results are significant, demonstrating that all brown portfolios are positively exposed to the profitability factor (0.7762* and 0.361*, in KNN and 30/70 estimations, accordingly). Concerning the conservative-minus-aggressive factor, 2 out of 4 estimations are significant, implying results are mixed depending on chosen specifications (1.2725*** and -0.3686*, in 10/90 and 50/50 models). Considering the WML factor, 2 out of 4 models' results are significant, illuminating all brown portfolios have higher WML exposure (0.2743** and 0.2219*, in 50/50 and 30/70 specifications, accordingly). According to Corrected Akaike criterion, the six-factor model is the best fit in the 10/90 and the 50/50 models whereas the eight-factor estimation in the KNN and the four-factor model in the 30/70 estimation (the BMG factor: -0.5704, -0.3898*, -1.069***, and -0.2866, respectively).

With regards to investment performance outputs associated with water usage change (see Table 16), adhering to raw performance, green companies always outshine less environmentally friendly ones. Additionally, similar findings occurring in Sortino ratio and modified Sharpe measure. Dealing with the best model, within green portfolios, the KNN model performs better compared to others (in raw performance and MVaR-Sharpe), while within less environmentally friendly portfolios, the best performing model is the 30/70 in each measure. Additionally, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (7.17% and 4.44%), Sortino measure (0.3267 and 0.1584) and modified Sharpe measure (0.7138 and 0.3393). According to raw performance, the environmentally friendly portfolio beats half of the market (in 6 out of 12 cases), whereas stocks with poor environmental performance portfolio perform worse (in 4 out of 12 cases). According to modified Sharpe measure, the environmentally friendly portfolio unfrequently outshines the market (in 5 out of 12 cases), while brown stocks perform worse (in 4 out of 12 cases).

Concerning the findings inspired by change in total waste performance (see Table 15), several of the conventional factors are explaining portfolios' performances in each approach. Considering the BMG factor, significant green estimation results underperform on the alphas; however, only one approach is significant (0.6428* in 10/90 estimation). With regards to the market beta, significant brown estimations have higher beta; however, only one approach is significant (0.126*** in 30/70 estimation). Considering the size effect, 2 out of 4 estimations' results are significant, suggesting all green portfolios are exposed to smaller-cap companies (-0.4601** and -0.6172**, in KNN and 10/90 estimations). Considering the high-minus-low factor, significant green findings are growth-oriented; however, only one approach is significant (0.7289** in KNN model). Regarding the WML, 3 out of 4 estimations' results are significant, showing that all green portfolios consist of winner companies (-0.1497*, -0.1973*** and -0.4134***, in 30/70, 50/50 and 10/90 specifications). Judging by Akaike criterion, the 10/90, the 30/70, and the 50/50 specifications perform best in the four-factor specification while the KNN best fit is the three-factor model (the BMG: 0.5989*, 0.0415, 0.0734, and 0.2838, accordingly).

Concerning financial performance findings associated with change in total waste performance (see Table 16), adhering to raw performance, less environmentally friendly stocks most often show lower returns than green ones (in 1 out of 4 models). Furthermore, similar findings occurring in Sortino measure and modified Sharpe ratio. Concerning the best model, the 10/90 approach performs best in both environmentally friendly and brown groups. Furthermore, considering the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to raw return, stocks with poor environmental performance outperform green (5.01% and 1.96%). Judging by Sortino ratio, less environmentally friendly stocks outperform green (0.165 and 0.0375). Adhering to MVaR-Sharpe, stocks with poor environmental performance outpace green (0.3651 and 0.0877, respectively). In accordance with raw return, the environmentally friendly portfolio unfrequently exceeds the market index (in 3 out of 12 cases), whereas brown stocks portfolio perform better (in 5 out of 12 cases). According to modified Sharpe ratio, the green portfolio rarely outshines the market benchmark (in 3 out of 12 cases), while less environmentally friendly counterparts behave better (in 4 out of 12 cases).

Regarding the findings formed on companies related to the Asia Pacific region excluding Japan and GHG and CO2 emission change (see Table 17), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the BMG factor, significant green model results perform better than on the alphas; however, only one approach is significant (-1.2167*** in 10/90 estimation). With regards to the SMB factor, significant green results consist of smaller-cap companies; however, only one approach is significant (0.4031* in KNN specification). With regards to the value premium, all findings are significant, showing that all environmentally friendly portfolios consist of companies with lower book-to-market values (0.7556***, 0.6593**, 0.6365*** and 0.296*, in 10/90, KNN, 30/70 and 50/50 estimations). Concerning the CMA, 2 out of 4 estimations are significant, implying all green portfolios have positive CMA exposure (-0.4013** and -0.616**, in 50/50 and 30/70 estimations, respectively). With regards to the WML factor, significant green model results have lower WML exposure; however, only one approach is significant (0.2962** in 10/90 model). In relation to Corrected Akaike information criterion, the six-factor estimation is the best fit in the 30/70 and the 50/50 models while the three-factor estimation in the KNN and the four-factor model in the 10/90 specification (the brown-minus-green factor: -0.4355, -0.1337, -0.4366, and -1.0807**, accordingly).

Considering financial performance findings associated with GHG emissions difference (see Table 18), adhering to raw performance, environmentally friendly stocks consistently beat less environmentally friendly ones. Furthermore, similar results occurring in downside risk-adjusted performance and MVaR-adjusted performance. Considering the best model, within green portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Further, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (8.87% and 4.05%), downside risk-adjusted performance (0.3896 and 0.1681) and MVaR-adjusted performance (0.7794 and 0.3192). In accordance with simple return, the green portfolio rarely exceeds the market index (in 4 out of 12 cases), whereas less environmentally friendly stocks portfolio behave worse (in 3 out of 12 cases). Judging by modified Sharpe ratio, the green portfolio unfrequently outpaces the benchmark (in 4 out of 12 cases), whereas less environmentally friendly counterparts behave worse (in 3 out of 12 cases).

Dealing with the outputs inspired by water usage change (see Table 17), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the HML factor, significant green results are negatively exposed to the value effect; however, only one approach is significant (0.356** in 10/90 specification). Considering the CMA, significant brown model results have negative CMA exposure; however, only one approach is significant (-1.196*** in KNN model). With regards to the momentum factor, significant brown estimation results include winner stocks; however, only one approach is significant (0.4307*** in 10/90 specification). There are no significant results in terms of the BMG. In relation to Corrected Akaike information criterion, the CAPM is the best fit in the 30/70 and the 50/50 models whereas the six-factor model in the KNN and the four-factor estimation in the 10/90 model (the brown-minus-green factor: -0.3765, -0.1084, -0.0796, and -0.5629, respectively).

Concerning financial performance results occurring in shift in water usage performance (see Table 18), in accordance with simple return, environmentally friendly stocks robustly beat brown ones. Additionally, similar results observed in downside risk-adjusted performance and MVaR-Sharpe. Concerning the best model, within environmentally friendly portfolios, the KNN model performs better compared to others (in raw performance and Sortino ratio), while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Further, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (7.39% and 6.2%), Sortino measure (0.363 and 0.2675) and modified Sharpe measure (0.6988 and 0.5654). According to simple return, the green portfolio rarely outpaces the benchmark (in 4 out of 12 cases), whereas brown stocks portfolio behave similarly. Adhering to MVaR-adjusted performance, the environmentally friendly portfolio unfrequently outpaces the broad market index (in 4 out of 12 cases), while less environmentally friendly stocks behave the same.

In terms of the findings established on shift in total waste performance (see Table 17), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the environmental factor, 3 out of 4 models' results are significant, evidencing all environmentally friendly portfolios outperform on the risk-adjusted terms (-0.7746***, -0.903*** and -0.983**, in 50/50, 30/70 and 10/90 estimations, accordingly). In terms of the CAPM factor, all estimations' results are significant, illuminating all green portfolios are less risky (0.344**, 0.2848***, 0.1482** and 0.1143**, in 10/90, 30/70, KNN and 50/50 specifications, accordingly). With regards to the profitability factor, significant environmentally friendly results are positively exposed to RMW; however, only one approach is significant (-0.8523*** in KNN model). Dealing with the CMA factor, significant green findings include firms that invest conservatively; however, only one approach is significant (-0.5808** in KNN model). With regards to the WML, significant less environmentally friendly model results have higher WML exposure; however, only one approach is significant (0.4483*** in KNN estimation). In accordance with Corrected Akaike criterion, the 10/90, the 30/70, and the 50/50 estimations perform best in the CAPM while the KNN best fit is the six-factor specification (the environmental factor: -0.6281, -0.7968***, -0.811***, and -0.5305).

With regards to financial performance outputs associated with shift in waste intensity per sales performance (see Table 18), adhering to non-adjusted performance, green stocks universally outperform brown ones. Further, similar findings occurring in Sortino measure and MVaR-adjusted performance. Concerning the best model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. In addition, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (12.14% and 3.93%), Sortino ratio (0.6716 and 0.1109) and MVaR-Sharpe (1.3066 and 0.2656). In relation to simple return, the green portfolio often outpaces the market index (in 9 out of 12 cases), whereas brown stocks portfolio behave worse (in 3 out of 12 cases). According to modified Sharpe ratio, the green portfolio unfrequently outperforms the market (in 5 out of 12 cases), while less environmentally friendly stocks behave worse (in 3 out of 12 cases).

Regarding the outputs established on companies from the North America and GHG pollution change (see Table 19), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG factor, 2 out of 4 estimations' results are significant, suggesting all environmentally friendly portfolios perform better than on the risk-adjusted terms (-0.7592** and -1.2509***, in 10/90 and KNN estimations, accordingly). Considering the size factor, significant green model results consist of smaller-cap stocks; however, only one approach is significant (0.5233** in KNN specification). With regards to the value premium, significant green estimation results are growth-oriented; however, only one approach is significant (0.7025** in KNN specification). In terms of the CMA factor, 2 out of 4 estimations are significant, implying all green portfolios have positive CMA exposure (-0.7033* and -1.0066**, in 10/90 and KNN estimations, accordingly). According to Akaike information criterion corrected for small sample size, the three-factor model is the best fit in the 10/90 and the 30/70 estimations while the six-factor specification in the KNN and the baseline specification in the 50/50 estimation (the BMG factor: -0.8412**, -0.2619, -1.2509***, and -0.1297, respectively).

Dealing with financial performance findings observed in shift in GHG emissions performance (see Table 20), adhering to raw return, green companies always outshine brown ones. Moreover, similar outputs associated with Sortino measure and MVaR-Sharpe. With regards to the model with the best returns, within environmentally friendly portfolios, the KNN model performs better compared to others (in raw performance and modified Sharpe measure), while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Moreover, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (22.39% and 17.84%), Sortino ratio (0.9847 and 0.8821) and modified Sharpe measure (2.4712 and 2.052). Adhering to non-adjusted performance, the green portfolio robustly outshines the benchmark, whereas brown stocks portfolio perform the same. According to modified Sharpe measure, the environmentally friendly portfolio mostly outpaces the benchmark (in 11 out of 12 cases), while brown stocks perform worse (in 9 out of 12 cases).

Considering the results created on change in water intensity per sales (see Table 19), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the CAPM factor, significant brown estimations are higher-beta; however, only one approach is significant (0.1439* in 30/70 specification). Considering the value factor, 2 out of 4 models' results are significant, demonstrating that all brown portfolios are positively exposed to the value effect (0.7877** and 0.5791**, in 10/90 and KNN specifications). Dealing with the CMA factor, significant less environmentally friendly results are negatively exposed to the investment factor; however, only one approach is significant (-1.1982*** in 10/90 estimation). Regarding the momentum factor, 3 out of 4 results are significant, evidencing that all brown portfolios consist of winner companies (0.4042***, 0.326** and 0.2692***, in 10/90, KNN and 30/70 specifications, respectively). There are no significant results in terms of the environmental factor. Adhering to Akaike criterion, the six-factor specification is the best fit in the 10/90 and the KNN specifications while the four-factor specification in the 30/70 and the CAPM in the 50/50 specification (the environmental factor: 0.0074, 0.1191, -0.1753, and 0.0968).

Dealing with financial performance findings occurring in water intensity per sales difference (see Table 20), adhering to raw return, green companies in most cases perform better than brown ones (in 3 out of 4 estimations). In addition, similar findings observed in Sortino measure and MVaR-Sharpe. With regards to the model with the best performance, within environmentally friendly portfolios, the KNN model performs better compared to others (in raw performance and Sortino ratio), while within brown portfolios, the best performing model is the 50/50 in each measure. Furthermore, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to simple return, brown stocks perform better than green (18.44% and 17.29%, respectively). In accordance with downside risk-adjusted performance, environmentally friendly outpace brown stocks (1.0983 and 1.0673). Adhering to modified Sharpe measure, less environmentally friendly stocks outshine green (2.4697 and 2.4003, accordingly). Adhering to raw return, the green portfolio robustly outshines the market index, whereas stocks with poor environmental performance portfolio behave the same. In accordance with modified Sharpe ratio, the environmentally friendly portfolio most often outperforms the benchmark (in 10 out of 12 cases), while brown stocks perform better (in 11 out of 12 cases).

Concerning the findings inspired by waste efficiency change (see Table 19), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the environmental factor, significant less environmentally friendly model results show lower returns than on the risk-adjusted terms; however, only one approach is significant (-0.9896* in KNN specification). Regarding the value factor, significant environmentally friendly results are growth-oriented; however, only one approach is significant (0.6347** in 10/90 specification). In terms of the investment factor, 2 out of 4 findings are significant, showing that all green portfolios have positive CMA exposure (-0.6919** and -0.8826*, in 10/90 and KNN specifications, respectively). According to Corrected Akaike criterion, the three-factor estimation is the best fit in the 30/70 and the 50/50 estimations while in the 10/90 and the KNN estimations best fit is the baseline model (the brown-minus-green factor: -0.1217, -0.1508, -0.533, and -0.8983, respectively).

Dealing with investment performance findings observed in waste intensity per sales difference (see Table 20), in accordance with simple return, green stocks consistently outpace less environmentally friendly ones. Additionally, similar results observed in Sortino ratio and modified Sharpe measure. In terms of the best model, the 50/50 approach performs best in both green and less environmentally friendly groups. Furthermore, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (17.83% and 14.43%), downside risk-adjusted performance (1.0217 and 0.7731) and modified Sharpe measure (2.5304 and 1.8305). Adhering to non-adjusted performance, the environmentally friendly portfolio robustly exceeds the broad market index, while less environmentally friendly counterparts portfolio behave worse (in 9 out of 12 cases). Judging by modified Sharpe ratio, the green portfolio consistently exceeds the market benchmark, while stocks with poor environmental performance behave worse (in 9 out of 12 cases).

In terms of the outputs formed on stocks from the Latin America and shift in GHG emissions performance (see Table 21), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the brown-minus-green factor, significant less environmentally friendly estimations exceed on the risk-adjusted terms; however, only one approach is significant (1.6885* in KNN model). Considering the HML, 3 out of 4 results are significant, evidencing that all green portfolios are positively exposed to the value effect (-1.144**, -1.1504** and -1.151**, in 30/70, 10/90 and 50/50 models, respectively). Considering the conservative-minus-aggressive factor, 2 out of 4 estimations' results are significant, illuminating all brown portfolios are positively exposed to the investment factor (1.3849*** and 1.0559*, in 50/50 and 30/70 specifications, accordingly). According to Akaike information criterion, the baseline specification is the best fit in the 10/90 and the KNN specifications whereas the three-factor estimation in the 30/70 and the six-factor specification in the 50/50 estimation (the BMG factor: 0.4139, 1.4104*, 0.2714, and 0.1175, respectively).

With regards to financial performance outputs observed in GHG pollution difference (see Table 22), adhering to simple return, less environmentally friendly companies robustly beat green ones. In addition, similar outputs observed in Sortino measure and MVaR-Sharpe. Regarding the best-performing model, within green portfolios, the 30/70 model performs better compared to others (in Sortino measure and modified Sharpe measure), while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Additionally, regarding the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, stocks with poor environmental performance outperform environmentally friendly (11.0% and -3.74%). In accordance with Sortino ratio, stocks with poor environmental performance outperform green (0.3133 and -0.135, accordingly). In accordance with MVaR-adjusted performance, less environmentally friendly stocks exceed environmentally friendly (0.4812 and -0.2619). Adhering to raw performance, the environmentally friendly portfolio never exceeds the market index, whereas brown stocks portfolio perform better (in

3 out of 12 cases). In accordance with modified Sharpe ratio, the green portfolio never outpaces the market, while less environmentally friendly counterparts perform better (in 3 out of 12 cases).

Considering the outputs created on water intensity per sales difference (see Table 21), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the SMB, significant environmentally friendly estimation results consist of smaller-cap stocks; however, only one approach is significant (-0.6747** in 50/50 estimation). In terms of the HML factor, significant green model results consist of companies with lower book-to-market values; however, only one approach is significant (0.858* in 30/70 estimation). Considering the operating profitability factor, significant less environmentally friendly findings consist of the most profitable firms; however, only one approach is significant (1.2691* in KNN specification). In terms of the investment factor, significant less environmentally friendly estimation results consist of aggressive stocks; however, only one approach is significant (-1.0352* in 30/70 specification). Concerning the momentum, significant less environmentally friendly results include winner stocks; however, only one approach is significant (0.5639*** in 50/50 model). There are no significant results in terms of the brown-minus-green factor. In relation to Corrected Akaike criterion, the baseline model is the best fit in the 30/70 and the KNN specifications whereas the CAPM in the 10/90 and the four-factor estimation in the 50/50 estimation (the environmental factor: 0.6681, 0.1681, 0.5145, and -0.7893*).

Considering financial performance results associated with change in water intensity per sales (see Table 22), according to non-adjusted performance, less environmentally friendly companies most often beat environmentally friendly ones. Moreover, similar outputs observed in downside risk-adjusted performance and MVaR-adjusted performance. With regards to the best model, within environmentally friendly portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 (in Sortino measure and modified Sharpe measure). Furthermore, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to simple return, stocks with poor environmental performance outperform environmentally friendly (-0.17% and -4.87%, respectively). Adhering to downside risk-adjusted performance, stocks with poor environmental performance beat environmentally friendly (-0.0345 and -0.1878, accordingly). In relation to modified Sharpe ratio, less environmentally friendly counterparts beat environmentally friendly (-0.0651 and -0.3895, accordingly). According to raw return, the environmentally friendly portfolio never beats the benchmark, whereas brown stocks portfolio behave the same. Adhering to modified Sharpe ratio, the environmentally friendly portfolio never outshines the broad market index, whereas less environmentally friendly counterparts perform similarly.

Dealing with the outputs inspired by shift in waste efficiency performance (see Table 21), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG factor, significant less environmentally friendly results outshine on the alphas; however, only one approach is significant (2.0096** in 10/90 model). With regards to the market risk, significant environmentally friendly estimation results are riskier; however, only one approach is significant (-0.3577* in 10/90 specification). In terms of the SMB, 2 out of 4 estimations are significant, indicating that all brown portfolios consist of small stocks (0.9524** and 0.8564***, in 30/70 and 50/50 estimations). In terms of the HML, 2 out of 4 estimations' results are significant, implying all green portfolios are value-oriented (-0.8956** and -1.0286**, in 50/50 and 10/90 estimations). In terms of the conservative-minus-aggressive factor, 2 out of 4 estimations' results are significant, implying all brown portfolios consist of conservative stocks (1.0012* and 0.7762**, in 30/70 and 50/50 estimations). Judging by Akaike information criterion, each portfolio specification performs best in the three-factor model (the environmental factor for the 10/90, the 30/70, the 50/50, and the KNN estimations: 1.4212*, 0.2714, -0.0077, and 0.6747, respectively).

Considering investment performance findings associated with waste intensity per sales difference (see Table 22), judging by raw performance, green companies always underperform less environmentally friendly ones. Dealing with the model with the best returns, within green portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. In addition, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw return, brown stocks outshine environmentally friendly (6.97% and -0.8%). Judging by Sortino measure, less environmentally friendly stocks outpace green (0.2419 and -0.053, accordingly). According to MVaR-Sharpe, less environmentally friendly counterparts perform better than environmentally friendly (0.3833 and -0.1024). In accordance with simple return, the environmentally friendly portfolio never beats the broad market index, while stocks with poor environmental performance portfolio behave better (in 4 out of 12 cases). According to MVaR-Sharpe, the environmentally friendly portfolio never exceeds the market, while stocks with poor environmental performance behave better (in 4 out of 12 cases).

With regards to the results inspired by stocks from the Middle East and Africa and GHG and CO2 emission difference (see Table 23), almost none of the conventional factors are explaining portfolios' performances in each approach. Concerning the CAPM factor, significant brown model results are high-beta stocks; however, only one approach is significant (0.318** in 30/70 model). With regards to the robust-minus-weak factor, significant green estimations are positively exposed to the profitability factor; however, only one approach is significant (-0.6981* in 30/70 specification). Considering the momentum factor, significant green findings consist of winner companies; however, only one approach is significant (-1.7271* in KNN estimation). There are no significant results in terms of the BMG. According to Akaike information criterion, the CAPM is the best fit in the 30/70 and the 50/50 specifications while the four-factor estimation in the KNN and the baseline specification in the 10/90 estimation (the BMG factor: -0.409, -0.2142, 2.1843, and -1.3435, respectively).

Considering financial performance outputs associated with GHG pollution difference (see Table 24), in accordance with raw performance, less environmentally friendly companies frequently lag behind green ones (in 1 out of 4 estimations). Additionally, similar results occurring in Sortino ratio and modified Sharpe measure. Dealing with the model with the best returns, within green portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the KNN in each measure. In addition, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to raw performance, brown stocks exceed environmentally friendly (6.61% and 3.39%). According to Sortino measure, less environmentally friendly stocks perform better than environmentally friendly (0.1623 and 0.1168, accordingly). In relation to MVaR-adjusted performance, environmentally friendly beat less environmentally friendly counterparts (0.2442 and 0.2065, respectively). In accordance with raw return, the environmentally friendly portfolio rarely performs better than the benchmark (in 2 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform better (in 3 out of 12 cases). Adhering to MVaR-Sharpe, the environmentally friendly portfolio unfrequently beats the market benchmark (in 2 out of 12 cases), whereas brown stocks behave the same.

Concerning the outputs formed on water usage intensity difference (see Table 23), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the CAPM factor, 2 out of 4 estimations' results are significant, evidencing all brown portfolios have higher beta (0.5979* and 0.3782*, in 10/90 and 30/70 models, accordingly). In terms of the SMB factor, significant less environmentally friendly model results consist of smaller-cap stocks; however, only one approach is significant (1.2622* in 10/90 specification). Regarding the CMA, significant green estimation results are negatively exposed to the investment factor; however, only one approach is significant (1.0194* in 50/50 estimation). Regarding the WML, significant less environmentally friendly results consist of winner companies; however, only one approach is significant (0.6706*** in KNN estimation). There are no significant results in terms of the BMG. In relation to Corrected Akaike criterion, the baseline estimation is the best fit in the 50/50 and the KNN specifications while in the 10/90 and the 30/70 estimations best fit is the CAPM (the brown-minus-green factor: -0.734, -0.4748, -0.7906, and -1.2986*).

Concerning financial performance results occurring in water intensity per sales difference (see Table 24), adhering to simple return, brown stocks universally are inferior to environmentally friendly ones. In addition, similar results occurring in Sortino measure and MVaR-adjusted performance. Regarding the best-performing model, the 10/90 approach performs best in both green and brown groups. Further, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (6.58% and -1.09%), downside risk-adjusted performance (0.2 and -0.0564) and modified Sharpe measure (0.3397 and -0.1383). Judging by raw return, the environmentally friendly portfolio seldom exceeds the market (in 3 out of 12 cases), while brown stocks portfolio perform worse (in 1 out of 12 cases). In accordance with modified Sharpe ratio, the environmentally friendly portfolio unfrequently outperforms the market index (in 3 out of 12 cases), whereas stocks with poor environmental performance perform worse (in 2 out of 12 cases).

In terms of the findings inspired by shift in waste intensity performance (see Table 23), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the HML, significant less environmentally friendly estimation results are positively exposed to the value effect; however, only one approach is significant (1.6491* in 10/90 specification). There are no significant results in terms of the BMG factor. Judging by Corrected Akaike information criterion, the baseline estimation is the best fit in the 30/70 and the 50/50 models whereas the CAPM in the KNN and the three-factor specification in the 10/90 model (the environmental factor: 0.0699, 0.6744, -0.3423, and 0.0236).

Considering investment performance findings associated with shift in waste intensity per sales performance (see Table 24), according to simple return, brown stocks perform similar to green ones (in 2 out of 4 estimations). Contrastingly, findings observed in Sortino measure and MVaR-Sharpe are less representative (environmentally friendly companies perform better than less environmentally friendly stocks in 1 out of 4 and 1 out of 4 estimations, respectively). Regarding the best model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Furthermore, considering the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw performance, less environmentally friendly counterparts perform better than environmentally friendly (2.51% and -0.13%, respectively). According to Sortino ratio, less environmentally friendly stocks outshine green (0.0639 and -0.0503, respectively). In relation to MVaR-adjusted performance, brown stocks beat green (0.1412 and -0.1165, respectively). According to raw return, the green portfolio never outperforms the broad market index, whereas less environmentally friendly counterparts portfolio perform better (in 2 out of 12 cases). Judging by MVaR-adjusted performance, the environmentally friendly portfolio never outperforms the benchmark, whereas brown stocks perform better (in 2 out of 12 cases).

Regarding the results formed on United States stocks and GHG emissions change (see Table 25), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the BMG factor, 2 out of 4 estimations are significant, evidencing all environmentally friendly portfolios perform better than on the alphas (-1.1078** and -1.3308**, in 10/90 and KNN estimations). Considering the market beta, significant green estimation results are low-beta stocks; however, only one approach is significant (0.3101** in KNN model). In terms of the small-firm effect, significant brown findings consist of small stocks; however, only one approach is significant (0.6438** in 10/90 specification). Concerning the value premium, significant green model results are growth-oriented; however, only one approach is significant (0.8503*** in KNN model). In terms of the robust-minus-weak factor, significant less environmentally friendly model results are positively exposed to the profitability factor; however, only one approach is significant (0.3333** in 50/50 specification). Dealing with the momentum, significant environmentally friendly findings consist of winner companies; however, only one approach is significant (-0.4774*** in KNN model). Adhering to Akaike criterion, the baseline model is the best fit in the 30/70 and the 50/50 specifications whereas the six-factor estimation in the KNN and the four-factor estimation in the 10/90 specification (the BMG: -0.4334, -0.1806, -1.3308**, and -1.0242*, accordingly).

In terms of financial performance results associated with GHG pollution difference (see Table 26), according to non-adjusted performance, environmentally friendly companies universally perform better than brown ones. Moreover, similar results associated with downside risk-adjusted performance and MVaR-Sharpe. Concerning the best model, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Further, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (23.2% and 18.42%), Sortino measure (1.008 and 0.9221) and modified Sharpe measure (2.5176 and 2.1858). Adhering to raw performance, the environmentally friendly portfolio consistently outperforms the broad market index, while stocks with poor environmental performance portfolio perform the same. Judging by modified Sharpe ratio, the environmentally friendly portfolio robustly exceeds the broad market index, while less environmentally friendly stocks behave worse (in 9 out of 12 cases).

In terms of the findings inspired by shift in water use intensity performance (see Table 25), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the CAPM factor, significant green model results are lower-beta; however, only one approach is significant (0.0939* in 50/50 model). Considering the size factor, significant brown model results consist of smaller-cap companies; however, only one approach is significant (-0.3455* in 10/90 model). With regards to the CMA factor, significant green findings are positively exposed to the investment factor; however, only one approach is significant (-0.667** in 10/90 model). There are no significant results in terms of the environmental factor. According to Akaike information criterion, the 10/90, the 30/70, and the KNN specifications perform best in the baseline estimation while the 50/50's best fit is the CAPM (the environmental factor: -0.0647, 0.2445, -0.1968, and 0.3075, accordingly).

Considering financial performance findings associated with shift in water usage intensity (see Table 26), in accordance with raw performance, brown companies perform on par with green ones (in 2 out of 4 models). Additionally, similar results observed in Sortino measure and MVaR-Sharpe. Dealing with the best-performing model, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Additionally, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by raw return, less environmentally friendly stocks beat environmentally friendly (20.56% and 16.0%). According to Sortino measure, less environmentally friendly stocks outpace green (1.2174 and 0.9821, respectively). Adhering to modified Sharpe ratio, less environmentally friendly counterparts beat environmentally friendly (3.0303 and 2.2751). In relation to non-adjusted performance, the green portfolio always exceeds the market, whereas less environmentally friendly counterparts portfolio behave the same. In relation to modified Sharpe ratio, the environmentally friendly portfolio in most cases outpaces the market index (in 9 out of 12 cases), while less environmentally friendly counterparts perform better (in 12 out of 12 cases).

Considering the results created on waste efficiency change (see Table 25), almost none of the conventional factors are explaining portfolios' performances in each approach. Concerning the size factor, significant green estimation results consist of large stocks; however, only one approach is significant (0.2247* in 50/50 specification). Considering the CMA factor, significant less environmentally friendly estimations are positively exposed to the investment factor; however, only one approach is significant (0.5378** in 30/70 estimation). There are no significant results in terms of the BMG. In relation to Corrected Akaike information criterion, the three-factor specification is the best fit in the 30/70 and the 50/50 specifications whereas in the 10/90 and the KNN specifications best fit is the baseline model (the BMG factor: -0.2511, -0.1174, -0.3487, and -0.334, respectively).

Dealing with financial performance results occurring in waste efficiency change (see Table 26), in relation to raw return, environmentally friendly companies universally perform better than less environmentally friendly ones. Additionally, similar outputs associated with Sortino measure and modified Sharpe ratio. With regards to the model with the best returns, the 50/50 approach performs best in both green and less environmentally friendly groups. Moreover, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (18.4% and 16.31%), Sortino measure (1.0904 and 0.8558) and modified Sharpe ratio (2.6201 and 2.0754). Adhering to simple return, the environmentally friendly portfolio always beats the broad market index, whereas brown stocks portfolio perform similarly. In accordance with modified Sharpe measure, the environmentally friendly portfolio robustly outpaces the market index, whereas less environmentally friendly stocks behave worse (in 9 out of 12 cases).

With regards to the results based on Japanese companies and shift in GHG emissions performance (see Table 27), almost none of the conventional factors are explaining portfolios' performances in each approach. Concerning the market risk, significant green estimations are less risky; however, only one approach is significant (0.1852** in 50/50 specification). There are no significant results in terms of the brown-minus-green factor. According to Corrected Akaike information criterion, the CAPM is the best fit in the 30/70 and the 50/50 specifications whereas in the 10/90 and the KNN models best fit is the baseline estimation (the brown-minus-green factor: -0.0697, -0.0806, -0.5703, and -0.7138, respectively).

Dealing with investment performance results occurring in greenhouse gas emissions difference (see Table 28), according to simple return, green companies perform the same as less environmentally friendly ones (in 2 out of 4 estimations). With regards to the best model, within green portfolios, the 10/90 model performs better compared to others (in simple return and Sortino measure), while within brown portfolios, the best performing model is the 50/50 in each measure. Additionally, regarding the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to non-adjusted performance, environmentally friendly perform better than less environmentally friendly counterparts (10.6% and 9.49%, accordingly). According to Sortino ratio, environmentally friendly beat less environmentally friendly stocks (0.5905 and 0.4841). In accordance with modified Sharpe ratio, less environmentally friendly stocks perform better than green (1.0279 and 0.9124, respectively). According to simple return, the green portfolio rarely outshines the benchmark (in 4 out of 12 cases), whereas stocks with poor environmental performance portfolio perform the same. In relation to modified Sharpe ratio, the green portfolio unfrequently outshines the broad market index (in 4 out of 12 cases), while less environmentally friendly stocks behave the same.

With regards to the outputs created on water usage difference (see Table 27), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the BMG factor, significant less environmentally friendly results lag behind on the alphas; however, only one approach is significant (-0.5618** in 50/50 model). Concerning the CAPM factor, significant less environmentally friendly estimations are high-beta stocks; however, only one approach is significant (0.1151** in 50/50 specification). Dealing with the size factor, 2 out of 4 models' results are significant, showing that all green portfolios consist of smaller-cap companies (-0.2844** and -0.3365**, in 50/50 and 30/70 estimations). Judging by Akaike information criterion, the 10/90, the 30/70, and the 50/50 estimations perform best in the three-factor model while the KNN best fit is the baseline specification (the BMG: -0.1922, -0.4253, -0.5516**, and -0.4144, accordingly).

Concerning investment performance results observed in shift in water use intensity performance (see Table 28), according to raw return, brown companies robustly underperform green ones. Further, similar results associated with Sortino ratio and modified Sharpe ratio. Considering the best-performing model, within green portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. Further, concerning the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (7.71% and 1.86%), Sortino measure (0.44 and 0.0426) and modified Sharpe measure (0.9196 and 0.1061). Judging by raw return, the green portfolio mostly beats the market (in 7 out of 12 cases), while stocks with poor environmental performance portfolio perform worse (in 3 out of 12 cases). In accordance with MVaR-adjusted performance, the green portfolio exceeds half of the market benchmark (in 6 out of 12 cases), while brown stocks perform worse (in 3 out of 12 cases).

With regards to the findings created on shift in waste efficiency performance (see Table 27), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the market risk, significant brown model results are higher-beta; however, only one approach is significant (0.3113* in KNN estimation). Considering the value effect, significant green model results consist of companies with lower book-to-market values; however, only one approach is significant (0.6423* in KNN model). In terms of the RMW, significant brown model results consist of robust stocks; however, only one approach is significant (0.7129** in 10/90 specification). Considering the momentum, 2 out of 4 estimations are significant, suggesting all green portfolios have higher WML exposure (-0.163* and -0.1694*, in 50/50 and 30/70 estimations). There are no significant results in terms of the BMG factor. In accordance with Akaike information criterion, the eight-factor estimation is the best fit in the 30/70 and the 50/50 estimations whereas the three-factor model in the KNN and the six-factor specification in the 10/90 estimation (the brown-minus-green factor: 0.2292, 0.098, -0.3437, and -0.4595).

Dealing with financial performance outputs occurring in waste efficiency difference (see Table 28), judging by raw performance, environmentally friendly companies behave indistinguishable from less environmentally friendly ones (in 2 out of 4 models). Further, similar results observed in downside risk-adjusted performance and modified Sharpe ratio. Dealing with the best model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 30/70 in each measure. Additionally, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to simple return, brown stocks beat environmentally friendly (8.17% and 6.1%, respectively).

According to Sortino ratio, stocks with poor environmental performance outshine green (0.4041 and 0.2933). According to modified Sharpe ratio, brown stocks outshine environmentally friendly (0.8855 and 0.5874). In relation to raw return, the green portfolio unfrequently outpaces the market benchmark (in 3 out of 12 cases), whereas brown stocks portfolio behave better (in 4 out of 12 cases). Adhering to MVaR-adjusted performance, the environmentally friendly portfolio unfrequently outshines the benchmark (in 3 out of 12 cases), whereas brown stocks behave better (in 4 out of 12 cases).

Regarding the outputs inspired by companies from United Kingdom and shift in GHG emissions performance (see Table 29), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the brown-minus-green factor, significant environmentally friendly results underperform on the risk-adjusted terms; however, only one approach is significant (0.6657* in KNN estimation). With regards to the CMA factor, significant green model results include firms that invest conservatively; however, only one approach is significant (-0.483* in 30/70 model). In relation to Akaike criterion best fir models for the 10/90, the 30/70, the 50/50, and the KNN models are the CAPM, the three-factor estimation, the eight-factor specification, and the baseline estimation, respectively (the BMG: 0.4511, 0.2671, 0.3623, and 0.4443).

In terms of investment performance results occurring in shift in air pollution performance (see Table 30), in accordance with raw performance, less environmentally friendly stocks universally beat environmentally friendly ones. Concerning the model with the best returns, within green portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. In addition, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, stocks with poor environmental performance outpace green (17.35% and 12.78%, accordingly). Adhering to Sortino measure, stocks with poor environmental performance exceed environmentally friendly (0.76 and 0.6269, accordingly). According to MVaR-adjusted performance, environmentally friendly outperform brown stocks (1.4829 and 1.3415, accordingly). According to simple return, the green portfolio outpaces half of the market index (in 6 out of 12 cases), while brown stocks portfolio perform better (in 12 out of 12 cases). In relation to modified Sharpe measure, the environmentally friendly portfolio seldom performs better than the market index (in 5 out of 12 cases), whereas brown stocks behave the same.

In terms of the results established on change in water usage performance (see Table 29), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the market risk, significant green model results are less risky; however, only one approach is significant (0.1512* in 30/70 specification). Concerning the high-minus-low factor, 3 out of 4 models' results are significant, implying all brown portfolios consist of companies with high book-to-market ratios (1.6726***, 0.787*** and 0.6883**, in 10/90, 30/70 and 50/50 specifications). In terms of the profitability anomaly, significant less environmentally friendly results consist of robust stocks; however, only one approach is significant (1.6211*** in 10/90 specification). Regarding the momentum factor, significant environmentally friendly model results have higher WML exposure; however, only one approach is significant (-0.3424* in KNN estimation). There are no significant results in terms of the environmental factor.

According to Corrected Akaike information criterion, the four-factor specification is the best fit in the 50/50 and the KNN specifications while the six-factor estimation in the 10/90 and the three-factor specification in the 30/70 model (the environmental factor: -0.0292, 0.3563, -0.0793, and 0.1436).

Considering investment performance results associated with shift in water intensity per sales (see Table 30), judging by non-adjusted performance, green stocks frequently show lower returns than less environmentally friendly ones. With regards to the model with the best performance, within environmentally friendly portfolios, the KNN model performs better compared to others (in downside risk-adjusted performance and modified Sharpe ratio), while within brown portfolios, the best performing model is the 30/70 (in Sortino ratio and MVaR-Sharpe). Additionally, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to simple return, less environmentally friendly stocks perform better than environmentally friendly (14.11% and 12.74%, respectively). Judging by Sortino measure, environmentally friendly exceed brown stocks (0.7147 and 0.599). Judging by MVaR-adjusted performance, green perform better than less environmentally friendly counterparts (1.503 and 1.2398). According to raw performance, the environmentally friendly portfolio outperforms half of the benchmark (in 6 out of 12 cases), while brown stocks portfolio perform better (in 9 out of 12 cases). Adhering to MVaR-adjusted performance, the green portfolio unfrequently outperforms the market index (in 5 out of 12 cases), while brown stocks behave similarly.

Regarding the outputs inspired by change in waste efficiency performance (see Table 29), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the market beta, 2 out of 4 results are significant, demonstrating that all brown portfolios are riskier (0.2713** and 0.1811**, in KNN and 30/70 models). Concerning the CMA factor, significant environmentally friendly findings have positive CMA exposure; however, only one approach is significant (-0.6984* in 10/90 specification). In terms of the WML, 2 out of 4 findings are significant, demonstrating that all green portfolios have higher WML exposure (-0.2618** and -0.4736*, in 30/70 and KNN models). There are no significant results in terms of the environmental factor. In relation to Akaike criterion, the CAPM is the best fit in the 30/70 and the 50/50 estimations whereas the four-factor specification in the KNN and the baseline model in the 10/90 specification (the environmental factor: 0.1899, -0.1205, 0.3427, and 0.2347, accordingly).

Regarding investment performance results observed in waste efficiency difference (see Table 30), according to raw return, less environmentally friendly stocks perform similar to green ones (in 2 out of 4 specifications). Furthermore, similar outputs associated with Sortino measure and MVaR-Sharpe. With regards to the model with the best performance, within environmentally friendly portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 30/70 in each measure. Moreover, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with non-adjusted performance, brown stocks outperform green (9.63% and 8.18%, respectively). Adhering to downside risk-adjusted performance, environmentally friendly perform better than stocks with poor environmental performance (0.4399 and 0.4023). According to MVaR-Sharpe, green perform better than less environmentally friendly counterparts (0.9256 and 0.8417, accordingly). According to raw performance, the environmentally friendly portfolio rarely beats the market benchmark (in 4 out of 12 cases), while less environmentally friendly stocks portfolio behave the same. In relation to modified Sharpe measure, the environmentally friendly portfolio seldom beats the benchmark (in 4 out of 12 cases), while less environmentally friendly stocks perform the same.

Considering the findings based on Chinese stocks and GHG pollution difference (see Table 31), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the environmental factor, significant brown estimation results are inferior to on the risk-adjusted terms; however, only one approach is significant (-2.5147** in 30/70 estimation). Dealing with the market factor, significant environmentally friendly model results are lower-beta; however, only one approach is significant (0.4884* in 10/90 model). Regarding the small-minus-big factor, significant green model results are exposed to smaller-cap companies; however, only one approach is significant (-0.7999* in 10/90 estimation). With regards to the value effect, 2 out of 4 findings are significant, illuminating all brown portfolios consist of companies with high book-to-market ratios (2.0218** and 1.5592*, in KNN and 30/70 estimations, respectively). Regarding the profitability anomaly, 2 out of 4 estimations are significant, enforcing all brown portfolios consist of robust stocks (1.7954** and 1.3867**, in KNN and 30/70 specifications, respectively). In relation to Akaike information criterion, the baseline specification is the best fit in the 50/50 and the KNN estimations while in the 10/90 and the 30/70 specifications best fit is the CAPM (the environmental factor: -0.1819, -0.9062, -1.6492, and -1.09).

Dealing with financial performance results associated with GHG emissions difference (see Table 32), in accordance with non-adjusted performance, green stocks always exceed brown ones. Further, similar findings associated with Sortino ratio and MVaR-Sharpe. In terms of the best-performing model, within green portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. In addition, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (9.14% and 2.33%), Sortino measure (0.3743 and 0.0641) and MVaR-Sharpe (0.679 and 0.1169). In accordance with simple return, the environmentally friendly portfolio rarely outshines the market benchmark (in 2 out of 12 cases), whereas less environmentally friendly stocks portfolio perform worse (in 0 out of 12 cases). Adhering to MVaR-Sharpe, the environmentally friendly portfolio seldom performs better than the market benchmark (in 2 out of 12 cases), whereas stocks with poor environmental performance perform worse (in 0 out of 12 cases).

Dealing with the outputs formed on shift in water intensity per sales (see Table 31), almost none of the conventional factors are explaining portfolios' performances in each approach. Regarding the environmental factor, significant less environmentally friendly estimation results lag behind on the alphas; however, only one approach is significant (-2.2323** in 30/70 specification). Concerning the RMW, 2 out of 4 estimations are significant, demonstrating that all brown portfolios are positively exposed to RMW (1.6825* and 0.945*, in KNN and 10/90 specifications, respectively). Adhering to Akaike information criterion, each portfolio specification performs best in the baseline specification (the brown-minus-green factor for the 10/90, the 30/70, the 50/50, and the KNN models: 0.1702, -1.6286*, -0.3475, and -0.4601).

Regarding financial performance outputs observed in change in water usage performance (see Table 32), judging by raw performance, environmentally friendly stocks most often beat brown ones (in 3 out of 4 models). Furthermore, similar outputs occurring in Sortino measure and modified Sharpe measure. Concerning the model with the best performance, within green portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 (in raw return and Sortino ratio). In addition, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (10.97% and -0.61%), downside risk-adjusted performance (0.5099 and -0.0747) and MVaR-Sharpe (0.8329 and -0.1508). In relation to raw return, the green portfolio rarely outperforms the market index (in 3 out of 12 cases), whereas less environmentally friendly counterparts portfolio perform worse (in 2 out of 12 cases). Adhering to modified Sharpe measure, the green portfolio unfrequently beats the benchmark (in 3 out of 12 cases), while stocks with poor environmental performance behave worse (in 1 out of 12 cases).

In terms of the outputs based on waste intensity difference (see Table 31), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG factor, 3 out of 4 estimations are significant, demonstrating that all green portfolios outperform on the alphas (-1.6245***, -2.3173** and -4.5738**, in 50/50, 30/70 and KNN models, respectively). Regarding the market risk, 3 out of 4 estimations are significant, indicating that all brown portfolios are riskier (0.4558*, 0.3783* and 0.2784**, in KNN, 10/90 and

50/50 specifications). Considering the size effect, significant brown results are positively exposed to the size effect; however, only one approach is significant (0.4185* in 50/50 specification). Concerning the RMW factor, significant less environmentally friendly findings are positively exposed to RMW; however, only one approach is significant (1.0344** in 30/70 estimation). Regarding the WML, significant environmentally friendly estimation results include loser stocks; however, only one approach is significant (0.7887* in KNN model). Adhering to Akaike information criterion, the 10/90, the 30/70, and the KNN specifications perform best in the CAPM while the 50/50's best fit is the four-factor specification (the BMG: 0.0223, -1.2644, -3.6689**, and -1.8091***, respectively).

With regards to investment performance results associated with waste intensity difference (see Table 32), in relation to simple return, green companies universally perform better than less environmentally friendly ones. Contradicting earlier findings, outputs associated with Sortino measure and MVaR-adjusted performance are less representative (green companies exceed less environmentally friendly stocks in 3 out of 4 and 3 out of 4 estimations, accordingly). Considering the model with the best performance, within green portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. Furthermore, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (5.16% and -4.69%), Sortino ratio (0.2483 and -0.2039) and MVaR-adjusted performance (0.3962 and -0.3122). Judging by raw performance, the environmentally friendly portfolio rarely outpaces the market (in 3 out of 12 cases), whereas brown stocks portfolio perform worse (in 0 out of 12 cases). According to MVaR-Sharpe, the environmentally friendly portfolio seldom outshines the broad market index (in 3 out of 12 cases), whereas less environmentally friendly stocks perform worse (in 0 out of 12 cases).

Considering the outputs established on stocks associated with Taiwan and GHG pollution difference (see Table 33), none of the conventional factors are explaining portfolios' performances in each approach. There are also no significant results in terms of the BMG. Meanwhile, in accordance with Corrected Akaike information criterion, each portfolio estimation performs best in the baseline specification (the BMG for the 10/90, the 30/70, the 50/50, and the KNN specifications: -0.427, -0.501, -0.3869, and -0.9778, accordingly).

Regarding investment performance findings associated with GHG and CO2 emission change (see Table 34), judging by simple return, less environmentally friendly companies consistently lag behind environmentally friendly ones. Additionally, similar outputs occurring in Sortino measure and MVaR-Sharpe. Regarding the best model, the 50/50 approach performs best in both environmentally friendly and brown groups. In addition, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (17.85% and 13.03%), Sortino ratio (0.901 and 0.6842) and MVaR-adjusted performance (1.9948 and 1.6902). Adhering to raw performance, the green portfolio universally beats the market benchmark, whereas brown stocks portfolio behave worse (in 7 out of 12 cases). Judging by MVaR-adjusted performance, the green portfolio mostly outperforms the broad market index (in 8 out of 12 cases), whereas less environmentally friendly counterparts behave worse (in 6 out of 12 cases).

Regarding the results established on change in water use intensity performance (see Table 33), almost none of the conventional factors are explaining portfolios' performances in each approach. In terms of the market beta, 3 out of 4 models' results are significant, suggesting all green portfolios have higher beta (-0.1276**, -0.1669** and -0.2316*, in 50/50, 30/70 and 10/90 estimations). There are no significant results in terms of the BMG. Judging by Akaike criterion, the baseline specification is the best fit in the 50/50 and the KNN specifications whereas in the 10/90 and the 30/70 models best fit is the CAPM (the BMG factor: -0.0876, -0.7337, -0.2419, and -0.1903, accordingly).

Dealing with financial performance results associated with water usage intensity difference (see Table 34), according to raw return, less environmentally friendly stocks consistently are inferior to environmentally friendly ones. In addition, similar findings are observed in modified Sharpe ratio, while findings for Sortino measure are less representative (environmentally friendly stocks perform better than brown companies in 3 out of 4 estimations). Regarding the model with the best returns, within green portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Further, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (13.54% and 11.71%), downside risk-adjusted performance (0.6115 and 0.6048) and MVaR-adjusted performance (1.3882 and 1.2873). Judging by simple return, the green portfolio frequently beats the market (in 8 out of 12 cases), while stocks with poor environmental performance portfolio perform worse (in 7 out of 12 cases). In relation to modified Sharpe measure, the green portfolio rarely outperforms the market index (in 4 out of 12 cases), whereas stocks with poor environmental performance behave similarly.

Concerning the results inspired by change in waste intensity performance (see Table 33), almost none of the conventional factors are explaining portfolios' performances in each approach. Concerning the brown-minus-green factor, significant environmentally friendly estimation results perform better than on the alphas; however, only one approach is significant (-1.4283** in 10/90 model). In terms of the CAPM factor, significant less environmentally friendly results are riskier; however, only one approach is significant (0.2985** in 10/90 estimation). Dealing with the CMA factor, significant brown results have negative CMA exposure; however, only one approach is significant (-1.5772* in KNN estimation). In accordance with Akaike information criterion, the 30/70, the 50/50, and the KNN estimations perform best in the baseline estimation while the 10/90's best fit is the CAPM (the environmental factor: -0.6018, -0.2291, -0.5353, and -1.7144**, respectively).

In terms of financial performance outputs associated with change in total waste performance (see Table 34), in accordance with non-adjusted performance, environmentally friendly companies consistently outperform less environmentally friendly ones. In addition, similar outputs observed in Sortino measure and modified Sharpe ratio. With regards to the best-performing model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Moreover, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (30.75%

and 16.73%), Sortino ratio (1.4261 and 0.8415) and MVaR-adjusted performance (2.8836 and 1.6481). In accordance with raw return, the green portfolio always beats the market, while less environmentally friendly stocks portfolio perform similarly. According to MVaR-Sharpe, the green portfolio universally outshines the benchmark, whereas less environmentally friendly counterparts behave worse (in 6 out of 12 cases).

With regards to the outputs inspired by Hong Kong companies and greenhouse gas emissions performance (see Table 37), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the market beta, 2 out of 4 results are significant, implying all brown portfolios have higher beta (1.0896* and 1.0551**, in KNN and 10/90 specifications, accordingly). Regarding the conservative-minus-aggressive factor, significant environmentally friendly findings include firms that invest aggressively; however, only one approach is significant (4.0893* in 10/90 estimation). There are no significant results in terms of the environmental factor. In relation to Akaike criterion, the baseline estimation is the best fit in the 30/70 and the 50/50 estimations while in the 10/90 and the KNN specifications best fit is the three-factor model (the environmental factor: -0.1706, 0.043, 2.583, and 1.9434).

In terms of financial performance results occurring in GHG emissions change (see Table 38), according to raw performance, environmentally friendly stocks in most cases underperform less environmentally friendly ones. Considering the best-performing model, within green portfolios, the KNN model performs better compared to others (in non-adjusted performance and Sortino ratio), while within brown portfolios, the best performing model is the 10/90 in each measure. Additionally, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to non-adjusted performance, stocks with poor environmental performance exceed environmentally friendly (23.59% and 8.06%, accordingly). In accordance with Sortino measure, stocks with poor environmental performance outperform green (0.6862 and 0.4355, respectively). Judging by modified Sharpe ratio, green exceed stocks with poor environmental performance (0.7797 and 0.5695). According to non-adjusted performance, the green portfolio rarely outpaces the market index (in 2 out of 12 cases), while brown stocks portfolio perform better (in 6 out of 12 cases). According to MVaR-adjusted performance, the green portfolio unfrequently outpaces the broad market index (in 2 out of 12 cases), whereas brown stocks perform similarly.

Considering the results formed on change in water intensity per sales (see Table 37), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the brown-minus-green factor, significant green model results lag behind on the alphas; however, only one approach is significant (3.1369* in 10/90 model). Considering the market risk, 2 out of 4 models' results are significant, implying all green portfolios have higher beta (-0.3075*** and -0.5529***, in 30/70 and 10/90 specifications, respectively). Concerning the size factor, significant environmentally friendly model results are exposed to larger-cap companies; however, only one approach is significant (0.6996** in 50/50 estimation). Dealing with the RMW factor, significant less environmentally friendly estimations consist of the least profitable firms; however, only one approach is significant (-1.1941** in 10/90 specification). Regarding the CMA, significant brown results have positive CMA exposure; however, only one approach is significant (1.2083* in 10/90 estimation). In terms of the WML, significant green results are negatively exposed to momentum; however, only one approach is significant (1.0306*** in 10/90 model). Judging by Akaike information criterion corrected for small sample size best fir models for the 10/90, the 30/70, the 50/50, and the KNN models are the four-factor model, the CAPM, the three-factor model, and the baseline model, respectively (the BMG factor: 1.899, 0.2381, 0.0628, and -0.49, accordingly).

Concerning financial performance findings associated with change in water use intensity performance (see Table 38), adhering to raw return, less environmentally friendly stocks behave similar to green ones (in 2 out of 4 models). Additionally, similar outputs occurring in Sortino ratio and modified Sharpe measure. Regarding the model with the best returns, within green portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. Further, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by simple return, less environmentally friendly counterparts outshine green (31.03% and 5.37%). In relation to Sortino measure, stocks with poor environmental performance outperform environmentally friendly (1.2526 and 0.1682, accordingly). According to modified Sharpe measure, less environmentally friendly counterparts outperform environmentally friendly (3.6028 and 0.4144). Judging by non-adjusted performance, the green portfolio seldom outperforms the broad market index (in 2 out of 12 cases), while stocks with poor environmental performance portfolio behave better (in 10 out of 12 cases). In relation to modified Sharpe measure, the green portfolio unfrequently outpaces the market index (in 2 out of

12 cases), whereas stocks with poor environmental performance perform better (in 7 out of 12 cases).

Regarding the outputs established on waste intensity change (see Table 37), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the size premium, 2 out of 4 estimations' results are significant, indicating that all brown portfolios consist of small stocks (1.0461* and 0.9001**, in 10/90 and KNN models, accordingly). Considering the HML factor, 2 out of 4 models' results are significant, indicating that all brown portfolios are positively exposed to the value effect (1.7856*** and 0.9698*, in 10/90 and KNN specifications, respectively). Concerning the WML, significant brown findings include winner stocks; however, only one approach is significant (0.7109* in 10/90 estimation). There are no significant results in terms of the environmental factor. Adhering to Corrected Akaike criterion, each portfolio estimation performs best in the baseline specification (the BMG factor for the 10/90, the 30/70, the 50/50, and the KNN specifications: 0.4783, 0.6585, 0.1276, and 0.3235).

In terms of investment performance outputs observed in total waste difference (see Table 38), in accordance with non-adjusted performance, environmentally friendly stocks universally underperform less environmentally friendly ones. In addition, similar findings occurring in downside risk-adjusted performance and modified Sharpe ratio. Considering the model with the best performance, within environmentally friendly portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. In addition, concerning the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to non-adjusted performance, brown stocks outperform green (1.08% and -1.92%). In accordance with Sortino ratio, brown stocks outpace environmentally friendly (0.0033 and -0.1634). Adhering to MVaR-Sharpe, less environmentally friendly stocks beat environmentally friendly (0.0056 and -0.2764, accordingly). According to raw return, the environmentally friendly portfolio never beats the market benchmark, whereas brown stocks portfolio behave better (in 2 out of 12 cases). Judging by modified Sharpe measure, the green portfolio never beats the market index, whereas brown stocks behave better (in 2 out of 12 cases).

With regards to the findings established on German sample and GHG emissions change (see Table 45), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the environmental factor, significant less environmentally friendly results outperform on the risk-adjusted terms; however, only one approach is significant (2.3887** in 10/90 estimation). With regards to the CAPM factor, significant environmentally friendly estimations are riskier; however, only one approach is significant (-0.7762** in 10/90 specification). Regarding the size premium, significant green results consist of smaller-cap stocks; however, only one approach is significant (1.7956*** in KNN estimation). Dealing with the RMW, significant environmentally friendly results consist of robust stocks; however, only one approach is significant (-0.6173* in 50/50 specification). Concerning the WML, significant green estimations consist of loser companies; however, only one approach is significant (0.6683** in KNN model). In accordance with Corrected Akaike criterion, the baseline model is the best fit in the 30/70 and the 50/50 specifications while the four-factor estimation in the KNN and the three-factor model in the 10/90 specification (the brown-minus-green factor: 0.2925, 0.158, 0.5411, and 2.6521**, respectively).

In terms of investment performance outputs occurring in shift in GHG and CO2 emission performance (see Table 46), judging by simple return, less environmentally friendly companies universally outperform environmentally friendly ones. Moreover, similar results observed in Sortino measure and MVaR-adjusted performance. Concerning the model with the best returns, within environmentally friendly portfolios, the 50/50 model performs better compared to others (in non-adjusted performance and modified Sharpe measure), while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Further, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by raw return, brown stocks perform better than environmentally friendly (17.95% and 5.38%, accordingly). Adhering to downside risk-adjusted performance, less environmentally friendly counterparts outshine environmentally friendly (0.9238 and 0.2341, accordingly). According to modified Sharpe ratio, less environmentally friendly stocks outpace green (1.7024 and 0.465, accordingly). According to raw return, the environmentally friendly portfolio rarely beats the broad market index (in 3 out of 12 cases), while stocks with poor environmental performance portfolio perform better (in 10 out of 12 cases). In accordance with MVaR-Sharpe, the environmentally friendly portfolio seldom outpaces the market benchmark (in 3 out of 12 cases), whereas brown stocks perform better (in 4 out of 12 cases).

Concerning the findings established on water intensity per sales change (see Table 45), almost none of the conventional factors are explaining portfolios' performances in each approach. With regards to the market risk, significant green results are low-beta stocks; however, only one approach is significant (0.1552** in

30/70 specification). In terms of the RMW factor, significant brown estimation results are negatively exposed to the profitability factor; however, only one approach is significant (-0.9001* in 30/70 estimation). There are no significant results in terms of the brown-minus-green factor. Adhering to Corrected Akaike information criterion, the baseline estimation is the best fit in the 50/50 and the KNN models while in the 10/90 and the 30/70 models best fit is the CAPM (the environmental factor: 0.0814, 0.5145, -0.8738, and -0.1866).

Concerning financial performance results observed in water usage intensity difference (see Table 46), judging by simple return, green companies perform indistinguishable from less environmentally friendly ones (in 2 out of 4 specifications). In addition, similar outputs associated with Sortino ratio and modified Sharpe measure. Concerning the best model, within green portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. In addition, concerning the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to raw performance, less environmentally friendly counterparts exceed green (4.66% and 3.39%). Adhering to Sortino ratio, stocks with poor environmental performance perform better than environmentally friendly (0.1383 and 0.1069, respectively). Adhering to modified Sharpe measure, brown stocks outpace green (0.2592 and 0.2138). Judging by raw return, the environmentally friendly portfolio seldom beats the broad market index (in 4 out of 12 cases), whereas brown stocks portfolio perform the same. In accordance with modified Sharpe measure, the environmentally friendly portfolio unfrequently outperforms the market benchmark (in 3 out of 12 cases), while less environmentally friendly stocks behave similarly.

Regarding the outputs established on waste efficiency difference (see Table 45), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the BMG factor, significant environmentally friendly estimation results show lower returns than on the risk-adjusted terms; however, only one approach is significant (2.0427* in 10/90 model). Considering the market factor, 2 out of 4 estimations are significant, indicating that all brown portfolios are riskier (0.2097** and 0.1873*, in KNN and 30/70 specifications). Dealing with the CMA, 2 out of 4 models' results are significant, evidencing that all brown portfolios are positively exposed to the investment factor (1.2928** and 0.7126*, in 30/70 and 50/50 models). According to Corrected Akaike criterion, the CAPM is the best fit in the 10/90 and the KNN models while the six-factor specification in the 30/70 and the baseline model in the 50/50 estimation (the BMG: 1.6965*, -0.5372, -0.0183, and 0.0213).

With regards to investment performance results associated with change in waste intensity performance (see Table 46), in relation to raw return, green companies mostly underperform less environmentally friendly ones. Moreover, similar outputs are associated with modified Sharpe ratio, whereas findings for Sortino measure are more representative (environmentally friendly companies outperform less environmentally friendly companies in 2 out of 4 models). In terms of the best-performing model, within green portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. Moreover, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, stocks with poor environmental performance exceed green (7.82% and 3.73%). In accordance with Sortino measure, less environmentally friendly counterparts outshine green (0.2787 and 0.1306). In relation to modified Sharpe measure, brown stocks beat environmentally friendly (0.623 and 0.2459). Judging by non-adjusted performance, the green portfolio seldom outshines the market benchmark (in 4 out of 12 cases), while stocks with poor environmental performance portfolio behave similarly. Adhering to MVaR-Sharpe, the green portfolio seldom exceeds the market (in 3 out of 12 cases), while brown stocks perform better (in 4 out of 12 cases).

In terms of the findings established on Indian stocks and GHG emissions change (see Table 47), several of the conventional factors are explaining portfolios' performances in each approach. Considering the environmental factor, significant green estimation results outperform on the alphas; however, only one approach is significant (-1.9128* in 10/90 specification). With regards to the market beta, all findings are significant, evidencing that all environmentally friendly portfolios are low-beta stocks (1.1177***, 0.8264***, 0.6058*** and 0.3754***, in KNN, 10/90, 30/70 and 50/50 estimations, respectively). In terms of the HML factor, significant less environmentally friendly estimations are value-oriented; however, only one approach is significant (1.4038* in 10/90 model). Adhering to Corrected Akaike information criterion, the CAPM is the best fit in the 30/70 and the 50/50 models whereas in the 10/90 and the KNN models best fit is the three-factor model (the BMG: -0.2453, -0.3151, -2.2545**, and -0.7295, accordingly).

Concerning financial performance findings occurring in shift in GHG emissions performance (see Table 48), in relation to raw return, brown companies robustly underperform green ones. Additionally, similar results occurring in downside risk-adjusted performance and modified Sharpe ratio. Regarding the model with the best returns, within green portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. In addition, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (38.54% and 11.01%), downside risk-adjusted performance (1.215 and 0.3788) and modified Sharpe measure (3.466 and 0.7746). In relation to raw performance, the green portfolio consistently beats the benchmark, while less environmentally friendly stocks portfolio perform worse (in 8 out of 12 cases). In accordance with modified Sharpe ratio, the green portfolio robustly outshines the market index, whereas stocks with poor environmental performance perform worse (in 4 out of 12 cases).

Regarding the outputs created on water use intensity change (see Table 47), almost none of the conventional factors are explaining portfolios' performances in each approach. Concerning the CAPM factor, significant environmentally friendly findings are low-beta stocks; however, only one approach is significant (0.5608*** in KNN specification). Considering the size premium, significant environmentally friendly results consist of small-caps; however, only one approach is significant (-1.1964* in KNN estimation). There are no significant results in terms of the brown-minus-green factor. In accordance with Akaike information criterion, the 10/90, the 30/70, and the 50/50 specifications perform best in the baseline model whereas the KNN best fit is the CAPM (the brown-minus-green factor: -2.0909*, 0.4594, 0.4969, and 0.4992).

Dealing with financial performance findings occurring in water usage intensity difference (see Table 48), judging by simple return, less environmentally friendly stocks frequently perform better than green ones. Regarding the model with the best performance, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 (in non-adjusted performance and modified Sharpe measure). Furthermore, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (46.97% and 31.7%), Sortino measure (1.2773 and 1.1202) and modified Sharpe ratio (5.1685 and 2.4561). Judging by raw performance, the green portfolio robustly outshines the market, while stocks with poor environmental performance portfolio behave similarly. In relation to modified Sharpe measure, the environmentally friendly portfolio always outperforms the broad market index, while less environmentally friendly counterparts behave the same.

In terms of the outputs formed on shift in total waste performance change (see Table 47), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the CAPM factor, 3 out of 4 findings are significant, showing that all brown portfolios are riskier (0.8159***, 0.6907*** and 0.2395**, in KNN, 30/70 and 50/50 specifications). Considering the value effect, significant brown estimation results consist of companies with high book-to-market ratios; however, only one approach is significant (0.5354* in 50/50 model). There are no significant results in terms of the BMG. According to Akaike information criterion, the CAPM is the best fit in the 30/70 and the KNN specifications while the baseline estimation in the 10/90 and the three-factor specification in the 50/50 specification (the BMG: -0.4177, -1.5718*, 0.0276, and -0.1183, respectively).

Regarding investment performance outputs observed in waste intensity per sales change (see Table 48), according to simple return, environmentally friendly companies most often outperform brown ones (in 3 out of 4 estimations). Dealing with the best-performing model, within green portfolios, the KNN model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. In addition, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (27.21% and 23.39%), Sortino measure (1.2235 and 0.8756) and modified Sharpe measure (2.9835 and 2.2099). In relation to simple return, the green portfolio universally outshines the market benchmark, while less environmentally friendly stocks portfolio perform the same. Judging by MVaR-adjusted performance, the green portfolio always outshines the market benchmark, whereas brown stocks behave worse (in 9 out of 12 cases).

With regards to the findings formed on stocks from Sweden and GHG pollution change (see Table 53), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the market risk, significant less environmentally friendly findings have higher beta; however, only one approach is significant (0.5428** in 10/90 model). Dealing with the profitability anomaly, 2 out of 4 estimations are significant, evidencing that all green portfolios are positively exposed to the profitability factor (-1.9103** and -2.5324***, in 10/90 and KNN estimations, accordingly). With regards to the CMA factor, 2 out of 4 models' results are significant, showing that all green portfolios have positive CMA exposure (-1.673** and -2.5902**, in KNN and 10/90 estimations, accordingly). There are no significant results in terms of the BMG. Judging by Corrected Akaike information criterion, the 30/70, the 50/50, and the KNN models perform best in the baseline estimation whereas the 10/90's best fit is the CAPM (the BMG: -2.1989**, -1.6715**, -0.0344, and 0.501, respectively).

In terms of financial performance outputs occurring in greenhouse gas emissions performance (see Table 54), in accordance with simple return, green stocks mostly outshine brown ones (in 3 out of 4 estimations). Moreover, similar results occurring in downside risk-adjusted performance and modified Sharpe measure. Regarding the best model, within environmentally friendly portfolios, the 30/70 model performs better compared to others (in raw performance and Sortino measure), while within brown portfolios, the best performing model is the KNN in each measure. Furthermore, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (23.81% and 22.5%), Sortino measure (2.3307 and 1.2112) and modified Sharpe measure (3.0882 and 2.9265). In accordance with raw performance, the environmentally friendly portfolio often exceeds the benchmark (in 8 out of 12 cases), while less environmentally friendly counterparts portfolio perform worse (in 3 out of 12 cases). Judging by modified Sharpe measure, the environmentally friendly portfolio seldom outpaces the market benchmark (in 3 out of 12 cases), whereas less environmentally friendly stocks perform similarly.

Concerning the outputs based on water usage intensity difference (see Table 53), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the size factor, significant less environmentally friendly model results are exposed to larger-cap companies; however, only one approach is significant (-1.486* in 10/90 estimation). There are no significant results in terms of the environmental factor. In relation to Corrected Akaike information criterion, the 10/90, the 30/70, and the KNN specifications perform best in the baseline model whereas the 50/50's best fit is the CAPM (the brown-minus-green factor: 0.4624, 0.0916, -0.4227, and 0.6133).

In terms of financial performance results observed in water usage change (see Table 54), in accordance with raw performance, less environmentally friendly companies frequently exceed environmentally friendly ones. Regarding the best-performing model, the 50/50 approach performs best in both green and less environmentally friendly groups. Additionally, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by simple return, brown stocks beat environmentally friendly (24.86% and 24.29%). In accordance with Sortino measure, less environmentally friendly counterparts outpace environmentally friendly (1.4977 and 1.0175, accordingly). In accordance with MVaR-adjusted performance, environmentally friendly perform better than less environmentally friendly stocks (2.7368 and 2.4271, accordingly). Adhering to raw performance, the green portfolio most often exceeds the benchmark (in 9 out of 12 cases), while stocks with poor environmental performance portfolio behave better (in 10 out of 12 cases). In relation to modified Sharpe measure, the green portfolio unfrequently outpaces the benchmark (in 4 out of 12 cases), while less environmentally friendly stocks behave the same.

Regarding the results inspired by total waste difference (see Table 53), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the environmental factor, significant green results fall behind on the alphas; however, only one approach is significant (4.5256* in 10/90 estimation). In terms of the CAPM factor, significant green model results are high-beta stocks; however, only one approach is significant (-0.5478* in 10/90 model). With regards to the SMB, 2 out of 4 results are significant, showing that all brown portfolios consist of small stocks (4.1542*** and 2.2842**, in 10/90 and KNN specifications, accordingly). Regarding the CMA, 2 out of 4 models' results are significant, demonstrating that all brown portfolios include firms that invest conservatively (4.5247** and 2.569**, in 10/90 and KNN estimations). According to Corrected Akaike information criterion, each portfolio specification performs best in the baseline specification (the BMG for the 10/90, the 30/70, the 50/50, and the KNN specifications: 2.7317, -0.5801, -0.4251, and 0.4103).

In terms of financial performance findings associated with change in total waste performance (see Table 54), adhering to non-adjusted performance, green companies perform similar to brown ones (in 2 out of 4 estimations). Additionally, similar outputs are associated with downside risk-adjusted performance, whereas outputs for MVaR-Sharpe are more representative (green companies beat brown stocks in 3 out of 4 models). Concerning the best-performing model, within green portfolios, the 30/70 model performs better compared to others (in raw performance and downside risk-adjusted performance), while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Additionally, concerning the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw performance, stocks with poor environmental performance outperform green (32.36% and 26.97%, respectively). Adhering to Sortino ratio, stocks with poor environmental performance exceed environmentally friendly (2.1492 and 1.7914, accordingly). In relation to MVaR-adjusted performance, green outshine stocks with poor environmental performance (3.806 and 3.7117, respectively). In accordance with non-adjusted performance, the green portfolio most often performs better than the market index (in 7 out of 12 cases), while less environmentally friendly stocks portfolio perform better (in 10 out of 12 cases). According to modified Sharpe ratio, the environmentally friendly portfolio seldom outshines the benchmark (in 3 out of 12 cases), while stocks with poor environmental performance behave the same.

Considering the findings formed on Switzerland's companies and shift in GHG and CO2 emission performance (see Table 55), almost none of the conventional factors are explaining portfolios' performances in each approach. In terms of the market risk, significant environmentally friendly estimation results are riskier; however, only one approach is significant (-0.6271*** in 10/90 model). Dealing with the value premium, significant environmentally friendly results are positively exposed to the value effect; however, only one approach is significant (-1.9707** in 50/50 estimation). With regards to the profitability factor, significant green findings are positively exposed to RMW; however, only one approach is significant (-2.4419*** in 50/50 estimation). There are no significant results in terms of the BMG. Judging by Akaike criterion, each portfolio specification performs best in the baseline specification (the environmental factor for the 10/90, the 30/70, the 50/50, and the KNN specifications: -2.0772, 0.2896, 0.2408, and 0.5589, accordingly).

Concerning financial performance findings occurring in shift in air pollution performance (see Table 56), according to simple return, green companies often underperform less environmentally friendly ones. With regards to the model with the best performance, within environmentally friendly portfolios, results are mixed, while within less environmentally friendly portfolios, the best performing model is KNN (in non-adjusted performance and Sortino measure). Furthermore, concerning the comparison between the grouped portfolios' performances and benchmarks, there is no best green portfolio, while there appears to be a brown portfolio with the best performance. In relation to simple return, the less environmentally friendly stocks portfolio often outperforms the benchmark (in 10 out of 12 cases), and adhering to modified Sharpe measure, the less environmentally friendly counterparts portfolio seldom performs better than the broad market index (in 3 out of 12 cases).

Dealing with the findings formed on shift in water usage intensity (see Table 55), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the environmental factor, significant green estimation results are inferior to on the alphas; however, only one approach is significant (0.8142* in 50/50 model). In terms of the market factor, significant less environmentally friendly estimations have lower beta; however, only one approach is significant (-0.2935*** in 50/50 estimation). In terms of the high-minus-low factor, significant environmentally friendly model results consist of companies with high book-to-market ratios; however, only one approach is significant (-1.1296** in KNN model). Considering the conservative-minus-aggressive factor, significant green findings are negatively exposed to the investment factor; however, only one approach is significant (1.145* in KNN estimation). In accordance with Corrected Akaike information criterion, the 10/90, the 30/70, and the KNN models perform best in the baseline specification whereas the 50/50's best fit is the CAPM (the environmental factor: 0.3206, 0.1792, -0.3286, and 0.7642*, accordingly).

Concerning investment performance outputs observed in water intensity per sales difference (see Table 56), adhering to simple return, less environmentally friendly companies mostly beat green ones. Furthermore, similar results are observed in MVaR-adjusted performance, whereas outputs for downside risk-adjusted performance are more representative (environmentally friendly companies perform better than less environmentally friendly companies in 2 out of 4 specifications). Considering the model with the best returns, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 (in Sortino measure and modified Sharpe ratio). Moreover, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to raw return, less environmentally friendly counterparts outpace green (19.31% and 17.13%, respectively). In accordance with Sortino ratio, brown stocks beat green (1.433 and 1.0418, accordingly). Judging by MVaR-Sharpe, less environmentally friendly stocks exceed environmentally friendly (3.2728 and 2.2439). In relation to raw return, the environmentally friendly portfolio mostly outperforms the benchmark (in 11 out of 12 cases), while stocks with poor environmental performance portfolio perform better (in 12 out of 12 cases). In accordance with modified Sharpe ratio, the environmentally friendly portfolio mostly outperforms the market index (in 9 out of 12 cases), whereas brown stocks behave better (in 12 out of 12 cases).

In terms of the findings formed on shift in total waste performance (see Table 55), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the market beta, significant environmentally friendly model results are less risky; however, only one approach is significant (0.5417*** in 10/90 model). Dealing with the value effect, significant green results are value-oriented; however, only one approach is significant (-0.9744* in 50/50 specification). With regards to the profitability anomaly, 2 out of 4 estimations are significant, evidencing all green portfolios consist of the most profitable firms (-1.0571** and -2.0397***, in 50/50 and 30/70 specifications, respectively). Dealing with the investment factor, significant less environmentally friendly estimations are positively exposed to the investment factor; however, only one approach is significant (1.9625* in 10/90 model). There are no significant results in terms of the environmental factor. According to Akaike criterion, the baseline estimation is the best fit in the 10/90 and the KNN models while the six-factor specification in the 30/70 and the three-factor model in the 50/50 model (the BMG factor: -1.2506, -0.4844, 0.4331, and 0.0831, accordingly).

Regarding financial performance outputs occurring in waste intensity per sales change (see Table 56), according to simple return, green companies behave like brown ones (in 2 out of 4 estimations). Additionally, similar outputs are observed in Sortino ratio, while outputs for modified Sharpe measure are more representative (environmentally friendly stocks outshine brown stocks in 3 out of 4 specifications). Concerning the best model, within environmentally friendly portfolios, the 10/90 model performs better compared to others (in non-adjusted performance and downside risk-adjusted performance), while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Additionally, considering the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by non-adjusted performance, green outpace less environmentally friendly stocks (15.78% and 14.75%, respectively). In accordance with Sortino ratio, brown stocks perform better than environmentally friendly (0.7854 and 0.6207). According to modified Sharpe measure, stocks with poor environmental performance outpace green (1.6833 and 1.3984, accordingly). According to non-adjusted performance, the environmentally friendly portfolio in most cases beats the market benchmark (in 10 out of 12 cases), while brown stocks portfolio behave worse (in 9 out of 12 cases). In accordance with MVaR-Sharpe, the green portfolio outshines half of the benchmark (in 6 out of 12 cases), while less environmentally friendly stocks behave better (in 8 out of 12 cases).

Concerning the findings formed Malaysian stocks and shift in GHG emissions performance (see Table 63), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG, significant environmentally friendly estimation results perform better than on the alphas; however, only one approach is significant (-6.5404** in KNN specification). Regarding the high-minus-low factor, significant environmentally friendly estimation results consist of companies with lower book-to-market values; however, only one approach is significant (2.0736** in 50/50 estimation). Regarding the CMA, significant green results have positive CMA exposure; however, only one approach is significant (-1.6847** in 50/50 estimation). Regarding the momentum, significant brown results consist of winner companies; however, only one approach is significant (2.3636* in KNN specification). In accordance with Akaike information criterion corrected for small sample size best fir models for the 10/90, the 30/70, the 50/50, and the KNN specifications are the baseline specification, the CAPM, the three-factor specification, and the four-factor estimation, respectively (the BMG: 1.1624, -0.966, -0.9647, and -6.3074**). Considering investment performance findings occurring in GHG pollution difference (see Table 64), in relation to non-adjusted performance, less environmentally friendly stocks most often show lower returns than green ones (in 1 out of 4 models). Furthermore, similar outputs observed in downside risk-adjusted performance and MVaR-adjusted performance. Considering the best model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 in each measure. In addition, with regards to the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (4.28% and 3.87%), Sortino measure (0.1994 and 0.1554) and modified Sharpe ratio (0.3641 and 0.2541). In relation to non-adjusted performance, the environmentally friendly portfolio unfrequently beats the benchmark (in 3 out of 12 cases), whereas brown stocks portfolio perform similarly. In accordance with MVaR-Sharpe, the green portfolio seldom outshines the market (in 3 out of 12 cases), while brown stocks perform similarly.

Considering the results formed on water use intensity change (see Table 63), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the HML factor, 2 out of 4 estimations' results are significant, evidencing all green portfolios are value-oriented (-1.1975* and -1.506**, in 30/70 and 50/50 estimations, accordingly). Considering the RMW factor, 2 out of 4 results are significant, evidencing all green portfolios are positively exposed to the profitability factor (-0.6319** and -1.0852**, in 50/50 and KNN models, respectively). There are no significant results in terms of the BMG. Judging by Akaike criterion, the 10/90, the 30/70, and the KNN models perform best in the baseline estimation whereas the 50/50's best fit is the three-factor estimation (the brown-minus-green factor: -6.74, -1.1677**, -0.7802, and -0.0762, accordingly).

Dealing with investment performance findings occurring in water usage intensity change (see Table 64), in accordance with raw performance, green stocks universally outpace brown ones. Furthermore, similar results observed in Sortino measure and MVaR-adjusted performance. Considering the model with the best returns, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the KNN in each measure. Further, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (66.67% and 3.8%), downside risk-adjusted performance (1.953 and 0.1857) and MVaR-Sharpe (3.9873 and 0.2439). In relation to simple return, the green portfolio consistently outperforms the market index, while less environmentally friendly counterparts portfolio perform worse (in 1 out of 12 cases). Judging by modified Sharpe measure, the green portfolio rarely outshines the market (in 3 out of 12 cases), whereas stocks with poor environmental performance behave worse (in 1 out of 12 cases).

Concerning the results inspired by companies from Norway and GHG pollution difference (see Table 65), several of the conventional factors are explaining portfolios' performances in each approach. Considering the BMG, significant environmentally friendly estimations fall behind on the alphas; however, only one approach is significant (6.1024*** in 10/90 estimation). Concerning the market risk, 2 out of 4 estimations are significant, evidencing that all green portfolios are high-beta stocks (-0.7475* and -1.439*, in 50/50 and KNN specifications, accordingly). With regards to the SMB, significant brown estimation results consist of large stocks; however, only one approach is significant (-2.2655** in 10/90 estimation). Considering the value premium, significant brown estimation results consist of companies with lower book-to-market values; however, only one approach is significant (-2.2756* in 10/90 model). Considering the profitability factor, 2 out of 4 results are significant, indicating that all green portfolios are positively exposed to the profitability factor (-2.9635* and -5.5019**, in 50/50 and 10/90 specifications, respectively). In accordance with Akaike information criterion, the 30/70, the 50/50, and the KNN specifications perform best in the CAPM whereas the 10/90's best fit is the baseline specification (the BMG factor: 3.6768*, 1.9439, 3.9298*, and 1.8711, accordingly).

With regards to investment performance findings associated with GHG emissions difference (see Table 66), according to non-adjusted performance, environmentally friendly companies consistently underperform brown ones. With regards to the best-performing model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 30/70 in each measure. Moreover, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with non-adjusted performance, brown stocks exceed environmentally friendly (63.43% and 42.83%). Adhering to downside risk-adjusted performance, less environmentally friendly stocks outperform green (5.6069 and 3.1879, accordingly). According to modified Sharpe ratio, less environmentally friendly stocks outshine environmentally friendly (8.5226 and 8.0965). In relation to simple return, the green portfolio most often outpaces the broad market index (in 11 out of 12 cases), while less environmentally friendly stocks portfolio behave better (in 12 out of 12 cases). In accordance with MVaR-adjusted performance, the green portfolio mostly exceeds the broad market index (in 10 out of 12 cases), whereas brown stocks perform better (in 12 out of 12 cases).

Considering the outputs based on Finnish stocks and water use intensity change (see Table 67), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the SMB factor, 2 out of 4 models' results are significant, enforcing all green portfolios consist of smaller-cap stocks (-0.8783** and -3.3752*, in 50/50 and 10/90 estimations, accordingly). In terms of the HML, significant less environmentally friendly findings are growth-oriented; however, only one approach is significant (-1.4966* in 30/70 model). With regards to the RMW factor, significant environmentally friendly results are negatively exposed to the profitability factor; however, only one approach is significant (0.892* in 50/50 model). In terms of the investment factor, significant environmentally friendly results include firms that invest aggressively; however, only one approach is significant (2.0969** in 30/70 model). Regarding the WML, significant environmentally friendly estimations consist of winner companies; however, only one approach is significant (-1.151** in 30/70 model). There are no significant results in terms of the BMG. Judging by Akaike information criterion, the three-factor estimation is the best fit in the 10/90 and the 50/50 estimations whereas the baseline model in the KNN and the six-factor model in the 30/70 specification (the environmental factor: 1.205, 0.0067, 0.9591, and 1.0787, respectively).

Considering financial performance findings observed in water usage intensity difference (see Table 68), judging by non-adjusted performance, brown companies always exceed green ones. In addition, similar results are observed in MVaR-adjusted performance, whereas outputs for Sortino ratio are more representative (green companies perform better than brown stocks in 1 out of 4 models). Considering the best-performing model, within environmentally friendly portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 10/90 (in simple return and Sortino measure). In addition, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw return, brown stocks outperform environmentally friendly (20.62% and 16.17%, respectively). In relation to Sortino ratio, brown stocks outperform environmentally friendly (1.1436 and 1.0135). In accordance with MVaR-Sharpe, green outshine brown stocks (2.0365 and 0.8976). According to raw return, the environmentally friendly portfolio frequently outperforms the market index (in 8 out of 12 cases), whereas brown stocks portfolio behave better (in 12 out of 12 cases). In accordance with modified Sharpe ratio, the environmentally friendly portfolio unfrequently beats the broad market index (in 5 out of 12 cases), while brown stocks behave worse (in 1 out of 12 cases).

Dealing with the results based on waste intensity difference (see Table 67), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the brown-minus-green factor, significant less environmentally friendly estimations fall behind on the risk-adjusted terms;

however, only one approach is significant (-1.3417* in 50/50 model). Concerning the market factor, significant green model results have higher beta; however, only one approach is significant (-0.7984** in 10/90 model). Dealing with the robust-minus-weak factor, 2 out of 4 results are significant, indicating that all brown portfolios consist of robust stocks (3.2377** and 1.7296*, in KNN and 30/70 estimations, respectively). In terms of the CMA, significant green estimations have negative CMA exposure; however, only one approach is significant (1.7427** in 50/50 specification). In relation to Corrected Akaike information criterion, the baseline model is the best fit in the 30/70 and the 50/50 specifications whereas in the 10/90 and the KNN estimations best fit is the CAPM (the environmental factor: -0.9085, -1.0078, 1.7882, and 0.878, accordingly).

In terms of financial performance results occurring in change in waste efficiency performance (see Table 68), in relation to non-adjusted performance, green stocks behave similar to brown ones (in 2 out of 4 specifications). Considering the model with the best performance, within environmentally friendly portfolios, the 30/70 model performs better compared to others (in raw performance and modified Sharpe ratio), while within brown portfolios, the best performing model is the KNN in each measure. Moreover, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to raw return, less environmentally friendly stocks exceed green (31.3% and 24.66%). According to Sortino ratio, green exceed less environmentally friendly counterparts (1.7087 and 1.3538, respectively). Adhering to modified Sharpe measure, environmentally friendly perform better than less environmentally friendly counterparts (3.2495 and 2.3657, respectively). In relation to simple return, the environmentally friendly portfolio consistently performs better than the market, while less environmentally friendly counterparts portfolio perform the same. In accordance with MVaR-Sharpe, the environmentally friendly portfolio universally performs better than the market index, whereas less environmentally friendly stocks perform the same.

Considering the outputs based on companies from Netherlands and shift in greenhouse gas performance (see Table 69), none of the conventional factors are explaining portfolios' performances in each approach. There are no significant results in terms of the BMG factor. Adhering to Akaike criterion, the baseline model is the best fit in the 10/90 and the 30/70 models while the CAPM in the KNN and the three-factor estimation in the 50/50 specification (the BMG factor: 2.3978, 1.6527*, -0.8507, and 2.5481*, respectively).

In terms of investment performance results associated with air pollution difference (see Table 70), in relation to raw return, green companies robustly lag behind brown ones. Furthermore, similar outputs are associated with MVaR-adjusted performance, whereas outputs for Sortino ratio are more representative (environmentally friendly companies outpace brown stocks in 1 out of 4 estimations). Considering the best-performing model, the 10/90 approach performs best in both environmentally friendly and less environmentally friendly groups. Moreover, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to non-adjusted performance, stocks with poor environmental performance exceed green (-5.98% and -35.49%). In relation to downside risk-adjusted performance, stocks with poor environmental performance outshine green (-0.5068 and -0.7853, accordingly). In accordance with MVaR-Sharpe, less environmentally friendly counterparts beat green (-0.7555 and -1.4801). In accordance with simple return, the green portfolio never beats the market benchmark, while brown stocks portfolio behave better (in 8 out of 12 cases). In accordance with MVaR-Sharpe, the environmentally friendly portfolio rarely outshines the market (in 3 out of 12 cases), while brown stocks behave better (in 10 out of 12 cases).

Concerning the findings created on shift in water intensity per sales (see Table 69), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the BMG factor, significant less environmentally friendly model results outshine on the alphas; however, only one approach is significant (1.2957** in 50/50 estimation). Considering the CAPM factor, significant brown estimations have lower beta; however, only one approach is significant (-0.4749* in 50/50 estimation). With regards to the value factor, all results are significant, evidencing that all brown portfolios consist of companies with high book-to-market ratios (2.6769*, 2.2376**, 1.1746** and 0.5358*, in KNN, 10/90, 30/70 and 50/50 models, accordingly). Regarding the conservative-minus-aggressive factor, 2 out of 4 findings are significant, evidencing all green portfolios consist of conservative stocks (-4.5233** and -5.2558**, in KNN and 10/90 models, respectively). In relation to Corrected Akaike criterion, each portfolio specification performs best in the baseline specification (the brown-minus-green factor for the 10/90, the 30/70, the 50/50, and the KNN estimations: 2.3742, 3.0168**, 1.8567*, and 5.1044***, accordingly).

Concerning investment performance findings associated with shift in water usage performance (see Table 70), adhering to non-adjusted performance, environmentally friendly companies always lag behind less environmentally friendly ones. In addition, similar results occurring in Sortino ratio and MVaR-

Sharpe. With regards to the best-performing model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN (in raw return and Sortino measure). Moreover, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by raw return, stocks with poor environmental performance outperform green (75.26% and 25.52%, respectively). In accordance with Sortino measure, brown stocks outshine green (11.5104 and 1.6695, accordingly). In relation to modified Sharpe measure, less environmentally friendly counterparts perform better than environmentally friendly (8.5874 and 3.7739, accordingly). Adhering to simple return, the green portfolio outperforms half of the market (in 6 out of 12 cases), whereas brown stocks portfolio behave better (in 12 out of 12 cases). Judging by modified Sharpe measure, the environmentally friendly portfolio seldom exceeds the market (in 3 out of 12 cases), while less environmentally friendly stocks behave better (in 12 out of 12 cases).

Considering the results formed on Thailand's companies and GHG emissions change (see Table 71), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG, significant less environmentally friendly estimation results beat on the alphas; however, only one approach is significant (4.7738* in KNN specification). Dealing with the market beta, significant green estimation results are high-beta stocks; however, only one approach is significant (-2.1119* in KNN model). Regarding the value factor, 2 out of 4 estimations' results are significant, evidencing all green portfolios are value-oriented (-0.7778** and -1.4113*, in 50/50 and 30/70 specifications). With regards to the CMA, 3 out of 4 models' results are significant, evidencing that all brown portfolios have positive CMA exposure (4.4308*, 2.1479* and 0.9986**, in KNN, 30/70 and 50/50 estimations, accordingly). Adhering to Akaike information criterion corrected for small sample size, the 10/90, the 30/70, and the 50/50 estimations perform best in the baseline estimation whereas the KNN best fit is the CAPM (the environmental factor: -2.6659, 0.4221, -0.3069, and 4.6947, respectively).

Dealing with investment performance results observed in GHG emissions change (see Table 72), in relation to non-adjusted performance, brown stocks behave on par with green ones (in 2 out of 4 estimations). With regards to the model with the best performance, within environmentally friendly portfolios, the 30/70 model performs better compared to others (in Sortino ratio and MVaR-Sharpe), while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Additionally, regarding the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by non-adjusted performance, less environmentally friendly counterparts outperform green (66.76% and 28.37%, accordingly). Adhering to Sortino ratio, less environmentally friendly stocks outpace green (4.0979 and 2.4021, respectively). In accordance with MVaR-adjusted performance, less environmentally friendly stocks outpace environmentally friendly (4.5395 and 4.3407, respectively). Judging by raw return, the green portfolio robustly performs better than the market index, while less environmentally friendly counterparts portfolio behave similarly. Adhering to MVaR-Sharpe, the green portfolio seldom outperforms the broad market index (in 4 out of 12 cases), while stocks with poor environmental performance perform similarly.

Dealing with the results inspired by water use intensity difference (see Table 71), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the BMG factor, significant brown model results outshine on the alphas; however, only one approach is significant (1.843*** in 10/90 specification). Dealing with the CAPM factor, significant green results are higher-beta; however, only one approach is significant (-0.6484*** in 10/90 specification). In terms of the SMB, significant environmentally friendly estimation results consist of smaller-cap companies; however, only one approach is significant (0.7461* in 30/70 estimation). Regarding the CMA factor, significant green results are negatively exposed to the investment factor; however, only one approach is significant (1.2022* in 10/90 estimation). Considering the momentum, significant brown findings are negatively exposed to momentum; however, only one approach is significant (-0.6583** in 10/90 model). According to Corrected Akaike criterion, the 30/70, the 50/50, and the KNN models perform best in the baseline estimation while the 10/90's best fit is the CAPM (the BMG factor: 0.0126, -0.2188, 0.6254, and 0.9077, respectively).

Dealing with investment performance outputs occurring in water use intensity difference (see Table 72), in accordance with non-adjusted performance, brown stocks in most cases beat green ones. Furthermore, similar outputs associated with Sortino measure and modified Sharpe ratio. Regarding the best-performing model, within green portfolios, the 50/50 model performs better compared to others (in Sortino ratio and MVaR-adjusted performance), while within less environmentally friendly portfolios, the best performing model is the 30/70 (in downside risk-adjusted performance and MVaR-Sharpe). Additionally, regarding the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to simple return, less environmentally friendly stocks outpace green (10.31% and 6.76%, respectively). In relation to Sortino ratio, stocks with poor environmental performance beat green (0.3318 and 0.2045, accordingly). According to modified Sharpe ratio, brown stocks outshine green (0.6582 and 0.3666). In relation to simple return, the environmentally friendly portfolio seldom outperforms the benchmark (in 2 out of 12 cases), while brown stocks portfolio behave better (in 3 out of 12 cases). In accordance with modified Sharpe measure, the environmentally friendly portfolio rarely performs better than the broad market index (in 2 out of 12 cases), while brown stocks perform similarly.

In terms of the findings based on total waste difference (see Table 71), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the BMG, significant environmentally friendly findings lag behind on the alphas; however, only one approach is significant (1.7685* in 30/70 model). Dealing with the CAPM factor, 3 out of 4 estimations are significant, illuminating all brown portfolios are higher-beta (0.9711***, 0.399* and 0.2224*, in 10/90, 30/70 and 50/50 models, accordingly). Concerning the CMA, 3 out of 4 models' results are significant, suggesting that all brown portfolios are positively exposed to the investment factor (3.4848*, 2.3674* and 1.4318**, in 10/90, KNN and 30/70 models, respectively). Dealing with the momentum, 2 out of 4 models' results are significant, showing that all brown portfolios include winner stocks (1.048** and 0.6508*, in KNN and 30/70 models, respectively). Judging by Corrected Akaike information criterion, the 10/90, the 30/70, and the 50/50 specifications perform best in the CAPM whereas the KNN best fit is the baseline specification (the brown-minus-green factor: 1.9449, 1.159, 0.855, and 1.9358*).

Dealing with financial performance results associated with waste efficiency change (see Table 72), judging by raw performance, green companies robustly are inferior to less environmentally friendly ones. Furthermore, similar results associated with Sortino measure and modified Sharpe ratio. With regards to the best-performing model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. In addition, concerning the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw return, stocks with poor environmental performance perform better than green (12.22% and -6.78%, respectively). Judging by Sortino measure, less environmentally friendly stocks beat green (0.3238 and -0.2731). In relation to MVaR-adjusted performance, less environmentally friendly counterparts perform better than green (0.4968 and -0.3692). Judging by simple return, the green portfolio unfrequently performs better than the benchmark (in 3 out of 12 cases), whereas brown stocks portfolio perform similarly. Adhering to MVaR-Sharpe, the green portfolio seldom outpaces the broad market index (in 3 out of 12 cases), while stocks with poor environmental performance behave similarly.

Dealing with the outputs created on Russian sample and greenhouse gas emissions change (see Table 73), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the BMG, 2 out of 4 estimations are significant, suggesting all brown portfolios perform better than on the alphas (6.0726*** and 5.1218*, in 10/90 and KNN estimations, accordingly). In terms of the market factor, significant brown model results are lower-beta; however, only one approach is significant (-0.5757* in KNN estimation). Dealing with the size effect, significant environmentally friendly estimation results consist of small stocks; however, only one approach is significant (-4.415** in 10/90 estimation). Considering the RMW, significant brown model results are negatively exposed to RMW; however, only one approach is significant (-6.5101** in 10/90 specification). In accordance with Akaike criterion, the baseline model is the best fit in the 30/70 and the 50/50 estimations whereas in the 10/90 and the KNN models best fit is the three-factor specification (the BMG factor: 3.4895, 0.0111, 2.0849, and 4.3634***, accordingly).

In terms of investment performance outputs observed in air pollution difference (see Table 74), in relation to simple return, green stocks consistently lag behind brown ones. Moreover, similar findings observed in downside risk-adjusted performance and modified Sharpe ratio. Considering the model with the best returns, the 50/50 approach performs best in both green and less environmentally friendly groups. In addition, considering the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to non-adjusted performance, brown stocks outshine green (44.05% and 43.12%, accordingly). Adhering to downside risk-adjusted performance, stocks with poor environmental performance perform better than green (2.0905 and 1.7958). Judging by modified Sharpe ratio, less environmentally friendly stocks beat environmentally friendly (8.383 and 5.9759, accordingly). According to raw performance, the environmentally friendly portfolio most often exceeds the market (in 11 out of 12 cases), whereas stocks with poor environmental performance portfolio perform better (in 12 out of 12 cases). Judging by MVaR-adjusted performance, the green portfolio outperforms half of the broad market index (in 6 out of 12 cases), while brown stocks behave better (in 12 out of 12 cases).

Dealing with the findings established on water intensity per sales difference (see Table 73), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the brown-minus-green factor, significant environmentally friendly estimations beat on the alphas; however, only one approach is significant (-0.9741** in 50/50 model). With regards to the CAPM factor, 2 out of 4 estimations' results are significant, enforcing all brown portfolios are riskier (0.6072** and 0.5299**, in 30/70 and 10/90 estimations, respectively). Concerning the size effect, significant brown results consist of large-caps; however, only one approach is significant (-1.3033** in 10/90 estimation). Adhering to Corrected Akaike information criterion, the baseline model is the best fit in the 50/50 and the KNN estimations whereas in the 10/90 and the 30/70 models best fit is the CAPM (the brown-minus-green factor: -0.756*, -0.112, -0.6764, and -1.049, accordingly).

Regarding financial performance findings occurring in shift in water usage performance (see Table 74), according to raw performance, brown stocks consistently show lower returns than environmentally friendly ones. Furthermore, similar findings associated with Sortino ratio and modified Sharpe measure. Regarding the model with the best returns, the 30/70 approach performs best in both green and brown groups. In addition, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (40.86% and 28.97%), Sortino measure (1.6408 and 0.9023) and modified Sharpe measure (4.0222 and 3.6038). According to raw return, the green portfolio universally exceeds the benchmark, whereas brown stocks portfolio behave the same. In relation to MVaR-adjusted performance, the environmentally friendly portfolio robustly outpaces the broad market index, whereas less environmentally friendly counterparts behave similarly. Dealing with the findings formed on change in waste intensity per sales performance (see Table 73), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the CAPM factor, significant green estimation results are less risky; however, only one approach is significant (1.8841** in 10/90 model). Concerning the value factor, significant brown estimation results consist of growth stocks; however, only one approach is significant (-3.1035** in 30/70 specification). Considering the CMA, 2 out of 4 estimations are significant, suggesting that all brown portfolios have positive CMA exposure (3.6602* and 3.0852*, in KNN and 30/70 specifications, respectively). There are no significant results in terms of the BMG. Adhering to Corrected Akaike criterion, each portfolio specification performs best in the baseline model (the brown-minus-green factor for the 10/90, the 30/70, the 50/50, and the KNN models: -0.9968, 1.2778, 0.7393, and 2.109**, respectively).

With regards to investment performance outputs occurring in waste efficiency change (see Table 74), according to raw return, environmentally friendly stocks frequently fall behind brown ones. In addition, similar findings associated with downside risk-adjusted performance and modified Sharpe ratio. Considering the best model, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, results are mixed. Moreover, in terms of the comparison within the grouped portfolios' performances and benchmarks, there exists a best-performing green portfolio. In relation to raw performance, the green portfolio always exceeds the market index, and adhering to MVaR-Sharpe, the green portfolio unfrequently outpaces the benchmark (in 5 out of 12 cases), while there does not exist a brown portfolio that performs the best.

Results based on stock associated with Canada, Australia, France, South Korea, Italy, Brazil, South Africa, Spain, Singapore and Mexico do not show any significance of the brown minus green factor (see Tables 101-105).

Dealing with the findings based on Industrials sector and shift in GHG and CO2 emission performance (see Table 77), almost none of the conventional factors are explaining portfolios' performances in each approach. In terms of the profitability anomaly, significant green estimation results are positively exposed to RMW; however, only one approach is significant (-0.4028** in 50/50 specification). There are no significant results in terms of the environmental factor. According to Akaike information criterion, the baseline model is the best fit in the 10/90 and the KNN models whereas the four-factor model in the 30/70 and the six-factor model in the 50/50 estimation (the BMG: -0.509, 0.1919, 0.1378, and 0.1867).

With regards to investment performance outputs observed in GHG and CO2 emission difference (see Table 78), adhering to raw performance, green companies always exceed less environmentally friendly ones. Additionally, similar outputs occurring in Sortino measure and MVaR-Sharpe. Concerning the best model, within green portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. In addition, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (14.94% and 10.84%), Sortino ratio (0.7159 and 0.4593) and modified Sharpe measure (1.9098 and 1.0766). In relation to non-adjusted performance, the environmentally friendly portfolio universally outperforms the broad market index, while less environmentally friendly stocks portfolio behave worse (in 6 out of 12 cases). According to modified Sharpe ratio, the environmentally friendly portfolio frequently outshines the market (in 9 out of 12 cases), whereas less environmentally friendly stocks behave worse (in 5 out of 12 cases).

In terms of the results established on water intensity per sales change (see Table 77), several of the conventional factors are explaining portfolios' performances in each approach. Dealing with the BMG factor, 2 out of 4 models' results are significant, showing that all environmentally friendly portfolios beat on the risk-adjusted terms (-0.4014* and -0.6223**, in 50/50 and 30/70 models). Regarding the CAPM factor, 2 out of 4 results are significant, illuminating all brown portfolios are higher-beta (0.2233* and 0.1441**, in 10/90 and 30/70 models, accordingly). In terms of the value effect, 2 out of 4 models' results are significant, illuminating all brown portfolios are value-oriented (0.6162*** and 0.3141*, in 30/70 and 50/50 specifications, respectively). In terms of the WML, significant environmentally friendly results have lower WML exposure; however, only one approach is significant (0.656*** in 10/90 specification). In relation to Akaike criterion, the 30/70, the 50/50, and the KNN models perform best in the three-factor model while the 10/90's best fit is the four-factor model (the brown-minus-green factor: -0.5821**, -0.3999*, -0.579, and -0.3674).

Concerning financial performance outputs observed in water intensity per sales change (see Table 78), in relation to raw performance, brown stocks robustly fall behind environmentally friendly ones. Further, similar outputs associated with Sortino ratio and modified Sharpe measure. Regarding the model with the best performance, within green portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 (in Sortino ratio and modified Sharpe measure). Moreover, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (15.12% and 8.66%), downside risk-adjusted performance (0.7781 and 0.361) and MVaR-adjusted performance (1.7948 and 0.8785). In accordance with non-adjusted performance, the green portfolio often outpaces the market (in 10 out of 12 cases), while stocks with poor environmental performance portfolio behave worse (in 4 out of 12 cases). In accordance with MVaR-adjusted performance, the green portfolio in most cases beats the market (in 9 out of 12 cases), whereas less environmentally friendly counterparts behave worse (in 4 out of 12 cases).

Regarding the results based on waste intensity per sales difference (see Table 77), almost none of the conventional factors are explaining portfolios' performances in each approach. Concerning the CAPM factor, significant green estimations are high-beta stocks; however, only one approach is significant (-0.1332* in 50/50 model). With regards to the HML factor, significant environmentally friendly results consist of growth stocks; however, only one approach is significant (0.8927* in 10/90 estimation). Regarding the conservative-minus-aggressive factor, significant less environmentally friendly estimation results have negative CMA exposure; however, only one approach is significant (-0.5587* in 30/70 model). There are no significant results in terms of the environmental factor. According to Akaike information criterion corrected for small sample size, the four-factor specification is the best fit in the 30/70 and the KNN estimations while the three-factor estimation in the 10/90 and the CAPM in the 50/50 specification (the environmental factor: 0.1622, -0.361, -0.5814, and 0.0605, accordingly).

Concerning financial performance findings associated with change in waste intensity per sales performance (see Table 78), according to raw performance, green companies in most cases outshine less environmentally friendly ones (in 3 out of 4 specifications). However, results occurring in Sortino measure and modified Sharpe measure are less representative (environmentally friendly stocks outperform brown stocks in 2 out of 4 and 2 out of 4 specifications). Regarding the model with the best returns, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 30/70 in each measure. Further, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (12.18% and 10.74%), Sortino measure (0.6004 and 0.4521) and modified Sharpe measure (1.1088 and 1.0459). According to non-adjusted performance, the green portfolio outperforms half of the market index (in 6 out of 12 cases), while stocks with poor environmental performance portfolio behave worse (in 5 out of 12 cases). In relation to MVaR-adjusted performance, the green portfolio seldom exceeds the market (in 5 out of 12 cases), whereas stocks with poor environmental performance behave the same.

Considering the results created on Materials sector and shift in greenhouse gas performance (see Table 79), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the market beta, 2 out of 4 findings are significant, suggesting that all brown portfolios have higher beta (0.5198*** and 0.2507**, in 10/90 and 30/70 models). Concerning the small-minus-big factor, significant environmentally friendly results consist of smaller-cap stocks; however, only one approach is significant (0.4708* in 30/70 specification). Dealing with the RMW, significant less environmentally friendly estimations consist of the least profitable firms; however, only one approach is significant (-0.942** in 10/90 specification). Considering the WML factor, all results are significant, showing that all less environmentally friendly portfolios consist of loser companies (-0.4253***, -0.4614*, -0.6333*** and -0.6643**, in 50/50, 10/90, 30/70 and KNN estimations, accordingly). There are no significant results in terms of the BMG factor. Judging by Corrected Akaike criterion, the 30/70, the 50/50, and the KNN specifications perform best in the four-factor model whereas the 10/90's best fit is the six-factor specification (the BMG factor: -0.303, -0.2615, -0.2613, and 0.4314, respectively).

With regards to financial performance findings associated with GHG emissions difference (see Table 80), in accordance with simple return, green stocks in most cases outperform less environmentally friendly ones (in 3 out of 4 estimations). Regarding the best model, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Additionally, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (11.7% and 8.87%), Sortino ratio (0.5613 and 0.2685) and modified Sharpe ratio (1.1773 and 0.5159). Judging by simple return, the green portfolio often performs better than the market index (in 9 out of 12 cases), whereas less environmentally friendly stocks portfolio behave worse (in 5 out of 12 cases). In accordance with modified Sharpe measure, the green portfolio rarely outperforms the broad market index (in 5 out of 12 cases), while brown stocks behave worse (in 4 out of 12 cases).

Regarding the results established on change in water usage intensity (see Table 79), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the brown-minus-green factor, significant environmentally friendly model results lag behind on the risk-adjusted terms; however, only one approach is significant (0.9601** in 10/90 estimation). Concerning the CAPM factor, significant less environmentally friendly estimations are higher-beta; however, only one approach is significant (0.4762*** in 10/90 estimation). Dealing with the value premium, significant less environmentally friendly findings are growth-oriented; however, only one approach is significant (-0.5657** in 50/50 estimation). Dealing with the RMW, 2 out of 4 models' results are significant, evidencing all green portfolios are positively exposed to RMW (-0.6351* and -0.6585**, in 30/70 and 50/50 estimations, accordingly). Considering the CMA, significant green model results are negatively exposed to the investment factor; however, only one approach is significant (0.7923** in 50/50 specification). Adhering to Akaike information criterion corrected for small sample size, the baseline estimation is the best fit in the 30/70 and the KNN models while the CAPM in the 10/90 and the eight-factor model in the 50/50 specification (the BMG: -0.0053, 0.4739, 0.6661, and 0.0092, accordingly).

Dealing with investment performance results associated with change in water intensity per sales (see Table 80), according to non-adjusted performance, environmentally friendly companies perform indistinguishable from brown ones (in 2 out of 4 models). Furthermore, similar results are occurring in modified Sharpe measure, while findings for Sortino measure are more representative (green stocks outpace less environmentally friendly companies in 3 out of 4 estimations). In terms of the model with the best performance, within green portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Furthermore, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by non-adjusted performance, brown stocks perform better than environmentally friendly (16.68% and 12.19%, respectively). Adhering to Sortino ratio, brown stocks outperform green (0.6174 and 0.5611, accordingly). In relation to MVaR-Sharpe, less environmentally friendly stocks perform better than environmentally friendly (1.1884 and 1.0651, accordingly). Adhering to simple return, the green portfolio exceeds half of the benchmark (in 6 out of 12 cases), while stocks with poor environmental performance portfolio perform better (in 12 out of 12 cases). Judging by modified Sharpe ratio, the green portfolio rarely outshines the market index (in 5 out of 12 cases), while stocks with poor environmental performance behave the same.

Regarding the findings based on waste intensity difference (see Table 79), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the CAPM factor, all estimations' results are significant, illuminating all environmentally friendly portfolios are lower-beta (0.4273***, 0.385***, 0.3112* and 0.2605***, in 10/90, 30/70, KNN and 50/50 estimations, accordingly). Dealing with the SMB, significant green results consist of smaller-cap companies; however, only one approach is significant (-0.7577** in 10/90 estimation). Dealing with the WML factor, all estimations are significant, illuminating all green portfolios include winner stocks (-0.3225**, -0.391***, -

0.7739*** and -1.1773**, in 30/70, 50/50, 10/90 and KNN estimations, accordingly). There are no significant results in terms of the brown-minus-green factor. In accordance with Corrected Akaike information criterion, the 10/90, the 50/50, and the KNN estimations perform best in the four-factor model whereas the 30/70's best fit is the eight-factor specification (the brown-minus-green factor: -0.0266, -0.1143, 0.1232, and -0.0358, respectively).

Dealing with investment performance findings associated with waste efficiency difference (see Table 80), adhering to non-adjusted performance, green companies consistently exceed brown ones. Further, similar findings associated with downside risk-adjusted performance and MVaR-adjusted performance. Concerning the model with the best performance, the 50/50 approach performs best in both environmentally friendly and less environmentally friendly groups. Further, considering the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (8.0% and 5.33%), Sortino ratio (0.3746 and 0.1774) and MVaR-Sharpe (0.7423 and 0.3475). In relation to simple return, the green portfolio unfrequently outpaces the benchmark (in 4 out of 12 cases), whereas stocks with poor environmental performance portfolio behave similarly. According to modified Sharpe ratio, the green portfolio rarely outpaces the market benchmark (in 4 out of 12 cases), whereas brown stocks perform worse (in 3 out of 12 cases).

Concerning the findings based on Consumer Discretionary sector and shift in air pollution performance (see Table 81), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the market factor, significant environmentally friendly estimations have lower beta; however, only one approach is significant (0.2949** in KNN model). With regards to the size factor, 2 out of 4 results are significant, suggesting that all green portfolios consist of small stocks (-0.3832* and -0.5116**, in 50/50 and 30/70 models, accordingly). Dealing with the robust-minus-weak factor, 2 out of 4 estimations' results are significant, illuminating all green portfolios consist of robust stocks (-1.0138*** and -1.1382*, in 50/50 and 10/90 specifications, accordingly). There are no significant results in terms of the BMG factor. In relation to Akaike criterion, the baseline model is the best fit in the 10/90 and the 30/70 estimations whereas the CAPM in the KNN and the six-factor model in the 50/50 model (the BMG: -0.5131, -0.3276, -0.0906, and -0.0206).

In terms of financial performance outputs observed in shift in air pollution performance (see Table 82), in accordance with non-adjusted performance, environmentally friendly stocks mostly outshine brown ones (in 3 out of 4 models). Regarding the model with the best returns, the 50/50 approach performs best in both green and less environmentally friendly groups. Furthermore, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (12.35% and 9.42%), Sortino ratio (0.578 and 0.447) and modified Sharpe ratio (1.3163 and 0.9625). Adhering to simple return, the green portfolio most often outpaces the market benchmark (in 9 out of 12 cases), whereas less environmentally friendly counterparts portfolio behave worse (in 5 out of 12 cases). Adhering to modified Sharpe ratio, the environmentally friendly portfolio outshines half of the market benchmark (in 6 out of 12 cases), while less environmentally friendly stocks perform worse (in 5 out of 12 cases).

Regarding the findings established on water usage intensity difference (see Table 81), almost none of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG factor, significant less environmentally friendly model results exceed on the alphas; however, only one approach is significant (0.5151** in 50/50 estimation). In accordance with Corrected Akaike information criterion, the 10/90, the 30/70, and the KNN models perform best in the baseline estimation while the 50/50's best fit is the eight-factor model (the BMG factor: 0.1346, 0.2599, 0.035, and 0.4764*).

Considering investment performance results associated with water use intensity difference (see Table 82), judging by non-adjusted performance, green stocks frequently are inferior to brown ones. Further, similar outputs associated with downside risk-adjusted performance and MVaR-adjusted performance. Considering the model with the best returns, the 50/50 approach performs best in both environmentally friendly and less environmentally friendly groups. Further, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with simple return, stocks with poor environmental performance perform better than environmentally friendly (16.62% and 10.97%, accordingly). Adhering to Sortino measure, brown stocks perform better than environmentally friendly (0.7535 and 0.5575). In relation to modified Sharpe ratio, stocks with poor environmental performance perform better than environmentally friendly (1.5301 and 1.0723). In relation to simple return, the environmentally friendly portfolio rarely beats the market benchmark (in 5 out of 12 cases), whereas stocks with poor environmental performance portfolio perform better (in 12 out of 12 cases). Judging by MVaR-adjusted performance, the green portfolio rarely exceeds the benchmark (in 5 out of 12 cases), while less environmentally friendly counterparts perform better (in 6 out of 12 cases).

Concerning the findings formed on total waste difference (see Table 81), almost none of the conventional factors are explaining portfolios' performances in each approach. Considering the value premium, significant environmentally friendly results are negatively exposed to the value effect; however, only one approach is significant (0.9806*** in 10/90 model). Regarding the CMA, significant green results have positive CMA exposure; however, only one approach is significant (-1.1037** in 10/90 specification). Regarding the momentum, significant less environmentally friendly model results include winner stocks; however, only one approach is significant (0.4194** in 10/90 specification). There are no significant results in terms of the BMG. In relation to Akaike information criterion corrected for small sample size, each portfolio estimation performs best in the baseline estimation (the environmental factor for the 10/90, the 30/70, the 50/50, and the KNN models: 0.6553, 0.236, -0.0906, and -0.4071, respectively).

Dealing with investment performance findings observed in change in total waste performance (see Table 82), according to simple return, less environmentally friendly companies perform the same as green ones (in 2 out of 4 estimations). Further, similar findings are observed in downside risk-adjusted performance, while outputs for modified Sharpe ratio are less representative (environmentally friendly stocks outperform less environmentally friendly companies in 1 out of 4 estimations). Regarding the model with the best returns, within green portfolios, the KNN model performs better compared to others (in simple return and Sortino ratio), while within brown portfolios, the best performing model is the 30/70 (in non-adjusted performance and MVaR-Sharpe). Moreover, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw performance, less environmentally friendly stocks beat environmentally friendly (11.42% and 9.31%, accordingly). According to Sortino measure, less environmentally friendly counterparts outperform green (0.4383 and 0.4266, respectively). Judging by modified Sharpe measure, stocks with poor environmental performance outpace environmentally friendly (1.3382 and 0.7965, accordingly). According to simple return, the environmentally friendly portfolio unfrequently outpaces the broad market index (in 5 out of 12 cases), whereas less environmentally friendly stocks portfolio behave better (in 8 out of 12 cases). In accordance with MVaR-adjusted performance, the green portfolio rarely outpaces the benchmark (in 4 out of 12 cases), whereas less environmentally friendly stocks perform better (in 6 out of 12 cases).

Dealing with the results based on Financials sector and GHG pollution difference (see Table 83), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the brown-minus-green factor, 3 out of 4 findings are significant, demonstrating that all environmentally friendly portfolios outperform on the alphas (-0.5278*, -0.7009* and -0.9894*, in 50/50, 30/70 and KNN specifications). With regards to the HML, significant environmentally friendly results are positively exposed to the value effect; however, only one approach is significant (-0.8102** in KNN specification). In terms of the robust-minus-weak factor, 2 out of 4 models' results are significant, evidencing that all brown portfolios are positively exposed to RMW (0.7392* and 0.6161*, in 30/70 and 50/50 models). In accordance with Corrected Akaike information criterion, the baseline model is the best fit in the 30/70 and the 50/50 models while the three-factor specification in the KNN and the CAPM in the 10/90 specification (the BMG: -0.3942, -0.2933, -0.9583*, and -0.5674, accordingly).

Considering investment performance results occurring in GHG pollution change (see Table 84), adhering to raw return, less environmentally friendly stocks always fall behind green ones. Furthermore, similar results associated with Sortino measure and modified Sharpe measure. In terms of the best model, the 50/50 approach performs best in both green and brown groups. Furthermore, regarding the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (9.24% and 6.18%), downside risk-adjusted performance (0.2899 and 0.2013) and modified Sharpe measure (0.65 and 0.3859). According to raw return, the green portfolio seldom exceeds the market (in 4 out of 12 cases), whereas brown stocks portfolio perform worse (in 3 out of 12 cases). In relation to modified Sharpe measure, the green portfolio rarely performs better than the market index (in 3 out of 12 cases), whereas stocks with poor environmental performance behave similarly.

Concerning the results inspired by water usage intensity change (see Table 83), almost none of the conventional factors are explaining portfolios' performances in each approach. Regarding the CAPM factor, significant green results are less risky; however, only one approach is significant (0.1493* in 50/50 model). Dealing with the profitability factor, 2 out of 4 models' results are significant, illuminating all brown portfolios are positively exposed to the profitability factor (1.3609* and 1.3111**, in KNN and 10/90 models). There are no significant results in terms of the BMG factor. Adhering to Akaike information criterion corrected for small sample size, the 10/90, the 30/70, and the KNN models perform best in the baseline estimation while the 50/50's best fit is the CAPM (the BMG factor: 0.1099, -0.1548, 0.0648, and -0.1576, respectively).

In terms of investment performance findings associated with shift in water use intensity performance (see Table 84), according to simple return, less environmentally friendly stocks in most cases show lower returns than environmentally friendly ones (in 1 out of 4 models). In addition, similar findings are associated with downside risk-adjusted performance, whereas results for MVaR-Sharpe are more representative (green companies outshine less environmentally friendly companies in 4 out of 4 specifications). Regarding the model with the best returns, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Moreover, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (4.94% and 3.56%), Sortino measure (0.1582 and 0.0903) and modified Sharpe ratio (0.4096 and 0.1862). According to raw performance, the green portfolio seldom outshines the benchmark (in 3 out of 12 cases), while less environmentally friendly counterparts portfolio behave similarly. Judging by modified Sharpe ratio, the green portfolio unfrequently outpaces the market index (in 3 out of 12 cases), while stocks with poor environmental performance perform worse (in 2 out of 12 cases).

Considering the outputs created on shift in waste intensity per sales performance (see Table 83), several of the conventional factors are explaining portfolios' performances in each approach. With regards to the environmental factor, significant brown estimations fall behind on the risk-adjusted terms; however, only one approach is significant (-0.7023** in 50/50 specification). Concerning the market risk, 3 out of 4 models' results are significant, demonstrating that all brown portfolios are riskier (0.221**, 0.2104** and 0.2085*, in 30/70, 50/50 and KNN models, accordingly). In terms of the robust-minus-weak factor, 2 out of 4 results are significant, implying all brown portfolios are positively exposed to the profitability factor (1.1819* and 0.4701*, in KNN and 50/50 estimations, accordingly). Considering the WML, significant environmentally friendly estimations have lower WML exposure; however, only one approach is significant (0.4249* in 10/90 estimation). Adhering to Corrected Akaike criterion, the CAPM is the best fit in the 30/70 and the 50/50 models while in the 10/90 and the KNN estimations best fit is the baseline estimation (the environmental factor: -0.294, -0.4615, -0.594, and -0.7245, accordingly).

Regarding financial performance outputs occurring in shift in waste intensity performance (see Table 84), judging by non-adjusted performance, green companies consistently exceed less environmentally friendly ones. In addition, similar outputs occurring in downside risk-adjusted performance and modified Sharpe ratio. Regarding the best-performing model, the 50/50 approach performs best in both green and brown groups. Furthermore, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in non-adjusted performance (7.01% and 2.73%), downside risk-adjusted performance (0.2826 and 0.0761) and modified Sharpe measure (0.6117 and 0.1577). Adhering to raw performance, the green portfolio unfrequently performs better than the benchmark (in 4 out of 12 cases), while brown stocks portfolio perform worse (in 1 out of 12 cases). Judging by MVaR-adjusted performance, the green portfolio rarely outpaces the market (in 4 out of 12 cases), while less environmentally friendly counterparts perform worse (in 1 out of 12 cases).

Concerning the results inspired by Information Technology sector and GHG emissions change (see Table 85), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the BMG factor, 2 out of 4 estimations' results are significant, evidencing all green portfolios beat on the alphas (-1.0814* and -1.1371*, in KNN and 10/90 models). Dealing with the market factor, significant brown model results are higher-beta; however, only one approach is significant (0.1401** in 50/50 estimation). In terms of the size factor, significant brown estimation results are positively exposed to the size effect; however, only one approach is significant (0.816* in KNN estimation). According to Corrected Akaike information criterion, the eight-factor estimation is the best fit in the 30/70 and the KNN models while the baseline estimation in the 10/90 and the CAPM in the 50/50 specification (the environmental factor: -0.1262, -0.8859, -1.0864*, and -0.006, respectively).

With regards to investment performance outputs associated with GHG pollution difference (see Table 86), in accordance with simple return, green companies often exceed less environmentally friendly ones (in 3 out of 4 specifications). With regards to the best model, within green portfolios, the 10/90 model performs better compared to others (in raw performance and Sortino ratio), while within brown portfolios, the best performing model is the 50/50 (in raw performance and modified Sharpe ratio). Furthermore, with regards to the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (29.37% and 20.9%), downside risk-adjusted performance (1.3451 and 1.0137) and MVaR-adjusted performance (2.755 and 2.175). According to raw performance, the environmentally friendly portfolio always outperforms the benchmark, whereas less environmentally friendly stocks portfolio perform similarly. Judging by modified Sharpe ratio, the green portfolio always outperforms the market benchmark, while less environmentally friendly counterparts behave worse (in 9 out of 12 cases).

With regards to the findings based on water usage difference (see Table 85), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the environmental factor, significant brown estimation results beat on the risk-adjusted terms; however, only one approach is significant (0.7428* in 50/50 model). Dealing with the market beta, significant brown findings are high-beta stocks; however, only one approach is significant (0.2987*** in 10/90 estimation). With regards to the small-minus-big factor, significant environmentally friendly estimations are exposed to smaller-cap companies; however, only one approach is significant (-0.6762*** in 50/50 model). Dealing with the RMW factor, 2 out of 4 findings are significant, suggesting all brown portfolios consist of robust stocks (0.8189** and 0.6041**, in 30/70 and 50/50 estimations, accordingly). In relation to Corrected Akaike information criterion, the 30/70, the 50/50, and the KNN models perform best in the three-factor model whereas the 10/90's best fit is the four-factor model (the environmental factor: 0.3288, 0.8402**, 0.0644, and -0.5433, respectively).

Regarding investment performance results associated with water intensity per sales change (see Table 86), in relation to non-adjusted performance, environmentally friendly stocks frequently fall behind brown ones. Furthermore, similar findings are observed in MVaR-adjusted performance, while results for Sortino ratio are more representative (environmentally friendly companies exceed less environmentally friendly companies in 2 out of 4 models). Considering the best-performing model, within environmentally friendly portfolios, results are mixed, while within brown portfolios, the best performing model is 50/50 in each measure. In addition, with regards to the comparison within the grouped portfolios' performances and benchmarks, there does not exist a green portfolio that performs the best, whereas there is a best-performing brown portfolio. Adhering to raw return, the brown stocks portfolio robustly outshines the broad market index, and adhering to modified Sharpe ratio, the stocks with poor environmental performance portfolio mostly exceeds the benchmark (in 9 out of 12 cases).

Concerning the results based on total waste difference (see Table 85), almost none of the conventional factors are explaining portfolios' performances in each approach. Regarding the market beta, significant environmentally friendly estimation results are lower-beta; however, only one approach is significant (0.253* in 10/90 estimation). Concerning the small-firm effect, significant brown findings consist of smaller-cap stocks; however, only one approach is significant (0.7682* in KNN model). There are no significant results in terms of the BMG. Adhering to Akaike criterion, each portfolio specification performs best in the baseline specification (the BMG for the 10/90, the 30/70, the 50/50, and the KNN models: 0.0127, 0.588, 0.4711, and -0.5224, respectively).

Dealing with investment performance outputs occurring in change in total waste performance (see Table 86), in accordance with non-adjusted performance, brown companies most often outshine environmentally friendly ones. Moreover, similar findings occurring in downside risk-adjusted performance and modified Sharpe ratio. With regards to the best model, the 50/50 approach performs best in both green and less environmentally friendly groups. Furthermore, considering the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by raw return, stocks with poor environmental performance exceed environmentally friendly (21.67% and 15.73%). Judging by downside risk-adjusted performance, less environmentally friendly counterparts perform better than green (1.0 and 0.703). In accordance with MVaR-Sharpe, less environmentally friendly counterparts outperform environmentally friendly (2.0577 and 1.5981). In relation to raw performance, the environmentally friendly portfolio always performs better than the broad market index, whereas stocks with poor environmental performance portfolio perform the same. In relation to MVaR-adjusted performance, the green portfolio outpaces half of the broad market index (in 6 out of 12 cases), whereas less environmentally friendly counterparts behave better (in 9 out of 12 cases).

Considering the results inspired by Consumer Staples sector and GHG pollution difference (see Table 87), almost none of the conventional factors are explaining portfolios' performances in each approach. With regards to the brown-minus-green factor, significant less environmentally friendly estimation results lag behind on the risk-adjusted terms; however, only one approach is significant (-0.8626* in 10/90 estimation). In terms of the value premium, significant less environmentally friendly estimations consist of companies with high book-to-market ratios; however, only one approach is significant (0.9482** in KNN estimation). Regarding the CMA factor, significant brown findings have negative CMA exposure; however, only one approach is significant (-1.8765* in KNN model). According to Corrected Akaike criterion, the baseline specification is the best fit in the 50/50 and the KNN specifications while the three-factor estimation in the 10/90 and the CAPM in the 30/70 specification (the brown-minus-green factor: -0.2064, 0.2393, -0.7297*, and -0.3815, accordingly).

Considering financial performance outputs occurring in GHG pollution change (see Table 88), in relation to non-adjusted performance, green companies robustly beat less environmentally friendly ones. Further, similar outputs observed in downside risk-adjusted performance and modified Sharpe measure. Concerning the model with the best performance, within environmentally friendly portfolios, the KNN model performs better compared to others (in downside risk-adjusted performance and modified Sharpe ratio), while within less environmentally friendly portfolios, the best performing model is the 50/50 (in Sortino ratio and modified Sharpe ratio). In addition, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (10.71% and 7.18%), Sortino ratio (0.7136 and 0.4188) and modified Sharpe measure (1.6349 and 0.9205). In accordance with raw performance, the green portfolio outperforms half of the broad market index (in 6 out of 12 cases), whereas less environmentally friendly stocks portfolio perform worse (in 4 out of 12 cases). According to MVaR-Sharpe, the environmentally friendly portfolio in most cases exceeds the broad market index (in 9 out of 12 cases), while stocks with poor environmental performance perform worse (in 5 out of 12 cases).

In terms of the findings based on change in water usage performance (see Table 87), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the BMG, significant brown findings outperform on the alphas; however, only one approach is significant (0.8802** in KNN specification). Considering the CAPM factor, significant less environmentally friendly model results are lower-beta; however, only one approach is significant (-0.2416** in KNN specification). Regarding the value premium, significant less environmentally friendly results consist of value stocks; however, only one approach is significant (0.7019* in 10/90 estimation). Concerning the investment factor, significant brown model results consist of conservative stocks; however, only one approach is significant (0.3839** in 50/50 specification). With regards to the WML factor, significant less environmentally friendly model results are negatively exposed to momentum; however, only one approach is significant (-0.1599* in 50/50 specification). According to Akaike information criterion corrected for small sample size, the three-factor specification is the best fit in the 30/70 and the KNN models whereas the baseline specification in the 10/90 and the six-factor model in the 50/50 model (the brown-minus-green factor: 0.0062, 0.6461, 0.3629, and -0.1182, accordingly).

Considering financial performance findings occurring in water usage difference (see Table 88), judging by raw return, environmentally friendly stocks frequently underperform less environmentally friendly ones. Concerning the best model, within environmentally friendly portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Moreover, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Judging by raw performance, brown stocks outpace environmentally friendly (12.65% and 10.14%, accordingly). Adhering to Sortino ratio, less environmentally friendly stocks outshine green (0.8904 and 0.6746, respectively). According to MVaR-Sharpe, environmentally friendly beat brown stocks (1.4751 and 1.4724, respectively). According to simple return, the green portfolio outshines half of the benchmark (in 6 out of 12 cases), while less environmentally friendly stocks portfolio behave better (in 9 out of 12 cases). According to modified Sharpe ratio, the green portfolio outperforms half of the broad market index (in 6 out of 12 cases), whereas less environmentally friendly stocks behave similarly.

Regarding the findings formed on change in waste intensity per sales performance (see Table 87), almost none of the conventional factors are explaining portfolios' performances in each approach. With regards to the market risk, significant environmentally friendly estimations are higher-beta; however, only one approach is significant (-0.2319*** in 30/70 specification). Regarding the HML factor, significant less environmentally friendly estimations are positively exposed to the value effect; however, only one approach is significant (0.684** in KNN specification). Dealing with the CMA factor, significant environmentally friendly estimation results are positively exposed to the investment factor; however, only one approach is significant (-0.7875** in KNN specification). There are no significant results in terms of the BMG. Judging by Corrected Akaike information criterion, the CAPM is the best fit in the 30/70 and the 50/50 estimations while in the 10/90 and the KNN models best fit is the baseline model (the brown-minus-green factor: 0.3661, 0.0816, -0.0953, and 0.0221, accordingly).

In terms of financial performance outputs occurring in waste intensity difference (see Table 88), adhering to raw performance, green stocks often exceed brown ones (in 3 out of 4 specifications). Furthermore, similar findings occurring in Sortino ratio and modified Sharpe measure. Concerning the best-performing model, within green portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 30/70 in each measure. Furthermore, in terms of the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to raw performance, environmentally friendly exceed brown stocks (7.27% and 6.57%, respectively). Judging by downside risk-adjusted performance, less environmentally friendly stocks outshine green (0.4052 and 0.3738). According to MVaR-adjusted performance, environmentally friendly outpace brown stocks (0.9205 and 0.8474, respectively). Adhering to non-adjusted performance, the environmentally friendly portfolio seldom beats the benchmark (in 4 out of 12 cases), whereas brown stocks portfolio behave the same. According to MVaR-Sharpe, the environmentally friendly portfolio seldom performs better than the broad market index (in 5 out of 12 cases), whereas less environmentally friendly stocks behave similarly.

With regards to the findings inspired by Health Care sector and GHG pollution change (see Table 91), several of the conventional factors are explaining portfolios' performances in each approach. Considering the BMG, 2 out of 4 estimations' results are significant, suggesting that all environmentally friendly portfolios outshine on the risk-adjusted terms (-1.6755** and -2.3017***, in 10/90 and KNN estimations, accordingly). With regards to the market risk, significant brown findings have higher beta; however, only one approach is significant (0.2331** in 30/70 model). With regards to the small-minus-big factor, significant green estimation results consist of smaller-cap companies; however, only one approach is significant (1.3186** in KNN estimation). With regards to the value premium, 2 out of 4 estimations' results are significant, evidencing that all brown portfolios consist of companies with high book-to-market ratios (1.7549** and 1.5165***, in 10/90 and KNN estimations). With regards to the conservative-minus-aggressive factor, significant green estimations consist of conservative stocks; however, only one approach is significant (-1.4746* in KNN model). Concerning the WML, 2 out of 4 estimations are significant, suggesting that all brown portfolios consist of winner companies (1.0427* and 0.8743***, in 10/90 and KNN estimations, respectively). Adhering to Corrected Akaike information criterion, the 10/90, the 30/70, and the 50/50 models perform best in the baseline estimation whereas the KNN best fit is the four-factor model (the BMG: -1.5885**, -0.4231, -0.0942, and -2.0278***, accordingly).

Concerning investment performance outputs occurring in shift in air pollution performance (see Table 92), according to raw performance, green companies consistently outpace less environmentally friendly ones. Additionally, similar results occurring in Sortino ratio and modified Sharpe measure. Concerning the best model, within green portfolios, the 30/70 model performs better compared to others (in Sortino ratio and modified Sharpe measure), while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Moreover, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (12.19% and 7.41%), Sortino ratio (0.9659 and 0.3996) and MVaR-adjusted performance (1.8227 and 0.8135). According to non-adjusted performance, the green portfolio frequently outpaces the market index (in 7 out of 12 cases), while brown stocks portfolio behave worse (in 3 out of 12 cases). In relation to MVaR-adjusted performance, the green portfolio often outperforms the market benchmark (in 8 out of 12 cases), whereas less environmentally friendly counterparts perform worse (in 4 out of 12 cases).

With regards to the findings created on change in water usage intensity (see Table 91), none of the conventional factors are explaining portfolios' performances in each approach and there are also nonsignificant results in terms of the environmental factor. Meanwhile, according to Akaike information criterion corrected for small sample size, the 10/90, the 30/70, and the 50/50 estimations perform best in the three-factor estimation while the KNN best fit is the baseline estimation (the BMG factor: -0.0914, -0.0838, -0.2736, and -0.3387).

Regarding financial performance results occurring in water usage difference (see Table 92), according to raw performance, brown companies in most cases are inferior to environmentally friendly ones (in 1 out of 4 specifications). With regards to the model with the best performance, within environmentally friendly portfolios, the 50/50 model performs better compared to others (in non-adjusted performance and modified Sharpe ratio), while within less environmentally friendly portfolios, the best performing model is the 30/70 (in non-adjusted performance and downside risk-adjusted performance). Additionally, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (16.68% and 13.93%), Sortino ratio (1.2506 and 0.8674) and MVaR-Sharpe (2.7489 and 1.9108). In relation to non-adjusted performance, the green portfolio universally outshines the market, while less environmentally friendly stocks portfolio behave worse (in 9 out of 12 cases). Judging by modified Sharpe measure, the environmentally friendly portfolio consistently outpaces the market index, while less environmentally friendly stocks perform worse (in 9 out of 12 cases).

Regarding the results established on waste intensity per sales difference (see Table 91), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the BMG, 2 out of 4 models' results are significant, illuminating all environmentally friendly portfolios perform better than on the risk-adjusted terms (-0.8296** and -1.1947*, in 30/70 and 10/90 estimations, accordingly). Considering the market factor, 3 out of 4 estimations are significant, indicating that all brown portfolios have higher beta (0.402*, 0.3689** and 0.2069*, in KNN, 10/90 and 30/70 models, respectively). In terms of the high-minus-low factor, significant brown results are value-oriented; however, only one approach is significant (2.1495*** in KNN model). With regards to the robust-minus-weak factor, 3 out of 4 estimations are significant, enforcing all brown portfolios are positively exposed to RMW (1.7105*, 0.9377** and 0.7273*, in KNN, 30/70 and 50/50 models). Concerning the CMA, significant less environmentally friendly estimations have negative CMA exposure; however, only one approach is significant (-3.5574*** in KNN estimation). Dealing with the momentum factor, significant green model results have lower WML exposure; however, only one approach is significant (0.6353** in KNN specification). According to Akaike information criterion, the six-factor model is the best fit in the 30/70 and the KNN specifications whereas the CAPM in the 10/90 and the baseline estimation in the 50/50 estimation (the BMG: -0.8296**, -1.0284, -1.4108**, and -0.4286, accordingly).

Regarding investment performance results associated with waste intensity per sales difference (see Table 92), in accordance with raw return, environmentally friendly companies consistently exceed brown ones. In addition, similar outputs observed in downside risk-adjusted performance and modified Sharpe measure. Considering the model with the best returns, the 50/50 approach performs best in both green and brown groups. Moreover, regarding the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw return (14.99% and 9.18%), Sortino ratio (0.9722 and 0.4908) and modified Sharpe ratio (2.1988 and 1.0995). In relation to raw performance, the environmentally friendly portfolio consistently outpaces the broad market index, while stocks with poor environmental performance portfolio behave worse (in 4 out of 12 cases). Adhering to modified Sharpe ratio, the green portfolio frequently outpaces the market (in 9 out of 12 cases), while less environmentally friendly stocks behave worse (in 5 out of 12 cases).

With regards to the outputs created on Energy sector and shift in GHG emissions performance (see Table 93), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the CAPM factor, 2 out of 4 results are significant, implying all brown portfolios are high-beta stocks (0.3775*** and 0.2236*, in KNN and 10/90 estimations, respectively). Regarding the SMB factor, significant less environmentally friendly findings consist of small-caps; however, only one approach is significant (1.0446*** in KNN specification). With regards to the value factor, 3 out of 4 estimations are significant, suggesting that all brown portfolios are positively exposed to the value effect (1.2923***, 0.8334** and 0.7194*, in 10/90, KNN and 30/70 models, respectively). In terms of the investment factor, 2 out of 4 estimations are significant, evidencing all green portfolios include firms that invest conservatively (-0.7236* and -1.2567**, in 30/70 and 10/90 estimations, respectively). There are no significant results in terms of the brown-minus-green factor. Adhering to Corrected Akaike information criterion best fir models for the 10/90, the 30/70, the 50/50, and the KNN models are the CAPM, the three-factor specification, the baseline estimation, and the eight-factor model, accordingly (the environmental factor: -0.6234, -0.3084, -0.062, and -0.7922, accordingly).

Concerning investment performance outputs associated with GHG emissions change (see Table 94), according to raw performance, green companies universally beat less environmentally friendly ones. Furthermore, similar results observed in downside risk-adjusted performance and modified Sharpe measure. In terms of the model with the best performance, within green portfolios, the 10/90 model performs better compared to others (in raw performance and Sortino measure), while within brown portfolios, the best performing model is the 50/50 in each measure. Additionally, considering the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (7.09% and 2.11%), downside risk-adjusted performance (0.2339 and 0.0419) and MVaR-adjusted performance (0.364 and 0.085). Adhering to raw performance, the green portfolio unfrequently performs better than the market (in 4 out of 12 cases), while stocks with poor environmental performance portfolio behave worse (in 1 out of 12 cases). Adhering to MVaR-adjusted performance, the environmentally friendly portfolio rarely exceeds the market benchmark (in 3 out of 12 cases), while brown stocks perform worse (in 1 out of 12 cases).

Concerning the results inspired by water usage intensity difference (see Table 93), almost none of the conventional factors are explaining portfolios' performances in each approach. With regards to the brown-minus-green factor, significant green model results fall behind on the alphas; however, only one approach is significant (1.303** in 30/70 specification). Considering the SMB, significant less environmentally friendly estimation results are negatively exposed to the size effect; however, only one approach is significant (-0.7786** in 30/70 specification). In accordance with Akaike information criterion corrected for small sample size, the baseline specification is the best fit in the 50/50 and the KNN estimations whereas in the 10/90 and the 30/70 models best fit is the three-factor specification (the environmental factor: 0.5133*, 0.6695, 0.5366, and 1.2596**, accordingly).

Dealing with financial performance outputs associated with shift in water use intensity performance (see Table 94), in accordance with simple return, environmentally friendly companies consistently show lower returns than less environmentally friendly ones. In addition, similar results occurring in downside risk-adjusted performance and modified Sharpe ratio. With regards to the best model, within environmentally friendly portfolios, the 50/50 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 30/70 in each measure. In addition, in terms of the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. According to non-adjusted performance, brown stocks outperform environmentally friendly (14.28% and -0.05%, respectively). Adhering to Sortino measure, stocks with poor environmental performance perform better than green (0.5603 and -0.0387). Judging by modified Sharpe measure, brown stocks perform better than environmentally friendly (0.9799 and -0.084, respectively). Adhering to raw performance, the green portfolio unfrequently outperforms the benchmark (in 1 out of 12 cases), whereas less environmentally friendly stocks portfolio behave better (in 12 out of 12 cases). Adhering to modified Sharpe measure, the environmentally friendly portfolio seldom performs better than the broad market index (in 1 out of 12 cases), while brown stocks perform better (in 6 out of 12 cases).

With regards to the findings established on shift in waste intensity per sales performance (see Table 93), almost none of the conventional factors are explaining portfolios' performances in each approach. In terms of the market factor, 2 out of 4 findings are significant, evidencing all brown portfolios are riskier (0.3347* and 0.2389**, in 10/90 and 30/70 estimations, respectively). There are no significant results in terms of the BMG. According to Corrected Akaike information criterion, the baseline estimation is the best fit in the 50/50 and the KNN models whereas in the 10/90 and the 30/70 models best fit is the CAPM (the BMG factor: 0.4354, 0.8815, 0.9373, and 0.2011, respectively).

With regards to financial performance results associated with shift in waste intensity per sales performance (see Table 94), adhering to raw return, green stocks robustly fall behind brown ones. In addition, similar outputs observed in Sortino measure and MVaR-Sharpe. With regards to the model with the best returns, within green portfolios, the 30/70 model performs better compared to others (in raw return and downside risk-adjusted performance), while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. In addition, regarding the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with non-adjusted performance, stocks with poor environmental performance outpace environmentally friendly (8.31% and -0.22%, accordingly). According to downside risk-adjusted performance, brown stocks outperform environmentally friendly (0.2647 and -0.0462). According to modified Sharpe ratio, less environmentally friendly counterparts beat environmentally friendly (0.4728 and -0.0933, accordingly). In accordance with simple return, the green portfolio rarely performs better than the market benchmark (in 1 out of 12 cases), while stocks with poor environmental performance portfolio behave better (in 6 out of 12 cases). According to MVaR-Sharpe, the environmentally friendly portfolio rarely exceeds the benchmark (in 1 out of 12 cases), whereas stocks with poor environmental performance perform better (in 4 out of 12 cases).

Dealing with the findings created on Utilities sector and shift in greenhouse gas performance (see Table 95), almost none of the conventional factors are explaining portfolios' performances in each approach. Concerning the SMB, significant brown estimation results consist of smaller-cap companies; however, only one approach is significant (0.8219* in 10/90 specification). Concerning the WML factor, significant brown model results are negatively exposed to momentum; however, only one approach is significant (-0.4194* in 10/90 model). There are no significant results in terms of the BMG. According to Corrected Akaike criterion, the baseline estimation is the best fit in the 30/70 and the KNN estimations while the four-factor model in the 10/90 and the CAPM in the 50/50 specification (the BMG factor: -0.329, 0.6629, -0.1818, and -0.3321, respectively).

Considering investment performance outputs observed in greenhouse gas emissions performance (see Table 96), judging by raw performance, less environmentally friendly stocks mostly fall behind green ones (in 1 out of 4 estimations). Dealing with the model with the best performance, within environmentally friendly portfolios, the 10/90 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the KNN in each measure. Moreover, concerning the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (14.64% and 12.51%), downside risk-adjusted performance (0.8349 and 0.4693) and MVaR-adjusted performance (1.8149 and 0.7857). Judging by raw return, the environmentally friendly portfolio consistently outperforms the benchmark, whereas less environmentally friendly counterparts portfolio perform worse (in 9 out of 12 cases). In accordance with MVaR-adjusted performance, the green portfolio most often performs better than the benchmark (in 9 out of 12 cases), whereas brown stocks perform worse (in 4 out of 12 cases).

Considering the outputs based on water usage intensity change (see Table 95), several of the conventional factors are explaining portfolios' performances in each approach. Concerning the brown-minus-green factor, significant less environmentally friendly results outperform on the risk-adjusted terms; however, only one approach is significant (0.4856** in 50/50 model). Dealing with the value factor, 3 out of 4 models' results are significant, suggesting all green portfolios consist of companies with high book-to-market ratios (-0.326*, -0.4774* and -0.7074*, in 50/50, 30/70 and KNN models, accordingly). Regarding the operating profitability factor, 2 out of 4 findings are significant, illuminating all green portfolios consist of the most profitable firms (-0.4794** and -0.9426***, in 50/50 and 30/70 models). In terms of the CMA, significant less environmentally friendly estimations are positively exposed to the investment factor; however, only one approach is significant (0.8732* in KNN estimation). Judging by Akaike information criterion corrected for small sample size best fir models for the 10/90, the 30/70, the 50/50, and the KNN models are the baseline specification, the six-factor specification, the CAPM, and the four-factor estimation, respectively (the environmental factor: 0.2104, 0.304, 0.3689*, and -0.0448, accordingly).

In terms of investment performance results observed in change in water intensity per sales (see Table 96), in relation to raw performance, green companies always fall behind brown ones. Moreover, similar results observed in Sortino ratio and modified Sharpe measure. With regards to the best model, within environmentally friendly portfolios, the 30/70 model performs better compared to others in each measure, while within brown portfolios, the best performing model is the 50/50 in each measure. Additionally, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In accordance with raw performance, stocks with poor environmental performance outshine green (7.48% and 4.93%, respectively). In accordance with downside risk-adjusted performance, less environmentally friendly counterparts outpace green (0.4149 and 0.239, respectively). Adhering to modified Sharpe measure, brown stocks outperform green (0.9179 and 0.4915, respectively). In accordance with raw performance, the environmentally friendly portfolio seldom outpaces the market index (in 3 out of 12 cases), whereas less environmentally friendly stocks portfolio behave better (in 4 out of 12 cases). Adhering to modified Sharpe measure, the environmentally friendly portfolio seldom beats the market (in 3 out of 12 cases), whereas brown stocks perform better (in 4 out of 12 cases).

In terms of the results based on shift in waste intensity performance (see Table 95), several of the conventional factors are explaining portfolios' performances in each approach. Regarding the CAPM factor, significant green model results are low-beta stocks; however, only one approach is significant (0.2715*** in 30/70 model). Concerning the HML factor, 2 out of 4 findings are significant, indicating that all green portfolios consist of value stocks (-0.4644* and -0.899**, in 50/50 and 30/70 specifications, accordingly). Concerning the operating profitability factor, all findings are significant, showing that all less environmentally friendly portfolios consist of weak stocks (-0.7322**, -0.7842**, -1.2584* and -1.3979**, in 50/50, 30/70, KNN and 10/90 models). Dealing with the CMA, significant less environmentally friendly estimation results consist of conservative stocks; however, only one approach is significant (1.0314** in 30/70 estimation). In terms of the momentum, 2 out of 4 estimations' results are significant, suggesting all green portfolios include winner stocks (-0.5277*** and -0.5316*, in 30/70 and KNN estimations, accordingly). There are no significant results in terms of the brown-minus-green factor. Adhering to Akaike information criterion, the 30/70, the 50/50, and the KNN estimations perform best in the six-factor specification while the 10/90's best fit is the CAPM (the BMG factor: 0.3231, -0.0059, 0.7934, and -0.117).

In terms of investment performance outputs associated with total waste difference (see Table 96), in relation to raw return, green companies frequently underperform less environmentally friendly ones. Furthermore, similar findings observed in Sortino measure and modified Sharpe measure. Regarding the model with the best returns, within green portfolios, the 50/50 model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the KNN in each measure. Moreover, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. In relation to raw performance, brown stocks perform better than environmentally friendly (8.96% and 5.72%, respectively). In accordance with Sortino ratio, green exceed less environmentally friendly stocks (0.3735 and 0.3431). Judging by MVaR-Sharpe, stocks with poor environmental performance outperform green (0.7477 and 0.7298, accordingly). According to raw return, the environmentally friendly portfolio unfrequently beats the market benchmark (in 4 out of 12 cases), while less environmentally friendly stocks portfolio perform similarly. Adhering to MVaR-Sharpe, the environmentally friendly portfolio unfrequently outperforms the benchmark (in 4 out of 12 cases), while less environmentally friendly stocks perform similarly.

Dealing with the findings created on Communication Services sector and shift in greenhouse gas performance (see Table 97), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the brown-minus-green factor, 3 out of 4 models' results are significant, indicating that all green portfolios outpace on the risk-adjusted terms (-0.7742**, -1.0092** and -1.1015*, in 50/50, 30/70 and KNN specifications, respectively). Dealing with the SMB factor, 2 out of 4 estimations' results are significant, indicating that all brown portfolios are positively exposed to the size effect (0.9831*** and 0.9771**, in 30/70 and 10/90 models, accordingly). Dealing with the RMW, 2 out of 4 findings are significant, enforcing all brown portfolios are positively exposed to the profitability factor (1.4575*** and 1.0703**, in 30/70 and 50/50 specifications). Concerning the CMA, 2 out of 4 estimations are significant, indicating that all brown portfolios include firms that invest conservatively (1.2332* and 1.2132***, in 10/90 and 30/70 estimations, accordingly). Adhering to Corrected Akaike criterion, the six-factor specification is the best fit in the 30/70 and the 50/50 estimations whereas the baseline model in the KNN and the CAPM in the 10/90 estimation (the environmental factor: -1.0092**, -0.7742**, -0.9457*, and -1.0233, accordingly).

Concerning financial performance outputs occurring in shift in greenhouse gas performance (see Table 98), according to raw return, less environmentally friendly companies consistently fall behind environmentally friendly ones. Further, similar results associated with downside risk-adjusted performance and modified Sharpe measure. In terms of the best model, within green portfolios, the 30/70 model performs better compared to others (in non-adjusted performance and downside risk-adjusted performance), while within less environmentally friendly portfolios, the best performing model is the 50/50 (in raw performance and Sortino measure). Additionally, dealing with the comparison within the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in raw performance (15.74% and 6.85%), downside risk-adjusted performance (1.0302 and 0.3848) and modified Sharpe measure (1.7742 and 0.6407). Adhering to simple return, the green portfolio universally outpaces the broad market index, whereas less environmentally friendly stocks portfolio perform worse (in 4 out of 12 cases). In accordance with modified Sharpe ratio, the green portfolio in most cases performs better than the benchmark (in 9 out of 12 cases), whereas brown stocks behave worse (in 4 out of 12 cases).

Considering the findings inspired by shift in water usage intensity (see Table 97), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the market factor, significant environmentally friendly model results are riskier; however, only one approach is significant (-0.2882** in 10/90 specification). Dealing with the size premium, significant environmentally friendly model results consist of large-caps; however, only one approach is significant (0.8035** in 30/70 specification). Considering the profitability anomaly, significant brown estimations consist of the most profitable firms; however, only one approach is significant (1.4138*** in 10/90 specification). Regarding the conservative-minus-aggressive factor, significant green model results consist of conservative stocks; however, only one approach is significant (-1.0093** in 50/50 estimation). There are no significant results in terms of the BMG factor. According to Corrected Akaike information criterion, the three-factor estimation is the best fit in the 30/70 and the KNN estimations while the CAPM in the 10/90 and the six-factor estimation in the 50/50 estimation (the environmental factor: -0.4571, -0.2556, 0.9734*, and -0.075, accordingly).

Concerning financial performance outputs observed in water usage change (see Table 98), according to non-adjusted performance, less environmentally friendly companies most often fall behind environmentally friendly ones (in 1 out of 4 specifications). Furthermore, similar results associated with downside risk-adjusted performance and modified Sharpe measure. Concerning the model with the best performance, within environmentally friendly portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 10/90 in each measure. Further, considering the comparison between the grouped portfolios' performances and benchmarks, the green and the brown portfolios have mixed results. Adhering to non-adjusted performance, brown stocks perform better than environmentally friendly (12.13% and 8.32%). In accordance with Sortino measure, less environmentally friendly stocks beat green (0.5107 and 0.4828, accordingly). Adhering to modified Sharpe measure, less environmentally friendly counterparts exceed green (1.1437 and 0.9934, accordingly). Adhering to raw return, the green portfolio seldom exceeds the market benchmark (in 4 out of 12 cases), while less environmentally friendly counterparts portfolio behave better (in 9 out of 12 cases). In relation to MVaR-Sharpe, the environmentally friendly portfolio rarely outperforms the market benchmark (in 4 out of 12 cases), whereas less environmentally friendly counterparts behave better (in 5 out of 12 cases).

Dealing with the findings created on waste intensity per sales difference (see Table 97), several of the conventional factors are explaining portfolios' performances in each approach. In terms of the operating profitability factor, 2 out of 4 findings are significant, enforcing all green portfolios consist of robust stocks (-1.0436** and -1.2055**, in 10/90 and KNN models, respectively). Considering the CMA, significant brown estimations are positively exposed to the investment factor; however, only one approach is significant (0.9304* in 30/70 model). Regarding the WML, significant brown estimations have higher WML exposure; however, only one approach is significant (0.4276** in 50/50 estimation). There are no significant results in terms of the BMG factor. Adhering to Akaike criterion, the 10/90, the 30/70, and the KNN specifications perform best in the baseline specification while the 50/50's best fit is the four-factor specification (the BMG: -0.1454, -0.5735, -1.1195*, and -0.3513, respectively).

Regarding financial performance results occurring in shift in total waste performance (see Table 98), in accordance with simple return, green companies consistently outperform brown ones. Furthermore, similar findings associated with downside risk-adjusted performance and modified Sharpe ratio. In terms of the model with the best performance, within green portfolios, the KNN model performs better compared to others in each measure, while within less environmentally friendly portfolios, the best performing model is the 50/50 in each measure. Moreover, dealing with the comparison between the grouped portfolios' performances and benchmarks, the green portfolio outpaces the brown one in each measure: in simple return (11.6% and 3.26%), downside risk-adjusted performance (0.7308 and 0.1323) and MVaR-adjusted performance (1.2175 and 0.2274). In accordance with raw return, the green portfolio often outpaces the market (in 9 out of 12 cases), whereas brown stocks portfolio perform worse (in 4 out of 12 cases). According to MVaR-adjusted performance, the green portfolio often outperforms the market benchmark (in 8 out of 12 cases), while brown stocks perform worse (in 4 out of 12 cases).

Results based on stock associated with Real Estate do not show any significance of the brown minus green factor (see Tables 107).

Dealing with the summary of the empirical chapter, compared to environmental performance, momentum-based is appeared more significant in terms of representing source of systematic risk factor. Judging by the results established in the full sample approach, the greenhouse gas and waste generation momentums are significant and negative in most of the estimations (contributing to possible extension and improvement of conventional factor approach Ammann et al., 2022; Asness and Frazzini, 2013; Li et al., 2022; Basu, 1983; Jaffe et al. 1989; Koh, 2020; and contrasting with evidences from Wagner et al., 2002; supporting Al-Tuwaijri et al., 2004; Nakao et al., 2007; Boulatoff and Boyer, 2009; Benjamin et al., 2020; Giese et al., 2019; and supporting Görgen et al., 2018; Capelle-Blancard and Laguna, 2010; Reboredo, 2015; Ghimire and Shanaev, 2018), while water-related variable significant in each estimation observed in the 30/70 approach, and the KNN portfolios applied to the CAPM. Such evidence contribute to the robustness and validity of environmental momentum being a source of the systematic risk, while the interpretation of its signs also goes in line with CSR premises, where negative alpha indicates the positive markets' reflection towards the improved environmental performance.

Similar performance is observed in the developed sample, meanwhile, findings observed in the emerging countries and developed excluding the United States mostly significant in waste-based approach, and greenhouse gas emissions and water intensity are noticeable less significant compared to previous samples.

Moving on to the regional-wise results, significance of the air pollution appears in Asian Pacific excluding Japan, North American samples, having negative coefficient. While European and Latin American estimation significant alphas are positive evidencing an existent mispricing. Dealing with the water usage variable, its significance appears in Europe (arguing with Muñoz et al, 2014; Ibikunle and Steffen, 2017), Latin America, and Middle East and North Africa, with positive signs of alphas.

With regards to the country-wise findings, the greenhouse gas related risk factor is observed in the United States (which is opposite to findings observed in Bauer et al., 2005; Schröder, 2004; Goldreyer et al., 1999; Bolton and Kacperczyk, 2021; Climent and Soriano, 2011), China (supporting call for disclosure from Liu and Anbumozhi, 2009), Canada (contradicts to Bauer et al., 2007), India, Sweden (arguing with Kreander et al., 2005), Malaysia, and Mexico, where multiple estimations have significant and negative coefficients, while significant and positive results are observed in the United Kingdom (arguing with Luther et al., 1992; and corresponding to Luther and Matatko, 1994; Mallin et al., 1995; Gregory et al., 1997; Goldreyer et al., 1999), South Korea, Germany (supporting Schröder, 2004; Bauer et al., 2005; Kreander et al. ; 2005), Norway, Netherlands (going in line with evidences provided by Kreander et al., 2005), Thailand, and Russia. Dealing with water's momentum, its alphas are significant and negative in Japan (contributing to Nakao et al., 2007), China (going in line with encourage for disclosure from Liu and Anbumozhi, 2009), India, Sweden (contrasting to Kreander et al., 2005), Switzerland, Malaysia (in the 10/90 and the 30/70 portfolios), and Russia, positive alphas are observed in the United States (supporting findings observed in Bauer et al., 2005; Schröder, 2004; Goldreyer et al., 1999; Bolton and Kacperczyk, 2021; Climent and Soriano, 2011), Canada (which corresponds to Bauer et al., 2007), Hong Kong, Australia (supporting Jones et al, 2008; while corresponding to call for environmental impact disclosure manifested by Rankin et al, 2011; Subramaniam et al, 2015), South Africa, Malaysia (in the KNN approach), Netherlands (supporting Kreander et al., 2005), and Thailand. In case of the waste generation outcomes, negative coefficients appear in China (supporting the call for disclosure from Liu and Anbumozhi, 2009), Taiwan, Canada (which argues with Bauer et al., 2007), India, Italy, and Finland, and positive alphas are observed in Germany (going in line with Schröder, 2004; Bauer et al., 2005; Kreander et al., 2005), Sweden (going in line with Kreander et al., 2005), Thailand, and Russia.

Moving further to the sector-wise results, the GHG factor is significant in such sectors as Materials, Financials, Information Technology, Consumer Staples, Health Care, and Communication Services, while in each case coefficients are negative. Meanwhile, water intensity does not appear with such one-sided coefficients: in Industrials, Real Estate, Consumer Services (in the 30/70 estimation) significant alphas appear with negative signs, while opposite is observed in Materials, Consumer Discretionary, Information Technology, Consumer Staples, Energy, and Utilities, evidencing mispricing associated with water performance.

In terms of portfolios' financial performance, the green outperformance is more noticeable compared to the results observed in the specification established on the environmental performance on each evaluated measure, including monthly returns, the modified Sharpe ratio and the Sortino ratio. Dealing with a more detailed view, the main difference from the previous approach is located in the regional- and status- wise samples, where greener stocks associated with emerging countries and the European region appear to outshine brown ones on a frequent basis.

4.4. ESG momentum in factor models

This empirical chapter covers the outcomes of the calendar time event studies applied to changes in companies' ESG MSCI ratings. As was mentioned in the methodology chapter, the primary approach taken in this section involves factor regression (including one-factor model, four-factor model, and six-factor model) analysis of portfolios combined depending on the existence of the companies' rating changes events splitting the sample into three types of the portfolios such as Upgraded, Downgraded and Unchanged (e.g., Control portfolio). This portfolio construction rule is applied to different groups based on several approaches that cover geographical zones (United States, Europe, Japan, Asia Pacific ex. Japan, North America, Latin America, Middle East and North Africa), economy levels (Developed, Emerging, Developed excluding the United States, Developed leaders, Developed laggards, Emerging leaders and Emerging laggards), size factor (Large, Small, Large developed and Small developed), value factor (Growth, Value, Growth developed and Value developed), meta-sectors (Extraction, Production and Services), the clusters of primordial rating (Leaders and Laggards) and additional grouping by English-speaking countries. The origin of such subsampling is coming from the Fama and French factors grouping.

Dealing with the findings based on a complete sample in the baseline approach (see Table 207), the results do not show any significant outputs except the significant positive risk-adjusted returns of 0.1376* and 0.1456* in CAPM and the six-factor model in the control portfolio. While in portfolios' differences estimations, the results of Upgraded minus Downgraded portfolios (U-D) indicate the statistically significant outperformance of upgraded ones on alphas (0.9557* and 1.047* on four- and six- factor models). None of the additional results appeared significant, which indicates the market's irrelevance to the event of rating changes in the analysed specification.

Assuming the existence of the anticipation and adjustment effect, further analysis is based on the expanded window that includes not only the month of the event but also the previous and following months. Such estimation results in a broader range of significant results illuminating the superiority of upgraded companies compared to control and downgraded ones. According to the models' outputs, the upgraded portfolio has significant positive risk-adjusted returns in each estimation: 0.5004* in CAPM, 0.5997*** in the four-factor model and 0.7266*** in the six-factor model. Such results are consistent with the findings occurring in zero-investment portfolios where alphas are significant and positive in both, upgraded minus downgraded (1.1281**, 1.1445**, and 1.2526*** in CAPM, four- and six-factor models, accordingly) and upgraded minus control (0.4964* and 0.5983** in four- and six-factor models). Going further in the performance of the downgraded portfolios, none of the estimations' results is significant; however, each coefficient is negative. Nevertheless, significance appears in the downgrade minus control approach, where each coefficient appears significant and negative (-0.7519**, -0.6481*, and -0.6543* in CAPM, four- and six-factor models). Such opposite performance of downgraded and upgraded companies and estimations results reject the null hypothesis of ESG rating irrelevance and go in line with studies in related fields.

For additional robustness and identification of the possible heterogeneity effect, further analysis is concentrated on testing the various subsamples.

With regards to findings based on two primordial rating groups that include leaders and laggards (see Table 209 and Table 210), the results almost never appear to be significant on alphas despite one case of control portfolio in the leaders' sample, where each coefficient is positive and significant (0.2607***, 0.1828***, and 0.1936*** in CAPM, four- and six- factor models, accordingly). Meanwhile, coefficients in downgraded and upgraded portfolios as well as in each pair of differences are insignificant, while its signs are duplicating the results that appeared in the baseline approach. Dealing with laggards, none of the outcomes is significant, whereas signs of the coefficients show mixed results that are less interpretable compared to previous findings. Such performance of subsample groups indicates the market's insensitivity to rating changes within specific levels, supporting the outcomes of the baseline approach.

Considering the findings in samples inspired by different economic levels, the first group is the companies from developed countries (see Table 211). In accordance with the performance of estimations, each coefficient in each portfolio and difference pair is significant. The upgraded portfolio's coefficients have positive signs in each approach: 0.6137** in CAPM, 0.6443** in the four-factor model, and 0.7383*** in the six-factor model. Similar to upgraded portfolios, significant positive risk-adjusted return is also observed in the control portfolio; however, having smaller coefficient values (0.1232**, 0.0652**, and 0.0566** in CAPM, four- and six- factor models, accordingly), that goes in line with the outcomes of upgrade minus control estimation, where all coefficients are significant and positive, supporting evidence of upgraded portfolio's outperformance (0.4905*, 0.5791**, 0.6817** in CAPM, four- and six- factor models). With regards to the downgraded portfolio in the developed sample, alphas appeared significant and negative in each asset-pricing model (-0.715**, -0.7221*, -0.7343** in CAPM, four- and six- factor models, accordingly), that is reinforced by the outcomes of zero-investment portfolios, where in upgraded minus downgraded portfolio coefficients are all positive and significant with values from 1.32% to 1.48% for each model, while in downgraded minus control approach signs are significant and in a range between -0.78% and -0.84%. Such results support the outcomes of the extended baseline approach in a complete sample; however, judging by values and level of significance of abnormal risk-adjusted returns, companies from developed companies are more exposed to rating changes compared to the whole sample, especially in terms of downgraded and control groups, that could be a result of the funds' allocation that depends on screening approaches.

While results in developed countries appeared significant in each case, findings based on companies from emerging countries are less informative (see Table 212). Upgraded and control portfolios remain significant, similarly to the previous case, with significant positive alphas in each estimation except CAPM for upgraded portfolio (1.0422** and 1.0267** in four- and six- factor models for upgraded and 0.3268**, 0.3783**, and 0.3758** in CAPM, four- and six- factor models, accordingly for control portfolio). Despite such performance in a separate analysis, upgraded minus control does not reinforce significance in adjusted returns: none of the asset-pricing models' outcomes is significant. Dealing with the downgraded portfolio does not perform any significant results that are refuted to findings in the developed subsample, while in the upgrade minus downgraded portfolio, two models have significant results: 1.5944* and 1.3756** in four- and six- factor models; and for difference with control portfolio, the six-factor model outcome appeared significant with alpha equals to -0.7247*. Such performance suggests that there are no statistically significant footprints of penalties for the downgrades in emerging countries, while there is a premium for better or unchanging ESG performance. This lack of sensitivity in comparison to the developed sample could be linked to the positive connotation of the company's inclusion in the ratings. Nevertheless, signs of the insignificant coefficients on par with previous observations remain negative, whereas its values are less compared to the results of other estimations.

The results obtained from the application of covered sample addition grouping on laggards and leaders do not add significantly to the explanation and confirmation of previous findings (see Table 209 and Table 210). Dealing with the estimations' results founded on leaders' and laggards' clusters in the developed sample (see Table 219 and Table 220), significant risk-adjusted returns are observed in each asset-pricing model utilising leaders' control portfolio, where each coefficient is positive (0.2879*** in CAPM and similar alpha in four- and six- factor model that equals 0.1736**). Such results are not observed in the laggard's approach; however, the upgraded portfolio of this sample has positive and significant alphas in four- and six- factor models that are equal to 0.8758** and 0.9403**, accordingly. These results go in line with earlier observations supporting the assumption that the market encourages companies' better ESG performance. With regards to results established of downgraded portfolios, almost none of the alphas appear to be statistically significant in both leaders' and laggards' sample, except for the developed leaders' six-factor estimation. Regarding the outcomes based on differences, multiple results are both economically and statistically significant: for leaders, such results are in upgraded minus downgraded portfolio, where each coefficient is positive and significant (0.9183*, 0.9438*, and 1.0857** in CAPM, four- and six- factor models); in downgraded minus control portfolio where alphas are significant and negative for each asset-pricing model (-0.9464** in CAPM, -

0.8915*, and -0.94*, four- and six- factor models, accordingly); whereas for differences in laggards, significance appears only in four- (0.8943**) and six- (0.9678**) factor models applied to upgraded minus control portfolio.

Dissimilar to subsamples based on developed countries, estimations' results obtained established on leaders and laggards in the emerging sample do not show any evidence of rating changes relevance (see Table 221 and Table 222). None of the models' alphas is significant, whereas even signs of the coefficients are inconsistent: according to the estimations' results in the emerging leaders subsample, downgraded portfolios rarely outpace the downgraded portfolios, what is observed within portfolios' outcomes as well as in their difference portfolio. Such findings are divergent from the findings established on the full emerging sample, evidencing the market's irrelevance to companies' rank levels in non-developed countries.

An additional related sample that should be covered is developed countries, excluding the United States (see Table 214). The exclusion of companies associated with the United States provides an additional robustness check of the results achieved in the full developed subsample. The number of excluded companies equals 623, which is 39.33% of the whole developed sample (1,584 companies), leaving 961 companies in the approach. Dealing with the outcomes of the estimations, significance appears in two portfolios, upgraded and control ones, where each coefficient is positive (for upgraded alphas equals 0.5615** in CAPM, 0.5621* in the four-factor model, and 0.5825** in the six-factor model, whereas for control portfolios risk-adjusted returns are in a range between 0.1073 and 0.1191 for each asset-pricing model). None of the remaining estimations has significant alphas, including downgraded portfolios and differences, except upgraded minus control in CAPM (where coefficient equals 0.4542*). Such results are partially contradicting earlier findings in a developed approach, indicating enforcing the effect of heterogeneity; nevertheless, another possible explanation of such outcome could be similar to the case of emerging countries.

Dealing with the outcomes of the sample based on companies from the United States (see Table 213), the estimations' results represent and support better the findings in developed countries compared to the previous subsample. In addition to expected outcomes of rating upgrades and inalterability, where almost every risk-adjusted return appears positive and significant (for upgraded: 0.5745* in CAPM, 0.5882**, and 0.6885**, in four- and six- factor approaches; for control: 0.0745** in four-factor model and 0.0546** in six-factor), the results of models applied to zero-investment portfolios are also significant in both statistical and economically. Upgraded minus downgraded portfolio shows positive and significant values in each asset-pricing model: 1.5402** in CAPM, 1.3252** in the four-factor model, and 1.5327** six-factor approach; while similar is observed in upgraded minus control (0.5137* and 0.6338* in four- and six- factor models) supporting the significance of the upgrades in ESG ratings. Meanwhile, similar to developed excluding the US approach, the downgraded portfolio's outcomes remain insignificant, having all coefficients' signs negative, and in differences, only one estimation result appeared significant (-1.0724* in CAPM). Such a result documents the importance of the upgrades and statistically inconsistent performance of downgrades that could be explained by the ESG concerned investors' and funds' positive or best-in-class screening rules not applying the negative one.

Moving on with the geography-wise analysis, finding established on the European sample that includes 494 companies, in accordance with findings that the MSIC ESG rating effect seldom occurred (Table 215). Weak significance appears in two portfolios: positive and significant alphas, one of which is in the four-factor model, applied to the upgraded portfolio and is equal to 0.7469* and in the six-factor approach established on the control portfolio (0.1021*). Meanwhile, there are no significant results in any of the zero-investment portfolios as well as in downgraded on; downgraded stocks also have positive signs in each estimation, which is confirmed by the outcomes of the downgraded minus control portfolio. Such contradicting to full sample results may occur due to the existence of rating agencies oriented especially toward European companies. Taking into account the pieces of evidence observed in the literature, which highlights the differences between rating agencies' methodologies and their performance, the lack of significance and inconsistent results could be levelled by application of the more suitable rating data that is similar to the methodology established by the Fama and French that intend to apply related factors to the sample.

Dealing with the outcomes inspired by stocks associated with Japan (see Table 216), specifications results are more informative compared to the European findings, however, still not meeting the statistical and economical significance of previous observations. Japanese sample consists of 259 companies that is 18.2% of all Asia Pacific stocks extracted for analysis. In case of this sample, significant alphas appear only in control portfolio (0.0998*, 0.0712*, and 0.0761** in CAPM, four- and six- factor models), while other estimations don’t show any significant results. Interestingly, similar to European outcomes, downgraded portfolio outshines control one in both, separate model's coefficient comparison and zero-investment approach.

The additional sample that is primary in completing the MSCI ESG rating's role in the region is the stock associated with Asia Pacific countries excluding Japan (see Table 217). This sample consists of 1,164 companies and covers 13 countries. Similar to Japan and European samples, there is only one portfolio that has significant risk-adjusted returns: alphas are significant in the control portfolio in CAPM, and the six-factor model has positive signs with values equal to 0.662** and 0.7234**, accordingly. In addition, a downgraded portfolio performs the same way it does in two previous cases, being positive and insignificant in performance. Additionally, in accordance with the estimations' outcomes, upgraded portfolios are outshined by the control portfolio in each of the specifications that are supported by different portfolios; however, these results are statistically insignificant. Such results contribute to the findings observed in European and Japanese samples and can possibly be explained by a lack of awareness regarding the MSCI ESG rating in these regions.

In terms of the findings obtained in the sample formed on the Middle East and North African stocks (see Table 236), which includes 82 companies, the results are divergent from what was observed in any of the previous specifications. Judging by estimations' results, a downgraded portfolio is dominating in comparison with other stocks having alphas not only significant and positive in each asset-pricing model but being incomparable with previous estimations in terms of coefficient values (1.8057**, 2.6236**, 2.5098** in CAPM, four- and six- factor models, accordingly). The control portfolio also appeared to have significant positive coefficients in four- and six- factor models with alphas equal to 1.1835*** and

1.2022***. Such contrasting statistical and economic performance could be explained by the remoteness and weak linkage between the rating methodology and the market, which mainly influences the formation of companies' valuation in this region. At the same time, macroeconomic effects and stakeholder interests can cause such performance. This region is prone to extensive growth, which can lead to a shift in values in favour of the company's growth factors rather than sustainability profile development. Dealing with the outcomes of the difference portfolio, the only significant result appears in downgrade minus control portfolio, where coefficient appeared positive and weekly significant (1.47*), evidencing outperformance of downgraded companies previously found.

Moving further to final geographical cluster, models inspired by companies located in Latin America, with sample size equal to 82, does not show any significant results.

Overall, most of the samples' behaviour and reflection to the ESG rating information is mirroring the European companies, having weak similarity to the full sample outcomes. As previously mentioned, such performance can be a result of the decentralised ESG rating providers and their divergence in the methodology.

Moving further to the different grouping approach, the analysis covers companies' meta-sectors (see Table 223, Table 224, and Table 225). Such meta-sectors include companies related to Extraction, consisting of Material and Energy sectors, with a sample size equal to 379. Production meta-sector includes companies from Industrials, Consumer Discretionary, Consumer Staples and Real Estate sectors, covering 1,089 companies. The final meta-sector is Services, which assembles 1,376 companies from the Financials, Information Technology, Health Care, Communication Services and Utilities sectors.

Dealing with findings inspired by the Extraction sector, several models appeared to have significant results: first, significant coefficients are observed in the upgraded portfolio, where alphas in four- and six- factor models are positive and significant with values equal to 1.1275* and 1.3117** that goes in line with the previous findings; second, the CAPM model based on the control portfolio has a significant and negative value (-0.4872**), while the alphas of all other models are also negative but not statistically significant. Meanwhile, despite statistical insignificance, coefficients of models in downgraded portfolios outpace upgraded ones in each case except the six-factor model. Such U-shaped performance can indicate weak sensitivity of the Extraction companies to the ESG indicators. The control portfolio's underperformance can be explained by the stocks' stagnation, while upgraded and downgraded companies can benefit from intensive and extensive growth that is attractive to both the ESG and non-ESG concerned investors. Additional evidence of the U-shaped performance is observed in portfolios based on differences in returns: significant and positive alphas are observed in each model applied to the upgraded minus control portfolio (1.2016* in the CAPM, 1.2395* in the four-factor model, and 1.3786* in the six-factor model); however, despite statistical insignificance that goes in line with separate portfolio analysis, downgraded minus control portfolio each coefficient appeared with positive signs, while results in upgraded minus downgraded are mixed.

With regards to the production meta-sector, there are only four compilations with significant alphas. First, the downgraded portfolio has a negative and significant coefficient in the CAPM model that is equal to -1.0706*, and all the rest values are also negative but statistically insignificant. The upgraded and the control portfolios do not appear to perform significant alphas in any approaches. Dealing with portfolio differences, upgraded minus downgraded portfolio's alphas are significant in two cases: the CAPM with a coefficient equal to 1.3923* and in the six-factor approach where the alpha's value is 1.2091*. The upgraded minus control portfolio does not show any significant results, while the downgraded minus control portfolio's coefficient is negative and significant only in the case of the CAMP (-1.1543*). The production meat sector's outcomes are like previous observations in terms of signs and the overall interrelation of the coefficients.

Moving on to the sample inspired by companies related to the services sectors, the model's performance is similar to full-sample outcomes and most of the geographically based clusters. The upgraded portfolio is the best performer in the group in terms of coefficient value, being positive and significant in each model (0.5695**, 0.7748***, and 0.8958*** in the CAPM, four- and six- factor models, accordingly). The control portfolio also performs statistically and economically significant in each approach with coefficients equal to 0.2886**** in the CAPM, 0.253** in the four-factor model, and 0.2327** in the six-factor model. In accordance with the full sample outcomes, the downgraded portfolio's coefficients are insignificant; however, contrary to the Extraction sample and severe country-wise findings, having a negative sign. Portfolios based on difference reinforce the previous observations: the upgraded minus downgraded portfolio, similar to the upgraded minus control portfolio, has positive and significant coefficients in each approach except the CAPM of the upgraded minus control. In the case of the first difference portfolio, alphas are 0.7751* in the CAPM, 1.0596**, and 1.1424** in the four- and six- factor approaches. Dealing with the upgraded minus control portfolio results, alphas are significant in four- and six- factor models with coefficients' values equal to 0.5695** and 06631***, accordingly. The downgraded minus control portfolio does not appear to have significant alphas in any of the approaches. Such performance goes in line with the full sample approach as well as with most of the additional sampling specifications, contributing to the null hypothesis rejection and highlighting the importance of the rating changes in the services sector.

Concluding the sector-wise sampling, findings in the production and services meta-sectors are similar to most of the previous observations, including the full sample, and are dissimilar to the extraction group, which appeared to be U-shaped in terms of the companies' reflection of an event of the rating changes. The difference in sample sizes could possibly cause such a difference in the performance; however, it is more likely that the extraction sector's stakeholders have polar interests in "earning more while doing better", which was also applicable to the sample inspired by companies from the Middle East and North Africa.

In terms of findings based on sampling established on the size factor (see Table 226 and Table 227), four main groups are observed in the research, which includes large, large developed, small, and small developed samples. Such formation is based on a methodology similar to the Fama and French grouping.

Starting from the observation of the large sample's outputs found on the 1,263 companies' data, the results show multiple significant coefficients. With regards to the upgraded portfolio, alpha is significant and positive in each model, highlighting the importance of better ESG performance for large-cap companies (0.5591*, 0.6335**, and 0.7863*** in the CAPM, four-factor and six-factor models). The control portfolio does not show any statistically significant results as well as the downgraded one, while their coefficients' signs are similar to most of the previous observations, including a full sample, two out of three sector-wise approaches and most of the geography-wise observations. Most models appeared to be significant when dealing with the performance of portfolios based on differences in returns. Each of the upgraded minus downgraded portfolio-based models have significant and positive coefficients (1.31** in the CAPM, 1.3222** in the four-factor model, and 1.4238** in the six-factor model), reinforcing previous findings. Additional support of upgrades importance in large companies arises from the estimations formed on the upgrades minus control portfolio, where coefficients are significant in the four-factor model with a value equal to 0.6209* and in the six-factor approach where alpha is 0.7458**. On behalf of the downgraded minus control portfolio, only the CAPM model performed with a significant coefficient being equal to -0.8382*.

Moving on to the second group in this sub-sample, large companies from developed countries, which consists of 924 stocks, results appear significant in almost every portfolio except the control one. The upgraded portfolio has positive and significant alphas in each approach (0.6554** in the CAMP, 0.666**, and 0.7773*** in four- and six- factor models), which is also supported by difference portfolio, wherein the upgraded minus downgraded portfolio all coefficients are significant and positive (1,4933***, 1.5838***, and 1.693*** in the CAPM, four- and six- factor models, accordingly). In addition, outcomes of the upgraded minus control portfolio contribute to the significance of the ESG rating upgrades with coefficients equal to 0.55* in the CAPM, 0.6644** in the four-factor estimation, and 0.7835*** in the six-factor model. Dealing with the performance of the downgraded portfolios, each alpha is significant and negative (-0.8379**, -0.9178** and -0.9157** in the CAPM, four- and six- factor models). Meanwhile, the outcomes of the control portfolio appeared insignificant, with mixed signs and values close to zero. However, the outcomes of the estimations established on the downgraded minus control portfolio are significant and negative in each approach, highlighting the effect of the event and downgraded companies lagging behind compared to other portfolio types. Overall, the findings represent the strong effect of the ESG rating changes on large companies' performance in developed markets. With regards to the sample inspired by small companies, which consists of 1,416 stocks, the results are close to the performance of the companies related to the Middle East and North Africa in terms of coefficients' performance. The alphas in the upgraded portfolio are mostly insignificant except for the Fama and French six-factor model, which equals 1.117*. All coefficients in the control portfolio are significant and positive (1.1704***, 1.3372***, and 1.4227*** in the CAPM, four- and six- factor models, accordingly). In addition, coefficient values outpace the outcomes of the upgraded companies. Similarly, but much more significantly in terms of values, the alphas of the downgraded portfolio are significant and positive, with values equal to 1.7856** in the CAPM, 2.3786** in the four-factor model, and 2.461** in the six-factor approach. However, there are no significant results in estimations based on difference portfolios. Such performance could be explained similarly to the Middle East and North Africa sample: stakeholders value and expect smaller companies to grow rapidly and achieve more significant market share, which goes in line with the growth period of the business lifecycle; however, it can contradict to the values of the social responsibility. Dissimilar to the U-shaped performance that was observed in the extraction sector, where investors' interests could be polar, in the case of small companies, market share and revenue prevail over business efficiency and management quality in terms of non-financial behaviour.

Moving further to the sample of small companies related to developed companies, which consists of 483 companies, findings contribute to the previous observation, improving the economic sense of the outcomes. In this case, coefficients behave similarly in three groups of models. The upgraded portfolio's models have significant and positive alphas in four- and six- factor models (2.0934* and 2.133*, accordingly). Similarly, the downgraded portfolio's significant outcomes located in the same two models; however, being more outstanding in values, which are equal to 2.3668** in the four-factor model, and 2.2719** in the six-factor approach. Dealing with the control portfolio, each alpha appears significant and positive (1.4351***, 1.642***, and 1.7043*** in the CAPM, four- and six- factor models, accordingly). The performance of the difference portfolios does not show any significant results that are indistinguishable from previous sample analysis. With regards to the explanation of such outcomes, despite the downgraded companies' outperformance that duplicates the previous sample's findings, this case is different not only because of its U-shaped coefficients but its indistinguishable positive signs within each model. The explanation of such findings is that developed markets value and respond positively to smaller companies' inclusion in the ESG rating.

Dealing with the value-factor sampling approach (see Table 232 and Table 233), similar to the size-factor case, two groups were established utilising the Fama and French methodology, which are growth and value, and for the robustness check, the same groups were established on stocks related to developed markets.

Starting with the growth sample, which consists of 1,306 stocks, multiple outcomes appeared statistically significant. Regarding the upgraded portfolio, alphas in the CAPM and the six-factor model are significant and positive, with values equal to 0.9991** and 0.746*, respectively. In the control portfolios, each model's coefficient also appeared positive with strong significance (0.6694***, 0.2901***, and 0.3019*** in the CAPM, four- and six- factor models). With regards to the downgraded portfolio, all models' alphas are negative and statistically significant (-0.8134* in the CAPM, -1.1451** in the four-factor model and -1.1175** in the six-factor model), complementing the sample's performance that goes in line with most of the previous observations. Despite weak significance, the upgraded portfolios outperform the downgraded, which is also confirmed by the upgraded minus downgraded portfolio outcomes, where each coefficient appeared positive and significant with values equal to 1.8126** in the CAPM, 1.7163** and 1.8634*** in the four- and six- factor approaches. Dealing with the downgraded portfolio, its underperformance is also observed in the downgraded minus control portfolio, where each alpha has a negative sign and strong statistical significance (-1.4829***, -1.4352***, and -1.4194*** in the CAPM, four- and six- factor models, accordingly). Such performance is similar to one observed in the full sample and most of the sub-sample, evidencing and importance of the rating changes.

Moving on to the results found on the growth companies from developed countries, which sample includes data related to 718 companies, performance is similar to the previous specification in terms of significance and coefficients' signs. The CAPM is the only model that is significant in the upgraded portfolio, having positive and significant alpha whose value equals 1.1027**. In the case of the control portfolio, each coefficient appeared significant and positive, with its values equal to 0.7083*** in the CAPM, 0.2596** in the four-factor model, and 0.2287*** in the six-factor model. Regarding the downgraded portfolio, significant outcomes with negative signs are observed in four- and six- factor models (-1.1622** and -

1.1341***, accordingly). Meanwhile, findings established on different portfolios support previous results highlighting the upgraded portfolio's better performance compared to the downgraded one through the statistical significance of each coefficient in models applied to the upgraded minus downgraded portfolio, where each alpha has a positive sign (1.661**, 1.6866**, and 1.7615*** in the CAPM, four- and six- factor models). Dealing with the outcomes of the downgraded minus control portfolio, all coefficients appeared negative and strongly significant, with values equal to -1.2666** in the CAPM, -1.4218*** in the four-factor approach, and -1.3629*** in the six-factor model. Such performance is similar to the one observed in the full growth sample; however, the coefficient values are more significant, indicating and confirming the increased sensitivity to rating changes in developed markets.

Considering the findings based on the second cluster of this section, which is the value companies, the performance of the approaches applied to 1,487 companies almost does not indicate any significant results. In the upgraded portfolio, the significance is observed in the four-factor model and the six-factor model, which alphas equal to 0.6613* and 0.7552**, accordingly. With regards to the control portfolio, only the six-factor model performed significant alpha equal to 0.3025*, while alphas in each model applied to the downgraded portfolio are insignificant. Dealing with different portfolios, significance was observed only in the case of the upgraded minus downgraded in the six-factor model (0.7124*). None of the additional results is statistically significant, indicating a gap between value and growth companies in the perception of the ESG ratings and their sensitivity to rating changes. Such conclusion is supported by mostly positive, however statistically insignificant, coefficients of models applied to downgraded portfolios.

For additional robustness of the previous findings, the sample inspired by value companies related to developed countries that include 740 stocks was also analysed. Similarly, to the previous observation, significant outcomes appear in a few scenarios: first, in the case of the upgraded portfolio, where alphas are significant with positive signs in the Carhart four-factor model (0.6548*) and the six-factor model (0.7845*); second, significant coefficients are observed in results of control portfolio, where the four- and six- factor models' alphas have positive signs (0.1842* and 02241**, accordingly). Dealing with the downgraded stocks, the models' outcomes do not show any statistically significant results; in addition, most of the coefficients have a positive sign, reinforcing the finding observed in the full sample of value companies.

Summing up the empirical chapter, findings based on the subsample analysis indicate the existence of several groups with different types of sensitivity to the ESG rating changes. The causes of such divergence in perception may be located in multiple areas, including stakeholders' values, homogeneity of the rating and a market, economic level of related country, sector, geography, size and value factor, and the origin rating's level of related stock.

Dealing with the rating's initial level factor, there is no evidence of a statistically significant difference in reflection to rating change between leaders and laggards, except for laggard stocks from developed countries, which are more likely to show better financial performance as a result of rating's upgrades (contributing to evidences appeared in Naffa and Fain, 2022; Shanaev and Ghimire, 2021; Capelle-Blancard and Laguna, 2010; Chen and Yang, 2020; while contrasting with Clementino and Perkins, 2021).

With regards to divergence based on economic status, developed and emerging markets reflect on rating upgrades similarly (arguing with Clementino and Perkins, 2021; Chen and Yang, 2020); however, in the case of emerging countries, coefficients are more significant in terms of values, and in the case of developed countries, it is more probable to achieve better returns investing into stocks with the low initial rating level. In addition, there is no statistically significant stock underperformance due to the downgrades in the emerging group; meanwhile, the opposite is observed in developed countries, where downgraded stocks' underperformance is linked to a decrease in the rating.

Going further to a more profound dependence on geographical affiliation, its more probable for stocks related to North America, especially the United States, to be encouraged by investors for better ESG rating performance (supporting Madhaven et al, 2021; Chen and Yang, 2020; contradicting to Clementino and Perkins, 2021); while similar responsiveness is lacking in companies associated with European countries, the Asia Pacific (supporting Xu et al, 2012), Middle East and North Africa, and Latin America. Moreover, stocks from Latin America, the Middle East and North Africa are significantly benefiting from the ESG underperformance (contradicting to Madhaven et al, 2021; Clementino and Perkins, 2021; Chen and Yang, 2020; Khan et al, 2016; Khan 2019), which can be explained by a growing stage in the business cycle of companies, in which values that are loosely linked to social responsibility are more encouraged by investors.

Dealing with the sector-wise findings, socially responsible investors seeking better performance should consider companies related to extraction and services sectors, while in the case of extraction, despite statistical insignificance, downgraded companies' ESG miss performance does not affect the financial results (going in line with Clementino and Perkins, 2021, contrasting with Chen and Yang, 2020). In addition, judging by models' outcomes, companies associated with the production sector are insensitive to rating changes (which contradicts to the results established by Maiti, 2021; Ashwin et al, 2016; Serafim and Yoon, 2022; and second research by Serafim and Yoon, 2022; supporting Clementino and Perkins, 2021; Blacconiere and Patten, 1994).

Dealing with the factor-wise approach, the positive financial performance of larger stocks is associated with upgrades in rating, while smaller companies are benefiting primarily from downgrades (contrasting with Verheyden et al, 2016; Madhaven et al, 2021; Maiti, 2021; Serafim and Yoon, 2022; and second research by Serafim and Yoon, 2022; Yoon and Serafim, 2020; Clementino and Perkins, 2021; Chen and Yang, 2020), which could be linked to extensive growth, which values could contradict the ESG principles. While in the subsample of the developed group, findings reinforce previous statements, however, investors should avoid investing in downgraded large companies due to statistically significant negative alphas observed in the specification (supporting Ashwin et al., 2016; arguing with Clementino and Perkins, 2021; contrasting with Chen and Yang, 2020). Meanwhile, in terms of value factor, positive returns are associated with growth as well as in value upgraded companies (supporting Aouadi and Marsat, 2018; Chen and Yang, 2020). In the case of downgrades, the statistical significance of negative returns is observed only in growth companies (contradicting Ashwin et al, 2016; supporting Clementino and Perkins, 2021). Such statements are valid in both full sample and developed approaches.

4.5. Gas, Water and Waste: Investors' environmental value drivers

Concerning models formed on full sample outputs show each environmentally friendly indicator is significant in company valuation (see Table 109, Table 110, Table 111, Table 112, Table 113, Table 114, Table 115, and Table 150). Dealing with coefficients, each green variable has a positive sign implying better performance of the companies accompanied by environmental underperformance (0.0002**, 0.0* and 0.0057*** for GHG and CO2 emission intensity, water use intensity, and water usage intensity), which is partially confirmed by variable-wise results. According to the F-test, the environmental variables have informational value (R-squared being 0.0485 and 0.0363 for the ESG and the non-SRI models, respectively, while the F-stat is 52.68***). Dealing with year-wise data, greenhouse gas intensity is rarely significant (in 6 out of 16 years), whereas the coefficient mostly is positive (in 4 out of 6 cases). Water use intensity is seldom significant (in 7 out of 16 years), whereas the coefficient often is positive (in 6 out of 7 cases). Total waste is most often significant (in 12 out of 16 years), whereas each coefficient has a positive sign. While dealing with the financial performance, environmentally friendly specification outpaces less environmentally friendly specification in monthly returns over the whole sample (9.63% and 8.9%, respectively), while the CAPM results, which is the best-fit estimation in relation to Corrected Akaike information criterion, indicating that the outputs are statistically insignificant with environmental factor value equals to 0.1923.

Dealing with estimations created on developed countries, sample outputs show each environmentally friendly indicator is significant in value regression (see Table 151). Considering coefficients, they have contradictory signs depending on the indicator (-0.0102**, 0.0004** and 0.0089*** for greenhouse gas intensity, water usage intensity, and water intensity per sales). Adhering to the F-test, the environmental variables have informational value (R-squared being 0.0327 and 0.0155 for green and the non-SRI models, accordingly, while the F-stat is 47.23***). Considering year-wise data, greenhouse gas emissions is unfrequently significant (in 6 out of 16 years), while the coefficient mostly appears to be positive (in 5 out of 6 cases). Water use intensity is unfrequently significant (in 3 out of 16 years), while each coefficient has a positive sign. Waste intensity per sales is frequently significant (in 12 out of 16 years), while the coefficient in most cases has a positive sign (in 11 out of 12 cases). While dealing with the financial performance, the ESG specification exceeds the non-ESG specification in full-sample monthly returns (0.61% and -4.05%), while the four-factor results, which is the best-fit estimation according to Corrected Akaike criterion, illuminating the results are statistically insignificant with environmental factor value equals to 0.265.

Considering estimations based on emerging countries, sample findings show greenhouse gas intensity and waste intensity per sales are significant in company valuation (see Table 152). Concerning coefficients, each green variable has a positive sign suggesting better performance of the companies accompanied by environmental underperformance (0.0001**, 0.0 and 0.0022*** for GHG and CO2 emission intensity, water usage, and water usage, accordingly), which is consistent with variable-wise findings. In relation to the F-test, the explanatory power improves significantly (R-squared being 0.3035 and 0.3007 for the SRI and less environmentally friendly models, accordingly, while the F-stat is 5.77***). In terms of year-wise data, GHG emissions is rarely significant (in 3 out of 13 years), whereas the coefficient frequently is negative (in 2 out of 3 cases). Water usage intensity is rarely significant (in 6 out of 13 years), while the coefficient most often appears to be positive (in 5 out of 6 cases). Total waste is often significant (in 10 out of 13 years), while each coefficient being positive. While dealing with the financial performance, the non-ESG specification performs better than environmentally friendly model in monthly returns over the whole sample (10.05% and 8.5%, respectively), whereas the baseline estimations, which is the best model in relation to Akaike information criterion, showing that the outputs are statistically insignificant with environmental factor value equals to -0.1063.

Dealing with estimations inspired by Developed countries excluding United States, sample findings show water usage intensity and waste efficiency are significant in value regression (see Table 153). Regarding coefficients, each green indicator has a positive sign evidencing that better performance of the companies accompanied by environmental underperformance (-0.0088, 0.0007*** and 0.0077*** for GHG and CO2 emission intensity, water use intensity, and water usage, respectively), which is confirmed by variable-wise results. Judging by the F-test, the environmental variables have informational value (R-squared being 0.0576 and 0.026 for the SRI and the baseline models, respectively, while the F-stat is 68.37***). Dealing with year-wise data, greenhouse gas emissions is unfrequently significant (in 7 out of 16 years), while the coefficient in most cases has a positive sign (in 6 out of 7 cases). Water usage is seldom significant (in 4 out of 16 years), whereas each coefficient being positive. Waste intensity per sales is mostly significant (in 11 out of 16 years), whereas the coefficient often being positive (in 10 out of 11 cases). While dealing with the financial performance, green estimation performs better than less environmentally friendly estimation in full-sample monthly returns (1.06% and -4.75%, respectively), while the four-factor estimations' results, which is the best-fit specification adhering to Akaike information criterion corrected for small sample size, demonstrating that the outputs are statistically insignificant with environmental factor value equals to 0.1688.

With regards to specifications established on Europe, sample outputs show air pollution intensity and waste intensity per sales are significant in value regression (see Table 154). Regarding coefficients, each environmentally friendly indicator has a positive sign evidencing that better performance of the companies accompanied by environmental underperformance (0.0093*, 0.0001 and 0.0136*** for greenhouse gas emissions, water usage intensity, and water usage, respectively), which is supported by variable-wise findings. According to the F-test, the environmental variables have informational value (R-squared being 0.0419 and 0.0165 for green and less environmentally friendly models, while the F-stat is 35.09***). Considering year-wise data, GHG emissions is unfrequently significant (in 5 out of 15 years), whereas the coefficient frequently appears to be positive (in 4 out of 5 cases). Water usage is unfrequently significant (in 5 out of 15 years), while the coefficient in most cases has a positive sign (in 4 out of 5 cases). Waste efficiency is frequently significant (in 9 out of 15 years), whereas each coefficient has a positive sign. While dealing with the financial performance, the non-ESG estimation outperforms green specification in full-sample monthly returns (9.02% and 9.01%, respectively), while the baseline estimations' results, which is the best specification in accordance with Akaike information criterion corrected for small sample size, illuminating the results are statistically insignificant with constant value equals to -0.0628.

In terms of estimations created on Asia Pacific excluding Japan, sample findings show water usage is significant in company valuation (see Table 155). Considering coefficient, water use intensity has a positive sign (-0.0, 0.0001** and 0.001 for air pollution intensity, water use intensity, and water usage), which is confirmed by variable-wise findings (0.0**). In relation to the F-test, the added variables jointly have no informational value (R-squared being 0.5134 and 0.5126 for the ESG and the baseline models, respectively, while the F-stat is 1.89). Considering year-wise data, GHG pollution is rarely significant (in 6 out of 13 years), whereas each coefficient being positive. Water usage is rarely significant (in 3 out of 13 years), whereas each coefficient is negative. Waste intensity is most often significant (in 8 out of 13 years), whereas the coefficient frequently has a positive sign (in 7 out of 8 cases). While dealing with the financial performance, the SRI estimation outpaces the non-SRI model in full-sample monthly returns (4.77% and 4.72%, accordingly), while the six-factor results, which is the best-fit specification in relation to Akaike information criterion, enforcing the results are statistically insignificant with constant value equals to -0.0366.

Concerning models established on North America, sample results show water usage and waste intensity are significant in value regression (see Table 156). Dealing with coefficients, each green indicator has a positive sign evidencing better performance of the companies accompanied by environmental underperformance (0.0142, 0.0006*** and 0.0097*** for GHG emissions, water usage intensity, and water usage intensity), which is supported by variable-wise results. Adhering to the F-test, the explanatory power improves significantly (R-squared being 0.1113 and 0.063 for environmentally friendly and the baseline models, while the F-stat is 43.65***). Considering year-wise data, greenhouse gas emissions is seldom significant (in 4 out of 14 years), while half of the coefficient has a positive sign. Water intensity per sales is significant in half of the years (in 7 out of 14 years), whereas the coefficient mostly has a positive sign (in 5 out of 7 cases). Waste intensity is significant in half of the years (in 7 out of 14 years), while the coefficient often has a positive sign (in 4 out of 7 cases). While dealing with the financial performance, the baseline specification exceeds green specification in monthly returns over the whole sample (1.86% and -2.49%, accordingly), whereas the six-factor models' results, which is the best-fit model in accordance with Akaike criterion, suggesting that the findings are statistically insignificant with intercept value equals to -0.3362.

In terms of models created on Latin America, sample outputs show water usage intensity and waste efficiency are significant in company valuation (see Table 157). Dealing with coefficients, each environmentally friendly variable has a positive sign demonstrating that better performance of the companies accompanied by environmental underperformance (-0.0022, 0.0001*** and 0.0097* for GHG pollution, water use intensity, and water use intensity), which is consistent with variable-wise findings. In accordance with the F-test, the environmental variables have informational value (R-squared being 0.309 and 0.3009 for the ESG and the baseline models, respectively, while the F-stat is 2.62*). Regarding year-wise data, GHG and CO2 emission intensity is unfrequently significant (in 3 out of 11 years), whereas the coefficient often is positive (in 2 out of 3 cases). Water usage is in most cases significant (in 7 out of 11 years), whereas the coefficient often is positive (in 5 out of 7 cases). Waste efficiency is in most cases significant (in 7 out of 11 years), while the coefficient frequently appears to be positive (in 5 out of 7 cases). While dealing with the financial performance, the non-SRI specification outpaces the SRI estimation in full-sample monthly returns (8.32% and 5.83%), while the CAPM estimations, which is the best-fit model in relation to Akaike information criterion, indicating that the results are statistically insignificant with environmental factor value equals to -0.611.

Dealing with specifications established on Middle East and Africa, sample outputs show each environmentally friendly indicator is significant in value regression (see Table 158). Considering coefficients, they have contradictory signs depending on the variable (-0.0272***, 0.0*** and 0.0034*** for GHG pollution, water usage, and water usage intensity, respectively). Judging by the F-test, the environmental variables enhance explanatory power (R-squared being 0.3175 and 0.2509 for the ESG and the baseline models, respectively, while the F-stat is 11.06***). Concerning year-wise data, air pollution intensity is mostly significant (in 3 out of 5 years), whereas the coefficient in most cases is positive (in 2 out of 3 cases). Water usage intensity is always significant (in 5 years), whereas each coefficient being positive. Waste intensity per sales is consistently significant (in 5 years), whereas each coefficient being positive. While dealing with the financial performance, the ESG specification outperforms the baseline specification in full-sample monthly returns (33.77% and -29.03%, respectively), whereas the baseline results, which is the best-fit estimation judging by Corrected Akaike information criterion, suggesting the results are statistically significant with environmental factor value equals to 4.8965**.

In terms of models created on United states, sample outputs show air pollution intensity and waste intensity per sales are significant in value regression (see Table 184). Regarding coefficients, each environmentally friendly variable has a positive sign demonstrating that better performance of the companies accompanied by environmental underperformance (0.0984***, 0.0002 and 0.0244*** for air pollution intensity, water intensity per sales, and water usage, accordingly), which is reinforced by variable-wise estimations. Judging by the F-test, the environmental variables enhance explanatory power (R-squared being 0.1245 and 0.0988 for green and the baseline models, while the F-stat is 18.04***). With regards to year-wise data, greenhouse gas emissions is unfrequently significant (in 1 out of 14 years), whereas each coefficient has a positive sign. Water use intensity is seldom significant (in 4 out of 14 years), whereas each coefficient being positive. Waste intensity is most often significant (in 8 out of 14 years), whereas each coefficient appears to be positive. While dealing with the financial performance, environmentally friendly estimation exceeds less environmentally friendly model in monthly returns over the whole sample (1.69% and -0.55%, respectively), while the CAPM estimations' results, which is the best-fit estimation in accordance with Corrected Akaike information criterion, evidencing the findings are statistically insignificant with constant value equals to 0.1312.

With regards to models created on Japanese sample, sample outputs show waste intensity per sales is significant in company valuation (see Table 180). Concerning coefficient, waste efficiency has a negative sign (-0.0004, 0.0002 and -0.144** for GHG and CO2 emission intensity, water use intensity, and water usage), which is confirmed by variable-wise model results (-0.0024). According to the F-test, there is no significant improvement in the explanatory power (R-squared being 0.7531 and 0.7524 for environmentally friendly and the non-ESG models, while the F-stat is 1.3). Dealing with year-wise data, GHG pollution is frequently significant (in 9 out of 15 years), while the coefficient frequently appears to be negative (in 5 out of 9 cases). Water usage intensity is insignificant in each year (in 15 years) Waste intensity per sales is rarely significant (in 2 out of 15 years), while half of the coefficient appears to be positive. While dealing with the financial performance, the non-SRI estimation performs better than environmentally friendly model in full-sample monthly returns (3.48% and 1.13%), while the baseline models' results, which is the best estimation judging by Akaike information criterion, illuminating the results are statistically insignificant with environmental factor value equals to -0.2098.

Considering models inspired by United Kingdom, sample outputs show water use intensity is significant in value regression (see Table 137). In terms of coefficient, water intensity per sales has a positive sign (0.0034, 0.002* and 0.0005 for air pollution intensity, water usage, and water use intensity, respectively), which is reinforced by variable-wise model results (0.0011***). In relation to the F-test, there is a significant improvement in the explanatory power (R-squared being 0.3886 and 0.3796 for the ESG and the baseline models, respectively, while the F-stat is 4.1***). In terms of year-wise data, GHG and CO2 emission intensity is significant in half of the years (in 7 out of 14 years), while the coefficient frequently is positive (in 4 out of 7 cases). Water usage is in most cases significant (in 8 out of 14 years), while each coefficient has a positive sign. Total waste is significant in half of the years (in 7 out of 14 years), while the coefficient often is negative (in 6 out of 7 cases). While dealing with the financial performance, the baseline specification outperforms green specification in full-sample monthly returns (-7.45% and -9.25%, respectively), while the eight-factor estimations, which is the best-fit specification in relation to Corrected Akaike information criterion, suggesting that the findings are statistically insignificant with alpha value equals to -0.14.

In terms of models inspired by China, sample outputs show water use intensity is significant in company valuation (see Table 174). In terms of coefficient, water usage has a positive sign (0.0, 0.0002*** and 0.0 for GHG and CO2 emission intensity, water usage intensity, and water intensity per sales, accordingly), which is consistent with variable-wise estimations (0.0002**). In relation to the F-test, the environmental variables do not enhance explanatory power (R-squared being 0.4281 and 0.4251 for environmentally friendly and the non-ESG models, respectively, while the F-stat is 0.66). With regards to year-wise data, greenhouse gas emissions is unfrequently significant (in 1 out of 4 years), whereas each coefficient appears to be positive. Water intensity per sales is unfrequently significant (in 1 out of 4 years), whereas each coefficient being positive. Waste intensity per sales is mostly significant (in 3 out of 4 years), while each coefficient has a positive sign. While dealing with the financial performance, the baseline specification beats the SRI specification in full-sample monthly returns (-3.27% and -3.61%, accordingly), whereas the baseline estimations, which is the best model in accordance with Akaike information criterion, indicating that the outputs are statistically insignificant with constant value equals to 0.3371.

With regards to specifications inspired by Taiwan, sample outputs show water usage intensity is significant in company valuation (see Table 147). With regards to coefficient, water usage has a positive sign (0.0069, 0.0004*** and -0.0045 for greenhouse gas intensity, water use intensity, and water intensity per sales, respectively), which is confirmed by variable-wise model results (0.0005***). Adhering to the F-test, the explanatory power improves significantly (R-squared being 0.7592 and 0.7564 for the ESG and less environmentally friendly models, accordingly, while the F-stat is 4.09***). Concerning year-wise data, greenhouse gas intensity is unfrequently significant (in 2 out of 9 years), while each coefficient appears to be negative. Water usage intensity is in most cases significant (in 5 out of 9 years), while each coefficient has a positive sign. Waste efficiency is rarely significant (in 4 out of 9 years), whereas the coefficient most often is positive (in 3 out of 4 cases). While dealing with the financial performance, environmentally friendly specification outshines less environmentally friendly estimation in full-sample monthly returns (-5.18% and -5.64%, accordingly), while the three-factor estimations' results, which is the best-fit specification in accordance with Corrected Akaike information criterion, demonstrating that the results are statistically insignificant with constant value equals to 0.0444.

With regards to models established on Canada, sample results show total waste is significant in company valuation (see Table 138). Concerning coefficient, waste efficiency has a positive sign (0.0134, 0.0019 and 0.0047*** for greenhouse gas emissions, water usage intensity, and water intensity per sales, accordingly), which is supported by variable-wise findings (0.0062***). In accordance with the F-test, the environmental variables improve explanatory power (R-squared being 0.3832 and 0.2952 for green and the non-ESG models, while the F-stat is 17.54***). Concerning year-wise data, GHG pollution is frequently significant (in 4 out of 6 years), whereas the coefficient most often is negative (in 3 out of 4 cases). Water usage intensity is most often significant (in 5 out of 6 years), whereas the coefficient mostly appears to be positive (in 4 out of 5 cases). Waste intensity per sales is seldom significant (in 2 out of 6 years), while half of the coefficient is positive. While dealing with the financial performance, the baseline estimation exceeds green estimation in full-sample monthly returns (2.49% and 1.73%, respectively), while the baseline estimations, which is the best specification adhering to Akaike criterion, evidencing the outputs are statistically insignificant with alpha value equals to -0.0974.

Concerning models inspired by Australia, sample outputs show each green variable is insignificant in company valuation (see Table 135). In relation to the F-test, the added variables jointly do not add explanatory power (R-squared being 0.6171 and 0.6113 for environmentally friendly and less environmentally friendly models, respectively, while the F-stat is 1.88). Regarding year-wise data, GHG pollution is seldom significant (in 1 out of 5 years), whereas each coefficient has a negative sign. Water intensity per sales is often significant (in 4 out of 5 years), while each coefficient has a positive sign. Total waste is unfrequently significant (in 1 out of 5 years), whereas each coefficient being negative. While dealing with the financial performance, the non-ESG model exceeds environmentally friendly model in full-sample monthly returns (1.93% and 1.76%), while the baseline estimations' results, which is the best specification in relation to Corrected Akaike criterion, suggesting the results are statistically insignificant with alpha value equals to 0.0012.

Considering specifications inspired by Hong Kong, sample results show GHG pollution and water usage intensity are significant in company valuation (see Table 142). Concerning coefficients, they have dissimilar signs depending on the indicator (0.2268***, -0.0007** and 0.0088 for greenhouse gas emissions, water usage, and water usage intensity). Judging by the F-test, the added variables jointly have informational value (R-squared being 0.7121 and 0.6876 for green and less environmentally friendly models, accordingly, while the F-stat is 7.26***). In terms of year-wise data, GHG emissions is unfrequently significant (in 1 out of 4 years), whereas each coefficient has a positive sign. Water usage intensity is significant in half of the years (in 2 out of 4 years), whereas half of the coefficient is positive. Total waste is often significant (in 3 out of 4 years), while each coefficient is positive. While dealing with the financial performance, the non-ESG specification outperforms environmentally friendly estimation in full-sample monthly returns (5.54% and 3.97%), while the six-factor results, which is the best-fit model in relation to Akaike information criterion, evidencing that the outputs are statistically insignificant with environmental factor value equals to -0.1822.

In terms of models created on French sample, sample findings show each environmentally friendly indicator is significant in company valuation. Considering coefficients, they have inconsistent signs depending on the indicator (-0.16**, 0.0007*** and 0.653*** for GHG pollution, water usage intensity, and water intensity per sales, accordingly). In relation to the F-test, the environmental variables improve explanatory power (R-squared being 0.5209 and 0.4978 for environmentally friendly and the non-ESG models, respectively, while the F-stat is 7.93***). Regarding year-wise data, GHG emissions is rarely significant (in 1 out of 8 years), whereas each coefficient is positive. Water use intensity is insignificant in each year (in 8 years) Waste intensity per sales is unfrequently significant (in 3 out of 8 years), while each coefficient has a negative sign. While dealing with the financial performance, the non-ESG estimation beats green model in monthly returns over the whole sample (0.34% and -0.35%, accordingly), while the three-factor estimations' results, which is the best-fit specification in relation to Corrected Akaike information criterion, showing that the outputs are statistically insignificant with constant value equals to -0.1541.

With regards to models created on South Korea, sample results show GHG pollution is significant in value regression (see Table 145). Concerning coefficient, greenhouse gas emissions has a positive sign (0.0422**, -0.0004 and -0.0182 for

GHG and CO2 emission intensity, water use intensity, and water usage intensity, respectively), which is supported by variable-wise results (0.0175***). According to the F-test, the added variables jointly add explanatory power (R-squared being 0.6192 and 0.6141 for the SRI and less environmentally friendly models, respectively, while the F-stat is 2.31*). Concerning year-wise data, GHG and CO2 emission intensity is frequently significant (in 4 out of 7 years), whereas each coefficient appears to be positive. Water usage is rarely significant (in 3 out of 7 years), while the coefficient frequently being negative (in 2 out of 3 cases). Waste intensity is frequently significant (in 4 out of 7 years), while the coefficient mostly is negative (in 3 out of 4 cases). While dealing with the financial performance, the non-ESG model exceeds environmentally friendly estimation in full-sample monthly returns (-3.71% and -5.81%, accordingly), whereas the baseline findings, which is the best-fit model in relation to Akaike information criterion corrected for small sample size, illuminating the findings are statistically insignificant with alpha value equals to -0.1929.

With regards to specifications created on Germany, sample outputs show greenhouse gas intensity and water use intensity are significant in company valuation (see Table 141). With regards to coefficients, they have inconsistent signs depending on the variable (-0.1217***, 0.0042*** and 0.0799 for greenhouse gas emissions, water usage intensity, and water intensity per sales, respectively). Judging by the F-test, the environmental variables enhance explanatory power (R-squared being 0.1117 and 0.0297 for environmentally friendly and the non-ESG models, while the F-stat is 13.02***). In terms of year-wise data, greenhouse gas emissions is frequently significant (in 4 out of 6 years), whereas the coefficient mostly is negative (in 3 out of 4 cases). Water use intensity is in most cases significant (in 4 out of 6 years), while the coefficient often has a positive sign (in 3 out of 4 cases). Waste intensity is most often significant (in 5 out of 6 years), whereas the coefficient frequently being positive (in 3 out of 5 cases). While dealing with the financial performance, the non-SRI specification beats environmentally friendly estimation in full-sample monthly returns (0.67% and -6.05%), while the CAPM estimations, which is the best-fit model in relation to Corrected Akaike criterion, indicating that the results are statistically insignificant with alpha value equals to -0.9223.

Concerning specifications established on India, sample findings show GHG emissions and water usage are significant in company valuation (see Table 143). With regards to coefficients, they have dissimilar signs depending on the indicator (0.0675***, -0.0003*** and 0.0022 for GHG pollution, water use intensity, and water usage intensity). Adhering to the F-test, the environmental variables have informational value (R-squared being 0.5171 and 0.4672 for the ESG and the baseline models, while the F-stat is 10.12***). Concerning year-wise data, greenhouse gas intensity is universally significant (in 4 years), whereas each coefficient appears to be positive. Water usage is often significant (in 3 out of 4 years), while each coefficient has a negative sign. Waste efficiency is in most cases significant (in 3 out of 4 years), whereas the coefficient mostly appears to be negative (in 2 out of 3 cases). While dealing with the financial performance, environmentally friendly model outpaces less environmentally friendly estimation in full-sample monthly returns (-9.63% and -18.5%, accordingly), whereas the baseline findings, which is the best model adhering to Akaike information criterion, showing that the outputs are statistically significant with environmental factor value equals to 0.7425*.

Regarding specifications formed on Italy, sample findings show water use intensity is significant in value regression (see Table 144). Considering coefficient, water intensity per sales has a positive sign (-0.0056, 0.0006*** and 0.0596 for greenhouse gas intensity, water use intensity, and water use intensity, accordingly), which is confirmed by variable-wise model results (0.0012***). In relation to the F-test, the added variables jointly have informational value (R-squared being 0.5619 and 0.5484 for the ESG and the baseline models, while the F-stat is 3.55**). Concerning year-wise data, GHG pollution is consistently significant (in 4 years), whereas half of the coefficient being positive. Water use intensity is robustly significant (in 4 years), whereas each coefficient is positive. Waste intensity is significant in half of the years (in 2 out of 4 years), whereas each coefficient has a positive sign. While dealing with the financial performance, environmentally friendly estimation outshines less environmentally friendly model in full-sample monthly returns (4.26% and -1.5%), whereas the four-factor findings, which is the best specification judging by Akaike criterion, illuminating the results are statistically insignificant with constant value equals to -1.2026.

With regards to estimations inspired by Brazil, sample results show total waste is significant in company valuation (see Table 136). Considering coefficient, waste intensity has a positive sign (-0.0294, -0.0001 and 0.0283*** for GHG pollution, water use intensity, and water usage, respectively), which is reinforced by variable-wise estimations (0.0336***). Adhering to the F-test, there is a significant improvement in the explanatory power (R-squared being 0.5052 and 0.4896 for the SRI and the non-SRI models, accordingly, while the F-stat is 4.63***). Regarding year-wise data, GHG emissions is seldom significant (in 3 out of 9 years), while each coefficient has a positive sign. Water use intensity is often significant (in 6 out of 9 years), whereas the coefficient in most cases appears to be negative (in 5 out of 6 cases). Waste efficiency is frequently significant (in 8 out of 9 years), whereas each coefficient being positive. While dealing with the financial performance, the baseline specification outshines the ESG estimation in full-sample monthly returns (21.67% and 9.86%, accordingly), whereas the CAPM models' results, which is the best-fit specification according to Akaike information criterion, illuminating the findings are statistically insignificant with intercept value equals to -1.1387.

In terms of specifications created on Sweden, sample outputs show GHG emissions is significant in company valuation (see Table 189). In terms of coefficient, GHG emissions has a positive sign (5.7107***, -0.0028 and -1.8474 for GHG emissions, water usage, and water usage, accordingly), which is the opposite of variable-wise estimations (-0.65**). In relation to the F-test, the environmental variables have informational value (R-squared being 0.8467 and 0.7546 for green and the baseline models, while the F-stat is 16.23***).

Regarding estimations inspired by Switzerland, sample findings show each environmentally friendly variable is significant in value regression (see Table 189). Considering coefficients, they have contradictory signs depending on the indicator (0.931***, -0.0185** and -0.0165*** for greenhouse gas emissions, water usage, and water use intensity, respectively). Adhering to the F-test, the explanatory power improves significantly (R-squared being 0.7012 and 0.6846 for the ESG and the non-SRI models, respectively, while the F-stat is 5.67***).

Concerning models created on South Africa, sample results show each environmentally friendly indicator is significant in company valuation. Regarding coefficients, they have inconsistent signs depending on the variable (-0.0264*, 0.0*** and 0.0035*** for greenhouse gas emissions, water use intensity, and water usage, respectively). In relation to the F-test, the environmental variables enhance explanatory power (R-squared being 0.3401 and 0.2622 for environmentally friendly and the non-ESG models, while the F-stat is 10.23***).

Considering estimations formed on Spain, sample outputs show waste intensity is significant in company valuation (see Table 189). Considering coefficient, total waste has a positive sign (0.02, -0.0002 and 0.0126** for GHG and CO2 emission intensity, water use intensity, and water use intensity), which is reinforced by variable-wise estimations (0.0129**). Judging by the F-test, the environmental variables do not enhance explanatory power (R-squared being 0.086 and 0.0646 for environmentally friendly and less environmentally friendly models, respectively, while the F-stat is 1.92).

Dealing with specifications created on Singapore sample results show each environmentally friendly indicator is insignificant in company valuation (see Table 189). According to the F-test, the explanatory power does not improve (R-squared being 0.6074 and 0.6013 for the SRI and less environmentally friendly models, while the F-stat is 0.4).

With regards to estimations created on Malaysia, sample outputs show waste intensity is significant in company valuation. With regards to coefficient, waste intensity has a positive sign (-0.0642, 0.006 and 1.2145*** for GHG emissions, water usage, and water usage), which is reinforced by variable-wise results (0.6995*). Judging by the F-test, the environmental variables do not enhance explanatory power (R-squared being 0.5954 and 0.5688 for green and the non-SRI models, accordingly, while the F-stat is 1.86).

Concerning specifications inspired by Norway, sample outputs show waste intensity is significant in value regression (see Table 189). Considering coefficient, waste intensity has a negative sign (0.1225, 0.0023 and -0.1048*** for GHG pollution, water usage intensity, and water intensity per sales, accordingly), which is contrary to variable-wise estimations (0.0554***). Judging by the F-test, the environmental variables improve explanatory power (R-squared being 0.93 and 0.8812 for the SRI and the non-ESG models, accordingly, while the F-stat is 13.7***).

In terms of models established on Finland, sample findings show each green variable is significant in company valuation (see Table 189). Concerning coefficients, they have dissimilar signs depending on the indicator (0.3182***, 0.0013* and -3.4413*** for GHG pollution, water use intensity, and water usage). In relation to the F-test, the added variables jointly add explanatory power (R-squared being 0.683 and 0.6292 for environmentally friendly and the non-ESG models, while the F-stat is 11.47***).

In terms of estimations created on Netherlands, sample results show each green indicator is significant in value regression (see Table 189). Dealing with coefficients, they have contradictory signs depending on the variable (0.3575***, -0.0006*** and 6.1342*** for GHG pollution, water usage intensity, and water usage intensity). In accordance with the F-test, the environmental variables enhance explanatory power (R-squared being 0.7375 and 0.6902 for the SRI and less environmentally friendly models, while the F-stat is 7.92***).

With regards to estimations formed on Thailand, sample outputs show greenhouse gas intensity and waste intensity per sales are significant in company valuation (see Table 189). Regarding coefficients, each green variable has a positive sign suggesting that better performance of the companies accompanied by environmental underperformance (0.0367*, -0.0 and 1.7648** for GHG pollution, water use intensity, and water usage intensity, accordingly), which is confirmed by variable-wise results. According to the F-test, the environmental variables do not improve explanatory power (R-squared being 0.7596 and 0.7533 for environmentally friendly and the non-ESG models, accordingly, while the F-stat is 1.66). With regards to year-wise data, greenhouse gas intensity is insignificant in each year (in 1 years) Water usage is insignificant in each year (in 1 years) Waste intensity is insignificant in each year (in 1 years)While dealing with the financial performance, the baseline model exceeds environmentally friendly estimation in full-sample monthly returns (-9.95% and -10.75%, respectively), while the baseline results, which is the best-fit model in relation to Corrected Akaike information criterion, evidencing that the findings are statistically significant with constant value equals to -0.0732**.

With regards to estimations formed on Mexico, sample outputs show air pollution intensity and waste intensity per sales are significant in company valuation (see Table 189). In terms of coefficients, each green variable has a positive sign illuminating better performance of the companies accompanied by environmental underperformance (0.0777**, -0.0026 and 0.0377*** for air pollution intensity, water intensity per sales, and water usage intensity, respectively), which is reinforced by variable-wise estimation results. According to the F-test, the environmental variables enhance explanatory power (R-squared being 0.3558 and 0.2868 for green and less environmentally friendly models, while the F-stat is 6.5***).

Considering specifications based on Russia, sample findings show GHG emissions and total waste are significant in company valuation (see Table 189). With regards to coefficients, they have inconsistent signs depending on the variable (-0.029***, -0.0001 and 0.0215*** for GHG and CO2 emission intensity, water intensity per sales, and water use intensity, respectively). In accordance with the F-test, there is a significant improvement in the explanatory power (R-squared being 0.7599 and 0.6522 for green and the baseline models, respectively, while the F-stat is 17.5***).

Concerning models inspired by Denmark, sample results show water usage and total waste are significant in value regression (see Table 189). Dealing with coefficients, each green indicator has a positive sign evidencing better performance of the companies accompanied by environmental underperformance (0.409, 0.0945*** and 11.4589*** for GHG and CO2 emission intensity, water use intensity, and water intensity per sales, respectively), which is partially supported by variable-wise model results. Adhering to the F-test, the added variables jointly add explanatory power (R-squared being 0.7979 and 0.7517 for environmentally friendly and the non-ESG models, while the F-stat is 6.17***).

In terms of models based on Poland, sample findings show each environmentally friendly variable is significant in value regression (see Table 189). Dealing with coefficients, they have contradictory signs depending on the indicator (0.0493*, -0.0574*** and 0.0068* for GHG and CO2 emission intensity, water usage, and water use intensity, accordingly). In relation to the F-test, the explanatory power does not improve (R-squared being 0.754 and 0.7003 for environmentally friendly and the non-ESG models, accordingly, while the F-stat is 2.26).

In terms of estimations formed on Indonesian sample outputs show water use intensity is significant in company valuation (see Table 189). Concerning coefficient, water intensity per sales has a negative sign (0.0142, -0.008*** and 0.0001 for air pollution intensity, water use intensity, and water usage intensity, accordingly), which is supported by variable-wise model results (-0.0001). According to the F-test, the explanatory power improves significantly (R-squared being 0.8663 and 0.7237 for green and the non-ESG models, accordingly, while the F-stat is 13.86***).

Dealing with specifications created in Philippines, sample findings show water usage and waste intensity are significant in company valuation (see Table 189). In terms of coefficients, each environmentally friendly variable has a negative sign enforcing better financial and environmental performance (0.1008, -0.0007*** and -0.1731** for GHG emissions, water usage, and water usage intensity, respectively), which is confirmed by variable-wise estimation results. Judging by the F-test, the added variables jointly have informational value (R-squared being 0.7436 and 0.6255 for environmentally friendly and the baseline models, while the F-stat is 11.51***).

Concerning estimations established on Turkey, sample findings show air pollution intensity is significant in company valuation. Dealing with coefficient, GHG emissions has a positive sign (0.0221*, 0.0031 and 0.1553 for GHG emissions, water intensity per sales, and water use intensity), which is consistent with variable-wise results (0.0215**). Judging by the F-test, the added variables jointly do not add explanatory power (R-squared being 0.6966 and 0.6869 for the ESG and the non-SRI models, while the F-stat is 1.25).

Considering models created on Belgium, sample outputs show air pollution intensity and waste efficiency are significant in company valuation (see Table 189). In terms of coefficients, they have dissimilar signs depending on the variable

(0.9887**, 0.0017 and -2.8115** for GHG pollution, water intensity per sales, and water use intensity, accordingly). In accordance with the F-test, the environmental variables have informational value (R-squared being 0.6804 and 0.5986 for the ESG and the baseline models, accordingly, while the F-stat is 5.71***).

Concerning models based on Austria, sample findings show each environmentally friendly indicator is insignificant in company valuation. Adhering to the F-test, the environmental variables do not improve explanatory power (R-squared being 0.8402 and 0.8363 for green and the non-SRI models, while the F-stat is 0.46).

In terms of specifications formed on Chile, sample outputs show GHG pollution and water usage are significant in company valuation (see Table 189). Considering coefficients, they have inconsistent signs depending on the variable (-0.1608***, 0.0018*** and -0.012 for air pollution intensity, water usage, and water use intensity, accordingly). According to the F-test, the added variables jointly have informational value (R-squared being 0.7158 and 0.6695 for green and the non-ESG models, respectively, while the F-stat is 6.3***).

With regards to specifications inspired by Ireland, sample results show each environmentally friendly variable is significant in value regression (see Table 189). Concerning coefficients, they have contradictory signs depending on the indicator (-14.8519***, -0.0517** and 63.6702*** for GHG emissions, water usage intensity, and water intensity per sales, accordingly). Judging by the F-test, the explanatory power improves significantly (R-squared being 0.8841 and 0.6836 for green and the non-SRI models, respectively, while the F-stat is 20.17***).

With regards to specifications based on Greece, sample findings show air pollution intensity and water use intensity are significant in company valuation (see Table 189). In terms of coefficients, they have contradictory signs depending on the variable (-0.1704**, 0.0027** and -0.109 for greenhouse gas emissions, water intensity per sales, and water usage). In accordance with the F-test, the explanatory power does not improve (R-squared being 0.8573 and 0.8294 for environmentally friendly and the non-SRI models, while the F-stat is 1.95).

Considering estimations formed on Colombia, sample findings show water use intensity and waste intensity per sales are significant in company valuation (see Table 189). Dealing with coefficients, each environmentally friendly variable has a negative sign illuminating better financial and environmental performance (-0.0363, -0.0*** and -0.0118* for air pollution intensity, water usage, and water intensity per sales), which is partially supported by variable-wise findings. In relation to the F-test, the added variables jointly have no informational value (R-squared being 0.8654 and 0.8584 for the SRI and the non-ESG models, accordingly, while the F-stat is 1.16).

Dealing with estimations formed on Portugal, sample findings show greenhouse gas emissions and water intensity per sales are significant in value regression (see Table 189). Considering coefficients, they have contradictory signs depending on the variable (-0.6121**, 0.0069** and 1.3389 for GHG pollution, water usage intensity, and water usage intensity). According to the F-test, there is no significant improvement in the explanatory power (R-squared being 0.8714 and 0.8619 for green and less environmentally friendly models, accordingly, while the F-stat is 1.65).

Dealing with estimations formed on Israel, sample results show greenhouse gas emissions and waste intensity per sales are significant in value regression. In terms of coefficients, each environmentally friendly indicator has a positive sign indicating that better performance of the companies accompanied by environmental underperformance (2.0463*, 0.0073 and 8.468** for GHG pollution, water usage intensity, and water usage), which is consistent with variable-wise estimation results. Judging by the F-test, the environmental variables enhance explanatory power (R-squared being 0.8813 and 0.8481 for the SRI and the non-SRI models, respectively, while the F-stat is 3.26**).

Dealing with models created on Sri Lanka, sample results show air pollution intensity and water usage intensity are significant in value regression (see Table 189). With regards to coefficients, they have divergent signs depending on the indicator (3.6653**, -0.0765*** and 1.3435 for greenhouse gas intensity, water usage, and water usage, accordingly). In relation to the F-test, the environmental variables enhance explanatory power (R-squared being 0.7617 and 0.6808 for the SRI and less environmentally friendly models, respectively, while the F-stat is 3.28**).

Dealing with specifications based on the Communication services sector's sample results show GHG and CO2 emission intensity is significant in value regression (see Table 159). Concerning coefficient, greenhouse gas intensity has a positive sign (2.5153***, -0.0071 and 0.756 for greenhouse gas intensity, water usage intensity, and water intensity per sales), which is reinforced by variable-wise estimations (0.0623*). In relation to the F-test, the environmental variables improve explanatory power (R-squared being 0.3736 and 0.3342 for the ESG and the baseline models, accordingly, while the F-stat is 9.01***). In terms of year-wise data, GHG emissions is significant in half of the years (in 3 out of 6 years), while the coefficient mostly appears to be negative (in 2 out of 3 cases). Water use intensity is significant in half of the years (in 3 out of 6 years), while the coefficient mostly has a negative sign (in 2 out of 3 cases). Total waste is often significant (in

4 out of 6 years), while the coefficient mostly is negative (in 3 out of 4 cases). While dealing with the financial performance, the ESG estimation exceeds the non-SRI model in monthly returns over the whole sample (-5.7% and -8.9%), whereas the baseline estimations, which is the best specification in accordance with Akaike information criterion corrected for small sample size, showing that the results are statistically insignificant with intercept value equals to 0.1375.

Concerning models formed on the Consumer discretionary sector's sample outputs show water usage intensity is significant in company valuation (see Table 160). In terms of coefficient, water intensity per sales has a positive sign (0.2165, 0.0009*** and -0.0531 for GHG emissions, water use intensity, and water use intensity, accordingly), which is confirmed by variable-wise results (0.0001***). In relation to the F-test, the environmental variables improve explanatory power (R-squared being 0.3126 and 0.2994 for green and the non-SRI models, accordingly, while the F-stat is 8.28***). Regarding year-wise data, greenhouse gas intensity is unfrequently significant (in 3 out of 12 years), while each coefficient has a positive sign. Water usage intensity is significant in half of the years (in 6 out of 12 years), while half of the coefficient being positive. Waste intensity per sales is unfrequently significant (in 4 out of 12 years), while the coefficient mostly is positive (in 3 out of 4 cases). While dealing with the financial performance, the SRI estimation exceeds less environmentally friendly specification in monthly returns over the whole sample (1.85% and -1.49%, respectively), whereas the baseline results, which is the best model adhering to Akaike information criterion corrected for small sample size, implying the results are statistically insignificant with environmental factor value equals to 0.2827.

Dealing with models based on the Consumer staples sector's sample outputs show waste efficiency is significant in company valuation (see Table 161). Dealing with coefficient, waste intensity has a positive sign (0.0453, 0.0001 and 0.0213*** for greenhouse gas emissions, water intensity per sales, and water usage), which is confirmed by variable-wise model results (0.0023). In relation to the F-test, the added variables jointly have informational value (R-squared being 0.4416 and 0.4341 for green and the baseline models, respectively, while the F-stat is 4.85***). Dealing with year-wise data, GHG pollution is most often significant (in 8 out of 11 years), while the coefficient often is negative (in 5 out of 8 cases). Water usage intensity is in most cases significant (in 7 out of 11 years), whereas the coefficient in most cases appears to be positive (in 5 out of 7 cases). Waste intensity is unfrequently significant (in 5 out of 11 years), while each coefficient appears to be positive. While dealing with the financial performance, less environmentally friendly estimation outshines environmentally friendly model in monthly returns over the whole sample (4.0% and 1.83%, respectively), while the eight-factor estimations, which is the best estimation in accordance with Corrected Akaike information criterion, showing that the outputs are statistically insignificant with intercept value equals to -0.2876.

Regarding estimations established on the Energy sector's sample findings show GHG emissions is significant in value regression (see Table 162). Concerning coefficient, GHG and CO2 emission intensity has a positive sign (0.1202**, -0.0001 and 0.0041 for GHG and CO2 emission intensity, water usage, and water use intensity, accordingly), which is confirmed by variable-wise findings (0.0001). In accordance with the F-test, the environmental variables have informational value (R-squared being 0.5218 and 0.5147 for environmentally friendly and the baseline models, while the F-stat is 2.52*). Concerning year-wise data, GHG and CO2 emission intensity is rarely significant (in 3 out of 8 years), whereas the coefficient most often is positive (in 2 out of 3 cases). Water usage intensity is significant in half of the years (in 4 out of 8 years), whereas each coefficient being negative. Waste intensity per sales is in most cases significant (in 5 out of 8 years), whereas the coefficient most often appears to be negative (in 3 out of 5 cases). While dealing with the financial performance, the non-ESG specification outperforms the ESG estimation in monthly returns over the whole sample (8.51% and 1.36%, respectively), while the three-factor models' results, which is the best-fit model adhering to Akaike information criterion, illuminating the outputs are statistically significant with environmental factor value equals to -0.534**.

Considering models created on the Financials sector's sample outputs show water usage intensity is significant in value regression (see Table 163). Considering coefficient, water use intensity has a negative sign (0.0089, -0.0022** and -0.4621 for GHG emissions, water intensity per sales, and water usage intensity, accordingly), which is contradicted by variable-wise model results (0.0008*). Adhering to the F-test, the environmental variables have informational value (R-squared being 0.5755 and 0.5619 for green and the baseline models, respectively, while the F-stat is 10.69***). With regards to year-wise data, air pollution intensity is rarely significant (in 2 out of 12 years), while half of the coefficient is positive. Water use intensity is significant in half of the years (in 6 out of 12 years), whereas half of the coefficient being positive. Waste intensity is most often significant (in 7 out of 12 years), while the coefficient mostly has a positive sign (in 5 out of 7 cases). While dealing with the financial performance, environmentally friendly estimation outpaces the non-ESG model in monthly returns over the whole sample

(1.01% and -3.5%, respectively), whereas the baseline estimations' results, which is the best estimation in relation to Corrected Akaike criterion, evidencing the results are statistically insignificant with risk-adjusted return value equals to 0.3637.

In terms of specifications created on the Health care sector's sample results show water usage is significant in value regression (see Table 164). Considering coefficient, water use intensity has a negative sign (-0.1067, -0.051** and -0.1302 for GHG and CO2 emission intensity, water usage, and water use intensity), which is confirmed by variable-wise estimations (-0.0046). According to the F-test, the added variables jointly add explanatory power (R-squared being 0.6696 and 0.6545 for environmentally friendly and the non-ESG models, while the F-stat is 11.42***). Considering year-wise data, greenhouse gas emissions is rarely significant (in 2 out of 12 years), while half of the coefficient has a positive sign. Water usage is most often significant (in 7 out of 12 years), whereas the coefficient most often being negative (in 4 out of 7 cases). Total waste is seldom significant (in 2 out of 12 years), while half of the coefficient is positive. While dealing with the financial performance, the non-ESG estimation outpaces environmentally friendly estimation in monthly returns over the whole sample (-3.46% and -5.91%, accordingly), while the three-factor results, which is the best-fit specification in accordance with Akaike criterion, implying the results are statistically insignificant with intercept value equals to -0.3306.

Considering estimations formed on the Industrials sector's sample results show water usage is significant in company valuation (see Table 165). With regards to coefficient, water usage has a negative sign (-0.0106, -0.0033*** and 0.0005 for GHG and CO2 emission intensity, water intensity per sales, and water usage intensity, accordingly), which is supported by variable-wise model results (-0.001). In accordance with the F-test, the added variables jointly have informational value (R-squared being 0.1928 and 0.1222 for the ESG and less environmentally friendly models, respectively, while the F-stat is 58.03***). Concerning year-wise data, greenhouse gas emissions is rarely significant (in 4 out of 14 years), while the coefficient in most cases has a positive sign (in 3 out of 4 cases). Water use intensity is significant in half of the years (in 7 out of 14 years), whereas the coefficient frequently has a negative sign (in 4 out of 7 cases). Waste intensity is unfrequently significant (in 5 out of 14 years), while the coefficient often appears to be positive (in 3 out of 5 cases). While dealing with the financial performance, less environmentally friendly model outpaces environmentally friendly model in monthly returns over the whole sample (-5.08% and -7.07%, accordingly), while the eight-factor results, which is the best estimation in accordance with Akaike information criterion corrected for small sample size, indicating that the results are statistically insignificant with environmental factor value equals to -0.3168.

Concerning estimations created on the Information technology sector's sample results show each green variable is insignificant in company valuation (see Table 166). In accordance with the F-test, there is a significant improvement in the explanatory power (R-squared being 0.0809 and 0.0517 for the ESG and the non-SRI models, while the F-stat is 15.05***). Dealing with year-wise data, GHG pollution is rarely significant (in 4 out of 13 years), while each coefficient has a positive sign. Water usage is unfrequently significant (in 5 out of 13 years), whereas the coefficient most often being positive (in 4 out of 5 cases). Total waste is rarely significant (in 6 out of 13 years), while the coefficient often being negative (in 5 out of 6 cases). While dealing with the financial performance, the non-ESG specification performs better than the SRI model in full-sample monthly returns (-3.94% and -5.69%), whereas the baseline estimations' results, which is the best-fit model in relation to Corrected Akaike criterion, evidencing the results are statistically insignificant with constant value equals to -0.1935.

With regards to specifications based on the Materials sector's sample results show each green indicator is significant in value regression (see Table 167). Concerning coefficients, each green variable has a positive sign evidencing better performance of the companies accompanied by environmental underperformance (0.0001*, 0.0* and 0.0039*** for greenhouse gas emissions, water intensity per sales, and water usage intensity, accordingly), which is reinforced by variable-wise estimations. In relation to the F-test, the environmental variables enhance explanatory power (R-squared being 0.313 and 0.2884 for the SRI and the non-SRI models, while the F-stat is 25.3***). Considering year-wise data, GHG and CO2 emission intensity is significant in half of the years (in 7 out of 14 years), whereas the coefficient often is negative (in 6 out of 7 cases). Water usage intensity is rarely significant (in 5 out of 14 years), while the coefficient most often is positive (in 4 out of 5 cases). Total waste is in most cases significant (in 9 out of 14 years), whereas each coefficient is positive. While dealing with the financial performance, less environmentally friendly specification exceeds the ESG specification in monthly returns over the whole sample (7.25% and 5.19%, respectively), while the baseline models' results, which is the best-fit specification adhering to Akaike information criterion corrected for small sample size, showing that the outputs are statistically insignificant with risk-adjusted return value equals to -0.1792.

Concerning estimations based on the Real Estate sector's sample outputs show water use intensity and total waste are significant in company valuation (see Table

168). Concerning coefficients, each environmentally friendly variable has a positive sign suggesting that better performance of the companies accompanied by environmental underperformance (0.0132, 0.0013*** and 0.03*** for greenhouse gas intensity, water usage intensity, and water intensity per sales, accordingly), which is supported by variable-wise estimation results. According to the F-test, the environmental variables enhance explanatory power (R-squared being 0.5611 and 0.5545 for green and less environmentally friendly models, accordingly, while the F-stat is 4.18***). Regarding year-wise data, GHG pollution is significant in half of the years (in 4 out of 8 years), while each coefficient appears to be negative. Water intensity per sales is often significant (in 6 out of 8 years), while each coefficient is positive. Waste intensity is often significant (in 6 out of 8 years), whereas the coefficient frequently being positive (in 5 out of 6 cases). While dealing with the financial performance, environmentally friendly model outpaces the non-ESG model in full-sample monthly returns (-3.73% and -4.79%, respectively), whereas the three-factor results, which is the best estimation adhering to Akaike information criterion, suggesting the outputs are statistically insignificant with alpha value equals to 0.005.

With regards to estimations established on the Utilities sector's sample outputs show total waste is significant in company valuation (see Table 169). Considering coefficient, waste intensity has a positive sign (-0.017, 0.0 and 0.195** for GHG and CO2 emission intensity, water use intensity, and water use intensity, respectively), which is reinforced by variable-wise estimations (0.0***). According to the F-test, the added variables jointly have informational value (R-squared being 0.4406 and 0.4265 for environmentally friendly and the non-SRI models, respectively, while the F-stat is 6.45***). Concerning year-wise data, air pollution intensity is seldom significant (in 5 out of 12 years), whereas each coefficient being positive. Water intensity per sales is seldom significant (in 1 out of 12 years), while each coefficient being positive. Waste intensity per sales is seldom significant (in 3 out of 12 years), while each coefficient being positive. While dealing with the financial performance, the non-SRI specification exceeds green model in full-sample monthly returns (5.61% and 5.48%, respectively), whereas the baseline estimations, which is the best estimation judging by Corrected Akaike information criterion, indicating that the results are statistically insignificant with environmental factor value equals to -0.0355.

With regards to the outcomes of the empirical chapter, environmental variables appear significant in value driver regression estimation in almost every sample, as well as in most of the years, separately and combined. Key findings can be observed within the outcomes observed in combined models, whereas results appear significant in almost every estimation, highlighting and illuminating the explanatory power of environmental variables, evidencing their importance and contribution (contributing to Liu et al., 2002; Nerlinger, 2020; and the conclusions observed in Benjamin et al., 2020; whereas environmental variables are contributing to companies' value). According to F-test (see Table 189), the statistically significant increase of the coefficient of determination was observed in the full sample approach, in each sector-wise sample, almost in each regional-wise estimation, excluding Asian Pacific and North African (contrasting with Jitmaneeroj) sample, in 28 out of 40 countries, excluding Japan, Australia, Spain, Singapore, Malaysia (refuting Zulkufly, 2012), Thailand (contrasting with Jitmaneeroj), Poland, Turkey, Austria (contradicting to Shephard, 2022), Greece, Colombia and Portugal. Despite such significance, the signs of established coefficients appeared mixed, evidencing contradicting SRI premises reflection (confirming Xu et al, 2012; Bolton and Kacperczyk, 2021; contrasting with Abrams et al. 2021; Kumar and Shetty, 2018; Aouadi and Marsat, 2018; Ng and Rezaee, 2015). Such performance may be explained by environmental impact being a proxy of the company's growth. Dealing with outcomes of the year-wise specifications, frequent significant improvement appears in the full sample, developed and emerging, while the subsample consisting of countries from developed markets, excluding the United States, has less frequent significant results. With regards to the year-wise approach within sectors, combined environmental variables show frequent significant outcomes in Communication Services, Consumer Staples and Materials (contributing to Bolton and Kacperczyk, 2021); while in cases of Consumer Discretionary, Financials, Health Care and Industrials sectors, this significance appears in a smaller number of estimations; and in companies associated with Energy, Information technology, Real Estate and Utilities, the year-wase significance appear rarely. Considering the year-wise findings within counties, results appear insignificant almost in each sub-sample, which could be a result of the insufficient sample sizes.

Regarding the outcomes that appear in the separate-variable approach, multiple, however, mixed results contribute to the importance of the different types of environmental impact information, depending on the analysed sample.

An additional finding is associated with the predictive power of environmental variables, which, according to multiple factor models' tests, appears insignificant in almost every estimation. However, several estimations' results indicate extant misprising in subsample associated with the Middle East and North African region, Indian stocks (contrasting with evidence observed in Kumar and Shetty, 2018;

Albarrak et al., 2019), which alphas appeared positive and significant, evidencing undervaluation of the environmental information. Contrastingly, findings based on companies from the North American region, Germany, Thailand, Energy, and Health Care sectors, where adhering to estimations' results, alphas' values are negative and significant, suggesting overvaluation of the investigated factor and overreaction to environmental information.

5. Conclusion

This section represents the overview of the main findings established in the research as well as the answers to the research questions and the outcomes of the tested hypothesis alongside its theoretical and practical implications and contribution to knowledge.

The developed research set as a challenge the determination of the relationship between the environmental information and financial performance of stocks, its possibility of being the source of systematic risk, the effect on company valuations and its explanatory power as well as predictive power, and to answer the prolonged question existing within stakeholders of the financial market, “Does it pay to be green?”, which became an epitaph of CSR and ESG at least since King and Lenox (2001). Multiple studies challenged the area of environmentally friendly investing as a part of the developing field of socially responsible investing, observing contradicting evidence divergent depending on the utilised ESG information, approaches, and samples. Through indicating main similarities and differences and rethinking established core approaches, considering achievements and shortcomings of the existing literature, this research claims to address the lack of consensus through the provided analysis of environmental performance, momentum, and mispricing, as well as ESG momentum.

This study has investigated the linkage between environmental information and financial data through multiple approaches, including methods established in asset pricing, performance evaluation, and stock valuation fields of study.

With regards to the asset pricing, especially the factor models, the research provides evidence of the environmental performance significance in multiple specifications. Judging by multiple hypothesis tests’ outcomes, which include standard coverage and harmonic tests, the null hypothesis of the environmental insignificance, in terms of considering it as a source of systematic risk, can be rejected (contributing to possible extension and improvement of conventional factor approach Ammann et al., 2022; Asness and Frazzini, 2013; Li et al., 2022; Basu, 1983; Jaffe et al. 1989; Koh, 2020). In accordance with the methodology, two specifications of environmental variables were tested; where the first one utilises raw values of investigated variables for portfolio structuring, labelling this approach as environmental performance, while the second approach implies considering the change in environmental performance for the very same purpose, denoted environmental momentum.

Dealing with the findings observed in the environmental performance section, the outcomes of multiple hypotheses testing evidence that implementation of environmental factors towards the widely used factor models show significant results in four-, six-, and eight- factor models (see Table 108). However, such performance is not observed in the constant, the CAPM, and the three-factor approaches, manifesting the environmental variables being non-autonomous but complementary sources of risk-related information. Meanwhile, according to the Akaike information criterion, the baseline and six-factor approaches are more likely to be the best fits, insinuating the possibility of environmental performance incompetence for its implementation as the quantitative proxy and that additional variable-related procedure is needed in order to illuminate the hidden potential of the investigated data.

Going deeper in analysing variable-related outcomes, the greenhouse gas emissions appeared more statistically significant compared to other factors, with significant p-values in the baseline, six-and eight- factor specifications, supporting its relevance in the financial market. With regards to the environmental performance built on the water usage information, according to tests' outcomes, the hypothesis of its relevance is weakly supported since the significant p-values are observed only in the harmonic mean test applied to six- and eight- factor models. Due to the limitations of the harmonic mean test and the existing lack of consensus on its proper utilisation, the conclusion can be made that water usage does not appear to be a source of systematic risk. A similar conclusion is valid for the waste amount as well since weak statistical significance appears in only six- and eight- factor specifications.

Moving further from the acknowledgement of consolidated findings' significance in environmental performance to detailed outcomes' disclosure, in accordance with the signs of the brown minus green alphas, environmentally friendly stocks more frequently outperform stocks with poor environmental performance in risk-adjustment terms. Such findings indicate that greener stocks are associated with riskier investments, indicating the market is not accounting for the investigated information. Since the premise of socially responsible investing enforces the brown companies being riskier, as well as the existing sentiment built up around the ESG field, observed outcomes contradict the expected scenario and refute the null hypothesis of environmental mis performance being a source of systematic risk. Moving on with the results' interpretation, these estimations can have several plausible reasons, whereas either market is mispricing the information or environmental concerns are inflating the stock-market bubble; however, both mentioned reasons are less likely due to the duration of the investigated sample, leaving the main cause being the environmental information appears the source of the systematic risk.

With regards to the investment opportunities based on the environmental performance, according to the comparison of monthly returns, the modified Sharpe ratio, and the Sortino ratio within the green and brown portfolios, environmentally friendly stocks outshine their counterparts on average. Going deeper in the specifications, green portfolios prevail on each measure in the full sample, as well as in smaller samples, such as developed countries, including samples where the United States is not considered, Asian Pacific, Latin American, Middle East and North Africa, and North American regions, while emerging countries and stocks related to the European region show mixed or better performance of brown stocks. Dealing with country-wise observations, most of the better performing portfolios are green ones; however, this statement is valid for those portfolios which consider greenhouse gas or water usage as a primary source of the stock's classification. In terms of the sector-wise perspective, most of the sectors' greener portfolios outshine related brown ones. An additional outcome of the compared results is that the portfolio's performance depends on the structuring approach, whereas the k-nearest neighbours, the 10/90 and the 30/70, better illuminate the benefits of environmental performance information utilisation.

Moving further to the description of environmental momentum estimations' results, which consideration in the research was driven by the contradictory outcomes of raw environmental performance multiple hypothesis tests and corrected Akaike information criterion, which indicated the need for additional pre-processing of the data. Compared to performance, momentums' findings are more intuitive and more aligned with the existing narrative. With regards to the results established in the full sample approach, each of the multiple hypothesis estimations appeared significant, including the baseline, CAPM, three-, four-, six-, and eight-factor models, indicating the value of the risk-related information brought by environmental momentum, which noticeably differs from findings observed in environmental performance. Such robust evidence of environmental information's cruciality in asset pricing is also valid in separate variables tests, highlighting the significance of annualised changes in the greenhouse gas emissions and waste efficiency, where all the tests' outcomes appear with mostly strong significance, except for the baseline model associated with a change in waste intensity. Contrastingly, the water-based momentum factor does not perform as good as its counterparts, performing significantly only in the CAPM, three-and four- factor models. In addition, judging by the Akaike criterion, it is more likely that the best fit model will be the baseline one. Moreover, the probability of the different best fit models decreases with the inclusion of the additional factors, evidencing the factors' integrity and robustness. Dealing with a more detailed perspective, significant alphas are prevailing in environmentally friendly portfolios, which interpretation differs a lot compared to the raw environmental performance since the momentum considers a change in the performance, that could be interpreted as an appearance of the new information on the market, alphas' signs and significance are the evidence of markets reflection to the change in environmental performance. In such a case, the negative and significant value of the brown minus green factor is interpreted as the market's positive reaction to better performance, which goes in line with the CSR premise as well as an observed sentiment. Overall, the developed factors can be considered as a source of systematic risk and be utilised as an extension to the existing conservative risk factors. Moreover, since the corrected Akaike criterion pulls attention to the baseline specification, the results of the empirical chapter can be considered as separate risk factors.

In terms of portfolios' financial performance, the green outperformance is more noticeable compared to the results observed in the specification established on the environmental performance on each evaluated measure, including monthly returns, the modified Sharpe ratio and the Sortino ratio. Dealing with a more detailed view, the main difference from the previous approach is located in the regional- and status- wise samples, where greener stocks associated with emerging countries and the European region appear to outshine brown ones on a frequent basis. One more development of the momentum approach is the manageability and implementability of various tested models and variables since almost each of the combinations is advanced by environmentally friendly stocks, except the 10/90 approach applied to change in water usage.

Additional significant observation occurred in the research is a performance of the k-nearest neighbours portfolio structuring approach, that, according to the multiple hypothesis tests, performs on the level with conventional methods, making it a robust alternative tool for such tasks.

Taking into account the findings documented in environmental momentum, this research also covers the ESG momentum, which remains a sufficiently investigated area in the academic literature. Since the momentum in this case is defined by the event of change in companies' MSCI ESG rating, constructed portfolios were also tested via factor models.

Findings based on the subsample analysis indicate the existence of several groups with different types of sensitivity to the ESG rating changes. The causes of such divergence in perception may be located in multiple areas, including stakeholders' values, homogeneity of the rating and the market, economic development level of related country, sector, geography, size and value factor, and the origin rating's level of related stock (contributing to Dorfleitner et al., 2015; Giese et al., 2019; Berg et al., 2019; Gibson et al., 2019; Gyönyörová et al., 2021).

With regards to findings obtained in stocks grouped by levels of economic development, the upgraded and downgraded portfolios are similarly exposed to the rating upgrades, having significant positive and negative alpha values, respectively, which is contradicting to the null hypothesis of markets' irrelevance towards the rating changes. In addition, while stocks associated with developed markets are exposed to the rating's downgrades, such source of the systematic risk is not observed in the emerging market. Dealing with the outcomes appeared in region-wise approach, market reflects positively the companies' rating upgrades which are originally from North American countries, and especially United States. Meanwhile, the lack of similar exposure is observed for stocks from European countries, the Asia Pacific, Middle East and North Africa, and Latin America. Moreover, companies associated with Latin American, the Middle Eastern and North African countries are showing contradicting results, whereas the downgraded portfolios have positive and significant alphas, which can be explained by a growing stage in the business cycle of companies, in extensive growing approaches, which could contrast with the ESG premise, are more encouraged by investors. Dealing with the sector-wise findings, socially responsible investors seeking better performance should consider companies related to extraction and services sectors, since related estimations' results appeared to be positive and significant. While the outcomes established on production sector show its insensitivity to rating changes.

Dealing with the factor-wise approach, the positive financial performance of larger stocks is associated with upgrades in rating, while smaller companies are benefiting primarily from downgrades, which contradicts the ESG principles and could also be related to extensive growth. While in the subsample of the developed group, findings reinforce previous statements, investors should avoid investing in downgraded large companies due to statistically significant negative alphas observed in the specification. Meanwhile, in terms of the HML factor, positive and significant alphas are observed in upgraded portfolios for both, growth and value samples. In the case of downgrades, the statistical significance of negative alphas is observed only in growth companies, which is valid for full and developed samples.

With regards to the outcomes of the value driver regression models, which approach was incorporated to determine the explanatory and predictive power of environmental variables and overall, its contribution to the company valuation methods, evidence suggests that examined information improves the baseline models significantly. Such conclusion is built up as the result of the multiple testing of models' performance, using the F-tests, whereas the value driver regression model extended with environmental information outshines restricted ones noticeably on the coefficients of determination, with differences in explanatory power consistently significant. Going deeper in the description of the outcomes, such improvements of baseline models is observed in almost each sample-wise estimation where full time-period and three-variable approach were considered (see Table 189), evidencing contribution of environmental information to stock price explanatory power. Similar, however, less significant outcomes where also observed in year-wise approach within samples, proving the robustness of the findings. Meanwhile, estimations established on separate variables do not perform as significant, as combined approach, contributing to its cumulative significance, alluding to further possible research direction which is the development of environmental index.

In addition to the significance of the coefficients, their signs are also worth attention, since they are mixed in most of cases, which, in case of the positive signs is contradictious to the established SRI premise, evidencing either undervaluation of the environmental performance or unobservability of such information flow, especially this is noticeable in case of the greenhouse gas since the prevailing sentiment around the topic, compared to the water and waste intensity, and multiple evidence from accounting and management related literature that highlights negative relationship between emissions and financial performance.

While existence of environmental variables' explanatory power appeared incontrovertible, outcomes of predictive power tests evidence the absence of the systemic risk associated with environmental misperformance, contributing to markets ability to account for the environmental information. However, several estimations' results indicate extant misprising in subsample associated with Middle East and North African region, Indian stocks, which alphas appeared positive and significant, evidencing undervaluation of the environmental information. Contrastingly, findings based on companies from North American region, Germany, Thailand, Energy, and Health Care sectors, where adhering to estimations' results, alphas' values are negative and significant, suggesting overvaluation of the investigated factor and overreaction to environmental information. Further, since the findings established in the environmental mispricing chapter are evidencing inexistence of related predictive power, these results are supporting previously establish claim of environmental information being a source of systematic risk rather than sentiment or other types of market irrationality.

Moving further to the possible implementations of the established findings, there are two main areas of the results incorporation, which include the academic and practice fields. This thesis investigated multiple approaches analysing the relationship between financial and environmental performance, developing the environmental momentum and performance risk factors, showing the ability and potential of environmentally friendly investing, disclosing the explanatory capabilities of the environmental information.

With regards to academia, this research fills in the gaps discovered in the intersection between green finance and such areas as asset pricing, stock valuation and performance evaluation. Developed systematic environmental risk factors can be utilised similarly to the conventional, where the first set of factors, including the greenhouse gas, water, and waste factors, can characterise stocks as green or brown and can be utilised as an extension of the conventional factor models. Following, the second set of factors, which consists of environmental momentum factors, can describe stocks by the environmental out- and underperformance following; due to the observed results and integrity of the variables, this risk factor can be utilised not only as an extension to the baseline approaches but also as a separate factor. In order to incorporate these factors, the interested party will be able to extract the returns of the BmG factors, which are the best fit, depending on the analysed sample characteristics, such as sector, country, region, and related economic status. In addition to the established factors, research should drive attention towards the raw variables themselves and encourage investigations of disaggregated information flows, which is lacking in contemporary research, due to the prolonged advance of the aggregated rating-like data.

Further, this research highlighted the novel implication of the k-nearest neighbours algorithm to the portfolio structuring task, which showed significant performance on a par with the conventional approaches, however, it can be more useful while dealing with multidimensional classification or attempting the illumination of polar quantitative non-binary variable in the big data sets.

Moving on to the possible implementation of the findings observed in the ESG momentum, in addition to the developing academic literature on rating changes, these results are covering largest sample available on the one of the most used ratings available. While most of the research available concentrates on the initial levels, the related portfolios performances, and divergence between rating agencies, the findings provided are covering areas with lack of investigation. In addition to direct usage of the outcomes, utilised method can be applied to wider range of ESG-related rating to determine divergence with agencies and dissimilarities in market responses depending on the source data, this can also be applied towards the non-ESG ratings, expanding the analysis of markets' reflection to the ratings, their expedience, and capability of associated topic's illumination. It also highlights perspective areas for further analysis, which are associated with U-shaped performance on market reaction to rating changes.

Regarding the outcomes observed in the company valuation chapter and their possible implementation, the developed approach can encourage implementation of value driver regression models towards different ESG and non-ESG related variables in order to obtain uncovered disclosed information impacting the companies value, and to illuminate markets' mispricings and anomalies, similar to ones documented in the research. In addition, represented findings should inspire investigations of the samples appeared mispriced in terms of the factor-models.

Dealing with the implacability in the practice field, overall, this research represents itself as a guidebook for ESG-oriented stakeholders. In order to increase the contribution, availability of the data, and tracking opportunities, developed factors, portfolios, environmental indexes, and outcomes of further research, these findings will be available on a deployed website, and frequent reports will be launched. First of all, it can be useful for both institutional and individual investors, who can extract methodology, as well as preconstructed portfolios, and implement it in their investing strategies. Since the outcomes of the first and third chapters are comparable to the environmental investing map, they can utilise preferable samples or their combinations, and in addition, research accumulates results based on different approaches, which also corresponds to the manageability of the risk levels, providing an interested party with a choice of suitable green return to risk degree, making it easier to "do good, while receiving well". Moreover, due to the fact that research explored several approaches toward green finance, investors can also choose between conceptual approaches, where they can invest in the initial environmental performance level or stimulate companies to improve their emissions.

Walley and Whitehead (1994) concluded that it's not easy being green. However, established findings can be incorporated by companies willing to track their environmental performance, which according to the literature and corporate reports, is a concern of related stakeholders. By applying methods used in chapter five, companies can track their degree of dependence on environmental performance and adjust their ESG-related inner processes and strategies. In addition, since the data will be available online, companies will be able to check their up-to-date environmental cluster and find out targets for being associated with greener stocks.

ESG rating agencies will also benefit from the developed results since the research provides an adequate analogue of the existing measurements, pointing out the resilience of existing agencies' methodologies covered in the literature and findings.

For the global contribution, in addition to deploying a website and providing the community with frequent reports, the data and findings will be used to track companies' development in terms of environmental impact.

Dealing with further research, the goals are to cover both extensive and intensive improvements by expanding applied methods to existing data to illuminate possible additional information and by increasing investigated environmental variables. For example, as greenhouse gas factors were found to be overall more promising, distinct greenhouse gas emissions (for example, CO_2, N_2O, NO) or other environmentally harmful non-greenhouse gases (methane, ozone-depleting substances, sulphur oxides) can be studied separately using similar techniques for additional robustness and generate more nuanced inferences. Further, toxic and hazardous waste can be scrutinised (contrastingly to total waste used in this thesis). Moreover, the development of the multidimensional-based environmental index, which accumulates multiple variables to define a company's cluster, is one of the main priorities of further research agenda. Meanwhile, the field of raw environmental data analysis is lacking in contemporary research, leaving vast space for creativity in developing and testing hypotheses that can contribute to the global concern for environmental friendliness. As such, raw environmental variables besides carbon can be integrated not only in the asset pricing model toolbox, but also in the portfolio theory field of study, where investors could choose portfolios consistent with their preferences not only with regards to risk and return, but also considering or internalising the social cost of emissions, water usage, and waste disposal.

Overall, this thesis has provided a comprehensive guide for environmentally conscious investing driven by raw data rather than proxies, ratings, or other overly aggregated and arguably less reliable sources of environmental and ESG information. It has succeeded in a previously never undertaken endeavour of estimating the implications of environmental performance, momentum, and mispricing on a vast array of subsamples, portfolio construction techniques, and asset pricing models, decidedly demonstrating their importance and carving a place for environmental long-minus-short portfolios in the established “zoo of factors”.

6. Appendix

6.1. Publication plan

Empirical Chapter 1. Planned to be presented at the AFM research seminar in 2022. Title: Environmental performance in factor models. The chapter is planned to be submitted to Journal of Sustainable Finance and Investment by November 2022.

Empirical Chapter 2. Presented at the FFM conference in University of Milano-Bicocca in July 2022. Title: Brown Minus Green Factor: Environmental Risk Premium, Evidence from Countries in the European Union. The chapter is being considered for publication in European Journal of Finance and will be submitted by January 2023.

Empirical Chapter 3. Title: Environmental momentum as a source of systematic risk and an opportunity for better financial performance. The chapter will be integrated with Chapter 2 for a paper targeting European Journal of Finance and will be submitted by January 2023.

Empirical Chapter 4. Title: ESG momentum in factor portfolios. The chapter will be submitted to Finance Research Letters by April 2023.

Empirical Chapter 5. Title: Gas, Water and Waste: Investors’ environmental value drivers.

The chapter will be submitted to Journal of Accounting Research by June 2023.

6.2.Portfolios' performance and factor models outcomes

Table 7. Full sample factor-models performance in environmental performance and momentum

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.4808	-0.1203*	0.3578	0.8634***	0.9179***	-0.8243*	0.492***	-0.9405***	0.0835	-0.0377	0.1103	-0.4499	0.006	-0.1082
		(0.3235)	(0.0637)	(0.2537)	(0.2679)	(0.2913)	(0.4492)	(0.1224)	(0.2535)	(0.1291)	(0.3434)	(0.2149)	(0.3164)	(0.2646)	(0.1193)
		0.139	*0.0604*	*0.1601*	*0.0015*	*0.0019*	*0.0681*	*0.0001*	*0.0003*	*0.5187*	*0.9127*	*0.6086*	*0.1569*	*0.9821*	*0.3659*
	30/70	-0.4191*	-0.0398	0.4166***	0.6088***	0.7806***	-0.5778*	0.3092***	-0.4428**	0.119*	0.1127	0.26*	0.0035	-0.0825	-0.034
		(0.2437)	(0.0495)	(0.1559)	(0.1989)	(0.2371)	(0.3067)	(0.0931)	(0.1717)	(0.0624)	(0.1524)	(0.1482)	(0.1591)	(0.1557)	(0.0669)
		0.0871	*0.4234*	*0.0082*	*0.0025*	*0.0012*	*0.0611*	*0.0011*	*0.0108*	*0.0585*	*0.4605*	*0.0812*	*0.9824*	*0.597*	*0.6125*
	50/50	-0.2792*	0.0091	0.3508***	0.4559***	0.509***	-0.4029*	0.1886***	-0.272**	0.0655	0.0766	0.1584	0.0565	-0.0585	-0.1497***
		(0.1636)	(0.0361)	(0.1115)	(0.1391)	(0.1533)	(0.2161)	(0.0675)	(0.1279)	(0.0422)	(0.1089)	(0.1261)	(0.1204)	(0.1561)	(0.0562)
		0.0896	*0.8016*	*0.0019*	*0.0013*	*0.0011*	*0.0638*	*0.0058*	*0.035*	*0.1224*	*0.4827*	*0.2107*	*0.6396*	*0.7082*	*0.0086*
	KNN	-0.5888*	-0.1695**	0.4079*	0.6498***	1.0987***	-0.557	0.6084***	-0.6717*	0.0078	0.268	0.0976	-0.0824	-0.0226	-0.2819**
		(0.3472)	(0.0777)	(0.226)	(0.2355)	(0.3323)	(0.437)	(0.1371)	(0.4049)	(0.0965)	(0.2781)	(0.2531)	(0.3403)	(0.3527)	(0.1125)
		0.0917	*0.0305*	*0.0728*	*0.0064*	*0.0011*	*0.204*	*0*	*0.0991*	*0.9357*	*0.3367*	*0.7005*	*0.8091*	*0.9491*	*0.0132*
WTR	10/90	-0.3712	-0.0376	0.3788**	0.4617***	0.7588***	-0.212	0.2033**	-0.1187	0.1704***	-0.2269	0.2536	-0.0022	-0.2185	0.2313***
		(0.2575)	(0.0627)	(0.1515)	(0.1684)	(0.2213)	(0.286)	(0.0892)	(0.1718)	(0.0569)	(0.1793)	(0.1749)	(0.1877)	(0.2216)	(0.0763)
		0.1512	*0.5496*	*0.0133*	*0.0067*	*0.0007*	*0.4595*	*0.0238*	*0.4906*	*0.0032*	*0.2074*	*0.1489*	*0.9907*	*0.3256*	*0.0028*
	30/70	-0.2174	-0.0011	0.4854***	0.2525*	0.5916***	-0.1432	0.1146	-0.3743**	0.1748***	-0.0283	0.4119**	0.2145	-0.4345	0.3183***
		(0.2314)	(0.0505)	(0.155)	(0.138)	(0.1806)	(0.208)	(0.0736)	(0.1495)	(0.0418)	(0.1432)	(0.1919)	(0.2064)	(0.3077)	(0.0996)
		0.3487	*0.9824*	*0.002*	*0.0689*	*0.0013*	*0.4919*	*0.1209*	*0.0133*	*0*	*0.8439*	*0.0333*	*0.3004*	*0.1599*	*0.0017*
	50/50	-0.1882	-0.0275	0.3303***	0.229**	0.4764***	-0.0108	0.1517**	-0.0921	0.1013***	-0.1024	0.3411**	0.08	-0.5464**	0.2526***
		(0.1621)	(0.0398)	(0.121)	(0.115)	(0.1493)	(0.165)	(0.066)	(0.1391)	(0.0318)	(0.1293)	(0.135)	(0.1513)	(0.2484)	(0.09)
		0.2471	*0.4907*	*0.007*	*0.048*	*0.0017*	*0.9481*	*0.0226*	*0.5088*	*0.0018*	*0.4292*	*0.0125*	*0.5976*	*0.0293*	*0.0056*
	KNN	-0.4248*	0.004	0.3144	0.3842**	0.8103***	-0.4031	0.3041***	-0.4735	0.0525	0.2639	0.6629***	0.3814	-0.8452***	0.1304
		(0.236)	(0.0663)	(0.1971)	(0.1879)	(0.2255)	(0.2732)	(0.1038)	(0.3629)	(0.0818)	(0.2249)	(0.2411)	(0.2683)	(0.3025)	(0.1276)
		0.0735	*0.9516*	*0.1124*	*0.0423*	*0.0004*	*0.1418*	*0.0038*	*0.1938*	*0.5222*	*0.2424*	*0.0067*	*0.157*	*0.0058*	*0.3086*
WST	10/90	-0.3062	0.0261	0.7855***	0.7729***	0.5149	-0.8731*	0.3972***	-0.8305**	0.1811	-0.0174	0.4801**	0.2163	-0.9995**	0.0326
		(0.4166)	(0.0901)	(0.2951)	(0.2743)	(0.3244)	(0.4634)	(0.1474)	(0.3359)	(0.1271)	(0.2424)	(0.2269)	(0.297)	(0.3861)	(0.0974)
		0.4633	*0.7724*	*0.0085*	*0.0054*	*0.1142*	*0.0611*	*0.0077*	*0.0144*	*0.1562*	*0.9427*	*0.0359*	*0.4675*	*0.0105*	*0.7387*
	30/70	-0.2087	0.0622	0.5033***	0.4982***	0.4677***	-0.5178*	0.2146**	-0.2688	0.1735**	0.0621	0.1083	-0.2403	-0.1226	0.0363
		(0.2295)	(0.0526)	(0.1698)	(0.1853)	(0.1745)	(0.2675)	(0.0954)	(0.1637)	(0.0731)	(0.1675)	(0.1802)	(0.2105)	(0.228)	(0.0961)
		0.3643	*0.2385*	*0.0034*	*0.0078*	*0.008*	*0.0544*	*0.0256*	*0.1025*	*0.0188*	*0.7114*	*0.5487*	*0.2554*	*0.5915*	*0.7062*
	50/50	-0.1458	0.0328	0.3123**	0.2954**	0.2567**	-0.3236**	0.1776***	-0.2739*	0.185***	-0.0481	0.0547	-0.2496	0.1109	0.0827
		(0.1703)	(0.0344)	(0.1251)	(0.1292)	(0.1165)	(0.1629)	(0.0673)	(0.1463)	(0.0518)	(0.1223)	(0.1396)	(0.1575)	(0.1938)	(0.0852)
		0.3933	*0.3415*	*0.0134*	*0.0234*	*0.0288*	*0.0484*	*0.009*	*0.063*	*0.0005*	*0.6944*	*0.6959*	*0.115*	*0.5681*	*0.333*
	KNN	-0.3673	0.0871	0.5318*	0.5078	0.1802	-0.4569	0.242	-0.6434	0.0822	-0.4545*	0.0414	0.4231	-0.6132	-0.2846*
		(0.4453)	(0.103)	(0.2795)	(0.3374)	(0.3832)	(0.5599)	(0.1761)	(0.4199)	(0.1062)	(0.24)	(0.4338)	(0.7182)	(0.4676)	(0.1706)
		0.4106	*0.3988*	*0.0586*	*0.134*	*0.6386*	*0.4155*	*0.171*	*0.1274*	*0.4399*	*0.0601*	*0.924*	*0.5567*	*0.1916*	*0.0973*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 8. Full sample's financial performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Sharpe	Sortino	MSharpe
GHG	10/90	Green	8.69%	0.3439	0.3287	0.7859	13.01%	0.5492	0.5119	1.3261
		Brown	5.98%	0.2406	0.2234	0.6044	-1.60%	-0.1109	-0.1082	-0.2205
	30/70	Green	8.77%	0.4014	0.3629	0.9442	10.19%	0.4994	0.4503	1.1439
		Brown	6.58%	0.2880	0.2836	0.6529	4.37%	0.1558	0.1457	0.3506
	50/50	Green	8.80%	0.4695	0.4259	1.1077	9.07%	0.4385	0.4010	0.9798
		Brown	7.22%	0.3576	0.3441	0.8316	5.20%	0.2011	0.1853	0.4532
	KNN	Green	8.32%	0.3037	0.3026	0.6377	9.77%	0.4749	0.4241	1.0953
		Brown	6.22%	0.2668	0.2561	0.6579	-2.15%	-0.1256	-0.1206	-0.2512
WTR	10/90	Green	7.11%	0.3090	0.2800	0.7413	5.36%	0.2648	0.2474	0.5662
		Brown	5.09%	0.2079	0.1978	0.4680	4.61%	0.1923	0.1692	0.4442
	30/70	Green	7.43%	0.3500	0.3192	0.8295	8.29%	0.4560	0.4434	1.0089
		Brown	6.93%	0.3091	0.3091	0.6849	5.30%	0.2292	0.2096	0.5085
	50/50	Green	7.60%	0.3863	0.3393	0.9307	6.19%	0.3158	0.2879	0.6953
		Brown	7.19%	0.3706	0.3740	0.8102	5.73%	0.2602	0.2255	0.6295
	KNN	Green	6.94%	0.3085	0.2722	0.7404	8.64%	0.4781	0.4680	1.0578
		Brown	5.13%	0.2083	0.2071	0.4580	2.29%	0.0569	0.0549	0.1195
WST	10/90	Green	10.33%	0.4689	0.4364	1.0717	3.86%	0.1451	0.1375	0.3119
		Brown	7.17%	0.2508	0.2602	0.5601	-6.97%	-0.3133	-0.2705	-1.1388
	30/70	Green	7.45%	0.3851	0.3396	0.8954	4.53%	0.1850	0.1715	0.4164
		Brown	6.43%	0.2849	0.2755	0.6552	0.54%	-0.0204	-0.0180	-0.0647
	50/50	Green	7.74%	0.4192	0.3731	0.9678	6.65%	0.2943	0.2833	0.6709
		Brown	7.04%	0.3514	0.3359	0.8087	3.09%	0.0947	0.0815	0.2771
	KNN	Green	9.86%	0.4431	0.4214	1.0136	4.53%	0.1845	0.1737	0.4124
		Brown	4.58%	0.1322	0.1359	0.2928	-4.66%	-0.1912	-0.1785	-0.4726

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 9. Developed countries factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.4852	-0.0998	0.2616	0.8389***	0.7727***	-0.6506	0.4964***	-0.4648**	0.1457	-0.2168	0.3921*	-0.4585	-0.1729	-0.1008
	10/90	(0.3296)	(0.0634)	(0.263)	(0.2587)	(0.2862)	(0.4274)	(0.1138)	(0.2188)	(0.123)	(0.2856)	(0.2184)	(0.286)	(0.2634)	(0.1113)
		0.1427	*0.1172*	*0.3212*	*0.0014*	*0.0076*	*0.1297*	*0*	*0.0352*	*0.238*	*0.4488*	*0.0745*	*0.1109*	*0.5125*	*0.3662*
		-0.564**	-0.0172	0.404**	0.6715***	0.9234***	-0.4738	0.3385***	-0.2906	0.0942	-0.0088	0.2704	-0.2105	-0.068	-0.0484
	30/70	(0.2488)	(0.0495)	(0.1626)	(0.2039)	(0.2418)	(0.3197)	(0.0969)	(0.1914)	(0.0656)	(0.1921)	(0.1718)	(0.2147)	(0.1562)	(0.0794)
		0.0245	*0.7277*	*0.0138*	*0.0012*	*0.0002*	*0.1401*	*0.0006*	*0.1309*	*0.153*	*0.9634*	*0.1174*	*0.3284*	*0.6637*	*0.5427*
		-0.3581**	0.0094	0.3136***	0.3998***	0.5673***	-0.3128	0.2072***	-0.2146*	0.116**	0.0003	-0.0225	0.0438	0.0537	-0.1519**
	50/50	(0.1592)	(0.0323)	(0.1143)	(0.1395)	(0.1532)	(0.2206)	(0.0661)	(0.1098)	(0.0463)	(0.1177)	(0.1251)	(0.1409)	(0.1586)	(0.064)
		0.0256	*0.7706*	*0.0067*	*0.0046*	*0.0003*	*0.1579*	*0.002*	*0.0523*	*0.0131*	*0.9977*	*0.8573*	*0.7563*	*0.7354*	*0.0188*
		-0.7198**	-0.1554**	0.3443	0.6698***	0.9237***	-0.5024	0.6509***	-0.7522**	0.0424	0.2904	0.34	-0.0025	-0.0069	-0.3165***
	KNN	(0.3468)	(0.0766)	(0.2373)	(0.2387)	(0.3142)	(0.4255)	(0.1317)	(0.3774)	(0.0932)	(0.2974)	(0.3028)	(0.3876)	(0.4287)	(0.1182)
		0.0393	*0.044*	*0.1485*	*0.0056*	*0.0037*	*0.2392*	*0*	*0.0479*	*0.65*	*0.3302*	*0.2631*	*0.9949*	*0.9872*	*0.0082*
WTR		-0.4169	-0.0797	0.2279	0.4918***	0.6759***	-0.2189	0.2596***	0.1092	0.1653***	-0.3034	0.3291*	-0.0225	-0.3904*	0.1955***
	10/90	(0.2777)	(0.0616)	(0.1607)	(0.1611)	(0.2307)	(0.2639)	(0.0781)	(0.1874)	(0.0517)	(0.2081)	(0.1841)	(0.2015)	(0.2259)	(0.0684)
		0.135	*0.1976*	*0.1578*	*0.0026*	*0.0038*	*0.408*	*0.0011*	*0.561*	*0.0017*	*0.1469*	*0.0757*	*0.911*	*0.0859*	*0.0048*
		-0.3282	-0.011	0.464***	0.2424*	0.61***	0.0997	0.1801**	-0.273*	0.1827***	-0.0747	0.3965**	0.2054	-0.4103	0.2917***
	30/70	(0.226)	(0.0454)	(0.1448)	(0.1366)	(0.1845)	(0.1832)	(0.0734)	(0.1549)	(0.0368)	(0.149)	(0.1888)	(0.2011)	(0.3077)	(0.1106)
		0.148	*0.8083*	*0.0016*	*0.0777*	*0.0011*	*0.5869*	*0.0151*	*0.08*	*0*	*0.6168*	*0.0372*	*0.3087*	*0.1843*	*0.0091*
		-0.2246	-0.047	0.3206**	0.227*	0.504***	0.1037	0.1908***	-0.0859	0.1361***	-0.1749	0.156	-0.0535	-0.2509	0.224**
	50/50	(0.1618)	(0.0369)	(0.1232)	(0.1153)	(0.1527)	(0.158)	(0.0666)	(0.1428)	(0.0308)	(0.1218)	(0.119)	(0.1628)	(0.2055)	(0.0971)
		0.1667	*0.205*	*0.01*	*0.0504*	*0.0012*	*0.5123*	*0.0046*	*0.548*	*0*	*0.153*	*0.1917*	*0.743*	*0.224*	*0.0223*
		-0.4576*	-0.0295	0.3093	0.3768**	0.7387***	-0.325	0.3338***	-0.5737	0.0581	0.1447	0.4442	-0.3845	-0.4943	0.4082***
	KNN	(0.2621)	(0.0638)	(0.205)	(0.1856)	(0.234)	(0.2632)	(0.1018)	(0.4355)	(0.094)	(0.305)	(0.3076)	(0.3824)	(0.3878)	(0.128)
		0.0825	*0.6449*	*0.133*	*0.0437*	*0.0019*	*0.2186*	*0.0012*	*0.1896*	*0.5376*	*0.6358*	*0.1507*	*0.3162*	*0.2043*	*0.0017*
WST		-0.4122	0.0268	0.7477**	0.69**	0.4772	-0.7522*	0.4094***	-1.0415***	0.2366*	0.0401	0.3358	0.2491	-0.6339	0.0262
	10/90	(0.4051)	(0.084)	(0.2937)	(0.2671)	(0.3106)	(0.4406)	(0.1434)	(0.3177)	(0.1216)	(0.2771)	(0.2215)	(0.2903)	(0.3979)	(0.1082)
		0.3102	*0.7497*	*0.0117*	*0.0106*	*0.1262*	*0.0895*	*0.0048*	*0.0013*	*0.0534*	*0.885*	*0.1315*	*0.392*	*0.1131*	*0.8087*
		-0.2282	0.0599	0.4924***	0.4629**	0.4548***	-0.3911	0.2357**	-0.3105*	0.2088***	-0.0182	0.0363	-0.1491	0.116	0.0048
	30/70	(0.2321)	(0.0484)	(0.173)	(0.183)	(0.1693)	(0.2484)	(0.0923)	(0.1675)	(0.0718)	(0.1811)	(0.1652)	(0.2189)	(0.2434)	(0.1178)
		0.3267	*0.2169*	*0.0049*	*0.0123*	*0.0079*	*0.1171*	*0.0115*	*0.0657*	*0.0042*	*0.9201*	*0.8263*	*0.4967*	*0.6344*	*0.9679*
		-0.139	0.0291	0.287**	0.2645**	0.2556**	-0.2082	0.1614**	-0.272	0.1941***	-0.0326	0.1224	-0.0639	0.2281	0.0546
	50/50	(0.1726)	(0.0333)	(0.1291)	(0.1306)	(0.1187)	(0.1543)	(0.0642)	(0.1717)	(0.0555)	(0.1248)	(0.1365)	(0.1579)	(0.195)	(0.1022)
		0.4217	*0.3833*	*0.0275*	*0.0443*	*0.0325*	*0.1788*	*0.0128*	*0.1151*	*0.0006*	*0.7941*	*0.3712*	*0.686*	*0.2438*	*0.5941*
		-0.1163	0.0086	0.6832**	0.1135	-0.3003	0.5086	0.1202	-1.0895***	0.1768*	-0.2574	0.0585	-0.2888	-0.4331	-0.1745
	KNN	(0.4169)	(0.0828)	(0.286)	(0.2413)	(0.3289)	(0.3782)	(0.1263)	(0.3563)	(0.0962)	(0.2878)	(0.2836)	(0.5455)	(0.3967)	(0.1898)
		0.7807	*0.9176*	*0.0179*	*0.6388*	*0.3624*	*0.1803*	*0.3424*	*0.0026*	*0.068*	*0.3724*	*0.8367*	*0.5973*	*0.2766*	*0.3594*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 10. Developed countries portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	10.11%	0.4041	0.3756	0.9426	12.64%	0.5843	0.5137	1.5145
		Brown	6.84%	0.2799	0.2621	0.6673	3.41%	0.1027	0.0994	0.2145
	30/70	Green	10.10%	0.4630	0.4217	1.1081	11.37%	0.5498	0.4848	1.3100
		Brown	6.51%	0.2822	0.2776	0.6401	5.79%	0.2224	0.2056	0.5131
	50/50	Green	10.00%	0.5364	0.4838	1.2925	9.57%	0.4656	0.4242	1.0612
		Brown	7.72%	0.3935	0.3675	0.9236	7.03%	0.2873	0.2614	0.6565
	KNN	Green	10.44%	0.3872	0.3909	0.8381	11.17%	0.5379	0.4726	1.2833
		Brown	5.96%	0.2506	0.2354	0.6200	-1.84%	-0.1066	-0.1007	-0.2173
WTR	10/90	Green	8.10%	0.3541	0.3067	0.8591	5.08%	0.2522	0.2277	0.5415
		Brown	5.25%	0.2285	0.2111	0.5164	7.01%	0.3235	0.2971	0.7582
	30/70	Green	8.39%	0.3975	0.3612	0.9629	8.82%	0.4955	0.4686	1.0960
		Brown	6.83%	0.3218	0.3206	0.7181	7.12%	0.3277	0.3012	0.7359
	50/50	Green	8.52%	0.4371	0.3892	1.0674	7.83%	0.4270	0.4057	0.9310
		Brown	7.78%	0.4242	0.4130	0.9371	7.62%	0.3732	0.3239	0.8766
	KNN	Green	7.55%	0.3313	0.2915	0.7991	9.09%	0.5047	0.4770	1.1241
		Brown	5.23%	0.2183	0.2087	0.4821	-0.65%	-0.0747	-0.0707	-0.1543
WST	10/90	Green	11.20%	0.5017	0.4505	1.1693	6.47%	0.2714	0.2455	0.6128
		Brown	7.06%	0.2563	0.2708	0.5709	-5.52%	-0.2576	-0.2143	-0.9423
	30/70	Green	8.18%	0.4265	0.3722	1.0066	5.16%	0.2161	0.2024	0.4826
		Brown	7.10%	0.3303	0.3190	0.7608	1.30%	0.0132	0.0112	0.0424
	50/50	Green	8.56%	0.4730	0.4194	1.1113	6.86%	0.3019	0.2878	0.6883
		Brown	7.93%	0.4154	0.4058	0.9491	3.82%	0.1267	0.1053	0.3854
	KNN	Green	10.97%	0.4877	0.4617	1.1267	5.52%	0.2316	0.2151	0.5144
		Brown	6.94%	0.2438	0.2709	0.4964	-10.37%	-0.3943	-0.3421	-1.0178

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 11. Emerging countries

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.4481	-0.03	0.7592***	-0.0131	-0.047	0.3695	0.1327	-0.5347	0.1582	-0.266	-0.0025	-0.9473**	-0.0879	-0.0703
		(0.4056)	(0.1223)	(0.2549)	(0.3693)	(0.3599)	(0.4674)	(0.2021)	(0.5448)	(0.1268)	(0.3534)	(0.4621)	(0.44)	(0.595)	(0.2024)
		0.2709	*0.8067*	*0.0033*	*0.9718*	*0.8962*	*0.4304*	*0.5123*	*0.3281*	*0.2141*	*0.4529*	*0.9957*	*0.0331*	*0.8828*	*0.729*
	30/70	0.1427	0.0164	0.3258*	0.1363	-1.0145***	0.4799	0.0532	-0.0953	0.0879	-0.2287	0.1444	-0.418	-0.1272	-0.0269
		(0.324)	(0.1173)	(0.1706)	(0.3658)	(0.3255)	(0.5011)	(0.1507)	(0.3614)	(0.0901)	(0.2428)	(0.2404)	(0.3422)	(0.2753)	(0.1557)
		0.6603	*0.8887*	*0.058*	*0.71*	*0.0022*	*0.3397*	*0.7245*	*0.7923*	*0.3311*	*0.3479*	*0.5491*	*0.224*	*0.6446*	*0.8631*
	50/50	0.0641	-0.0258	0.3168**	0.0532	-0.645***	-0.1667	-0.0687	-0.1599	0.0792	-0.2526	0.2036	-0.1002	-0.0161	0.0594
		(0.2808)	(0.0945)	(0.157)	(0.2861)	(0.2288)	(0.3014)	(0.1152)	(0.2362)	(0.0747)	(0.2041)	(0.1681)	(0.2845)	(0.2295)	(0.1282)
		0.8198	*0.785*	*0.0453*	*0.8526*	*0.0054*	*0.5809*	*0.5521*	*0.4996*	*0.2908*	*0.218*	*0.2278*	*0.7253*	*0.9441*	*0.6438*
	KNN	-0.0638	0.0088	0.5736*	-0.1547	-0.3135	0.6918	0.3036	-0.3017	-0.1138	-0.5668*	0.0484	-0.995**	-0.6421	0.1711
		(0.3853)	(0.1272)	(0.2952)	(0.4519)	(0.4769)	(0.5653)	(0.1886)	(0.4627)	(0.1579)	(0.3008)	(0.418)	(0.4282)	(0.5141)	(0.2443)
		0.8686	*0.9451*	*0.0538*	*0.7325*	*0.5119*	*0.2228*	*0.1094*	*0.5155*	*0.4724*	*0.0617*	*0.9079*	*0.0216*	*0.2137*	*0.4849*
WTR	10/90	0.0854	0.0176	0.86***	0.1784	-0.4498	0.4302	-0.1898	0.4209	0.0627	-0.2457	-0.102	-0.6087*	-0.2826	0.164
		(0.5518)	(0.1444)	(0.2568)	(0.3366)	(0.513)	(0.4342)	(0.1947)	(0.5553)	(0.1875)	(0.2788)	(0.3842)	(0.3625)	(0.6729)	(0.2754)
		0.8772	*0.9034*	*0.001*	*0.5967*	*0.3819*	*0.3233*	*0.3312*	*0.4498*	*0.7386*	*0.3798*	*0.791*	*0.0954*	*0.6752*	*0.5526*
	30/70	-0.0017	0.0712	0.3229	0.1797	-0.1787	0.2732	0.008	0.4982	-0.1007	-0.4247**	0.5476	-0.5528*	-0.9855**	-0.0966
		(0.3848)	(0.1088)	(0.198)	(0.2437)	(0.3025)	(0.2635)	(0.1693)	(0.471)	(0.1352)	(0.1886)	(0.3485)	(0.3025)	(0.4773)	(0.201)
		0.9965	*0.5136*	*0.1048*	*0.4618*	*0.5556*	*0.3014*	*0.9621*	*0.2921*	*0.4579*	*0.0259*	*0.1184*	*0.0698*	*0.0408*	*0.6317*
	50/50	-0.1704	0.062	0.1206	0.187	-0.1951	0.1595	-0.0541	-0.0438	-0.0342	-0.1596	0.2209	-0.4678**	-0.2562	-0.109
		(0.2135)	(0.0746)	(0.1243)	(0.1764)	(0.1857)	(0.2264)	(0.0894)	(0.258)	(0.0772)	(0.1394)	(0.2071)	(0.1875)	(0.2341)	(0.1298)
		0.4261	*0.407*	*0.3336*	*0.2908*	*0.295*	*0.4821*	*0.5457*	*0.8655*	*0.6583*	*0.2542*	*0.288*	*0.0138*	*0.2757*	*0.4025*
	KNN	0.3773	-0.036	0.6873**	-0.1755	-0.3203	0.9462***	-0.4256**	0.4238	0.0305	-0.3877	0.7836*	-0.2552	-1.328**	0.1051
		(0.4194)	(0.1107)	(0.2693)	(0.4107)	(0.4087)	(0.3348)	(0.2104)	(0.7111)	(0.1919)	(0.3525)	(0.4038)	(0.3785)	(0.6122)	(0.3114)
		0.3697	*0.7457*	*0.0116*	*0.6697*	*0.4344*	*0.0053*	*0.0447*	*0.5522*	*0.8738*	*0.2733*	*0.0544*	*0.5014*	*0.0318*	*0.7361*
WST	10/90	-0.8657**	0.3371	0.2849	0.3544	-0.3858	0.658	0.2745	-0.0309	-0.1317	-0.2332	0.1582	-0.6636	-0.5674	0.1476
		(0.4197)	(0.223)	(0.2994)	(0.4596)	(0.5164)	(0.5095)	(0.1759)	(0.5193)	(0.1425)	(0.2867)	(0.3519)	(0.4583)	(0.5716)	(0.2818)
		0.0408	*0.1326*	*0.3428*	*0.4418*	*0.4561*	*0.1984*	*0.1207*	*0.9526*	*0.3567*	*0.4175*	*0.6538*	*0.1499*	*0.3226*	*0.6013*
	30/70	-0.3703	0.0939	0.2431	0.3687	-0.3136	0.4409	0.2436	-0.5127*	0.0016	0.1665	0.3752*	-0.4517	-0.3878	0.2027
		(0.2864)	(0.0965)	(0.1785)	(0.2466)	(0.3697)	(0.3416)	(0.1507)	(0.2807)	(0.0763)	(0.1254)	(0.2095)	(0.3014)	(0.3091)	(0.1525)
		0.1979	*0.3322*	*0.1751*	*0.1369*	*0.3976*	*0.1987*	*0.108*	*0.07*	*0.9834*	*0.1865*	*0.0755*	*0.1363*	*0.2117*	*0.1862*
	50/50	0.2158	0.012	0.1487	0.1201	-0.1495	0.1401	0.088	-0.4205*	0.0106	-0.0048	-0.1032	-0.4945**	-0.0267	0.087
		(0.1967)	(0.0461)	(0.1097)	(0.1934)	(0.2112)	(0.2265)	(0.085)	(0.2186)	(0.0575)	(0.1438)	(0.2109)	(0.2321)	(0.1975)	(0.1108)
		0.2743	*0.7948*	*0.1774*	*0.5354*	*0.4799*	*0.5371*	*0.3024*	*0.0565*	*0.8538*	*0.9734*	*0.6254*	*0.0349*	*0.8927*	*0.4334*
	KNN	-0.1326	0.1336	-0.078	0.7538**	-0.2808	0.3807	0.1881	0.117	-0.3062**	-0.0142	-0.0067	-0.4387	-0.7735	-0.3582
		(0.5169)	(0.1118)	(0.2418)	(0.3577)	(0.4225)	(0.4529)	(0.2724)	(0.7244)	(0.1467)	(0.2403)	(0.4206)	(0.5808)	(0.5589)	(0.2777)
		0.7979	*0.2338*	*0.7474*	*0.0366*	*0.5073*	*0.4018*	*0.4909*	*0.8719*	*0.0388*	*0.953*	*0.9873*	*0.4514*	*0.1686*	*0.1992*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 12. Emerging companies, portfolio performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	2.73%	0.0599	0.0627	0.1221	8.07%	0.3494	0.3368	0.7739
		Brown	0.87%	-0.0054	-0.0053	-0.0125	-3.37%	-0.1758	-0.1704	-0.3486
	30/70	Green	1.92%	0.0378	0.0378	0.0805	6.68%	0.3027	0.2826	0.6494
		Brown	2.92%	0.0772	0.0773	0.1680	3.20%	0.0975	0.0996	0.1985
	50/50	Green	5.77%	0.2174	0.2217	0.4460	6.59%	0.2989	0.3010	0.6402
		Brown	3.56%	0.1147	0.1146	0.2489	5.25%	0.2002	0.2111	0.4091
	KNN	Green	-1.47%	-0.0874	-0.0833	-0.1910	5.63%	0.2425	0.2272	0.5115
		Brown	2.83%	0.0831	0.0885	0.1700	-3.39%	-0.1824	-0.1721	-0.3640
WTR	10/90	Green	3.62%	0.0995	0.1009	0.2118	1.57%	0.0251	0.0245	0.0546
		Brown	3.97%	0.1088	0.1112	0.2360	5.73%	0.2046	0.2089	0.4245
	30/70	Green	3.04%	0.0828	0.0851	0.1730	5.09%	0.2064	0.2184	0.4233
		Brown	4.22%	0.1247	0.1214	0.2826	5.37%	0.1957	0.2004	0.4069
	50/50	Green	4.87%	0.1730	0.1695	0.3748	6.83%	0.3101	0.3335	0.6388
		Brown	2.70%	0.0698	0.0676	0.1546	2.29%	0.0626	0.0621	0.1301
	KNN	Green	3.86%	0.1118	0.1142	0.2357	4.15%	0.1599	0.1660	0.3282
		Brown	6.55%	0.2236	0.2458	0.4738	6.29%	0.1885	0.1900	0.4035
WST	10/90	Green	6.56%	0.2323	0.2659	0.4471	5.91%	0.2183	0.2306	0.4415
		Brown	-0.68%	-0.0529	-0.0502	-0.1423	2.88%	0.0857	0.0962	0.1656
	30/70	Green	1.18%	0.0075	0.0071	0.0163	8.23%	0.3689	0.3830	0.7741
		Brown	0.51%	-0.0190	-0.0187	-0.0440	2.52%	0.0753	0.0770	0.1570
	50/50	Green	-0.31%	-0.0540	-0.0512	-0.1218	8.97%	0.4113	0.4304	0.8597
		Brown	3.54%	0.1041	0.1037	0.2439	2.43%	0.0718	0.0738	0.1453
	KNN	Green	1.49%	0.0191	0.0185	0.0407	9.47%	0.4216	0.4425	0.8905
		Brown	3.47%	0.0799	0.0846	0.1655	-0.37%	-0.0543	-0.0592	-0.0995

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 13. Developed excluding US factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.2361	-0.0115	0.2119	-0.0674	0.0277	-0.0544	0.3793**	-0.0354	0.1358	-0.337*	0.5765**	-0.4991	-0.9608**	0.015
		(0.3696)	(0.0617)	(0.2486)	(0.2745)	(0.3203)	(0.489)	(0.1664)	(0.281)	(0.0898)	(0.1846)	(0.2387)	(0.3367)	(0.3802)	(0.108)
		0.5238	*0.8526*	*0.3951*	*0.8062*	*0.9311*	*0.9116*	*0.0238*	*0.8998*	*0.1327*	*0.0698*	*0.0168*	*0.1402*	*0.0125*	*0.8897*
	30/70	-0.4107*	0.0491	0.1897	-0.1057	0.1164	-0.1108	0.2828**	0.0698	0.0246	-0.2612**	0.4605**	0.0336	-0.4508	-0.1023
		(0.2403)	(0.0533)	(0.1534)	(0.1722)	(0.2131)	(0.3076)	(0.1122)	(0.1975)	(0.062)	(0.1296)	(0.211)	(0.3031)	(0.2989)	(0.1052)
		0.0892	*0.3587*	*0.2179*	*0.5402*	*0.5855*	*0.7192*	*0.0126*	*0.7241*	*0.6918*	*0.0456*	*0.0305*	*0.9119*	*0.1335*	*0.332*
	50/50	-0.2352	0.0707*	0.2014*	0.004	0.0676	-0.2954	0.1805**	-0.0112	0.0425	-0.0994	0.1724	-0.0322	-0.3349**	-0.1486**
		(0.1721)	(0.0383)	(0.1039)	(0.1226)	(0.1414)	(0.2005)	(0.0749)	(0.1355)	(0.0364)	(0.1069)	(0.1533)	(0.1947)	(0.1556)	(0.0672)
		0.1734	*0.0663*	*0.054*	*0.9741*	*0.6329*	*0.1424*	*0.017*	*0.9345*	*0.2454*	*0.3538*	*0.2625*	*0.8687*	*0.0329*	*0.0283*
	KNN	-0.5511	-0.0908	0.2771	0.0437	0.3777	-0.1212	0.4533***	0.2679	-0.1293	0.0491	0.523	0.2494	-0.5616	-0.2418
		(0.3476)	(0.0715)	(0.2268)	(0.2514)	(0.3448)	(0.4483)	(0.165)	(0.3662)	(0.1104)	(0.3727)	(0.3228)	(0.4765)	(0.4622)	(0.1619)
		0.1145	*0.206*	*0.2234*	*0.8622*	*0.2747*	*0.7873*	*0.0066*	*0.4656*	*0.2431*	*0.8953*	*0.1071*	*0.6014*	*0.2261*	*0.1372*
WTR	10/90	-0.0226	0.0991	0.201	-0.281	0.3301	0.2315	0.2406**	-0.0584	0.242***	-0.0496	0.3111	0.2028	0.1486	0.074
		(0.2767)	(0.0915)	(0.178)	(0.2258)	(0.2972)	(0.3173)	(0.0986)	(0.2303)	(0.0579)	(0.139)	(0.2419)	(0.2255)	(0.34)	(0.1004)
		0.9349	*0.2802*	*0.2604*	*0.2149*	*0.2681*	*0.4666*	*0.0157*	*0.8001*	*0*	*0.7218*	*0.2002*	*0.3698*	*0.6626*	*0.4622*
	30/70	-0.1555	0.0728	0.1939*	-0.1716	0.305	0.1559	0.2069**	-0.3087*	0.1928***	-0.0019	0.1813	-0.0721	-0.144	0.1783
		(0.1931)	(0.0542)	(0.1144)	(0.1277)	(0.187)	(0.1864)	(0.0802)	(0.1818)	(0.0496)	(0.1263)	(0.1933)	(0.1786)	(0.3055)	(0.1209)
		0.4216	*0.1807*	*0.0917*	*0.1805*	*0.1045*	*0.404*	*0.0107*	*0.0915*	*0.0001*	*0.9881*	*0.3498*	*0.6869*	*0.638*	*0.1422*
	50/50	-0.165	0.0401	0.1043	-0.0783	0.2406*	0.1218	0.168**	-0.2573	0.1347***	0.0204	0.0048	-0.2165	-0.0698	0.1748**
		(0.1565)	(0.0414)	(0.0869)	(0.1)	(0.139)	(0.1473)	(0.067)	(0.1672)	(0.0376)	(0.0949)	(0.1596)	(0.1515)	(0.2428)	(0.0881)
		0.293	*0.3332*	*0.2315*	*0.4346*	*0.0851*	*0.4096*	*0.0131*	*0.1258*	*0.0005*	*0.83*	*0.9758*	*0.1549*	*0.7741*	*0.0489*
	KNN	-0.2464	0.0439	0.1621	-0.1906	0.1986	-0.1407	0.2917***	-0.9932*	0.304***	0.7684**	0.4479	0.512	0.2983	0.1359
		(0.2506)	(0.0721)	(0.1636)	(0.1941)	(0.3019)	(0.2497)	(0.1048)	(0.5124)	(0.0966)	(0.3055)	(0.4154)	(0.4982)	(0.4637)	(0.22)
		0.3267	*0.5436*	*0.323*	*0.3275*	*0.5115*	*0.5738*	*0.0059*	*0.0543*	*0.002*	*0.0129*	*0.2825*	*0.3056*	*0.5209*	*0.5376*
WST	10/90	-0.0025	0.1136	0.2715	-0.2828	0.0265	-0.5673	0.412***	-0.5428*	0.2148*	-0.27	0.3264	-0.5569	-1.1228**	-0.0649
		(0.3941)	(0.1021)	(0.2607)	(0.3017)	(0.3707)	(0.5095)	(0.1552)	(0.298)	(0.1188)	(0.2179)	(0.36)	(0.6431)	(0.4582)	(0.141)
		0.995	*0.2671*	*0.2991*	*0.3498*	*0.9431*	*0.267*	*0.0086*	*0.0704*	*0.0724*	*0.2172*	*0.3659*	*0.3878*	*0.0153*	*0.6458*
	30/70	-0.1188	0.1164**	0.1238	-0.0275	0.0811	-0.2907	0.1835**	-0.1231	0.2147***	-0.0745	-0.0048	-0.5253	-0.0567	-0.0829
		(0.2254)	(0.0501)	(0.1338)	(0.1499)	(0.1808)	(0.2313)	(0.083)	(0.1708)	(0.0541)	(0.131)	(0.1774)	(0.3224)	(0.2652)	(0.1185)
		0.5987	*0.0212*	*0.3562*	*0.8546*	*0.6544*	*0.2103*	*0.0282*	*0.4722*	*0.0001*	*0.5705*	*0.9783*	*0.1051*	*0.831*	*0.4853*
	50/50	-0.0442	0.056	0.0404	-0.0495	-0.0752	-0.1935	0.1424**	0.0011	0.1824***	-0.1019	-0.0294	-0.2247	0.2582	0.0049
		(0.1759)	(0.0348)	(0.0991)	(0.1159)	(0.1448)	(0.149)	(0.0625)	(0.1517)	(0.0379)	(0.1007)	(0.111)	(0.1885)	(0.229)	(0.1103)
		0.8018	*0.1086*	*0.6839*	*0.6696*	*0.6042*	*0.1955*	*0.024*	*0.9941*	*0*	*0.3131*	*0.7912*	*0.2351*	*0.2611*	*0.9644*
	KNN	0.254	0.0278	0.4434	-0.4667	-0.5353	0.3663	0.2276*	-0.4489	0.0806	-0.1409	0.2124	-0.6326	-0.8033	-0.1491
		(0.3688)	(0.0931)	(0.2685)	(0.2894)	(0.4136)	(0.4396)	(0.1261)	(0.4104)	(0.0771)	(0.2814)	(0.3156)	(0.3898)	(0.4875)	(0.2074)
		0.4919	*0.7656*	*0.1003*	*0.1085*	*0.1972*	*0.4058*	*0.0727*	*0.2757*	*0.2971*	*0.6173*	*0.5019*	*0.1066*	*0.1014*	*0.4734*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 14. Developed excluding US portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	4.60%	0.1475	0.1382	0.3209	7.17%	0.3393	0.3175	0.7504
		Brown	4.76%	0.1663	0.1565	0.3775	2.90%	0.0802	0.0758	0.1739
	30/70	Green	6.98%	0.2856	0.2789	0.6374	4.39%	0.1714	0.1623	0.3832
		Brown	4.65%	0.1751	0.1758	0.3769	3.39%	0.1037	0.1015	0.2214
	50/50	Green	6.78%	0.3211	0.3051	0.7258	4.42%	0.1797	0.1766	0.3781
		Brown	5.58%	0.2378	0.2366	0.5210	2.56%	0.0713	0.0695	0.1554
	KNN	Green	5.34%	0.1622	0.1592	0.3431	3.69%	0.1371	0.1290	0.3008
		Brown	3.71%	0.1234	0.1158	0.2881	4.53%	0.1436	0.1393	0.3048
WTR	10/90	Green	1.56%	0.0258	0.0235	0.0575	3.16%	0.1303	0.1188	0.2718
		Brown	5.11%	0.1916	0.1817	0.4172	3.96%	0.1466	0.1363	0.3200
	30/70	Green	4.93%	0.2017	0.1851	0.4711	6.00%	0.3050	0.2959	0.6431
		Brown	6.39%	0.2847	0.2869	0.6172	3.06%	0.1051	0.1027	0.2204
	50/50	Green	5.83%	0.2689	0.2481	0.6227	5.62%	0.2728	0.2634	0.5722
		Brown	6.35%	0.3073	0.3071	0.6622	2.81%	0.0969	0.0908	0.2099
	KNN	Green	3.91%	0.1367	0.1216	0.3178	6.29%	0.3195	0.3081	0.6779
		Brown	4.16%	0.1530	0.1522	0.3222	-2.64%	-0.1405	-0.1316	-0.3087
WST	10/90	Green	3.60%	0.1169	0.1115	0.2538	3.66%	0.1453	0.1369	0.3127
		Brown	6.80%	0.2379	0.2501	0.5258	-7.36%	-0.3195	-0.2694	-1.1737
	30/70	Green	5.68%	0.2682	0.2508	0.5996	2.61%	0.0868	0.0827	0.1847
		Brown	6.18%	0.2684	0.2648	0.6025	-2.11%	-0.1305	-0.1119	-0.4014
	50/50	Green	6.48%	0.3253	0.3056	0.7284	1.74%	0.0384	0.0352	0.0867
		Brown	6.81%	0.3288	0.3227	0.7261	0.74%	-0.0118	-0.0100	-0.0345
	KNN	Green	4.88%	0.1719	0.1659	0.3804	2.40%	0.0749	0.0714	0.1584
		Brown	7.66%	0.2775	0.3002	0.5735	-9.00%	-0.3521	-0.3075	-0.9598

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 15. European companies

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.6711	-0.0102	0.1576	0.1734	0.935***	0.2143	0.4819***	0.3155	0.0549	-0.1694	0.3495	-0.7098**	0.0218	0.1476
	10/90	(0.4602)	(0.0631)	(0.2738)	(0.2518)	(0.2992)	(0.4243)	(0.1615)	(0.3685)	(0.0941)	(0.2691)	(0.2623)	(0.3472)	(0.3909)	(0.1318)
		0.1466	*0.8715*	*0.5657*	*0.492*	*0.0021*	*0.6143*	*0.0033*	*0.3934*	*0.5602*	*0.5299*	*0.1848*	*0.0427*	*0.9556*	*0.2645*
		-0.5744**	0.0293	0.0351	0.0527	0.9115***	0.4535*	0.3035**	0.0816	0.0075	-0.0923	0.2903	-0.3157	-0.2782	0.0854
	30/70	(0.2585)	(0.0467)	(0.162)	(0.2108)	(0.216)	(0.2727)	(0.1174)	(0.1617)	(0.0514)	(0.1361)	(0.2078)	(0.1916)	(0.2059)	(0.0857)
		0.0276	*0.5306*	*0.8286*	*0.803*	*0*	*0.0982*	*0.0106*	*0.6146*	*0.8846*	*0.4987*	*0.1644*	*0.1015*	*0.1786*	*0.3205*
		-0.3654**	0.0275	0.0165	0.1654	0.6639***	0.0902	0.1318*	0.2062	-0.037	-0.1458	0.3477*	-0.1463	-0.3718	-0.0586
	50/50	(0.174)	(0.0324)	(0.1082)	(0.1382)	(0.1602)	(0.1765)	(0.0703)	(0.1555)	(0.0374)	(0.1078)	(0.1764)	(0.1784)	(0.2313)	(0.0964)
		0.0372	*0.3979*	*0.879*	*0.2332*	*0.0001*	*0.61*	*0.0625*	*0.1869*	*0.3247*	*0.1783*	*0.0506*	*0.4133*	*0.11*	*0.5442*
		-0.8018**	-0.0552	0.1664	0.1451	1.0682***	0.3879	0.5014***	0.8841**	0.0125	-0.2801	-0.0165	-0.5716	-0.155	-0.2086
	KNN	(0.3818)	(0.0609)	(0.2246)	(0.2362)	(0.2744)	(0.3556)	(0.1434)	(0.3608)	(0.1003)	(0.2898)	(0.3486)	(0.4055)	(0.403)	(0.1426)
		0.0372	*0.3659*	*0.4598*	*0.5399*	*0.0001*	*0.2768*	*0.0006*	*0.0154*	*0.9012*	*0.3353*	*0.9623*	*0.1608*	*0.7011*	*0.1455*
WTR		-0.5521*	-0.029	0.1759	0.1141	1.0763***	0.3792*	0.3514***	-0.5704	0.1629*	0.3618	0.289	0.7071	1.2725***	0.2205
	10/90	(0.2911)	(0.0568)	(0.1566)	(0.2437)	(0.3494)	(0.2277)	(0.1153)	(0.3964)	(0.0886)	(0.2399)	(0.3416)	(0.4281)	(0.3928)	(0.2993)
		0.0595	*0.6104*	*0.2631*	*0.6403*	*0.0024*	*0.0978*	*0.0027*	*0.1521*	*0.0676*	*0.1334*	*0.3989*	*0.1005*	*0.0015*	*0.4624*
		-0.3806*	-0.01	0.131	0.0286	0.8627***	0.384*	0.2127**	-0.4031	0.1538**	0.0227	0.4335*	0.361*	0.1177	0.2219*
	30/70	(0.1986)	(0.042)	(0.1035)	(0.1789)	(0.1668)	(0.2099)	(0.0961)	(0.261)	(0.0619)	(0.154)	(0.2232)	(0.21)	(0.276)	(0.1311)
		0.057	*0.8128*	*0.2072*	*0.8731*	*0*	*0.069*	*0.0282*	*0.1244*	*0.0141*	*0.8828*	*0.0539*	*0.0876*	*0.6704*	*0.0924*
		-0.229	-0.0328	0.0329	0.0261	0.6095***	0.3375**	0.1686**	-0.3898*	0.0711	0.0789	0.5344***	0.1259	-0.3686*	0.2743**
	50/50	(0.1565)	(0.0315)	(0.0833)	(0.1385)	(0.1292)	(0.1538)	(0.0736)	(0.2252)	(0.0512)	(0.1251)	(0.1309)	(0.1619)	(0.194)	(0.1134)
		0.1454	*0.2999*	*0.6932*	*0.8507*	*0*	*0.0295*	*0.0232*	*0.0854*	*0.1673*	*0.5292*	*0.0001*	*0.438*	*0.0592*	*0.0167*
		-0.4599	0.0089	0.1442	0.0883	0.8405***	0.1101	0.3327***	-1.0014**	0.3089**	0.5579**	0.5745	0.7762*	0.4129	-0.0716
	KNN	(0.3018)	(0.0493)	(0.1806)	(0.2279)	(0.3208)	(0.2523)	(0.1039)	(0.3882)	(0.1237)	(0.2401)	(0.397)	(0.4607)	(0.3727)	(0.1382)
		0.1294	*0.8576*	*0.4258*	*0.6987*	*0.0096*	*0.6631*	*0.0016*	*0.0108*	*0.0135*	*0.0214*	*0.1498*	*0.0939*	*0.2696*	*0.6053*
WST		-0.3929	-0.0076	0.1776	0.1881	0.8473**	-0.5429	0.2516**	0.6428*	0.0511	-0.6172**	-0.2163	-0.1444	0.0693	-0.4134***
	10/90	(0.4089)	(0.0618)	(0.2388)	(0.3323)	(0.3479)	(0.4738)	(0.1212)	(0.3698)	(0.0966)	(0.2451)	(0.4005)	(0.3497)	(0.4208)	(0.1492)
		0.3378	*0.9028*	*0.4581*	*0.572*	*0.0158*	*0.2534*	*0.0394*	*0.0841*	*0.5972*	*0.0128*	*0.59*	*0.6801*	*0.8693*	*0.0063*
		-0.4369**	0.0892***	0.1392	0.1877	0.6049***	-0.2473	0.226***	0.0653	0.126***	-0.0365	0.1411	-0.079	0.0474	-0.1497*
	30/70	(0.2123)	(0.0339)	(0.1095)	(0.1233)	(0.1643)	(0.1878)	(0.0695)	(0.1932)	(0.0466)	(0.1308)	(0.1435)	(0.2752)	(0.2365)	(0.0843)
		0.041	*0.0092*	*0.2052*	*0.1298*	*0.0003*	*0.1895*	*0.0014*	*0.7358*	*0.0076*	*0.7808*	*0.3268*	*0.7743*	*0.8413*	*0.0778*
		-0.2489	0.0467**	0.0655	0.2196**	0.3553***	-0.3122***	0.179***	0.0504	0.0164	0.0473	0.2557	0.0764	-0.0485	-0.1973***
	50/50	(0.1656)	(0.0228)	(0.0891)	(0.1)	(0.1307)	(0.1126)	(0.0496)	(0.1682)	(0.0506)	(0.1038)	(0.1612)	(0.1843)	(0.3032)	(0.0697)
		0.1344	*0.0417*	*0.4632*	*0.0293*	*0.0072*	*0.0061*	*0.0004*	*0.765*	*0.7466*	*0.649*	*0.1147*	*0.6791*	*0.8732*	*0.0053*
		-0.2621	0.0093	0.2348	-0.1302	0.4549	0.0547	0.0581	0.3137	0.084	-0.4601**	0.7289**	0.0997	-0.1645	-0.0781
	KNN	(0.3944)	(0.0922)	(0.2087)	(0.3162)	(0.4474)	(0.38)	(0.1355)	(0.3963)	(0.0838)	(0.2253)	(0.2897)	(0.3766)	(0.3371)	(0.139)
		0.5072	*0.9195*	*0.2621*	*0.6811*	*0.3106*	*0.8857*	*0.6686*	*0.4298*	*0.3176*	*0.0427*	*0.0128*	*0.7916*	*0.6263*	*0.5747*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 16. European countries portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	0.95%	-0.0018	-0.0018	-0.0037	10.13%	0.4462	0.4231	1.0229
		Brown	2.88%	0.0769	0.0751	0.1711	9.00%	0.3298	0.3368	0.7121
	30/70	Green	2.74%	0.0702	0.0693	0.1493	9.68%	0.4508	0.4645	0.9689
		Brown	3.83%	0.1333	0.1315	0.2844	8.71%	0.3632	0.3756	0.7711
	50/50	Green	4.48%	0.1735	0.1709	0.3784	8.74%	0.4028	0.4111	0.8642
		Brown	4.57%	0.1858	0.1765	0.4003	8.70%	0.3596	0.3832	0.7537
	KNN	Green	1.40%	0.0133	0.0134	0.0275	8.98%	0.4144	0.4218	0.8825
		Brown	2.80%	0.0779	0.0749	0.1721	13.81%	0.4924	0.5321	1.0987
WTR	10/90	Green	1.31%	0.0117	0.0107	0.0282	6.94%	0.2522	0.2473	0.5398
		Brown	4.35%	0.1529	0.1504	0.3346	4.38%	0.1434	0.1353	0.3221
	30/70	Green	2.22%	0.0522	0.0499	0.1121	7.13%	0.3338	0.3395	0.7106
		Brown	4.69%	0.1857	0.1822	0.4002	4.44%	0.1607	0.1584	0.3393
	50/50	Green	3.43%	0.1123	0.1085	0.2474	6.17%	0.2788	0.2763	0.5886
		Brown	5.59%	0.2465	0.2356	0.5356	2.96%	0.0939	0.0868	0.2085
	KNN	Green	1.27%	0.0103	0.0098	0.0223	7.17%	0.3331	0.3267	0.7138
		Brown	4.05%	0.1367	0.1347	0.2963	-4.25%	-0.1725	-0.1582	-0.3968
WST	10/90	Green	4.30%	0.1354	0.1298	0.3059	1.96%	0.0403	0.0375	0.0877
		Brown	6.79%	0.2459	0.2281	0.5871	5.01%	0.1643	0.1650	0.3651
	30/70	Green	5.02%	0.2006	0.1960	0.4353	0.86%	-0.0063	-0.0058	-0.0148
		Brown	5.43%	0.2171	0.2014	0.5054	-1.30%	-0.0871	-0.0783	-0.2496
	50/50	Green	6.25%	0.2828	0.2710	0.6209	1.43%	0.0196	0.0171	0.0531
		Brown	6.81%	0.3043	0.2796	0.6944	-0.63%	-0.0641	-0.0582	-0.1751
	KNN	Green	4.37%	0.1369	0.1358	0.2984	0.57%	-0.0195	-0.0178	-0.0459
		Brown	4.44%	0.1321	0.1308	0.2838	-1.18%	-0.0699	-0.0673	-0.1491

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 17. Pacific countries excluding Japan factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.2782	-0.0775	0.1604	0.251	-0.1937	-0.1796	0.0778	-1.2167***	0.1253	0.2713	0.7556***	0.2723	-0.1659	0.2962**
	10/90	(0.3248)	(0.0776)	(0.1657)	(0.1619)	(0.2898)	(0.215)	(0.1292)	(0.4269)	(0.1216)	(0.1962)	(0.2604)	(0.2903)	(0.3863)	(0.1495)
		0.3929	*0.3191*	*0.3345*	*0.1229*	*0.5047*	*0.4045*	*0.5482*	*0.005*	*0.3047*	*0.1689*	*0.0043*	*0.3499*	*0.6682*	*0.0496*
		0.0936	0.127**	0.0531	-0.1102	-0.3357	-0.2459	0.092	-0.4355	0.0793	0.138	0.6365***	0.0169	-0.616**	-0.0387
	30/70	(0.2846)	(0.0509)	(0.147)	(0.2095)	(0.268)	(0.2109)	(0.1025)	(0.3133)	(0.0956)	(0.1412)	(0.1957)	(0.2145)	(0.2786)	(0.1347)
		0.7425	*0.0135*	*0.7183*	*0.5995*	*0.212*	*0.2452*	*0.3705*	*0.1668*	*0.4085*	*0.3302*	*0.0014*	*0.9373*	*0.0287*	*0.7741*
		0.1205	0.0754*	0.0738	-0.1329	-0.3642*	-0.322**	0.0528	-0.1337	0.0216	0.1054	0.296*	-0.0511	-0.4013**	-0.0462
	50/50	(0.2191)	(0.0384)	(0.1224)	(0.1628)	(0.2096)	(0.1413)	(0.0757)	(0.2068)	(0.0485)	(0.1151)	(0.1593)	(0.1574)	(0.1923)	(0.0953)
		0.5829	*0.0514*	*0.5471*	*0.4153*	*0.084*	*0.0239*	*0.4862*	*0.5192*	*0.6566*	*0.3615*	*0.0653*	*0.7457*	*0.0388*	*0.6282*
		0.0773	0.0015	0.0433	-0.0987	-0.3977	-0.2966	0.1816	-0.3562	-0.0006	0.4031*	0.6593**	0.1956	-0.3378	-0.1058
	KNN	(0.3203)	(0.0796)	(0.1676)	(0.2611)	(0.3598)	(0.2445)	(0.1165)	(0.5425)	(0.1336)	(0.2395)	(0.2754)	(0.2869)	(0.417)	(0.1529)
		0.8097	*0.9845*	*0.7962*	*0.7058*	*0.2705*	*0.2267*	*0.1208*	*0.5126*	*0.9965*	*0.0946*	*0.018*	*0.4965*	*0.4194*	*0.4902*
WTR		-0.0092	0.1145	0.1249	0.2531	0.0798	-0.5417	0.1297	-0.7402	0.0735	0.0627	0.356**	0.3656	-0.2564	0.4307***
	10/90	(0.4129)	(0.1455)	(0.2537)	(0.295)	(0.3869)	(0.3388)	(0.1472)	(0.4904)	(0.1007)	(0.1957)	(0.1654)	(0.2436)	(0.3238)	(0.1569)
		0.9822	*0.4321*	*0.6229*	*0.3921*	*0.8367*	*0.1117*	*0.3797*	*0.1336*	*0.4663*	*0.7493*	*0.0331*	*0.1356*	*0.4298*	*0.0069*
		0.3815	0.1096*	0.1158	-0.1108	-0.0835	-0.212	0.1555	-0.459	0.0988	-0.1306	0.0274	-0.0139	-0.3297	0.1304
	30/70	(0.2802)	(0.0662)	(0.1544)	(0.2118)	(0.2823)	(0.2415)	(0.0999)	(0.3519)	(0.0711)	(0.1185)	(0.237)	(0.1911)	(0.2896)	(0.114)
		0.1752	*0.0998*	*0.4542*	*0.6016*	*0.7678*	*0.3811*	*0.1212*	*0.1943*	*0.1669*	*0.2724*	*0.9082*	*0.942*	*0.2569*	*0.2546*
		0.2905	0.0925*	0.0838	-0.086	-0.1499	-0.0769	0.093	-0.2798	0.0914	-0.0033	0.2183	0.0461	0.0815	0.0818
	50/50	(0.2156)	(0.0555)	(0.1276)	(0.1636)	(0.236)	(0.1843)	(0.0842)	(0.2769)	(0.0659)	(0.1326)	(0.1884)	(0.1962)	(0.2924)	(0.0981)
		0.1796	*0.0974*	*0.5126*	*0.5998*	*0.5264*	*0.6769*	*0.2713*	*0.3141*	*0.1676*	*0.9799*	*0.2486*	*0.8146*	*0.7809*	*0.4059*
		0.3432	0.0558	0.0291	-0.1216	-0.0208	-0.4212	0.0273	-0.0796	0.0509	-0.1249	0.2981	0.0048	-1.196***	0.163
	KNN	(0.3904)	(0.0837)	(0.2307)	(0.2335)	(0.275)	(0.2759)	(0.1167)	(0.517)	(0.0998)	(0.1679)	(0.2786)	(0.2765)	(0.3874)	(0.1808)
		0.3805	*0.5061*	*0.8998*	*0.6034*	*0.9397*	*0.1286*	*0.8155*	*0.8779*	*0.6107*	*0.4583*	*0.2865*	*0.9863*	*0.0024*	*0.3688*
WST		-0.085	0.1604*	0.0158	-0.2866	-0.2542	-0.3966	0.1012	-0.983**	0.344**	0.1044	0.3436	-0.0204	0.0044	0.2744
	10/90	(0.3834)	(0.0919)	(0.2283)	(0.3339)	(0.3099)	(0.3377)	(0.1471)	(0.4949)	(0.1343)	(0.2183)	(0.2778)	(0.281)	(0.3724)	(0.1792)
		0.8248	*0.0826*	*0.945*	*0.392*	*0.4132*	*0.242*	*0.4926*	*0.049*	*0.0115*	*0.6332*	*0.2182*	*0.9423*	*0.9906*	*0.128*
		-0.0904	0.1447**	-0.0976	-0.0726	-0.1031	-0.2734	0.0649	-0.903***	0.2848***	0.1975	0.0104	0.0497	-0.0456	0.1009
	30/70	(0.2794)	(0.0673)	(0.1938)	(0.2449)	(0.2514)	(0.2446)	(0.1174)	(0.3288)	(0.0908)	(0.1231)	(0.1696)	(0.1932)	(0.2439)	(0.1343)
		0.7466	*0.0331*	*0.6153*	*0.7673*	*0.6822*	*0.2652*	*0.5814*	*0.0068*	*0.0021*	*0.1109*	*0.951*	*0.7973*	*0.8521*	*0.4536*
		0.1717	0.0988**	-0.0869	-0.1628	-0.1835	-0.2991	0.1297	-0.7746***	0.1143**	0.0058	-0.1223	-0.1234	0.0279	0.0304
	50/50	(0.2142)	(0.0439)	(0.139)	(0.2017)	(0.2089)	(0.2013)	(0.0929)	(0.2116)	(0.0478)	(0.0918)	(0.1464)	(0.166)	(0.1484)	(0.0732)
		0.4239	*0.0257*	*0.5328*	*0.4207*	*0.3811*	*0.1394*	*0.1644*	*0.0004*	*0.0183*	*0.9499*	*0.4049*	*0.4584*	*0.8514*	*0.6787*
		-0.6062	0.0824	0.4404*	1.0792***	0.867**	-0.2916	-0.138	-0.5305	0.1482**	-0.019	0.0036	-0.8523***	-0.5808**	0.4483***
	KNN	(0.5445)	(0.0925)	(0.2362)	(0.3623)	(0.3541)	(0.3043)	(0.1646)	(0.435)	(0.0713)	(0.1534)	(0.2768)	(0.2196)	(0.2758)	(0.1378)
		0.2672	*0.3746*	*0.0641*	*0.0033*	*0.0154*	*0.3393*	*0.4032*	*0.2247*	*0.0394*	*0.9018*	*0.9896*	*0.0002*	*0.037*	*0.0014*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 18. Pacific countries excluding Japan, portfolio performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	7.35%	0.2959	0.2713	0.6660	8.87%	0.3717	0.3896	0.7794
		Brown	3.55%	0.1265	0.1191	0.3047	0.96%	-0.0018	-0.0018	-0.0038
	30/70	Green	7.52%	0.3200	0.3091	0.7109	6.87%	0.3192	0.3091	0.7090
		Brown	7.08%	0.2452	0.2420	0.5556	1.10%	0.0048	0.0049	0.0094
	50/50	Green	8.25%	0.3772	0.3793	0.8310	7.06%	0.3343	0.3241	0.7271
		Brown	7.30%	0.2765	0.2719	0.6360	4.05%	0.1601	0.1681	0.3192
	KNN	Green	5.86%	0.2286	0.2150	0.5019	6.59%	0.3008	0.2944	0.6679
		Brown	5.68%	0.2121	0.2018	0.5245	0.90%	-0.0045	-0.0045	-0.0091
WTR	10/90	Green	6.74%	0.2429	0.2335	0.5225	2.83%	0.0856	0.1011	0.1627
		Brown	6.76%	0.1948	0.1978	0.4689	2.42%	0.0720	0.0707	0.1466
	30/70	Green	7.05%	0.2865	0.2829	0.6104	7.33%	0.3312	0.3616	0.6809
		Brown	12.16%	0.4467	0.4604	1.0174	2.98%	0.0926	0.0930	0.1899
	50/50	Green	6.80%	0.2816	0.2689	0.6136	7.27%	0.3431	0.3500	0.7110
		Brown	10.27%	0.3946	0.3966	0.8962	6.20%	0.2702	0.2675	0.5654
	KNN	Green	5.84%	0.2148	0.2122	0.4562	7.39%	0.3374	0.3630	0.6988
		Brown	8.71%	0.2942	0.3179	0.6371	6.03%	0.2062	0.2301	0.3987
WST	10/90	Green	7.67%	0.3155	0.2915	0.7090	7.41%	0.3331	0.3666	0.6579
		Brown	3.54%	0.0883	0.0882	0.1976	0.71%	-0.0123	-0.0125	-0.0254
	30/70	Green	7.19%	0.3160	0.2939	0.7387	11.18%	0.5805	0.6350	1.2024
		Brown	4.93%	0.1551	0.1536	0.3511	2.21%	0.0573	0.0552	0.1201
	50/50	Green	5.63%	0.2349	0.2175	0.5468	12.14%	0.6130	0.6716	1.3066
		Brown	6.69%	0.2365	0.2301	0.5498	2.20%	0.0605	0.0594	0.1218
	KNN	Green	7.89%	0.2711	0.2479	0.6446	10.60%	0.5159	0.5525	1.0651
		Brown	4.16%	0.1103	0.1042	0.2641	3.93%	0.1221	0.1109	0.2656

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 19. North American countries factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.6025	-0.2499**	0.1685	0.8996***	0.6822***	-0.6723*	0.4229***	-0.7592**	-0.0227	0.3174	0.4528	0.0322	-0.7033*	0.0452
	10/90	(0.3939)	(0.113)	(0.1586)	(0.2045)	(0.2307)	(0.3937)	(0.1046)	(0.3562)	(0.1883)	(0.2305)	(0.2932)	(0.2598)	(0.376)	(0.1599)
		0.1278	*0.0282*	*0.2894*	*0*	*0.0035*	*0.0894*	*0.0001*	*0.0347*	*0.9041*	*0.1705*	*0.1247*	*0.9015*	*0.0634*	*0.7776*
		-0.4303	-0.0765	0.3602***	0.6996***	0.7716***	-0.553*	0.2644***	-0.2718	-0.0811	0.303	0.2314	0.0893	-0.0911	0.0489
	30/70	(0.2712)	(0.0701)	(0.1185)	(0.1701)	(0.2116)	(0.2853)	(0.0862)	(0.2734)	(0.1392)	(0.1863)	(0.2283)	(0.2215)	(0.303)	(0.1296)
		0.1143	*0.2763*	*0.0027*	*0.0001*	*0.0003*	*0.0541*	*0.0025*	*0.3218*	*0.5611*	*0.106*	*0.3125*	*0.6874*	*0.7642*	*0.7065*
		-0.2779	-0.0679	0.3979***	0.4179***	0.5643***	-0.2955	0.1547**	-0.2329	0.0315	0.1727	-0.0551	0.227	0.1098	0.0298
	50/50	(0.1805)	(0.0529)	(0.0861)	(0.1097)	(0.1231)	(0.1789)	(0.0621)	(0.2152)	(0.1077)	(0.1481)	(0.1397)	(0.155)	(0.2089)	(0.1124)
		0.1253	*0.2013*	*0*	*0.0002*	*0*	*0.1004*	*0.0137*	*0.2809*	*0.7701*	*0.2455*	*0.6938*	*0.1452*	*0.5999*	*0.7915*
		-0.2792	-0.288***	0.2545**	0.7853***	0.5404**	-0.3916	0.4461***	-1.2509***	0.1228	0.5233**	0.7025**	0.1371	-1.0066**	-0.0422
	KNN	(0.378)	(0.1102)	(0.1289)	(0.2107)	(0.2338)	(0.3697)	(0.0907)	(0.4316)	(0.1577)	(0.2404)	(0.3511)	(0.3115)	(0.4211)	(0.1347)
		0.461	*0.0097*	*0.0499*	*0.0003*	*0.0219*	*0.2908*	*0*	*0.0043*	*0.4376*	*0.0311*	*0.0472*	*0.6605*	*0.0181*	*0.7545*
WTR		0.0035	-0.3319**	0.3549	0.4719*	0.5988*	-0.2496	0.3269**	0.0074	0.1625	0.1291	0.7877**	0.0044	-1.1982***	0.4042***
	10/90	(0.5353)	(0.1467)	(0.2603)	(0.249)	(0.3066)	(0.3029)	(0.1444)	(0.4223)	(0.1756)	(0.4352)	(0.327)	(0.4251)	(0.3274)	(0.1505)
		0.9948	*0.0249*	*0.1746*	*0.0597*	*0.0524*	*0.4112*	*0.0249*	*0.9861*	*0.3562*	*0.7671*	*0.0172*	*0.9918*	*0.0004*	*0.0081*
		-0.2169	-0.1319	0.4284***	0.465***	0.5129***	-0.5038*	0.0437	-0.1401	0.1439*	0.0243	0.2641	0.0305	-0.3342	0.2692***
	30/70	(0.3427)	(0.0888)	(0.1413)	(0.1415)	(0.167)	(0.2691)	(0.0806)	(0.2465)	(0.0821)	(0.1672)	(0.1855)	(0.1821)	(0.2323)	(0.0898)
		0.5277	*0.1392*	*0.0028*	*0.0012*	*0.0025*	*0.0629*	*0.5883*	*0.5707*	*0.0816*	*0.8848*	*0.1567*	*0.8674*	*0.1523*	*0.0032*
		-0.1038	-0.2392***	0.3521**	0.1799	0.4308**	0.118	0.1205	0.1511	0.0746	0.172	-0.0803	-0.1381	0.1735	0.0537
	50/50	(0.249)	(0.0794)	(0.16)	(0.177)	(0.1965)	(0.2119)	(0.0999)	(0.2245)	(0.0548)	(0.1369)	(0.1121)	(0.1734)	(0.2202)	(0.0855)
		0.6774	*0.003*	*0.0291*	*0.3109*	*0.0297*	*0.5783*	*0.2291*	*0.5018*	*0.1759*	*0.2109*	*0.475*	*0.4271*	*0.432*	*0.5314*
		-0.3536	-0.1766	0.3639*	0.7302***	0.6631**	-0.987*	0.3145**	0.1191	0.0254	-0.2045	0.5791**	-0.5358	-0.3281	0.326**
	KNN	(0.5536)	(0.1768)	(0.2197)	(0.2363)	(0.2826)	(0.5037)	(0.1448)	(0.4004)	(0.1419)	(0.2826)	(0.2545)	(0.3695)	(0.3642)	(0.1264)
		0.5238	*0.3193*	*0.0995*	*0.0023*	*0.0201*	*0.0517*	*0.0312*	*0.7665*	*0.858*	*0.4705*	*0.0243*	*0.1492*	*0.369*	*0.0109*
WST		-0.4725	-0.1807	0.387	0.485	-0.038	0.0118	-0.0236	-0.3614	-0.0775	0.2235	0.6347**	0.2463	-0.6919**	0.2614
	10/90	(0.6814)	(0.193)	(0.345)	(0.3171)	(0.4042)	(0.5311)	(0.2122)	(0.3784)	(0.1028)	(0.217)	(0.3102)	(0.4347)	(0.3178)	(0.2032)
		0.489	*0.3505*	*0.2635*	*0.128*	*0.9252*	*0.9823*	*0.9115*	*0.3412*	*0.4523*	*0.3048*	*0.0426*	*0.5718*	*0.0312*	*0.2005*
		-0.3053	-0.0684	0.399***	0.2979**	0.2797*	0.0499	0.0524	-0.1375	0.0879	0.08	0.1959	-0.059	0.0709	0.0377
	30/70	(0.2309)	(0.0645)	(0.1086)	(0.1378)	(0.1669)	(0.2184)	(0.0751)	(0.2614)	(0.0694)	(0.1793)	(0.2124)	(0.2544)	(0.2764)	(0.144)
		0.1878	*0.2902*	*0.0003*	*0.032*	*0.0956*	*0.8194*	*0.4861*	*0.5997*	*0.2076*	*0.6559*	*0.358*	*0.8171*	*0.7981*	*0.7939*
		-0.1988	-0.0652	0.2587***	0.2022*	0.2643**	-0.0098	0.0747	-0.1791	0.0113	0.1849	0.2182	0.0557	0.0423	0.0386
	50/50	(0.1826)	(0.0472)	(0.0828)	(0.1132)	(0.131)	(0.1932)	(0.0591)	(0.2228)	(0.0602)	(0.1648)	(0.1513)	(0.2028)	(0.2166)	(0.1191)
		0.2779	*0.1694*	*0.0021*	*0.0758*	*0.0452*	*0.9595*	*0.208*	*0.4228*	*0.8512*	*0.2638*	*0.1514*	*0.784*	*0.8456*	*0.7465*
		-0.52	-0.1206	0.6879***	0.2562	0.2971	0.7152**	-0.0447	-0.9896*	-0.036	0.4367	0.159	0.6698	-0.8826*	0.2005
	KNN	(0.3899)	(0.1056)	(0.1638)	(0.2137)	(0.2299)	(0.3399)	(0.1541)	(0.5307)	(0.1324)	(0.3058)	(0.3458)	(0.5636)	(0.4978)	(0.2126)
		0.1841	*0.2554*	*0*	*0.2323*	*0.1981*	*0.0368*	*0.7721*	*0.0644*	*0.7863*	*0.1555*	*0.6465*	*0.2366*	*0.0785*	*0.3474*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 20. North American companies portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	17.47%	0.7615	0.7594	1.7451	21.50%	0.9446	0.9759	2.1507
		Brown	7.54%	0.3563	0.3043	1.0181	9.34%	0.3890	0.4115	0.8072
	30/70	Green	12.84%	0.6140	0.5568	1.5097	22.10%	1.0345	1.0254	2.4128
		Brown	7.36%	0.3303	0.3132	0.8074	16.38%	0.8163	0.7840	1.8792
	50/50	Green	12.25%	0.6868	0.6253	1.6699	19.57%	0.9541	0.9190	2.1550
		Brown	8.70%	0.4610	0.4070	1.1737	17.84%	0.8909	0.8821	2.0520
	KNN	Green	14.68%	0.6313	0.5982	1.5209	22.39%	1.0533	0.9847	2.4712
		Brown	8.82%	0.4554	0.4093	1.2656	3.59%	0.0938	0.0906	0.2204
WTR	10/90	Green	9.55%	0.3702	0.3294	0.8533	16.78%	0.8910	1.0370	1.9276
		Brown	7.97%	0.3766	0.3670	1.0417	16.13%	0.6549	0.6252	1.5442
	30/70	Green	10.36%	0.5254	0.4609	1.2453	16.75%	1.0616	1.0436	2.4602
		Brown	5.84%	0.2525	0.2280	0.7304	16.27%	0.8938	0.8842	2.0946
	50/50	Green	9.90%	0.4988	0.4390	1.1984	15.66%	0.9848	0.9539	2.2953
		Brown	7.36%	0.4081	0.3851	0.9542	18.44%	1.0425	1.0673	2.4697
	KNN	Green	10.15%	0.4307	0.3929	0.9685	17.29%	1.0614	1.0983	2.4003
		Brown	3.35%	0.1021	0.0853	0.4358	14.44%	0.6517	0.6832	1.4448
WST	10/90	Green	12.77%	0.5112	0.4428	1.4152	11.50%	0.5654	0.6161	1.1744
		Brown	0.92%	-0.0028	-0.0029	-0.0061	4.23%	0.1570	0.1664	0.3076
	30/70	Green	11.20%	0.5635	0.5012	1.3423	15.36%	0.9268	0.9188	2.1080
		Brown	6.06%	0.2727	0.2614	0.6683	13.47%	0.7008	0.7067	1.5302
	50/50	Green	11.18%	0.6161	0.5451	1.4694	17.83%	1.0754	1.0217	2.5304
		Brown	8.11%	0.4341	0.3977	1.0533	14.43%	0.7910	0.7731	1.8305
	KNN	Green	14.27%	0.6039	0.5692	1.5028	17.28%	1.0144	0.9850	2.3512
		Brown	5.36%	0.1933	0.2047	0.3822	3.24%	0.0865	0.0897	0.1780

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 21. Latin American companies, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	0.002	-0.1249	0.7094**	0.2832	0.7776*	-1.5188***	-0.334**	0.8162	-0.0062	-0.266	-1.1504**	0.0363	0.8826	-0.2309
		(0.563)	(0.1801)	(0.2868)	(0.49)	(0.4462)	(0.4275)	(0.1667)	(0.9272)	(0.1328)	(0.448)	(0.5128)	(0.4519)	(0.5466)	(0.3397)
		0.9971	*0.4891*	*0.0146*	*0.5643*	*0.0836*	*0.0005*	*0.047*	*0.3808*	*0.9626*	*0.554*	*0.0271*	*0.9361*	*0.1095*	*0.4983*
	30/70	0.1442	-0.0904	0.5842**	0.6744*	0.1279	-0.5737	-0.2914	-0.1716	0.3736	0.2676	-1.144**	-0.3172	1.0559*	0.4437
		(0.4735)	(0.1116)	(0.2631)	(0.3893)	(0.4613)	(0.4191)	(0.1886)	(0.7681)	(0.2366)	(0.3024)	(0.5601)	(0.5555)	(0.5856)	(0.3348)
		0.7612	*0.4196*	*0.0281*	*0.0855*	*0.782*	*0.1733*	*0.1246*	*0.8237*	*0.1174*	*0.3783*	*0.0437*	*0.5693*	*0.0744*	*0.1881*
	50/50	0.1382	-0.0835	0.4366**	0.6995**	0.0224	-0.4634	-0.2286	0.1175	0.3124	0.1473	-1.151**	-0.0587	1.3849***	0.3755
		(0.4028)	(0.0891)	(0.2096)	(0.3053)	(0.3684)	(0.3268)	(0.1544)	(0.6576)	(0.2009)	(0.2759)	(0.4738)	(0.4462)	(0.519)	(0.2593)
		0.732	*0.3503*	*0.0391*	*0.0235*	*0.9517*	*0.1585*	*0.141*	*0.8586*	*0.123*	*0.5947*	*0.0169*	*0.8957*	*0.0089*	*0.1507*
	KNN	-0.8208	0.1029	0.7073***	0.645*	0.636	-0.2373	0.0997	1.6885*	-0.2556	0.1025	0.2488	0.47	0.0767	-0.3454
		(0.5339)	(0.1147)	(0.249)	(0.3776)	(0.4683)	(0.3671)	(0.2115)	(0.8807)	(0.2522)	(0.484)	(0.7058)	(0.6755)	(0.7505)	(0.5481)
		0.1265	*0.3713*	*0.0052*	*0.0899*	*0.1766*	*0.5191*	*0.638*	*0.058*	*0.3133*	*0.8326*	*0.7252*	*0.4882*	*0.9188*	*0.53*
WTR	10/90	-0.191	-0.2794	0.0605	-0.4262	0.3205	-0.3967	0.051	0.3167	0.3276	-0.6317	-0.0283	-0.3036	0.3275	0.2497
		(0.6181)	(0.2153)	(0.4317)	(0.5559)	(0.6396)	(0.3836)	(0.1469)	(1.2409)	(0.3499)	(0.6289)	(0.8562)	(1.086)	(0.899)	(0.6359)
		0.7577	*0.1964*	*0.8887*	*0.4445*	*0.6171*	*0.3027*	*0.7292*	*0.799*	*0.3511*	*0.3173*	*0.9737*	*0.7803*	*0.7163*	*0.6954*
	30/70	-0.3916	-0.137	0.7547**	0.1439	0.8595*	-0.5894	-0.0491	0.7362	-0.1779	-0.3028	0.858*	0.3078	-1.0352*	-0.0862
		(0.5686)	(0.1623)	(0.3231)	(0.4876)	(0.4526)	(0.3813)	(0.1435)	(0.8255)	(0.1963)	(0.3841)	(0.4653)	(0.5743)	(0.5288)	(0.4063)
		0.492	*0.3999*	*0.0208*	*0.7683*	*0.0595*	*0.1243*	*0.7328*	*0.3744*	*0.3668*	*0.4321*	*0.0678*	*0.593*	*0.0527*	*0.8324*
	50/50	-0.2057	-0.078	0.4282*	0.2178	0.2325	-0.2091	-0.1638	-0.819	-0.0602	-0.6747**	0.2736	-0.1765	0.3512	0.5639***
		(0.4093)	(0.1094)	(0.2237)	(0.3645)	(0.3844)	(0.3679)	(0.1155)	(0.5657)	(0.151)	(0.2917)	(0.3707)	(0.3595)	(0.3698)	(0.1887)
		0.6161	*0.477*	*0.0576*	*0.551*	*0.5461*	*0.5706*	*0.1583*	*0.1504*	*0.6907*	*0.0225*	*0.462*	*0.6245*	*0.3443*	*0.0034*
	KNN	-0.8453	-0.2389	0.424	0.2335	0.6777*	-0.5691	0.1771	-0.0662	0.019	-0.1464	0.8183	1.2691*	-1.0379	-0.1016
		(0.5338)	(0.1749)	(0.329)	(0.4739)	(0.4006)	(0.5098)	(0.1783)	(1.1494)	(0.244)	(0.4411)	(0.5208)	(0.7215)	(0.7251)	(0.5501)
		0.1154	*0.1739*	*0.1995*	*0.623*	*0.0928*	*0.2661*	*0.3222*	*0.9542*	*0.938*	*0.7406*	*0.1189*	*0.0813*	*0.1551*	*0.8537*
WST	10/90	-0.1454	-0.1041	0.1051	0.6779	-0.2661	0.1134	0.2028	2.0096**	-0.3577*	0.5285	-1.0286**	-0.2198	-0.6011	-0.4039
		(0.7798)	(0.1867)	(0.4792)	(0.5377)	(0.6964)	(0.5353)	(0.2595)	(0.9398)	(0.1853)	(0.4667)	(0.5082)	(0.7159)	(0.5946)	(0.3373)
		0.8523	*0.5779*	*0.8266*	*0.2094*	*0.7029*	*0.8325*	*0.4358*	*0.0347*	*0.0561*	*0.2599*	*0.0453*	*0.7594*	*0.3142*	*0.2336*
	30/70	-0.5156	-0.0143	0.6592**	0.1568	0.7903**	-0.4251	-0.0843	-0.0584	0.2404	0.9524**	-1.0099	0.3836	1.0012*	0.0859
		(0.4847)	(0.1402)	(0.2969)	(0.4002)	(0.3812)	(0.347)	(0.148)	(0.7905)	(0.1933)	(0.3702)	(0.615)	(0.668)	(0.5707)	(0.3938)
		0.2892	*0.9191*	*0.0279*	*0.6958*	*0.0399*	*0.2225*	*0.5699*	*0.9412*	*0.2164*	*0.0114*	*0.1033*	*0.567*	*0.0821*	*0.8277*
	50/50	-0.2797	-0.0607	0.5416**	-0.1362	1.2055***	-0.2313	-0.096	-0.3014	0.2386	0.8564***	-0.8956**	0.2416	0.7762**	0.1174
		(0.3566)	(0.1125)	(0.2458)	(0.3029)	(0.3279)	(0.2898)	(0.144)	(0.5906)	(0.1457)	(0.2315)	(0.3785)	(0.4933)	(0.359)	(0.2638)
		0.4341	*0.5901*	*0.0291*	*0.6536*	*0.0003*	*0.4261*	*0.5062*	*0.6108*	*0.1043*	*0.0003*	*0.0197*	*0.6252*	*0.0327*	*0.6571*
	KNN	-0.5158	-0.0583	0.4226	-0.1667	0.5916	-0.244	0.0378	0.439	-0.0814	0.1564	-0.7755	0.6002	-0.0081	0.0306
		(0.3946)	(0.0927)	(0.273)	(0.2758)	(0.4255)	(0.3148)	(0.1684)	(1.1843)	(0.2544)	(0.565)	(0.5987)	(0.7522)	(0.5839)	(0.5411)
		0.1932	*0.5303*	*0.1237*	*0.5464*	*0.1665*	*0.4395*	*0.8228*	*0.7116*	*0.7495*	*0.7824*	*0.1978*	*0.4266*	*0.989*	*0.9549*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 22. Latin American companies, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-5.94%	-0.1890	-0.1993	-0.3760	-3.70%	-0.1389	-0.1431	-0.2813
		Brown	-8.32%	-0.2988	-0.3064	-0.6102	1.88%	0.0274	0.0289	0.0555
	30/70	Green	-1.33%	-0.0709	-0.0734	-0.1451	-3.74%	-0.1319	-0.1350	-0.2619
		Brown	-2.47%	-0.1050	-0.1155	-0.2074	-0.01%	-0.0304	-0.0345	-0.0619
	50/50	Green	-1.28%	-0.0761	-0.0773	-0.1561	-5.91%	-0.2029	-0.2048	-0.4171
		Brown	-2.02%	-0.0987	-0.1047	-0.1970	1.00%	0.0001	0.0001	0.0002
	KNN	Green	-0.83%	-0.0547	-0.0561	-0.1134	-5.61%	-0.1740	-0.1700	-0.3439
		Brown	-5.06%	-0.1808	-0.1894	-0.3947	11.00%	0.2448	0.3133	0.4812
WTR	10/90	Green	4.22%	0.0894	0.0954	0.1951	-5.83%	-0.2090	-0.2236	-0.4019
		Brown	2.00%	0.0406	0.0426	0.0811	-0.17%	-0.0317	-0.0345	-0.0651
	30/70	Green	6.33%	0.1529	0.1650	0.3227	-7.74%	-0.2835	-0.2874	-0.5789
		Brown	5.34%	0.1564	0.1831	0.3195	-0.07%	-0.0343	-0.0367	-0.0720
	50/50	Green	5.75%	0.1453	0.1562	0.3069	-4.87%	-0.1886	-0.1878	-0.3895
		Brown	3.41%	0.0788	0.0856	0.1630	-7.36%	-0.2704	-0.2908	-0.5285
	KNN	Green	6.30%	0.1524	0.1608	0.3229	-9.02%	-0.3094	-0.3154	-0.6202
		Brown	0.23%	-0.0294	-0.0319	-0.0591	-8.44%	-0.2608	-0.2630	-0.5338
WST	10/90	Green	6.23%	0.1668	0.1897	0.3519	-10.17%	-0.2853	-0.2782	-0.5815
		Brown	6.28%	0.1574	0.1850	0.3112	6.97%	0.2004	0.2419	0.3833
	30/70	Green	5.61%	0.1472	0.1580	0.3056	-2.62%	-0.0961	-0.1015	-0.1988
		Brown	2.79%	0.0640	0.0727	0.1252	1.08%	0.0022	0.0024	0.0048
	50/50	Green	2.48%	0.0452	0.0503	0.0933	-5.56%	-0.1861	-0.1978	-0.3765
		Brown	3.32%	0.0882	0.0997	0.1772	-5.53%	-0.1999	-0.2194	-0.4032
	KNN	Green	4.96%	0.1351	0.1412	0.2979	-0.80%	-0.0493	-0.0530	-0.1024
		Brown	1.10%	0.0040	0.0043	0.0081	5.60%	0.1275	0.1705	0.2310

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 23. Middle Eastern and African companies' factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.4491	0.3864	0.6508	-0.305	-1.4848***	1.0202	0.1074	-0.7673	0.1885	-0.2266	-0.4764	-0.8932	-0.3054	-0.3185
	10/90	(0.5378)	(0.2978)	(0.5283)	(0.4934)	(0.5634)	(0.7267)	(0.2656)	(1.2468)	(0.2182)	(0.5813)	(0.6976)	(0.6862)	(0.7297)	(0.592)
		0.405	*0.1965*	*0.22*	*0.5374*	*0.0093*	*0.1625*	*0.6866*	*0.5395*	*0.3894*	*0.6974*	*0.496*	*0.1957*	*0.6764*	*0.5917*
		-0.2757	-0.1587	0.2034	0.3275	-1.0648**	-0.0585	0.0181	0.248	0.318**	-0.2016	-0.4865	-0.6981*	0.0996	-0.3795
	30/70	(0.4251)	(0.1167)	(0.2685)	(0.3671)	(0.5102)	(0.3811)	(0.1753)	(0.5727)	(0.1296)	(0.303)	(0.4749)	(0.3977)	(0.4764)	(0.2477)
		0.5176	*0.176*	*0.4499*	*0.3738*	*0.0386*	*0.8783*	*0.918*	*0.6658*	*0.0157*	*0.5072*	*0.3078*	*0.0819*	*0.8348*	*0.1282*
		0.0234	-0.3446***	-0.1592	0.4508*	-0.842**	-0.632*	-0.0702	0.0264	0.1367	0.1045	-0.0992	-0.1289	0.2125	-0.2439
	50/50	(0.4002)	(0.0927)	(0.2633)	(0.2602)	(0.3476)	(0.3276)	(0.1352)	(0.5342)	(0.0954)	(0.2721)	(0.3023)	(0.275)	(0.3515)	(0.2237)
		0.9535	*0.0003*	*0.5463*	*0.0853*	*0.0166*	*0.0556*	*0.6045*	*0.9607*	*0.1547*	*0.7017*	*0.7435*	*0.6402*	*0.5468*	*0.2778*
		-0.0799	0.01	0.1757	0.2197	-0.8539	-0.1943	-0.0766	2.3825	0.3734	0.1909	0.727	0.0086	-0.9199	-1.7271*
	KNN	(0.4842)	(0.1505)	(0.3448)	(0.4035)	(0.6223)	(0.4514)	(0.2029)	(2.2983)	(0.264)	(0.5138)	(0.4885)	(0.7456)	(0.7765)	(1.0406)
		0.8691	*0.947*	*0.6112*	*0.5869*	*0.1721*	*0.6675*	*0.7064*	*0.3021*	*0.16*	*0.711*	*0.1394*	*0.9908*	*0.2386*	*0.0998*
WTR		-0.3282	-0.0623	-0.9859*	0.1059	-0.4834	0.246	-0.4501	-0.4829	0.5979*	1.2622*	0.3126	0.178	-0.4267	-0.4688
	10/90	(0.9662)	(0.1865)	(0.5076)	(0.4563)	(0.6251)	(0.4288)	(0.3961)	(0.886)	(0.3395)	(0.6947)	(0.7732)	(0.9998)	(1.1688)	(0.5604)
		0.7346	*0.7388*	*0.0541*	*0.8168*	*0.4407*	*0.5671*	*0.2579*	*0.5871*	*0.0817*	*0.0726*	*0.687*	*0.8591*	*0.7159*	*0.4051*
		-0.3379	0.2711*	-0.1183	0.0847	-0.5969	0.2706	-0.0755	-1.6687	0.3782*	0.5763	-0.1015	-0.3175	0.4411	0.3961
	30/70	(0.5372)	(0.1587)	(0.2862)	(0.3653)	(0.4533)	(0.4078)	(0.2317)	(1.0168)	(0.1943)	(0.3634)	(0.5625)	(0.569)	(0.7458)	(0.3851)
		0.5303	*0.0898*	*0.68*	*0.8171*	*0.1901*	*0.5081*	*0.7451*	*0.1043*	*0.0547*	*0.1163*	*0.8573*	*0.5783*	*0.5557*	*0.3065*
		-0.3266	0.1616	-0.3291	0.5938*	-0.7654*	0.0163	0.0967	-0.9459	0.1933	0.6987	-0.2752	-0.0431	1.0194*	0.0799
	50/50	(0.4646)	(0.1192)	(0.2492)	(0.3479)	(0.3937)	(0.3416)	(0.1816)	(1.0417)	(0.1609)	(0.4745)	(0.5429)	(0.4933)	(0.5384)	(0.358)
		0.4833	*0.1774*	*0.1888*	*0.0901*	*0.0539*	*0.9621*	*0.5954*	*0.3663*	*0.2326*	*0.1444*	*0.6134*	*0.9306*	*0.0615*	*0.824*
		-0.0022	0.3444	0.5027	-0.218	-0.3929	0.774	-0.3114	-1.3393	0.0808	-0.0354	0.816	-0.0847	0.1274	0.6706***
	KNN	(0.6848)	(0.3177)	(0.5502)	(0.4437)	(0.5774)	(0.5815)	(0.3196)	(0.9438)	(0.1808)	(0.3601)	(0.5201)	(0.4665)	(0.6741)	(0.2303)
		0.9975	*0.2803*	*0.3625*	*0.624*	*0.4973*	*0.1854*	*0.3317*	*0.1594*	*0.6562*	*0.9218*	*0.1203*	*0.8563*	*0.8505*	*0.0045*
WST		0.0165	0.2817	-1.374**	-0.0078	-1.2199	0.9174	0.1568	-0.1024	0.0073	-0.6464	1.6491*	0.6888	-0.1265	-0.061
	10/90	(1.3584)	(0.3381)	(0.6121)	(0.6707)	(0.9)	(0.739)	(0.517)	(1.8293)	(0.3133)	(0.9234)	(0.9399)	(0.9986)	(1.0648)	(0.7042)
		0.9903	*0.4063*	*0.0265*	*0.9907*	*0.1777*	*0.2168*	*0.7621*	*0.9555*	*0.9814*	*0.4855*	*0.0824*	*0.4919*	*0.9056*	*0.9312*
		-0.6716	0.2987	-0.2397	0.134	-0.909	0.2528	0.1689	-0.3492	-0.1046	-0.8002	0.5669	0.9347	-0.0581	0.2322
	30/70	(0.727)	(0.2393)	(0.4341)	(0.4898)	(0.5881)	(0.6003)	(0.2676)	(0.7966)	(0.1956)	(0.5321)	(0.4925)	(0.7053)	(0.5444)	(0.3103)
		0.3574	*0.2144*	*0.5818*	*0.7849*	*0.1247*	*0.6744*	*0.5291*	*0.6621*	*0.594*	*0.1358*	*0.2524*	*0.1881*	*0.9153*	*0.4559*
		-0.6116	0.1752	-0.0082	0.1186	-0.2741	-0.0007	0.3358	0.7516	-0.1356	-0.4728	0.6222	0.6561	-0.5847	-0.1951
	50/50	(0.5773)	(0.1977)	(0.3819)	(0.4751)	(0.5083)	(0.5309)	(0.2238)	(0.7167)	(0.1314)	(0.4175)	(0.4202)	(0.5603)	(0.527)	(0.3271)
		0.2915	*0.3773*	*0.983*	*0.8033*	*0.5907*	*0.9989*	*0.1361*	*0.2968*	*0.3046*	*0.2602*	*0.1418*	*0.2444*	*0.2698*	*0.5523*
		0.1296	0.1727	0.9186**	-0.5392	-1.3831**	0.0335	-0.1984	-0.3813	0.4138	-0.1582	1.079	1.4363	-0.5265	-0.3894
	KNN	(0.6036)	(0.1637)	(0.3863)	(0.4029)	(0.5402)	(0.4087)	(0.2612)	(1.2429)	(0.3531)	(0.7489)	(0.702)	(1.0117)	(0.8841)	(0.673)
		0.8303	*0.2933*	*0.0189*	*0.1832*	*0.0117*	*0.9349*	*0.449*	*0.7597*	*0.244*	*0.8331*	*0.1274*	*0.1588*	*0.5528*	*0.5641*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 24. Middle Eastern and African companies portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	14.55%	0.6499	0.6716	1.5144	0.81%	-0.0074	-0.0072	-0.0160
		Brown	6.80%	0.1710	0.2000	0.3382	-15.67%	-0.5413	-0.5008	-1.0405
	30/70	Green	14.63%	0.6435	0.6479	1.5449	2.41%	0.0739	0.0708	0.1496
		Brown	6.47%	0.2275	0.2479	0.4428	-0.93%	-0.0801	-0.0787	-0.1591
	50/50	Green	11.26%	0.4841	0.5169	1.0820	3.39%	0.1191	0.1168	0.2442
		Brown	4.73%	0.1766	0.1956	0.3337	1.66%	0.0308	0.0329	0.0586
	KNN	Green	14.84%	0.6745	0.6606	1.5896	2.46%	0.0779	0.0742	0.1555
		Brown	9.17%	0.2911	0.3331	0.5709	6.61%	0.1131	0.1623	0.2065
WTR	10/90	Green	7.82%	0.3816	0.3958	0.9082	6.58%	0.1740	0.2000	0.3397
		Brown	-6.41%	-0.2467	-0.2642	-0.4529	-1.09%	-0.0569	-0.0564	-0.1383
	30/70	Green	9.42%	0.4603	0.4825	1.0126	-3.25%	-0.1770	-0.1688	-0.3530
		Brown	2.38%	0.0501	0.0569	0.0984	-16.76%	-0.6507	-0.5578	-1.4915
	50/50	Green	4.61%	0.1895	0.1874	0.4001	-1.84%	-0.1151	-0.1155	-0.2208
		Brown	-0.12%	-0.0445	-0.0475	-0.0871	-10.78%	-0.4529	-0.3935	-1.1743
	KNN	Green	8.72%	0.4050	0.4088	0.9144	-2.19%	-0.1290	-0.1267	-0.2600
		Brown	4.04%	0.0944	0.1090	0.1844	-8.43%	-0.3512	-0.2917	-0.9307
WST	10/90	Green	1.76%	0.0355	0.0334	0.0749	-5.39%	-0.2397	-0.2174	-0.5281
		Brown	-3.61%	-0.1121	-0.1310	-0.2099	-6.38%	-0.1820	-0.1754	-0.3848
	30/70	Green	4.50%	0.1750	0.1602	0.4060	-0.13%	-0.0530	-0.0503	-0.1165
		Brown	-5.42%	-0.2027	-0.2069	-0.3898	0.28%	-0.0304	-0.0305	-0.0585
	50/50	Green	0.76%	-0.0117	-0.0114	-0.0251	-5.19%	-0.2977	-0.2870	-0.6171
		Brown	-3.03%	-0.1680	-0.1792	-0.3195	2.51%	0.0677	0.0639	0.1412
	KNN	Green	1.84%	0.0328	0.0319	0.0720	-2.77%	-0.1655	-0.1539	-0.3697
		Brown	-3.92%	-0.1878	-0.1939	-0.3519	-10.51%	-0.2631	-0.2580	-0.5704

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 25. The United States companies factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.3729	-0.2927**	0.2801*	0.2102	0.479**	0.0924	0.2538***	-1.1078**	-0.1132	0.6438**	-0.2523	0.2699	0.0724	0.3848
		(0.4744)	(0.1412)	(0.1427)	(0.2946)	(0.2365)	(0.3754)	(0.081)	(0.5595)	(0.254)	(0.3149)	(0.5226)	(0.413)	(0.6463)	(0.2331)
		0.4329	*0.0396*	*0.0512*	*0.4765*	*0.0443*	*0.8058*	*0.002*	*0.0495*	*0.6565*	*0.0427*	*0.63*	*0.5144*	*0.911*	*0.1008*
	30/70	-0.5312*	-0.0369	0.2745***	0.075	0.5878***	0.1798	0.119**	-0.3445	-0.0989	0.2667	-0.0045	0.1539	0.0976	0.0638
		(0.2897)	(0.0761)	(0.0895)	(0.187)	(0.1812)	(0.2607)	(0.0575)	(0.2945)	(0.12)	(0.1688)	(0.2618)	(0.2269)	(0.3715)	(0.1382)
		0.0683	*0.6283*	*0.0025*	*0.6888*	*0.0014*	*0.4912*	*0.0399*	*0.2439*	*0.4111*	*0.1161*	*0.9863*	*0.4988*	*0.7932*	*0.6449*
	50/50	-0.314*	-0.09*	0.313***	-0.0064	0.3892***	0.1317	0.0735	-0.3701	0.0605	0.168	-0.1513	0.3333**	0.1113	0.0848
		(0.1819)	(0.0499)	(0.0764)	(0.1246)	(0.112)	(0.1692)	(0.0483)	(0.2244)	(0.0895)	(0.1272)	(0.1368)	(0.15)	(0.2081)	(0.09)
		0.0859	*0.0726*	*0.0001*	*0.9591*	*0.0006*	*0.4373*	*0.1296*	*0.1013*	*0.5001*	*0.1886*	*0.2705*	*0.0278*	*0.5937*	*0.3474*
	KNN	-0.3099	-0.2614**	0.3228***	0.2201	0.3236	0.1823	0.1458**	-1.3308**	0.3101**	-0.0535	0.8503***	-0.4331	-0.6003	-0.4774***
		(0.3945)	(0.1141)	(0.1115)	(0.2459)	(0.2188)	(0.3526)	(0.0733)	(0.643)	(0.1206)	(0.2853)	(0.3009)	(0.3561)	(0.4948)	(0.1769)
		0.4332	*0.0231*	*0.0043*	*0.372*	*0.1408*	*0.6058*	*0.0482*	*0.0402*	*0.0111*	*0.8514*	*0.0054*	*0.2258*	*0.227*	*0.0078*
WTR	10/90	-0.4396	-0.2157	0.1628	0.0537	0.5174*	0.1261	0.2291**	0.0929	0.0044	-0.3455*	0.2843	-0.2963	-0.667**	-0.0237
		(0.5216)	(0.1558)	(0.2021)	(0.2797)	(0.274)	(0.321)	(0.114)	(0.3244)	(0.1266)	(0.182)	(0.2139)	(0.2544)	(0.3006)	(0.1469)
		0.4005	*0.168*	*0.4216*	*0.8481*	*0.0607*	*0.6949*	*0.046*	*0.775*	*0.9726*	*0.0598*	*0.1861*	*0.2461*	*0.0281*	*0.8722*
	30/70	-0.0529	-0.2081***	0.3556***	0.1345	0.476**	0.1436	-0.0146	0.1332	0.0549	-0.0083	0.0007	0.0394	-0.0559	0.1607
		(0.2805)	(0.0704)	(0.1303)	(0.1503)	(0.1888)	(0.2134)	(0.0514)	(0.1954)	(0.0641)	(0.1429)	(0.1218)	(0.1483)	(0.1927)	(0.1199)
		0.8506	*0.0036*	*0.007*	*0.3722*	*0.0126*	*0.5017*	*0.7765*	*0.4966*	*0.3933*	*0.9535*	*0.9951*	*0.7906*	*0.7721*	*0.1822*
	50/50	-0.0812	-0.2227***	0.203*	-0.0434	0.377**	0.2076	0.0692	0.3674	0.0939*	-0.0566	0.0062	-0.0925	0	-0.0889
		(0.2365)	(0.0727)	(0.1213)	(0.1594)	(0.1734)	(0.204)	(0.0884)	(0.2398)	(0.0564)	(0.1261)	(0.098)	(0.1442)	(0.1772)	(0.0829)
		0.7319	*0.0025*	*0.0959*	*0.7858*	*0.031*	*0.3103*	*0.4347*	*0.1278*	*0.0981*	*0.6544*	*0.9496*	*0.5223*	*1*	*0.2855*
	KNN	-0.1453	-0.2666**	0.3556**	0.0422	0.4324*	0.5579*	0.064	-0.0123	-0.065	-0.1677	0.1149	-0.2452	-0.0331	-0.0616
		(0.4407)	(0.1315)	(0.1677)	(0.2361)	(0.2556)	(0.2942)	(0.0962)	(0.343)	(0.1385)	(0.2236)	(0.2181)	(0.2366)	(0.3241)	(0.1674)
		0.7421	*0.0442*	*0.0354*	*0.8582*	*0.0925*	*0.0596*	*0.5072*	*0.9713*	*0.6399*	*0.4546*	*0.5992*	*0.3018*	*0.9189*	*0.7137*
WST	10/90	-0.5767	-0.1024	0.25	0.138	0.5252*	0.4035	0.0207	-0.4382	0.1154	-0.0078	0.2878	0.014	-0.0537	0.082
		(0.582)	(0.1364)	(0.1992)	(0.2556)	(0.3017)	(0.3676)	(0.1182)	(0.5454)	(0.1217)	(0.3185)	(0.2791)	(0.4534)	(0.3099)	(0.2015)
		0.3232	*0.4538*	*0.2112*	*0.5901*	*0.0835*	*0.2738*	*0.861*	*0.4232*	*0.3447*	*0.9806*	*0.3042*	*0.9755*	*0.8626*	*0.6845*
	30/70	-0.1674	-0.1804***	0.3199***	0.0645	0.388**	0.3356	-0.0155	-0.351	0.1092	0.1026	0.0225	0.0306	0.5378**	-0.0122
		(0.2322)	(0.0579)	(0.1026)	(0.1411)	(0.1829)	(0.2242)	(0.0473)	(0.3492)	(0.0796)	(0.1829)	(0.1534)	(0.1856)	(0.2184)	(0.1508)
		0.4719	*0.0022*	*0.0021*	*0.6481*	*0.0353*	*0.1362*	*0.7433*	*0.3167*	*0.1726*	*0.5757*	*0.8838*	*0.8692*	*0.015*	*0.9359*
	50/50	-0.131	-0.0964**	0.1609**	0.0061	0.2585**	0.2447	0.0604	-0.1883	0.0323	0.2247*	0.024	0.1024	0.2768	-0.0098
		(0.1887)	(0.0429)	(0.0752)	(0.1077)	(0.1288)	(0.1853)	(0.0446)	(0.2501)	(0.061)	(0.1346)	(0.1174)	(0.1623)	(0.1944)	(0.1052)
		0.4885	*0.0259*	*0.0338*	*0.9549*	*0.0463*	*0.1884*	*0.1771*	*0.4527*	*0.5975*	*0.0974*	*0.8384*	*0.529*	*0.1567*	*0.9257*
	KNN	-0.3476	-0.1916*	0.3687**	0.4604**	0.2037	0.3727	-0.1548	-0.6363	0.0446	0.362	-0.1941	0.6484	-0.418	0.1981
		(0.389)	(0.1099)	(0.1443)	(0.1892)	(0.2205)	(0.2943)	(0.1003)	(0.5478)	(0.1359)	(0.2666)	(0.3581)	(0.4042)	(0.4519)	(0.1638)
		0.3728	*0.0832*	*0.0115*	*0.016*	*0.357*	*0.207*	*0.1244*	*0.2475*	*0.7433*	*0.1768*	*0.5886*	*0.1109*	*0.3566*	*0.2285*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 26. The United States companies' portfolios performances

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	14.78%	0.6090	0.5855	1.4491	20.79%	0.6527	0.6429	1.6090
		Brown	9.21%	0.4712	0.4086	1.6066	7.45%	0.2954	0.2900	0.6297
	30/70	Green	13.23%	0.6306	0.5774	1.5644	22.58%	1.0173	1.0005	2.3898
		Brown	8.69%	0.4176	0.3780	1.0128	17.06%	0.8712	0.8585	1.9927
	50/50	Green	12.54%	0.6908	0.6314	1.7048	20.77%	1.0041	0.9473	2.3161
		Brown	9.57%	0.5475	0.4667	1.3608	18.42%	0.9334	0.9221	2.1858
	KNN	Green	14.55%	0.5969	0.5851	1.4287	23.20%	1.0697	1.0080	2.5176
		Brown	9.54%	0.4850	0.4333	1.2404	1.64%	0.0166	0.0174	0.0367
WTR	10/90	Green	10.95%	0.4276	0.3876	0.9888	15.46%	0.7723	0.8570	1.6497
		Brown	6.16%	0.2833	0.2486	0.8516	14.42%	0.6944	0.7246	1.5479
	30/70	Green	10.11%	0.4892	0.4273	1.1865	15.51%	0.9454	0.9309	2.1517
		Brown	9.09%	0.4745	0.4378	1.1608	18.83%	1.1298	1.1388	2.6182
	50/50	Green	10.51%	0.5294	0.4833	1.2753	14.78%	0.9684	0.9537	2.2039
		Brown	9.42%	0.5656	0.5082	1.2779	20.56%	1.2082	1.2174	3.0303
	KNN	Green	12.22%	0.4985	0.4655	1.1599	16.00%	1.0021	0.9821	2.2751
		Brown	10.15%	0.5032	0.5314	1.0757	12.48%	0.5972	0.5761	1.4117
WST	10/90	Green	14.35%	0.6211	0.6324	1.3910	16.07%	0.7579	0.8642	1.6133
		Brown	7.95%	0.3627	0.3518	0.9042	10.68%	0.4297	0.4360	0.9685
	30/70	Green	11.26%	0.5569	0.4989	1.3281	17.86%	1.0589	1.0321	2.4909
		Brown	8.96%	0.4808	0.4691	1.1177	14.53%	0.7395	0.7803	1.6306
	50/50	Green	11.41%	0.6196	0.5553	1.4728	18.40%	1.1127	1.0904	2.6201
		Brown	10.08%	0.5935	0.5180	1.4518	16.31%	0.8803	0.8558	2.0754
	KNN	Green	16.63%	0.7063	0.6651	1.9312	17.79%	1.0239	0.9899	2.3962
		Brown	9.30%	0.4081	0.3636	0.9405	11.32%	0.4165	0.4713	0.8930

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 27. Japanese companies factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.5206	-0.2701***	0.2867*	0.0062	0.4045	0.5583*	-0.0314	-0.6708	0.07	0.02	0.2868	0.29	-0.4672	0.2925
	10/90	(0.3752)	(0.0815)	(0.1595)	(0.1759)	(0.3038)	(0.3217)	(0.1286)	(0.6726)	(0.1636)	(0.2479)	(0.2581)	(0.5385)	(0.3601)	(0.2068)
		0.1671	*0.0011*	*0.074*	*0.9719*	*0.1847*	*0.0845*	*0.8076*	*0.3202*	*0.6694*	*0.9359*	*0.2681*	*0.591*	*0.1966*	*0.1594*
		-0.2484	-0.0651	0.4174***	0.0904	-0.3423	-0.0325	0.0461	-0.154	0.1651	-0.1002	0.1321	0.3478	0.0236	-0.1271
	30/70	(0.1796)	(0.053)	(0.123)	(0.1334)	(0.211)	(0.2436)	(0.0862)	(0.4745)	(0.1226)	(0.1976)	(0.178)	(0.425)	(0.3146)	(0.1803)
		0.1683	*0.2213*	*0.0009*	*0.4989*	*0.1066*	*0.8941*	*0.593*	*0.746*	*0.1802*	*0.6129*	*0.4591*	*0.4145*	*0.9403*	*0.482*
		-0.0912	-0.0429	0.4024***	0.0988	-0.2604	-0.0412	0.0422	-0.1027	0.1852**	-0.1285	0.0882	0.2014	0.068	-0.0876
	50/50	(0.1556)	(0.0416)	(0.098)	(0.1196)	(0.1809)	(0.165)	(0.0692)	(0.353)	(0.0916)	(0.1827)	(0.2176)	(0.3313)	(0.2934)	(0.1606)
		0.5587	*0.3037*	*0.0001*	*0.41*	*0.1518*	*0.8031*	*0.5433*	*0.7715*	*0.045*	*0.483*	*0.6857*	*0.5441*	*0.8172*	*0.5863*
		-0.4408	-0.2606***	0.2036	0.1	0.2417	0.0234	0.0955	-0.3246	0.0278	-0.2384	0.1071	-0.9781	-0.5053	0.3911
	KNN	(0.3812)	(0.0782)	(0.1713)	(0.1645)	(0.375)	(0.3524)	(0.1389)	(0.7414)	(0.1809)	(0.3049)	(0.2336)	(0.6089)	(0.4846)	(0.308)
		0.2492	*0.0011*	*0.2363*	*0.5441*	*0.5201*	*0.9471*	*0.4926*	*0.6622*	*0.878*	*0.4355*	*0.6473*	*0.1103*	*0.2988*	*0.2061*
WTR		-0.2257	0.0437	0.1819	0.3066**	0.5066*	0.0146	-0.1671*	-0.2021	0.0212	-0.3444	-0.2939	0.0967	-0.3031	-0.072
	10/90	(0.2259)	(0.0886)	(0.1286)	(0.1454)	(0.2685)	(0.2831)	(0.0975)	(0.4693)	(0.1093)	(0.246)	(0.2076)	(0.3624)	(0.5079)	(0.1817)
		0.3192	*0.6227*	*0.1591*	*0.0364*	*0.0609*	*0.959*	*0.0884*	*0.6673*	*0.8465*	*0.1635*	*0.1588*	*0.7899*	*0.5514*	*0.6924*
		-0.1577	0.0185	0.1936**	0.0857	0.3956**	0.1084	0.0003	-0.4312	0.0978	-0.3365**	-0.1418	0.0919	-0.2055	-0.0051
	30/70	(0.1775)	(0.0504)	(0.0875)	(0.0974)	(0.1999)	(0.1498)	(0.0757)	(0.3476)	(0.0723)	(0.1613)	(0.1609)	(0.2434)	(0.327)	(0.1417)
		0.3754	*0.7134*	*0.0282*	*0.38*	*0.0494*	*0.4701*	*0.9969*	*0.2166*	*0.1776*	*0.0385*	*0.3794*	*0.7061*	*0.5306*	*0.9711*
		-0.0335	0.0057	0.0466	-0.0129	0.2376	0.0562	0.0597	-0.5618**	0.1151**	-0.2844**	-0.1973	0.0254	0.0082	-0.0241
	50/50	(0.1544)	(0.0408)	(0.081)	(0.0781)	(0.1607)	(0.1201)	(0.065)	(0.2524)	(0.0544)	(0.1232)	(0.128)	(0.2063)	(0.2785)	(0.0984)
		0.8287	*0.8883*	*0.5658*	*0.8689*	*0.1411*	*0.6408*	*0.3596*	*0.0274*	*0.036*	*0.0222*	*0.1253*	*0.9022*	*0.9766*	*0.8065*
		-0.1853	0.1074	0.1774	0.1676	0.7066**	0.2612	-0.1118	-0.4493	0.041	-0.154	-0.0899	0.2172	-0.0312	-0.0697
	KNN	(0.2846)	(0.0921)	(0.1545)	(0.1806)	(0.2972)	(0.3176)	(0.1214)	(0.5261)	(0.1223)	(0.25)	(0.2767)	(0.4567)	(0.4622)	(0.2086)
		0.516	*0.2452*	*0.2524*	*0.3548*	*0.0185*	*0.412*	*0.3583*	*0.3944*	*0.7378*	*0.5387*	*0.7457*	*0.635*	*0.9463*	*0.7386*
WST		0.0923	-0.1568**	0.1441	0.1672	0.0615	0.4692**	-0.1256	-0.4595	0.2169	-0.0151	0.3351	0.7129**	-0.3603	-0.3714
	10/90	(0.2139)	(0.0761)	(0.1118)	(0.1571)	(0.244)	(0.2039)	(0.0842)	(0.4347)	(0.148)	(0.1885)	(0.2169)	(0.2925)	(0.3418)	(0.2346)
		0.6668	*0.0407*	*0.1993*	*0.2885*	*0.8012*	*0.0226*	*0.1377*	*0.2923*	*0.1449*	*0.9362*	*0.1244*	*0.016*	*0.2936*	*0.1155*
		-0.2835*	-0.0768	0.3074***	-0.0596	-0.0879	0.5184***	-0.0599	0.226	0.1053	-0.1526	-0.1387	0.0992	0.1965	-0.1694*
	30/70	(0.1604)	(0.0632)	(0.0872)	(0.1123)	(0.1824)	(0.1867)	(0.0689)	(0.3202)	(0.0857)	(0.1548)	(0.1858)	(0.2722)	(0.3117)	(0.0979)
		0.079	*0.2257*	*0.0005*	*0.5965*	*0.6304*	*0.0061*	*0.3865*	*0.4815*	*0.2215*	*0.3257*	*0.4563*	*0.7161*	*0.5294*	*0.0857*
		-0.1527	-0.066	0.1801***	-0.0591	-0.0442	0.2044*	-0.0171	0.0949	0.0331	-0.0389	-0.0776	0.3102	0.0933	-0.163*
	50/50	(0.1043)	(0.0421)	(0.0574)	(0.1031)	(0.1372)	(0.1189)	(0.0454)	(0.2387)	(0.0702)	(0.1135)	(0.1164)	(0.2183)	(0.2079)	(0.0902)
		0.1447	*0.1194*	*0.002*	*0.567*	*0.7476*	*0.0873*	*0.7066*	*0.6915*	*0.6375*	*0.7325*	*0.506*	*0.1573*	*0.6542*	*0.0728*
		-0.2929	-0.2636***	0.1806	0.0703	0.5155**	0.7402***	-0.0048	-0.4513	0.3113*	0.607	0.6423*	0.3074	-0.5212	0.1071
	KNN	(0.2385)	(0.0897)	(0.1487)	(0.1629)	(0.2428)	(0.1955)	(0.0925)	(0.4858)	(0.1754)	(0.3872)	(0.3638)	(0.4101)	(0.5554)	(0.1899)
		0.221	*0.0038*	*0.2263*	*0.6663*	*0.0352*	*0.0002*	*0.9583*	*0.3544*	*0.078*	*0.1191*	*0.0795*	*0.4547*	*0.3495*	*0.5736*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 28. Japanese companies' portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	1.36%	0.0170	0.0169	0.0347	10.60%	0.4677	0.5905	0.9124
		Brown	-3.54%	-0.2362	-0.2283	-0.4630	3.70%	0.1467	0.1460	0.2900
	30/70	Green	4.21%	0.1869	0.1713	0.4059	8.58%	0.4359	0.4733	0.8748
		Brown	1.55%	0.0354	0.0343	0.0694	8.84%	0.4291	0.4347	0.9044
	50/50	Green	3.77%	0.1649	0.1491	0.3572	9.41%	0.5443	0.5539	1.1150
		Brown	3.23%	0.1460	0.1393	0.2961	9.49%	0.4826	0.4841	1.0279
	KNN	Green	1.31%	0.0151	0.0149	0.0303	10.17%	0.4782	0.5837	0.9056
		Brown	-3.64%	-0.2518	-0.2478	-0.4683	0.18%	-0.0346	-0.0373	-0.0633
WTR	10/90	Green	3.12%	0.1317	0.1296	0.2701	4.86%	0.2059	0.2144	0.4138
		Brown	1.89%	0.0539	0.0532	0.1089	1.86%	0.0481	0.0426	0.1061
	30/70	Green	3.86%	0.1951	0.2012	0.3931	7.71%	0.4340	0.4400	0.9196
		Brown	3.38%	0.1646	0.1513	0.3498	1.65%	0.0384	0.0348	0.0860
	50/50	Green	3.61%	0.1770	0.1764	0.3557	5.92%	0.3273	0.3188	0.7033
		Brown	3.85%	0.1949	0.1713	0.4244	-1.50%	-0.1437	-0.1295	-0.3178
	KNN	Green	1.68%	0.0401	0.0402	0.0817	6.18%	0.3284	0.3207	0.6913
		Brown	1.90%	0.0528	0.0517	0.1063	-0.21%	-0.0548	-0.0515	-0.1174
WST	10/90	Green	2.65%	0.1015	0.0951	0.2097	6.10%	0.2901	0.2933	0.5874
		Brown	4.35%	0.2293	0.2257	0.4683	5.41%	0.2266	0.2263	0.4799
	30/70	Green	5.36%	0.2938	0.2622	0.6396	4.49%	0.2143	0.2062	0.4442
		Brown	2.90%	0.1373	0.1317	0.2862	8.17%	0.3920	0.4041	0.8855
	50/50	Green	4.92%	0.2639	0.2337	0.5744	3.93%	0.1798	0.1719	0.3823
		Brown	3.57%	0.1883	0.1795	0.3813	6.92%	0.3525	0.3412	0.7981
	KNN	Green	5.33%	0.2238	0.2188	0.4867	4.71%	0.2279	0.2160	0.4734
		Brown	3.57%	0.1728	0.1739	0.3486	0.91%	-0.0030	-0.0032	-0.0056

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 29. The United Kingdom sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.7545	-0.0392	-0.2195	0.4562	1.0693**	-0.1801	0.4797***	0.6935	0.0695	0.1149	-0.055	-0.0638	0.4282	-0.1867
	10/90	(0.4675)	(0.1259)	(0.2876)	(0.495)	(0.5345)	(0.6221)	(0.1659)	(0.4994)	(0.0966)	(0.2354)	(0.3559)	(0.3746)	(0.3907)	(0.126)
		0.1084	*0.7562*	*0.4463*	*0.3581*	*0.047*	*0.7726*	*0.0043*	*0.1671*	*0.4726*	*0.6262*	*0.8773*	*0.865*	*0.2748*	*0.1405*
		-0.4209	0.0507	-0.4061**	0.1412	0.9365***	0.5007	0.4325***	0.3001	-0.0017	-0.1808	0.479	-0.4219	-0.483*	0.1601
	30/70	(0.3345)	(0.0864)	(0.1817)	(0.3058)	(0.3139)	(0.3564)	(0.1517)	(0.2677)	(0.0694)	(0.1875)	(0.3087)	(0.3303)	(0.2794)	(0.1178)
		0.21	*0.5578*	*0.0267*	*0.6449*	*0.0033*	*0.1618*	*0.0049*	*0.264*	*0.9807*	*0.3366*	*0.1229*	*0.2034*	*0.0859*	*0.1762*
		-0.2833	0.0406	-0.384***	-0.0834	0.5078*	0.4522**	0.243***	0.4283	-0.099	-0.0125	0.2741	-0.3146	-0.0522	-0.0852
	50/50	(0.2367)	(0.0541)	(0.1409)	(0.216)	(0.2614)	(0.2243)	(0.0801)	(0.2647)	(0.0851)	(0.1777)	(0.3026)	(0.3389)	(0.3124)	(0.1675)
		0.2331	*0.4538*	*0.0071*	*0.6999*	*0.0537*	*0.0454*	*0.0028*	*0.1078*	*0.2462*	*0.9439*	*0.3664*	*0.3548*	*0.8675*	*0.6118*
		-0.3269	0.0127	-0.304	-0.0116	0.6502	0.8623*	0.4492***	0.6657*	-0.0472	0.0547	0.0991	-0.1247	0.2891	-0.0762
	KNN	(0.443)	(0.0926)	(0.1938)	(0.3104)	(0.3947)	(0.4371)	(0.1701)	(0.347)	(0.1042)	(0.2705)	(0.3248)	(0.4135)	(0.4611)	(0.1788)
		0.4616	*0.891*	*0.1186*	*0.9702*	*0.1013*	*0.0501*	*0.009*	*0.057*	*0.6514*	*0.8399*	*0.7607*	*0.7633*	*0.5317*	*0.6704*
WTR		-0.6719	0.0525	-0.0226	0.3919	1.297***	-0.295	0.5969***	-0.0793	0.2023	0.0269	1.6726***	1.6211***	0.199	-0.0133
	10/90	(0.4758)	(0.1171)	(0.3449)	(0.3569)	(0.4779)	(0.5218)	(0.1569)	(0.5247)	(0.159)	(0.3893)	(0.5924)	(0.4845)	(0.7595)	(0.2204)
		0.1598	*0.6546*	*0.9478*	*0.2737*	*0.0073*	*0.5726*	*0.0002*	*0.88*	*0.2052*	*0.9451*	*0.0054*	*0.001*	*0.7937*	*0.9519*
		-0.3864	0.0479	-0.1271	0.0919	0.7505**	0.0072	0.373***	-0.055	0.1512*	0.099	0.787***	0.3934	-0.281	0.1312
	30/70	(0.3385)	(0.09)	(0.1523)	(0.2701)	(0.3383)	(0.31)	(0.0987)	(0.3415)	(0.0783)	(0.2688)	(0.2359)	(0.3796)	(0.2873)	(0.1545)
		0.2553	*0.5952*	*0.4051*	*0.734*	*0.0278*	*0.9816*	*0.0002*	*0.8722*	*0.0554*	*0.7133*	*0.0011*	*0.3018*	*0.3295*	*0.3971*
		-0.1027	-0.0181	-0.1424	0.0741	0.5748**	0.4157*	0.2839***	-0.2062	0.0697	0.0914	0.6883**	0.5106	-0.1526	0.2074
	50/50	(0.2655)	(0.0727)	(0.1183)	(0.2111)	(0.2432)	(0.2248)	(0.08)	(0.3468)	(0.0759)	(0.2057)	(0.2718)	(0.3518)	(0.2746)	(0.1435)
		0.6992	*0.8037*	*0.2304*	*0.7259*	*0.0192*	*0.0661*	*0.0005*	*0.5529*	*0.3599*	*0.6574*	*0.0124*	*0.1488*	*0.5792*	*0.1506*
		0.5139	0.0396	-0.2108	0.3019	1.4632***	0.2666	0.2341	0.4414	0.2371	-0.0218	0.2293	-0.2905	-0.0776	-0.3424*
	KNN	(0.5181)	(0.1079)	(0.2358)	(0.4417)	(0.5091)	(0.6168)	(0.2524)	(0.5688)	(0.1463)	(0.4135)	(0.4225)	(0.5313)	(0.5146)	(0.2056)
		0.3227	*0.7143*	*0.3724*	*0.4952*	*0.0046*	*0.6662*	*0.3548*	*0.4389*	*0.1073*	*0.958*	*0.5881*	*0.5854*	*0.8803*	*0.0979*
WST		0.2523	0.1006	0.025	0.4284	0.5464	-1.1702*	0.3449	0.6836	-0.1227	-0.4229	-0.0925	-0.5723	-0.6984*	-0.2413
	10/90	(0.5744)	(0.1468)	(0.3493)	(0.6684)	(0.7444)	(0.6915)	(0.2523)	(0.5158)	(0.1273)	(0.2931)	(0.3465)	(0.5091)	(0.3809)	(0.2104)
		0.661	*0.4939*	*0.9429*	*0.5224*	*0.4639*	*0.0924*	*0.1735*	*0.1873*	*0.3367*	*0.1514*	*0.79*	*0.263*	*0.0689*	*0.2535*
		-0.2172	0.1721**	0.1764	0.0418	0.7589***	-0.441	0.3438***	0.543	0.1811**	0.0192	-0.2922	-0.4044	0.1112	-0.2618**
	30/70	(0.3433)	(0.0699)	(0.2185)	(0.2967)	(0.266)	(0.4436)	(0.1072)	(0.3385)	(0.0727)	(0.2157)	(0.3219)	(0.389)	(0.3891)	(0.1242)
		0.5278	*0.0149*	*0.4206*	*0.8881*	*0.0049*	*0.3216*	*0.0016*	*0.111*	*0.0139*	*0.9291*	*0.3656*	*0.3004*	*0.7755*	*0.037*
		-0.0979	0.0521	-0.0594	-0.0431	0.4546**	-0.1012	0.3201***	-0.0593	0.0819	-0.1834	0.133	0.238	0.0136	-0.0641
	50/50	(0.2081)	(0.0375)	(0.1384)	(0.1438)	(0.2032)	(0.1982)	(0.0616)	(0.3359)	(0.0673)	(0.1759)	(0.2498)	(0.312)	(0.3081)	(0.1332)
		0.6386	*0.1665*	*0.6682*	*0.7647*	*0.0266*	*0.6104*	*0*	*0.8601*	*0.226*	*0.2991*	*0.5953*	*0.4467*	*0.9649*	*0.6311*
		-0.2363	0.0829	0.1509	-0.5888**	0.9728***	0.8802***	0.1127	0.4875	0.2713**	0.3157	0.4504	-0.8104	-0.9865	-0.4736*
	KNN	(0.2706)	(0.0715)	(0.1836)	(0.2362)	(0.3305)	(0.2524)	(0.0878)	(0.6413)	(0.1243)	(0.4876)	(0.5216)	(0.7851)	(0.6026)	(0.2462)
		0.3838	*0.2474*	*0.4123*	*0.0136*	*0.0037*	*0.0006*	*0.2014*	*0.4484*	*0.0307*	*0.5184*	*0.3894*	*0.3038*	*0.1039*	*0.0565*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 30. The United Kingdom's companies' portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	7.55%	0.2369	0.2246	0.5528	10.82%	0.4587	0.4318	1.0947
		Brown	7.47%	0.2645	0.2755	0.5654	17.35%	0.6322	0.7600	1.3415
	30/70	Green	-1.14%	-0.0829	-0.0774	-0.1863	12.78%	0.6344	0.6269	1.4829
		Brown	2.35%	0.0626	0.0602	0.1285	14.02%	0.6037	0.6512	1.2793
	50/50	Green	2.23%	0.0593	0.0547	0.1392	10.93%	0.5210	0.5365	1.2097
		Brown	3.76%	0.1558	0.1469	0.3171	11.63%	0.4913	0.5227	1.0270
	KNN	Green	-0.68%	-0.0572	-0.0511	-0.1445	10.33%	0.4917	0.4900	1.1310
		Brown	3.48%	0.1078	0.1045	0.2326	15.19%	0.5934	0.7021	1.2465
WTR	10/90	Green	0.08%	-0.0329	-0.0322	-0.0656	13.56%	0.5828	0.7106	1.1439
		Brown	4.57%	0.1491	0.1548	0.3487	15.78%	0.5323	0.5831	1.1316
	30/70	Green	1.64%	0.0288	0.0268	0.0604	12.58%	0.6492	0.6867	1.4486
		Brown	4.64%	0.1849	0.1927	0.3768	14.11%	0.5723	0.5990	1.2398
	50/50	Green	0.92%	-0.0038	-0.0035	-0.0083	11.28%	0.5856	0.6698	1.2068
		Brown	5.05%	0.2330	0.2367	0.4625	11.54%	0.5166	0.5340	1.1040
	KNN	Green	-6.28%	-0.3017	-0.2537	-0.7367	12.74%	0.6724	0.7147	1.5030
		Brown	9.66%	0.4189	0.4811	0.8359	12.26%	0.3441	0.3654	0.7079
WST	10/90	Green	1.11%	0.0045	0.0038	0.0132	-1.41%	-0.0970	-0.0916	-0.2172
		Brown	9.46%	0.2891	0.2823	0.7164	0.74%	-0.0093	-0.0092	-0.0191
	30/70	Green	-0.21%	-0.0563	-0.0523	-0.1184	6.15%	0.2937	0.2981	0.5869
		Brown	5.70%	0.2094	0.1842	0.5446	9.63%	0.3968	0.4023	0.8417
	50/50	Green	1.32%	0.0166	0.0157	0.0349	8.18%	0.4452	0.4399	0.9256
		Brown	6.37%	0.3160	0.2900	0.6997	6.97%	0.3113	0.3219	0.6307
	KNN	Green	-0.97%	-0.0839	-0.0739	-0.2114	7.34%	0.3728	0.3851	0.7462
		Brown	5.30%	0.2250	0.2203	0.4579	2.99%	0.0569	0.0574	0.1202

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 31. Chinese sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		0.4048	-0.0382	0.3607	1.0326*	1.3662**	-0.4181	0.235	-2.8413	0.4884*	-0.7999*	1.3969	0.6321	-1.4207	0.7578
	10/90	(1.0977)	(0.2142)	(0.3941)	(0.5475)	(0.6268)	(0.8288)	(0.2364)	(2.0857)	(0.2597)	(0.4296)	(1.1329)	(0.5845)	(1.633)	(0.4942)
		0.7138	*0.8592*	*0.3642*	*0.0648*	*0.0337*	*0.6161*	*0.3248*	*0.1836*	*0.0701*	*0.0728*	*0.2275*	*0.2884*	*0.3914*	*0.1361*
		0.1917	0.0618	0.4882*	0.3461	0.4159	-0.3007	0.2087	-2.5147**	0.1786	-0.2316	1.5592*	1.3867**	-0.8209	0.5917
	30/70	(0.6361)	(0.1021)	(0.2647)	(0.4262)	(0.3896)	(0.4377)	(0.1384)	(1.1883)	(0.1462)	(0.3787)	(0.7679)	(0.6202)	(0.8046)	(0.3561)
		0.7643	*0.5477*	*0.0707*	*0.4204*	*0.2906*	*0.4951*	*0.1373*	*0.043*	*0.2316*	*0.5456*	*0.0516*	*0.0332*	*0.316*	*0.1074*
		-0.5334	0.0181	0.2724	0.5988*	0.7552**	-0.5166	0.1716	-0.6823	0.1249	0.179	0.6512	0.5868	-0.1762	0.0708
	50/50	(0.5268)	(0.1162)	(0.2039)	(0.3382)	(0.3329)	(0.4381)	(0.1577)	(0.806)	(0.0992)	(0.2877)	(0.5145)	(0.3664)	(0.5545)	(0.2038)
		0.3159	*0.877*	*0.1873*	*0.0824*	*0.0274*	*0.2437*	*0.2814*	*0.4042*	*0.2179*	*0.5386*	*0.2157*	*0.1201*	*0.7529*	*0.7309*
		-0.6201	0.0332	0.2672	0.4908	0.6271	-0.1737	0.2427	-2.5478	0.1089	0.7095	2.0218**	1.7954**	-1.4362	0.1183
	KNN	(1.1988)	(0.2165)	(0.3653)	(0.5937)	(0.4245)	(0.7426)	(0.2831)	(1.504)	(0.1618)	(0.6292)	(0.8289)	(0.7767)	(1.0149)	(0.404)
		0.6071	*0.8786*	*0.4677*	*0.4121*	*0.1456*	*0.816*	*0.3952*	*0.101*	*0.5063*	*0.2687*	*0.0211*	*0.0281*	*0.1677*	*0.7718*
WTR		0.3205	-0.2553	0.4669	0.3253	0.4129	0.1889	0.3377*	-0.6603	-0.0116	-0.1587	0.2237	0.945*	-1.0856	-0.4385
	10/90	(0.6237)	(0.1678)	(0.2937)	(0.3878)	(0.4306)	(0.4835)	(0.1905)	(1.4107)	(0.1529)	(0.7231)	(0.5486)	(0.4762)	(0.8615)	(0.3514)
		0.6081	*0.1305*	*0.1142*	*0.4031*	*0.3394*	*0.6966*	*0.0786*	*0.6422*	*0.9398*	*0.8274*	*0.6856*	*0.0539*	*0.2148*	*0.2191*
		-1.0798**	-0.2575**	0.2137	0.23	0.8069***	0.0788	0.1178	-2.2323**	0.1446	-0.3133	0.2456	1.0103	-0.228	-0.4368
	30/70	(0.4245)	(0.1223)	(0.1926)	(0.2619)	(0.281)	(0.3178)	(0.1277)	(0.8513)	(0.1983)	(0.5835)	(0.5513)	(0.6254)	(0.6369)	(0.3414)
		0.0121	*0.0372*	*0.2691*	*0.3814*	*0.0047*	*0.8046*	*0.358*	*0.0122*	*0.4699*	*0.5942*	*0.6583*	*0.1139*	*0.7222*	*0.2079*
		-0.5171	-0.2849**	0.2744	0.3547	0.597**	-0.0381	0.044	-0.4001	0.1483	-0.3435	-0.0613	0.1061	-0.1007	-0.2251
	50/50	(0.3461)	(0.1273)	(0.1815)	(0.2422)	(0.2612)	(0.2896)	(0.106)	(0.7104)	(0.1385)	(0.4946)	(0.4881)	(0.4461)	(0.5646)	(0.2297)
		0.1375	*0.0268*	*0.133*	*0.1454*	*0.0238*	*0.8955*	*0.6786*	*0.5764*	*0.2907*	*0.4913*	*0.9007*	*0.8131*	*0.8593*	*0.3328*
		-0.2644	-0.2231**	0.0418	0.4916	0.6482**	-0.685**	0.1495	-2.0642	-0.0365	-0.9011	0.2923	1.6825*	-0.9324	-0.3256
	KNN	(0.4054)	(0.0974)	(0.2007)	(0.3283)	(0.2632)	(0.2797)	(0.147)	(1.4613)	(0.3066)	(0.8966)	(1.0358)	(0.9605)	(1.2927)	(0.6034)
		0.5155	*0.0235*	*0.8352*	*0.1366*	*0.015*	*0.0156*	*0.311*	*0.1653*	*0.9058*	*0.3208*	*0.7792*	*0.0873*	*0.4749*	*0.5924*
WST		-0.6697	-0.2279	-0.807*	0.8064	1.3192**	0.2974	0.3495	-0.9003	0.3783*	0.0359	0.3531	0.4753	-0.7262	0.389
	10/90	(1.0183)	(0.1813)	(0.4334)	(0.6253)	(0.5935)	(0.9482)	(0.2997)	(1.4891)	(0.1922)	(0.4282)	(0.7233)	(0.5297)	(1.0931)	(0.3676)
		0.5127	*0.2125*	*0.0664*	*0.201*	*0.0292*	*0.7546*	*0.2472*	*0.5488*	*0.0558*	*0.9335*	*0.6281*	*0.3748*	*0.5102*	*0.2961*
		0.1064	-0.114	-0.0803	0.649*	0.6283*	0.2797	0.1233	-2.3173**	0.2525	0.4069	0.7529	1.0344**	-0.5847	0.2536
	30/70	(0.5806)	(0.143)	(0.2698)	(0.3809)	(0.3392)	(0.5815)	(0.1956)	(1.107)	(0.1511)	(0.2638)	(0.6036)	(0.4697)	(0.8278)	(0.322)
		0.8551	*0.4276*	*0.7667*	*0.0925*	*0.0678*	*0.6318*	*0.5304*	*0.0426*	*0.1024*	*0.1306*	*0.2193*	*0.0333*	*0.484*	*0.4355*
		-0.022	-0.0307	0.0422	0.169	0.2821	0.1934	-0.0017	-1.6245***	0.2784**	0.4185*	-0.0839	-0.3098	-0.35	0.3169
	50/50	(0.4467)	(0.0867)	(0.217)	(0.3527)	(0.3469)	(0.4911)	(0.1487)	(0.5736)	(0.1066)	(0.2087)	(0.4077)	(0.2772)	(0.6333)	(0.201)
		0.9608	*0.7247*	*0.8465*	*0.6332*	*0.4187*	*0.6948*	*0.9907*	*0.0071*	*0.0125*	*0.0516*	*0.8379*	*0.2701*	*0.5835*	*0.1227*
		-0.7189	-0.1931	-0.5602	1.1628***	1.0369**	-0.1956	0.0306	-4.5738**	0.4558*	-0.5149	0.1707	0.1165	-0.2257	0.7887*
	KNN	(0.9523)	(0.1668)	(0.3793)	(0.4051)	(0.3931)	(0.7568)	(0.2531)	(1.8133)	(0.2361)	(1.0804)	(1.0976)	(0.9279)	(1.1776)	(0.4546)
		0.4526	*0.2504*	*0.1437*	*0.0053*	*0.0101*	*0.7967*	*0.904*	*0.0156*	*0.0604*	*0.6362*	*0.8771*	*0.9007*	*0.849*	*0.0903*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 32. Chinese sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-1.62%	-0.1277	-0.1195	-0.2579	2.41%	0.0684	0.0892	0.1225
		Brown	15.45%	0.5461	0.5860	1.1864	-12.29%	-0.4507	-0.4464	-0.8125
	30/70	Green	0.93%	-0.0037	-0.0036	-0.0073	6.25%	0.2265	0.2491	0.4286
		Brown	8.70%	0.3925	0.3634	0.8844	-4.77%	-0.2108	-0.2245	-0.3936
	50/50	Green	5.05%	0.2150	0.2116	0.4618	4.83%	0.1764	0.1869	0.3479
		Brown	7.10%	0.3138	0.3037	0.6781	2.33%	0.0584	0.0641	0.1169
	KNN	Green	8.07%	0.3404	0.3019	0.7843	9.14%	0.3477	0.3743	0.6790
		Brown	6.50%	0.2069	0.2252	0.4228	-3.63%	-0.1579	-0.1523	-0.3072
WTR	10/90	Green	2.76%	0.0612	0.0614	0.1206	-7.01%	-0.3271	-0.3051	-0.6492
		Brown	13.54%	0.4892	0.5036	1.0863	-4.59%	-0.2453	-0.2705	-0.4286
	30/70	Green	6.44%	0.2205	0.2277	0.4489	10.97%	0.4129	0.5099	0.8329
		Brown	-1.32%	-0.1157	-0.1088	-0.2336	-7.91%	-0.4475	-0.4629	-0.7627
	50/50	Green	5.82%	0.2052	0.2122	0.4234	3.25%	0.0990	0.1178	0.1869
		Brown	2.39%	0.0708	0.0673	0.1430	-0.61%	-0.0775	-0.0747	-0.1508
	KNN	Green	5.78%	0.2106	0.2158	0.4204	6.49%	0.2163	0.2340	0.4516
		Brown	6.14%	0.2336	0.2296	0.4946	-1.82%	-0.0799	-0.1136	-0.1418
WST	10/90	Green	0.97%	-0.0011	-0.0011	-0.0022	-4.04%	-0.2578	-0.2722	-0.4467
		Brown	4.83%	0.1485	0.1826	0.2836	-4.69%	-0.1780	-0.2039	-0.3122
	30/70	Green	1.43%	0.0168	0.0145	0.0387	5.16%	0.2103	0.2483	0.3962
		Brown	8.15%	0.3172	0.3459	0.6424	-9.44%	-0.4183	-0.4715	-0.7074
	50/50	Green	6.26%	0.2225	0.2045	0.5167	4.64%	0.1863	0.2085	0.3562
		Brown	7.94%	0.3250	0.3090	0.7092	-12.43%	-0.5625	-0.5684	-0.9959
	KNN	Green	-0.95%	-0.0699	-0.0625	-0.1502	3.42%	0.1230	0.1487	0.2270
		Brown	-3.15%	-0.1618	-0.1709	-0.3179	-36.73%	-0.9013	-0.9558	-1.4315

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 33. Taiwan sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		0.002	0.0334	0.1168	-0.2565	-0.1274	0.6833*	-0.0319	-0.2091	-0.0267	-0.1	0.1426	0.0121	-0.0288	-0.2498
	10/90	(0.5835)	(0.097)	(0.1901)	(0.2762)	(0.3598)	(0.3482)	(0.1842)	(0.7984)	(0.1247)	(0.2982)	(0.4189)	(0.4774)	(0.6341)	(0.2915)
		0.9973	*0.7312*	*0.5401*	*0.3549*	*0.7239*	*0.052*	*0.8628*	*0.794*	*0.831*	*0.7381*	*0.7344*	*0.9799*	*0.9638*	*0.3938*
		0.5141	0.117*	-0.1204	-0.3075*	-0.2147	0.5799***	0.0042	-0.5332	0.0166	-0.0116	0.3614	0.2436	-0.4306	-0.1134
	30/70	(0.3218)	(0.0701)	(0.1136)	(0.1797)	(0.1678)	(0.2051)	(0.1022)	(0.5364)	(0.103)	(0.2101)	(0.329)	(0.344)	(0.501)	(0.2118)
		0.1127	*0.0978*	*0.2911*	*0.0896*	*0.203*	*0.0055*	*0.9673*	*0.3229*	*0.8721*	*0.9561*	*0.2749*	*0.4807*	*0.3924*	*0.5937*
		0.6021**	0.0954*	-0.0186	-0.2934	-0.1868	0.3969**	0.1158	-0.4239	-0.0354	-0.036	0.2126	0.2662	-0.393	-0.0815
	50/50	(0.2888)	(0.0516)	(0.1174)	(0.2031)	(0.1853)	(0.1735)	(0.1099)	(0.4257)	(0.0856)	(0.155)	(0.2742)	(0.25)	(0.3624)	(0.169)
		0.0391	*0.0665*	*0.8743*	*0.1511*	*0.3156*	*0.0238*	*0.2944*	*0.322*	*0.6805*	*0.8169*	*0.4401*	*0.2898*	*0.2812*	*0.6308*
		0.5939	0.0441	0.0292	-0.1634	-0.1722	0.6225*	-0.0216	-0.7107	0.0142	-0.332	0.2313	0.0091	-0.0509	-0.3424
	KNN	(0.4468)	(0.0815)	(0.1649)	(0.256)	(0.3484)	(0.3245)	(0.157)	(0.7585)	(0.2029)	(0.3231)	(0.3947)	(0.3914)	(0.8147)	(0.2474)
		0.1862	*0.5891*	*0.8596*	*0.5244*	*0.6221*	*0.0573*	*0.8907*	*0.3513*	*0.9443*	*0.3069*	*0.5593*	*0.9814*	*0.9503*	*0.1699*
WTR		-0.3682	0.1466*	-0.1555	0.0839	-0.2118	-0.2384	-0.0577	-0.1044	-0.2316*	0.2199	0.1355	0.0173	-0.6839	-0.1331
	10/90	(0.626)	(0.084)	(0.1791)	(0.2331)	(0.2604)	(0.3149)	(0.1784)	(0.7768)	(0.1217)	(0.264)	(0.4258)	(0.4783)	(0.6176)	(0.206)
		0.5576	*0.0835*	*0.387*	*0.7196*	*0.4177*	*0.4505*	*0.747*	*0.8934*	*0.0601*	*0.4071*	*0.7511*	*0.9713*	*0.2712*	*0.5199*
		0.5941	0.1296**	-0.135	-0.3671	-0.3834	0.1506	0.1341	0.0274	-0.1669**	0.1526	0.1498	0.0921	-0.4635	-0.2666
	30/70	(0.4322)	(0.0617)	(0.1457)	(0.3504)	(0.2723)	(0.3154)	(0.1363)	(0.5441)	(0.0765)	(0.1792)	(0.3859)	(0.409)	(0.3966)	(0.198)
		0.1719	*0.038*	*0.356*	*0.297*	*0.1618*	*0.6339*	*0.3274*	*0.96*	*0.0317*	*0.3968*	*0.6988*	*0.8224*	*0.2456*	*0.1816*
		0.5469	0.1357**	-0.0983	-0.26	-0.3285	0.0349	0.163	-0.0586	-0.1276**	0.1852	0.271	0.0891	-0.2624	-0.0319
	50/50	(0.3676)	(0.052)	(0.1363)	(0.2814)	(0.2098)	(0.2658)	(0.1205)	(0.4548)	(0.0634)	(0.1816)	(0.3633)	(0.3967)	(0.3797)	(0.1908)
		0.1396	*0.0102*	*0.4725*	*0.3574*	*0.1201*	*0.8959*	*0.1788*	*0.8978*	*0.0473*	*0.3106*	*0.4577*	*0.8227*	*0.4914*	*0.8675*
		-0.7228	0.1132	-0.0695	0.4289	0.339	0.0156	0.4215*	0.0237	0.0516	0.2775	0.0075	-0.3844	-0.4845	-0.638
	KNN	(0.6259)	(0.1024)	(0.1803)	(0.3058)	(0.3093)	(0.4496)	(0.2154)	(1.071)	(0.1462)	(0.3191)	(0.6545)	(0.7769)	(0.8366)	(0.4864)
		0.2507	*0.2714*	*0.7008*	*0.1635*	*0.2754*	*0.9724*	*0.0528*	*0.9824*	*0.7251*	*0.3867*	*0.9909*	*0.622*	*0.564*	*0.193*
WST		-0.5524	0.1775	-0.0125	-0.2894	-0.4106	0.7576*	-0.0945	-1.4283**	0.2985**	0.0057	0.1897	0.0248	-0.3157	-0.3298
	10/90	(0.6072)	(0.122)	(0.2115)	(0.285)	(0.3703)	(0.3936)	(0.1839)	(0.7037)	(0.131)	(0.309)	(0.3644)	(0.4201)	(0.5969)	(0.3557)
		0.3647	*0.1481*	*0.9531*	*0.312*	*0.2697*	*0.0565*	*0.6084*	*0.0454*	*0.0251*	*0.9852*	*0.6039*	*0.9531*	*0.5982*	*0.3562*
		0.1119	0.1005	-0.0695	-0.3036	-0.4028*	0.6729***	0.0121	-0.7757	0.0221	0.0527	0.4336	0.3414	-0.2827	-0.0142
	30/70	(0.3788)	(0.0701)	(0.1175)	(0.2098)	(0.2192)	(0.2441)	(0.1327)	(0.5141)	(0.0969)	(0.2218)	(0.395)	(0.3151)	(0.5535)	(0.2223)
		0.7681	*0.1545*	*0.5554*	*0.1503*	*0.0685*	*0.0067*	*0.9272*	*0.1349*	*0.8202*	*0.8128*	*0.2753*	*0.2815*	*0.6108*	*0.9493*
		0.6842**	0.0615	-0.0855	-0.3742	-0.2749	0.428**	0.0757	-0.3457	0.0349	0.1239	-0.0444	0.0696	0.1446	0.0897
	50/50	(0.3301)	(0.0534)	(0.1134)	(0.2565)	(0.2058)	(0.1969)	(0.1178)	(0.4319)	(0.0899)	(0.191)	(0.4062)	(0.3894)	(0.3585)	(0.2117)
		0.0402	*0.2516*	*0.4525*	*0.1471*	*0.1842*	*0.0317*	*0.5218*	*0.4256*	*0.6991*	*0.5181*	*0.9132*	*0.8586*	*0.6877*	*0.6727*
		-0.0254	-0.0189	0.1553	-0.1299	-0.3981	0.6011*	-0.1496	-0.4038	0.122	0.4041	0.8606	0.1754	-1.5772*	-0.3119
	KNN	(0.6494)	(0.1096)	(0.2651)	(0.3161)	(0.4051)	(0.3566)	(0.1744)	(0.8984)	(0.1701)	(0.4133)	(0.7074)	(0.6997)	(0.9072)	(0.4042)
		0.9688	*0.8633*	*0.5592*	*0.6819*	*0.3276*	*0.0943*	*0.3928*	*0.6542*	*0.4749*	*0.3308*	*0.227*	*0.8026*	*0.0856*	*0.4423*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 34. Taiwan sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	8.32%	0.3742	0.3437	0.8796	10.08%	0.4165	0.4087	0.9341
		Brown	7.32%	0.3062	0.3524	0.5641	4.16%	0.1346	0.1299	0.3124
	30/70	Green	8.72%	0.4854	0.4698	1.0729	18.63%	0.8394	0.8963	1.8515
		Brown	14.97%	0.7802	0.8624	1.7361	11.93%	0.5440	0.5219	1.2728
	50/50	Green	9.32%	0.5514	0.5224	1.2268	17.85%	0.8695	0.9010	1.9948
		Brown	17.85%	0.8980	1.0216	1.9716	13.03%	0.7107	0.6842	1.6902
	KNN	Green	5.67%	0.2611	0.2378	0.5843	17.57%	0.7609	0.8151	1.6755
		Brown	12.18%	0.5304	0.6750	1.0115	3.48%	0.0953	0.0933	0.2191
WTR	10/90	Green	18.11%	0.9048	1.1343	1.8619	11.82%	0.4738	0.5239	0.9910
		Brown	11.80%	0.5046	0.5764	0.9777	7.91%	0.3201	0.3742	0.6293
	30/70	Green	14.52%	0.9108	0.8976	2.1550	11.81%	0.5510	0.5339	1.2656
		Brown	21.82%	0.9888	1.1531	2.1529	8.88%	0.4379	0.4442	0.9438
	50/50	Green	14.05%	0.9488	0.9572	2.2225	12.67%	0.6086	0.5683	1.3869
		Brown	21.64%	1.0219	1.1216	2.3700	11.71%	0.5884	0.6048	1.2873
	KNN	Green	15.10%	0.6984	0.7827	1.5480	13.54%	0.6067	0.6115	1.3882
		Brown	15.18%	0.5639	0.6569	1.1274	2.03%	0.0355	0.0359	0.0684
WST	10/90	Green	16.35%	0.8516	0.9039	1.8713	30.75%	1.2861	1.4261	2.8836
		Brown	6.16%	0.2661	0.3170	0.5097	8.48%	0.3517	0.2965	0.9353
	30/70	Green	10.84%	0.5609	0.5174	1.2751	17.14%	0.8281	0.8511	1.8055
		Brown	10.96%	0.5720	0.5965	1.3015	9.04%	0.4192	0.3652	1.0527
	50/50	Green	9.79%	0.5474	0.5332	1.2225	20.24%	1.0641	1.1984	2.4244
		Brown	18.20%	0.9130	1.0657	1.9767	16.73%	0.7995	0.8415	1.6481
	KNN	Green	7.22%	0.3013	0.2678	0.7049	17.27%	0.8434	0.8499	1.8556
		Brown	2.25%	0.0578	0.0607	0.1180	7.30%	0.2141	0.2062	0.4817

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 35. Canadian sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.4572	-0.1183	0.7358**	0.5157	0.953*	-0.8807	0.2255	0.0631	0.3684	0.649	0.1852	0.4824	0.1296	-0.4985
	10/90	(0.4743)	(0.1448)	(0.2878)	(0.3293)	(0.4882)	(0.6325)	(0.1687)	(0.6578)	(0.2239)	(0.4117)	(0.6281)	(0.6051)	(0.7511)	(0.3288)
		0.3365	*0.4151*	*0.0115*	*0.1193*	*0.0526*	*0.1657*	*0.1834*	*0.9237*	*0.1024*	*0.1174*	*0.7686*	*0.4269*	*0.8633*	*0.1321*
		-0.5323	0.0966	0.4478**	0.4326*	0.5142	-0.5654	0.3655**	-0.6118	0.2676*	-0.1966	-0.1284	-0.574**	0.1362	-0.5038**
	30/70	(0.3765)	(0.1256)	(0.2112)	(0.2406)	(0.3469)	(0.4041)	(0.1685)	(0.4002)	(0.1508)	(0.2735)	(0.2206)	(0.2449)	(0.3568)	(0.2102)
		0.1594	*0.443*	*0.0355*	*0.074*	*0.1402*	*0.1637*	*0.0316*	*0.1288*	*0.0784*	*0.4734*	*0.5615*	*0.0207*	*0.7032*	*0.018*
		-0.4762	0.0532	0.3619**	0.3205	0.3895	-0.5725	0.2619	-0.0762	0.1818**	0.0918	-0.2268	-0.2258	0.0633	-0.2317*
	50/50	(0.3305)	(0.1181)	(0.1801)	(0.2084)	(0.3044)	(0.3571)	(0.1744)	(0.2991)	(0.0768)	(0.1701)	(0.2297)	(0.2138)	(0.3045)	(0.1236)
		0.1515	*0.6529*	*0.0462*	*0.126*	*0.2026*	*0.1108*	*0.1351*	*0.7992*	*0.0195*	*0.5905*	*0.3253*	*0.293*	*0.8356*	*0.0632*
		-0.1744	-0.2336	-0.0983	-0.1132	0.1518	0.3028	0.1987	-0.6551	0.5669*	0.3349	0.1132	-0.0219	0.2801	-0.5751
	KNN	(0.4451)	(0.1503)	(0.2631)	(0.2749)	(0.3607)	(0.4836)	(0.1554)	(0.7915)	(0.2944)	(0.4579)	(0.538)	(0.6056)	(0.8525)	(0.3868)
		0.6958	*0.1221*	*0.7094*	*0.681*	*0.6744*	*0.5321*	*0.2028*	*0.4094*	*0.0564*	*0.4659*	*0.8337*	*0.9712*	*0.743*	*0.1396*
WTR		-1.166**	0.0272	0.6433***	-0.5672	0.7074**	0.3211	-0.2894	0.992	0.408	1.0339	-0.7706	-0.907	1.8742*	-1.09
	10/90	(0.5565)	(0.2041)	(0.2307)	(0.4001)	(0.312)	(0.4698)	(0.3105)	(1.0529)	(0.3423)	(0.6604)	(0.8595)	(0.9529)	(1.1259)	(0.6644)
		0.0381	*0.8944*	*0.0061*	*0.1588*	*0.0251*	*0.4955*	*0.3532*	*0.3486*	*0.2364*	*0.121*	*0.3724*	*0.3438*	*0.0995*	*0.1044*
		-0.9369*	-0.0261	0.6534**	-0.6702	0.476	0.4541	-0.4686	0.5741	-0.0289	0.1402	-0.2661	-0.5155	0.6035	-0.2052
	30/70	(0.5156)	(0.192)	(0.2857)	(0.4137)	(0.4245)	(0.6937)	(0.303)	(0.7181)	(0.16)	(0.2853)	(0.4985)	(0.4522)	(0.8608)	(0.3354)
		0.0716	*0.8921*	*0.0239*	*0.1078*	*0.2643*	*0.5139*	*0.1245*	*0.4261*	*0.8571*	*0.6243*	*0.5947*	*0.2573*	*0.4851*	*0.5421*
		-0.769*	-0.132	0.596**	-0.4259	0.4642	0.2911	-0.3811	0.1175	-0.0282	-0.2215	-0.0381	-0.3402	0.0625	-0.0294
	50/50	(0.4003)	(0.1471)	(0.2402)	(0.3202)	(0.373)	(0.5226)	(0.2517)	(0.3739)	(0.1171)	(0.1938)	(0.2006)	(0.2648)	(0.342)	(0.1799)
		0.057	*0.3715*	*0.0144*	*0.186*	*0.2156*	*0.5786*	*0.1326*	*0.7541*	*0.8103*	*0.2561*	*0.8497*	*0.2022*	*0.8553*	*0.8705*
		-0.8492	0.1291	0.5649*	-0.7034*	0.6467	1.092	-0.3155	1.6974	0.2514	1.133*	-0.0536	-0.606	1.2579	-0.962*
	KNN	(0.597)	(0.2492)	(0.2898)	(0.4155)	(0.4228)	(0.7536)	(0.321)	(1.0707)	(0.3798)	(0.5785)	(0.8017)	(1.0945)	(1.2258)	(0.5459)
		0.1574	*0.6053*	*0.0535*	*0.093*	*0.1286*	*0.1498*	*0.3275*	*0.1165*	*0.5098*	*0.0533*	*0.9468*	*0.5812*	*0.3076*	*0.0815*
WST		-0.4011	0.2193	0.5826	-1.3471	-0.5034	1.6267	-0.5863	0.2822	0.0441	0.8999*	-0.0082	-0.0938	0.1872	-0.1666
	10/90	(1.1304)	(0.3531)	(0.4477)	(0.8323)	(0.6739)	(1.3921)	(0.6797)	(0.9196)	(0.2541)	(0.4643)	(0.4655)	(0.7394)	(0.6434)	(0.3271)
		0.7233	*0.5356*	*0.1955*	*0.1081*	*0.4565*	*0.2448*	*0.39*	*0.7597*	*0.8627*	*0.0558*	*0.986*	*0.8993*	*0.7718*	*0.6117*
		-0.8179	-0.0306	0.334	-0.8907	0.0985	0.8452	-0.4381	-0.6076	0.3828**	-0.1892	0.3744	-0.7669**	-0.3682	-0.2865
	30/70	(0.8173)	(0.274)	(0.3987)	(0.6268)	(0.6289)	(1.1089)	(0.4665)	(0.5469)	(0.16)	(0.2932)	(0.2589)	(0.3212)	(0.4494)	(0.3209)
		0.3189	*0.9113*	*0.4038*	*0.1578*	*0.8758*	*0.4474*	*0.3494*	*0.2696*	*0.0188*	*0.5203*	*0.1517*	*0.0191*	*0.4148*	*0.3743*
		-0.755**	0.0153	0.3668*	-0.0502	0.0812	-0.0004	-0.26	0.1676	0.2547**	-0.035	0.3404*	-0.5102**	-0.3315	-0.0861
	50/50	(0.3809)	(0.1329)	(0.2117)	(0.2718)	(0.3391)	(0.4273)	(0.218)	(0.4038)	(0.0993)	(0.206)	(0.1722)	(0.2517)	(0.2703)	(0.2182)
		0.0497	*0.9087*	*0.0856*	*0.8538*	*0.8113*	*0.9993*	*0.2354*	*0.679*	*0.012*	*0.8657*	*0.0512*	*0.0456*	*0.2233*	*0.694*
		-0.2175	0.2135	0.2631	-0.1931	-0.5353	-0.0685	-0.4281	0.851	0.3446*	-0.1168	1.2677**	-0.8119	-0.4077	0.672**
	KNN	(0.7102)	(0.1632)	(0.3474)	(0.5177)	(0.4182)	(0.6727)	(0.2649)	(0.8935)	(0.1823)	(0.3593)	(0.6265)	(0.5051)	(0.9959)	(0.3043)
		0.7599	*0.1933*	*0.4502*	*0.7097*	*0.2029*	*0.919*	*0.1086*	*0.3434*	*0.062*	*0.7459*	*0.046*	*0.1115*	*0.6833*	*0.0298*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 36. Canadian sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	6.67%	0.2390	0.2254	0.5306	4.82%	0.1615	0.1577	0.3270
		Brown	0.57%	-0.0161	-0.0160	-0.0338	4.87%	0.1189	0.1151	0.2747
	30/70	Green	8.33%	0.3366	0.3062	0.7200	8.67%	0.4258	0.4077	0.9659
		Brown	2.07%	0.0409	0.0411	0.0930	-0.14%	-0.0450	-0.0454	-0.0951
	50/50	Green	7.21%	0.2968	0.2914	0.6247	3.61%	0.1383	0.1290	0.2979
		Brown	1.15%	0.0059	0.0058	0.0145	3.60%	0.1208	0.1321	0.2483
	KNN	Green	3.11%	0.0749	0.0614	0.2227	8.10%	0.3990	0.3954	0.8895
		Brown	0.57%	-0.0165	-0.0161	-0.0347	-4.64%	-0.1296	-0.1302	-0.2804
WTR	10/90	Green	11.01%	0.5654	0.5243	1.3276	0.30%	-0.0196	-0.0197	-0.0400
		Brown	-3.23%	-0.1572	-0.1665	-0.3044	3.68%	0.0578	0.0682	0.1201
	30/70	Green	8.25%	0.4227	0.3654	1.0190	5.64%	0.2061	0.1994	0.4271
		Brown	-5.38%	-0.2222	-0.2482	-0.4059	8.41%	0.2601	0.3378	0.4905
	50/50	Green	6.24%	0.3012	0.2697	0.7212	7.97%	0.3513	0.3144	0.8729
		Brown	-6.36%	-0.2878	-0.2924	-0.5589	8.72%	0.3932	0.4355	0.8130
	KNN	Green	5.16%	0.2245	0.2068	0.5163	4.51%	0.1547	0.1529	0.3063
		Brown	-3.75%	-0.1612	-0.1891	-0.2943	6.58%	0.1086	0.1265	0.2189
WST	10/90	Green	8.14%	0.3707	0.3551	0.9691	5.19%	0.1425	0.1455	0.3007
		Brown	-3.03%	-0.0848	-0.1077	-0.1539	3.70%	0.0790	0.0933	0.1504
	30/70	Green	8.19%	0.4397	0.3983	1.0519	8.96%	0.4284	0.4220	0.9442
		Brown	-5.91%	-0.1916	-0.2220	-0.3450	0.24%	-0.0289	-0.0357	-0.0540
	50/50	Green	7.73%	0.3945	0.3863	0.9007	4.29%	0.1713	0.1464	0.3755
		Brown	-4.62%	-0.2220	-0.2234	-0.4369	6.03%	0.2341	0.2481	0.4845
	KNN	Green	-4.95%	-0.2569	-0.2112	-0.6093	7.04%	0.3244	0.2927	0.7290
		Brown	-10.79%	-0.3455	-0.3480	-0.6777	13.00%	0.3943	0.5884	0.7281

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 37. Hong Kong sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.2207	-0.313*	0.1827	0.1379	0.8067**	0.6214**	0.1718	3.8079	1.0551**	3.8675	0.4729	-1.5073	4.0893*	0.3182
		(0.5908)	(0.1618)	(0.2481)	(0.2747)	(0.3756)	(0.3099)	(0.1707)	(2.8713)	(0.5125)	(2.6891)	(1.891)	(0.9848)	(2.0838)	(0.4528)
		0.7097	*0.0562*	*0.4635*	*0.6168*	*0.0345*	*0.048*	*0.317*	*0.1921*	*0.0459*	*0.158*	*0.8038*	*0.1335*	*0.0565*	*0.4862*
	30/70	-0.617	-0.2925**	-0.0308	-0.0957	0.6061**	0.4924**	0.2837**	-0.0506	0.1373	0.5852	-0.2711	-0.4671	0.4053	0.1316
		(0.4648)	(0.1179)	(0.2168)	(0.2215)	(0.2701)	(0.2413)	(0.1365)	(0.6578)	(0.1431)	(0.4238)	(0.453)	(0.3044)	(0.5984)	(0.1572)
		0.1877	*0.015*	*0.8873*	*0.6666*	*0.0273*	*0.0443*	*0.0406*	*0.9391*	*0.3428*	*0.1748*	*0.5528*	*0.1326*	*0.502*	*0.4074*
	50/50	-0.6095	-0.2989***	-0.1463	-0.1369	0.3735	0.5126**	0.2547**	0.2629	0.1506	0.3293	-0.4409	-0.2008	0.5312	-0.1556
		(0.4041)	(0.0933)	(0.1594)	(0.1835)	(0.2345)	(0.2295)	(0.1168)	(0.5947)	(0.145)	(0.3491)	(0.4582)	(0.313)	(0.471)	(0.1888)
		0.135	*0.0019*	*0.3613*	*0.4576*	*0.1148*	*0.028*	*0.0319*	*0.6607*	*0.3053*	*0.3511*	*0.3415*	*0.5248*	*0.266*	*0.4148*
	KNN	-1.2073**	-0.3134***	-0.1652	0.3005	0.9103**	0.2329	0.512***	3.3155	1.0896*	4.0016	0.5996	-1.5811	3.6312	0.1212
		(0.5522)	(0.1124)	(0.2812)	(0.2751)	(0.3494)	(0.3535)	(0.151)	(3.3653)	(0.6068)	(3.1065)	(2.2611)	(1.0566)	(2.5108)	(0.6312)
		0.0314	*0.0065*	*0.5584*	*0.2776*	*0.0108*	*0.5118*	*0.001*	*0.3303*	*0.0799*	*0.2049*	*0.7922*	*0.1422*	*0.1557*	*0.8487*
WTR	10/90	-0.5471	-0.3585**	0.0285	-0.01	0.7218	0.5005	0.2426	3.1369*	-0.5529***	-0.5318	-0.5085	-1.1941**	1.2083*	1.0306***
		(0.7145)	(0.1505)	(0.3697)	(0.3755)	(0.4476)	(0.4016)	(0.1787)	(1.5425)	(0.1369)	(0.5925)	(0.377)	(0.5831)	(0.6611)	(0.3395)
		0.4458	*0.0194*	*0.9387*	*0.9789*	*0.1104*	*0.2159*	*0.178*	*0.0512*	*0.0004*	*0.3768*	*0.1878*	*0.0497*	*0.0779*	*0.005*
	30/70	-0.5774*	-0.2507***	0.3967***	-0.0961	0.4381***	0.5457**	0.2825**	0.3948	-0.3075***	0.2259	0.2255	-0.1134	0.3436	0.1557
		(0.3244)	(0.07)	(0.1498)	(0.1946)	(0.1588)	(0.23)	(0.1236)	(0.498)	(0.0859)	(0.3228)	(0.2814)	(0.2695)	(0.3383)	(0.1579)
		0.0785	*0.0006*	*0.0096*	*0.6228*	*0.007*	*0.0198*	*0.0246*	*0.4344*	*0.0012*	*0.4896*	*0.4294*	*0.677*	*0.3183*	*0.3324*
	50/50	0.0663	-0.0628	0.1951*	-0.0246	0.3771**	0.3148*	0.1151	0.1679	0.1761	0.6996**	0.6721	-0.1249	-0.336	-0.1254
		(0.2905)	(0.0868)	(0.1071)	(0.1625)	(0.1562)	(0.1614)	(0.1316)	(0.7259)	(0.1191)	(0.3112)	(0.4093)	(0.2699)	(0.5348)	(0.224)
		0.8201	*0.4713*	*0.0718*	*0.8801*	*0.0178*	*0.0543*	*0.3842*	*0.8187*	*0.15*	*0.0324*	*0.1114*	*0.6471*	*0.5347*	*0.5797*
	KNN	-0.5423	0.0427	0.9285***	-0.1431	0.8325**	0.713*	0.1041	0.0776	-0.0264	0.0118	0.471	0.3582	0.6928	-0.2204
		(0.643)	(0.1043)	(0.2264)	(0.3931)	(0.3871)	(0.428)	(0.1547)	(1.1277)	(0.1262)	(0.6529)	(0.7414)	(0.7118)	(0.522)	(0.2256)
		0.4013	*0.6832*	*0.0001*	*0.7166*	*0.0342*	*0.0993*	*0.5025*	*0.9456*	*0.8357*	*0.9857*	*0.5302*	*0.6186*	*0.1948*	*0.3367*
WST	10/90	-0.6217	-0.1195	-0.0247	-0.0236	0.3528	-0.0471	0.5005	-0.3563	-0.0137	1.0461*	1.7856***	0.6317	-0.9494	0.7109*
		(0.7217)	(0.1584)	(0.4248)	(0.5921)	(0.4177)	(1.0438)	(0.3085)	(0.9272)	(0.1745)	(0.5268)	(0.6422)	(0.6462)	(1.148)	(0.413)
		0.3922	*0.4533*	*0.9538*	*0.9684*	*0.4015*	*0.9641*	*0.1096*	*0.7028*	*0.9377*	*0.0538*	*0.0082*	*0.334*	*0.413*	*0.0927*
	30/70	-0.6468	0.203**	-0.1219	0.2558	0.3005	-0.4406	0.0251	0.074	-0.2197	0.0932	0.6868	0.6259	-0.1684	0.31
		(0.452)	(0.0914)	(0.2316)	(0.2877)	(0.2566)	(0.323)	(0.113)	(0.8254)	(0.1669)	(0.4332)	(0.6809)	(0.5991)	(0.8706)	(0.2361)
		0.1573	*0.0298*	*0.6005*	*0.3772*	*0.2458*	*0.1772*	*0.8249*	*0.929*	*0.1954*	*0.8307*	*0.3191*	*0.3022*	*0.8476*	*0.1966*
	50/50	-0.6104	0.1797**	-0.0855	0.3376	0.2411	-0.4589*	-0.0703	-0.4111	-0.0753	-0.0731	0.7156	0.4371	-0.5528	0.199
		(0.3894)	(0.0696)	(0.1831)	(0.2363)	(0.2239)	(0.2627)	(0.0876)	(0.5992)	(0.1091)	(0.2691)	(0.5322)	(0.4077)	(0.6941)	(0.1939)
		0.1218	*0.0122*	*0.6421*	*0.1579*	*0.2856*	*0.0853*	*0.425*	*0.4965*	*0.4943*	*0.7873*	*0.1861*	*0.29*	*0.4304*	*0.3107*
	KNN	-0.4817	0.0059	0.2527	0.0941	0.4246	-0.3126	0.1558	-0.0122	-0.1613	0.9001**	0.9698*	0.3835	-0.4515	0.3596
		(0.8803)	(0.1502)	(0.3214)	(0.4875)	(0.6795)	(0.5641)	(0.2045)	(1.2119)	(0.1822)	(0.3973)	(0.571)	(0.8225)	(0.9888)	(0.2826)
		0.5861	*0.9685*	*0.4346*	*0.8475*	*0.5343*	*0.5813*	*0.4489*	*0.992*	*0.3811*	*0.0288*	*0.097*	*0.6435*	*0.6504*	*0.2103*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 38. Hong Kong sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	3.31%	0.1043	0.1106	0.2139	6.82%	0.3421	0.3220	0.7943
		Brown	6.91%	0.4194	0.3612	1.0155	23.59%	0.3011	0.6862	0.5695
	30/70	Green	5.77%	0.2316	0.2529	0.4688	6.79%	0.3286	0.3419	0.6520
		Brown	4.17%	0.2233	0.1956	0.4868	4.27%	0.1671	0.1662	0.3313
	50/50	Green	4.55%	0.1850	0.1902	0.3732	3.20%	0.1219	0.1247	0.2347
		Brown	1.33%	0.0234	0.0223	0.0456	3.65%	0.1434	0.1430	0.2871
	KNN	Green	5.11%	0.1898	0.2007	0.3840	8.06%	0.3844	0.4355	0.7797
		Brown	0.73%	-0.0162	-0.0135	-0.0371	13.26%	0.1497	0.3639	0.2786
WTR	10/90	Green	8.52%	0.3190	0.3517	0.6670	-3.50%	-0.1426	-0.1386	-0.2869
		Brown	8.44%	0.5441	0.5520	1.1404	31.03%	1.3365	1.2526	3.6028
	30/70	Green	6.71%	0.2869	0.3024	0.5940	3.26%	0.0948	0.0852	0.2079
		Brown	4.51%	0.2485	0.1970	0.5485	3.79%	0.1515	0.1785	0.2820
	50/50	Green	0.54%	-0.0257	-0.0269	-0.0495	3.06%	0.1140	0.1103	0.2314
		Brown	4.58%	0.2296	0.2114	0.4846	1.73%	0.0341	0.0398	0.0620
	KNN	Green	3.02%	0.0919	0.0962	0.1824	5.37%	0.1844	0.1682	0.4144
		Brown	1.17%	0.0078	0.0077	0.0164	-1.90%	-0.0992	-0.1239	-0.1831
WST	10/90	Green	0.80%	-0.0082	-0.0071	-0.0183	-3.68%	-0.2103	-0.2247	-0.3799
		Brown	0.25%	-0.0333	-0.0312	-0.0732	1.08%	0.0030	0.0033	0.0056
	30/70	Green	4.83%	0.2602	0.2423	0.5414	-8.04%	-0.4389	-0.4534	-0.8028
		Brown	1.79%	0.0433	0.0375	0.0930	-0.76%	-0.0793	-0.0782	-0.1520
	50/50	Green	3.17%	0.1453	0.1338	0.2995	-1.92%	-0.1507	-0.1634	-0.2764
		Brown	-0.84%	-0.0999	-0.0889	-0.2032	-0.91%	-0.0875	-0.0898	-0.1690
	KNN	Green	9.01%	0.4665	0.4695	1.0146	-3.90%	-0.2421	-0.2650	-0.4505
		Brown	7.35%	0.3180	0.3308	0.6440	-1.80%	-0.1007	-0.1063	-0.1886

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 39. Australian sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.5468	0.273**	0.2138	0.1148	-0.4378	-0.3397	0.0275	0.2297	-0.1291	0.264	0.0387	-0.5725	-0.7656	-0.493**
	10/90	(0.5695)	(0.106)	(0.2093)	(0.3746)	(0.3677)	(0.3948)	(0.1701)	(0.81)	(0.2479)	(0.3665)	(0.4099)	(0.4787)	(0.749)	(0.2426)
		0.3383	*0.0108*	*0.3084*	*0.7595*	*0.2355*	*0.3907*	*0.8717*	*0.7772*	*0.6035*	*0.4728*	*0.925*	*0.2343*	*0.3089*	*0.0445*
		0.1239	0.093	0.0881	0.0713	-0.451	-0.4667	0.054	0.2795	-0.025	0.3759**	0.0923	0.0382	-0.8167*	-0.223
	30/70	(0.4713)	(0.0873)	(0.1939)	(0.3438)	(0.3653)	(0.3589)	(0.1586)	(0.4094)	(0.0967)	(0.1674)	(0.2571)	(0.283)	(0.4444)	(0.1495)
		0.793	*0.2884*	*0.6501*	*0.8358*	*0.2186*	*0.1952*	*0.7339*	*0.4962*	*0.7966*	*0.0267*	*0.7203*	*0.8929*	*0.0687*	*0.1386*
		0.0666	0.1562**	0.1552	0.1093	-0.2672	-0.4613	0.0059	0.1162	0.0208	0.2164	0.0491	-0.2217	-0.9029**	-0.2682
	50/50	(0.4122)	(0.0785)	(0.1817)	(0.3035)	(0.3228)	(0.3133)	(0.1424)	(0.3902)	(0.0684)	(0.1637)	(0.2352)	(0.2269)	(0.3827)	(0.1945)
		0.8718	*0.0482*	*0.3941*	*0.7191*	*0.4089*	*0.1428*	*0.9669*	*0.7665*	*0.7612*	*0.1887*	*0.835*	*0.3306*	*0.02*	*0.1707*
		-0.0382	0.1201	-0.0422	-0.03	-0.6388*	-0.4404	0.0576	0.8749	0.0868	0.5758*	-0.0634	-0.4289	-0.9517**	-0.2057
	KNN	(0.4364)	(0.0873)	(0.2034)	(0.333)	(0.3773)	(0.3692)	(0.1686)	(0.683)	(0.1173)	(0.3119)	(0.4455)	(0.5347)	(0.4159)	(0.2591)
		0.9303	*0.1706*	*0.8359*	*0.9284*	*0.0922*	*0.2345*	*0.7332*	*0.2029*	*0.4606*	*0.0675*	*0.8871*	*0.4242*	*0.024*	*0.429*
WTR		-0.447	0.0415	0.6707**	0.1288	-0.1564	0.0459	0.1458	-0.8011	-0.1464	-0.0976	0.8597*	0.4722	0.3612	0.3798
	10/90	(0.7834)	(0.1886)	(0.2867)	(0.4151)	(0.4217)	(0.5275)	(0.2696)	(0.758)	(0.2134)	(0.3648)	(0.4359)	(0.4129)	(0.4746)	(0.3749)
		0.5691	*0.8263*	*0.0207*	*0.7567*	*0.7113*	*0.9308*	*0.5895*	*0.2939*	*0.4948*	*0.7897*	*0.0522*	*0.2563*	*0.4489*	*0.3142*
		-0.1765	0.0714	0.3799	0.5014	0.1065	-0.1521	-0.0287	0.0266	0.1446	-0.1706	-0.3992	0.0307	0.0212	0.2077
	30/70	(0.4829)	(0.1024)	(0.2574)	(0.3246)	(0.4067)	(0.4046)	(0.1704)	(0.5156)	(0.1207)	(0.2955)	(0.3293)	(0.4285)	(0.3905)	(0.1842)
		0.7153	*0.487*	*0.1421*	*0.1246*	*0.7938*	*0.7075*	*0.8666*	*0.9591*	*0.2346*	*0.5655*	*0.2291*	*0.943*	*0.9568*	*0.2631*
		-0.2083	0.0903	0.3641	0.4939	0.1161	-0.2471	-0.0829	-0.063	0.0698	-0.3168**	-0.2655	-0.2383	-0.2572	0.1307
	50/50	(0.4445)	(0.0998)	(0.2205)	(0.3064)	(0.3368)	(0.3944)	(0.1541)	(0.4125)	(0.0591)	(0.1457)	(0.25)	(0.2826)	(0.279)	(0.139)
		0.64	*0.3668*	*0.1008*	*0.1091*	*0.7307*	*0.532*	*0.5917*	*0.8791*	*0.2412*	*0.0328*	*0.2916*	*0.4016*	*0.3595*	*0.35*
		0.6049	0.0204	0.7389**	0.0686	0.0708	0.3359	0.0508	1.5517	0.137	0.1855	-0.1188	-0.006	0.4462	-0.3421
	KNN	(0.739)	(0.1656)	(0.3122)	(0.4428)	(0.4266)	(0.5725)	(0.1955)	(1.0582)	(0.231)	(0.298)	(0.5012)	(0.4701)	(0.8075)	(0.5129)
		0.4144	*0.9019*	*0.0192*	*0.8771*	*0.8685*	*0.5583*	*0.7953*	*0.1466*	*0.5548*	*0.5354*	*0.8132*	*0.9898*	*0.5821*	*0.5068*
WST		0.5553	-0.0198	0.023	0.2561	-0.6496	-0.5403	-0.193	-0.8249	0.2303	0.9803*	0.3749	0.4399	-0.6727	0.1528
	10/90	(0.781)	(0.1873)	(0.395)	(0.4751)	(0.564)	(0.4343)	(0.2849)	(0.9336)	(0.1774)	(0.493)	(0.8031)	(0.7864)	(0.6274)	(0.4721)
		0.4782	*0.9158*	*0.9537*	*0.5906*	*0.2513*	*0.2154*	*0.4991*	*0.3797*	*0.1982*	*0.0503*	*0.6419*	*0.5776*	*0.287*	*0.7472*
		0.0076	0.0251	0.2109	0.5617	0.1302	-0.7158*	-0.119	0.5936	-0.1083	0.0775	-0.2707	-1.0885*	0.3522	-0.3896
	30/70	(0.5509)	(0.1179)	(0.275)	(0.3552)	(0.3771)	(0.4017)	(0.1841)	(0.8637)	(0.2215)	(0.3329)	(0.5175)	(0.5884)	(0.746)	(0.3753)
		0.989	*0.832*	*0.4443*	*0.1159*	*0.7303*	*0.0768*	*0.5189*	*0.494*	*0.6263*	*0.8165*	*0.6024*	*0.0682*	*0.6381*	*0.3025*
		-0.1302	0.1022	0.2783	0.5317*	0.1477	-0.5991*	-0.1516	0.036	-0.0371	0.1401	-0.0301	-0.511	-0.3454	-0.1347
	50/50	(0.4551)	(0.092)	(0.2493)	(0.3133)	(0.3375)	(0.3542)	(0.1559)	(0.5796)	(0.1281)	(0.2001)	(0.3668)	(0.3157)	(0.5541)	(0.2779)
		0.7752	*0.2686*	*0.266*	*0.0918*	*0.6623*	*0.0928*	*0.3325*	*0.9507*	*0.7729*	*0.4861*	*0.9348*	*0.1096*	*0.5349*	*0.6292*
		0.8591	-0.106	-0.0739	-0.3237	-0.4738	-0.2042	-0.0315	0.959	-0.3428	0.423	0.5223	-0.5097	-0.1362	0.0974
	KNN	(0.5603)	(0.1028)	(0.2553)	(0.3023)	(0.4343)	(0.3181)	(0.1212)	(0.9278)	(0.2984)	(0.4037)	(0.5767)	(0.6545)	(0.8043)	(0.3289)
		0.1273	*0.3046*	*0.7728*	*0.2861*	*0.277*	*0.5218*	*0.7955*	*0.3045*	*0.2541*	*0.298*	*0.368*	*0.4385*	*0.866*	*0.7678*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 40. Australian sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	11.22%	0.4064	0.3968	0.9125	6.88%	0.1984	0.1883	0.5354
		Brown	1.35%	0.0106	0.0100	0.0245	-0.72%	-0.0606	-0.0548	-0.1289
	30/70	Green	9.39%	0.3478	0.3228	0.8337	8.00%	0.2977	0.2745	0.7870
		Brown	7.77%	0.2291	0.2266	0.5067	7.23%	0.2539	0.2533	0.5435
	50/50	Green	9.54%	0.3876	0.3561	0.9321	9.33%	0.3676	0.3500	0.9246
		Brown	7.69%	0.2302	0.2304	0.5103	4.56%	0.1458	0.1442	0.3067
	KNN	Green	9.79%	0.3430	0.3111	0.8209	8.24%	0.3054	0.2957	0.7492
		Brown	5.43%	0.1447	0.1454	0.3171	11.57%	0.3324	0.3481	0.7144
WTR	10/90	Green	15.47%	0.5461	0.5217	1.2982	6.56%	0.2123	0.2031	0.6139
		Brown	8.82%	0.2360	0.2645	0.4877	3.67%	0.1098	0.0975	0.2486
	30/70	Green	13.20%	0.5079	0.4904	1.2090	0.46%	-0.0258	-0.0267	-0.0526
		Brown	11.85%	0.3852	0.4292	0.8149	4.28%	0.1440	0.1312	0.3601
	50/50	Green	13.09%	0.5262	0.4897	1.2923	3.53%	0.1258	0.1261	0.2678
		Brown	10.90%	0.3558	0.3908	0.7479	4.19%	0.1572	0.1457	0.3533
	KNN	Green	14.14%	0.5224	0.5085	1.2280	2.70%	0.0763	0.0768	0.1611
		Brown	21.25%	0.5914	0.8236	1.1549	16.89%	0.5699	0.6696	1.0990
WST	10/90	Green	14.64%	0.5077	0.4855	1.2497	8.83%	0.2014	0.1921	0.4865
		Brown	14.81%	0.4030	0.4682	0.8432	3.60%	0.0601	0.0586	0.1321
	30/70	Green	11.76%	0.4613	0.4307	1.1883	10.56%	0.3019	0.2789	0.8140
		Brown	11.50%	0.3689	0.4029	0.7826	8.54%	0.2803	0.2636	0.6665
	50/50	Green	12.71%	0.5509	0.5095	1.3671	12.20%	0.4241	0.3686	1.2812
		Brown	11.08%	0.3714	0.3987	0.7861	8.39%	0.2910	0.2696	0.6966
	KNN	Green	12.66%	0.4797	0.5001	1.0424	9.13%	0.2698	0.2406	0.7799
		Brown	19.68%	0.7564	0.9162	1.5805	19.21%	0.5870	0.5458	1.3567

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 41. French sample, factor model

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-1.2978***	-0.3063***	0.5902**	-0.0724	1.6295***	1.1127**	0.2283*	0.4412	-0.0795	-0.1562	-0.2293	-1.5837**	-0.8505	0.1365
	10/90	(0.4111)	(0.1012)	(0.2493)	(0.3471)	(0.3572)	(0.473)	(0.1248)	(0.6365)	(0.1406)	(0.3126)	(0.7143)	(0.6053)	(0.7994)	(0.1979)
		0.0019	*0.0029*	*0.0192*	*0.8351*	*0*	*0.02*	*0.0692*	*0.4897*	*0.5732*	*0.6184*	*0.7488*	*0.0102*	*0.2899*	*0.492*
		-1.111***	-0.1743**	0.3181*	-0.0323	0.8621***	1.0971***	0.042	-0.2157	0.1944**	0.0882	0.5587	0.1029	-0.2273	0.2911
	30/70	(0.299)	(0.075)	(0.1668)	(0.2407)	(0.2586)	(0.3501)	(0.1196)	(0.374)	(0.0949)	(0.2613)	(0.3493)	(0.3381)	(0.4147)	(0.1778)
		0.0003	*0.0214*	*0.0584*	*0.8935*	*0.0011*	*0.0021*	*0.7263*	*0.5653*	*0.0431*	*0.7365*	*0.1129*	*0.7616*	*0.5848*	*0.1047*
		-0.604***	-0.1505***	0.0733	-0.02	0.7973***	0.7503***	-0.0654	-0.4946	0.097	0.4196**	0.5738**	0.0967	-0.2128	0.3007*
	50/50	(0.1997)	(0.0476)	(0.1155)	(0.1518)	(0.1945)	(0.1834)	(0.0613)	(0.3268)	(0.0681)	(0.1919)	(0.2875)	(0.2946)	(0.383)	(0.152)
		0.0029	*0.0019*	*0.5267*	*0.8952*	*0.0001*	*0.0001*	*0.2881*	*0.1332*	*0.1575*	*0.0311*	*0.0486*	*0.7435*	*0.5798*	*0.0506*
		-0.9598**	-0.2867***	0.1609	0.1079	1.5368***	0.9422***	0.1807	-0.4599	-0.0704	-0.5334	0.2434	-0.716	-1.4615	0.5237
	KNN	(0.3977)	(0.0662)	(0.1547)	(0.2388)	(0.2899)	(0.3576)	(0.1307)	(0.6046)	(0.1558)	(0.3873)	(0.9454)	(0.8926)	(1.0506)	(0.4179)
		0.017	*0*	*0.2999*	*0.6519*	*0*	*0.0093*	*0.1689*	*0.4486*	*0.6523*	*0.1715*	*0.7974*	*0.4243*	*0.1672*	*0.213*
WTR		-2.0394***	0.0451	-0.5043*	0.7484**	2.1809***	-0.5088	0.4503***	0.0189	0.0176	-0.5464	0.2727	-0.4941	0.4144	-0.2575
	10/90	(0.414)	(0.0892)	(0.2667)	(0.373)	(0.462)	(0.4883)	(0.1715)	(0.6886)	(0.1607)	(0.3574)	(0.6059)	(0.5195)	(1.0041)	(0.323)
		0	*0.6136*	*0.0604*	*0.0465*	*0*	*0.299*	*0.0095*	*0.9781*	*0.9131*	*0.1288*	*0.6534*	*0.3434*	*0.6805*	*0.4268*
		-1.1468***	-0.0998	-0.1237	0.1772	1.1672***	0.0248	0.0882	-0.6073	0.1514	0.058	0.8756**	0.8428**	0.1419	0.0368
	30/70	(0.2819)	(0.0614)	(0.1606)	(0.2535)	(0.3243)	(0.3261)	(0.0826)	(0.4124)	(0.1028)	(0.1882)	(0.3599)	(0.4154)	(0.4716)	(0.1143)
		0.0001	*0.1058*	*0.4422*	*0.4856*	*0.0004*	*0.9395*	*0.2874*	*0.1434*	*0.1432*	*0.7585*	*0.0164*	*0.0446*	*0.764*	*0.7479*
		-0.7797***	-0.0969**	-0.1427	0.0733	0.8291***	0.075	0.0787	-0.3141	0.1078	0.1773	0.606**	0.5996	0.0741	-0.0867
	50/50	(0.2444)	(0.0449)	(0.1511)	(0.2117)	(0.256)	(0.296)	(0.0894)	(0.3066)	(0.0793)	(0.1759)	(0.2951)	(0.3661)	(0.3651)	(0.086)
		0.0017	*0.0324*	*0.3462*	*0.7298*	*0.0015*	*0.8004*	*0.3802*	*0.3076*	*0.1761*	*0.3154*	*0.0421*	*0.104*	*0.8395*	*0.3151*
		-1.1054***	-0.035	-0.088	-0.4029	1.4977***	0.2215	-0.21	-0.8727	0.2287	0.4059	1.477**	0.5878	-1.4632*	0.287
	KNN	(0.4152)	(0.0916)	(0.2521)	(0.3978)	(0.4622)	(0.4765)	(0.1635)	(0.683)	(0.1441)	(0.3273)	(0.616)	(0.5697)	(0.8004)	(0.2453)
		0.0085	*0.7033*	*0.7275*	*0.3126*	*0.0014*	*0.6427*	*0.2008*	*0.2037*	*0.1149*	*0.2172*	*0.018*	*0.3041*	*0.0699*	*0.2442*
WST		-0.9613*	0.1096	0.3301	-0.1767	0.4102	-0.2673	0.4071	-0.0766	-0.2787	0.1669	1.054	0.4123	-0.014	-0.3003
	10/90	(0.5752)	(0.1578)	(0.2681)	(0.4904)	(0.6604)	(0.5227)	(0.2564)	(0.7145)	(0.1801)	(0.5101)	(0.6361)	(0.6788)	(0.9437)	(0.4465)
		0.0967	*0.4883*	*0.22*	*0.7191*	*0.5354*	*0.6098*	*0.1143*	*0.9149*	*0.1248*	*0.7442*	*0.1006*	*0.545*	*0.9882*	*0.5028*
		-0.8534***	0.1575**	0.2236	0.0814	0.5117*	0.4039	-0.058	-0.1469	0.0022	0.7153**	0.9162**	0.137	-0.2093	-0.0358
	30/70	(0.2608)	(0.0659)	(0.1383)	(0.2459)	(0.3026)	(0.2459)	(0.0674)	(0.5347)	(0.1207)	(0.2984)	(0.3697)	(0.3977)	(0.6356)	(0.3031)
		0.0013	*0.018*	*0.108*	*0.7411*	*0.0928*	*0.1025*	*0.3911*	*0.7841*	*0.9856*	*0.0184*	*0.0149*	*0.7312*	*0.7426*	*0.9061*
		-0.4559**	0.0656	0.0847	0.0292	0.1172	0.3163	0.0268	-0.2231	-0.0879	0.5722**	0.6138*	0.184	0.0304	0.0157
	50/50	(0.2189)	(0.0511)	(0.1323)	(0.1754)	(0.199)	(0.2326)	(0.0497)	(0.4547)	(0.0977)	(0.2234)	(0.3499)	(0.391)	(0.5474)	(0.3037)
		0.0389	*0.2009*	*0.5228*	*0.868*	*0.5567*	*0.1757*	*0.5901*	*0.6248*	*0.3706*	*0.0119*	*0.0824*	*0.639*	*0.9559*	*0.9589*
		-0.3338	0.0197	-0.0621	-0.3	0.4921	0.6087	-0.246*	-0.0822	-0.1011	0.9993**	0.331	0.3709	0.8299	-0.0957
	KNN	(0.4571)	(0.109)	(0.2624)	(0.3793)	(0.5228)	(0.4231)	(0.1343)	(0.9685)	(0.1728)	(0.4085)	(0.6545)	(0.7921)	(0.8375)	(0.3)
		0.4663	*0.8568*	*0.8133*	*0.4302*	*0.3479*	*0.1521*	*0.0689*	*0.9325*	*0.56*	*0.0162*	*0.6141*	*0.6406*	*0.3241*	*0.7504*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 42. French sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	7.82%	0.1991	0.2054	0.4250	2.55%	0.0719	0.0727	0.1379
		Brown	1.17%	0.0076	0.0078	0.0157	3.76%	0.1324	0.1519	0.2552
	30/70	Green	15.31%	0.5283	0.5866	1.1341	4.66%	0.1914	0.2141	0.3703
		Brown	3.42%	0.1143	0.1194	0.2241	3.02%	0.0890	0.0970	0.1786
	50/50	Green	12.37%	0.4734	0.5140	1.0224	6.72%	0.3109	0.3424	0.6154
		Brown	5.91%	0.2495	0.2580	0.5029	1.75%	0.0350	0.0388	0.0700
	KNN	Green	9.65%	0.2712	0.2835	0.5635	7.27%	0.3335	0.3674	0.6614
		Brown	4.34%	0.1541	0.1683	0.2966	2.89%	0.0659	0.0824	0.1163
WTR	10/90	Green	5.67%	0.1514	0.1453	0.3573	9.90%	0.3646	0.4110	0.7947
		Brown	-5.47%	-0.2383	-0.2310	-0.4819	0.42%	-0.0196	-0.0213	-0.0385
	30/70	Green	5.31%	0.1666	0.1635	0.3649	10.02%	0.5316	0.6297	1.0536
		Brown	-2.17%	-0.1461	-0.1457	-0.2717	3.67%	0.1244	0.1314	0.2469
	50/50	Green	6.15%	0.2045	0.2018	0.4451	8.26%	0.4341	0.4750	0.8545
		Brown	1.33%	0.0157	0.0157	0.0304	4.53%	0.1729	0.1777	0.3627
	KNN	Green	6.27%	0.1836	0.1939	0.3795	7.44%	0.3884	0.4341	0.7548
		Brown	1.37%	0.0169	0.0178	0.0306	0.38%	-0.0213	-0.0194	-0.0475
WST	10/90	Green	0.08%	-0.0287	-0.0274	-0.0635	5.73%	0.1813	0.1933	0.3692
		Brown	-3.70%	-0.1517	-0.1293	-0.4262	-2.94%	-0.1380	-0.1488	-0.2453
	30/70	Green	6.79%	0.2494	0.2521	0.5233	3.91%	0.1436	0.1531	0.2789
		Brown	-1.54%	-0.0996	-0.0938	-0.2123	-1.83%	-0.1109	-0.1160	-0.2122
	50/50	Green	6.31%	0.2488	0.2547	0.5246	4.95%	0.1868	0.2008	0.3713
		Brown	1.28%	0.0124	0.0120	0.0258	-0.15%	-0.0498	-0.0531	-0.0940
	KNN	Green	-0.02%	-0.0362	-0.0363	-0.0741	3.41%	0.1066	0.1118	0.2114
		Brown	-2.94%	-0.1466	-0.1421	-0.3085	-2.19%	-0.1087	-0.1088	-0.2276

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 43. South Korean sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	0.1349	0.07	-0.218	-0.1772	-0.0749	0.2205	-0.0747	1.1725	-0.0099	0.3283	0.0938	0.1867	1.721**	0.6402**
		(0.4827)	(0.0869)	(0.2345)	(0.3094)	(0.2864)	(0.4054)	(0.1622)	(0.8725)	(0.2057)	(0.4149)	(0.5532)	(0.5693)	(0.6998)	(0.3132)
		0.7803	*0.4224*	*0.3544*	*0.5679*	*0.794*	*0.5875*	*0.646*	*0.1829*	*0.9616*	*0.4312*	*0.8658*	*0.7438*	*0.0162*	*0.0444*
	30/70	0.5712	0.1632**	-0.2606*	-0.3555	-0.3433	0.2449	0.0356	-0.1661	-0.0975	-0.6964**	0.3356	0.3806	1.1085*	0.643**
		(0.3906)	(0.0774)	(0.1544)	(0.2343)	(0.2758)	(0.3138)	(0.12)	(0.7179)	(0.1613)	(0.2851)	(0.331)	(0.3173)	(0.5795)	(0.2616)
		0.1461	*0.037*	*0.094*	*0.1317*	*0.2155*	*0.4366*	*0.7671*	*0.8176*	*0.5471*	*0.0169*	*0.3139*	*0.234*	*0.0595*	*0.0162*
	50/50	0.7444*	0.0563	-0.1554	0.0572	0.0458	0.2075	0.095	0.37	-0.091	-0.0636	0.3694	0.3052	0.5428	0.2548
		(0.438)	(0.0727)	(0.1479)	(0.2078)	(0.2597)	(0.2947)	(0.1252)	(0.639)	(0.147)	(0.3086)	(0.4138)	(0.401)	(0.5022)	(0.2394)
		0.0917	*0.4399*	*0.2956*	*0.7836*	*0.8603*	*0.4828*	*0.4498*	*0.5642*	*0.5378*	*0.8373*	*0.3749*	*0.4489*	*0.2831*	*0.2907*
	KNN	0.7737	0.1074	-0.2334	-0.348	-0.359	0.5131*	-0.2016	-0.7594	-0.5183***	-0.1741	0.8976	0.4956	1.2011*	0.7852***
		(0.4954)	(0.076)	(0.1833)	(0.2937)	(0.3251)	(0.3054)	(0.1516)	(0.9748)	(0.1877)	(0.4482)	(0.6611)	(0.6505)	(0.6222)	(0.2891)
		0.1209	*0.1598*	*0.2053*	*0.2383*	*0.2715*	*0.0955*	*0.1861*	*0.4384*	*0.0072*	*0.6987*	*0.1786*	*0.4485*	*0.0572*	*0.0081*
WTR	10/90	-0.5768	-0.0198	-0.156	0.0065	-0.1495	-0.1651	0.4123*	0.6606	0.571	-0.1277	-1.0721	0.0807	0.681	0.1722
		(0.7324)	(0.1173)	(0.3018)	(0.4192)	(0.4806)	(0.4268)	(0.2417)	(1.961)	(0.3678)	(0.8854)	(1.7007)	(1.1425)	(1.6338)	(0.7322)
		0.4324	*0.8664*	*0.606*	*0.9876*	*0.7563*	*0.6995*	*0.0906*	*0.7373*	*0.1254*	*0.8858*	*0.5306*	*0.9439*	*0.6782*	*0.8149*
	30/70	0.4184	-0.0609	-0.3253	-0.1365	-0.1489	0.2232	0.3084*	0.7413	0.1203	0.1493	0.3064	0.2201	-0.5041	-0.0438
		(0.5997)	(0.1177)	(0.2142)	(0.3061)	(0.2704)	(0.3754)	(0.1729)	(0.8741)	(0.2185)	(0.8308)	(0.5776)	(0.4944)	(0.8463)	(0.3245)
		0.4867	*0.6057*	*0.1313*	*0.6563*	*0.583*	*0.5532*	*0.0769*	*0.3996*	*0.5838*	*0.8579*	*0.5976*	*0.6576*	*0.5535*	*0.8931*
	50/50	0.4887	0.0111	-0.4084**	-0.0091	0.1018	0.2587	0.1888	0.1593	0.1261	0.0793	0.0056	-0.1977	-0.5477	-0.1291
		(0.4765)	(0.0975)	(0.177)	(0.2633)	(0.2535)	(0.3225)	(0.1369)	(0.6468)	(0.1414)	(0.4659)	(0.4691)	(0.441)	(0.603)	(0.2412)
		0.3071	*0.9093*	*0.0227*	*0.9725*	*0.6888*	*0.4239*	*0.1702*	*0.8062*	*0.3756*	*0.8653*	*0.9905*	*0.6555*	*0.3671*	*0.5942*
	KNN	0.6134	-0.0623	-0.2503	-0.212	-0.3199	0.073	0.2477	0.5805	0.4431**	1.2043	-0.5204	0.2728	0.8981	-0.1874
		(0.6443)	(0.1247)	(0.2225)	(0.343)	(0.336)	(0.3942)	(0.1797)	(0.9765)	(0.2056)	(0.7295)	(0.5167)	(0.7222)	(0.8835)	(0.3843)
		0.3429	*0.6179*	*0.2628*	*0.5378*	*0.3429*	*0.8534*	*0.1706*	*0.5542*	*0.0349*	*0.1036*	*0.3176*	*0.7068*	*0.3132*	*0.6274*
WST	10/90	-0.599	0.1473*	0.0739	0.5089	0.501	-0.1288	0.134	-0.5388	0.0488	1.335**	0.4489	0.9389	-0.8872	0.5449
		(0.4679)	(0.0788)	(0.2084)	(0.346)	(0.3093)	(0.4142)	(0.1495)	(1.6161)	(0.3353)	(0.614)	(0.8647)	(0.8332)	(0.9873)	(0.5897)
		0.2028	*0.0638*	*0.7234*	*0.1439*	*0.1078*	*0.7564*	*0.3719*	*0.7402*	*0.8849*	*0.0342*	*0.6058*	*0.2649*	*0.3729*	*0.3596*
	30/70	-0.0169	0.1377	-0.0912	-0.0296	-0.0901	-0.4032	0.0752	0.4296	0.031	0.6515*	0.0389	-0.2936	0.3615	-0.0499
		(0.5317)	(0.1189)	(0.1968)	(0.3289)	(0.3318)	(0.3088)	(0.1506)	(0.8168)	(0.1834)	(0.3438)	(0.5799)	(0.6722)	(0.8014)	(0.4312)
		0.9747	*0.2488*	*0.644*	*0.9285*	*0.7864*	*0.1941*	*0.6182*	*0.6011*	*0.8662*	*0.0636*	*0.9467*	*0.664*	*0.6538*	*0.9083*
	50/50	0.175	-0.0583	0.1383	-0.0778	0.0175	-0.2529	0.0685	0.1744	-0.0555	0.6027**	-0.1861	-0.1335	0.7194	-0.041
		(0.4353)	(0.1003)	(0.2068)	(0.2258)	(0.3301)	(0.2709)	(0.1152)	(0.7232)	(0.1474)	(0.2391)	(0.3758)	(0.4545)	(0.6596)	(0.2724)
		0.6883	*0.5623*	*0.5049*	*0.731*	*0.9577*	*0.3523*	*0.5531*	*0.8104*	*0.7079*	*0.0147*	*0.6226*	*0.77*	*0.2804*	*0.8808*
	KNN	-0.6813	0.0031	0.6361	0.7338	1.0902**	-1.1789*	-0.1257	0.0932	0.0447	0.5916	-0.4628	-0.8088	0.5938	-0.1698
		(0.8122)	(0.1366)	(0.4655)	(0.449)	(0.498)	(0.661)	(0.3942)	(1.0544)	(0.3078)	(0.4586)	(0.6829)	(0.7464)	(0.9831)	(0.455)
		0.4032	*0.9821*	*0.1743*	*0.1047*	*0.0305*	*0.0769*	*0.7503*	*0.9299*	*0.885*	*0.2026*	*0.5009*	*0.2835*	*0.5485*	*0.7105*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 44. South Korean sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	0.86%	-0.0065	-0.0062	-0.0132	-19.72%	-0.6261	-0.6372	-1.1164
		Brown	0.61%	-0.0145	-0.0164	-0.0273	-0.93%	-0.0586	-0.0586	-0.1180
	30/70	Green	-0.22%	-0.0572	-0.0533	-0.1151	0.30%	-0.0273	-0.0263	-0.0548
		Brown	5.60%	0.1918	0.2194	0.3759	6.68%	0.2135	0.2821	0.3925
	50/50	Green	0.13%	-0.0416	-0.0407	-0.0806	6.78%	0.2341	0.2656	0.4702
		Brown	12.11%	0.4958	0.5572	1.0041	15.71%	0.5833	0.7455	1.1535
	KNN	Green	-1.54%	-0.1110	-0.1088	-0.2217	-0.60%	-0.0672	-0.0660	-0.1307
		Brown	2.67%	0.0604	0.0683	0.1168	-3.10%	-0.1421	-0.1293	-0.2888
WTR	10/90	Green	0.66%	-0.0134	-0.0136	-0.0264	14.50%	0.3985	0.4070	0.9643
		Brown	-1.77%	-0.1022	-0.1045	-0.1982	25.81%	0.5276	0.8800	0.9854
	30/70	Green	0.62%	-0.0168	-0.0165	-0.0339	10.96%	0.3545	0.4357	0.7606
		Brown	9.94%	0.3908	0.4178	0.8042	24.75%	0.8264	1.0933	1.7011
	50/50	Green	-0.14%	-0.0538	-0.0498	-0.1093	16.79%	0.6259	0.9058	1.2387
		Brown	10.30%	0.3939	0.4570	0.7818	18.16%	0.7210	0.8604	1.5395
	KNN	Green	1.39%	0.0172	0.0170	0.0348	10.56%	0.3415	0.4297	0.7183
		Brown	10.63%	0.4151	0.4636	0.8484	13.80%	0.3399	0.4003	0.7063
WST	10/90	Green	-2.68%	-0.1586	-0.1653	-0.3024	-8.22%	-0.3123	-0.3268	-0.5616
		Brown	-4.84%	-0.2028	-0.1959	-0.3996	-2.01%	-0.0855	-0.0919	-0.1659
	30/70	Green	0.52%	-0.0230	-0.0229	-0.0459	4.52%	0.1419	0.1485	0.2769
		Brown	0.02%	-0.0383	-0.0406	-0.0757	7.61%	0.2372	0.2900	0.4537
	50/50	Green	4.45%	0.1569	0.1553	0.3137	8.37%	0.2949	0.3594	0.5596
		Brown	6.37%	0.2338	0.2572	0.4583	9.07%	0.3188	0.3787	0.6116
	KNN	Green	-2.21%	-0.1311	-0.1319	-0.2412	9.12%	0.3361	0.4313	0.6319
		Brown	-9.51%	-0.3150	-0.3066	-0.6513	1.78%	0.0229	0.0228	0.0474

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 45. German sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-1.438**	-0.2039	0.8289	-0.1662	0.8637	0.8933	0.1357	2.3887**	-0.7762**	-0.9355	1.4865	-0.7793	-2.0692	-0.165
	10/90	(0.5551)	(0.1385)	(0.5736)	(0.4027)	(0.5644)	(0.6377)	(0.1867)	(1.0556)	(0.325)	(0.76)	(1.2025)	(1.107)	(1.4507)	(0.7198)
		0.0105	*0.1431*	*0.1505*	*0.6804*	*0.128*	*0.1633*	*0.4683*	*0.027*	*0.0198*	*0.2228*	*0.2208*	*0.484*	*0.1586*	*0.8194*
		-0.6323**	0.0509	0.1779	0.0451	0.8208***	0.4235	0.262**	0.5964	-0.0425	0.3868	0.1218	-0.4256	0.1816	0.0096
	30/70	(0.3016)	(0.0572)	(0.2016)	(0.2443)	(0.3009)	(0.3003)	(0.1069)	(0.4393)	(0.1079)	(0.2948)	(0.443)	(0.4373)	(0.584)	(0.216)
		0.0377	*0.3743*	*0.3789*	*0.8536*	*0.0071*	*0.1606*	*0.0155*	*0.1792*	*0.6953*	*0.1942*	*0.7843*	*0.334*	*0.7568*	*0.9648*
		-0.4523*	0.0731	0.0231	0.069	0.6565***	0.285	0.0451	0.4783	-0.0015	0.0261	0.0191	-0.6173*	0.0923	0.0362
	50/50	(0.2506)	(0.0524)	(0.1163)	(0.1393)	(0.241)	(0.1828)	(0.0862)	(0.3693)	(0.0927)	(0.224)	(0.3916)	(0.3493)	(0.4992)	(0.1943)
		0.0731	*0.165*	*0.8427*	*0.6207*	*0.0072*	*0.121*	*0.6016*	*0.1999*	*0.9874*	*0.9075*	*0.9613*	*0.0819*	*0.8539*	*0.8529*
		-0.9631**	0.1319	0.4424	-0.2617	1.2745***	0.771*	0.2247	0.2025	0.3359	1.7956***	1.5564	1.2601	-0.339	0.6683**
	KNN	(0.4114)	(0.0816)	(0.3082)	(0.2931)	(0.3502)	(0.4117)	(0.1442)	(0.9886)	(0.219)	(0.6026)	(1.0019)	(0.857)	(1.1501)	(0.2712)
		0.0206	*0.1079*	*0.1533*	*0.3734*	*0.0004*	*0.0631*	*0.1212*	*0.8383*	*0.13*	*0.0041*	*0.1252*	*0.1463*	*0.7691*	*0.0164*
WTR		-0.369	0.1288	0.5609	-0.7304*	0.2793	1.7911**	0.3154*	-0.2926	0.1624	0.4243	-0.5973	-0.4386	1.0534	-0.4877
	10/90	(0.4993)	(0.1122)	(0.3462)	(0.4406)	(0.5243)	(0.7289)	(0.1698)	(0.7041)	(0.196)	(0.3755)	(0.6332)	(0.7412)	(1.0305)	(0.4004)
		0.4609	*0.2524*	*0.1072*	*0.0993*	*0.595*	*0.0151*	*0.0651*	*0.6785*	*0.4089*	*0.2609*	*0.3476*	*0.5552*	*0.3089*	*0.2257*
		-0.4423	-0.0704	0.281	0.1517	1.1136***	0.4521	0.2862**	0.2599	0.1552**	0.0047	-0.3111	-0.9001*	0.2394	-0.0954
	30/70	(0.2904)	(0.0803)	(0.1957)	(0.3047)	(0.3003)	(0.2854)	(0.1393)	(0.3334)	(0.076)	(0.262)	(0.3829)	(0.4683)	(0.5848)	(0.1775)
		0.1297	*0.3825*	*0.1529*	*0.6192*	*0.0003*	*0.1152*	*0.0416*	*0.4372*	*0.0436*	*0.9857*	*0.4182*	*0.0571*	*0.683*	*0.5922*
		-0.3067	-0.0253	0.1252	0.1326	0.7257***	0.406**	0.1732*	0.1286	0.0404	-0.0267	-0.0002	-0.4389	-0.1639	0.1315
	50/50	(0.1862)	(0.0509)	(0.1323)	(0.1897)	(0.1955)	(0.1803)	(0.0983)	(0.332)	(0.0551)	(0.1693)	(0.2983)	(0.3179)	(0.359)	(0.1891)
		0.1014	*0.6202*	*0.3454*	*0.4856*	*0.0003*	*0.0257*	*0.0801*	*0.6992*	*0.465*	*0.8749*	*0.9996*	*0.17*	*0.649*	*0.4883*
		-0.3738	-0.0582	0.3535	0.1097	1.0784***	0.3924	0.2495*	0.8598	-0.0418	0.1139	-0.2464	-0.6734	-0.198	-0.2729
	KNN	(0.3268)	(0.0972)	(0.2144)	(0.3741)	(0.3612)	(0.3757)	(0.1467)	(0.7454)	(0.1482)	(0.353)	(0.6284)	(0.9695)	(1.0459)	(0.4587)
		0.2545	*0.5502*	*0.1011*	*0.7698*	*0.0033*	*0.2979*	*0.0908*	*0.2511*	*0.7784*	*0.7476*	*0.6957*	*0.4888*	*0.8502*	*0.553*
WST		-1.2127***	0.0964	0.5162**	-0.1656	0.6553*	0.3826	0.2156	2.0427*	0.3283	-0.678	0.2323	-1.713	-0.4704	0.6978
	10/90	(0.3929)	(0.0895)	(0.2138)	(0.2805)	(0.3879)	(0.3606)	(0.1357)	(1.0978)	(0.2314)	(0.5749)	(0.8189)	(1.0598)	(0.8604)	(0.6882)
		0.0024	*0.2829*	*0.0169*	*0.5559*	*0.0931*	*0.2904*	*0.1141*	*0.0654*	*0.1587*	*0.2407*	*0.7772*	*0.1088*	*0.5857*	*0.3128*
		-0.592	-0.062	-0.216	0.6218*	0.9045**	-0.4883	0.3318**	-0.0183	0.1873*	0.2194	-0.2205	0.2478	1.2928**	0.135
	30/70	(0.3897)	(0.1276)	(0.2045)	(0.3309)	(0.4242)	(0.4161)	(0.1322)	(0.4207)	(0.095)	(0.2373)	(0.3252)	(0.3869)	(0.521)	(0.1404)
		0.1307	*0.6276*	*0.2924*	*0.062*	*0.0345*	*0.2422*	*0.0131*	*0.9655*	*0.0511*	*0.3571*	*0.4991*	*0.5231*	*0.0146*	*0.3383*
		-0.4385	-0.0832	-0.117	0.7377**	0.827**	-0.5445	0.2202**	-0.0901	0.1324	0.1997	0.1115	0.2677	0.7126*	0.2182
	50/50	(0.3238)	(0.0988)	(0.1648)	(0.2837)	(0.356)	(0.3689)	(0.1098)	(0.3508)	(0.0884)	(0.1914)	(0.2906)	(0.3252)	(0.4124)	(0.1592)
		0.1775	*0.4014*	*0.4785*	*0.0102*	*0.0214*	*0.1419*	*0.0465*	*0.7978*	*0.1371*	*0.2989*	*0.7018*	*0.4122*	*0.0867*	*0.1732*
		-1.0115**	0.2162**	-0.0264	-0.1092	0.172	-0.8471**	0.461***	-0.3283	0.2097**	-0.1604	-0.0782	-0.5977	-0.0918	0.0563
	KNN	(0.4618)	(0.1064)	(0.2144)	(0.3624)	(0.4926)	(0.4237)	(0.1384)	(0.5082)	(0.104)	(0.4107)	(0.3102)	(0.3802)	(0.6024)	(0.2239)
		0.0299	*0.0438*	*0.902*	*0.7635*	*0.7274*	*0.0473*	*0.0011*	*0.5196*	*0.0462*	*0.6969*	*0.8016*	*0.1187*	*0.8792*	*0.8021*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 46. German sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	8.90%	0.2183	0.2306	0.4914	-1.92%	-0.0941	-0.0915	-0.1898
		Brown	-1.02%	-0.0825	-0.0777	-0.1732	17.95%	0.8032	0.9238	1.7024
	30/70	Green	6.20%	0.1970	0.2112	0.4086	5.22%	0.2142	0.2371	0.4290
		Brown	5.24%	0.1873	0.1905	0.4016	8.94%	0.4032	0.4150	0.8724
	50/50	Green	8.52%	0.3375	0.3577	0.7260	5.38%	0.2294	0.2341	0.4650
		Brown	6.52%	0.2502	0.2505	0.5451	7.36%	0.3307	0.3428	0.7033
	KNN	Green	7.26%	0.2215	0.2366	0.4617	3.39%	0.1159	0.1151	0.2442
		Brown	6.45%	0.2289	0.2382	0.4747	13.61%	0.3320	0.3288	1.1440
WTR	10/90	Green	-0.48%	-0.0403	-0.0391	-0.0901	3.39%	0.1060	0.1069	0.2138
		Brown	4.49%	0.1269	0.1260	0.2740	-6.52%	-0.2873	-0.2475	-0.5923
	30/70	Green	0.69%	-0.0101	-0.0095	-0.0243	1.04%	0.0020	0.0019	0.0041
		Brown	4.71%	0.1553	0.1459	0.3496	-0.83%	-0.0787	-0.0748	-0.1594
	50/50	Green	2.77%	0.0647	0.0619	0.1597	2.46%	0.0703	0.0692	0.1424
		Brown	4.43%	0.1420	0.1327	0.3232	3.13%	0.0962	0.0955	0.2023
	KNN	Green	0.35%	-0.0209	-0.0201	-0.0502	-0.03%	-0.0492	-0.0474	-0.0990
		Brown	5.12%	0.1649	0.1521	0.3699	4.66%	0.1318	0.1383	0.2592
WST	10/90	Green	3.78%	0.1001	0.0977	0.2241	-15.49%	-0.5284	-0.4353	-1.2045
		Brown	-3.46%	-0.1691	-0.1629	-0.3411	7.82%	0.2738	0.2787	0.6230
	30/70	Green	3.31%	0.0999	0.0945	0.2252	1.63%	0.0269	0.0277	0.0550
		Brown	1.07%	0.0029	0.0029	0.0061	1.97%	0.0418	0.0395	0.0889
	50/50	Green	4.02%	0.1315	0.1258	0.3065	2.86%	0.0839	0.0883	0.1691
		Brown	2.16%	0.0487	0.0486	0.1005	3.00%	0.0889	0.0850	0.1950
	KNN	Green	4.84%	0.1642	0.1693	0.3401	3.73%	0.1216	0.1306	0.2459
		Brown	-1.18%	-0.0807	-0.0771	-0.1722	-3.20%	-0.1440	-0.1371	-0.3048

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 47. Indian sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.2403	-0.2393*	0.4567	-0.1321	-0.0578	-0.1223	0.0753	-1.9128*	0.8264***	-0.1214	1.4038*	0.0222	-1.3048	-0.3235
		(0.8235)	(0.1231)	(0.3621)	(0.4679)	(0.3658)	(0.7532)	(0.2289)	(0.9955)	(0.2115)	(0.4067)	(0.7451)	(0.5924)	(1.0426)	(0.4432)
		0.7709	*0.054*	*0.2094*	*0.7782*	*0.8746*	*0.8712*	*0.7426*	*0.0584*	*0.0002*	*0.7661*	*0.0633*	*0.9702*	*0.2146*	*0.4677*
	30/70	-0.6562	0.5814***	0.3312*	0.2874	0.3106	0.2428	-0.1867	-0.5466	0.6058***	0.0158	0.4934	-0.1262	-0.3448	0.2963
		(0.5048)	(0.0824)	(0.1972)	(0.3316)	(0.3065)	(0.2913)	(0.1455)	(0.8021)	(0.1975)	(0.26)	(0.442)	(0.492)	(0.5673)	(0.3014)
		0.1958	*0*	*0.0953*	*0.3876*	*0.3126*	*0.4061*	*0.2016*	*0.4976*	*0.003*	*0.9516*	*0.2678*	*0.7983*	*0.5451*	*0.3286*
	50/50	-0.9503**	0.2343***	0.3787**	0.2696	0.3634	0.1449	-0.024	-0.323	0.3754***	0.0269	0.2843	-0.2843	-0.0348	0.0239
		(0.4377)	(0.0724)	(0.1661)	(0.2391)	(0.2296)	(0.2182)	(0.131)	(0.6916)	(0.1099)	(0.1944)	(0.393)	(0.3489)	(0.4091)	(0.2497)
		0.0317	*0.0015*	*0.0241*	*0.2615*	*0.1158*	*0.5077*	*0.8547*	*0.6418*	*0.001*	*0.8903*	*0.4716*	*0.4176*	*0.9324*	*0.9239*
	KNN	-0.6311	0.6901***	0.4286	0.0553	0.0871	0.4672	-0.28	-0.078	1.1177***	-0.2735	0.4114	-0.7905	-0.3284	-0.3349
		(0.7172)	(0.1477)	(0.2659)	(0.4047)	(0.358)	(0.3947)	(0.2148)	(1.1201)	(0.2159)	(0.4076)	(0.7958)	(0.5411)	(1.1568)	(0.5181)
		0.3804	*0*	*0.1093*	*0.8915*	*0.8081*	*0.2386*	*0.1946*	*0.9447*	*0*	*0.5043*	*0.6067*	*0.1481*	*0.7773*	*0.5199*
WTR	10/90	-0.023	0.7052***	0.6166	0.1906	0.1699	-0.2312	-0.3949	-1.0344	0.2042	-0.1696	-0.2166	-0.7209	-0.1416	-0.9404
		(1.0043)	(0.2222)	(0.4201)	(0.622)	(0.528)	(0.5407)	(0.345)	(1.4037)	(0.3041)	(1.0124)	(0.8473)	(0.5591)	(0.9869)	(0.5987)
		0.9817	*0.0019*	*0.1444*	*0.7598*	*0.748*	*0.6697*	*0.2544*	*0.4654*	*0.5057*	*0.8678*	*0.7996*	*0.2045*	*0.8866*	*0.1239*
	30/70	-0.8866*	0.6064***	0.3333	0.5547	0.5243	0.4415	-0.1437	0.3533	0.0176	-0.1798	-0.135	-0.8764	-0.3778	0.5718
		(0.4903)	(0.0844)	(0.2642)	(0.3787)	(0.3684)	(0.3484)	(0.1661)	(0.9376)	(0.2064)	(0.5688)	(0.7958)	(0.5889)	(1.1881)	(0.4646)
		0.0727	*0*	*0.2093*	*0.1454*	*0.1569*	*0.2073*	*0.3886*	*0.7082*	*0.9327*	*0.7535*	*0.8662*	*0.1444*	*0.7521*	*0.2255*
	50/50	-0.3726	0.2186**	-0.0035	0.4183	0.2975	0.069	-0.0315	0.0714	0.0587	-0.0727	0.4856	-0.2885	-0.8152	0.4463
		(0.3893)	(0.0908)	(0.2268)	(0.3058)	(0.331)	(0.2761)	(0.1476)	(0.9886)	(0.2135)	(0.4079)	(0.6558)	(0.4765)	(0.971)	(0.3377)
		0.3402	*0.0174*	*0.9877*	*0.1736*	*0.3703*	*0.8031*	*0.8315*	*0.9428*	*0.7848*	*0.8595*	*0.4632*	*0.5482*	*0.406*	*0.1937*
	KNN	-1.0326	0.5963***	0.5708	1.1087**	0.8739*	-0.2357	-0.181	0.3997	0.5608***	-1.1964*	0.0162	-1.0432	-0.3992	0.5594
		(0.6845)	(0.1954)	(0.3808)	(0.5339)	(0.521)	(0.5055)	(0.2504)	(1.6749)	(0.2073)	(0.66)	(0.7592)	(0.8895)	(1.071)	(0.4806)
		0.1337	*0.0027*	*0.1362*	*0.0397*	*0.0958*	*0.6418*	*0.471*	*0.8126*	*0.0099*	*0.0772*	*0.9831*	*0.2476*	*0.7113*	*0.2512*
WST	10/90	-0.3347	0.5307***	0.8223**	0.2903	0.7266	0.8612	-0.1502	0.0909	0.1895	-0.0154	0.9259	0.0974	-1.6808	-0.1485
		(0.9012)	(0.1969)	(0.3393)	(0.6226)	(0.5545)	(0.7036)	(0.3188)	(1.5161)	(0.3095)	(0.4043)	(0.8341)	(0.8068)	(1.3728)	(0.4392)
		0.711	*0.0081*	*0.017*	*0.6419*	*0.1927*	*0.2235*	*0.6384*	*0.9524*	*0.5426*	*0.9697*	*0.2711*	*0.9042*	*0.2253*	*0.7363*
	30/70	-0.6542	0.2036**	0.1929	0.4796	0.6988	0.3862	0.0156	-0.2474	0.6907***	0.2233	0.6764	-0.0441	-0.6185	-0.264
		(0.3991)	(0.0956)	(0.2191)	(0.3952)	(0.4285)	(0.4124)	(0.1312)	(0.7622)	(0.2259)	(0.2404)	(0.5343)	(0.5631)	(0.726)	(0.3577)
		0.104	*0.0353*	*0.3805*	*0.2275*	*0.1058*	*0.351*	*0.9058*	*0.7466*	*0.0032*	*0.3563*	*0.21*	*0.9379*	*0.3974*	*0.4632*
	50/50	-0.5426	-0.0146	0.1276	0.2123	0.5836*	0.3249	-0.0428	0.1415	0.2395**	0.0602	0.5354*	0.0332	-0.2345	-0.2489
		(0.36)	(0.0853)	(0.1815)	(0.3027)	(0.3325)	(0.3916)	(0.1262)	(0.4551)	(0.0935)	(0.2237)	(0.3061)	(0.3041)	(0.4458)	(0.2053)
		0.1345	*0.8641*	*0.4835*	*0.4845*	*0.0819*	*0.4085*	*0.7353*	*0.7568*	*0.0127*	*0.7886*	*0.085*	*0.9133*	*0.6007*	*0.2298*
	KNN	0.3641	0.102	0.2514	-0.4085	0.4182	0.2968	-0.28	-1.3781	0.8159***	-0.077	0.1364	0.1546	-0.4201	-0.1648
		(1.1298)	(0.2397)	(0.4267)	(0.4869)	(0.4962)	(0.6732)	(0.2862)	(0.8645)	(0.2645)	(0.3886)	(0.8244)	(0.7719)	(0.9603)	(0.4543)
		0.7479	*0.6714*	*0.5569*	*0.4033*	*0.4011*	*0.6602*	*0.3299*	*0.1157*	*0.003*	*0.8435*	*0.8691*	*0.8419*	*0.6632*	*0.718*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 48. Indian sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	19.39%	0.5410	0.6300	1.2223	38.54%	1.1844	1.2150	3.4660
		Brown	14.96%	0.4527	0.5381	0.9666	5.36%	0.0925	0.0998	0.2159
	30/70	Green	13.96%	0.5829	0.6451	1.3761	15.18%	0.5750	0.6471	1.2441
		Brown	6.48%	0.1720	0.1854	0.3574	10.38%	0.2598	0.3220	0.5756
	50/50	Green	13.42%	0.5726	0.6083	1.3611	15.12%	0.5593	0.5631	1.3185
		Brown	3.65%	0.0998	0.1084	0.2000	11.01%	0.3405	0.3788	0.7746
	KNN	Green	14.61%	0.5709	0.6290	1.4356	20.08%	0.7156	0.7837	1.7467
		Brown	4.79%	0.1083	0.1150	0.2268	6.48%	0.1119	0.1238	0.2770
WTR	10/90	Green	7.42%	0.2098	0.2079	0.5368	46.97%	1.3885	1.2773	5.1685
		Brown	2.73%	0.0420	0.0455	0.0871	15.14%	0.4208	0.4893	0.9443
	30/70	Green	11.97%	0.4919	0.5403	1.0749	27.51%	1.0243	0.9588	3.3170
		Brown	5.13%	0.1369	0.1510	0.2861	31.36%	0.8538	1.1420	1.8352
	50/50	Green	11.96%	0.5104	0.5467	1.1251	25.59%	0.9700	0.9133	3.2539
		Brown	9.50%	0.3123	0.3648	0.6339	31.70%	1.0146	1.1202	2.4561
	KNN	Green	13.73%	0.5776	0.6240	1.2720	26.24%	0.9480	0.9268	2.8410
		Brown	4.52%	0.1059	0.1093	0.2229	29.43%	0.6091	0.6858	1.5123
WST	10/90	Green	9.80%	0.2985	0.3131	0.6471	23.79%	0.6988	0.5995	2.0021
		Brown	11.95%	0.3731	0.4635	0.7550	19.61%	0.4686	0.4505	1.7981
	30/70	Green	16.06%	0.6735	0.6711	1.5659	22.46%	0.8958	0.8547	2.3523
		Brown	14.12%	0.5381	0.5413	1.2211	16.08%	0.3951	0.3932	1.0566
	50/50	Green	14.39%	0.5571	0.6444	1.1913	23.02%	0.9832	1.0553	2.4741
		Brown	10.78%	0.4358	0.4364	1.0049	23.39%	0.8464	0.8756	2.2099
	KNN	Green	15.30%	0.6299	0.6909	1.3892	27.21%	1.1365	1.2235	2.9835
		Brown	14.69%	0.4308	0.4530	0.9838	4.15%	0.0732	0.0756	0.1628

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 49. Italian sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.0815	-0.0518	0.211	0.0193	1.5497**	1.3328*	0.1012	-0.5045	0.2556	-0.4453	1.2209	-0.9923	-0.4667	0.7569
		(0.6664)	(0.133)	(0.3587)	(0.4791)	(0.7281)	(0.7829)	(0.2841)	(1.4233)	(0.505)	(1.016)	(1.8991)	(2.0472)	(1.5285)	(0.7138)
		0.903	*0.6979*	*0.5576*	*0.9679*	*0.0357*	*0.0918*	*0.7224*	*0.7248*	*0.6155*	*0.6635*	*0.5239*	*0.6304*	*0.7616*	*0.2951*
	30/70	-0.3752	-0.246**	0.1159	-0.4526	1.6722**	1.6515**	-0.142	-0.7865	0.4095*	-0.3446	0.2817	0.0331	-0.4158	0.3838
		(0.5874)	(0.1057)	(0.2626)	(0.4994)	(0.6382)	(0.662)	(0.314)	(0.9665)	(0.225)	(0.3872)	(0.8172)	(0.9173)	(1.0029)	(0.3216)
		0.5245	*0.022*	*0.6599*	*0.3669*	*0.0101*	*0.0142*	*0.6521*	*0.4205*	*0.076*	*0.3788*	*0.732*	*0.9714*	*0.6806*	*0.2395*
	50/50	-0.3659	-0.2878***	0.117	-0.1747	1.8677***	1.2027*	-0.0863	-0.2351	0.3363*	-0.5423*	0.2798	-0.1491	-0.2954	0.1138
		(0.4753)	(0.0846)	(0.2167)	(0.3767)	(0.563)	(0.6099)	(0.2642)	(0.5977)	(0.1931)	(0.3199)	(0.5894)	(0.5615)	(0.6938)	(0.2473)
		0.4431	*0.001*	*0.5905*	*0.6438*	*0.0013*	*0.0514*	*0.7445*	*0.6962*	*0.089*	*0.0977*	*0.6375*	*0.7919*	*0.6725*	*0.6479*
	KNN	-0.5345	-0.1084	-0.499	0.0192	2.0258***	0.992	0.0319	0.331	0.5709**	-1.1195*	0.1894	-0.6808	-0.5318	0.3511
		(0.6656)	(0.1468)	(0.3218)	(0.4827)	(0.6473)	(0.7863)	(0.3409)	(1.002)	(0.2612)	(0.5665)	(0.8506)	(1.177)	(1.33)	(0.3639)
		0.4239	*0.4623*	*0.1241*	*0.9684*	*0.0023*	*0.21*	*0.9257*	*0.7428*	*0.0346*	*0.0549*	*0.8249*	*0.5662*	*0.6914*	*0.3404*
WTR	10/90	-0.4734	-0.0809	0.2893	-0.1512	1.1606***	1.7805***	0.3115	-0.7704	-0.1102	1.0887	1.3271*	2.2815**	-0.2099	0.6427**
		(0.4948)	(0.0896)	(0.2828)	(0.2983)	(0.4401)	(0.5416)	(0.2256)	(0.719)	(0.1868)	(0.7542)	(0.7308)	(1.0309)	(1.0003)	(0.2769)
		0.3402	*0.3684*	*0.3079*	*0.6131*	*0.0093*	*0.0013*	*0.1694*	*0.2873*	*0.557*	*0.1529*	*0.0733*	*0.0298*	*0.8343*	*0.0229*
	30/70	-0.333	-0.1009	0.2125	-0.6296*	1.206***	1.0178*	-0.0639	-0.3687	0.0671	0.1753	0.4853	1.6074**	-0.0511	-0.0315
		(0.3526)	(0.0694)	(0.2418)	(0.3439)	(0.3843)	(0.5203)	(0.163)	(0.6313)	(0.1665)	(0.4457)	(0.6705)	(0.7209)	(0.8657)	(0.3269)
		0.3466	*0.1477*	*0.3807*	*0.0692*	*0.002*	*0.0523*	*0.6955*	*0.5609*	*0.688*	*0.6952*	*0.4714*	*0.0287*	*0.953*	*0.9234*
	50/50	-0.2683	-0.1066	0.3582*	-0.2852	1.1929***	0.9477**	-0.0027	-0.425	0.0796	-0.02	0.3121	0.5925	-0.1901	0.1691
		(0.3196)	(0.0652)	(0.1826)	(0.2843)	(0.3234)	(0.4429)	(0.1336)	(0.5054)	(0.1629)	(0.3471)	(0.5239)	(0.6029)	(0.7862)	(0.3104)
		0.4024	*0.1038*	*0.0517*	*0.3174*	*0.0003*	*0.034*	*0.9842*	*0.4029*	*0.6265*	*0.9543*	*0.5531*	*0.3288*	*0.8096*	*0.5875*
	KNN	-0.1456	-0.137	0.6663**	-0.3385	1.9356***	1.918***	-0.2888	-0.6894	0.0796	-0.2181	0.9251	1.3161*	-1.0289	0.1235
		(0.4799)	(0.1101)	(0.3162)	(0.5096)	(0.4729)	(0.6825)	(0.2212)	(0.6766)	(0.203)	(0.6412)	(0.7696)	(0.7093)	(1.0757)	(0.3795)
		0.762	*0.2153*	*0.0368*	*0.5075*	*0.0001*	*0.0056*	*0.1937*	*0.3114*	*0.6959*	*0.7346*	*0.233*	*0.0674*	*0.3419*	*0.7457*
WST	10/90	-0.4673	0.0271	1.0888***	-0.0937	2.3546***	1.5014**	0.0614	0.7865	-0.5762*	-1.2981*	-1.1333	-3.1328**	-2.9779**	-0.2908
		(0.5264)	(0.1247)	(0.2405)	(0.3876)	(0.532)	(0.6589)	(0.1676)	(1.4639)	(0.3094)	(0.6989)	(0.7493)	(1.3558)	(1.2802)	(0.3345)
		0.3761	*0.8282*	*0*	*0.8092*	*0*	*0.0241*	*0.7148*	*0.5929*	*0.0671*	*0.0678*	*0.1353*	*0.024*	*0.0231*	*0.3878*
	30/70	-0.1999	-0.1362*	0.4441**	-0.266	1.5332***	1.1842***	-0.0627	-0.3003	-0.2277	-0.3877	-0.7191	-1.5461*	-0.9233	-0.1299
		(0.3149)	(0.0691)	(0.1802)	(0.2607)	(0.3335)	(0.391)	(0.1465)	(0.6862)	(0.1754)	(0.5077)	(0.7464)	(0.8046)	(1.1093)	(0.3061)
		0.5266	*0.0505*	*0.0148*	*0.3093*	*0*	*0.0029*	*0.6694*	*0.6631*	*0.1989*	*0.4478*	*0.3389*	*0.0591*	*0.4083*	*0.6726*
	50/50	-0.3633	-0.0632	0.3648**	-0.0442	1.3271***	0.8793**	-0.0286	0.3538	-0.0944	-0.6442*	-0.5693	-1.0742*	-1.4713***	-0.0459
		(0.3147)	(0.0657)	(0.176)	(0.2318)	(0.3075)	(0.3839)	(0.1409)	(0.6296)	(0.1283)	(0.3447)	(0.395)	(0.5546)	(0.5216)	(0.2129)
		0.2502	*0.3383*	*0.0399*	*0.849*	*0*	*0.0234*	*0.8396*	*0.576*	*0.4646*	*0.0661*	*0.1543*	*0.0571*	*0.0064*	*0.8299*
	KNN	0.0252	-0.0514	-0.1212	-0.1358	0.9344**	0.7722	-0.178	0.6759	0.1144	-0.934**	-1.6089**	-1.8376**	-0.2709	0.0897
		(0.3996)	(0.0897)	(0.2073)	(0.3367)	(0.4518)	(0.5361)	(0.2014)	(0.7274)	(0.2248)	(0.3843)	(0.7002)	(0.8054)	(0.8357)	(0.2913)
		0.9499	*0.5673*	*0.5595*	*0.6872*	*0.0404*	*0.1519*	*0.3781*	*0.3562*	*0.6126*	*0.0179*	*0.0248*	*0.0258*	*0.7469*	*0.7592*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 50. Italian sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	6.48%	0.2132	0.2132	0.4629	20.19%	0.7353	1.0241	1.4338
		Brown	9.86%	0.3735	0.4268	0.7422	10.10%	0.2888	0.2397	1.0860
	30/70	Green	7.13%	0.2079	0.2086	0.4548	12.34%	0.4249	0.4402	0.9209
		Brown	5.09%	0.1930	0.2146	0.3728	12.03%	0.3576	0.3181	1.1669
	50/50	Green	5.81%	0.1670	0.1668	0.3705	16.97%	0.6768	0.6712	1.4846
		Brown	5.41%	0.2187	0.2381	0.4306	17.48%	0.5672	0.5789	1.4558
	KNN	Green	6.94%	0.2072	0.1996	0.4606	12.38%	0.4255	0.4414	0.9214
		Brown	4.84%	0.1597	0.1774	0.3085	23.87%	0.6502	0.6836	1.5319
WTR	10/90	Green	6.59%	0.1615	0.1636	0.3434	-1.84%	-0.0952	-0.0925	-0.1948
		Brown	7.23%	0.2392	0.2612	0.4750	4.77%	0.1310	0.1327	0.3527
	30/70	Green	2.02%	0.0325	0.0314	0.0686	1.40%	0.0155	0.0146	0.0329
		Brown	5.39%	0.1947	0.2125	0.3799	5.12%	0.1640	0.1741	0.3682
	50/50	Green	2.14%	0.0385	0.0374	0.0810	0.73%	-0.0108	-0.0102	-0.0222
		Brown	5.54%	0.2034	0.2189	0.4070	0.08%	-0.0356	-0.0358	-0.0737
	KNN	Green	0.48%	-0.0157	-0.0148	-0.0338	4.23%	0.1219	0.1123	0.2642
		Brown	5.98%	0.1994	0.2308	0.3837	3.75%	0.0943	0.1011	0.1938
WST	10/90	Green	-2.46%	-0.0960	-0.0925	-0.2018	8.07%	0.2451	0.2278	0.5484
		Brown	7.44%	0.2317	0.2372	0.5140	-2.87%	-0.1612	-0.1545	-0.3490
	30/70	Green	0.84%	-0.0050	-0.0047	-0.0105	12.61%	0.5263	0.5890	1.1689
		Brown	6.02%	0.2046	0.2211	0.4102	-1.78%	-0.1250	-0.1096	-0.2667
	50/50	Green	2.96%	0.0695	0.0655	0.1466	10.75%	0.4792	0.5633	1.0138
		Brown	4.95%	0.1714	0.1777	0.3464	10.02%	0.4297	0.4844	0.8810
	KNN	Green	4.11%	0.1072	0.1041	0.2294	3.08%	0.0809	0.0763	0.2359
		Brown	6.48%	0.2123	0.2319	0.4277	6.00%	0.2231	0.2173	0.5461

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 51. Brazilian sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	1.0444*	-0.157	0.565*	1.1537**	-0.4595	-1.0357**	-0.4733**	0.2996	0.145	-0.8186	-0.7013	1.1189*	1.1044	0.3134
		(0.5829)	(0.1265)	(0.3107)	(0.451)	(0.552)	(0.515)	(0.2321)	(1.4209)	(0.2166)	(0.5623)	(0.7191)	(0.6355)	(0.7132)	(0.5308)
		0.0754	*0.2165*	*0.0711*	*0.0116*	*0.4066*	*0.0463*	*0.0434*	*0.8335*	*0.5049*	*0.1489*	*0.3321*	*0.0817*	*0.1251*	*0.5564*
	30/70	0.4652	-0.0995	0.4737	0.9333*	-0.2282	-0.7882	-0.2902	-0.6444	0.2227	0.5742	-0.7594	0.7422	0.426	0.3646
		(0.6254)	(0.1388)	(0.2909)	(0.4839)	(0.6059)	(0.4897)	(0.2416)	(0.82)	(0.2243)	(0.4312)	(0.4874)	(0.6366)	(0.7392)	(0.3237)
		0.4583	*0.4748*	*0.1058*	*0.0559*	*0.707*	*0.1098*	*0.2318*	*0.4341*	*0.3236*	*0.1864*	*0.1228*	*0.2468*	*0.5659*	*0.263*
	50/50	0.6862	-0.1202	0.4103*	0.9101**	-0.184	-0.6017	-0.2709	-0.2337	0.0606	0.2585	-0.938***	0.7768	1.0187*	0.261
		(0.5136)	(0.1136)	(0.2336)	(0.3732)	(0.4712)	(0.4142)	(0.2046)	(0.5848)	(0.1571)	(0.2869)	(0.354)	(0.4782)	(0.5749)	(0.3118)
		0.1837	*0.2919*	*0.0812*	*0.016*	*0.6968*	*0.1486*	*0.1876*	*0.6904*	*0.7008*	*0.3701*	*0.0095*	*0.1078*	*0.0798*	*0.4048*
	KNN	0.2214	0.0519	0.2517	0.9519**	-0.3478	-0.6115	-0.0949	-0.4108	-0.2542	0.0632	0.5218	1.6049*	-0.7451	0.2525
		(0.7085)	(0.1238)	(0.3026)	(0.4775)	(0.6391)	(0.4097)	(0.2493)	(1.337)	(0.3634)	(0.5044)	(0.9174)	(0.9312)	(1.0935)	(0.6181)
		0.7551	*0.6755*	*0.407*	*0.0482*	*0.5871*	*0.1379*	*0.7041*	*0.7593*	*0.4861*	*0.9006*	*0.571*	*0.0883*	*0.4974*	*0.6839*
WTR	10/90	0.175	0.0169	0.0304	0.1019	0.1208	-0.5802	-0.0196	-0.0232	0.1768	-0.581	0.2498	-0.0162	1.6794*	0.603
		(0.8276)	(0.2892)	(0.589)	(0.6262)	(0.6078)	(0.5857)	(0.2242)	(1.5069)	(0.4004)	(0.874)	(0.8572)	(1.121)	(0.8582)	(0.728)
		0.8329	*0.9534*	*0.9589*	*0.8709*	*0.8427*	*0.3235*	*0.9304*	*0.9878*	*0.6597*	*0.5077*	*0.7713*	*0.9885*	*0.0531*	*0.4094*
	30/70	-0.2067	-0.1759	0.7182**	0.4729	0.2437	-0.8075*	-0.0771	0.3652	-0.2535	-0.3704	0.448	-0.44	0.4518	0.466
		(0.5976)	(0.1597)	(0.3277)	(0.5024)	(0.5405)	(0.4469)	(0.1609)	(0.9302)	(0.2718)	(0.4026)	(0.5836)	(0.6353)	(0.6022)	(0.3946)
		0.7299	*0.2724*	*0.03*	*0.3481*	*0.6527*	*0.0728*	*0.6326*	*0.6955*	*0.3532*	*0.3598*	*0.4444*	*0.4901*	*0.4548*	*0.2405*
	50/50	-0.0775	-0.102	0.427*	0.4219	-0.0294	-0.5582	-0.0002	-0.205	-0.143	-0.5052	0.113	-0.4135	0.649	0.4784**
		(0.4435)	(0.1095)	(0.2372)	(0.3847)	(0.4555)	(0.3735)	(0.1212)	(0.8007)	(0.2548)	(0.4084)	(0.5589)	(0.453)	(0.5157)	(0.188)
		0.8615	*0.3532*	*0.0739*	*0.2745*	*0.9486*	*0.1372*	*0.9988*	*0.7985*	*0.5759*	*0.219*	*0.8401*	*0.3635*	*0.2111*	*0.0125*
	KNN	-0.3339	0.2684	0.861***	-0.4564	0.3135	0.7553	0.2568	-1.0397	-0.0814	-0.0733	-0.1021	0.8138	0.7043	0.1497
		(0.5717)	(0.1668)	(0.2766)	(0.4817)	(0.5143)	(0.5086)	(0.1689)	(0.7089)	(0.2199)	(0.4036)	(0.5926)	(0.6019)	(0.7537)	(0.3203)
		0.5601	*0.1096*	*0.0022*	*0.345*	*0.543*	*0.1397*	*0.1305*	*0.1456*	*0.7119*	*0.8563*	*0.8636*	*0.1794*	*0.3523*	*0.6411*
WST	10/90	0.4716	-0.1294	0.1037	0.5729	-0.4216	0.417	0.2078	-0.3032	-0.3752	-0.3915	-1.0064	0.8268	0.0949	-0.397
		(0.9563)	(0.2227)	(0.5487)	(0.6545)	(0.7694)	(0.5904)	(0.2916)	(1.1376)	(0.271)	(0.6675)	(0.9788)	(1.0431)	(0.7097)	(0.8603)
		0.6226	*0.562*	*0.8504*	*0.3828*	*0.5846*	*0.4811*	*0.4771*	*0.7903*	*0.1689*	*0.5587*	*0.3061*	*0.4297*	*0.8939*	*0.6453*
	30/70	-0.5297	-0.0183	0.7389**	0.0751	0.6393	-0.543	-0.028	0.1097	-0.0318	0.3838	-0.1742	-0.4799	0.9355	0.1727
		(0.5837)	(0.1635)	(0.3388)	(0.5062)	(0.5249)	(0.3981)	(0.1695)	(0.92)	(0.2709)	(0.5209)	(0.7552)	(0.7693)	(0.7246)	(0.3577)
		0.3656	*0.911*	*0.0308*	*0.8822*	*0.2252*	*0.1746*	*0.869*	*0.9053*	*0.9067*	*0.4627*	*0.818*	*0.534*	*0.1993*	*0.6302*
	50/50	-0.4394	-0.1	0.6284*	0.0958	1.0807***	-0.8314**	0.0438	-0.5814	0.0324	0.945***	-0.4498	0.2772	0.722	0.0415
		(0.4972)	(0.1693)	(0.3251)	(0.4243)	(0.3965)	(0.4003)	(0.1716)	(0.7344)	(0.1439)	(0.3304)	(0.4385)	(0.6635)	(0.5042)	(0.305)
		0.3782	*0.5557*	*0.0552*	*0.8218*	*0.0072*	*0.0395*	*0.7989*	*0.4302*	*0.8222*	*0.005*	*0.3071*	*0.6768*	*0.1549*	*0.892*
	KNN	-0.3342	-0.1509	1.1729***	0.1225	1.2674***	-1.1597**	-0.1122	-0.7327	-0.2017	-0.5331	-0.7822	0.1481	0.4874	0.5573
		(0.5264)	(0.1864)	(0.2717)	(0.5197)	(0.4353)	(0.5009)	(0.2049)	(0.7638)	(0.1784)	(0.4855)	(0.5182)	(0.692)	(0.5872)	(0.3505)
		0.5265	*0.4195*	*0*	*0.814*	*0.0041*	*0.022*	*0.5846*	*0.3395*	*0.2606*	*0.2745*	*0.134*	*0.831*	*0.4083*	*0.1147*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 52. Brazilian sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-5.97%	-0.1912	-0.1976	-0.3821	-4.52%	-0.1334	-0.1553	-0.2561
		Brown	-3.45%	-0.1057	-0.1200	-0.2149	6.70%	0.1577	0.1652	0.3432
	30/70	Green	-2.57%	-0.0969	-0.1008	-0.1978	2.07%	0.0235	0.0253	0.0468
		Brown	-1.92%	-0.0742	-0.0841	-0.1422	1.77%	0.0194	0.0216	0.0423
	50/50	Green	-3.32%	-0.1291	-0.1306	-0.2638	-1.44%	-0.0593	-0.0592	-0.1219
		Brown	0.77%	-0.0066	-0.0075	-0.0131	1.45%	0.0129	0.0135	0.0277
	KNN	Green	-1.26%	-0.0615	-0.0637	-0.1272	4.05%	0.0626	0.0703	0.1211
		Brown	-1.35%	-0.0557	-0.0625	-0.1066	6.88%	0.1307	0.1523	0.2698
WTR	10/90	Green	5.78%	0.1307	0.1478	0.2674	-6.66%	-0.2008	-0.2129	-0.4437
		Brown	8.85%	0.2232	0.2878	0.4270	1.91%	0.0213	0.0243	0.0434
	30/70	Green	4.78%	0.0987	0.1053	0.2076	-7.09%	-0.2253	-0.2076	-0.4875
		Brown	3.75%	0.0825	0.0873	0.1725	1.01%	0.0002	0.0002	0.0004
	50/50	Green	4.74%	0.1021	0.1079	0.2135	-3.94%	-0.1404	-0.1353	-0.3036
		Brown	4.84%	0.1122	0.1239	0.2313	-2.44%	-0.0937	-0.1021	-0.1865
	KNN	Green	3.98%	0.0803	0.0853	0.1655	-2.30%	-0.0883	-0.0890	-0.1943
		Brown	7.30%	0.1760	0.1932	0.3671	-10.20%	-0.3024	-0.3039	-0.6005
WST	10/90	Green	-2.52%	-0.0952	-0.1067	-0.1934	5.93%	0.1028	0.1243	0.1929
		Brown	4.97%	0.1061	0.1234	0.2099	0.92%	-0.0022	-0.0027	-0.0040
	30/70	Green	4.22%	0.0920	0.1004	0.1917	-2.15%	-0.0794	-0.0878	-0.1583
		Brown	1.38%	0.0124	0.0135	0.0244	0.33%	-0.0159	-0.0192	-0.0313
	50/50	Green	2.76%	0.0478	0.0519	0.1002	-4.41%	-0.1331	-0.1475	-0.2632
		Brown	2.78%	0.0607	0.0675	0.1205	-7.80%	-0.2350	-0.2606	-0.4614
	KNN	Green	3.45%	0.0715	0.0725	0.1555	-2.82%	-0.0955	-0.1035	-0.1912
		Brown	3.33%	0.0830	0.0880	0.1744	-4.59%	-0.1510	-0.1880	-0.2656

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 53. Swedish sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	0.7146	-0.1335	-0.2586	0.4851	0.5472	-1.231	0.0051	0.9807	0.5428**	-0.4422	-0.4185	-1.9103**	-2.5902**	-0.4402
		(0.6392)	(0.1249)	(0.3853)	(0.5126)	(0.4582)	(0.9218)	(0.2833)	(0.9704)	(0.2273)	(1.0119)	(0.7534)	(0.8777)	(1.0397)	(0.6644)
		0.2659	*0.2875*	*0.5035*	*0.346*	*0.2349*	*0.1844*	*0.9856*	*0.3264*	*0.0288*	*0.6676*	*0.5858*	*0.0439*	*0.0234*	*0.5165*
	30/70	0.0703	-0.062	-0.0294	0.6022	0.8016*	-1.0121*	-0.2653	-0.7828	-0.0329	-0.2593	-0.5098	-1.9155	0.622	-0.4976
		(0.493)	(0.1258)	(0.2645)	(0.4296)	(0.4304)	(0.5665)	(0.2356)	(1.0717)	(0.2615)	(0.8173)	(0.9614)	(1.1253)	(1.2485)	(0.8372)
		0.8869	*0.6233*	*0.9116*	*0.1637*	*0.0651*	*0.0767*	*0.2625*	*0.4751*	*0.9013*	*0.7549*	*0.6028*	*0.1069*	*0.6247*	*0.5601*
	50/50	0.1815	-0.0987	0.0245	0.7426**	1.069***	-0.9764**	-0.2273	-1.1984	-0.0545	0.6017	-0.1555	-0.627	0.62	-0.0165
		(0.4207)	(0.0988)	(0.2497)	(0.3404)	(0.3712)	(0.4743)	(0.1964)	(0.8829)	(0.1631)	(0.5547)	(0.74)	(0.9137)	(0.7668)	(0.6222)
		0.667	*0.3202*	*0.9221*	*0.0312*	*0.0048*	*0.0418*	*0.2497*	*0.1924*	*0.7425*	*0.2932*	*0.836*	*0.5018*	*0.43*	*0.9791*
	KNN	0.7184	-0.2136	-0.3141	0.9463*	0.5801	-1.6466**	-0.0409	0.6093	0.2518	-0.3608	-0.7518	-2.5324***	-1.673**	-0.4803
		(0.7647)	(0.1742)	(0.3319)	(0.5668)	(0.6194)	(0.7291)	(0.3248)	(0.9336)	(0.202)	(0.8545)	(0.5831)	(0.7061)	(0.7775)	(0.4015)
		0.3495	*0.2226*	*0.346*	*0.0978*	*0.351*	*0.0258*	*0.9001*	*0.5227*	*0.2295*	*0.6781*	*0.2145*	*0.0023*	*0.0461*	*0.248*
WTR	10/90	0.6309	0.5048**	-1.275**	-0.5156	-1.0968	-0.6093	0.08	-0.063	0.1106	-1.486*	0.8592	-1.0271	-2.0064	0.5401
		(0.8653)	(0.2001)	(0.59)	(0.5573)	(0.7761)	(0.7981)	(0.3282)	(1.1225)	(0.315)	(0.8682)	(0.9359)	(0.8292)	(1.3221)	(0.4727)
		0.4673	*0.0129*	*0.0326*	*0.3567*	*0.1601*	*0.4467*	*0.8078*	*0.9556*	*0.7282*	*0.0976*	*0.3661*	*0.2254*	*0.14*	*0.2625*
	30/70	0.3969	-0.0715	-0.8365**	-0.487	-1.0548**	0.5151	0.1078	-0.6118	0.0164	0.5846	0.1262	-0.307	-0.5886	0.251
		(0.4184)	(0.1286)	(0.3753)	(0.3844)	(0.4622)	(0.443)	(0.1486)	(0.633)	(0.1978)	(0.4422)	(0.5528)	(0.4893)	(0.7203)	(0.2305)
		0.3447	*0.5794*	*0.0276*	*0.2074*	*0.0242*	*0.2471*	*0.4695*	*0.3418*	*0.9346*	*0.1965*	*0.821*	*0.5353*	*0.4205*	*0.285*
	50/50	0.5826**	-0.0302	-0.3092	-0.1894	-0.296	0.1015	-0.0204	0.1398	-0.215	-0.1598	-0.4748	-0.9457	-0.5186	0.0781
		(0.26)	(0.0745)	(0.1907)	(0.2779)	(0.3254)	(0.3257)	(0.1055)	(0.5748)	(0.243)	(0.5101)	(0.8021)	(0.7223)	(0.8905)	(0.2488)
		0.0268	*0.6859*	*0.1075*	*0.4967*	*0.3648*	*0.7558*	*0.8467*	*0.8095*	*0.3837*	*0.7563*	*0.5585*	*0.2007*	*0.5648*	*0.756*
	KNN	-0.0895	-0.1958	-1.2215***	-0.05	0.3297	0.1395	0.2308	-1.2953	-0.3716	0.8776	1.2465	0.3486	-1.6428	0.3185
		(0.469)	(0.1396)	(0.3137)	(0.5087)	(0.4701)	(0.6079)	(0.2535)	(0.9999)	(0.2423)	(0.5658)	(0.8629)	(0.9876)	(1.1437)	(0.3744)
		0.849	*0.163*	*0.0002*	*0.9218*	*0.4844*	*0.8189*	*0.3645*	*0.2054*	*0.136*	*0.1317*	*0.1593*	*0.7267*	*0.1616*	*0.4019*
WST	10/90	-0.1886	-0.1744	-1.0054**	-0.2797	1.0478	-0.7583	-0.2328	4.5256*	-0.5478*	4.1542***	-0.9385	2.0478	4.5247**	-0.1935
		(0.8579)	(0.2213)	(0.4237)	(0.55)	(0.9225)	(0.8405)	(0.2695)	(1.9299)	(0.24)	(0.8458)	(1.2201)	(1.5103)	(1.2139)	(0.7659)
		0.8264	*0.432*	*0.0192*	*0.612*	*0.2582*	*0.3687*	*0.3893*	*0.066*	*0.0713*	*0.0044*	*0.4765*	*0.2332*	*0.0136*	*0.8107*
	30/70	-0.2062	0.1076	0.0834	0.0674	0.7262**	-0.1028	-0.2364	0.2198	-0.0627	0.5599	-0.3783	-0.1333	0.7909	-0.7398
		(0.4555)	(0.1068)	(0.2233)	(0.2978)	(0.3583)	(0.3322)	(0.1607)	(1.8562)	(0.1666)	(0.8717)	(0.8129)	(1.165)	(0.8834)	(0.5579)
		0.6515	*0.3155*	*0.7094*	*0.8213*	*0.0448*	*0.7574*	*0.1439*	*0.9103*	*0.722*	*0.5489*	*0.6613*	*0.9134*	*0.4117*	*0.2421*
	50/50	-0.1288	0.0824	0.0907	0.1664	0.6395**	-0.3343	-0.0986	0.0138	0.0279	0.8332	-0.1752	0.7539	1.931	-0.6959
		(0.3179)	(0.0829)	(0.1511)	(0.2467)	(0.2976)	(0.2364)	(0.1097)	(1.366)	(0.2335)	(1.9356)	(0.7605)	(0.9386)	(1.132)	(0.8185)
		0.6861	*0.3221*	*0.5492*	*0.5013*	*0.0335*	*0.1598*	*0.3704*	*0.9923*	*0.9094*	*0.6848*	*0.8269*	*0.4583*	*0.1488*	*0.434*
	KNN	-0.186	-0.1378	0.0578	0.3896	0.3075	-0.237	0.1135	1.6468	-0.0636	2.2842**	-1.5785	1.0612	2.569**	-0.652
		(0.5606)	(0.1387)	(0.2958)	(0.5687)	(0.6339)	(0.5937)	(0.2316)	(1.8695)	(0.2972)	(0.8122)	(1.2471)	(1.414)	(0.9798)	(0.7818)
		0.7407	*0.3223*	*0.8454*	*0.4946*	*0.6284*	*0.6904*	*0.625*	*0.4187*	*0.839*	*0.0374*	*0.2614*	*0.4868*	*0.047*	*0.4423*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 54. Swedish sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-1.53%	-0.0992	-0.0950	-0.2145	0.46%	-0.0469	-0.0564	-0.0807
		Brown	10.96%	0.5136	0.5824	1.0529	18.06%	0.8823	1.0199	1.9563
	30/70	Green	6.97%	0.3082	0.3268	0.6420	23.81%	1.4470	2.3307	3.0882
		Brown	8.85%	0.3996	0.3929	0.9036	-4.69%	-0.3758	-0.3915	-0.6653
	50/50	Green	7.08%	0.3386	0.3887	0.6504	22.04%	1.5094	2.1687	3.2896
		Brown	11.01%	0.5261	0.4952	1.1898	0.07%	-0.0698	-0.0706	-0.1302
	KNN	Green	-0.81%	-0.0750	-0.0718	-0.1670	23.59%	1.4246	2.1888	3.0929
		Brown	9.78%	0.4486	0.4718	0.9631	22.50%	1.1542	1.2112	2.9265
WTR	10/90	Green	0.62%	-0.0159	-0.0175	-0.0311	12.82%	0.3553	0.3498	0.8439
		Brown	7.05%	0.2026	0.2080	0.4221	20.62%	0.6840	0.5811	2.3324
	30/70	Green	11.04%	0.4241	0.5039	0.8667	23.42%	0.8725	0.9037	2.0872
		Brown	10.38%	0.4712	0.5151	0.9867	24.30%	0.8574	0.8179	2.0569
	50/50	Green	7.07%	0.2987	0.3163	0.6377	24.29%	1.0458	1.0175	2.7368
		Brown	12.58%	0.5946	0.6180	1.2931	24.86%	1.1706	1.4977	2.4271
	KNN	Green	10.91%	0.3683	0.3675	0.8081	23.42%	0.8712	0.8640	2.0875
		Brown	10.70%	0.4714	0.4739	1.0862	16.21%	0.5338	0.5063	1.7144
WST	10/90	Green	7.31%	0.1862	0.2289	0.3577	-5.80%	-0.2502	-0.2349	-0.5474
		Brown	10.93%	0.4565	0.4864	0.9509	32.36%	1.4946	2.1492	3.7117
	30/70	Green	8.56%	0.4002	0.4395	0.8271	26.97%	1.4116	1.7914	3.8060
		Brown	8.11%	0.3387	0.3488	0.7007	18.89%	1.0732	1.1197	2.6407
	50/50	Green	8.17%	0.3806	0.3904	0.8164	24.98%	1.3562	1.6128	3.8773
		Brown	9.78%	0.4260	0.4463	0.9038	18.72%	0.9568	1.0292	2.2479
	KNN	Green	9.22%	0.3527	0.3942	0.7434	26.73%	1.4270	1.7567	4.0118
		Brown	7.71%	0.2921	0.3097	0.6089	32.36%	1.4946	2.1492	3.7117

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 55. Switzerland's sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	0.6141	0.086	0.1005	-0.6739	-0.2467	0.0824	-0.2134	-1.5395	-0.6271***	0.2572	-0.1359	1.6407	-0.2413	-0.6201
		(0.5905)	(0.1235)	(0.3189)	(0.44)	(0.571)	(0.5236)	(0.2151)	(1.6693)	(0.2062)	(1.0935)	(1.0171)	(1.2233)	(1.6031)	(0.7471)
		0.3001	*0.4874*	*0.7531*	*0.1277*	*0.6663*	*0.8752*	*0.3229*	*0.3693*	*0.0074*	*0.8168*	*0.8953*	*0.1975*	*0.8821*	*0.418*
	30/70	-0.197	0.0318	0.1556	-0.9619***	0.4533	1.057**	0.2608	0.0738	0.0222	-0.078	-0.0476	-1.1155	-0.7781	1.2826
		(0.3444)	(0.0734)	(0.1419)	(0.3071)	(0.3192)	(0.4179)	(0.1729)	(1.2359)	(0.3463)	(0.88)	(0.8748)	(0.9931)	(1.1511)	(1.0946)
		0.5683	*0.6651*	*0.2747*	*0.0021*	*0.1577*	*0.0125*	*0.1337*	*0.9531*	*0.9497*	*0.9304*	*0.9572*	*0.277*	*0.5081*	*0.2575*
	50/50	0.1238	-0.0288	0.1872	-1.0053***	0.2516	1.1419***	-0.054	1.4235	0.1382	-0.115	-1.9707**	-2.4419***	-0.1493	0.4427
		(0.2503)	(0.0545)	(0.1466)	(0.1972)	(0.2027)	(0.2945)	(0.0843)	(1.1784)	(0.2739)	(0.8526)	(0.6893)	(0.6496)	(0.8548)	(0.9874)
		0.6215	*0.5983*	*0.2035*	*0*	*0.2166*	*0.0002*	*0.5227*	*0.2436*	*0.6203*	*0.8943*	*0.0109*	*0.0016*	*0.8634*	*0.6596*
	KNN	0.1677	-0.0512	0.3115	-0.7082**	0.7952*	0.7076	-0.5501	0.8136	-0.1739	0.3978	-0.358	-1.5793	0.1143	2.1381
		(0.52)	(0.099)	(0.2759)	(0.3131)	(0.4791)	(0.4944)	(0.4224)	(1.4266)	(0.4653)	(1.1852)	(1.2936)	(1.0966)	(1.4417)	(1.345)
		0.7476	*0.6058*	*0.2608*	*0.0252*	*0.0991*	*0.1545*	*0.1949*	*0.5759*	*0.7131*	*0.7413*	*0.7853*	*0.168*	*0.9377*	*0.1303*
WTR	10/90	-1.1206	0.0923	1.3583*	-0.1088	-0.1406	0.7762	0.428	0.2674	0.1746	-0.0418	-0.8497	-0.8893	0.3173	0.2278
		(0.7504)	(0.1852)	(0.7388)	(0.4585)	(0.6361)	(0.6829)	(0.2746)	(0.6637)	(0.1374)	(0.4938)	(0.6025)	(0.5757)	(0.738)	(0.2903)
		0.1373	*0.619*	*0.0678*	*0.8128*	*0.8253*	*0.2574*	*0.121*	*0.6883*	*0.2084*	*0.9329*	*0.1633*	*0.1272*	*0.6687*	*0.4355*
	30/70	-0.2856	-0.0341	0.2327	-1.0636***	0.4544	1.0965***	0.4347**	0.3195	-0.0103	-0.0152	0.0204	-0.2967	0.1927	0.1246
		(0.3788)	(0.0948)	(0.2146)	(0.2944)	(0.4194)	(0.3678)	(0.1858)	(0.3989)	(0.1085)	(0.3602)	(0.4237)	(0.382)	(0.5935)	(0.2158)
		0.4521	*0.7196*	*0.2798*	*0.0004*	*0.2802*	*0.0033*	*0.0206*	*0.4261*	*0.9246*	*0.9664*	*0.9618*	*0.4401*	*0.7465*	*0.5656*
	50/50	-0.274	-0.0601	0.111	-0.794***	0.4202	0.9555***	0.2163	0.8142*	-0.2935***	-0.2527	-0.1295	-0.427	-0.0419	0.1713
		(0.2904)	(0.0701)	(0.1553)	(0.209)	(0.2951)	(0.2758)	(0.1504)	(0.4676)	(0.1072)	(0.3091)	(0.5029)	(0.4473)	(0.476)	(0.234)
		0.3468	*0.3927*	*0.4759*	*0.0002*	*0.1565*	*0.0007*	*0.1522*	*0.0864*	*0.008*	*0.4166*	*0.7976*	*0.3433*	*0.9301*	*0.467*
	KNN	-0.1482	-0.2215**	-0.1165	-0.6257	0.7779*	0.9136**	0.1629	-0.5582	0.2021	0.6421	-1.1296**	-0.2876	1.145*	-0.0499
		(0.3687)	(0.1016)	(0.2555)	(0.419)	(0.4353)	(0.442)	(0.1187)	(0.5423)	(0.1314)	(0.4409)	(0.5568)	(0.4456)	(0.6817)	(0.2656)
		0.6883	*0.0306*	*0.649*	*0.1373*	*0.0758*	*0.0403*	*0.1718*	*0.3072*	*0.129*	*0.1501*	*0.0466*	*0.5209*	*0.0978*	*0.8515*
WST	10/90	-0.7459	0.2525*	1.2751***	0.6047	0.2433	0.3834	0.2253	-1.1783	0.5417***	-0.1244	-1.5204	0.0158	1.9625*	-0.4865
		(0.7073)	(0.1422)	(0.4746)	(0.4054)	(0.5887)	(0.6347)	(0.269)	(1.077)	(0.1737)	(0.4412)	(0.9983)	(0.9131)	(1.0623)	(0.3612)
		0.2932	*0.0776*	*0.008*	*0.1378*	*0.6799*	*0.5467*	*0.4035*	*0.278*	*0.0027*	*0.7788*	*0.1326*	*0.9862*	*0.0692*	*0.1827*
	30/70	-0.4303	0.0795	0.5057***	-0.4069	0.9833***	0.8382**	0.3694*	0.4331	0.1317	-0.3438	-1.1297	-2.0397***	-0.1214	0.381
		(0.4048)	(0.0771)	(0.1781)	(0.29)	(0.3598)	(0.3643)	(0.1891)	(0.8453)	(0.1407)	(0.423)	(0.7822)	(0.7247)	(1.0493)	(0.3758)
		0.2894	*0.3039*	*0.0051*	*0.1625*	*0.007*	*0.0227*	*0.0525*	*0.6101*	*0.3528*	*0.4194*	*0.1535*	*0.0065*	*0.9083*	*0.3145*
	50/50	-0.1161	0.1283**	0.5241***	-0.245	0.447	0.4553	0.1785*	0.398	0.0435	0.0105	-0.9744*	-1.0571**	0.2974	0.1656
		(0.2995)	(0.0545)	(0.1831)	(0.2881)	(0.3058)	(0.3176)	(0.1068)	(0.6117)	(0.0965)	(0.3076)	(0.5245)	(0.5093)	(0.5932)	(0.2361)
		0.6988	*0.0197*	*0.0048*	*0.3963*	*0.1458*	*0.1537*	*0.0967*	*0.5176*	*0.6534*	*0.973*	*0.0677*	*0.0419*	*0.6178*	*0.4855*
	KNN	-0.7848**	0.1536	0.5443	-0.6615**	0.4601	-0.3131	-0.15	0.1334	0.13	-0.623	-1.2174	-1.4767	0.7014	-0.0638
		(0.3773)	(0.0997)	(0.3633)	(0.2937)	(0.5014)	(0.3687)	(0.1309)	(1.0167)	(0.2122)	(0.4944)	(1.2719)	(1.2421)	(1.1195)	(0.4572)
		0.0391	*0.1252*	*0.1361*	*0.0256*	*0.3601*	*0.3969*	*0.2533*	*0.896*	*0.5421*	*0.2121*	*0.342*	*0.2388*	*0.5332*	*0.8895*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 56. Switzerland's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	11.39%	0.4115	0.4618	0.8270	46.80%	1.8497	1.9896	5.5488
		Brown	19.46%	0.6625	0.6779	1.5224	16.36%	0.7953	1.0421	1.6760
	30/70	Green	7.79%	0.2916	0.3174	0.5615	26.41%	1.8665	2.2288	5.4042
		Brown	12.28%	0.7214	0.6965	1.6574	30.20%	1.7247	2.2826	4.1985
	50/50	Green	8.65%	0.3827	0.3891	0.8203	31.19%	2.5213	2.0580	9.7621
		Brown	12.63%	0.7747	0.6954	1.8308	33.69%	1.7531	2.1188	4.7627
	KNN	Green	9.68%	0.3791	0.4025	0.7655	31.17%	2.3897	2.4712	8.4165
		Brown	13.87%	0.6233	0.6092	1.3324	37.14%	1.4273	2.2948	3.1216
WTR	10/90	Green	8.72%	0.2359	0.2257	0.6594	7.43%	0.2794	0.2819	0.5907
		Brown	0.46%	-0.0156	-0.0157	-0.0323	11.88%	0.4997	0.4712	1.1575
	30/70	Green	1.31%	0.0112	0.0114	0.0216	17.13%	0.9649	1.0418	2.2439
		Brown	9.16%	0.5255	0.4633	1.2010	19.50%	1.0636	1.0208	2.5520
	50/50	Green	5.90%	0.2101	0.2163	0.4210	11.85%	0.6371	0.6095	1.4628
		Brown	9.58%	0.5497	0.4845	1.2526	19.31%	1.3824	1.4330	3.2728
	KNN	Green	3.61%	0.0989	0.0916	0.2231	16.06%	0.8501	0.8648	2.0358
		Brown	9.09%	0.4857	0.4303	1.1418	10.64%	0.4355	0.4268	0.9777
WST	10/90	Green	11.47%	0.4553	0.4399	1.1217	15.78%	0.5850	0.6207	1.3984
		Brown	2.79%	0.0489	0.0495	0.1041	-0.29%	-0.0512	-0.0456	-0.1095
	30/70	Green	3.60%	0.1084	0.1071	0.2173	7.94%	0.3134	0.2889	0.8280
		Brown	10.08%	0.5170	0.4805	1.1449	8.79%	0.3699	0.3646	0.8072
	50/50	Green	5.39%	0.2391	0.2277	0.5146	11.41%	0.5159	0.4795	1.3609
		Brown	10.53%	0.5682	0.5199	1.3020	14.75%	0.7440	0.7854	1.6833
	KNN	Green	7.78%	0.3150	0.3181	0.6571	12.83%	0.5545	0.5244	1.6138
		Brown	4.13%	0.1478	0.1325	0.3462	5.52%	0.1763	0.1788	0.3788

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 57. South African sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.2026	0.3416	1.0323	-0.2826	-1.3763	0.7273	0.1214	-0.6361	-0.1671	-0.0787	0.0396	-1.8771**	0.0552	0.1531
		(0.7141)	(0.4488)	(0.8591)	(0.7102)	(0.835)	(0.8221)	(0.3375)	(2.0802)	(0.3208)	(0.6091)	(1.0723)	(0.8629)	(1.0905)	(1.0323)
		0.777	*0.4477*	*0.2314*	*0.6913*	*0.1014*	*0.3778*	*0.7197*	*0.7604*	*0.6036*	*0.8975*	*0.9706*	*0.0319*	*0.9597*	*0.8824*
	30/70	-0.0016	-0.1241	0.2574	0.1242	-1.2648*	0.0628	0.0648	-0.4676	-0.0099	-0.1202	0.2221	-0.7087	-0.4871	0.1631
		(0.607)	(0.2457)	(0.4299)	(0.5228)	(0.6499)	(0.5573)	(0.2574)	(0.6271)	(0.119)	(0.3749)	(0.3596)	(0.5006)	(0.503)	(0.3237)
		0.9979	*0.6143*	*0.5502*	*0.8125*	*0.0535*	*0.9104*	*0.8017*	*0.4575*	*0.9341*	*0.7491*	*0.5382*	*0.1599*	*0.3351*	*0.6156*
	50/50	-0.1755	-0.0203	0.2638	0.2895	-0.6941	0.0946	0.0047	-0.4712	-0.0804	-0.245	0.2785	-0.1987	-0.2518	0.1668
		(0.4359)	(0.1953)	(0.3537)	(0.4037)	(0.5297)	(0.477)	(0.209)	(0.5765)	(0.1292)	(0.2981)	(0.2577)	(0.3397)	(0.4119)	(0.2256)
		0.6877	*0.9173*	*0.457*	*0.4745*	*0.1921*	*0.843*	*0.9822*	*0.4157*	*0.5355*	*0.4131*	*0.2825*	*0.56*	*0.5423*	*0.4613*
	KNN	-0.0306	0.1063	0.6195	0.1306	-1.0631	-0.2845	0.0001	2.0582	0.1327	0.0526	-0.0313	-1.5999	0.0965	-1.588
		(0.6812)	(0.3766)	(0.7229)	(0.5933)	(0.7556)	(0.7245)	(0.3248)	(2.7766)	(0.3774)	(0.85)	(1.3818)	(1.2239)	(1.3787)	(1.2712)
		0.9642	*0.7781*	*0.3928*	*0.8261*	*0.1615*	*0.6951*	*0.9998*	*0.4602*	*0.7259*	*0.9508*	*0.9819*	*0.1941*	*0.9443*	*0.2145*
WTR	10/90	0.5551	-0.545**	0.1655	0.3805	-1.0586	-1.1001*	-0.2551	0.0828	0.932**	1.3788*	-0.3071	2.7195**	1.0733	-0.9115
		(1.1329)	(0.2577)	(0.6158)	(0.5939)	(0.7211)	(0.5872)	(0.3773)	(1.6034)	(0.4325)	(0.801)	(1.0033)	(1.1914)	(1.4847)	(0.5861)
		0.6249	*0.0363*	*0.7885*	*0.5228*	*0.1444*	*0.0631*	*0.5*	*0.959*	*0.0357*	*0.091*	*0.7607*	*0.0265*	*0.4729*	*0.1259*
	30/70	0.2619	0.0417	0.265	0.0358	-0.8304	-0.5183	0.153	0.535	0.6073*	0.8772**	-0.1693	1.404**	0.9596	-0.068
		(0.7226)	(0.2719)	(0.4935)	(0.4908)	(0.6521)	(0.5715)	(0.2874)	(1.1107)	(0.3485)	(0.394)	(0.677)	(0.588)	(1.2608)	(0.3376)
		0.7175	*0.8784*	*0.5923*	*0.942*	*0.205*	*0.366*	*0.5953*	*0.6321*	*0.0872*	*0.0303*	*0.8035*	*0.0206*	*0.45*	*0.8411*
	50/50	0.0712	0.0455	0.1247	0.2652	-0.9444*	-0.4313	0.2281	0.9339	0.6362**	0.7865**	-0.7868	1.6061***	1.8192**	-0.4078
		(0.5792)	(0.2184)	(0.4224)	(0.3702)	(0.5134)	(0.5082)	(0.2287)	(0.8022)	(0.2843)	(0.3397)	(0.5053)	(0.5476)	(0.9059)	(0.3324)
		0.9024	*0.8352*	*0.7683*	*0.475*	*0.068*	*0.3975*	*0.3202*	*0.2495*	*0.0295*	*0.0245*	*0.1254*	*0.0049*	*0.0497*	*0.2253*
	KNN	0.3931	0.218	0.969	-0.3336	-0.8077	-0.4998	-0.0098	0.0183	0.3255	0.4386	0.2339	1.8761**	1.6072	0.3934
		(0.8048)	(0.4556)	(0.8582)	(0.5915)	(0.7447)	(0.696)	(0.3328)	(1.4062)	(0.39)	(0.4906)	(0.8562)	(0.8571)	(1.507)	(0.3792)
		0.6261	*0.6331*	*0.2608*	*0.5737*	*0.28*	*0.4739*	*0.9766*	*0.9897*	*0.4076*	*0.3754*	*0.7858*	*0.033*	*0.291*	*0.3042*
WST	10/90	0.6869	-0.4783	-2.1555***	0.349	-1.202	-0.5242	0.3657	1.4507	-0.3284	-0.9058	1.0634	0.2798	-0.9822	-1.001
		(1.5143)	(0.3053)	(0.525)	(0.7088)	(0.9141)	(0.9543)	(0.6679)	(3.0847)	(0.529)	(0.7699)	(1.1068)	(1.343)	(1.3586)	(1.3943)
		0.651	*0.1199*	*0.0001*	*0.6234*	*0.1912*	*0.5839*	*0.5851*	*0.6395*	*0.5366*	*0.243*	*0.3397*	*0.8355*	*0.4719*	*0.475*
	30/70	-0.1523	-0.2066	-1.0927**	0.436	-1.2839*	-0.8109	0.605	1.2708	-0.0727	-0.6764	-0.6108	0.9445	0.7486	-0.4142
		(0.9996)	(0.2652)	(0.4878)	(0.6504)	(0.754)	(0.8412)	(0.425)	(1.5878)	(0.3601)	(0.5766)	(0.5151)	(0.8656)	(0.7135)	(0.6665)
		0.8792	*0.4375*	*0.027*	*0.504*	*0.0914*	*0.3371*	*0.1573*	*0.426*	*0.8404*	*0.2444*	*0.2394*	*0.2786*	*0.2973*	*0.5361*
	50/50	-0.3565	0.1258	-0.0609	0.242	-0.7423	-0.7843	0.3064	-0.2668	0.0999	-0.578	-0.1547	0.9689	0.4524	-0.3172
		(0.8332)	(0.2818)	(0.4535)	(0.615)	(0.6793)	(0.703)	(0.3039)	(1.0215)	(0.1635)	(0.4254)	(0.4337)	(0.6358)	(0.5516)	(0.5352)
		0.6696	*0.6562*	*0.8935*	*0.6947*	*0.2768*	*0.267*	*0.3155*	*0.7946*	*0.543*	*0.1782*	*0.7223*	*0.1317*	*0.4147*	*0.5551*
	KNN	0.3692	0.5336	1.6435*	-0.36	-1.3786*	-0.7427	-0.2592	0.867	-0.3323	0.0274	1.6414**	2.5266***	-2.1943***	-0.4825
		(0.9469)	(0.5693)	(0.8829)	(0.715)	(0.7273)	(0.9101)	(0.4356)	(1.1907)	(0.3269)	(0.5204)	(0.6406)	(0.7437)	(0.7755)	(0.4438)
		0.6973	*0.3505*	*0.0653*	*0.6156*	*0.0606*	*0.4162*	*0.553*	*0.4687*	*0.3125*	*0.9581*	*0.0124*	*0.0011*	*0.0059*	*0.2803*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 58. South African sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	6.51%	0.1949	0.1943	0.4436	3.64%	0.0899	0.0856	0.1862
		Brown	0.75%	-0.0058	-0.0070	-0.0112	-12.47%	-0.2933	-0.3343	-0.5137
	30/70	Green	8.73%	0.2844	0.2847	0.6724	4.70%	0.1369	0.1276	0.3137
		Brown	3.16%	0.0659	0.0744	0.1284	-0.47%	-0.0589	-0.0609	-0.1121
	50/50	Green	9.06%	0.3179	0.3238	0.6872	3.88%	0.1124	0.1059	0.2492
		Brown	4.59%	0.1197	0.1336	0.2404	-0.15%	-0.0490	-0.0496	-0.0954
	KNN	Green	7.36%	0.2212	0.2192	0.5200	0.66%	-0.0119	-0.0113	-0.0252
		Brown	1.62%	0.0151	0.0174	0.0297	-10.31%	-0.1664	-0.2313	-0.2889
WTR	10/90	Green	4.61%	0.1115	0.1136	0.2387	9.34%	0.3188	0.3343	0.6712
		Brown	-2.67%	-0.0973	-0.1065	-0.1930	16.32%	0.4163	0.4838	0.8855
	30/70	Green	1.90%	0.0317	0.0325	0.0650	1.99%	0.0396	0.0434	0.0783
		Brown	1.64%	0.0189	0.0219	0.0369	20.30%	0.7234	0.8949	1.5427
	50/50	Green	1.16%	0.0060	0.0059	0.0124	4.05%	0.1326	0.1399	0.2670
		Brown	-0.18%	-0.0370	-0.0415	-0.0730	23.31%	0.8478	1.0847	1.8375
	KNN	Green	0.30%	-0.0246	-0.0245	-0.0497	1.12%	0.0050	0.0053	0.0096
		Brown	-1.85%	-0.0693	-0.0825	-0.1309	25.25%	0.9155	1.3233	1.8504
WST	10/90	Green	1.84%	0.0243	0.0230	0.0636	-9.55%	-0.3149	-0.3263	-0.5807
		Brown	3.39%	0.0555	0.0651	0.1086	-13.36%	-0.2433	-0.2979	-0.4322
	30/70	Green	1.31%	0.0102	0.0098	0.0260	-9.45%	-0.3052	-0.3078	-0.6089
		Brown	-1.02%	-0.0568	-0.0611	-0.1126	-1.05%	-0.0517	-0.0585	-0.0977
	50/50	Green	1.03%	0.0012	0.0012	0.0031	1.92%	0.0326	0.0325	0.0685
		Brown	-2.57%	-0.1062	-0.1143	-0.2052	-3.95%	-0.1514	-0.1484	-0.3074
	KNN	Green	-1.83%	-0.0920	-0.0899	-0.2244	-9.80%	-0.3174	-0.3042	-0.6299
		Brown	-7.93%	-0.1796	-0.2118	-0.3522	-1.06%	-0.0543	-0.0566	-0.1117

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 59. Spanish sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	0.6509	-0.3182**	-0.0267	-0.3343	0.563	-0.1443	0.4546*	0.1268	-0.206	-0.2554	-0.868	-1.9733*	-0.915	0.4839
		(0.5372)	(0.1427)	(0.3663)	(0.48)	(0.6088)	(0.5765)	(0.2439)	(1.1051)	(0.3049)	(1.0975)	(1.0359)	(1.1398)	(1.4617)	(0.3853)
		0.2279	*0.0276*	*0.9421*	*0.4875*	*0.3568*	*0.8028*	*0.0647*	*0.9091*	*0.5022*	*0.8169*	*0.4059*	*0.0892*	*0.534*	*0.2146*
	30/70	-0.1175	-0.187**	-0.4235*	-0.2521	0.8398*	-0.1373	0.5136**	0.3562	-0.4052**	0.0649	1.0244	-0.2627	-1.6812*	-0.1241
		(0.3989)	(0.0863)	(0.2262)	(0.3126)	(0.4804)	(0.4013)	(0.2322)	(0.7704)	(0.1687)	(0.446)	(0.6478)	(0.5418)	(0.9804)	(0.2617)
		0.7689	*0.032*	*0.0635*	*0.4215*	*0.0829*	*0.7328*	*0.0288*	*0.6457*	*0.0199*	*0.8848*	*0.1197*	*0.6299*	*0.0922*	*0.6373*
	50/50	-0.057	-0.1045	-0.2727	-0.1078	0.3816	-0.2818	0.4718**	0.5302	-0.2137	0.2202	0.6656	0.121	-0.7352	-0.3849**
		(0.3439)	(0.0741)	(0.1794)	(0.2763)	(0.4066)	(0.3756)	(0.1938)	(0.5758)	(0.1332)	(0.4019)	(0.4636)	(0.6411)	(0.6609)	(0.1683)
		0.8687	*0.1613*	*0.131*	*0.697*	*0.3498*	*0.4545*	*0.0163*	*0.3613*	*0.1146*	*0.586*	*0.1569*	*0.851*	*0.271*	*0.0262*
	KNN	0.069	-0.1507	-0.1556	-0.0186	1.0568*	0.0289	0.4631*	-0.5631	-0.4091	0.6434	-0.1328	-1.3757	-0.6877	-0.3253
		(0.4684)	(0.1238)	(0.2229)	(0.3016)	(0.5555)	(0.5429)	(0.234)	(0.8702)	(0.2688)	(0.5664)	(0.6943)	(0.8936)	(0.929)	(0.2243)
		0.8831	*0.226*	*0.4863*	*0.951*	*0.0594*	*0.9577*	*0.05*	*0.5204*	*0.1339*	*0.261*	*0.8491*	*0.1296*	*0.4624*	*0.1529*
WTR	10/90	-0.0212	0.0584	0.1433	-0.1503	1.7543***	0.7537	-0.0469	0.2092	-0.5483**	1.3158***	1.2663*	2.5767***	-0.1301	0.1785
		(0.4937)	(0.141)	(0.3618)	(0.3965)	(0.4863)	(0.5459)	(0.2112)	(1.0642)	(0.2593)	(0.4842)	(0.6361)	(0.8963)	(0.9895)	(0.4834)
		0.9658	*0.6796*	*0.6927*	*0.7052*	*0.0004*	*0.1697*	*0.8245*	*0.8449*	*0.0392*	*0.0089*	*0.0517*	*0.0058*	*0.8959*	*0.7133*
	30/70	0.2172	-0.1629*	0.0377	-0.0561	1.4403***	0.4989	0.2807	0.5292	-0.3263*	1.4693***	0.7786	1.7436***	0.5097	-0.7229***
		(0.4332)	(0.0889)	(0.2295)	(0.2756)	(0.3831)	(0.4106)	(0.1864)	(0.7415)	(0.1931)	(0.4821)	(0.4941)	(0.5971)	(0.783)	(0.2514)
		0.6169	*0.0689*	*0.8696*	*0.8391*	*0.0003*	*0.2264*	*0.1344*	*0.4786*	*0.0968*	*0.0036*	*0.121*	*0.0051*	*0.5179*	*0.0058*
	50/50	-0.1983	-0.0851	0.0257	-0.1991	1.2431***	0.4934	0.1819	0.6804	-0.2333	0.6566	0.0251	0.8212	0.5322	-1.0149***
		(0.3395)	(0.0741)	(0.1497)	(0.2096)	(0.3335)	(0.345)	(0.136)	(0.6213)	(0.1628)	(0.418)	(0.5614)	(0.6515)	(0.9781)	(0.2541)
		0.5602	*0.2529*	*0.8637*	*0.3438*	*0.0003*	*0.155*	*0.1835*	*0.2784*	*0.1579*	*0.1222*	*0.9645*	*0.213*	*0.5886*	*0.0002*
	KNN	-0.0621	-0.0948	-0.1853	-0.72	0.0717	-0.0479	0.2656	1.2093	-0.3196*	0.9964*	0.515	0.8572	0.5602	-0.7178**
		(0.7135)	(0.1758)	(0.3437)	(0.5118)	(0.6659)	(0.5768)	(0.2753)	(0.9769)	(0.1788)	(0.57)	(0.6866)	(0.6622)	(1.194)	(0.3459)
		0.9308	*0.5905*	*0.5906*	*0.1617*	*0.9144*	*0.934*	*0.3364*	*0.2212*	*0.0797*	*0.0862*	*0.4565*	*0.2011*	*0.6409*	*0.0428*
WST	10/90	-0.3551	0.0576	0.2845	-0.2916	-0.068	0.5631	0.3063	-0.7026	0.037	1.217	1.4763	1.2094	-0.6804	0.1562
		(0.533)	(0.097)	(0.3326)	(0.4922)	(0.524)	(0.6053)	(0.1978)	(1.2334)	(0.2668)	(0.7565)	(1.3223)	(1.6498)	(0.9768)	(0.6133)
		0.5063	*0.5536*	*0.3937*	*0.5545*	*0.8969*	*0.3537*	*0.1236*	*0.572*	*0.8904*	*0.1154*	*0.2707*	*0.4677*	*0.49*	*0.8002*
	30/70	-0.0551	-0.0264	0.3989**	-0.543*	0.6836*	0.7147*	0.2773**	-0.2385	0.0651	1.0302*	-0.4583	1.0706**	1.8505***	0.3104
		(0.3376)	(0.0642)	(0.1906)	(0.2966)	(0.3986)	(0.3715)	(0.1321)	(0.8048)	(0.2976)	(0.555)	(0.6089)	(0.4976)	(0.5838)	(0.2632)
		0.8707	*0.6813*	*0.038*	*0.0692*	*0.0885*	*0.0563*	*0.0375*	*0.7685*	*0.828*	*0.0706*	*0.456*	*0.0374*	*0.0029*	*0.2451*
	50/50	0.1386	-0.0362	-0.0138	-0.058	0.0282	-0.4506	0.2163	-0.3795	0.1268	0.214	-0.4568	1.4423***	1.5786**	0.1347
		(0.345)	(0.0682)	(0.1688)	(0.2341)	(0.3641)	(0.334)	(0.166)	(0.6093)	(0.2363)	(0.4917)	(0.583)	(0.4749)	(0.7161)	(0.2574)
		0.6885	*0.5963*	*0.9348*	*0.8046*	*0.9384*	*0.1793*	*0.1946*	*0.5368*	*0.5944*	*0.6657*	*0.4378*	*0.0041*	*0.0332*	*0.6037*
	KNN	0.4852	-0.1053	0.1107	0.2959	0.392	-0.7639*	-0.1357	-0.2461	0.0349	0.4366	-0.2549	1.5254	1.6227**	0.2893
		(0.3751)	(0.0854)	(0.2603)	(0.2673)	(0.4432)	(0.4302)	(0.1722)	(0.9327)	(0.2708)	(0.5338)	(0.9575)	(1.0283)	(0.6829)	(0.4415)
		0.1979	*0.2196*	*0.6713*	*0.27*	*0.3778*	*0.0778*	*0.4317*	*0.7932*	*0.8981*	*0.4181*	*0.7914*	*0.1456*	*0.0223*	*0.5159*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 60. Spanish sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-5.28%	-0.1802	-0.2084	-0.3284	6.83%	0.1935	0.1920	0.4406
		Brown	12.59%	0.5298	0.5519	1.1806	10.93%	0.3997	0.5186	0.7556
	30/70	Green	-0.49%	-0.0480	-0.0521	-0.0893	11.43%	0.4942	0.5098	1.0771
		Brown	8.60%	0.3533	0.3729	0.7554	12.77%	0.5212	0.5957	1.0456
	50/50	Green	0.33%	-0.0252	-0.0280	-0.0463	10.81%	0.4976	0.5316	1.0146
		Brown	7.17%	0.3021	0.3143	0.6245	13.27%	0.5266	0.6253	0.9818
	KNN	Green	-2.85%	-0.1314	-0.1406	-0.2482	9.38%	0.3882	0.4065	0.8169
		Brown	8.13%	0.3302	0.3413	0.7077	-6.64%	-0.2921	-0.3227	-0.5075
WTR	10/90	Green	0.52%	-0.0160	-0.0162	-0.0322	1.67%	0.0210	0.0271	0.0363
		Brown	10.29%	0.4077	0.4427	0.8705	8.63%	0.2915	0.3064	0.6505
	30/70	Green	-3.45%	-0.1400	-0.1460	-0.2632	6.15%	0.2269	0.2332	0.4494
		Brown	9.73%	0.3818	0.4140	0.8018	4.78%	0.1390	0.1395	0.3037
	50/50	Green	-1.18%	-0.0722	-0.0740	-0.1368	3.74%	0.1159	0.1175	0.2341
		Brown	5.48%	0.1977	0.2161	0.3997	1.41%	0.0141	0.0160	0.0262
	KNN	Green	0.64%	-0.0104	-0.0115	-0.0194	7.74%	0.2840	0.2958	0.5683
		Brown	7.50%	0.2556	0.2730	0.5325	11.04%	0.3482	0.3502	0.7307
WST	10/90	Green	4.21%	0.0931	0.1009	0.1869	4.19%	0.1499	0.1388	0.3102
		Brown	3.25%	0.0710	0.0749	0.1480	6.59%	0.2434	0.2408	0.5243
	30/70	Green	-1.09%	-0.0640	-0.0662	-0.1224	5.68%	0.2051	0.2020	0.4456
		Brown	6.83%	0.2351	0.2409	0.4947	8.50%	0.4092	0.3900	0.9115
	50/50	Green	2.26%	0.0476	0.0503	0.0910	9.98%	0.3835	0.4106	0.8434
		Brown	7.47%	0.2743	0.2761	0.5848	11.05%	0.5782	0.5861	1.2714
	KNN	Green	2.39%	0.0486	0.0491	0.0965	7.79%	0.2972	0.3086	0.6678
		Brown	10.97%	0.3759	0.4354	0.8034	11.34%	0.5005	0.6076	0.9974

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 61. Singaporean sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.5602	0.5335***	0.6781**	-0.0063	-0.1044	-0.2932	-0.4897*	-2.1226	-0.3363	-0.7858	2.0907	0.0616	-1.3235	2.8859
		(0.7276)	(0.1671)	(0.2927)	(0.4532)	(0.3588)	(0.4338)	(0.2488)	(3.6561)	(1.3846)	(3.6664)	(2.0151)	(0.7752)	(2.3385)	(1.8617)
		0.4458	*0.0027*	*0.0256*	*0.989*	*0.7725*	*0.5029*	*0.0559*	*0.5867*	*0.8177*	*0.8388*	*0.3471*	*0.9397*	*0.5959*	*0.1818*
	30/70	0.1715	0.0878	0.2761	-0.0037	-0.2821	-0.6754*	-0.1686	-1.6264	0.6333	0.1687	-0.4363	0.7379	0.5087	1.5872
		(0.4706)	(0.0555)	(0.2188)	(0.3268)	(0.2622)	(0.3644)	(0.1391)	(3.3149)	(0.8417)	(3.361)	(1.0864)	(0.9859)	(1.2088)	(1.3968)
		0.7174	*0.1214*	*0.2141*	*0.9911*	*0.2882*	*0.0711*	*0.2322*	*0.6445*	*0.4857*	*0.9619*	*0.7046*	*0.4879*	*0.6914*	*0.3073*
	50/50	0.3602	-0.0447	0.2644	-0.3795	-0.04	-0.1949	-0.0524	0.3985	0.0561	-0.3471	-0.0594	0.0513	-0.7269	0.1262
		(0.3705)	(0.0518)	(0.2122)	(0.2853)	(0.1933)	(0.3591)	(0.2072)	(1.7257)	(0.5691)	(0.7018)	(1.2939)	(0.4763)	(1.6695)	(0.6875)
		0.3367	*0.3934*	*0.2198*	*0.1907*	*0.8372*	*0.5902*	*0.8016*	*0.8265*	*0.9254*	*0.6419*	*0.9651*	*0.9185*	*0.6814*	*0.8616*
	KNN	0.7646	0.0434	0.0268	0.1555	-0.3997	-0.2014	-0.0381	-2.3968	-0.4926	-2.4971	-0.8315	1.3143	2.2172	2.4342
		(0.6894)	(0.0734)	(0.2411)	(0.3193)	(0.2968)	(0.3468)	(0.1742)	(8.9805)	(1.1145)	(5.153)	(4.8806)	(2.8804)	(3.0944)	(3.2538)
		0.2738	*0.5576*	*0.912*	*0.6288*	*0.1855*	*0.5646*	*0.8279*	*0.8002*	*0.677*	*0.6485*	*0.8714*	*0.6673*	*0.5057*	*0.4881*
WTR	10/90	0.0337	0.0789	0.4853	0.2799	-0.262	-0.2225	0.3041	Inadequate sample size						
		(0.9381)	(0.1516)	(0.4421)	(0.5503)	(0.4691)	(0.6207)	(0.2337)							
		0.9715	*0.6051*	*0.2773*	*0.6131*	*0.5787*	*0.7214*	*0.1988*							
	30/70	0.1276	-0.0957	0.2057	-0.0608	-0.0037	-0.4339	0.1543							
		(0.4479)	(0.0595)	(0.2504)	(0.2997)	(0.2946)	(0.2845)	(0.1656)							
		0.7768	*0.1137*	*0.4151*	*0.8399*	*0.9902*	*0.1332*	*0.3557*							
	50/50	0.0486	-0.1326*	0.1147	-0.1101	0.1304	-0.2722	0.1868							
		(0.4223)	(0.0677)	(0.2348)	(0.2679)	(0.2594)	(0.2526)	(0.1461)							
		0.9089	*0.0553*	*0.6272*	*0.6827*	*0.6173*	*0.2861*	*0.2066*							
	KNN	0.2035	-0.0493	1.0014	-1.5757***	-0.5833	0.5199	0.0209							
		(0.9123)	(0.2163)	(0.6972)	(0.5273)	(0.4665)	(0.5464)	(0.6243)							
		0.8243	*0.8205*	*0.1568*	*0.0042*	*0.2167*	*0.3457*	*0.9735*							
WST	10/90	-0.3604	-0.1737	-0.3011	-0.3252	0.245	0.6722	0.4564	-0.3306	0.2086	1.0002	-0.0639	0.4214	-0.6708	0.3112
		(0.8056)	(0.1724)	(0.3051)	(0.5824)	(0.491)	(0.7837)	(0.3396)	(1.6814)	(0.174)	(0.7261)	(0.7531)	(0.5265)	(1.1995)	(0.3067)
		0.6579	*0.3219*	*0.3319*	*0.5809*	*0.6215*	*0.3981*	*0.1894*	*0.8465*	*0.2471*	*0.1862*	*0.9334*	*0.4346*	*0.5833*	*0.3244*
	30/70	-0.9776*	0.009	0.2133	0.1325	0.295	-0.6657	-0.0514	0.2969	-0.0391	0.0535	-0.1724	-0.1519	-0.807	-0.1443
		(0.4878)	(0.1172)	(0.2955)	(0.3698)	(0.2462)	(0.4098)	(0.3069)	(0.5779)	(0.0695)	(0.3973)	(0.4608)	(0.4534)	(0.7601)	(0.2733)
		0.0545	*0.9392*	*0.4762*	*0.7228*	*0.2405*	*0.1151*	*0.868*	*0.614*	*0.5817*	*0.8945*	*0.713*	*0.7418*	*0.3033*	*0.6044*
	50/50	-0.6602	-0.0345	0.1962	-0.0107	0.209	-0.5948	-0.011	0.4295	-0.0434	-0.0853	-0.3291	-0.1169	-0.473	-0.2187
		(0.4402)	(0.1086)	(0.2213)	(0.286)	(0.2486)	(0.3611)	(0.269)	(0.5188)	(0.0772)	(0.3731)	(0.3497)	(0.336)	(0.6583)	(0.2517)
		0.1444	*0.7527*	*0.3827*	*0.9704*	*0.4074*	*0.1103*	*0.9678*	*0.4192*	*0.5811*	*0.8219*	*0.3598*	*0.7323*	*0.4822*	*0.3971*
	KNN	0.6401	-0.279*	-0.2097	-0.4985	0.3071	0.8199	0.0284	-0.1191	0.1027	0.3622	-0.294	0.4918	-0.7396	0.2722
		(0.6325)	(0.1577)	(0.3599)	(0.4372)	(0.357)	(0.6294)	(0.2973)	(1.3512)	(0.1635)	(0.6592)	(0.7414)	(0.5059)	(1.1943)	(0.3213)
		0.32	*0.0875*	*0.5645*	*0.2635*	*0.3967*	*0.2029*	*0.9244*	*0.9308*	*0.5382*	*0.5898*	*0.6966*	*0.3446*	*0.5439*	*0.4086*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 62. Singaporean sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	12.73%	0.7174	0.8109	1.5857	1.29%	0.0210	0.0280	0.0359
		Brown	0.37%	-0.0298	-0.0279	-0.0641	19.32%	0.5386	0.6292	1.1690
	30/70	Green	-0.53%	-0.0744	-0.0783	-0.1428	12.83%	0.7425	1.2694	1.3835
		Brown	-0.26%	-0.0596	-0.0532	-0.1347	15.88%	0.5910	1.0061	1.1142
	50/50	Green	-2.14%	-0.1478	-0.1450	-0.2867	0.55%	-0.0337	-0.0352	-0.0631
		Brown	3.36%	0.1205	0.1035	0.2970	3.76%	0.1928	0.1793	0.4116
	KNN	Green	-2.32%	-0.1591	-0.1553	-0.3676	12.83%	0.7425	1.2694	1.3835
		Brown	2.58%	0.0740	0.0658	0.1661	-26.87%	-0.6572	-0.6988	-1.1557
WTR	10/90	Green	1.27%	0.0134	0.0127	0.0294	Inadequate sample size			
		Brown	1.17%	0.0070	0.0070	0.0154				
	30/70	Green	3.01%	0.1040	0.1041	0.2121				
		Brown	6.94%	0.3288	0.3239	0.8360				
	50/50	Green	3.51%	0.1271	0.1282	0.2623				
		Brown	7.64%	0.3631	0.3429	0.9258				
	KNN	Green	8.58%	0.3200	0.3600	0.6544				
		Brown	2.54%	0.0533	0.0478	0.1328				
WST	10/90	Green	-1.91%	-0.1031	-0.0964	-0.2168	-7.30%	-0.2840	-0.3247	-0.5030
		Brown	-0.16%	-0.0457	-0.0457	-0.0926	8.80%	0.2218	0.2156	0.5433
	30/70	Green	2.23%	0.0504	0.0534	0.0991	-5.77%	-0.2488	-0.2790	-0.4504
		Brown	-3.25%	-0.1774	-0.1812	-0.4043	0.73%	-0.0107	-0.0124	-0.0225
	50/50	Green	1.67%	0.0281	0.0313	0.0542	-6.49%	-0.2847	-0.2843	-0.5250
		Brown	-0.31%	-0.0568	-0.0573	-0.1388	-1.22%	-0.0929	-0.1079	-0.1969
	KNN	Green	-6.73%	-0.2833	-0.2704	-0.5621	-4.58%	-0.1976	-0.2121	-0.3682
		Brown	0.79%	-0.0087	-0.0087	-0.0181	10.52%	0.2678	0.2613	0.6641

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 63. Malaysian sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	1.3469	-0.3743**	-0.3392	0.2042	-0.4181	0.4504	0.3494*	1.632	0.1698	0.9403	-0.6998	0.3027	1.8183	0.1675
		(1.0207)	(0.1843)	(0.4109)	(0.4697)	(0.3186)	(0.9601)	(0.201)	(1.8238)	(0.3017)	(0.548)	(1.0563)	(0.6675)	(1.0897)	(0.6665)
		0.1926	*0.0473*	*0.4128*	*0.6655*	*0.195*	*0.6409*	*0.088*	*0.3834*	*0.581*	*0.1044*	*0.5165*	*0.6559*	*0.1135*	*0.8046*
	30/70	0.2017	-0.372***	0.1295	-0.2487	0.1294	0.1755	0.4168***	-1.4495	0.668	0.3151	1.1419	-0.3555	-1.5431	-0.3441
		(0.5422)	(0.0925)	(0.3312)	(0.2286)	(0.1692)	(0.3668)	(0.1416)	(1.7457)	(0.4176)	(0.6566)	(1.1208)	(0.4346)	(0.9505)	(0.4076)
		0.7114	*0.0002*	*0.6973*	*0.2816*	*0.4479*	*0.6343*	*0.0048*	*0.4179*	*0.1281*	*0.6374*	*0.3226*	*0.4246*	*0.1229*	*0.4103*
	50/50	0.2798	-0.3032***	0.1407	-0.4381**	-0.1594	0.2367	0.2725***	-1.7518	0.0968	-0.142	2.0736**	-0.4683	-1.6847**	0.2036
		(0.4388)	(0.089)	(0.203)	(0.2149)	(0.1337)	(0.2744)	(0.0963)	(1.1851)	(0.2431)	(0.4765)	(0.7644)	(0.3216)	(0.7092)	(0.189)
		0.5265	*0.0013*	*0.4914*	*0.0465*	*0.2383*	*0.3921*	*0.0066*	*0.1576*	*0.6955*	*0.7694*	*0.0148*	*0.1636*	*0.0296*	*0.2963*
	KNN	-0.0611	-0.4565***	0.0077	0.0671	0.2801	-0.2223	0.4727***	-6.5404**	-0.067	0.4184	1.4934	0.9445	1.2262	2.3636*
		(0.5904)	(0.1042)	(0.3528)	(0.2438)	(0.2413)	(0.3817)	(0.1666)	(2.6871)	(0.4687)	(0.7362)	(1.3943)	(1.0847)	(1.7293)	(1.3502)
		0.9179	*0.0001*	*0.9826*	*0.7842*	*0.2508*	*0.5627*	*0.0064*	*0.0263*	*0.8881*	*0.5772*	*0.2991*	*0.3961*	*0.4879*	*0.098*
WTR	10/90	0.1229	-0.4786	-0.4133	-1.5993**	0.5149	0.6598	0.7312	-10.781	1.0033	0.6313	4.3947	-0.3303	-1.5212	-0.4397
		(1.238)	(0.2907)	(0.4887)	(0.7173)	(0.3754)	(0.9823)	(0.4436)	(7.1574)	(3.2244)	(5.0085)	(4.8098)	(2.3464)	(7.432)	(4.433)
		0.9213	*0.1056*	*0.4015*	*0.03*	*0.176*	*0.5047*	*0.1052*	*0.1923*	*0.7682*	*0.9046*	*0.4028*	*0.8935*	*0.8459*	*0.9248*
	30/70	-0.0766	-0.2028**	0.2804	-0.223	0.1603	-0.0871	0.1441	0.8111	0.113	-1.0194	-1.1975*	-0.5246	0.3836	0.035
		(0.5521)	(0.0934)	(0.2605)	(0.2406)	(0.2733)	(0.4095)	(0.1397)	(1.2461)	(0.1606)	(0.5465)	(0.566)	(0.3455)	(0.4439)	(0.3597)
		0.8901	*0.0344*	*0.2866*	*0.3582*	*0.5599*	*0.8324*	*0.3068*	*0.5438*	*0.5132*	*0.1211*	*0.088*	*0.1894*	*0.427*	*0.9264*
	50/50	0.1252	-0.0705	0.2445	-0.2547	0.0023	-0.0149	-0.0298	0.9628	0.0582	-0.3922	-1.506**	-0.6319**	0.3712	-0.2763
		(0.4182)	(0.0506)	(0.1904)	(0.1781)	(0.1997)	(0.2495)	(0.1222)	(1.0326)	(0.3421)	(0.9142)	(0.5032)	(0.2457)	(0.4956)	(0.4982)
		0.7658	*0.1695*	*0.2047*	*0.1584*	*0.9908*	*0.9527*	*0.8081*	*0.3939*	*0.8716*	*0.6858*	*0.0303*	*0.0499*	*0.4875*	*0.603*
	KNN	-0.2827	-0.2463*	0.358	-0.3627	0.1753	-0.214	0.3072	4.0839	0.0854	-1.5223	-2.7462	-1.0852**	0.5393	-0.9527
		(0.794)	(0.1288)	(0.342)	(0.3412)	(0.4011)	(0.5478)	(0.1879)	(2.9512)	(0.5236)	(1.1222)	(1.9295)	(0.3391)	(1.6381)	(0.7952)
		0.7232	*0.0612*	*0.2999*	*0.2927*	*0.6639*	*0.6976*	*0.108*	*0.225*	*0.8768*	*0.233*	*0.2139*	*0.024*	*0.7553*	*0.2846*
WST	10/90	-0.5579	0.0097	0.4228	0.0297	0.4788	0.0007	0.2452	Inadequate sample size						
		(0.6744)	(0.1575)	(0.4352)	(0.5339)	(0.4841)	(0.648)	(0.3363)							
		0.4118	*0.9511*	*0.3357*	*0.9559*	*0.3271*	*0.9992*	*0.4691*							
	30/70	0.4642	0.084	0.1584	0.4572	0.3488	-0.2173	0.2096							
		(0.5628)	(0.1498)	(0.3231)	(0.3892)	(0.3884)	(0.526)	(0.2507)							
		0.4132	*0.5772*	*0.626*	*0.2453*	*0.3732*	*0.6812*	*0.4068*							
	50/50	0.4552	-0.0957	-0.1412	0.2559	0.0901	-0.2234	0.1746							
		(0.4334)	(0.1114)	(0.1784)	(0.2349)	(0.2033)	(0.2951)	(0.2071)							
		0.2984	*0.3942*	*0.4322*	*0.2809*	*0.6592*	*0.4524*	*0.4031*							
	KNN	0.0972	0.0223	0.141	0.5434	0.0045	-0.3187	0.1837							
		(0.8358)	(0.1089)	(0.3831)	(0.4104)	(0.3489)	(0.4329)	(0.3219)							
		0.9079	*0.8388*	*0.7143*	*0.1911*	*0.9898*	*0.4649*	*0.5706*							

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 64. Malaysian sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-13.70%	-0.5715	-0.5680	-1.0937	-10.33%	-0.4659	-0.4282	-0.8867
		Brown	0.05%	-0.0632	-0.0708	-0.1126	3.87%	0.1335	0.1554	0.2541
	30/70	Green	-2.70%	-0.1926	-0.1931	-0.3572	4.28%	0.1811	0.1994	0.3641
		Brown	3.05%	0.1411	0.1581	0.2589	-12.64%	-0.4623	-0.3809	-1.0574
	50/50	Green	1.37%	0.0215	0.0232	0.0421	2.53%	0.0966	0.1193	0.1791
		Brown	4.25%	0.2220	0.2472	0.4233	-6.13%	-0.2726	-0.2603	-0.5701
	KNN	Green	0.39%	-0.0291	-0.0328	-0.0544	4.28%	0.1811	0.1994	0.3641
		Brown	5.73%	0.3114	0.3624	0.5955	-40.76%	-1.1735	-0.9906	-2.7525
WTR	10/90	Green	3.03%	0.0994	0.0943	0.1958	66.67%	1.6048	1.9530	3.9873
		Brown	16.20%	0.5758	1.2877	0.9902	-23.40%	-0.7684	-0.6960	-1.5442
	30/70	Green	3.57%	0.1309	0.1442	0.2525	3.67%	0.1579	0.2119	0.2876
		Brown	4.70%	0.2224	0.2614	0.4040	-10.31%	-0.5738	-0.6723	-0.8873
	50/50	Green	4.56%	0.2071	0.2387	0.4215	8.31%	0.4365	0.5974	0.8181
		Brown	5.36%	0.2733	0.3064	0.5155	-4.17%	-0.3167	-0.4054	-0.5006
	KNN	Green	4.30%	0.1598	0.1763	0.3148	13.83%	0.6289	0.9299	1.2255
		Brown	4.81%	0.1950	0.2356	0.3660	3.80%	0.1393	0.1857	0.2439
WST	10/90	Green	0.84%	-0.0081	-0.0090	-0.0150	Inadequate sample size			
		Brown	0.37%	-0.0359	-0.0366	-0.0696				
	30/70	Green	0.60%	-0.0242	-0.0269	-0.0442				
		Brown	11.71%	0.5712	0.5774	1.3317				
	50/50	Green	-0.05%	-0.0672	-0.0802	-0.1169				
		Brown	8.54%	0.5208	0.5619	1.1053				
	KNN	Green	4.27%	0.2267	0.2930	0.3974				
		Brown	6.64%	0.3053	0.2940	0.6608				

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 65. Norwegian sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.9445	-0.0574	-0.386	-0.0658	-0.7577	-1.1409	-0.0045	6.1024***	0.3638	-2.2655**	-2.2756*	-5.5019**	0.5243	-0.2544
	10/90	(0.5807)	(0.137)	(0.2877)	(0.5438)	(0.703)	(0.748)	(0.2819)	(0.8246)	(0.4108)	(0.6556)	(0.9274)	(1.4579)	(0.8164)	(0.7289)
		0.1079	*0.6763*	*0.1837*	*0.9041*	*0.2845*	*0.1313*	*0.9873*	*0.0007*	*0.4164*	*0.0181*	*0.0577*	*0.013*	*0.549*	*0.7413*
		0.0618	-0.1574	-0.1518	0.0335	0.6579	0.8788*	-0.2144	4.9893	-1.0132	1.4769	-0.6658	-0.3597	1.9834	-0.8681
	30/70	(0.5899)	(0.1389)	(0.3094)	(0.6324)	(0.562)	(0.4638)	(0.2726)	(3.6706)	(0.5389)	(2.1231)	(1.1855)	(1.846)	(1.0801)	(0.9461)
		0.9168	*0.2606*	*0.6252*	*0.9579*	*0.2454*	*0.0619*	*0.4339*	*0.2322*	*0.1188*	*0.5177*	*0.5986*	*0.8532*	*0.1257*	*0.4009*
		0.2426	-0.153	-0.1977	-0.2555	0.2485	1.0545***	-0.2506	4.3888	-0.7475*	-0.8836	-1.0983	-2.9635*	1.1369	-0.4124
	50/50	(0.4733)	(0.0953)	(0.2688)	(0.5055)	(0.4576)	(0.3903)	(0.2073)	(2.7857)	(0.3037)	(1.5021)	(0.9569)	(1.3431)	(0.6213)	(0.7076)
		0.6096	*0.1125*	*0.4643*	*0.6147*	*0.5887*	*0.0085*	*0.2305*	*0.176*	*0.0572*	*0.5819*	*0.303*	*0.0785*	*0.1268*	*0.5853*
		1.4927*	-0.1313	-0.933*	-1.0713*	-1.2802	1.128	-0.8323**	5.4506	-1.439*	1.3315	-0.7231	-0.9604	1.5882	-0.3942
	KNN	(0.7732)	(0.2713)	(0.5293)	(0.5783)	(0.7878)	(0.7592)	(0.3208)	(3.5239)	(0.6)	(2.1007)	(1.2596)	(2.0325)	(1.0876)	(0.9695)
		0.0572	*0.6299*	*0.0819*	*0.0678*	*0.1082*	*0.1414*	*0.0113*	*0.1826*	*0.0618*	*0.554*	*0.5908*	*0.6565*	*0.204*	*0.7012*
WTR		-1.1019	-0.4673	2.5098	1.0373	3.2236	0.9601	1.1247	Inadequate sample size						
	10/90	(3.7101)	(0.4042)	(2.1132)	(1.0825)	(1.8612)	(1.4107)	(1.0743)							
		0.7784	*0.2999*	*0.2883*	*0.3819*	*0.1438*	*0.5264*	*0.3431*							
		0.1533	0.0349	0.7935	0.9675	0.4928	-0.0801	1.0124							
	30/70	(2.0041)	(0.3659)	(1.4772)	(0.5746)	(1.1346)	(1.2034)	(0.5264)							
		0.942	*0.9277*	*0.6142*	*0.153*	*0.6821*	*0.9495*	*0.1125*							
		-2.4525	0.8409**	0.04	0.3655	1.2443	0.2805	-0.0596							
	50/50	(1.6694)	(0.3097)	(0.9769)	(0.7235)	(1.2132)	(0.4956)	(0.5083)							
		0.2018	*0.042*	*0.9689*	*0.635*	*0.3521*	*0.5959*	*0.9112*							
		7.3886**	-1.5091**	0.9707	0.4189	-1.8942	0.3883	0.9545							
	KNN	(2.3295)	(0.5544)	(1.4274)	(1.4326)	(2.3786)	(1.0228)	(0.9059)							
		0.0248	*0.0417*	*0.5267*	*0.7817*	*0.4619*	*0.7198*	*0.3403*							
WST		-0.1535	-0.3674**	0.1923	0.031	-0.685	-0.3326	-0.1888	Inadequate sample size						
	10/90	(0.9151)	(0.1806)	(0.4981)	(0.967)	(1.0466)	(1.0049)	(0.3664)							
		0.8674	*0.0469*	*0.701*	*0.9746*	*0.5156*	*0.742*	*0.6085*							
		-0.1525	-0.0807	0.3973	-0.3313	0.2794	0.1567	-0.3055							
	30/70	(0.5596)	(0.1308)	(0.3673)	(0.6193)	(0.7216)	(0.5539)	(0.2409)							
		0.7863	*0.54*	*0.2842*	*0.595*	*0.7002*	*0.7784*	*0.2103*							
		1.0547*	-0.2069	0.8743***	0.0438	0.4929	0.8978**	-0.3577							
	50/50	(0.6105)	(0.124)	(0.2974)	(0.3571)	(0.5568)	(0.3913)	(0.2588)							
		0.0899	*0.1012*	*0.0049*	*0.9029*	*0.38*	*0.0258*	*0.1727*							
		-0.3037	-0.1843	0.2228	-1.8831**	-1.5029*	0.9575	-0.0412							
	KNN	(1.1048)	(0.3514)	(0.4904)	(0.9247)	(0.853)	(1.3834)	(0.3975)							
		0.7845	*0.6021*	*0.6514*	*0.0467*	*0.0839*	*0.4919*	*0.9178*							

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 66. Norwegian sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	17.30%	0.6401	0.6592	1.5373	21.58%	0.7452	1.0603	1.5746
		Brown	5.01%	0.1539	0.1615	0.3064	50.25%	1.6224	2.3085	4.3789
	30/70	Green	12.14%	0.4412	0.4798	1.0501	29.05%	1.5829	1.6621	5.0076
		Brown	7.71%	0.2669	0.2877	0.5490	63.43%	2.9131	5.6069	8.5226
	50/50	Green	13.05%	0.5061	0.5258	1.2562	42.83%	2.3880	3.1879	8.0965
		Brown	9.23%	0.3607	0.3917	0.7462	50.26%	2.4408	2.9559	7.3388
	KNN	Green	11.09%	0.3547	0.3459	0.8398	33.16%	1.7875	2.0007	5.6866
		Brown	12.24%	0.4202	0.4940	0.8312	62.21%	2.6346	3.8537	7.2004
WTR	10/90	Green	28.02%	1.4144	1.5480	3.8284	Inadequate sample size			
		Brown	36.25%	1.9947	2.5287	5.0775				
	30/70	Green	14.73%	0.8960	0.8817	2.1828				
		Brown	28.96%	1.4215	1.4030	4.7246				
	50/50	Green	36.46%	2.1346	2.4090	6.0766				
		Brown	29.17%	1.4754	1.3568	4.3364				
	KNN	Green	0.91%	-0.0056	-0.0057	-0.0105				
		Brown	62.17%	2.6152	3.8591	7.1049				
WST	10/90	Green	10.06%	0.2840	0.2961	0.6510	Inadequate sample size			
		Brown	3.76%	0.0901	0.0998	0.1732				
	30/70	Green	9.07%	0.3566	0.4008	0.7749				
		Brown	6.96%	0.2576	0.2892	0.4932				
	50/50	Green	7.26%	0.2773	0.2944	0.5782				
		Brown	15.63%	0.5704	0.6368	1.2278				
	KNN	Green	10.49%	0.3304	0.3344	0.7540				
		Brown	4.71%	0.1835	0.1962	0.3725				

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 67. Finnish sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		0.827	0.0978	-0.4672	-0.3049	-0.907	0.0153	0.3039	Inadequate sample size						
	10/90	(0.7942)	(0.2177)	(0.495)	(0.7222)	(0.792)	(0.8112)	(0.3651)							
		0.2999	*0.6543*	*0.3472*	*0.6737*	*0.2545*	*0.985*	*0.4069*							
		-0.1566	-0.1256	0.1026	-0.062	-0.0608	-0.2941	-0.1727							
	30/70	(0.5944)	(0.2287)	(0.3556)	(0.5792)	(0.5725)	(0.9351)	(0.2584)							
		0.7927	*0.5838*	*0.7735*	*0.915*	*0.9156*	*0.7537*	*0.5054*							
		0.0897	-0.0886	0.2726	0.0764	0.1631	-0.079	-0.1815							
	50/50	(0.4564)	(0.1993)	(0.26)	(0.3854)	(0.4517)	(0.6453)	(0.2395)							
		0.8445	*0.6575*	*0.2967*	*0.8432*	*0.7187*	*0.9027*	*0.4502*							
		0.0273	-0.0804	0.5115	-0.3007	-0.6145	0.1971	0.3535							
	KNN	(0.5167)	(0.1391)	(0.3844)	(0.4527)	(0.5086)	(0.6069)	(0.2629)							
		0.958	*0.5646*	*0.186*	*0.5079*	*0.2295*	*0.7459*	*0.1815*							
WTR		-0.0163	0.2307*	-0.1067	-0.9766**	0.0995	0.6137	-0.4959**	2.3419	0.7448	-3.3752*	-2.9099	-1.4747	2.3829	-1.0644
	10/90	(0.5766)	(0.1288)	(0.369)	(0.4754)	(0.6555)	(0.6778)	(0.2394)	(1.7527)	(0.7931)	(1.9053)	(1.8485)	(1.3076)	(1.9123)	(0.7285)
		0.9774	*0.0759*	*0.773*	*0.0423*	*0.8796*	*0.3671*	*0.0406*	*0.1872*	*0.3519*	*0.0822*	*0.1214*	*0.2645*	*0.2182*	*0.1499*
		0.0601	0.0823	0.2154	-0.0407	0.46	0.0258	-0.3207**	1.0787	0.1025	-0.72	-1.4966*	-0.0666	2.0969**	-1.151**
	30/70	(0.412)	(0.1194)	(0.3047)	(0.3746)	(0.4313)	(0.407)	(0.1543)	(0.7367)	(0.2681)	(0.5729)	(0.7794)	(0.6311)	(1.0222)	(0.531)
		0.8843	*0.492*	*0.4811*	*0.9137*	*0.2885*	*0.9496*	*0.0399*	*0.149*	*0.7038*	*0.2143*	*0.0602*	*0.9164*	*0.0452*	*0.0347*
		-0.2237	0.185	0.4047	-0.4727	0.0963	0.4514	-0.3076**	-0.1278	0.1433	-0.8783**	-0.1255	0.892*	0.9669	-0.2219
	50/50	(0.3836)	(0.1191)	(0.2654)	(0.3417)	(0.3827)	(0.4344)	(0.1533)	(0.5611)	(0.1669)	(0.4088)	(0.3471)	(0.5231)	(0.5853)	(0.2318)
		0.561	*0.123*	*0.1301*	*0.1692*	*0.8017*	*0.301*	*0.0472*	*0.8207*	*0.3944*	*0.0362*	*0.7191*	*0.094*	*0.1045*	*0.3428*
		-0.3042	0.1193	-0.0907	-0.4953	0.2332	0.142	-0.3452*	1.5625	0.2917	-1.4572	-1.0963	-0.7148	0.9106	-0.853
	KNN	(0.4982)	(0.1604)	(0.2999)	(0.4678)	(0.4838)	(0.6496)	(0.1881)	(1.199)	(0.3482)	(0.9593)	(0.8596)	(1.1946)	(1.4444)	(0.6462)
		0.5427	*0.4586*	*0.7628*	*0.2919*	*0.6307*	*0.8274*	*0.0691*	*0.1981*	*0.4058*	*0.1347*	*0.2077*	*0.5521*	*0.5311*	*0.1925*
WST		-0.9174	0.3383*	0.5822	0.5472	1.4821**	-0.8518	-0.136	1.3671	-0.7984**	0.6802	1.1345	2.1155	-0.5262	-0.1948
	10/90	(0.6438)	(0.1917)	(0.5392)	(0.6101)	(0.6452)	(0.8084)	(0.2699)	(1.4942)	(0.3664)	(1.0461)	(1.7255)	(1.7415)	(1.7976)	(0.8388)
		0.1562	*0.0797*	*0.282*	*0.3712*	*0.023*	*0.2937*	*0.615*	*0.3678*	*0.0376*	*0.5207*	*0.516*	*0.2343*	*0.7718*	*0.8179*
		0.2422	0.3322**	0.2858	0.0996	0.4851	-0.4019	-0.1341	-1.275	0.2406	1.0533	0.1961	1.7296*	1.502	-0.5458
	30/70	(0.5188)	(0.1365)	(0.3831)	(0.5269)	(0.5211)	(0.6003)	(0.2091)	(0.8091)	(0.2586)	(0.6671)	(0.7)	(0.8556)	(0.998)	(0.3549)
		0.6413	*0.0162*	*0.4568*	*0.8504*	*0.3534*	*0.5043*	*0.5223*	*0.1259*	*0.36*	*0.1252*	*0.7814*	*0.0525*	*0.1431*	*0.1349*
		0.4492	0.1454	0.3152	0.1073	0.2763	-0.3092	-0.0347	-1.3417*	0.3581	0.0679	-0.2524	1.2058	1.7427**	-0.0917
	50/50	(0.3608)	(0.0932)	(0.3229)	(0.4185)	(0.4172)	(0.4442)	(0.132)	(0.6697)	(0.2365)	(0.7385)	(0.7634)	(0.7905)	(0.671)	(0.2874)
		0.2151	*0.1208*	*0.3305*	*0.798*	*0.5088*	*0.4874*	*0.7931*	*0.0546*	*0.1409*	*0.9274*	*0.7433*	*0.138*	*0.0146*	*0.7521*
		0.1548	0.201	0.6957*	0.2509	0.312	-0.5739	-0.1595	0.0749	-0.2315	0.3177	0.0192	3.2377**	2.8213	-0.1488
	KNN	(0.7809)	(0.1888)	(0.3595)	(0.6034)	(0.6679)	(0.8338)	(0.2444)	(1.2074)	(0.4457)	(1.4104)	(1.5742)	(1.4932)	(2.1856)	(0.7887)
		0.8431	*0.2888*	*0.0549*	*0.6782*	*0.641*	*0.4923*	*0.515*	*0.951*	*0.6074*	*0.8234*	*0.9903*	*0.0385*	*0.207*	*0.8517*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 68. Finnish sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-1.42%	-0.0731	-0.0636	-0.1738	Inadequate sample size			
		Brown	12.08%	0.5100	0.4972	1.1907				
	30/70	Green	13.88%	0.4757	0.5242	0.9712				
		Brown	11.20%	0.4885	0.4875	1.1367				
	50/50	Green	10.54%	0.4134	0.4589	0.8195				
		Brown	11.38%	0.5461	0.5461	1.2674				
	KNN	Green	6.91%	0.2143	0.2229	0.4680				
		Brown	10.95%	0.4563	0.4496	1.0118				
WTR	10/90	Green	12.47%	0.5468	0.5040	1.4978	5.84%	0.2286	0.2786	0.4366
		Brown	10.74%	0.4328	0.4226	0.9965	20.62%	0.4899	1.1436	0.8976
	30/70	Green	10.65%	0.5150	0.5678	1.1181	5.54%	0.2330	0.2535	0.4619
		Brown	11.55%	0.5220	0.4939	1.2302	8.86%	0.3589	0.3817	0.7538
	50/50	Green	14.06%	0.7300	0.7863	1.6997	16.17%	0.9150	1.0135	2.0365
		Brown	11.57%	0.5337	0.5444	1.2105	16.18%	0.8887	0.9295	2.1122
	KNN	Green	9.22%	0.4641	0.4668	1.0222	6.01%	0.2571	0.2769	0.5100
		Brown	4.59%	0.1848	0.1714	0.4190	15.73%	0.4766	0.5941	0.9580
WST	10/90	Green	2.82%	0.0649	0.0638	0.1350	-5.00%	-0.2066	-0.1772	-0.4479
		Brown	2.09%	0.0297	0.0333	0.0591	16.98%	0.7058	1.0119	1.4353
	30/70	Green	4.30%	0.1258	0.1273	0.2595	24.66%	1.3792	1.7087	3.2495
		Brown	13.36%	0.3914	0.4423	0.7854	11.82%	0.6069	0.7045	1.2247
	50/50	Green	5.62%	0.1934	0.1939	0.3950	22.25%	1.2854	1.7738	2.8206
		Brown	15.53%	0.5400	0.6330	1.0916	8.62%	0.4899	0.5646	0.9757
	KNN	Green	-0.84%	-0.0539	-0.0567	-0.1047	24.58%	1.3769	1.7055	3.2414
		Brown	8.00%	0.2213	0.2411	0.4345	31.30%	1.0459	1.3538	2.3657

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 69. Netherland's sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.1093	-0.1479	0.3393	-1.61**	0.3706	2.0354**	-0.2121	3.2652	-0.3236	4.1155	7.7174	2.2	-7.7524	0.0832
		(0.671)	(0.204)	(0.4922)	(0.6465)	(0.6718)	(0.8915)	(0.3217)	(5.526)	(2.2978)	(4.2136)	(3.9385)	(12.2658)	(12.494)	(3.1063)
		0.871	*0.4706*	*0.4927*	*0.0149*	*0.5828*	*0.0252*	*0.5116*	*0.5803*	*0.8935*	*0.3736*	*0.1074*	*0.8647*	*0.5621*	*0.9797*
	30/70	0.4238	-0.3209***	-0.0121	-0.1147	1.1737**	0.1878	0.2091	1.7384	-0.1434	2.2222	0.9388	-0.3192	-2.5962	0.3058
		(0.4551)	(0.1152)	(0.4034)	(0.5006)	(0.4684)	(0.7693)	(0.2242)	(1.6242)	(0.6559)	(1.9551)	(1.5884)	(2.2695)	(2.195)	(1.0201)
		0.3546	*0.0067*	*0.9762*	*0.8194*	*0.0143*	*0.8078*	*0.3538*	*0.3334*	*0.8356*	*0.3072*	*0.5802*	*0.8936*	*0.2901*	*0.7764*
	50/50	0.1412	-0.3727***	-0.2404	0.1398	1.3615***	0.1351	0.0354	1.834	-0.2487	3.2743	1.4404	-1.088	-3.8813	-0.0055
		(0.4032)	(0.0825)	(0.2754)	(0.425)	(0.383)	(0.5449)	(0.1777)	(1.5663)	(0.6213)	(1.7136)	(1.3684)	(2.2087)	(2.006)	(0.8899)
		0.7271	*0*	*0.3855*	*0.7431*	*0.0006*	*0.8048*	*0.8428*	*0.2944*	*0.7055*	*0.1143*	*0.3407*	*0.6432*	*0.1108*	*0.9953*
	KNN	0.4397	-0.4638**	-0.1157	0.9433	0.6269	-1.0028	0.375	0.0682	-0.8014	1.8682	1.5874	1.6636	-0.6476	0.0499
		(0.7099)	(0.1919)	(0.5197)	(0.6346)	(0.8733)	(1.0327)	(0.268)	(3.5736)	(1.091)	(1.9489)	(1.6355)	(4.8515)	(4.9999)	(0.8816)
		0.5375	*0.018*	*0.8245*	*0.1412*	*0.475*	*0.3346*	*0.1658*	*0.9855*	*0.4956*	*0.3818*	*0.3763*	*0.7456*	*0.902*	*0.957*
WTR	10/90	0.9935	0.2564	0.1936	-0.233	0.4646	0.9199	0.676**	-0.2419	0.6666	-3.1102	2.2376**	-2.2934	-5.2558**	1.0159
		(0.7895)	(0.2084)	(0.5149)	(0.5529)	(0.7841)	(0.987)	(0.305)	(1.9025)	(0.6148)	(2.6967)	(0.8155)	(1.2162)	(1.8573)	(1.0562)
		0.212	*0.2223*	*0.7079*	*0.6747*	*0.5552*	*0.3542*	*0.0296*	*0.9038*	*0.3277*	*0.3009*	*0.0406*	*0.118*	*0.0367*	*0.3803*
	30/70	0.5216	-0.0346	-0.267	-1.1991***	0.6657	1.2825**	0.2591	1.639	-0.6943	1.0982	1.1746**	2.1825	-1.1555	0.0811
		(0.5449)	(0.1395)	(0.3144)	(0.4453)	(0.4555)	(0.6268)	(0.2196)	(0.9124)	(0.379)	(1.0514)	(0.3991)	(1.1141)	(1.1419)	(0.4269)
		0.3414	*0.8047*	*0.3982*	*0.0087*	*0.148*	*0.0441*	*0.2417*	*0.1324*	*0.1264*	*0.3441*	*0.0321*	*0.1074*	*0.3581*	*0.8568*
	50/50	-0.4639	0.0461	0.3661	-0.2589	1.0746***	1.0901*	0.1211	1.2957**	-0.4749*	1.0329	0.5358*	1.1059	-0.678	0.3593
		(0.3966)	(0.0756)	(0.3155)	(0.3267)	(0.3827)	(0.602)	(0.1571)	(0.4102)	(0.2271)	(0.5589)	(0.2628)	(0.8245)	(0.4959)	(0.3278)
		0.2458	*0.5441*	*0.2494*	*0.4306*	*0.0063*	*0.0741*	*0.4433*	*0.0251*	*0.0908*	*0.1238*	*0.0971*	*0.2375*	*0.2298*	*0.323*
	KNN	1.1693	0.1661	0.3381	-2.4221***	-2.1241***	0.4641	-0.2339	2.0654	-0.6242	-1.7108	2.6769*	1.2107	-4.5233**	0.9215
		(0.8325)	(0.2171)	(0.8066)	(0.7624)	(0.734)	(1.1935)	(0.3762)	(2.6299)	(0.5368)	(1.5518)	(1.2882)	(1.8273)	(1.6282)	(0.8285)
		0.1641	*0.4465*	*0.6762*	*0.0021*	*0.0049*	*0.6984*	*0.5359*	*0.4678*	*0.2973*	*0.3205*	*0.0923*	*0.5369*	*0.039*	*0.3166*
WST	10/90	0.6344	0.0925	0.107	-1.6758**	0.2348	1.6517*	-0.5083	Inadequate sample size						
		(1.0617)	(0.2785)	(0.5899)	(0.7748)	(1.2629)	(0.9894)	(0.4573)							
		0.5516	*0.7407*	*0.8564*	*0.0332*	*0.8529*	*0.0985*	*0.2693*							
	30/70	-0.9232*	-0.027	-0.3567	-0.4187	0.9058**	1.0539	0.0884							
		(0.4904)	(0.134)	(0.339)	(0.4749)	(0.4126)	(0.638)	(0.2881)							
		0.063	*0.8406*	*0.2955*	*0.3804*	*0.0308*	*0.1021*	*0.7596*							
	50/50	-0.6394*	0.1158	-0.1179	-0.0854	0.8778***	0.7949*	0.1351							
		(0.384)	(0.107)	(0.2691)	(0.3546)	(0.3241)	(0.4528)	(0.186)							
		0.0994	*0.2822*	*0.6624*	*0.8103*	*0.0081*	*0.0826*	*0.4693*							
	KNN	-0.4763	-0.2182	-0.5703	-1.0227	-0.6065	0.2059	0.1932							
		(0.6675)	(0.168)	(0.3472)	(0.6214)	(0.6558)	(0.6195)	(0.2451)							
		0.4774	*0.1974*	*0.1039*	*0.1033*	*0.3576*	*0.7404*	*0.4327*							

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 70. Netherland's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	7.53%	0.1893	0.1765	0.4572	-35.49%	-0.8284	-0.7853	-1.4801
		Brown	6.31%	0.1842	0.1908	0.3780	-5.98%	-0.4329	-0.5068	-0.7555
	30/70	Green	2.51%	0.0564	0.0539	0.1199	-27.83%	-1.5347	-1.2953	-2.2033
		Brown	14.08%	0.6482	0.6574	1.5119	-11.44%	-0.7262	-0.6709	-1.4271
	50/50	Green	6.87%	0.2455	0.2360	0.5469	-26.04%	-1.4199	-1.2258	-2.1198
		Brown	11.67%	0.6234	0.6300	1.4057	-12.70%	-0.7980	-0.7329	-1.4908
	KNN	Green	6.36%	0.1925	0.1902	0.4210	-27.83%	-1.5347	-1.2953	-2.2033
		Brown	15.81%	0.6617	0.6958	1.5472	-23.89%	-1.4180	-1.3175	-1.9499
WTR	10/90	Green	-0.95%	-0.0674	-0.0621	-0.1437	25.52%	1.4515	1.6695	3.7739
		Brown	21.33%	0.7934	0.8716	1.8476	64.02%	2.8116	3.2699	8.6421
	30/70	Green	3.77%	0.0908	0.0829	0.2308	-3.06%	-0.2064	-0.2212	-0.4191
		Brown	18.06%	0.8646	0.9124	2.1085	39.87%	2.7884	3.7580	9.4944
	50/50	Green	16.72%	0.7269	0.8020	1.6140	6.78%	0.3643	0.3863	0.7454
		Brown	15.17%	0.7253	0.7000	1.8150	33.57%	2.6050	3.0975	9.0402
	KNN	Green	6.91%	0.2038	0.1869	0.5568	-2.95%	-0.2012	-0.2159	-0.4093
		Brown	23.52%	0.7777	0.8154	1.7861	75.26%	3.0153	11.5104	8.5874
WST	10/90	Green	6.35%	0.2162	0.2022	0.5114	Inadequate sample size			
		Brown	12.59%	0.3790	0.5501	0.6825				
	30/70	Green	20.30%	0.9369	1.0472	2.1248				
		Brown	10.07%	0.5378	0.6083	1.0894				
	50/50	Green	16.95%	0.8827	0.9506	2.0263				
		Brown	11.59%	0.6171	0.6458	1.3491				
	KNN	Green	15.42%	0.5949	0.5267	1.8077				
		Brown	10.46%	0.5686	0.5682	1.2399				

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 71. Thailand's sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		0.9702	-0.0241	0.0409	-0.2281	0.0667	-0.1843	-0.1452	-2.3045	-1.1575	-2.0092	1.1164	-0.056	0.2991	0.6294
	10/90	(0.8511)	(0.1526)	(0.2862)	(0.4324)	(0.321)	(0.5915)	(0.2199)	(2.4272)	(1.0197)	(1.5948)	(1.2771)	(0.9868)	(2.1678)	(1.1932)
		0.2578	*0.8751*	*0.8867*	*0.5994*	*0.836*	*0.7562*	*0.511*	*0.3557*	*0.2721*	*0.2247*	*0.3942*	*0.9554*	*0.8919*	*0.6047*
		0.4599	0.2653**	0.2151	0.2859	-0.1056	0.1569	-0.0079	1.476	-0.46	0.3941	-1.4113*	0.0074	2.1479*	0.1852
	30/70	(0.5141)	(0.1113)	(0.2263)	(0.3192)	(0.3494)	(0.4024)	(0.1797)	(1.0711)	(0.6338)	(0.6848)	(0.7077)	(0.7076)	(1.2008)	(0.7255)
		0.3738	*0.0196*	*0.3448*	*0.3732*	*0.7633*	*0.6978*	*0.9653*	*0.1861*	*0.4778*	*0.5724*	*0.0624*	*0.9917*	*0.0915*	*0.8016*
		0.3807	0.4504***	0.3362*	0.0002	-0.3006	0.3303	-0.1238	0.6594	-0.1596	-0.1927	-0.7778**	-0.1479	0.9986**	-0.2727
	50/50	(0.3599)	(0.0773)	(0.1743)	(0.2545)	(0.2776)	(0.3075)	(0.1245)	(0.5455)	(0.2218)	(0.3666)	(0.3469)	(0.4152)	(0.4634)	(0.2521)
		0.2934	*0*	*0.0575*	*0.9993*	*0.2822*	*0.2862*	*0.3232*	*0.2433*	*0.4815*	*0.6059*	*0.0386*	*0.726*	*0.0458*	*0.2944*
		0.2405	0.0515	0.1529	0.112	-0.1783	-0.2102	0.0392	4.7738*	-2.1119*	1.1115	-1.4508	0.5133	4.4308*	1.002
	KNN	(0.7906)	(0.246)	(0.3246)	(0.449)	(0.3564)	(0.5309)	(0.2207)	(2.702)	(1.0564)	(1.0264)	(1.654)	(1.1481)	(2.4476)	(1.4196)
		0.7618	*0.8349*	*0.6391*	*0.8037*	*0.6182*	*0.6932*	*0.8594*	*0.0952*	*0.0618*	*0.294*	*0.3926*	*0.6604*	*0.088*	*0.4898*
WTR		0.4573	0.5627***	0.7034***	-0.5081	0.1514	0.6201	-0.4832	1.843***	-0.6484***	-0.1322	-0.8287	-0.124	1.2022*	-0.6583**
	10/90	(0.6835)	(0.1726)	(0.2566)	(0.5357)	(0.4473)	(0.6358)	(0.3321)	(0.5933)	(0.1046)	(0.6178)	(0.6684)	(0.7471)	(0.6143)	(0.3138)
		0.5055	*0.0017*	*0.0076*	*0.3458*	*0.7358*	*0.3325*	*0.1498*	*0.0042*	*0*	*0.832*	*0.2249*	*0.8693*	*0.0601*	*0.0448*
		0.4288	0.3472***	0.2244	-0.2291	-0.2424	0.2597	0.0105	0.0298	-0.1015	0.7461*	1.1817	-0.0114	-1.0105	-0.0662
	30/70	(0.367)	(0.0782)	(0.2068)	(0.3264)	(0.2787)	(0.4149)	(0.1782)	(1.2171)	(0.0787)	(0.4073)	(0.8374)	(0.755)	(0.8221)	(0.3722)
		0.2462	*0*	*0.2812*	*0.4849*	*0.3871*	*0.5332*	*0.9533*	*0.9806*	*0.2072*	*0.0773*	*0.1688*	*0.9881*	*0.2289*	*0.8601*
		0.1863	0.3747***	0.0811	-0.3169	-0.1781	0.4215	-0.1163	0.2828	0.0168	0.5605	0.1247	-0.3445	0.0296	-0.3396
	50/50	(0.2803)	(0.0699)	(0.1278)	(0.27)	(0.2209)	(0.3236)	(0.1453)	(0.647)	(0.0512)	(0.3367)	(0.6038)	(0.675)	(0.4016)	(0.2579)
		0.5082	*0*	*0.5276*	*0.2441*	*0.4226*	*0.1967*	*0.426*	*0.6653*	*0.7448*	*0.1067*	*0.8378*	*0.6136*	*0.9418*	*0.1982*
		0.1773	0.3551***	-0.2481	-0.5373	0.0278	0.4292	-0.056	0.6224	0.1472	0.752	1.1228	-0.3036	-0.8493	-0.1193
	KNN	(0.4731)	(0.067)	(0.2007)	(0.3319)	(0.3062)	(0.4722)	(0.1681)	(1.3972)	(0.1266)	(0.5398)	(0.973)	(0.7668)	(1.18)	(0.4379)
		0.7088	*0*	*0.22*	*0.1095*	*0.9279*	*0.3663*	*0.74*	*0.6593*	*0.2544*	*0.1742*	*0.2579*	*0.695*	*0.4775*	*0.7872*
WST		0.7131	0.1958	0.1535	-0.4361	-0.9346*	0.1937	-0.1105	2.066	0.9711***	0.3176	-0.3483	1.2695	3.4848*	0.559
	10/90	(0.7158)	(0.1492)	(0.4423)	(0.5033)	(0.5015)	(0.5111)	(0.2245)	(2.0469)	(0.1806)	(1.5597)	(2.0011)	(2.2643)	(1.5454)	(0.7984)
		0.3229	*0.1941*	*0.7296*	*0.3895*	*0.0669*	*0.7059*	*0.6243*	*0.3591*	*0.003*	*0.8467*	*0.8687*	*0.5992*	*0.0738*	*0.5151*
		0.208	0.2141***	-0.0231	0.0095	-0.2617	-0.2624	-0.056	1.7685*	0.399*	1.0887	1.1993	1.4038	1.4318**	0.6508*
	30/70	(0.2936)	(0.0719)	(0.2301)	(0.3105)	(0.2722)	(0.2568)	(0.145)	(0.8433)	(0.1619)	(0.7758)	(0.9686)	(0.8864)	(0.532)	(0.2665)
		0.4812	*0.0041*	*0.9205*	*0.9757*	*0.3398*	*0.3106*	*0.7008*	*0.0901*	*0.0569*	*0.2195*	*0.2706*	*0.1741*	*0.0432*	*0.0585*
		0.131	0.0796	0.0873	0.3414	-0.2898	-0.4842**	-0.0776	0.987	0.2224*	0.7328	0.5953	0.827	0.3432	0.0573
	50/50	(0.2353)	(0.0577)	(0.2019)	(0.2214)	(0.205)	(0.2283)	(0.1044)	(0.5601)	(0.0993)	(0.7745)	(0.9212)	(0.6076)	(0.2341)	(0.1606)
		0.5795	*0.1723*	*0.6668*	*0.1279*	*0.1623*	*0.0378*	*0.4602*	*0.1383*	*0.0753*	*0.3875*	*0.5466*	*0.2316*	*0.2026*	*0.7357*
		-0.1335	0.2572***	-0.0384	0.0521	-0.4687	-0.0437	-0.0466	1.513	0.1658	0.2757	-0.7083	-0.2079	2.3674*	1.048**
	KNN	(0.4428)	(0.0937)	(0.3258)	(0.4319)	(0.3956)	(0.4839)	(0.2268)	(0.9279)	(0.1599)	(0.813)	(1.6415)	(1.8888)	(1.0852)	(0.3947)
		0.7641	*0.0078*	*0.9065*	*0.9044*	*0.2403*	*0.9282*	*0.8378*	*0.1639*	*0.3475*	*0.7483*	*0.6841*	*0.9166*	*0.081*	*0.0451*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 72. Thailand's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-3.41%	-0.1607	-0.1775	-0.3081	44.93%	1.1274	2.1914	2.2596
		Brown	7.50%	0.2433	0.2822	0.4707	9.95%	0.3749	0.4455	0.7444
	30/70	Green	-0.56%	-0.0649	-0.0711	-0.1228	28.37%	1.8115	2.4021	4.3407
		Brown	5.25%	0.1665	0.1819	0.3198	33.62%	1.5561	2.2344	3.6489
	50/50	Green	2.55%	0.0749	0.0820	0.1424	23.26%	1.4178	1.8059	3.1857
		Brown	4.88%	0.1499	0.1577	0.2931	18.66%	1.0507	1.1613	2.3699
	KNN	Green	-4.07%	-0.1844	-0.1909	-0.3573	22.52%	1.1181	1.1160	2.8273
		Brown	-0.69%	-0.0688	-0.0686	-0.1324	66.76%	1.9744	4.0979	4.5395
WTR	10/90	Green	3.53%	0.1146	0.1100	0.2460	0.96%	-0.0010	-0.0009	-0.0025
		Brown	5.87%	0.1824	0.2105	0.3451	6.23%	0.1816	0.2126	0.3418
	30/70	Green	-2.13%	-0.1385	-0.1498	-0.2573	7.52%	0.1779	0.1979	0.3501
		Brown	3.24%	0.0966	0.1011	0.1842	10.31%	0.3260	0.3318	0.6582
	50/50	Green	4.27%	0.1604	0.1741	0.3139	6.76%	0.1856	0.2045	0.3666
		Brown	5.13%	0.1741	0.1770	0.3362	4.42%	0.1151	0.1253	0.2223
	KNN	Green	6.23%	0.2578	0.2525	0.5545	2.01%	0.0274	0.0286	0.0527
		Brown	8.95%	0.3282	0.3500	0.6565	11.23%	0.3105	0.3032	0.6575
WST	10/90	Green	10.27%	0.4610	0.4692	0.9518	-14.54%	-1.1811	-1.0485	-2.0417
		Brown	10.66%	0.4647	0.4705	1.0217	12.22%	0.2476	0.3238	0.4968
	30/70	Green	8.51%	0.3550	0.3801	0.7225	-15.20%	-0.5653	-0.7232	-0.8938
		Brown	10.18%	0.3872	0.4202	0.7724	-2.02%	-0.0682	-0.0796	-0.1300
	50/50	Green	9.30%	0.3698	0.4076	0.7390	-6.78%	-0.2110	-0.2731	-0.3692
		Brown	9.22%	0.3649	0.3913	0.7160	3.08%	0.0447	0.0482	0.0878
	KNN	Green	10.81%	0.4969	0.5181	1.0265	-8.57%	-0.2513	-0.3223	-0.4368
		Brown	6.28%	0.2341	0.2782	0.4441	12.22%	0.2476	0.3238	0.4968

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 73. Russian's sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.3261	-0.2391	0.855	0.7302	0.7392	-0.7991	0.5699	6.0726***	0.4336	-4.415**	-0.3316	-6.5101**	-0.9698	0.4982
		(1.3376)	(0.175)	(0.7649)	(1.3575)	(0.9961)	(1.58)	(0.6521)	(1.3254)	(0.4038)	(1.249)	(0.566)	(1.7077)	(1.1867)	(0.5176)
		0.8086	*0.1792*	*0.2702*	*0.5936*	*0.4623*	*0.6157*	*0.3873*	*0.0059*	*0.3319*	*0.0167*	*0.5834*	*0.0125*	*0.451*	*0.38*
	30/70	1.4034	0.0592	0.6129	0.4612	1.0171	0.4196	0.2888	1.8492	-0.1833	0.3967	2.5832	0.5882	-1.0883	0.6923
		(1.1652)	(0.2053)	(0.5468)	(0.7506)	(0.8374)	(0.9666)	(0.3502)	(2.132)	(0.2817)	(1.5529)	(1.6549)	(1.8536)	(1.4388)	(1.2341)
		0.2353	*0.7746*	*0.2689*	*0.5423*	*0.2315*	*0.6665*	*0.4143*	*0.4254*	*0.5439*	*0.8086*	*0.1793*	*0.7638*	*0.4835*	*0.5991*
	50/50	1.4583*	-0.0679	0.6097**	-0.461	0.5764	1.6983***	-0.08	-1.6226	0.3647	0.6148	0.9183	1.1458	-0.0499	0.1695
		(0.7791)	(0.1305)	(0.2858)	(0.5872)	(0.4676)	(0.6066)	(0.2517)	(2.0989)	(0.2331)	(1.9807)	(1.1674)	(1.4409)	(1.173)	(1.0195)
		0.0684	*0.6057*	*0.039*	*0.437*	*0.2247*	*0.0078*	*0.7524*	*0.4744*	*0.1785*	*0.7688*	*0.4671*	*0.4626*	*0.9677*	*0.8744*
	KNN	0.4075	-0.0405	0.4257	1.2966	0.6628	-1.095	0.7379	5.1218*	-0.5757*	-0.3925	1.7795	-1.7065	-0.5121	0.8338
		(0.9717)	(0.1603)	(0.7468)	(0.8339)	(0.8529)	(1.2694)	(0.4846)	(2.0442)	(0.2327)	(1.9015)	(1.3466)	(1.4421)	(1.0454)	(1.1061)
		0.6771	*0.8018*	*0.5718*	*0.1277*	*0.4415*	*0.3934*	*0.1355*	*0.0541*	*0.0563*	*0.8446*	*0.2436*	*0.2899*	*0.645*	*0.4849*
WTR	10/90	1.6413*	-0.284	-0.9229*	-0.2269	-0.2106	-0.2302	0.2083	-0.4969	0.5299**	-1.3033**	0.7358	0.9804	-0.2178	0.0617
		(0.9146)	(0.2267)	(0.5121)	(0.7855)	(0.828)	(1.0751)	(0.3578)	(1.2631)	(0.2477)	(0.5415)	(0.7648)	(0.9399)	(0.8761)	(0.5091)
		0.0754	*0.2129*	*0.0742*	*0.7732*	*0.7997*	*0.8308*	*0.5617*	*0.696*	*0.0384*	*0.0207*	*0.3416*	*0.3031*	*0.8049*	*0.9041*
	30/70	0.9275	-0.2366**	-0.268	-0.1483	-0.3718	-0.6371	-0.1532	-0.943	0.6072**	-0.5291	-0.4794	-0.2921	1.0509	0.2907
		(0.6075)	(0.11)	(0.2523)	(0.4619)	(0.5723)	(0.6089)	(0.242)	(0.8729)	(0.2654)	(0.5221)	(0.6916)	(0.7252)	(0.6765)	(0.2733)
		0.1296	*0.0336*	*0.2903*	*0.7488*	*0.5173*	*0.2976*	*0.528*	*0.2863*	*0.0274*	*0.3168*	*0.4921*	*0.6892*	*0.128*	*0.2937*
	50/50	0.7181**	-0.0947	-0.2266	0.1545	-0.2096	-0.332	-0.1029	-0.9741**	0.179	-0.5095	0.2158	-0.1005	-0.3025	0.3737
		(0.3236)	(0.064)	(0.202)	(0.2898)	(0.2985)	(0.3958)	(0.1704)	(0.4765)	(0.1981)	(0.3768)	(0.4651)	(0.3538)	(0.5233)	(0.2312)
		0.0285	*0.1418*	*0.2643*	*0.595*	*0.484*	*0.4033*	*0.547*	*0.0474*	*0.3715*	*0.1837*	*0.6451*	*0.7779*	*0.5663*	*0.1137*
	KNN	1.3829	-0.164	-0.2766	-1.1791	-2.035***	-0.1509	0.2	-0.5457	0.548	-0.7748	0.9038	-0.1042	0.8152	1.1242
		(0.8821)	(0.1912)	(0.4524)	(0.8173)	(0.7015)	(0.9987)	(0.4014)	(1.3321)	(0.4558)	(1.0599)	(1.464)	(1.3107)	(1.0762)	(0.6745)
		0.1197	*0.3927*	*0.5423*	*0.1519*	*0.0045*	*0.8802*	*0.6193*	*0.6842*	*0.2362*	*0.4689*	*0.5404*	*0.937*	*0.4531*	*0.1032*
WST	10/90	1.0054	-0.0905	-0.8466	0.8294	-0.8544	-1.8776	0.9749	-5.0855	1.8841**	0.4183	0.0377	0.3836	4.6791	0.5023
		(1.0236)	(0.2396)	(0.9197)	(1.374)	(0.9573)	(1.2159)	(0.7122)	(3.1224)	(0.8045)	(1.8234)	(2.2907)	(2.3809)	(2.7581)	(1.0385)
		0.3281	*0.7064*	*0.3592*	*0.5473*	*0.374*	*0.1253*	*0.1737*	*0.1218*	*0.0316*	*0.8213*	*0.9871*	*0.8739*	*0.108*	*0.6348*
	30/70	0.3806	-0.2478*	-0.1218	0.2308	-0.6002	-1.4741**	0.3089	1.5669	0.7834	-0.8551	-3.1035**	-1.8742	3.0852*	-0.0479
		(0.6138)	(0.1473)	(0.4251)	(0.5507)	(0.6922)	(0.671)	(0.3547)	(1.6612)	(0.5913)	(0.734)	(1.1657)	(1.2944)	(1.5648)	(0.3795)
		0.5365	*0.0954*	*0.775*	*0.676*	*0.3878*	*0.0301*	*0.3857*	*0.3588*	*0.2027*	*0.2601*	*0.0164*	*0.1658*	*0.0652*	*0.9011*
	50/50	-0.1025	-0.0834	-0.1992	0.0488	-0.581	-1.085**	0.5058*	1.5256	0.3291	-0.9624	-2.1323	-0.9276	1.7573	-0.2679
		(0.5446)	(0.1334)	(0.3196)	(0.4278)	(0.5643)	(0.5399)	(0.3017)	(1.4001)	(0.6673)	(0.7781)	(1.2559)	(1.2327)	(1.5942)	(0.371)
		0.8511	*0.5329*	*0.5345*	*0.9093*	*0.3055*	*0.0468*	*0.0964*	*0.2911*	*0.6282*	*0.233*	*0.1078*	*0.462*	*0.2857*	*0.48*
	KNN	0.1576	0.1935	-0.42	-0.2421	-0.475	-0.1393	0.3504	0.3248	1.0482	-0.7267	-0.5812	0.8282	3.6602*	-0.08
		(0.7147)	(0.1652)	(0.4711)	(0.632)	(0.7558)	(0.7822)	(0.347)	(1.6901)	(0.8102)	(0.7729)	(1.1621)	(1.2197)	(1.8894)	(0.4374)
		0.8259	*0.2438*	*0.3746*	*0.7024*	*0.531*	*0.859*	*0.3147*	*0.8499*	*0.213*	*0.3603*	*0.6234*	*0.5063*	*0.0695*	*0.8571*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 74. Russian's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-0.70%	-0.0663	-0.0613	-0.1377	Inadequate sample size			
		Brown	2.83%	0.0627	0.0511	0.1309	34.28%	1.0799	1.0543	3.0807
	30/70	Green	5.04%	0.1714	0.1529	0.4014	-7.77%	-0.4405	-0.4117	-0.8766
		Brown	24.97%	0.8693	0.9936	2.1671	39.14%	1.7613	1.5500	6.6136
	50/50	Green	13.29%	0.4740	0.4609	1.1561	43.12%	1.8537	1.7958	5.9759
		Brown	24.30%	0.8775	0.9282	2.2276	44.05%	2.1642	2.0905	8.3830
	KNN	Green	7.54%	0.2758	0.2838	0.6206	-7.77%	-0.4405	-0.4117	-0.8766
		Brown	20.93%	0.6972	0.6791	2.0450	48.65%	1.6214	1.7542	5.0641
WTR	10/90	Green	-8.69%	-0.2783	-0.2552	-0.5879	19.28%	0.6202	0.5522	1.5863
		Brown	9.65%	0.2958	0.2892	0.6333	14.48%	0.3725	0.3425	0.9529
	30/70	Green	4.55%	0.1159	0.1147	0.2470	40.86%	1.5804	1.6408	4.0222
		Brown	14.17%	0.5349	0.6216	1.1540	28.97%	1.1362	0.9023	3.6038
	50/50	Green	3.43%	0.0919	0.0891	0.1970	31.00%	1.1468	1.0692	3.0626
		Brown	9.56%	0.3279	0.3601	0.7013	20.03%	0.7616	0.6282	2.3211
	KNN	Green	0.64%	-0.0107	-0.0111	-0.0245	37.84%	1.4089	1.4225	3.5770
		Brown	15.84%	0.5582	0.6400	1.2065	29.99%	0.7538	0.6192	2.5472
WST	10/90	Green	-100.00%	-2.3061	-1.6815	18.7232	58.33%	1.8231	3.3097	4.0425
		Brown	13.28%	0.4320	0.5037	0.9155	42.46%	1.5284	2.4378	3.2595
	30/70	Green	4.02%	0.1016	0.0912	0.2276	21.24%	0.8738	1.0231	1.8827
		Brown	11.67%	0.4494	0.5019	0.9786	41.49%	1.9210	3.0057	4.5807
	50/50	Green	5.81%	0.1675	0.1687	0.3626	24.57%	1.1168	1.2690	2.5098
		Brown	10.11%	0.4051	0.4440	0.8703	36.20%	1.7557	3.1195	3.9332
	KNN	Green	6.00%	0.1724	0.1544	0.3811	21.48%	0.8779	1.0395	1.8767
		Brown	11.51%	0.3667	0.3955	0.7652	53.22%	1.7517	2.4247	4.1881

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 75. Mexican sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
		0.1868	0.201	0.2748	-0.0129	-0.3926	-0.2228	-0.5322	-2.7938	0.3504	-1.5877	0.4577	0.4787	-1.065	0.5996
	10/90	(0.7676)	(0.2438)	(0.5417)	(0.4895)	(0.6503)	(0.6688)	(0.3573)	(1.8956)	(0.797)	(1.2508)	(0.8263)	(1.5137)	(1.3668)	(0.64)
		0.8084	*0.4123*	*0.6134*	*0.9791*	*0.5478*	*0.7399*	*0.1404*	*0.1588*	*0.6657*	*0.2214*	*0.5869*	*0.7557*	*0.4466*	*0.362*
		-0.6115	0.2889	0.358	-0.381	0.1672	0.7942	-0.0099	0.9283	0.2073	-0.8459	-0.2568	-0.7743	1.1438	-0.0201
	30/70	(0.702)	(0.1821)	(0.3841)	(0.4373)	(0.4774)	(0.7313)	(0.3384)	(0.6963)	(0.2435)	(0.7598)	(0.4104)	(0.5775)	(0.8225)	(0.2756)
		0.3864	*0.1166*	*0.3542*	*0.3863*	*0.7271*	*0.2809*	*0.9766*	*0.2001*	*0.4065*	*0.2811*	*0.5398*	*0.1976*	*0.1823*	*0.9426*
GHG		-0.3384	0.135	0.4586	-0.4112	0.0099	0.5105	-0.0558	0.3078	0.3451*	-0.1545	-0.3986	-0.4829	1.3851*	0.0945
	50/50	(0.5785)	(0.1665)	(0.2858)	(0.3276)	(0.346)	(0.6563)	(0.2661)	(0.6125)	(0.1799)	(0.321)	(0.3497)	(0.3288)	(0.6946)	(0.2405)
		0.5603	*0.4201*	*0.1127*	*0.2132*	*0.9772*	*0.439*	*0.8344*	*0.6217*	*0.072*	*0.6364*	*0.2702*	*0.1602*	*0.0624*	*0.6993*
		-0.5581	0.24	-0.045	-0.5025	-0.2889	0.7	-0.313	-0.9157	0.0913	-1.6506**	-0.2605	-0.8081	0.0616	-0.1591
	KNN	(0.7682)	(0.1858)	(0.3853)	(0.487)	(0.4932)	(0.6039)	(0.3332)	(1.5884)	(0.5813)	(0.7372)	(0.6268)	(0.9453)	(1.0738)	(0.4565)
		0.4697	*0.2002*	*0.9074*	*0.3054*	*0.5598*	*0.25*	*0.3504*	*0.5718*	*0.877*	*0.0388*	*0.683*	*0.4045*	*0.9549*	*0.7318*
		0.2556	0.1766	-0.6228	-0.4545	-0.8937	1.427	0.1971							
	10/90	(0.8615)	(0.3252)	(0.5434)	(0.7306)	(0.6927)	(1.1425)	(0.4392)							
		0.7674	*0.5884*	*0.2548*	*0.5354*	*0.2003*	*0.2149*	*0.6547*							
		-0.522	0.1688	0.2866	-0.3967	-0.4693	0.4429	-0.2208							
	30/70	(0.451)	(0.1236)	(0.2634)	(0.2664)	(0.3143)	(0.498)	(0.2003)							
		0.2501	*0.1757*	*0.2793*	*0.1399*	*0.139*	*0.3762*	*0.2734*							
WTR		-0.4375	0.0882	0.0858	-0.2397	-0.3513	0.1686	-0.1145	Inadequate sample size						
	50/50	(0.368)	(0.1085)	(0.2119)	(0.186)	(0.253)	(0.4107)	(0.1546)							
		0.2377	*0.4186*	*0.6864*	*0.201*	*0.1685*	*0.6824*	*0.4611*							
		0.264	0.2201	0.4511	-0.9757**	-0.5599	1.1287	-0.4637							
	KNN	(0.7514)	(0.1912)	(0.433)	(0.4725)	(0.4405)	(0.8824)	(0.402)							
		0.7262	*0.2526*	*0.3004*	*0.0418*	*0.207*	*0.2042*	*0.2518*							
		0.3586	0.0071	-0.1115	-0.3791	-0.5139	1.3498	0.1574	0.0216	0.1295	0.7612	0.4933	-0.3482	-2.209	-0.874
	10/90	(1.1498)	(0.3688)	(0.5971)	(0.7772)	(0.8822)	(1.1771)	(0.4486)	(1.157)	(0.6092)	(0.9122)	(0.8896)	(0.8836)	(1.4392)	(0.5335)
		0.756	*0.9846*	*0.8523*	*0.627*	*0.5619*	*0.2551*	*0.7267*	*0.9852*	*0.8331*	*0.4109*	*0.5835*	*0.6964*	*0.1356*	*0.1122*
		0.0858	0.1216	0.2264	-0.0893	-0.4539	0.3236	0.1257	1.0252	0.2277	-0.3247	-0.1371	-0.8719	-0.7152	-0.3485
	30/70	(0.6744)	(0.2221)	(0.3819)	(0.4244)	(0.5054)	(0.7998)	(0.288)	(0.9478)	(0.353)	(0.6061)	(0.4951)	(0.5302)	(0.7445)	(0.3666)
		0.899	*0.5857*	*0.555*	*0.8338*	*0.3719*	*0.6869*	*0.6639*	*0.2883*	*0.524*	*0.5962*	*0.7838*	*0.1109*	*0.3446*	*0.3497*
WST		0.3756	-0.1013	0.0742	-0.1574	-0.1522	0.3197	-0.0341	1.0275	0.0436	-0.0542	-0.2715	-0.4411	-0.2398	-0.4144
	50/50	(0.4581)	(0.133)	(0.2586)	(0.3017)	(0.3159)	(0.4566)	(0.2079)	(0.7277)	(0.2554)	(0.4113)	(0.3088)	(0.6408)	(0.4588)	(0.2542)
		0.4148	*0.4486*	*0.775*	*0.6034*	*0.6314*	*0.486*	*0.8702*	*0.1686*	*0.8658*	*0.8961*	*0.3865*	*0.4968*	*0.6052*	*0.1138*
		-0.1003	0.2446	-0.4091	0.0477	-0.7044	0.619	-0.48	1.5155	0.305	-1.0169	-0.0214	-1.8187***	-0.9821	-0.9103*
	KNN	(1.065)	(0.2472)	(0.4686)	(0.5335)	(0.7699)	(0.5292)	(0.498)	(1.8265)	(0.447)	(0.8586)	(0.5746)	(0.5615)	(0.7025)	(0.4647)
		0.9252	*0.3255*	*0.3854*	*0.929*	*0.3631*	*0.2458*	*0.3381*	*0.4135*	*0.5005*	*0.2459*	*0.9705*	*0.003*	*0.1727*	*0.0598*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 76. Mexican sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-3.49%	-0.1619	-0.1327	-0.4465	28.17%	1.0368	1.2052	2.3587
		Brown	-3.11%	-0.1323	-0.1243	-0.3056	12.14%	0.4678	0.5254	0.9353
	30/70	Green	6.99%	0.2587	0.2535	0.6107	5.96%	0.2610	0.2716	0.5364
		Brown	3.00%	0.0757	0.0729	0.1664	24.55%	1.1495	1.6953	2.4146
	50/50	Green	6.69%	0.2433	0.2411	0.5641	13.14%	0.6803	0.7603	1.4661
		Brown	4.10%	0.1240	0.1153	0.2885	26.48%	1.3121	2.0267	2.8315
	KNN	Green	9.86%	0.3101	0.3259	0.7845	20.66%	0.9864	1.1554	2.1965
		Brown	5.68%	0.1622	0.1570	0.3693	9.02%	0.2953	0.3482	0.5636
WTR	10/90	Green	-2.90%	-0.1097	-0.1189	-0.2355	Inadequate sample size			
		Brown	5.22%	0.1621	0.1766	0.3276				
	30/70	Green	4.12%	0.1401	0.1417	0.2964				
		Brown	-2.07%	-0.1320	-0.1213	-0.2767				
	50/50	Green	3.27%	0.1023	0.1034	0.2160				
		Brown	-1.64%	-0.1199	-0.1070	-0.2662				
	KNN	Green	5.76%	0.2256	0.2395	0.4619				
		Brown	8.10%	0.2301	0.2627	0.4645				
WST	10/90	Green	-0.78%	-0.0486	-0.0483	-0.1119	14.43%	0.4183	0.3761	0.9640
		Brown	5.18%	0.1412	0.1480	0.2872	3.23%	0.0641	0.0775	0.1190
	30/70	Green	1.40%	0.0151	0.0160	0.0320	5.55%	0.1597	0.1460	0.3573
		Brown	2.56%	0.0608	0.0626	0.1243	16.81%	0.6020	0.6487	1.3000
	50/50	Green	2.03%	0.0424	0.0437	0.0925	9.60%	0.3387	0.3238	0.7969
		Brown	5.62%	0.2243	0.2038	0.4979	19.79%	0.7759	0.6929	1.8860
	KNN	Green	10.96%	0.3190	0.3714	0.6416	7.30%	0.2284	0.2089	0.5260
		Brown	7.83%	0.2214	0.2434	0.4726	16.30%	0.4044	0.5312	0.7953

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 77. Industrial's sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	0.2242	-0.0716	0.2623	0.3521	0.4321	0.2008	-0.0215	-0.4905	0.0972	0.0809	0.0199	0.0299	0.0892	-0.198
		(0.4214)	(0.1113)	(0.253)	(0.3231)	(0.3343)	(0.4167)	(0.1827)	(0.4959)	(0.1533)	(0.4024)	(0.3417)	(0.4132)	(0.5281)	(0.1836)
		0.5954	*0.5207*	*0.3013*	*0.2774*	*0.1979*	*0.6304*	*0.9066*	*0.3244*	*0.5272*	*0.841*	*0.9537*	*0.9425*	*0.8661*	*0.2827*
	30/70	0.0202	-0.1378**	-0.0568	0.3133**	0.2912	-0.0287	-0.0102	0.2394	0.0708	0.1761	0.2103	-0.2778	-0.3433	-0.2818
		(0.2157)	(0.0531)	(0.1771)	(0.1502)	(0.1771)	(0.1768)	(0.0711)	(0.3324)	(0.0922)	(0.1939)	(0.2913)	(0.2749)	(0.3365)	(0.1781)
		0.9256	*0.0103*	*0.7489*	*0.0385*	*0.1019*	*0.8712*	*0.8864*	*0.4727*	*0.4438*	*0.3655*	*0.4714*	*0.314*	*0.3093*	*0.1159*
	50/50	0.1242	-0.0229	0.1024	-0.02	0.27*	0.0065	0.0357	0.1867	0.0359	0.1506	0.1023	-0.4028**	-0.1733	-0.1138
		(0.1359)	(0.0314)	(0.0827)	(0.1254)	(0.1402)	(0.1872)	(0.0633)	(0.2251)	(0.0555)	(0.1485)	(0.1754)	(0.1933)	(0.2196)	(0.1181)
		0.3621	*0.4655*	*0.2173*	*0.8737*	*0.0558*	*0.9725*	*0.5734*	*0.4081*	*0.5184*	*0.3121*	*0.5605*	*0.039*	*0.4314*	*0.3369*
	KNN	0.478	-0.1735**	-0.2325	0.5431*	0.6496**	-0.0358	-0.0313	0.2672	0.0398	0.4199	0.624	0.2193	-0.5163	-0.0112
		(0.3355)	(0.0704)	(0.232)	(0.284)	(0.2864)	(0.2978)	(0.0984)	(0.7013)	(0.1656)	(0.569)	(0.4545)	(0.5371)	(0.7638)	(0.2876)
		0.156	*0.0148*	*0.3177*	*0.0575*	*0.0246*	*0.9046*	*0.7509*	*0.7038*	*0.8106*	*0.4618*	*0.172*	*0.6836*	*0.5003*	*0.9689*
WTR	10/90	-0.1384	-0.123	-0.765***	0.1136	-0.2649	0.2129	-0.1577	-0.2445	0.2233*	-0.4348	0.6821	-0.3519	-0.2028	0.656***
		(0.3312)	(0.0951)	(0.2625)	(0.2199)	(0.2634)	(0.3613)	(0.1455)	(0.3917)	(0.1207)	(0.3071)	(0.5074)	(0.4507)	(0.6995)	(0.2468)
		0.6765	*0.1975*	*0.004*	*0.606*	*0.316*	*0.5565*	*0.2801*	*0.5334*	*0.0662*	*0.1589*	*0.1809*	*0.4362*	*0.7722*	*0.0087*
	30/70	-0.1419	-0.0478	0.1219	0.4624***	0.2671	-0.425***	0.0067	-0.6223**	0.1441**	0.0216	0.6162***	0.1026	-0.4072	0.1121
		(0.1603)	(0.0485)	(0.1037)	(0.1293)	(0.1843)	(0.1552)	(0.0612)	(0.2834)	(0.0672)	(0.22)	(0.21)	(0.1891)	(0.2983)	(0.0917)
		0.3775	*0.3252*	*0.2416*	*0.0004*	*0.1492*	*0.0068*	*0.913*	*0.0296*	*0.0336*	*0.9218*	*0.0039*	*0.5883*	*0.1743*	*0.2236*
	50/50	0.105	0.0566	0.3229*	0.2763	0.1653	-0.3857	0.1704**	-0.4014*	0.0569	0.0714	0.3141*	-0.0524	0.0239	0.0682
		(0.1683)	(0.0537)	(0.1701)	(0.1884)	(0.1753)	(0.268)	(0.0736)	(0.2322)	(0.0529)	(0.1341)	(0.1689)	(0.1963)	(0.2242)	(0.0876)
		0.5336	*0.293*	*0.0593*	*0.1444*	*0.347*	*0.1519*	*0.0217*	*0.0859*	*0.2834*	*0.5955*	*0.065*	*0.7897*	*0.9152*	*0.4374*
	KNN	-0.6479**	-0.0749	-0.362*	0.0265	-0.1274	0.0015	0.0504	-0.4435	0.2065	0.2722	0.6979	-0.4109	-0.0875	0.0313
		(0.288)	(0.0761)	(0.2049)	(0.1847)	(0.3097)	(0.257)	(0.0897)	(0.629)	(0.168)	(0.3683)	(0.6279)	(0.5954)	(0.7503)	(0.3307)
		0.0257	*0.3265*	*0.079*	*0.886*	*0.6814*	*0.9955*	*0.5745*	*0.4818*	*0.2208*	*0.4611*	*0.2681*	*0.4911*	*0.9073*	*0.9248*
WST	10/90	0.0094	-0.1275	-0.2398	-0.3233	-0.6759*	1.1578**	-0.3002**	-0.617	0.2024	0.0613	0.8927*	0.351	-0.565	-0.1913
		(0.4258)	(0.0884)	(0.2611)	(0.2987)	(0.3568)	(0.4707)	(0.1493)	(0.5904)	(0.1873)	(0.4234)	(0.5124)	(0.5018)	(0.6828)	(0.3331)
		0.9824	*0.1509*	*0.3598*	*0.2807*	*0.0599*	*0.0149*	*0.046*	*0.2977*	*0.2817*	*0.885*	*0.0835*	*0.4854*	*0.4092*	*0.5668*
	30/70	0.047	-0.0331	0.2976*	-0.2348	-0.111	-0.0628	0.0715	0.0518	0.1173	0.0992	0.3456	0.3525	-0.5587*	-0.1522
		(0.2222)	(0.055)	(0.1734)	(0.2354)	(0.2178)	(0.316)	(0.0943)	(0.3123)	(0.0808)	(0.2079)	(0.2635)	(0.2609)	(0.3362)	(0.1521)
		0.8326	*0.5488*	*0.088*	*0.32*	*0.6112*	*0.8427*	*0.4491*	*0.8685*	*0.1487*	*0.634*	*0.1917*	*0.1788*	*0.0986*	*0.3186*
	50/50	0.2154	-0.0415	0.1393	-0.0765	0.0358	-0.166	-0.0021	-0.045	-0.1332*	0.4049	-0.0585	0.1713	0.0309	0.0473
		(0.1818)	(0.0397)	(0.1214)	(0.1659)	(0.1633)	(0.2284)	(0.072)	(0.3305)	(0.0798)	(0.2789)	(0.308)	(0.2534)	(0.3598)	(0.1019)
		0.2377	*0.2972*	*0.2528*	*0.6452*	*0.8268*	*0.4682*	*0.9767*	*0.8919*	*0.0971*	*0.1486*	*0.8496*	*0.4999*	*0.9318*	*0.6431*
	KNN	0.5816	-0.2223**	-0.2955	-0.1458	-0.7784*	0.9142**	-0.1765	-0.3651	0.1008	-0.0492	0.4389	0.0307	-0.3812	-0.4325
		(0.4695)	(0.109)	(0.3403)	(0.2992)	(0.4078)	(0.4511)	(0.139)	(0.7195)	(0.1892)	(0.425)	(0.6048)	(0.6622)	(0.6526)	(0.3043)
		0.2171	*0.0429*	*0.3864*	*0.6266*	*0.0579*	*0.0442*	*0.2059*	*0.6126*	*0.5949*	*0.908*	*0.4691*	*0.9631*	*0.56*	*0.1573*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 78. Industrial's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	3.66%	0.1192	0.1199	0.2418	14.94%	0.7335	0.7159	1.9098
		Brown	6.80%	0.2522	0.2257	0.6287	7.38%	0.2719	0.3034	0.5363
	30/70	Green	8.21%	0.3564	0.3135	0.8628	11.08%	0.5565	0.5350	1.2730
		Brown	8.61%	0.4219	0.3799	0.9841	9.87%	0.3922	0.4137	0.8888
	50/50	Green	6.15%	0.2523	0.2291	0.5921	11.65%	0.5872	0.5557	1.3760
		Brown	9.39%	0.4277	0.3720	1.0679	10.84%	0.4692	0.4593	1.0766
	KNN	Green	2.85%	0.0839	0.0797	0.1779	11.32%	0.5671	0.5550	1.2931
		Brown	9.21%	0.4011	0.3747	0.9541	9.63%	0.2634	0.3118	0.5071
WTR	10/90	Green	5.33%	0.1945	0.1863	0.4672	11.71%	0.4930	0.4968	1.0314
		Brown	2.02%	0.0546	0.0515	0.1157	8.74%	0.2852	0.2768	0.6877
	30/70	Green	8.56%	0.4071	0.3573	0.9638	15.12%	0.7958	0.7781	1.7948
		Brown	6.46%	0.2850	0.2640	0.6540	7.83%	0.3146	0.2828	0.7471
	50/50	Green	5.38%	0.2249	0.2011	0.5143	14.78%	0.7594	0.7347	1.7134
		Brown	7.64%	0.3231	0.2997	0.7900	8.66%	0.3832	0.3610	0.8785
	KNN	Green	7.77%	0.3186	0.2981	0.7328	14.71%	0.7663	0.7528	1.7178
		Brown	-1.01%	-0.1018	-0.0960	-0.2150	4.62%	0.1081	0.1119	0.2304
WST	10/90	Green	5.94%	0.2490	0.2238	0.5676	12.18%	0.5456	0.6004	1.1088
		Brown	2.15%	0.0570	0.0557	0.1156	3.03%	0.0719	0.0705	0.2355
	30/70	Green	5.75%	0.2402	0.2185	0.5537	8.08%	0.3800	0.3850	0.7746
		Brown	6.91%	0.3223	0.2831	0.8254	10.74%	0.4568	0.4521	1.0459
	50/50	Green	5.34%	0.2224	0.1962	0.5259	10.28%	0.4030	0.3832	0.9510
		Brown	8.31%	0.3815	0.3357	0.9394	9.64%	0.4301	0.4351	0.9629
	KNN	Green	2.37%	0.0609	0.0547	0.1534	7.88%	0.3737	0.3916	0.7634
		Brown	4.80%	0.1839	0.1777	0.3904	-0.67%	-0.0535	-0.0555	-0.1071

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 79. Material sector's sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.5661	0.3406***	0.1549	0.9868***	-0.098	-1.2606**	0.2116	0.4314	0.5198***	0.1195	-0.2699	-0.942**	0.7298	-0.4614*
	10/90	(0.3515)	(0.0694)	(0.2322)	(0.3106)	(0.3382)	(0.4885)	(0.1724)	(0.5255)	(0.1382)	(0.4007)	(0.4684)	(0.4745)	(0.6977)	(0.263)
		0.1092	*0*	*0.5056*	*0.0018*	*0.7724*	*0.0107*	*0.2213*	*0.4131*	*0.0002*	*0.766*	*0.5654*	*0.0491*	*0.2974*	*0.0816*
		0.1071	0.1441**	-0.295	0.8758***	-0.1685	-1.0834***	0.2278**	-0.2355	0.2507**	0.4708*	-0.2363	-0.3035	0.2837	-0.6333***
	30/70	(0.2771)	(0.059)	(0.2291)	(0.2044)	(0.2577)	(0.3643)	(0.0998)	(0.3493)	(0.101)	(0.2665)	(0.2987)	(0.3213)	(0.596)	(0.189)
		0.6995	*0.0157*	*0.1995*	*0*	*0.5141*	*0.0034*	*0.0237*	*0.5012*	*0.0143*	*0.0796*	*0.4302*	*0.3465*	*0.6349*	*0.001*
		0.1512	0.0776**	-0.2737	0.546***	-0.1966	-0.6859**	0.2132**	-0.2095	-0.0278	0.295	-0.0244	-0.0851	-0.4224	-0.4253***
	50/50	(0.2013)	(0.0356)	(0.181)	(0.1761)	(0.1799)	(0.2711)	(0.0869)	(0.2643)	(0.1025)	(0.2687)	(0.263)	(0.2601)	(0.5288)	(0.1478)
		0.4536	*0.0308*	*0.1323*	*0.0023*	*0.2761*	*0.0123*	*0.0151*	*0.4294*	*0.7865*	*0.2741*	*0.9261*	*0.7441*	*0.4258*	*0.0047*
		-0.6225*	0.3485***	0.2912	0.8383***	-0.0372	-1.0108***	0.1011	-0.0703	0.0599	0.3634	-0.2345	-0.6067	-0.2819	-0.6643**
	KNN	(0.3404)	(0.0739)	(0.2094)	(0.2699)	(0.3407)	(0.3232)	(0.1252)	(0.5763)	(0.1456)	(0.4662)	(0.5069)	(0.6112)	(0.8849)	(0.3274)
		0.0692	*0*	*0.166*	*0.0022*	*0.9131*	*0.0021*	*0.4206*	*0.903*	*0.6815*	*0.437*	*0.6444*	*0.3226*	*0.7506*	*0.0444*
WTR		-0.2076	-0.1215	-0.0643	0.3666	-0.4382*	0.0708	-0.161	0.9601**	0.4762***	-0.0939	0.0134	-0.3567	0.5145	-0.1515
	10/90	(0.3862)	(0.1152)	(0.2244)	(0.229)	(0.2363)	(0.3844)	(0.11)	(0.4665)	(0.1785)	(0.3614)	(0.3493)	(0.5162)	(0.5715)	(0.1635)
		0.5916	*0.2934*	*0.7748*	*0.1112*	*0.0654*	*0.8541*	*0.1454*	*0.0413*	*0.0085*	*0.7952*	*0.9695*	*0.4906*	*0.3694*	*0.3555*
		-0.1215	0.1793***	0.1298	0.5133**	-0.1909	-0.4813	0.1288	0.1248	0.027	-0.1168	-0.424	-0.6351*	0.5096	0.1498
	30/70	(0.2866)	(0.0676)	(0.1735)	(0.2432)	(0.2837)	(0.3187)	(0.1141)	(0.3899)	(0.0994)	(0.2664)	(0.326)	(0.3462)	(0.3772)	(0.2082)
		0.6723	*0.0087*	*0.4552*	*0.0363*	*0.502*	*0.1328*	*0.2605*	*0.7493*	*0.7866*	*0.6618*	*0.1955*	*0.0686*	*0.1788*	*0.4729*
		-0.1739	-0.0102	0.3034**	-0.0879	-0.1615	0.1814	-0.1503**	0.0467	0.0113	0.1516	-0.5657**	-0.6585**	0.7923**	0.2017
	50/50	(0.236)	(0.0519)	(0.1469)	(0.2097)	(0.2339)	(0.3374)	(0.0731)	(0.3287)	(0.0863)	(0.2246)	(0.2518)	(0.3016)	(0.3236)	(0.1788)
		0.4622	*0.8442*	*0.0403*	*0.6755*	*0.4908*	*0.5915*	*0.0412*	*0.8872*	*0.8965*	*0.5008*	*0.0261*	*0.0306*	*0.0155*	*0.261*
		-0.3114	-0.0461	0.0792	0.5626**	-0.2134	-0.3459	-0.0944	0.0633	0.2375	0.5462	-0.4436	0.1872	0.5113	0.2281
	KNN	(0.312)	(0.1023)	(0.2456)	(0.2547)	(0.2602)	(0.3243)	(0.1317)	(0.5598)	(0.1667)	(0.4447)	(0.5893)	(0.6089)	(0.5391)	(0.3619)
		0.3197	*0.6527*	*0.7474*	*0.0285*	*0.4133*	*0.2877*	*0.4741*	*0.9101*	*0.1562*	*0.2213*	*0.4527*	*0.7589*	*0.3444*	*0.5295*
WST		0.2095	0.1506	0.0744	0.6483	0.0006	-1.2755*	0.1995	0.1527	0.4273***	-0.7577**	-0.4286	-0.7291	0.4218	-0.7739***
	10/90	(0.4901)	(0.1591)	(0.4225)	(0.4147)	(0.4213)	(0.72)	(0.1807)	(0.4821)	(0.1538)	(0.3626)	(0.3209)	(0.545)	(0.5439)	(0.261)
		0.6696	*0.3451*	*0.8603*	*0.1198*	*0.9989*	*0.0782*	*0.2711*	*0.752*	*0.0062*	*0.0385*	*0.1839*	*0.1832*	*0.4393*	*0.0036*
		0.1666	0.186*	0.0582	0.4933*	-0.3794	-0.9813*	0.1641	-0.1317	0.385***	0.1265	-0.0765	-0.0643	0.2879	-0.3225**
	30/70	(0.4652)	(0.1045)	(0.2962)	(0.2972)	(0.3848)	(0.5534)	(0.1626)	(0.3213)	(0.0742)	(0.267)	(0.2897)	(0.3082)	(0.4931)	(0.16)
		0.7206	*0.0769*	*0.8444*	*0.0987*	*0.3255*	*0.078*	*0.3143*	*0.6825*	*0*	*0.6363*	*0.792*	*0.8351*	*0.5603*	*0.0458*
		0.0792	0.0913	0.0429	0.4752*	-0.2515	-1.0087**	0.1606	-0.119	0.2605***	0.1585	-0.189	-0.0621	0.3388	-0.391***
	50/50	(0.3729)	(0.086)	(0.2482)	(0.2453)	(0.3338)	(0.4741)	(0.1382)	(0.2372)	(0.0545)	(0.1655)	(0.2096)	(0.1929)	(0.4083)	(0.1186)
		0.832	*0.2899*	*0.863*	*0.0543*	*0.4522*	*0.0348*	*0.2469*	*0.6166*	*0*	*0.3397*	*0.3689*	*0.7481*	*0.4082*	*0.0012*
		0.2738	0.124	-0.0633	0.0432	-0.4276	-0.3456	-0.0279	0.2998	0.3112*	0.0282	-0.8891	-0.9349	1.3479	-1.1773**
	KNN	(0.4851)	(0.1293)	(0.3243)	(0.3989)	(0.4776)	(0.4976)	(0.1632)	(0.7926)	(0.1633)	(0.6131)	(0.7101)	(0.6484)	(1.3762)	(0.5195)
		0.5733	*0.3388*	*0.8455*	*0.9138*	*0.3719*	*0.4883*	*0.8645*	*0.7058*	*0.0588*	*0.9634*	*0.2127*	*0.1516*	*0.3291*	*0.025*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 80. Material sector's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	12.76%	0.6224	0.6002	1.4824	8.33%	0.3597	0.3897	0.7549
		Brown	3.68%	0.0962	0.0882	0.2720	8.87%	0.2468	0.2685	0.5159
	30/70	Green	8.42%	0.3765	0.3394	0.8969	10.97%	0.5002	0.4983	1.0868
		Brown	7.42%	0.2452	0.2375	0.5905	3.78%	0.0996	0.1066	0.2034
	50/50	Green	6.61%	0.2571	0.2505	0.5863	9.16%	0.4010	0.4021	0.8480
		Brown	6.65%	0.2172	0.2211	0.4964	2.61%	0.0684	0.0680	0.1393
	KNN	Green	13.29%	0.6485	0.5843	1.6397	11.70%	0.5432	0.5613	1.1773
		Brown	3.32%	0.0811	0.0765	0.2182	0.18%	-0.0240	-0.0253	-0.0480
WTR	10/90	Green	13.23%	0.5560	0.4929	1.7502	2.91%	0.0893	0.0916	0.1764
		Brown	5.93%	0.2113	0.2373	0.4261	16.68%	0.5504	0.6174	1.1884
	30/70	Green	7.01%	0.3115	0.2746	0.7959	11.22%	0.4571	0.5166	0.9585
		Brown	4.11%	0.1232	0.1240	0.2655	10.28%	0.3874	0.4563	0.7824
	50/50	Green	7.99%	0.2870	0.2755	0.6534	9.85%	0.3777	0.4084	0.7803
		Brown	4.65%	0.1479	0.1485	0.3253	8.05%	0.3030	0.3378	0.6078
	KNN	Green	10.43%	0.4372	0.3843	1.3369	12.19%	0.5052	0.5611	1.0651
		Brown	2.51%	0.0612	0.0641	0.1288	15.77%	0.4999	0.5526	1.1754
WST	10/90	Green	7.08%	0.2994	0.2899	0.7035	7.68%	0.3397	0.3594	0.6717
		Brown	6.59%	0.1668	0.1747	0.3796	4.57%	0.1155	0.1198	0.2466
	30/70	Green	8.26%	0.3864	0.3994	0.8229	6.89%	0.3115	0.3103	0.6506
		Brown	7.01%	0.2034	0.2108	0.4523	5.01%	0.1455	0.1501	0.3065
	50/50	Green	8.73%	0.3880	0.3807	0.8468	8.00%	0.3572	0.3746	0.7423
		Brown	6.94%	0.2136	0.2215	0.4806	5.33%	0.1668	0.1774	0.3475
	KNN	Green	5.10%	0.1772	0.1786	0.3581	6.20%	0.2766	0.2720	0.5704
		Brown	6.06%	0.1708	0.1817	0.3673	-2.40%	-0.0828	-0.0934	-0.1597

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 81. Consumer Discretionally sector's sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.6619	0.2288*	0.3372	0.6154	0.7646	0.6564	-0.2367	-0.193	-0.0559	-0.5796	0.2118	-1.1382*	-0.7304	0.212
		(0.4302)	(0.1366)	(0.3645)	(0.4321)	(0.5642)	(0.546)	(0.1785)	(0.6935)	(0.1944)	(0.3736)	(0.8592)	(0.6459)	(1.1664)	(0.2342)
		0.1259	*0.0958*	*0.3563*	*0.1563*	*0.1773*	*0.231*	*0.1868*	*0.7812*	*0.7742*	*0.1231*	*0.8056*	*0.0803*	*0.5322*	*0.3668*
	30/70	-0.5028*	-0.0169	0.2424	0.2744	0.3524	0.3412	-0.2075*	-0.1475	-0.032	-0.5116**	0.0586	-0.5352	-0.1998	0.0188
		(0.2784)	(0.0812)	(0.1993)	(0.2259)	(0.3301)	(0.265)	(0.1216)	(0.2863)	(0.0929)	(0.247)	(0.3891)	(0.3439)	(0.7076)	(0.1378)
		0.0728	*0.8354*	*0.2258*	*0.2264*	*0.2872*	*0.1998*	*0.0899*	*0.6073*	*0.7311*	*0.0402*	*0.8805*	*0.1219*	*0.7781*	*0.8919*
	50/50	-0.068	-0.0839	-0.124	-0.1627	-0.1368	0.2071	-0.1551	-0.0206	-0.0482	-0.3832*	-0.3089	-1.0138***	0.2438	0.1019
		(0.219)	(0.0646)	(0.1364)	(0.1777)	(0.2152)	(0.1915)	(0.0982)	(0.2752)	(0.0773)	(0.1978)	(0.2401)	(0.3176)	(0.4173)	(0.1253)
		0.7567	*0.1958*	*0.3648*	*0.3613*	*0.5257*	*0.2811*	*0.1162*	*0.9403*	*0.5343*	*0.0547*	*0.2005*	*0.0017*	*0.56*	*0.4173*
	KNN	-0.1762	0.1867	0.5494	0.6081	0.6775	0.3254	-0.4996**	0.185	0.2949**	0.4519	0.109	-0.1023	-1.0593	-0.2657
		(0.4943)	(0.1676)	(0.3922)	(0.4465)	(0.6201)	(0.5682)	(0.2276)	(0.6339)	(0.1143)	(0.4085)	(0.4572)	(0.5835)	(0.7063)	(0.2129)
		0.722	*0.267*	*0.1632*	*0.1751*	*0.2762*	*0.5676*	*0.0296*	*0.7709*	*0.0109*	*0.2706*	*0.8119*	*0.8611*	*0.1359*	*0.2142*
WTR	10/90	0.4889	-0.1257	-0.3398	0.8733**	0.6736	-0.2522	-0.3666**	0.3576	-0.0426	-0.1426	0.3644	-0.4928	-0.7604	-0.0263
		(0.4517)	(0.0954)	(0.356)	(0.3659)	(0.4534)	(0.471)	(0.1752)	(0.6917)	(0.1772)	(0.5086)	(0.4932)	(0.4898)	(0.9718)	(0.2739)
		0.2807	*0.1894*	*0.3412*	*0.0181*	*0.1392*	*0.593*	*0.0379*	*0.6059*	*0.8102*	*0.7796*	*0.4612*	*0.316*	*0.4352*	*0.9235*
	30/70	-0.1619	-0.0877	0.2423	0.5346*	0.4443	-0.1612	-0.3517**	0.4604	-0.0828	0.3139	0.1452	-0.4604	-0.6155	0.0484
		(0.3582)	(0.0816)	(0.2806)	(0.2978)	(0.3181)	(0.3328)	(0.1413)	(0.3835)	(0.1447)	(0.2508)	(0.3479)	(0.4753)	(0.4777)	(0.1616)
		0.6519	*0.2841*	*0.389*	*0.0744*	*0.1643*	*0.6286*	*0.0137*	*0.2318*	*0.5681*	*0.2128*	*0.6769*	*0.3342*	*0.1996*	*0.7652*
	50/50	-0.0365	0.0203	0.0881	0.1549	0.0225	-0.0803	-0.1636**	0.5151**	0.0666	0.3191	0.0876	-0.4143	-0.4132	-0.0354
		(0.2312)	(0.0527)	(0.1904)	(0.1747)	(0.1922)	(0.2265)	(0.0823)	(0.2578)	(0.0783)	(0.2198)	(0.2564)	(0.3838)	(0.3915)	(0.116)
		0.8748	*0.7004*	*0.6443*	*0.3765*	*0.907*	*0.7234*	*0.0485*	*0.0475*	*0.3961*	*0.1486*	*0.733*	*0.2821*	*0.293*	*0.7604*
	KNN	0.2262	-0.0433	-0.0764	0.8581***	0.9667**	-0.1294	-0.4911**	0.6666	-0.2483	0.5328	0.1701	-1.2606	-0.6224	0.2886
		(0.3842)	(0.09)	(0.2628)	(0.3077)	(0.472)	(0.3633)	(0.2267)	(0.8381)	(0.241)	(0.5697)	(0.516)	(0.8106)	(0.8126)	(0.371)
		0.5568	*0.6309*	*0.7717*	*0.0059*	*0.0421*	*0.7222*	*0.0317*	*0.4277*	*0.3045*	*0.3512*	*0.7421*	*0.122*	*0.4449*	*0.4379*
WST	10/90	-0.3522	0.0633	-0.2177	0.5648	0.1418	-0.1629	-0.3356	0.5923	-0.0893	0.0968	0.9806***	0.4739	-1.1037**	0.4194**
		(0.4218)	(0.1281)	(0.3666)	(0.3847)	(0.545)	(0.5456)	(0.2454)	(0.4778)	(0.1247)	(0.3238)	(0.3674)	(0.4709)	(0.5231)	(0.1762)
		0.4049	*0.622*	*0.5534*	*0.1438*	*0.795*	*0.7656*	*0.1732*	*0.2172*	*0.4753*	*0.7654*	*0.0085*	*0.3159*	*0.0367*	*0.0187*
	30/70	-0.2602	0.0467	0.1059	-0.0935	-0.3045	0.9628*	0.0149	0.2396	-0.0514	0.0084	0.2095	-0.2481	0.0491	0.3765
		(0.4847)	(0.1636)	(0.3546)	(0.3591)	(0.4139)	(0.5584)	(0.1363)	(0.3372)	(0.0873)	(0.3438)	(0.3448)	(0.5364)	(0.4802)	(0.2313)
		0.5921	*0.7757*	*0.7654*	*0.795*	*0.4629*	*0.0865*	*0.9128*	*0.4785*	*0.5569*	*0.9805*	*0.5444*	*0.6444*	*0.9187*	*0.1058*
	50/50	-0.2339	0.1019	-0.0588	-0.0471	-0.0852	0.4512	0.0413	-0.0444	-0.0599	0.0861	0.0844	-0.2442	0.2236	0.2635
		(0.3262)	(0.0984)	(0.2537)	(0.2497)	(0.2681)	(0.3707)	(0.1009)	(0.3042)	(0.0582)	(0.1792)	(0.2618)	(0.3605)	(0.3607)	(0.1914)
		0.4743	*0.3023*	*0.817*	*0.8506*	*0.7509*	*0.2253*	*0.6828*	*0.8843*	*0.305*	*0.6314*	*0.7477*	*0.4993*	*0.5364*	*0.1709*
	KNN	-0.1611	0.1577	-0.0254	0.4369	0.2974	-0.0688	-0.4166*	-0.386	0.1053	-0.4532	0.2688	-0.7118	-0.3689	0.3044
		(0.4766)	(0.1355)	(0.3661)	(0.3934)	(0.5198)	(0.553)	(0.2498)	(0.6581)	(0.1675)	(0.3722)	(0.5998)	(0.7196)	(0.9046)	(0.317)
		0.7358	*0.2462*	*0.9447*	*0.2684*	*0.568*	*0.9011*	*0.0972*	*0.5585*	*0.5306*	*0.2254*	*0.6547*	*0.3243*	*0.6841*	*0.3386*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 82. Consumer Discretionally sector's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	12.67%	0.5211	0.4999	1.2488	9.27%	0.3817	0.4126	0.8166
		Brown	5.16%	0.1407	0.1387	0.3254	2.83%	0.0761	0.0839	0.1450
	30/70	Green	12.14%	0.4887	0.4718	1.0987	9.75%	0.4552	0.4959	0.9749
		Brown	5.26%	0.1761	0.1854	0.3641	6.00%	0.2557	0.2518	0.5465
	50/50	Green	10.18%	0.4404	0.4393	0.9744	12.35%	0.5652	0.5780	1.3163
		Brown	8.18%	0.3542	0.3715	0.7381	9.42%	0.4329	0.4470	0.9625
	KNN	Green	11.32%	0.4593	0.4565	1.0747	11.20%	0.5201	0.5546	1.1299
		Brown	8.25%	0.2339	0.2395	0.5257	11.92%	0.3378	0.3489	0.7288
WTR	10/90	Green	3.82%	0.1127	0.1019	0.2672	4.44%	0.1355	0.1431	0.2879
		Brown	8.57%	0.3116	0.3050	0.6983	6.61%	0.2123	0.2149	0.4625
	30/70	Green	9.58%	0.3738	0.4172	0.7929	7.91%	0.3185	0.3396	0.6710
		Brown	5.19%	0.1703	0.1739	0.3570	11.19%	0.4499	0.4660	0.9690
	50/50	Green	8.12%	0.3484	0.3764	0.7150	10.97%	0.5158	0.5575	1.0723
		Brown	6.46%	0.2499	0.2520	0.5221	16.62%	0.7020	0.7535	1.5301
	KNN	Green	7.01%	0.2534	0.2505	0.5534	6.93%	0.2698	0.2883	0.5562
		Brown	8.95%	0.3034	0.3087	0.6402	5.18%	0.1259	0.1242	0.2697
WST	10/90	Green	12.48%	0.5098	0.5561	1.0952	2.98%	0.0892	0.0952	0.1715
		Brown	5.57%	0.1824	0.1855	0.3729	11.34%	0.4735	0.4489	1.1423
	30/70	Green	9.38%	0.4182	0.4055	0.9466	8.12%	0.3247	0.3594	0.6793
		Brown	3.99%	0.1217	0.1155	0.2825	11.42%	0.4852	0.4383	1.3382
	50/50	Green	8.85%	0.3945	0.3935	0.8947	8.51%	0.3717	0.3844	0.8228
		Brown	6.06%	0.2230	0.2253	0.4709	7.72%	0.3510	0.3299	0.8752
	KNN	Green	12.31%	0.4913	0.5242	1.0704	9.31%	0.3773	0.4266	0.7965
		Brown	9.02%	0.3024	0.3107	0.6392	3.58%	0.0891	0.0809	0.1988

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 83. Financial sector's sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		0.2192	-0.2279**	0.1544	0.3424	-0.059	0.5045	0.0347	-0.9273	-0.1379	0.4693	0.0502	0.516	-0.1593	0.2948
	10/90	(0.4879)	(0.0967)	(0.3833)	(0.5794)	(0.5167)	(0.8271)	(0.2672)	(0.66)	(0.2906)	(0.7351)	(0.4945)	(0.5939)	(0.6974)	(0.2195)
		0.6538	*0.0195*	*0.6876*	*0.5553*	*0.9093*	*0.5427*	*0.8967*	*0.1621*	*0.6358*	*0.5241*	*0.9193*	*0.3863*	*0.8197*	*0.1812*
		0.2221	-0.0952	0.0363	0.2532	-0.5787	0.1113	0.0015	-0.7009*	0.0199	0.2829	-0.1007	0.7392*	0.0566	-0.0274
	30/70	(0.3236)	(0.0993)	(0.3734)	(0.3176)	(0.3748)	(0.4302)	(0.1372)	(0.3768)	(0.1414)	(0.4053)	(0.2338)	(0.4122)	(0.3482)	(0.1104)
		0.4934	*0.3389*	*0.9228*	*0.4264*	*0.1244*	*0.7962*	*0.991*	*0.0648*	*0.8883*	*0.4863*	*0.6671*	*0.075*	*0.871*	*0.8044*
		0.1271	-0.0581	0.0678	0.2831	-0.4966**	-0.1456	0.0377	-0.5278*	0.0276	0.2907	0.0293	0.6161*	0.1466	0.0544
	50/50	(0.2263)	(0.0596)	(0.243)	(0.2297)	(0.2354)	(0.3221)	(0.1242)	(0.2794)	(0.1078)	(0.3182)	(0.1915)	(0.3361)	(0.2946)	(0.1015)
		0.5752	*0.3313*	*0.7807*	*0.2195*	*0.0364*	*0.6519*	*0.7621*	*0.0608*	*0.7985*	*0.3625*	*0.8787*	*0.0687*	*0.6196*	*0.5931*
		0.1275	-0.1434	0.1785	0.0906	-0.1298	0.6944	-0.0313	-0.9894*	0.0528	0.48	-0.8102**	0.0848	0.5417	-0.1107
	KNN	(0.3851)	(0.0987)	(0.4211)	(0.477)	(0.4947)	(0.5946)	(0.2344)	(0.525)	(0.1666)	(0.4446)	(0.3215)	(0.361)	(0.4569)	(0.1531)
		0.741	*0.1481*	*0.6721*	*0.8496*	*0.7934*	*0.2444*	*0.894*	*0.0614*	*0.7516*	*0.282*	*0.0128*	*0.8146*	*0.2377*	*0.4709*
WTR		-0.3862	0.0709	-0.3288	0.1241	-0.1251	0.1306	0.1926	-0.2284	-0.0431	0.5405	-0.1748	1.3111**	0.5009	-0.1239
	10/90	(0.3974)	(0.1066)	(0.3138)	(0.2993)	(0.3279)	(0.2875)	(0.2057)	(0.7429)	(0.1576)	(0.4967)	(0.5313)	(0.6542)	(0.5727)	(0.3406)
		0.3325	*0.5067*	*0.2962*	*0.6789*	*0.7032*	*0.6501*	*0.3505*	*0.759*	*0.7847*	*0.2784*	*0.7426*	*0.047*	*0.3834*	*0.7167*
		-0.2726	-0.1149	-0.0256	0.3249	-0.1486	-0.0054	0.0369	-0.4697	0.138	0.314	-0.1561	0.4882	0.4377	0.0303
	30/70	(0.2715)	(0.0927)	(0.2579)	(0.2215)	(0.2651)	(0.3223)	(0.1226)	(0.4017)	(0.1038)	(0.2885)	(0.382)	(0.3522)	(0.5179)	(0.1655)
		0.3167	*0.2171*	*0.921*	*0.1442*	*0.576*	*0.9868*	*0.7641*	*0.2443*	*0.1861*	*0.2783*	*0.6835*	*0.1679*	*0.3995*	*0.855*
		-0.3667*	0.0371	0.0602	0.1598	-0.1416	0.2944	0.0352	-0.3683	0.1493*	0.0317	-0.0819	0.3823	0.4622	0.0608
	50/50	(0.2023)	(0.0554)	(0.1733)	(0.1555)	(0.1996)	(0.2207)	(0.1153)	(0.3242)	(0.0795)	(0.2102)	(0.3414)	(0.2849)	(0.406)	(0.1669)
		0.0716	*0.5037*	*0.7285*	*0.3055*	*0.4791*	*0.1841*	*0.7603*	*0.258*	*0.0624*	*0.8804*	*0.8108*	*0.1819*	*0.2569*	*0.7162*
		-0.9268*	0.0117	-0.4403	-0.2518	-0.0807	0.2873	-0.1064	-0.496	0.2261	0.9033	-0.453	1.3609*	0.5459	-0.3248
	KNN	(0.4884)	(0.1102)	(0.3002)	(0.3246)	(0.3716)	(0.3909)	(0.136)	(0.7624)	(0.2127)	(0.7019)	(0.6639)	(0.765)	(0.7749)	(0.3772)
		0.0594	*0.9158*	*0.1442*	*0.439*	*0.8282*	*0.4633*	*0.4353*	*0.5164*	*0.2896*	*0.2003*	*0.4962*	*0.0774*	*0.4824*	*0.3906*
WST		0.0307	-0.0388	-0.011	0.7435	-0.1086	-0.8735*	0.0734	-0.7596	0.0673	0.0139	0.1372	-0.245	-0.1402	0.4249*
	10/90	(0.5686)	(0.1387)	(0.5659)	(0.462)	(0.4531)	(0.5189)	(0.1831)	(0.6354)	(0.1244)	(0.3142)	(0.3036)	(0.4809)	(0.5398)	(0.2289)
		0.957	*0.78*	*0.9845*	*0.1095*	*0.8109*	*0.0942*	*0.6891*	*0.234*	*0.5897*	*0.9648*	*0.652*	*0.6112*	*0.7954*	*0.0655*
		0.062	-0.1382	0.0865	0.3091	-0.1319	-0.2787	-0.0852	-0.5188	0.221**	0.1407	-0.0762	0.504	0.2852	0.0192
	30/70	(0.287)	(0.1094)	(0.2885)	(0.2371)	(0.2901)	(0.3729)	(0.1034)	(0.3875)	(0.0941)	(0.2323)	(0.2038)	(0.3574)	(0.3912)	(0.1431)
		0.8292	*0.2086*	*0.7645*	*0.1942*	*0.65*	*0.456*	*0.4112*	*0.1828*	*0.0202*	*0.5455*	*0.709*	*0.1608*	*0.4672*	*0.8934*
		0.0599	-0.1083	0.0305	0.2803*	-0.1834	-0.239	-0.0202	-0.7023**	0.2104**	0.0952	-0.1864	0.4701*	0.2183	-0.0075
	50/50	(0.2391)	(0.0755)	(0.1976)	(0.1535)	(0.2026)	(0.2501)	(0.0756)	(0.3345)	(0.0811)	(0.2208)	(0.1716)	(0.2769)	(0.3038)	(0.1129)
		0.8025	*0.1534*	*0.8776*	*0.0697*	*0.3667*	*0.3406*	*0.7901*	*0.0376*	*0.0105*	*0.6671*	*0.2793*	*0.0919*	*0.4737*	*0.9471*
		0.3772	0.0025	-1.0177*	0.1225	-0.8778	0.0429	-0.2761	-1.371	0.2085*	-0.158	0.0391	1.1819*	-0.295	0.0586
	KNN	(0.4369)	(0.1685)	(0.5745)	(0.4168)	(0.5675)	(0.446)	(0.1697)	(0.9108)	(0.1232)	(0.4196)	(0.4941)	(0.6526)	(0.7886)	(0.351)
		0.3892	*0.9882*	*0.0784*	*0.7693*	*0.1239*	*0.9235*	*0.1058*	*0.1346*	*0.0927*	*0.707*	*0.9371*	*0.0723*	*0.709*	*0.8675*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 84. Financial sector's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	3.25%	0.0812	0.0777	0.1842	6.06%	0.1343	0.1430	0.2975
		Brown	2.81%	0.0641	0.0596	0.1559	-0.03%	-0.0381	-0.0400	-0.0746
	30/70	Green	2.56%	0.0590	0.0564	0.1236	9.15%	0.2757	0.2705	0.6238
		Brown	0.64%	-0.0126	-0.0115	-0.0285	4.87%	0.1396	0.1513	0.2756
	50/50	Green	2.66%	0.0664	0.0650	0.1402	9.24%	0.2936	0.2899	0.6500
		Brown	0.33%	-0.0252	-0.0223	-0.0575	6.18%	0.1936	0.2013	0.3859
	KNN	Green	2.50%	0.0524	0.0522	0.1100	9.31%	0.2833	0.2822	0.6388
		Brown	1.09%	0.0030	0.0028	0.0070	-0.75%	-0.0597	-0.0639	-0.1138
WTR	10/90	Green	0.41%	-0.0221	-0.0213	-0.0465	3.32%	0.0843	0.0741	0.2013
		Brown	-3.44%	-0.1680	-0.1527	-0.4048	3.56%	0.0898	0.0903	0.1862
	30/70	Green	3.19%	0.0785	0.0720	0.1904	3.51%	0.1119	0.1023	0.2509
		Brown	-1.93%	-0.1094	-0.1054	-0.2417	0.89%	-0.0045	-0.0046	-0.0090
	50/50	Green	2.87%	0.0734	0.0712	0.1606	4.52%	0.1621	0.1473	0.3810
		Brown	-2.38%	-0.1295	-0.1241	-0.2840	3.08%	0.0881	0.0877	0.1773
	KNN	Green	3.97%	0.1174	0.1134	0.2505	4.94%	0.1758	0.1582	0.4096
		Brown	-7.32%	-0.3102	-0.2942	-0.6688	2.89%	0.0603	0.0668	0.1163
WST	10/90	Green	1.89%	0.0323	0.0308	0.0696	5.77%	0.1907	0.1993	0.3954
		Brown	-1.83%	-0.0877	-0.0850	-0.1784	-1.87%	-0.1123	-0.1121	-0.2172
	30/70	Green	3.48%	0.0921	0.0889	0.2022	3.47%	0.1154	0.1140	0.2382
		Brown	1.48%	0.0175	0.0162	0.0382	1.70%	0.0306	0.0304	0.0613
	50/50	Green	2.15%	0.0439	0.0417	0.0962	7.01%	0.2898	0.2826	0.6117
		Brown	0.58%	-0.0160	-0.0151	-0.0340	2.73%	0.0770	0.0761	0.1577
	KNN	Green	3.23%	0.0880	0.0801	0.2003	3.54%	0.1164	0.1137	0.2326
		Brown	-0.04%	-0.0302	-0.0293	-0.0644	-9.82%	-0.2805	-0.2753	-0.5731

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 85. Information Technology sector's sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		0.5351	-0.0128	1.0139**	0.6783	-0.7952	-0.9722	0.174	-1.1371*	0.0397	0.468	-0.1857	0.0937	0.1766	-0.2659
	10/90	(0.6848)	(0.1566)	(0.4207)	(0.4319)	(0.5088)	(0.6167)	(0.1835)	(0.646)	(0.1324)	(0.4173)	(0.3948)	(0.496)	(0.6862)	(0.202)
		0.4357	*0.9351*	*0.0171*	*0.1182*	*0.12*	*0.1169*	*0.3443*	*0.0804*	*0.7648*	*0.2639*	*0.6389*	*0.8504*	*0.7973*	*0.1902*
		0.3165	-0.107	0.7586***	0.7222***	-0.4427	-0.2781	0.1999**	-0.2649	0.0064	0.294	0.1399	0.0393	-0.1518	-0.0769
	30/70	(0.329)	(0.0872)	(0.2516)	(0.2486)	(0.2697)	(0.3548)	(0.0995)	(0.4479)	(0.0866)	(0.2974)	(0.4179)	(0.4996)	(0.4869)	(0.1639)
		0.3375	*0.2216*	*0.003*	*0.0042*	*0.1026*	*0.4344*	*0.0463*	*0.5551*	*0.9409*	*0.3245*	*0.7383*	*0.9375*	*0.7556*	*0.6396*
		0.2847	-0.0715	0.4535**	0.4473**	-0.2634	-0.2355	0.2071***	-0.1271	0.1401**	0.1904	-0.2806	0.2357	0.2586	-0.1267
	50/50	(0.2383)	(0.0606)	(0.1793)	(0.1851)	(0.1963)	(0.2689)	(0.0725)	(0.3659)	(0.0658)	(0.2217)	(0.285)	(0.2645)	(0.4038)	(0.1382)
		0.234	*0.2399*	*0.0124*	*0.0168*	*0.1815*	*0.3824*	*0.0049*	*0.7288*	*0.0347*	*0.392*	*0.3264*	*0.3742*	*0.523*	*0.3608*
		0.2806	-0.0352	0.9021**	0.6966*	-0.6178	-0.3363	0.0987	-1.0814*	0.0749	0.816*	0.0762	-0.2004	-0.0625	-0.2757
	KNN	(0.5909)	(0.1316)	(0.4032)	(0.3773)	(0.5602)	(0.5554)	(0.1651)	(0.6502)	(0.0971)	(0.4207)	(0.3892)	(0.4646)	(0.4915)	(0.198)
		0.6356	*0.7892*	*0.0266*	*0.0667*	*0.2718*	*0.5457*	*0.5507*	*0.0984*	*0.4417*	*0.0543*	*0.845*	*0.6669*	*0.899*	*0.166*
WTR		0.0442	-0.2397**	0.7693**	0.6084*	-0.2607	0.0227	0.1309	-0.6394	0.2987***	-0.5254	0.0317	0.3843	-0.1978	0.3423
	10/90	(0.5069)	(0.1117)	(0.2963)	(0.3514)	(0.4199)	(0.537)	(0.1606)	(0.5271)	(0.1046)	(0.3318)	(0.3004)	(0.3686)	(0.4204)	(0.228)
		0.9306	*0.0333*	*0.0103*	*0.0853*	*0.5356*	*0.9663*	*0.4165*	*0.2271*	*0.005*	*0.1156*	*0.9161*	*0.2991*	*0.6387*	*0.1355*
		0.094	-0.0534	0.9004***	0.1307	-0.3211	0.3196	0.0588	0.1478	0.0972	-0.3274	-0.0065	0.8189**	-0.4773	-0.015
	30/70	(0.33)	(0.0758)	(0.2514)	(0.2192)	(0.3115)	(0.2985)	(0.1001)	(0.3787)	(0.1076)	(0.3268)	(0.2783)	(0.3138)	(0.4619)	(0.2566)
		0.7762	*0.4822*	*0.0005*	*0.5519*	*0.3042*	*0.2859*	*0.5581*	*0.697*	*0.3677*	*0.3182*	*0.9814*	*0.0101*	*0.3033*	*0.9536*
		-0.0144	-0.0587	0.6587***	0.1886	-0.2565	0.3508	0.0295	0.7428*	-0.0472	-0.6762***	0.013	0.6041**	-0.5845	-0.0323
	50/50	(0.2448)	(0.0653)	(0.1989)	(0.1805)	(0.2318)	(0.2506)	(0.0812)	(0.3835)	(0.0791)	(0.2351)	(0.2289)	(0.2682)	(0.3707)	(0.1708)
		0.953	*0.3706*	*0.0011*	*0.2975*	*0.2702*	*0.1635*	*0.7165*	*0.0548*	*0.5519*	*0.0047*	*0.9548*	*0.0259*	*0.1172*	*0.8502*
		0.3628	-0.1835**	0.535	0.1463	-0.5412	-0.0563	0.0418	-0.0222	0.2167	-0.6102	-0.3388	0.0399	0.1249	0.129
	KNN	(0.4051)	(0.0928)	(0.3264)	(0.3509)	(0.4989)	(0.473)	(0.1595)	(0.6221)	(0.1312)	(0.3819)	(0.3538)	(0.4004)	(0.6399)	(0.258)
		0.3718	*0.0496*	*0.1031*	*0.6772*	*0.2796*	*0.9054*	*0.7936*	*0.9716*	*0.101*	*0.1124*	*0.34*	*0.9207*	*0.8455*	*0.6179*
WST		-0.2089	-0.0154	1.3892***	0.1207	-0.76	0.0905	-0.2349	-0.3222	0.253*	-0.6584	-0.1764	0.0908	0.4795	0.2725
	10/90	(0.6188)	(0.171)	(0.3529)	(0.4362)	(0.565)	(0.586)	(0.2053)	(0.6831)	(0.1506)	(0.5348)	(0.6416)	(0.7671)	(0.57)	(0.2128)
		0.7361	*0.9283*	*0.0001*	*0.7823*	*0.1804*	*0.8774*	*0.2542*	*0.6378*	*0.0951*	*0.2202*	*0.7837*	*0.9059*	*0.4015*	*0.2024*
		0.0035	-0.0556	1.016***	0.2485	-0.4254	0.251	0.01	0.4427	0.0453	-0.0265	0.0024	0.205	-0.142	0.0096
	30/70	(0.3352)	(0.0808)	(0.2357)	(0.2111)	(0.2988)	(0.3396)	(0.0878)	(0.4848)	(0.1248)	(0.369)	(0.4816)	(0.5676)	(0.515)	(0.2304)
		0.9916	*0.4928*	*0*	*0.2408*	*0.1565*	*0.4609*	*0.9097*	*0.3627*	*0.717*	*0.9429*	*0.996*	*0.7185*	*0.7831*	*0.9667*
		-0.3087	0.004	0.7609***	0.3985**	-0.3109	0.0445	0.113	0.6387	-0.0256	-0.0255	0.2103	-0.2899	-0.1268	0.0393
	50/50	(0.278)	(0.0655)	(0.1785)	(0.1636)	(0.249)	(0.243)	(0.0719)	(0.4137)	(0.1115)	(0.2997)	(0.3747)	(0.4033)	(0.407)	(0.1773)
		0.2685	*0.9517*	*0*	*0.016*	*0.2136*	*0.8549*	*0.1183*	*0.1247*	*0.8186*	*0.9322*	*0.5755*	*0.4734*	*0.7557*	*0.8248*
		-0.3811	0.0343	1.4198***	-0.0382	-0.9476*	0.2696	-0.0652	-0.5616	0.0426	0.7682*	-0.2444	-0.1945	0.3077	0.2422
	KNN	(0.5914)	(0.1704)	(0.3263)	(0.4037)	(0.5357)	(0.5442)	(0.1786)	(0.6529)	(0.1414)	(0.3977)	(0.5352)	(0.5886)	(0.7656)	(0.2959)
		0.5202	*0.8408*	*0*	*0.9248*	*0.0788*	*0.621*	*0.7157*	*0.3911*	*0.7634*	*0.0553*	*0.6486*	*0.7415*	*0.6884*	*0.4145*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 86. Information Technology sector's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	15.32%	0.5568	0.5575	1.3010	29.37%	1.1609	1.3451	2.7550
		Brown	16.60%	0.5867	0.5909	1.3674	12.82%	0.4503	0.4968	0.9316
	30/70	Green	14.62%	0.6472	0.6557	1.4635	24.90%	1.2017	1.3026	2.8779
		Brown	14.60%	0.6622	0.6332	1.5326	20.12%	0.9036	1.0499	2.0235
	50/50	Green	13.45%	0.6403	0.6394	1.4578	20.32%	1.0146	1.0352	2.3533
		Brown	15.06%	0.7531	0.6802	1.7822	20.90%	0.9459	1.0137	2.1750
	KNN	Green	15.96%	0.5790	0.6047	1.2962	21.78%	1.0484	1.1113	2.4474
		Brown	16.08%	0.6428	0.6378	1.5000	2.66%	0.0549	0.0548	0.1129
WTR	10/90	Green	14.76%	0.5759	0.5548	1.3628	12.44%	0.4909	0.5678	0.9992
		Brown	10.55%	0.3994	0.4338	0.8305	12.06%	0.4817	0.4786	1.1213
	30/70	Green	15.07%	0.6555	0.6192	1.6722	12.02%	0.5725	0.6026	1.2355
		Brown	14.34%	0.6156	0.6020	1.4594	18.45%	0.8469	0.9156	1.8781
	50/50	Green	13.93%	0.6257	0.5830	1.5701	10.29%	0.5085	0.5305	1.0832
		Brown	11.96%	0.5489	0.5146	1.2975	22.49%	1.1109	1.1743	2.6596
	KNN	Green	12.38%	0.4962	0.4820	1.1659	12.04%	0.5721	0.6097	1.2282
		Brown	13.44%	0.5684	0.5864	1.2433	14.53%	0.5194	0.5391	1.1489
WST	10/90	Green	17.39%	0.6329	0.5839	1.7868	11.82%	0.4011	0.4307	0.8382
		Brown	8.92%	0.2795	0.2920	0.6039	12.08%	0.4243	0.4542	0.8860
	30/70	Green	17.36%	0.7799	0.7364	1.9931	11.79%	0.4818	0.4862	1.0895
		Brown	14.17%	0.6055	0.6029	1.4167	19.28%	0.7729	0.8804	1.6512
	50/50	Green	16.16%	0.7762	0.7295	1.9246	15.73%	0.6982	0.7030	1.5981
		Brown	9.69%	0.4220	0.3842	0.9613	21.67%	0.9188	1.0000	2.0577
	KNN	Green	17.42%	0.6428	0.6001	1.7301	10.87%	0.4279	0.4223	0.9746
		Brown	7.27%	0.2280	0.2164	0.5285	1.16%	0.0052	0.0056	0.0102

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 87. Consumer Staples sector's sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.0509	-0.0761	-0.2605	0.2396	-0.5379	-0.2099	-0.0732	-0.8626*	0.2382	0.6237	0.3566	0.6046	0.094	-0.1193
		(0.3215)	(0.0908)	(0.2259)	(0.2618)	(0.3349)	(0.3313)	(0.1315)	(0.4435)	(0.176)	(0.38)	(0.2827)	(0.4862)	(0.5796)	(0.2236)
		0.8744	*0.4031*	*0.2503*	*0.3613*	*0.11*	*0.5273*	*0.5783*	*0.0538*	*0.1781*	*0.103*	*0.2092*	*0.2159*	*0.8714*	*0.5944*
	30/70	-0.1655	0.0927	0.3531*	0.172	-0.2594	-0.5542**	-0.0072	-0.2897	0.1103	-0.0702	0.0859	-0.2309	0.0448	0.0427
		(0.2386)	(0.0628)	(0.2091)	(0.1663)	(0.2174)	(0.2411)	(0.068)	(0.2655)	(0.1029)	(0.2536)	(0.2317)	(0.2818)	(0.3983)	(0.1255)
		0.4887	*0.142*	*0.0932*	*0.3026*	*0.2344*	*0.0228*	*0.9154*	*0.277*	*0.2857*	*0.7823*	*0.7115*	*0.414*	*0.9106*	*0.7343*
	50/50	0.0838	-0.0533	0.0553	0.0155	-0.1563	-0.0762	0.0175	-0.2405	0.0607	0.135	-0.0289	-0.1524	-0.1011	0.045
		(0.1446)	(0.0479)	(0.1539)	(0.1148)	(0.1354)	(0.174)	(0.0504)	(0.191)	(0.0856)	(0.1784)	(0.1917)	(0.2359)	(0.3368)	(0.0882)
		0.5632	*0.2672*	*0.7199*	*0.893*	*0.2498*	*0.6619*	*0.728*	*0.2101*	*0.4796*	*0.4505*	*0.8802*	*0.5192*	*0.7644*	*0.6104*
	KNN	-0.0242	-0.0581	-0.1371	0.3955	-0.7411**	-0.4449	0.0694	0.3733	0.0176	0.5934	0.9482**	0.1031	-1.8765*	0.0453
		(0.354)	(0.0888)	(0.2604)	(0.3148)	(0.3561)	(0.396)	(0.119)	(0.861)	(0.2192)	(0.579)	(0.4705)	(0.5991)	(1.0392)	(0.3004)
		0.9456	*0.5136*	*0.5992*	*0.2107*	*0.0389*	*0.2627*	*0.5604*	*0.6653*	*0.9362*	*0.3072*	*0.0458*	*0.8637*	*0.0732*	*0.8804*
WTR	10/90	-0.3865	-0.0163	0.3926	0.2431	0.0552	-0.1326	-0.0947	0.6229	-0.1047	0.1627	0.7019*	0.177	-1.0232	-0.1214
		(0.3429)	(0.062)	(0.2594)	(0.2354)	(0.2275)	(0.3556)	(0.1183)	(0.5406)	(0.18)	(0.2917)	(0.4018)	(0.3667)	(0.6607)	(0.2226)
		0.2615	*0.7926*	*0.1321*	*0.3033*	*0.8087*	*0.7098*	*0.4246*	*0.2513*	*0.5618*	*0.5779*	*0.0829*	*0.6301*	*0.1238*	*0.5864*
	30/70	-0.1591	0.1386**	0.2458	0.0329	-0.0137	-0.0929	-0.0803	-0.0596	0.1011	0.0074	0.251	0.3919	0.1322	-0.1377
		(0.2059)	(0.0537)	(0.1728)	(0.1402)	(0.1852)	(0.1649)	(0.0679)	(0.2746)	(0.0773)	(0.1823)	(0.1711)	(0.2554)	(0.2323)	(0.1049)
		0.4408	*0.0107*	*0.157*	*0.8146*	*0.9411*	*0.574*	*0.2387*	*0.8286*	*0.1934*	*0.9677*	*0.1447*	*0.1272*	*0.5702*	*0.1914*
	50/50	-0.1664	0.0375	0.3294***	0.0818	-0.0282	0.0348	-0.0112	-0.1182	0.0204	-0.0637	-0.0446	0.3088	0.3839**	-0.1599*
		(0.1582)	(0.0438)	(0.1228)	(0.1153)	(0.1679)	(0.1486)	(0.0585)	(0.1953)	(0.0639)	(0.1531)	(0.1427)	(0.2192)	(0.1936)	(0.0864)
		0.2944	*0.3927*	*0.0081*	*0.4793*	*0.8667*	*0.8152*	*0.8488*	*0.546*	*0.7494*	*0.6778*	*0.7554*	*0.1612*	*0.0493*	*0.0664*
	KNN	-0.4356	0.0881	0.6363***	0.3094	0.1082	-0.145	-0.1399	0.8802**	-0.2416**	0.3933	0.1828	-0.3414	-0.6162	-0.1361
		(0.3961)	(0.0672)	(0.2393)	(0.2075)	(0.3015)	(0.2831)	(0.1116)	(0.4365)	(0.0952)	(0.2412)	(0.2885)	(0.2894)	(0.456)	(0.1106)
		0.2731	*0.1916*	*0.0086*	*0.1379*	*0.7201*	*0.6091*	*0.212*	*0.0457*	*0.0123*	*0.1053*	*0.5274*	*0.2401*	*0.1788*	*0.2206*
WST	10/90	-0.3125	0.2206***	0.2581	0.1888	-0.4716	-0.3776	0.1151	-0.3886	0.1067	-0.0152	0.2975	0.5896	-0.5048	0.0065
		(0.3934)	(0.0845)	(0.2898)	(0.3303)	(0.3156)	(0.4933)	(0.1346)	(0.4008)	(0.1287)	(0.3646)	(0.352)	(0.3657)	(0.4513)	(0.2448)
		0.4281	*0.0099*	*0.3746*	*0.5683*	*0.137*	*0.4451*	*0.3941*	*0.3344*	*0.4087*	*0.9668*	*0.3997*	*0.1097*	*0.2656*	*0.9787*
	30/70	0.0961	-0.0149	0.2208	0.2377	-0.1435	-0.509*	0.0814	0.3536	-0.2319***	-0.1009	0.0815	0.1014	0.0134	-0.0361
		(0.2088)	(0.0551)	(0.1569)	(0.164)	(0.1566)	(0.2705)	(0.0643)	(0.3069)	(0.0716)	(0.2097)	(0.2993)	(0.2063)	(0.3555)	(0.1364)
		0.6458	*0.7875*	*0.1614*	*0.1492*	*0.3608*	*0.0617*	*0.2072*	*0.2517*	*0.0016*	*0.6313*	*0.786*	*0.6242*	*0.9699*	*0.7919*
	50/50	0.0235	-0.049	0.0353	-0.0095	-0.1064	0.0573	-0.0125	-0.0303	-0.1076	-0.1838	0.1032	0.191	0.0983	0.0602
		(0.1374)	(0.0469)	(0.0944)	(0.1431)	(0.0977)	(0.2173)	(0.0599)	(0.3008)	(0.0652)	(0.1761)	(0.1603)	(0.1858)	(0.2487)	(0.1122)
		0.8646	*0.2977*	*0.7088*	*0.9473*	*0.2779*	*0.7923*	*0.8343*	*0.92*	*0.1013*	*0.2986*	*0.5212*	*0.3062*	*0.6934*	*0.5922*
	KNN	0.1074	0.1989**	-0.011	0.2047	-0.6596*	-0.6268	0.2856**	-0.1359	-0.0732	-0.21	0.684**	0.5222	-0.7875**	0.2628
		(0.3683)	(0.0854)	(0.2801)	(0.3526)	(0.3341)	(0.4325)	(0.131)	(0.4711)	(0.1233)	(0.3351)	(0.2892)	(0.3532)	(0.3751)	(0.1836)
		0.7709	*0.0211*	*0.9688*	*0.5624*	*0.0501*	*0.1493*	*0.0307*	*0.7735*	*0.5537*	*0.5321*	*0.0197*	*0.142*	*0.038*	*0.1552*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 88. Consumer Staples sector's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	7.17%	0.3735	0.3384	0.8332	11.21%	0.7096	0.7067	1.6137
		Brown	2.78%	0.1054	0.0927	0.2294	2.77%	0.0907	0.0895	0.1853
	30/70	Green	10.74%	0.6957	0.7095	1.4955	10.70%	0.7068	0.6808	1.6280
		Brown	6.66%	0.3190	0.2834	0.7341	7.09%	0.3870	0.3681	0.8333
	50/50	Green	8.44%	0.5719	0.5519	1.2539	9.61%	0.6403	0.6138	1.4378
		Brown	8.37%	0.5698	0.5211	1.2778	7.18%	0.4319	0.4188	0.9205
	KNN	Green	6.59%	0.3134	0.2910	0.6726	10.71%	0.7105	0.7136	1.6349
		Brown	1.93%	0.0489	0.0458	0.1075	10.38%	0.2888	0.3564	0.5308
WTR	10/90	Green	7.27%	0.3210	0.3020	0.7045	7.35%	0.3425	0.3685	0.6896
		Brown	1.67%	0.0309	0.0319	0.0631	12.63%	0.6842	0.7529	1.4195
	30/70	Green	6.34%	0.3468	0.3271	0.7416	8.37%	0.5310	0.5277	1.1004
		Brown	4.60%	0.1921	0.1826	0.4365	8.78%	0.4978	0.4930	1.0791
	50/50	Green	8.01%	0.5003	0.4660	1.1125	10.14%	0.6957	0.6746	1.4751
		Brown	5.65%	0.3060	0.2746	0.6789	9.37%	0.6176	0.6363	1.2997
	KNN	Green	6.73%	0.3306	0.3085	0.7042	7.47%	0.4448	0.4418	0.9160
		Brown	0.54%	-0.0200	-0.0205	-0.0408	12.65%	0.7291	0.8904	1.4724
WST	10/90	Green	10.06%	0.5115	0.4695	1.1484	5.03%	0.2405	0.2381	0.5024
		Brown	5.53%	0.2217	0.2047	0.4901	3.53%	0.1291	0.1330	0.2495
	30/70	Green	7.27%	0.4045	0.3860	0.8653	4.61%	0.2329	0.2115	0.4954
		Brown	7.28%	0.4000	0.3753	0.9059	6.57%	0.4065	0.4052	0.8474
	50/50	Green	7.59%	0.4640	0.4558	0.9912	7.27%	0.4195	0.3738	0.9205
		Brown	7.15%	0.4634	0.4188	1.0150	6.45%	0.3945	0.3707	0.8423
	KNN	Green	5.66%	0.2547	0.2433	0.5346	5.87%	0.3083	0.2801	0.6555
		Brown	6.38%	0.2715	0.2576	0.5835	4.47%	0.1704	0.1929	0.3226

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 89. Real Estate sector's sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.3253	-0.0674	-0.3429	-0.7196***	0.1129	0.5082	0.2245*	-0.4826	0.0648	0.3522	0.6009*	-0.8336	-1.224**	0.4677
	10/90	(0.3926)	(0.1127)	(0.2545)	(0.2612)	(0.3779)	(0.3878)	(0.1339)	(0.6035)	(0.1894)	(0.3806)	(0.3256)	(0.602)	(0.6154)	(0.3102)
		0.4087	*0.5508*	*0.1799*	*0.0066*	*0.7656*	*0.1921*	*0.0958*	*0.426*	*0.7332*	*0.3572*	*0.0683*	*0.1696*	*0.0498*	*0.1352*
		-0.0464	-0.0525	0.0788	-0.1437	0.7437***	0.1032	-0.077	-0.0198	-0.0757	0.1698	0.0534	-0.8542**	-0.4663	-0.0781
	30/70	(0.2386)	(0.0665)	(0.1976)	(0.2273)	(0.2694)	(0.3581)	(0.107)	(0.392)	(0.1054)	(0.2461)	(0.2202)	(0.3582)	(0.4385)	(0.2016)
		0.846	*0.4313*	*0.6904*	*0.5282*	*0.0065*	*0.7736*	*0.4729*	*0.9599*	*0.4742*	*0.492*	*0.8091*	*0.0192*	*0.2905*	*0.6993*
		0.1759	-0.0638	0.0295	-0.1543	0.3936***	-0.1139	-0.0786	-0.0828	-0.0494	0.2198	0.2153	-0.2654	-0.2537	0.1716
	50/50	(0.1812)	(0.0485)	(0.1129)	(0.147)	(0.1406)	(0.3289)	(0.0791)	(0.3132)	(0.0986)	(0.2131)	(0.2004)	(0.2681)	(0.5258)	(0.1793)
		0.3331	*0.1898*	*0.7945*	*0.2954*	*0.0058*	*0.7295*	*0.3222*	*0.7922*	*0.6176*	*0.3052*	*0.2855*	*0.325*	*0.6307*	*0.3413*
		-0.1978	0.0036	-0.2074	0.1513	0.8094***	-0.2839	0.0686	0.0701	0.0339	0.3939	0.9695	0.6851	-1.1874*	0.2735
	KNN	(0.2931)	(0.0686)	(0.2186)	(0.2764)	(0.2813)	(0.3845)	(0.1838)	(0.5557)	(0.1992)	(0.3968)	(0.5848)	(0.5994)	(0.6588)	(0.2841)
		0.5008	*0.9578*	*0.3443*	*0.5849*	*0.0046*	*0.4614*	*0.7095*	*0.8999*	*0.8654*	*0.3235*	*0.1009*	*0.2561*	*0.0749*	*0.3384*
WTR		-0.2788	0.3135*	-0.0951	0.7531**	0.1948	-0.6275	0.4189**	0.4687	-0.3012**	0.1901	0.4272	-0.7709	-1.391***	-0.0862
	10/90	(0.4415)	(0.1704)	(0.3253)	(0.3492)	(0.3321)	(0.5068)	(0.1689)	(0.387)	(0.1191)	(0.3788)	(0.29)	(0.586)	(0.3942)	(0.259)
		0.5287	*0.0679*	*0.7705*	*0.0326*	*0.5583*	*0.2176*	*0.0143*	*0.2295*	*0.0135*	*0.6171*	*0.1448*	*0.1923*	*0.0007*	*0.7403*
		-0.1651	0.0814	0.1174	0.3312	0.7717**	-0.4767	0.0702	0.1486	-0.1304	-0.204	0.0533	-0.427	-0.2819	0.1099
	30/70	(0.3568)	(0.1015)	(0.2674)	(0.3068)	(0.3398)	(0.4278)	(0.1272)	(0.3182)	(0.0893)	(0.2368)	(0.2907)	(0.269)	(0.3693)	(0.1707)
		0.6442	*0.4236*	*0.6613*	*0.2821*	*0.0246*	*0.267*	*0.5817*	*0.6418*	*0.1483*	*0.3917*	*0.855*	*0.1166*	*0.4476*	*0.5216*
		0.0142	0.0477	0.1307	0.1528	0.5995*	-0.0089	0.0888	-0.3032	-0.0949	-0.0018	0.1234	-0.4413	-0.6267**	0.0429
	50/50	(0.3217)	(0.0971)	(0.2523)	(0.3118)	(0.3279)	(0.3526)	(0.1169)	(0.2641)	(0.0942)	(0.1912)	(0.1936)	(0.2715)	(0.3017)	(0.132)
		0.9648	*0.6239*	*0.6053*	*0.6249*	*0.0695*	*0.9799*	*0.4489*	*0.2546*	*0.3169*	*0.9925*	*0.5256*	*0.1082*	*0.0411*	*0.7461*
		-0.1742	0.1092	0.2752	0.2028	0.2098	-0.7328	0.1389	-0.4888	-0.2233	-0.6012	0.0444	-0.3569	-0.3908	0.5189
	KNN	(0.4121)	(0.1242)	(0.3506)	(0.3481)	(0.4383)	(0.4745)	(0.1693)	(0.7135)	(0.2124)	(0.3839)	(0.69)	(0.5741)	(0.7615)	(0.3548)
		0.6731	*0.3805*	*0.4336*	*0.5611*	*0.633*	*0.1246*	*0.4131*	*0.4953*	*0.2963*	*0.1214*	*0.9488*	*0.536*	*0.6092*	*0.1476*
WST		0.2818	0.24	-0.7623	0.4543	0.129	-0.3145	0.3851	-0.2142	-0.2077	-0.0168	0.719*	-0.0496	-0.9693**	0.2781
	10/90	(0.6252)	(0.2251)	(0.6265)	(0.5848)	(0.6658)	(0.768)	(0.2936)	(0.4154)	(0.1466)	(0.4315)	(0.3628)	(0.4218)	(0.4824)	(0.2805)
		0.6529	*0.2881*	*0.2257*	*0.4385*	*0.8466*	*0.6828*	*0.1916*	*0.6073*	*0.1602*	*0.969*	*0.0506*	*0.9067*	*0.0475*	*0.3243*
		-0.158	0.2051**	-0.0695	0.3234	0.4962	0.0764	0.1249	-0.1214	-0.1326	-0.4266*	0.5293*	0.1172	-0.636**	0.2085
	30/70	(0.3633)	(0.089)	(0.2951)	(0.3542)	(0.3922)	(0.5508)	(0.151)	(0.3504)	(0.1083)	(0.2495)	(0.2678)	(0.42)	(0.3134)	(0.1756)
		0.6643	*0.0226*	*0.8141*	*0.3628*	*0.2078*	*0.8898*	*0.4097*	*0.7299*	*0.2242*	*0.0908*	*0.0512*	*0.7808*	*0.0454*	*0.2383*
		-0.0908	0.126*	0.1512	0.2991	0.3597	-0.0949	0.0829	-0.3075	-0.1858*	-0.3867*	0.2103	-0.0366	-0.4918	0.0433
	50/50	(0.2388)	(0.0645)	(0.1912)	(0.2264)	(0.2381)	(0.3338)	(0.0954)	(0.3892)	(0.0988)	(0.2279)	(0.2761)	(0.2779)	(0.3108)	(0.1641)
		0.7044	*0.0526*	*0.4302*	*0.1884*	*0.133*	*0.7767*	*0.386*	*0.4316*	*0.0633*	*0.0932*	*0.4483*	*0.8956*	*0.1171*	*0.7924*
		-0.9318**	0.3215***	0.4604	0.5514*	1.3013***	-0.4571	0.3331**	-0.2486	-0.3704***	0.1682	0.3401	-0.0163	-0.4545	0.1739
	KNN	(0.4309)	(0.1148)	(0.3249)	(0.3186)	(0.3795)	(0.5298)	(0.1401)	(0.3817)	(0.1196)	(0.3719)	(0.4043)	(0.4716)	(0.452)	(0.2485)
		0.0322	*0.0058*	*0.1586*	*0.0856*	*0.0008*	*0.3896*	*0.0187*	*0.5165*	*0.0026*	*0.6521*	*0.4025*	*0.9724*	*0.3173*	*0.486*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 90. Real Estate sector's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	16.19%	0.6280	0.7199	1.3037	6.02%	0.2229	0.2337	0.4995
		Brown	13.98%	0.7057	0.7675	1.5017	-3.88%	-0.1959	-0.1899	-0.4578
	30/70	Green	9.60%	0.4132	0.4181	0.9273	7.12%	0.3757	0.3891	0.8161
		Brown	12.21%	0.5723	0.5824	1.1858	1.89%	0.0492	0.0501	0.0967
	50/50	Green	7.84%	0.3294	0.3229	0.7442	6.44%	0.3320	0.2979	0.7214
		Brown	11.81%	0.5595	0.5630	1.2026	3.64%	0.1603	0.1576	0.3475
	KNN	Green	11.90%	0.5038	0.4770	1.1747	5.36%	0.2616	0.2514	0.5621
		Brown	12.53%	0.5397	0.5681	1.1338	6.88%	0.2623	0.2284	1.2374
WTR	10/90	Green	12.44%	0.5331	0.5468	1.2961	3.40%	0.1303	0.1270	0.2873
		Brown	14.02%	0.5922	0.5876	1.3167	3.71%	0.1590	0.1651	0.3338
	30/70	Green	8.08%	0.3461	0.3529	0.7461	2.59%	0.0835	0.0788	0.2042
		Brown	10.83%	0.5052	0.4926	1.1692	3.92%	0.1725	0.1705	0.3542
	50/50	Green	6.64%	0.2823	0.2767	0.6118	3.40%	0.1309	0.1210	0.3605
		Brown	10.31%	0.4985	0.5068	1.1773	-0.37%	-0.0802	-0.0715	-0.1909
	KNN	Green	14.19%	0.6329	0.6419	1.5399	3.73%	0.1421	0.1348	0.3568
		Brown	16.34%	0.7814	0.8677	1.6634	0.05%	-0.0537	-0.0475	-0.1099
WST	10/90	Green	4.08%	0.0921	0.0930	0.1969	3.22%	0.1299	0.1341	0.2545
		Brown	15.17%	0.5469	0.5855	1.1677	-2.95%	-0.2294	-0.2193	-0.4309
	30/70	Green	5.80%	0.2052	0.2092	0.4293	2.11%	0.0711	0.0693	0.1505
		Brown	8.50%	0.3435	0.3316	0.9020	-0.45%	-0.0966	-0.0961	-0.1917
	50/50	Green	7.27%	0.3090	0.3074	0.6625	3.33%	0.1501	0.1364	0.3623
		Brown	8.75%	0.3727	0.3619	0.9620	-1.57%	-0.1802	-0.1714	-0.3544
	KNN	Green	8.75%	0.3158	0.3410	0.6567	2.92%	0.1251	0.1206	0.2698
		Brown	7.61%	0.2620	0.2610	0.6252	-5.23%	-0.3845	-0.3606	-0.7231

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 91. Health Care sector's sample, factor models

Variable	Type	Environmental performance							Environmental momentum						
		Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.4756	-0.0161	-0.2467	-0.1101	-0.0088	-0.3785	0.2322	-1.6755**	-0.0954	0.0082	1.7549**	0.9306	-0.9674	1.0427*
		(0.5273)	(0.1195)	(0.3657)	(0.2979)	(0.4658)	(0.4656)	(0.177)	(0.7619)	(0.3401)	(0.7567)	(0.6968)	(0.7685)	(0.9913)	(0.6)
		0.3684	*0.8928*	*0.5009*	*0.7121*	*0.985*	*0.4175*	*0.1916*	*0.0305*	*0.7798*	*0.9913*	*0.0136*	*0.2292*	*0.3317*	*0.0857*
	30/70	-0.2484	0.0469	-0.328	-0.2569	-0.5199*	-0.2531	0.178	-0.5688	0.2331**	0.3392	-0.0249	-0.2077	0.2255	0.3217
		(0.2567)	(0.0965)	(0.2172)	(0.2227)	(0.2732)	(0.3992)	(0.1555)	(0.5227)	(0.1144)	(0.3633)	(0.3664)	(0.4049)	(0.4168)	(0.2967)
		0.3345	*0.6278*	*0.1328*	*0.2503*	*0.0588*	*0.527*	*0.2542*	*0.2795*	*0.0446*	*0.3531*	*0.9459*	*0.6093*	*0.5899*	*0.2811*
	50/50	-0.2191	0.0239	-0.1758	-0.0784	-0.1206	-0.0409	0.0714	-0.1366	0.1069	-0.1858	-0.0922	0.0008	0.5418	0.0033
		(0.1781)	(0.0506)	(0.1238)	(0.1245)	(0.1424)	(0.2131)	(0.0645)	(0.2556)	(0.0684)	(0.208)	(0.2209)	(0.4154)	(0.3345)	(0.152)
		0.2204	*0.637*	*0.1577*	*0.5297*	*0.3985*	*0.848*	*0.2701*	*0.5945*	*0.1218*	*0.3743*	*0.6776*	*0.9984*	*0.1088*	*0.9828*
	KNN	-0.793	0.1338	-0.329	-0.1105	0.02	-0.4028	0.3621*	-2.3017***	0.0606	1.3186**	1.5165***	1.164	-1.4746*	0.8743***
		(0.559)	(0.1172)	(0.4251)	(0.338)	(0.5166)	(0.568)	(0.1928)	(0.737)	(0.2345)	(0.646)	(0.4626)	(0.8334)	(0.7695)	(0.2885)
		0.1579	*0.2552*	*0.4401*	*0.7443*	*0.9692*	*0.4793*	*0.0621*	*0.0024*	*0.7966*	*0.0442*	*0.0015*	*0.166*	*0.0585*	*0.0032*
WTR	10/90	-0.4854	0.2363*	-0.2319	-0.1254	-0.0371	0.0798	0.2305	-0.1519	0.1932	0.3169	-0.2841	0.5719	-0.3867	-0.1785
		(0.455)	(0.1221)	(0.3376)	(0.3512)	(0.4988)	(0.6347)	(0.1403)	(0.5706)	(0.1307)	(0.3429)	(0.4163)	(0.4971)	(0.5426)	(0.2614)
		0.2875	*0.0547*	*0.493*	*0.7214*	*0.9408*	*0.9001*	*0.1022*	*0.7905*	*0.1419*	*0.3571*	*0.4961*	*0.2522*	*0.4774*	*0.4959*
	30/70	-0.1626	0.0406	-0.1452	0.1452	0.4613**	-0.1353	0.0329	-0.2161	0.0566	-0.1563	0.0766	0.494	-0.4416	0.0393
		(0.2145)	(0.0624)	(0.1255)	(0.1652)	(0.1856)	(0.2633)	(0.0758)	(0.2782)	(0.0869)	(0.1987)	(0.2156)	(0.3085)	(0.3876)	(0.1313)
		0.4493	*0.5157*	*0.2491*	*0.3807*	*0.0139*	*0.6081*	*0.665*	*0.4386*	*0.5165*	*0.4331*	*0.7228*	*0.1118*	*0.2568*	*0.765*
	50/50	-0.1615	0.0009	-0.0448	0.1202	0.1499	-0.1587	0.0411	-0.3535	-0.0218	-0.2218	-0.263	0.2786	0.272	-0.0567
		(0.1709)	(0.0526)	(0.1106)	(0.1403)	(0.1436)	(0.2314)	(0.0641)	(0.2309)	(0.0818)	(0.2107)	(0.2227)	(0.352)	(0.418)	(0.1111)
		0.346	*0.9867*	*0.6861*	*0.393*	*0.298*	*0.4938*	*0.5222*	*0.1282*	*0.7899*	*0.2944*	*0.2399*	*0.4302*	*0.5164*	*0.6105*
	KNN	-0.5451	0.0228	-0.3428	-0.5586*	-0.2848	-0.1347	0.1162	-0.692	0.0697	0.3419	0.4425	0.9932	-0.4109	0.125
		(0.4087)	(0.0842)	(0.2404)	(0.2896)	(0.3659)	(0.5734)	(0.1362)	(0.5201)	(0.1282)	(0.3639)	(0.7036)	(0.6768)	(0.8927)	(0.2395)
		0.1841	*0.7866*	*0.1557*	*0.0553*	*0.4374*	*0.8146*	*0.3945*	*0.1858*	*0.5875*	*0.3492*	*0.5306*	*0.1447*	*0.6461*	*0.6026*
WST	10/90	-0.6022	0.1535*	-0.5476*	0.0743	0.1713	-0.7115*	0.27	-1.1947*	0.3689**	-0.2072	0.6705	-0.1069	-0.6073	0.0095
		(0.4731)	(0.0894)	(0.3307)	(0.3169)	(0.4997)	(0.4294)	(0.182)	(0.6281)	(0.16)	(0.4677)	(0.4681)	(0.672)	(0.7901)	(0.2884)
		0.2048	*0.0879*	*0.0996*	*0.8149*	*0.7322*	*0.0993*	*0.1397*	*0.0594*	*0.0228*	*0.6585*	*0.1546*	*0.8738*	*0.4436*	*0.9737*
	30/70	-0.3044	0.0347	-0.4396**	0.04	0.1876	-0.2266	0.0241	-0.8296**	0.2069*	0.3822	0.5877	0.9377**	-0.2335	-0.1111
		(0.2637)	(0.0587)	(0.1705)	(0.1637)	(0.2637)	(0.239)	(0.0618)	(0.4078)	(0.1179)	(0.3041)	(0.432)	(0.4546)	(0.69)	(0.2191)
		0.25	*0.5547*	*0.0108*	*0.8071*	*0.4778*	*0.3443*	*0.6963*	*0.044*	*0.0818*	*0.2111*	*0.1762*	*0.0412*	*0.7357*	*0.6129*
	50/50	-0.2958**	0.0759*	-0.2893**	-0.0486	0.2404	0.1345	-0.0578	-0.5884	0.0448	0.1952	0.4755	0.7273*	-0.0389	0.0264
		(0.1259)	(0.0409)	(0.1132)	(0.0909)	(0.1566)	(0.1262)	(0.04)	(0.4162)	(0.1305)	(0.3068)	(0.3122)	(0.404)	(0.5706)	(0.1898)
		0.0199	*0.0655*	*0.0114*	*0.5931*	*0.1266*	*0.288*	*0.1498*	*0.16*	*0.7319*	*0.5257*	*0.1303*	*0.0742*	*0.9457*	*0.8894*
	KNN	-0.1492	0.0671	-0.4811*	0.0351	-0.27	-0.5435	0.1812	-1.0284	0.402*	0.83	2.1495***	1.7105*	-3.5574***	0.6353**
		(0.4227)	(0.0883)	(0.2863)	(0.2793)	(0.3845)	(0.3803)	(0.1267)	(0.6505)	(0.2048)	(0.6781)	(0.6815)	(0.92)	(1.2843)	(0.3147)
		0.7245	*0.4485*	*0.0947*	*0.9002*	*0.4835*	*0.1547*	*0.1546*	*0.1164*	*0.0519*	*0.2232*	*0.002*	*0.0653*	*0.0065*	*0.0456*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 92. Health Care sector's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	12.68%	0.5129	0.4658	1.5532	15.11%	0.6075	0.6041	1.3215
		Brown	7.93%	0.3310	0.3407	0.7043	-5.61%	-0.3016	-0.2851	-0.5762
	30/70	Green	11.83%	0.6964	0.6628	1.5721	12.19%	0.8756	0.9659	1.8227
		Brown	7.97%	0.4309	0.4290	0.9516	5.09%	0.2100	0.2092	0.4225
	50/50	Green	11.82%	0.7302	0.7161	1.6399	9.63%	0.6537	0.7043	1.3187
		Brown	9.26%	0.5685	0.5198	1.2413	7.41%	0.3969	0.3996	0.8135
	KNN	Green	14.52%	0.6395	0.6197	1.5863	10.46%	0.6204	0.6097	1.4252
		Brown	6.00%	0.2225	0.2238	0.4609	-15.72%	-0.6132	-0.5947	-1.1317
WTR	10/90	Green	7.90%	0.3420	0.3263	0.8091	12.70%	0.7689	0.9152	1.5753
		Brown	4.26%	0.1582	0.1453	0.3372	13.26%	0.6049	0.5972	1.3259
	30/70	Green	9.19%	0.5395	0.5120	1.1845	14.51%	1.0615	1.1210	2.3217
		Brown	9.43%	0.5393	0.5132	1.1603	13.93%	0.8368	0.8674	1.9108
	50/50	Green	10.38%	0.6630	0.6201	1.4702	16.68%	1.2306	1.2506	2.7489
		Brown	8.96%	0.5534	0.5169	1.2012	12.74%	0.8675	0.8557	2.0159
	KNN	Green	11.09%	0.5445	0.5286	1.3450	15.90%	1.1291	1.2932	2.4311
		Brown	4.82%	0.2106	0.1990	0.4517	8.44%	0.3339	0.3609	0.6727
WST	10/90	Green	13.53%	0.6142	0.6234	1.3550	17.84%	0.7873	0.8852	1.6560
		Brown	9.13%	0.4217	0.3838	0.9845	3.78%	0.1277	0.1295	0.2643
	30/70	Green	11.78%	0.7220	0.7029	1.6513	13.78%	0.8629	0.8109	1.9793
		Brown	9.11%	0.5374	0.5032	1.1756	5.98%	0.2618	0.2605	0.5421
	50/50	Green	11.26%	0.7429	0.6964	1.6935	14.99%	0.9524	0.9722	2.1988
		Brown	9.07%	0.5660	0.5200	1.2354	9.18%	0.5054	0.4908	1.0995
	KNN	Green	8.86%	0.3741	0.3629	0.8847	14.09%	0.8884	0.8387	2.0604
		Brown	8.19%	0.3844	0.3340	0.9003	9.30%	0.2691	0.2785	0.5736

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 93. Energy sector's sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	0.7114*	-0.1464	-0.4163	0.2651	-0.1231	-0.5548	0.0486	-0.5965	0.2236*	0.1026	1.2923***	0.3844	-1.2567**	0.3939
		(0.4213)	(0.119)	(0.2717)	(0.3029)	(0.3996)	(0.3879)	(0.1294)	(0.7124)	(0.1321)	(0.3742)	(0.4689)	(0.5678)	(0.5008)	(0.347)
		0.0932	*0.2207*	*0.1274*	*0.3828*	*0.7584*	*0.1545*	*0.7078*	*0.4039*	*0.0927*	*0.7844*	*0.0066*	*0.4995*	*0.0133*	*0.2583*
	30/70	0.2624	0.1293	0.5394*	0.177	-0.0526	0.0046	-0.0292	-0.3213	0.1373	0.3176	0.7194*	0.301	-0.7236*	0.0113
		(0.3416)	(0.1121)	(0.2958)	(0.2166)	(0.4026)	(0.2848)	(0.1247)	(0.4778)	(0.1087)	(0.2362)	(0.364)	(0.4009)	(0.3939)	(0.185)
		0.4436	*0.2505*	*0.0701*	*0.4151*	*0.8963*	*0.987*	*0.8149*	*0.5024*	*0.2088*	*0.181*	*0.0501*	*0.4541*	*0.0683*	*0.9515*
	50/50	0.0784	0.0983	0.488	0.2084	0.0417	-0.1236	-0.1961	0.0483	-0.0019	-0.0704	0.5121	-0.151	-0.6182	0.1094
		(0.3079)	(0.1235)	(0.3056)	(0.2094)	(0.4086)	(0.2318)	(0.12)	(0.4638)	(0.1268)	(0.3643)	(0.3837)	(0.5076)	(0.4453)	(0.1709)
		0.7993	*0.4275*	*0.1123*	*0.3211*	*0.9188*	*0.5947*	*0.1043*	*0.9172*	*0.9882*	*0.8471*	*0.1841*	*0.7665*	*0.1673*	*0.5232*
	KNN	0.5984	-0.1516	-0.1672	0.4155	-0.0647	-0.6005*	-0.0331	-0.6759	0.3775***	1.0446***	0.8334**	0.8978	-0.7489	-0.2896
		(0.4628)	(0.1189)	(0.302)	(0.3466)	(0.4412)	(0.3508)	(0.1202)	(0.5606)	(0.1271)	(0.3072)	(0.3996)	(0.5502)	(0.5057)	(0.2429)
		0.1979	*0.2042*	*0.5806*	*0.2324*	*0.8836*	*0.0889*	*0.7832*	*0.23*	*0.0035*	*0.0009*	*0.0389*	*0.105*	*0.141*	*0.2352*
WTR	10/90	-0.0228	-0.2672**	-0.796**	0.145	-0.3849	0.2824	-0.0043	0.6301	-0.0384	-0.6684	-0.5014	-0.5963	-0.1883	0.4955
		(0.4937)	(0.1141)	(0.3333)	(0.3264)	(0.4047)	(0.4014)	(0.208)	(0.9481)	(0.286)	(0.4385)	(0.7066)	(0.902)	(0.8817)	(0.6359)
		0.9632	*0.0204*	*0.0181*	*0.6574*	*0.343*	*0.4828*	*0.9835*	*0.5078*	*0.8934*	*0.1306*	*0.4796*	*0.5101*	*0.8313*	*0.4376*
	30/70	0.2231	-0.0801	-0.2378	0.1658	-0.1856	-0.1097	-0.1541	1.303**	-0.2682	-0.7786**	0.0813	-0.1259	-0.6391	0.0624
		(0.2474)	(0.0747)	(0.2301)	(0.1934)	(0.2285)	(0.2793)	(0.1126)	(0.6487)	(0.1875)	(0.3403)	(0.5041)	(0.5691)	(0.6824)	(0.4929)
		0.3685	*0.2851*	*0.3028*	*0.3927*	*0.4178*	*0.695*	*0.1729*	*0.0472*	*0.1556*	*0.0242*	*0.8721*	*0.8254*	*0.3512*	*0.8995*
	50/50	0.2198	-0.0213	0.201	0.2295	0.076	-1.2182***	-0.2884***	0.4366	-0.0418	-0.1612	0.0793	0.089	-0.2835	0.0473
		(0.2955)	(0.0702)	(0.1794)	(0.2104)	(0.2511)	(0.297)	(0.0968)	(0.3044)	(0.098)	(0.2023)	(0.273)	(0.3281)	(0.3358)	(0.2062)
		0.458	*0.7619*	*0.2642*	*0.277*	*0.7624*	*0.0001*	*0.0033*	*0.1546*	*0.6707*	*0.4275*	*0.7719*	*0.7869*	*0.4005*	*0.8192*
	KNN	0.6074*	-0.1939**	-0.5399*	0.1172	-0.2363	-0.1745	-0.262*	0.7035	-0.1412	-0.3672	-0.196	0.2283	-0.3895	-0.6911
		(0.3469)	(0.0882)	(0.3025)	(0.2568)	(0.2934)	(0.3173)	(0.1552)	(0.7693)	(0.2031)	(0.3983)	(0.6696)	(0.6537)	(0.8025)	(0.4632)
		0.0819	*0.0294*	*0.0762*	*0.6486*	*0.4218*	*0.583*	*0.0934*	*0.3626*	*0.4885*	*0.3588*	*0.7704*	*0.7277*	*0.6285*	*0.1388*
WST	10/90	-0.7923	0.0548	-0.1745	0.0783	0.2114	-0.0324	0.0066	1.0874	0.3347*	-0.1568	-0.2446	-0.4419	-0.0847	-0.1652
		(0.564)	(0.1364)	(0.3796)	(0.4242)	(0.4594)	(0.5692)	(0.2275)	(1.2088)	(0.1951)	(0.58)	(0.5814)	(0.7056)	(0.762)	(0.3063)
		0.162	*0.6885*	*0.6464*	*0.8537*	*0.6461*	*0.9547*	*0.9768*	*0.3705*	*0.0893*	*0.7874*	*0.6749*	*0.5326*	*0.9117*	*0.5909*
	30/70	-0.0693	0.0401	0.2081	0.4829**	0.746**	-0.2899	0.1244	0.271	0.2389**	0.2787	0.0308	0.2307	0.2731	-0.1362
		(0.2437)	(0.0613)	(0.2374)	(0.2122)	(0.3173)	(0.2575)	(0.117)	(0.5046)	(0.1105)	(0.3156)	(0.5254)	(0.3954)	(0.7057)	(0.2632)
		0.7766	*0.5138*	*0.382*	*0.0242*	*0.0199*	*0.262*	*0.2891*	*0.5923*	*0.0329*	*0.3793*	*0.9534*	*0.5609*	*0.6995*	*0.606*
	50/50	0.0354	0.095	0.2051	0.1969	0.1997	0.0708	0.2059**	0.3529	0.0974	0.4112	0.4577	0.4545	-0.0391	0.1599
		(0.2064)	(0.0756)	(0.1881)	(0.1757)	(0.267)	(0.2681)	(0.099)	(0.391)	(0.1676)	(0.33)	(0.4644)	(0.5116)	(0.5109)	(0.2149)
		0.864	*0.2111*	*0.2773*	*0.2641*	*0.4557*	*0.792*	*0.0392*	*0.369*	*0.5626*	*0.2156*	*0.3267*	*0.3765*	*0.9391*	*0.4586*
	KNN	-0.4677	0.039	0.0266	-0.1932	0.5478	1.0068**	-0.296*	1.3216	-0.1496	-0.5509	-0.4649	-0.8938	1.0001	-0.0531
		(0.4717)	(0.0984)	(0.2725)	(0.3481)	(0.3899)	(0.4659)	(0.166)	(0.9231)	(0.2404)	(0.5858)	(0.6391)	(0.7485)	(0.8129)	(0.4601)
		0.3229	*0.6923*	*0.9225*	*0.5797*	*0.1619*	*0.0322*	*0.0765*	*0.1553*	*0.5351*	*0.3492*	*0.4686*	*0.2352*	*0.2215*	*0.9084*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 94. Energy sector's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	-2.16%	-0.1087	-0.1022	-0.2471	7.09%	0.1919	0.2339	0.3640
		Brown	4.66%	0.1300	0.1223	0.2817	0.81%	-0.0056	-0.0059	-0.0122
	30/70	Green	-0.53%	-0.0622	-0.0601	-0.1355	6.12%	0.2045	0.2232	0.4445
		Brown	1.61%	0.0214	0.0214	0.0454	0.86%	-0.0048	-0.0049	-0.0098
	50/50	Green	1.69%	0.0313	0.0306	0.0642	3.06%	0.0799	0.0816	0.1786
		Brown	1.36%	0.0134	0.0133	0.0283	2.11%	0.0411	0.0419	0.0850
	KNN	Green	-2.85%	-0.1317	-0.1270	-0.2953	4.07%	0.1213	0.1273	0.2606
		Brown	1.89%	0.0300	0.0298	0.0620	-6.22%	-0.1893	-0.1895	-0.4108
WTR	10/90	Green	2.45%	0.0447	0.0469	0.0961	-5.63%	-0.2154	-0.2114	-0.4237
		Brown	-0.93%	-0.0686	-0.0738	-0.1371	6.39%	0.1807	0.1964	0.3566
	30/70	Green	-0.07%	-0.0387	-0.0369	-0.0858	-2.91%	-0.1343	-0.1319	-0.2833
		Brown	0.66%	-0.0125	-0.0124	-0.0264	14.28%	0.4785	0.5603	0.9799
	50/50	Green	0.51%	-0.0215	-0.0212	-0.0443	-0.05%	-0.0385	-0.0387	-0.0840
		Brown	0.98%	-0.0008	-0.0008	-0.0016	6.96%	0.2208	0.2243	0.4808
	KNN	Green	-3.81%	-0.1539	-0.1519	-0.3269	-3.92%	-0.1680	-0.1690	-0.3464
		Brown	0.44%	-0.0195	-0.0193	-0.0424	2.74%	0.0519	0.0546	0.1069
WST	10/90	Green	5.85%	0.1890	0.1970	0.3893	-12.49%	-0.4152	-0.3430	-1.2472
		Brown	-1.82%	-0.1105	-0.1051	-0.2393	1.92%	0.0337	0.0337	0.0699
	30/70	Green	-1.27%	-0.0823	-0.0853	-0.1559	-0.22%	-0.0444	-0.0462	-0.0933
		Brown	0.08%	-0.0340	-0.0328	-0.0701	2.33%	0.0402	0.0412	0.0903
	50/50	Green	-0.97%	-0.0747	-0.0749	-0.1469	-0.31%	-0.0458	-0.0479	-0.0929
		Brown	0.91%	-0.0034	-0.0032	-0.0075	4.49%	0.1107	0.1125	0.2703
	KNN	Green	3.31%	0.0858	0.0831	0.1951	-0.95%	-0.0677	-0.0710	-0.1393
		Brown	0.85%	-0.0055	-0.0057	-0.0109	8.31%	0.2349	0.2647	0.4728

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 95. Utilities sector's sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG	10/90	-0.4044	-0.1154	0.1018	0.5174	0.7458**	0.1981	0.3925***	-0.1423	-0.0375	0.8219*	-0.2466	-0.1091	-0.1295	-0.4194*
		(0.4318)	(0.1099)	(0.2637)	(0.3234)	(0.3694)	(0.5254)	(0.1061)	(0.5872)	(0.1482)	(0.4544)	(0.5158)	(0.6724)	(0.6827)	(0.2383)
		0.3504	*0.295*	*0.6999*	*0.1116*	*0.0452*	*0.7066*	*0.0003*	*0.8089*	*0.8006*	*0.0727*	*0.6334*	*0.8714*	*0.8498*	*0.0806*
	30/70	-0.084	-0.067	-0.1286	0.1825	0.5287**	0.0099	0.0345	-0.2648	0.0031	0.1541	-0.0192	-0.0596	-0.5588	-0.1464
		(0.2299)	(0.0579)	(0.1666)	(0.164)	(0.2262)	(0.2158)	(0.0827)	(0.385)	(0.1078)	(0.2494)	(0.3093)	(0.3257)	(0.4455)	(0.1805)
		0.7155	*0.2492*	*0.4411*	*0.2674*	*0.0207*	*0.9635*	*0.6773*	*0.4927*	*0.9772*	*0.5378*	*0.9505*	*0.855*	*0.2119*	*0.4187*
	50/50	-0.2594	0.1555***	-0.2547**	0.2665**	-0.0187	-0.072	0.0724	-0.3332	0.1031	-0.0117	0.0635	-0.0505	-0.3001	0.0496
		(0.1947)	(0.0508)	(0.1225)	(0.1333)	(0.1725)	(0.2261)	(0.0788)	(0.244)	(0.0634)	(0.2068)	(0.2631)	(0.2554)	(0.3199)	(0.1408)
		0.1848	*0.0026*	*0.0391*	*0.0473*	*0.9137*	*0.7505*	*0.3598*	*0.1743*	*0.1061*	*0.9548*	*0.8097*	*0.8436*	*0.3499*	*0.7252*
	KNN	0.1419	-0.1216	-0.006	0.2891	0.8338**	-0.0365	0.2084***	1.1768	-0.2026	-0.3429	0.3644	-0.328	0.3201	-0.1998
		(0.3811)	(0.088)	(0.2558)	(0.2356)	(0.3234)	(0.3126)	(0.079)	(0.8446)	(0.229)	(0.5904)	(0.4667)	(0.6015)	(0.673)	(0.2789)
		0.7102	*0.1687*	*0.9814*	*0.2215*	*0.0108*	*0.9071*	*0.0092*	*0.1658*	*0.3778*	*0.5624*	*0.4362*	*0.5864*	*0.6351*	*0.475*
WTR	10/90	-0.3586	-0.1972	-0.5474	-0.0556	0.2059	-0.1272	0.0548	0.3507	0.0518	-0.2994	-0.2328	-0.7189	0.0333	0.0351
		(0.4838)	(0.1457)	(0.3671)	(0.3931)	(0.4155)	(0.4264)	(0.1754)	(0.5125)	(0.1513)	(0.3514)	(0.3476)	(0.4539)	(0.4451)	(0.2076)
		0.4596	*0.1777*	*0.1378*	*0.8876*	*0.6208*	*0.7658*	*0.7552*	*0.4949*	*0.7328*	*0.3955*	*0.5041*	*0.1153*	*0.9405*	*0.866*
	30/70	-0.2107	0.2476***	-0.2997	0.4178**	0.4469*	-0.5952**	0.1927**	0.304	0.0588	-0.1598	-0.4774*	-0.9426***	0.4234	0.0856
		(0.3185)	(0.0861)	(0.2126)	(0.1982)	(0.2644)	(0.2334)	(0.0801)	(0.265)	(0.0715)	(0.224)	(0.2496)	(0.2833)	(0.2944)	(0.1062)
		0.5092	*0.0045*	*0.1604*	*0.0365*	*0.0927*	*0.0116*	*0.0172*	*0.253*	*0.4119*	*0.4767*	*0.0577*	*0.0011*	*0.1525*	*0.4219*
	50/50	-0.1618	0.1853***	-0.2063	0.0682	0.4264**	-0.1071	0.0442	0.4856**	-0.0757	-0.1084	-0.326*	-0.4794**	0.226	-0.0407
		(0.2208)	(0.0547)	(0.152)	(0.1439)	(0.1713)	(0.1869)	(0.0594)	(0.2077)	(0.079)	(0.1859)	(0.1761)	(0.2288)	(0.2469)	(0.0711)
		0.4647	*0.0009*	*0.1766*	*0.6362*	*0.0137*	*0.5671*	*0.4583*	*0.0207*	*0.3395*	*0.5607*	*0.0661*	*0.0378*	*0.3616*	*0.568*
	KNN	-0.5217	0.0576	-0.2104	0.2039	0.6079*	-0.1063	0.1472	0.0337	0.3033	0.6172	-0.7074*	-0.2737	0.8732*	0.1647
		(0.3551)	(0.0953)	(0.2561)	(0.3079)	(0.3315)	(0.3563)	(0.164)	(0.5821)	(0.2108)	(0.4728)	(0.4252)	(0.5361)	(0.4812)	(0.2075)
		0.1436	*0.5467*	*0.4123*	*0.5087*	*0.0684*	*0.7658*	*0.3706*	*0.9539*	*0.1524*	*0.1938*	*0.0983*	*0.6104*	*0.0716*	*0.4285*
WST	10/90	0.0067	0.1082	0.1526	0.1663	-0.1508	-0.2704	0.1572	0.4573	0.1157	-0.6443	-0.8247	-1.3979**	0.3935	-0.5213
		(0.3715)	(0.119)	(0.2568)	(0.2866)	(0.3579)	(0.4861)	(0.1517)	(0.7505)	(0.1726)	(0.4208)	(0.5679)	(0.5871)	(0.9382)	(0.3641)
		0.9855	*0.3646*	*0.5532*	*0.5624*	*0.6741*	*0.5788*	*0.3017*	*0.5434*	*0.504*	*0.1283*	*0.149*	*0.0188*	*0.6757*	*0.1546*
	30/70	0.2252	0.1339**	-0.0619	-0.1217	-0.7854***	0.484*	0.0463	0.3231	0.2715***	-0.0389	-0.899**	-0.7842**	1.0314**	-0.5277***
		(0.2268)	(0.0595)	(0.2529)	(0.2074)	(0.2367)	(0.2591)	(0.0876)	(0.3117)	(0.0974)	(0.2637)	(0.3683)	(0.3685)	(0.4771)	(0.1829)
		0.3221	*0.0257*	*0.8068*	*0.5583*	*0.0011*	*0.0635*	*0.5977*	*0.302*	*0.0061*	*0.8831*	*0.0161*	*0.0353*	*0.0325*	*0.0046*
	50/50	0.0394	0.1114**	-0.1518	-0.1978	-0.5865***	0.4451**	-0.0263	-0.0059	0.0904	-0.1433	-0.4644*	-0.7322**	0.4338	-0.141
		(0.184)	(0.0461)	(0.1551)	(0.1433)	(0.2058)	(0.1751)	(0.0669)	(0.2144)	(0.0616)	(0.2035)	(0.2429)	(0.2889)	(0.3248)	(0.0975)
		0.8305	*0.0168*	*0.329*	*0.1693*	*0.0049*	*0.0119*	*0.6947*	*0.9781*	*0.145*	*0.4826*	*0.0582*	*0.0125*	*0.1842*	*0.1506*
	KNN	-0.0213	0.1385*	0.1976	-0.1588	-0.5651**	0.8356**	-0.1314	0.7934	0.1665	-0.2001	-0.6819	-1.2584*	0.8648	-0.5316*
		(0.3046)	(0.0826)	(0.2672)	(0.2189)	(0.2616)	(0.3379)	(0.1221)	(0.5979)	(0.2004)	(0.3975)	(0.4182)	(0.689)	(0.605)	(0.2978)
		0.9442	*0.0954*	*0.4605*	*0.4691*	*0.0321*	*0.0144*	*0.2833*	*0.1869*	*0.4076*	*0.6155*	*0.1055*	*0.0702*	*0.1554*	*0.0767*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 96. Utilities sector's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	4.36%	0.1595	0.1485	0.3451	14.64%	0.7985	0.8349	1.8149
		Brown	3.18%	0.1347	0.1099	0.4427	8.57%	0.3491	0.3914	0.6912
	30/70	Green	2.63%	0.1020	0.0991	0.2090	8.14%	0.4852	0.4879	1.0648
		Brown	3.67%	0.1866	0.1775	0.4104	3.52%	0.1462	0.1430	0.3104
	50/50	Green	3.79%	0.1892	0.1800	0.3972	7.08%	0.4374	0.4566	0.9255
		Brown	1.06%	0.0033	0.0030	0.0072	3.62%	0.1667	0.1624	0.3441
	KNN	Green	-1.34%	-0.1205	-0.1100	-0.2435	7.66%	0.4785	0.4794	1.0526
		Brown	4.67%	0.2527	0.2135	0.7108	12.51%	0.3939	0.4693	0.7857
WTR	10/90	Green	5.05%	0.1580	0.1594	0.3376	2.43%	0.0733	0.0646	0.1638
		Brown	2.34%	0.0729	0.0675	0.1528	6.44%	0.3118	0.3019	0.6776
	30/70	Green	4.44%	0.2289	0.2422	0.4444	4.93%	0.2407	0.2390	0.4915
		Brown	5.10%	0.2289	0.2232	0.4946	7.39%	0.4037	0.3728	0.8922
	50/50	Green	3.54%	0.1750	0.1640	0.3693	3.49%	0.1504	0.1513	0.3041
		Brown	4.66%	0.2162	0.2090	0.4742	7.48%	0.4191	0.4149	0.9179
	KNN	Green	9.32%	0.4505	0.4763	0.9509	2.43%	0.0775	0.0746	0.1588
		Brown	6.29%	0.3182	0.2718	0.7507	6.17%	0.1997	0.1967	0.4053
WST	10/90	Green	3.46%	0.1306	0.1340	0.2785	0.69%	-0.0151	-0.0161	-0.0283
		Brown	3.15%	0.1105	0.1037	0.2748	2.58%	0.0699	0.0640	0.1531
	30/70	Green	2.33%	0.0783	0.0767	0.1602	2.59%	0.1181	0.1175	0.2327
		Brown	2.96%	0.1044	0.1040	0.2125	5.44%	0.2581	0.2622	0.5080
	50/50	Green	3.07%	0.1293	0.1275	0.2669	5.72%	0.3583	0.3735	0.7298
		Brown	2.05%	0.0600	0.0593	0.1222	4.64%	0.2421	0.2335	0.4963
	KNN	Green	2.54%	0.0894	0.0913	0.1822	4.55%	0.2611	0.2556	0.5504
		Brown	0.03%	-0.0501	-0.0508	-0.0950	8.96%	0.3514	0.3431	0.7477

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised.

Table 97. Communication services sector's sample, factor models

		Environmental performance							Environmental momentum						
Variable	Type	Alpha	Market	Size	Value	Profitability	Investment	Momentum	Alpha	Market	Size	Value	Profitability	Investment	Momentum
GHG		-0.1746	-0.3417***	-0.5869	0.4326	0.1483	0.4145	0.1749	-1.087	-0.2013	0.9771**	-0.6178	0.0793	1.2332*	-0.0887
	10/90	(0.4353)	(0.0921)	(0.3836)	(0.3512)	(0.388)	(0.4864)	(0.177)	(0.9094)	(0.1886)	(0.4639)	(0.5011)	(0.7031)	(0.6573)	(0.368)
		0.689	*0.0003*	*0.1282*	*0.22*	*0.7029*	*0.3954*	*0.3248*	*0.2342*	*0.2878*	*0.0372*	*0.2199*	*0.9103*	*0.063*	*0.8098*
		-0.1663	-0.1314	-0.3038	0.2263	0.7819***	0.9127***	0.2563**	-1.0092**	0.0178	0.9831***	-0.2295	1.4575***	1.2132***	-0.154
	30/70	(0.2607)	(0.0834)	(0.2346)	(0.1932)	(0.2544)	(0.2777)	(0.1229)	(0.4788)	(0.0936)	(0.2957)	(0.3692)	(0.5212)	(0.4471)	(0.2348)
		0.5245	*0.1174*	*0.1974*	*0.2433*	*0.0025*	*0.0013*	*0.0388*	*0.0371*	*0.8497*	*0.0012*	*0.5352*	*0.006*	*0.0076*	*0.5131*
		-0.0224	-0.0421	-0.045	0.3025	0.9918***	0.3058	0.1066	-0.7742**	0.0033	0.4126	-0.2163	1.0703**	0.4814	-0.0955
	50/50	(0.2608)	(0.0679)	(0.232)	(0.2068)	(0.3449)	(0.2812)	(0.1193)	(0.3255)	(0.0922)	(0.2907)	(0.3086)	(0.4339)	(0.3067)	(0.191)
		0.9316	*0.5362*	*0.8463*	*0.1456*	*0.0046*	*0.2786*	*0.373*	*0.0189*	*0.9718*	*0.1583*	*0.4846*	*0.015*	*0.119*	*0.6179*
		-0.0113	-0.3749***	-0.964***	0.3899	0.0197	0.0442	-0.0206	-1.1015*	-0.0215	0.3816	0.2166	0.7442	0.3852	0.0502
	KNN	(0.4397)	(0.0909)	(0.3057)	(0.296)	(0.3592)	(0.4737)	(0.1433)	(0.6145)	(0.1272)	(0.3552)	(0.4177)	(0.5969)	(0.4552)	(0.2992)
		0.9796	*0.0001*	*0.002*	*0.1897*	*0.9564*	*0.9258*	*0.8857*	*0.0755*	*0.866*	*0.2847*	*0.6051*	*0.2148*	*0.3991*	*0.8669*
WTR		0.1181	0.1729	-0.3098	0.2906	-0.6875	-0.3867	-0.1502	0.6211	-0.2882**	0.3629	0.5268	1.4138***	-0.3044	-0.0691
	10/90	(0.5487)	(0.1597)	(0.4045)	(0.6443)	(0.5907)	(0.7636)	(0.2353)	(0.5713)	(0.1166)	(0.3497)	(0.3774)	(0.4285)	(0.67)	(0.2793)
		0.8299	*0.2807*	*0.445*	*0.6526*	*0.2463*	*0.6133*	*0.5242*	*0.2792*	*0.0149*	*0.3017*	*0.1655*	*0.0013*	*0.6505*	*0.8049*
		0.2469	0.0928	-0.4034	0.6499**	0.2285	-0.815*	-0.0323	-0.5881	0.1876	0.8035**	0.2883	0.4865	-0.3565	-0.0187
	30/70	(0.3542)	(0.1201)	(0.2861)	(0.2888)	(0.41)	(0.4224)	(0.1677)	(0.3919)	(0.1213)	(0.3185)	(0.4141)	(0.4397)	(0.6083)	(0.2254)
		0.4868	*0.4406*	*0.1607*	*0.0259*	*0.5781*	*0.0556*	*0.8473*	*0.1362*	*0.1248*	*0.013*	*0.4878*	*0.2708*	*0.5589*	*0.9339*
		0.0345	0.0276	-0.3327*	0.3744*	0.375	-0.0604	-0.056	-0.075	-0.0091	0.1051	0.2091	-0.3503	-1.0093**	0.1169
	50/50	(0.2316)	(0.0606)	(0.1713)	(0.1934)	(0.2547)	(0.3453)	(0.0982)	(0.3411)	(0.0919)	(0.1647)	(0.2764)	(0.2171)	(0.4181)	(0.1937)
		0.8817	*0.6499*	*0.0539*	*0.0548*	*0.143*	*0.8613*	*0.5696*	*0.8263*	*0.921*	*0.5248*	*0.4509*	*0.1094*	*0.0174*	*0.5474*
		0.1889	0.1897*	-0.0542	-0.2381	-1.1511***	0.1708	-0.1469	-0.235	0.1937	0.6661	0.7041	0.1524	-0.7194	-0.0872
	KNN	(0.3463)	(0.1027)	(0.2768)	(0.2809)	(0.374)	(0.4914)	(0.1124)	(0.6108)	(0.1829)	(0.4552)	(0.6583)	(0.6776)	(0.9663)	(0.3758)
		0.5863	*0.0667*	*0.845*	*0.3981*	*0.0025*	*0.7286*	*0.1934*	*0.7012*	*0.2916*	*0.1462*	*0.2871*	*0.8224*	*0.4581*	*0.8169*
WST		0.3911	-0.106	-0.2396	0.4047	-0.3242	-0.6687	0.1684	0.0921	0.0537	0.2754	-0.4255	-1.0436**	-0.5144	-0.0448
	10/90	(0.5693)	(0.1145)	(0.3088)	(0.4028)	(0.3903)	(0.4368)	(0.1502)	(0.6529)	(0.1447)	(0.3661)	(0.4769)	(0.4955)	(0.7195)	(0.2939)
		0.4931	*0.356*	*0.4389*	*0.3165*	*0.4074*	*0.1278*	*0.2639*	*0.8881*	*0.7116*	*0.4536*	*0.3744*	*0.0377*	*0.4763*	*0.8791*
		-0.1634	0.0387	0.1045	0.1388	0.1831	0.1877	-0.0183	-0.3479	0.0217	0.055	-0.4231	-0.6823	0.9304*	0.2142
	30/70	(0.2942)	(0.0784)	(0.1862)	(0.2619)	(0.2635)	(0.3569)	(0.1074)	(0.463)	(0.1351)	(0.323)	(0.4315)	(0.4554)	(0.4995)	(0.2653)
		0.5794	*0.6225*	*0.5755*	*0.5968*	*0.4882*	*0.5998*	*0.8651*	*0.4542*	*0.8729*	*0.8652*	*0.3292*	*0.1372*	*0.0654*	*0.4212*
		-0.4425*	0.0387	0.162	0.044	-0.0029	0.2669	0.0154	-0.133	0.1644	0.4017	-0.365	-0.6261	0.3503	0.4276**
	50/50	(0.2479)	(0.0603)	(0.1403)	(0.2117)	(0.2088)	(0.3342)	(0.1019)	(0.4127)	(0.1253)	(0.3139)	(0.3331)	(0.5481)	(0.5203)	(0.2056)
		0.0761	*0.5213*	*0.2499*	*0.8356*	*0.989*	*0.4256*	*0.8798*	*0.7479*	*0.1924*	*0.2036*	*0.2758*	*0.256*	*0.5023*	*0.0401*
		0.5466	0.0736	0.0941	0.0848	0.1307	-0.4156	0.033	-0.6681	-0.0699	-0.341	-0.352	-1.2055**	0.6727	0.2179
	KNN	(0.5453)	(0.1566)	(0.3367)	(0.4055)	(0.5022)	(0.522)	(0.164)	(0.5967)	(0.1807)	(0.4922)	(0.5046)	(0.5441)	(0.7143)	(0.3533)
		0.3177	*0.6391*	*0.7802*	*0.8346*	*0.795*	*0.4272*	*0.8406*	*0.2655*	*0.6998*	*0.49*	*0.4871*	*0.029*	*0.3486*	*0.5388*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 98. Communication services sector's sample, portfolios' performance

Variable	Model	Portfolio Type	Environmental performance				Environmental momentum			
			Return	Sharpe	Sortino	MSharpe	Return	Return	Sharpe	MSharpe
GHG	10/90	Green	7.75%	0.3101	0.3498	0.6148	12.32%	0.4423	0.4275	1.0129
		Brown	2.46%	0.0884	0.1013	0.1638	-1.67%	-0.1225	-0.1194	-0.2412
	30/70	Green	8.61%	0.4180	0.4771	0.8177	15.74%	0.8596	1.0302	1.7742
		Brown	7.86%	0.4891	0.4978	1.0660	6.83%	0.3171	0.3185	0.6895
	50/50	Green	9.82%	0.5078	0.5356	1.0536	12.30%	0.6779	0.7446	1.4260
		Brown	12.82%	0.8280	0.8578	1.9491	6.85%	0.3339	0.3848	0.6407
	KNN	Green	7.25%	0.2979	0.3161	0.6046	15.28%	0.8416	0.9432	1.7747
		Brown	2.80%	0.1062	0.1190	0.1982	1.88%	0.0430	0.0428	0.0874
WTR	10/90	Green	6.25%	0.2884	0.3447	0.5343	3.42%	0.1062	0.1061	0.2295
		Brown	6.55%	0.2960	0.3286	0.5917	12.13%	0.4973	0.5107	1.1437
	30/70	Green	6.15%	0.3873	0.3791	0.8196	7.20%	0.4284	0.4406	0.8604
		Brown	10.77%	0.6391	0.6571	1.3513	1.06%	0.0034	0.0035	0.0073
	50/50	Green	8.65%	0.5286	0.5286	1.1029	5.17%	0.3249	0.3438	0.6365
		Brown	9.83%	0.6129	0.6005	1.3218	2.87%	0.1288	0.1361	0.2398
	KNN	Green	4.81%	0.2445	0.2342	0.5044	8.32%	0.4828	0.4828	0.9934
		Brown	5.88%	0.2686	0.2922	0.5287	1.30%	0.0112	0.0106	0.0308
WST	10/90	Green	4.25%	0.1562	0.1522	0.3352	2.09%	0.0612	0.0638	0.1124
		Brown	6.69%	0.3215	0.3106	0.6931	-0.56%	-0.0777	-0.0897	-0.1433
	30/70	Green	8.01%	0.4104	0.3967	0.9203	7.77%	0.3925	0.4545	0.7318
		Brown	6.68%	0.3600	0.3451	0.8050	-0.41%	-0.0879	-0.0864	-0.1660
	50/50	Green	8.64%	0.4787	0.4619	1.0257	6.49%	0.3595	0.3526	0.7191
		Brown	3.38%	0.1542	0.1540	0.3241	3.26%	0.1200	0.1323	0.2274
	KNN	Green	4.20%	0.1675	0.1654	0.3460	11.60%	0.6265	0.7308	1.2175
		Brown	12.53%	0.6498	0.6930	1.3873	-3.50%	-0.2060	-0.2249	-0.3790

Notes: best-performing results within a specific indicator are highlighted. All returns are annualised

Table 99. Full sample and status-wise multiple factor models

Sample	Variable	Model	Alphas											
			Environmental performance						Environmental momentum					
			Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor	Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor
All	GHG	10/90	-0.2523	-0.1562	-0.1404	-0.2909	-0.4808	-0.4362	-1.1074***	-1.2105***	-1.1186***	-1.0893***	-0.9405***	-0.9499***
		30/70	-0.2012	-0.1723	-0.1492	-0.2422	-0.4191*	-0.4007	-0.4335**	-0.5456***	-0.4666***	-0.4548**	-0.4428**	-0.4302**
		50/50	-0.1323	-0.1487	-0.1122	-0.1671	-0.2792*	-0.2661	-0.2841*	-0.3726***	-0.3036**	-0.2625**	-0.272**	-0.2703**
		KNN	-0.2565	-0.0654	-0.1034	-0.3078	-0.5888*	-0.5586	-0.798*	-0.8794**	-0.7776*	-0.7028*	-0.6717*	-0.6565
	WTR	10/90	-0.1661	-0.1229	-0.0865	-0.1555	-0.3712	-0.3459	-0.0011	-0.0936	-0.1016	-0.1544	-0.1187	-0.1223
		30/70	-0.0443	-0.0381	-0.0078	-0.0465	-0.2174	-0.1996	-0.1905	-0.2889*	-0.3039*	-0.3725**	-0.3743**	-0.3889***
		50/50	-0.049	-0.0053	0.0194	-0.0375	-0.1882	-0.1754	-0.0079	-0.0767	-0.1058	-0.1529	-0.0921	-0.0937
		KNN	-0.1203	-0.0926	-0.1183	-0.2166	-0.4248*	-0.3839	-0.4238	-0.5213*	-0.4766	-0.4819	-0.4735	-0.5342
	WST	10/90	-0.1597	-0.2164	-0.1388	-0.251	-0.3062	-0.2598	-0.7316**	-0.9365**	-0.9446**	-0.9185**	-0.8305**	-0.8639**
		30/70	-0.0474	-0.1145	-0.0646	-0.1241	-0.2087	-0.1862	-0.2583	-0.3963**	-0.3638*	-0.3684**	-0.2688	-0.2807
		50/50	-0.0445	-0.0744	-0.0513	-0.1043	-0.1458	-0.129	-0.2327	-0.3469**	-0.3143**	-0.3392**	-0.2739*	-0.2924*
		KNN	-0.2856	-0.3745	-0.2961	-0.3668	-0.3673	-0.3517	-0.5039	-0.6328	-0.6958	-0.6008	-0.6434	-0.64
Developed	GHG	10/90	-0.2827	-0.1885	-0.1616	-0.3199	-0.4852	-0.4326	-0.6561**	-0.824***	-0.6788***	-0.6451***	-0.4648**	-0.4846**
		30/70	-0.2803	-0.2506	-0.22	-0.3285	-0.564**	-0.5431**	-0.3836*	-0.4868**	-0.3872**	-0.3716**	-0.2906	-0.2779
		50/50	-0.1716	-0.1709	-0.1506	-0.2162	-0.3581**	-0.3433**	-0.1526	-0.2563**	-0.2292*	-0.1914*	-0.2146*	-0.229**
		KNN	-0.4259	-0.2389	-0.2666	-0.4878	-0.7198**	-0.6847**	-0.8928**	-1.0151**	-0.8373**	-0.7542**	-0.7522**	-0.7404*
	WTR	10/90	-0.2486	-0.1654	-0.1397	-0.2286	-0.4169	-0.3969	0.1893	0.078	0.0765	0.0392	0.1092	0.1337
		30/70	-0.1312	-0.085	-0.0488	-0.1212	-0.3282	-0.3221	-0.0897	-0.1954	-0.2078	-0.2703	-0.273*	-0.27*
		50/50	-0.0756	-0.0003	0.0251	-0.0508	-0.2246	-0.2147	0.01	-0.0609	-0.0942	-0.1439	-0.0859	-0.1014
		KNN	-0.1909	-0.1305	-0.1505	-0.2625	-0.4576*	-0.4221	-0.6828*	-0.7191*	-0.6923*	-0.7808**	-0.5737	-0.6242
	WST	10/90	-0.2573	-0.2989	-0.2326	-0.3539	-0.4122	-0.3617	-0.8601**	-1.0707***	-1.0749***	-1.0601***	-1.0415***	-1.0526***
		30/70	-0.0592	-0.1093	-0.0597	-0.1319	-0.2282	-0.203	-0.2313	-0.373**	-0.3366*	-0.3416*	-0.3105*	-0.3015*
		50/50	-0.0391	-0.0582	-0.0318	-0.0834	-0.139	-0.1229	-0.1787	-0.2932*	-0.2346	-0.2568	-0.272	-0.2822
		KNN	-0.241	-0.2297	-0.0857	-0.1486	-0.1163	-0.0813	-1.1325***	-1.3276***	-1.3166***	-1.2549***	-1.0895***	-1.1221***
Emerging	GHG	10/90	-0.2568	-0.2016	-0.2873	-0.4096	-0.4481	-0.4405	-0.8459*	-0.9928**	-0.9984**	-0.8179	-0.5347	-0.5481
		30/70	0.0947	0.0789	-0.0919	-0.0588	0.1427	0.1438	-0.2133	-0.3057	-0.31	-0.2391	-0.0953	-0.0945
		50/50	-0.1652	-0.1912	-0.2518	-0.1289	0.0641	0.0631	-0.0654	-0.1333	-0.1343	-0.1913	-0.1599	-0.1339
		KNN	0.2154	0.2798	0.2069	-0.0513	-0.0638	-0.0792	-0.6523	-0.6657	-0.6021	-0.7159*	-0.3017	-0.3486
	WTR	10/90	0.0487	0.0367	-0.1747	0.0261	0.0854	0.0942	0.3378	0.2804	0.3226	0.1909	0.4209	0.331
		30/70	0.1231	0.0979	-0.0141	-0.0112	-0.0017	-0.001	0.0668	-0.0008	0.0099	0.1346	0.4982	0.475
		50/50	-0.1323	-0.1691	-0.2623	-0.1998	-0.1704	-0.1712	-0.3308	-0.3742*	-0.3923*	-0.2288	-0.0438	-0.0699
		KNN	0.1962	0.2349	0.0343	0.4231	0.3773	0.3952	0.3377	0.2015	0.2237	0.0707	0.4238	0.3626
	WST	10/90	-0.3585	-0.472	-0.6521	-0.8769**	-0.8657**	-0.8833**	-0.2552	-0.2411	-0.2163	-0.3367	-0.0309	-0.1708
		30/70	-0.02	-0.0409	-0.1932	-0.3923	-0.3703	-0.3731	-0.441*	-0.4838*	-0.5232**	-0.7211**	-0.5127*	-0.5131*
		50/50	0.3187*	0.3198*	0.2639	0.1956	0.2158	0.2153	-0.5079***	-0.5225***	-0.5191***	-0.5643**	-0.4205*	-0.4203*
		KNN	0.2852	0.2175	-0.0031	-0.1543	-0.1326	-0.1392	-0.6972	-0.605	-0.5884	-0.1697	0.117	0.0432
Developed excluding United States	GHG	10/90	-0.0198	0.0431	0.0086	-0.2268	-0.2361	-0.2065	-0.2414	-0.3839	-0.3189	-0.2297	-0.0354	-0.0335
		30/70	-0.187	-0.1678	-0.2027	-0.3716	-0.4107*	-0.3921	-0.0223	-0.0897	-0.0203	0.0747	0.0698	0.0673
		50/50	-0.0745	-0.0981	-0.1278	-0.2121	-0.2352	-0.2199	-0.0995	-0.1621	-0.1366	-0.028	-0.0112	-0.0296
		KNN	-0.2203	-0.1042	-0.1465	-0.4246	-0.5511	-0.5332	0.1587	0.1413	0.1736	0.3483	0.2679	0.3087
	WTR	10/90	0.2803	0.3037	0.2668	0.0874	-0.0226	-0.0022	0.1213	0.0283	0.0712	0.0166	-0.0584	-0.0744
		30/70	0.1048	0.1264	0.0962	-0.0538	-0.1555	-0.1364	-0.1859	-0.2596	-0.2596	-0.3369*	-0.3087*	-0.3165*
		50/50	0.0312	0.0543	0.0365	-0.0847	-0.165	-0.1492	-0.1975	-0.24	-0.2553	-0.336*	-0.2573	-0.2717
		KNN	0.0067	0.0336	-0.0078	-0.1798	-0.2464	-0.215	-0.5578	-0.6437	-0.7006	-0.8049*	-0.9932*	-1.1117**
	WST	10/90	0.297	0.2796	0.2099	0.0073	-0.0025	0.0373	-0.7453*	-0.9296**	-0.9069**	-0.7604*	-0.5428*	-0.5954**
		30/70	0.0687	0.023	-0.0044	-0.0913	-0.1188	-0.1018	-0.2763	-0.3939**	-0.3666*	-0.3124	-0.1231	-0.1621
		50/50	0.0371	0.0171	0.0005	-0.0691	-0.0442	-0.034	-0.0148	-0.0845	-0.051	-0.0753	0.0011	-0.0222
		KNN	0.2431	0.2959	0.2528	0.0744	0.254	0.2872	-0.7519*	-0.8703**	-0.8489*	-0.6885*	-0.4489	-0.5446

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Best-fit factor-model which is defined by AICC within a specific indicator are highlighted.

Table 100. sample and status-wise multiple factor models

Sample	Variable	Model	Alphas											
			Environmental performance						Environmental momentum					
			Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor	Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor
Europe	GHG	10/90	0.0512	0.1619	-0.0346	-0.3509	-0.6711	-0.6408	-0.0171	-0.1682	0.177	0.0875	0.3155	0.3151
		30/70	0.0205	0.1024	-0.0335	-0.2546	-0.5744**	-0.5627**	-0.041	-0.1194	0.0364	0.0075	0.0816	0.0723
		50/50	-0.0084	0.015	-0.0547	-0.14	-0.3654**	-0.3596**	0.0324	-0.0513	0.1363	0.1949	0.2062	0.1756
		KNN	-0.0327	0.1152	-0.0904	-0.4315	-0.8018**	-0.7786**	0.4917	0.3621	0.5967*	0.7168**	0.8841**	0.8915**
	WTR	10/90	0.1342	0.2492	0.065	-0.1794	-0.5521*	-0.5374*	-0.198	-0.2103	-0.1063	-0.3186	-0.5704	-0.5675
		30/70	0.134	0.2176	0.0787	-0.0793	-0.3806*	-0.3695*	-0.1616	-0.2216	-0.1535	-0.2866	-0.4031	-0.4095
		50/50	0.1202	0.1956	0.1144	-0.014	-0.229	-0.2177	-0.2147	-0.2612	-0.2282	-0.3585	-0.3898*	-0.3973*
		KNN	0.1501	0.2304	0.039	-0.1747	-0.4599	-0.4471	-0.6756*	-0.8445**	-0.7652**	-0.7473*	-1.0014**	-1.069***
	WST	10/90	0.1828	0.2408	0.0042	-0.1227	-0.3929	-0.3653	0.2582	0.1925	0.3672	0.5989*	0.6428*	0.6309*
		30/70	0.0417	0.0336	-0.1074	-0.2416	-0.4369**	-0.4267**	-0.0658	-0.1623	-0.0406	0.0415	0.0653	0.05
		50/50	0.0541	0.0421	-0.0384	-0.137	-0.2489	-0.2435	-0.0992	-0.1621	-0.0443	0.0734	0.0504	0.0411
		KNN	0.0351	0.0831	-0.0707	-0.1113	-0.2621	-0.2535	0.063	-0.0579	0.2838	0.3414	0.3137	0.3098
Asia Pacific Ex Japan	GHG	10/90	-0.3208	-0.2935	-0.3292	-0.3978	-0.2782	-0.1897	-0.6334	-0.6867*	-0.7639*	-1.0807**	-1.2167***	-1.2719***
		30/70	0.0515	-0.0584	-0.0218	-0.1074	0.0936	0.1513	-0.4417*	-0.4924**	-0.5718**	-0.5212*	-0.4355	-0.4472
		50/50	-0.0087	-0.102	-0.0558	-0.1028	0.1205	0.1455	-0.2263	-0.2448	-0.2777	-0.2265	-0.1337	-0.1409
		KNN	0.0045	-0.0356	0.0042	-0.1614	0.0773	0.1328	-0.3802	-0.3708	-0.4366	-0.2925	-0.3562	-0.3686
	WTR	10/90	0.1468	0.0302	0.0517	-0.0184	-0.0092	0.0619	-0.058	-0.1044	-0.0993	-0.5629	-0.7402	-0.7657
		30/70	0.4674	0.3777	0.4453	0.3172	0.3815	0.3825	-0.3058	-0.3765	-0.3676	-0.5186	-0.459	-0.4924
		50/50	0.3231	0.2568	0.2906	0.2038	0.2905	0.277	-0.0674	-0.1084	-0.1486	-0.2397	-0.2798	-0.2921
		KNN	0.2989	0.2123	0.2867	0.2922	0.3432	0.3882	-0.0146	-0.0912	-0.0811	-0.2628	-0.0796	-0.1036
	WST	10/90	-0.1644	-0.2767	-0.1878	-0.2569	-0.085	-0.0617	-0.4533	-0.6281	-0.6734	-0.9944**	-0.983**	-1.0155*
		30/70	-0.0685	-0.155	-0.1308	-0.1702	-0.0904	-0.0643	-0.6441**	-0.7968***	-0.7684***	-0.8806***	-0.903***	-0.9173***
		50/50	0.1659	0.0974	0.1439	0.0464	0.1717	0.1823	-0.7489***	-0.811***	-0.796***	-0.8435***	-0.7746***	-0.8043***
		KNN	-0.2152	-0.2563	-0.3567	-0.1665	-0.6062	-0.6015	-0.4205	-0.5146	-0.5266	-1.1271***	-0.5305	-0.5719
North America	GHG	10/90	-0.7896**	-0.5757	-0.4731	-0.5267	-0.6025	-0.5863	-0.8898***	-1.0158**	-0.8412**	-0.8399**	-0.7592**	-0.7426**
		30/70	-0.417	-0.3979	-0.2723	-0.3062	-0.4303	-0.4458	-0.4289*	-0.4346	-0.2619	-0.2644	-0.2718	-0.2465
		50/50	-0.2641	-0.2627	-0.1467	-0.1669	-0.2779	-0.2738	-0.1297	-0.186	-0.1696	-0.1716	-0.2329	-0.2231
		KNN	-0.5115	-0.2654	-0.1358	-0.1931	-0.2792	-0.2576	-1.2408***	-1.6784***	-1.3568***	-1.3473***	-1.2509***	-1.2103***
	WTR	10/90	-0.199	0.0781	0.1727	0.1402	0.0035	0.0244	0.0472	-0.1942	-0.1203	-0.1408	0.0074	-0.0215
		30/70	-0.3229	-0.3079	-0.1526	-0.1552	-0.2169	-0.2036	-0.0045	-0.1465	-0.1589	-0.1753	-0.1401	-0.1755
		50/50	-0.228	-0.0469	0.0645	0.0514	-0.1038	-0.1049	0.2241	0.0968	0.1489	0.1438	0.1511	0.1343
		KNN	-0.4744	-0.3819	-0.3101	-0.3379	-0.3536	-0.3199	-0.1289	-0.1298	-0.0122	-0.0341	0.1191	0.0654
	WST	10/90	-0.8371	-0.8011	-0.4843	-0.4819	-0.4725	-0.4497	-0.533	-0.4971	-0.3572	-0.4314	-0.3614	-0.3077
		30/70	-0.3871*	-0.3991	-0.2039	-0.2097	-0.3053	-0.2991	-0.1071	-0.2445	-0.1217	-0.1358	-0.1375	-0.0821
		50/50	-0.2363	-0.2148	-0.1115	-0.1193	-0.1988	-0.1903	-0.229	-0.301	-0.1508	-0.1634	-0.1791	-0.1699
		KNN	-0.6765*	-0.6896*	-0.2929	-0.2919	-0.52	-0.5536	-0.8983	-0.9199	-0.975*	-1.0217*	-0.9896*	-0.8684
Latin America	GHG	10/90	-0.3621	-0.3304	-0.325	-0.1031	0.002	-0.0391	0.4139	0.4938	0.6118	0.9532	0.8162	0.8948
		30/70	-0.0978	-0.12	-0.2314	0.0581	0.1442	0.1103	0.2413	0.1898	0.2714	-0.09	-0.1716	-0.1441
		50/50	-0.0516	-0.0809	-0.189	0.0462	0.1382	0.1013	0.5168	0.5025	0.5745	0.3061	0.1175	0.1542
		KNN	-0.3436	-0.3979	-0.4989	-0.6935	-0.8208	-0.8603	1.4104*	1.5126*	1.4478*	1.8069**	1.6885*	1.7993**
	WTR	10/90	-0.4809	-0.1595	-0.0627	-0.1258	-0.191	-0.1929	0.6122	0.5145	0.5277	0.3091	0.3167	0.3596
		30/70	-0.266	-0.1078	-0.1779	-0.1827	-0.3916	-0.3572	0.6681	0.6651	0.6355	0.5948	0.7362	0.6608
		50/50	-0.2467	-0.2173	-0.3058	-0.1527	-0.2057	-0.1704	-0.2302	-0.2083	-0.2116	-0.7893*	-0.819	-0.8329
		KNN	-0.7072	-0.4487	-0.4715	-0.688	-0.8453	-0.8354	0.1681	0.1363	0.1395	0.0359	-0.0662	-0.263
	WST	10/90	0.0504	0.0902	-0.0305	-0.215	-0.1454	-0.1017	1.1502	1.2736	1.4212*	1.8263*	2.0096**	1.8875**
		30/70	-0.3111	-0.2713	-0.3445	-0.3152	-0.5156	-0.496	0.1984	0.2178	0.2714	0.2513	-0.0584	-0.0242
		50/50	-0.0948	0.0727	0.0643	0.0558	-0.2797	-0.2823	-0.0709	-0.0643	-0.0077	-0.0755	-0.3014	-0.2333
		KNN	-0.4141	-0.2771	-0.277	-0.3604	-0.5158	-0.4817	0.4585	0.5356	0.6747	0.5896	0.439	0.5718
Middle East and Africa	GHG	10/90	-0.31	-0.6103	-0.7953	-0.8099	-0.4491	-0.3614	-1.3435	-1.4964	-1.4288	-1.0485	-0.7673	-0.8474
		30/70	-0.5731	-0.5589	-0.6785	-0.5909	-0.2757	-0.2691	-0.1859	-0.409	-0.3696	0.1018	0.248	0.2305
		50/50	-0.5143	-0.4144	-0.4508	-0.2676	0.0234	-0.0191	-0.1188	-0.2142	-0.2512	0.0416	0.0264	0.0462
		KNN	-0.284	-0.4247	-0.5126	-0.3431	-0.0799	-0.0713	1.0345	0.5892	0.4315	2.1843	2.3825	2.5262
	WTR	10/90	-0.9457	-1.0046	-0.9864	-0.411	-0.3282	-0.2309	-0.4265	-0.7906	-0.9378	-0.4821	-0.4829	-0.1309
		30/70	-0.3869	-0.5702	-0.6116	-0.4473	-0.3379	-0.2862	-1.1465	-1.2986*	-1.3377*	-1.7035*	-1.6687	-1.4522
		50/50	-0.2744	-0.4487	-0.5128	-0.5369	-0.3266	-0.2642	-0.734	-0.7771	-0.8799	-0.85	-0.9459	-0.8391
		KNN	-0.1082	-0.2806	-0.3804	0.0523	-0.0022	-0.0257	-0.4748	-0.5254	-0.6312	-1.3476	-1.3393	-1.2435
	WST	10/90	0.0338	-0.1246	-0.1518	-0.1681	0.0165	0.1735	0.3105	0.183	0.0236	0.0363	-0.1024	-0.0506
		30/70	-0.5859	-0.7388	-0.7831	-0.8766	-0.6716	-0.643	0.0699	0.1122	0.1731	-0.1444	-0.3492	-0.2342
		50/50	-0.259	-0.3241	-0.3243	-0.6854	-0.6116	-0.5987	0.6744	0.683	0.7005	0.816	0.7516	0.8352
		KNN	-0.4834	-0.5662	-0.6038	-0.2373	0.1296	0.1316	-0.0674	-0.3423	-0.4184	-0.1304	-0.3813	-0.3611

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Best-fit factor-model which is defined by AICC within a specific indicator are highlighted.

Table 101. Country-wise samples' multiple factor models comparison, part 1

Sample	Variable	Model	Alphas											
			Environmental performance						Environmental momentum					
			Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor	Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor
United States	GHG	10/90	-0.4996	-0.1993	-0.1297	-0.1617	-0.3729	-0.3372	-1.1688**	-0.9381	-1.0258*	-1.0242*	-1.1078**	-1.0916*
		30/70	-0.3584	-0.3016	-0.245	-0.2604	-0.5312*	-0.5497*	-0.4334	-0.3446	-0.2864	-0.2861	-0.3445	-0.3062
		50/50	-0.2384	-0.1619	-0.123	-0.1325	-0.314*	-0.3133*	-0.1806	-0.2045	-0.263	-0.2626	-0.3701	-0.3533
		KNN	-0.4601	-0.2447	-0.1273	-0.1461	-0.3099	-0.2893	-1.1465	-2.0692***	-1.555**	-1.5571**	-1.3308**	-1.3498**
	WTR	10/90	-0.4526	-0.1747	-0.1765	-0.2048	-0.4396	-0.4171	-0.0647	-0.0575	-0.1048	-0.0924	0.0929	0.0672
		30/70	-0.1013	0.0279	0.1658	0.1675	-0.0529	-0.0516	0.2445	0.2285	0.1829	0.1339	0.1332	0.0775
		50/50	-0.1264	0.0999	0.1172	0.1082	-0.0812	-0.0798	0.4391*	0.3075	0.3174	0.344	0.3674	0.3503
		KNN	-0.2326	0.0024	0.1322	0.1223	-0.1453	-0.1431	-0.1968	-0.1168	-0.0962	-0.0799	-0.0123	-0.0785
	WST	10/90	-0.5182	-0.439	-0.2911	-0.2949	-0.5767	-0.5751	-0.3487	-0.5106	-0.4188	-0.4435	-0.4382	-0.4111
		30/70	-0.2031	-0.0813	0.0458	0.0467	-0.1674	-0.1571	-0.2081	-0.3602	-0.2511	-0.2543	-0.351	-0.3398
		50/50	-0.1213	-0.019	0.0232	0.015	-0.131	-0.1233	-0.1252	-0.2243	-0.1174	-0.1167	-0.1883	-0.1981
		KNN	-0.5824	-0.5862	-0.2218	-0.2042	-0.3476	-0.3542	-0.334	-0.3892	-0.4941	-0.5412	-0.6363	-0.5335
Japan	GHG	10/90	-0.4399	-0.3203	-0.3923	-0.3882	-0.5206	-0.4898	-0.5703	-0.5974	-0.626	-0.5602	-0.6708	-0.7309
		30/70	-0.24	-0.2056	-0.3108*	-0.3089*	-0.2484	-0.2409	0.0342	-0.0697	-0.0127	-0.0425	-0.154	-0.1845
		50/50	-0.0664	-0.0406	-0.1408	-0.1391	-0.0912	-0.0893	0.0364	-0.0806	-0.0214	-0.0401	-0.1027	-0.1139
		KNN	-0.4517	-0.3506	-0.4038	-0.3981	-0.4408	-0.4139	-0.7138	-0.7479	-0.6951	-0.6222	-0.3246	-0.3517
	WTR	10/90	-0.0945	-0.1087	-0.1314	-0.1401	-0.2257	-0.2327	-0.2528	-0.3042	-0.1922	-0.2123	-0.2021	-0.2418
		30/70	-0.04	-0.0377	-0.0809	-0.0795	-0.1577	-0.1654	-0.4629	-0.53	-0.4253	-0.4319	-0.4312	-0.4626
		50/50	0.0196	0.0228	0.0084	0.0125	-0.0335	-0.0408	-0.5712**	-0.6355**	-0.5516**	-0.555**	-0.5618**	-0.5773**
		KNN	0.0217	-0.0051	-0.0346	-0.0377	-0.1853	-0.1847	-0.4144	-0.4468	-0.391	-0.4018	-0.4493	-0.5303
	WST	10/90	0.1154	0.1916	0.1597	0.1575	0.0923	0.1073	-0.0238	-0.1802	-0.1039	-0.2161	-0.4595	-0.4567
		30/70	-0.2099	-0.1594	-0.2391	-0.2373	-0.2835*	-0.2921*	0.3203	0.2455	0.2885	0.2509	0.226	0.2292
		50/50	-0.1232	-0.091	-0.1371	-0.1361	-0.1527	-0.1513	0.2452	0.2212	0.2291	0.1918	0.0949	0.098
		KNN	-0.205	-0.0772	-0.1283	-0.1208	-0.2929	-0.2803	-0.0712	-0.2548	-0.3437	-0.3331	-0.4513	-0.3938
United Kingdom	GHG	10/90	-0.0817	0.0122	-0.1186	-0.4019	-0.7545	-0.693	0.5605	0.4511	0.5632	0.6325	0.6935	0.682
		30/70	0.199	0.288	0.2158	-0.0912	-0.4209	-0.3797	0.1387	0.0365	0.2671	0.2116	0001	0.2513
		50/50	0.0687	0.1349	0.0871	-0.0988	-0.2833	-0.2671	0.0911	0.0538	0.2857	0.3331	0.4283	0.3623
		KNN	0.1832	0.3031	0.2665	-0.0817	-0.3269	-0.288	0.4443	0.4257	0.5799*	0.5986*	0.6657*	0.625*
	WTR	10/90	0.2855	0.3687	0.1008	-0.2466	-0.6719	-0.6517	0.2917	-0.1176	0.4094	0.4179	-0.0793	-0.0712
		30/70	0.2002	0.2641	0.0978	-0.1346	-0.3864	-0.3702	0.1968	-0.0346	0.1436	0.0969	-0.055	-0.0423
		50/50	0.2774	0.3609	0.3117	0.1031	-0.1027	-0.078	0.0651	-0.0394	0.0677	-0.0292	-0.2062	-0.2207
		KNN	1.2255***	1.2883***	1.1699**	1.0127*	0.5139	0.5072	0.2704	-0.1188	0.1659	0.3563	0.4414	0.4086
	WST	10/90	0.7845	0.7456	0.5235	0.3984	0.2523	0.3109	0.2347	0.258	0.3471	0.5814	0.6836	0.6681
		30/70	0.5041	0.4985	0.2021	0.0232	-0.2172	-0.1731	0.3399	0.1899	0.2368	0.4297	0.543	0.5785*
		50/50	0.374*	0.4252*	0.244	0.0512	-0.0979	-0.0812	-0.0506	-0.1205	-0.0454	0.002	-0.0593	-0.0346
		KNN	0.4217	0.5287*	0.2491	0.1176	-0.2363	-0.1954	0.0476	-0.3569	-0.0897	0.3427	0.4875	0.498
China	GHG	10/90	1.449	1.4345	1.5358	1.5127	0.4048	0.3284	-1.099	-1.6492	-1.4637	-2.0349	-2.8413	-2.806
		30/70	0.6394	0.5875	0.6906	0.5605	0.1917	0.1252	-0.8233	-1.09	-0.9297	-1.1898	-2.5147**	-2.4655**
		50/50	0.1705	0.1278	0.1849	0.1308	-0.5334	-0.6238	-0.1819	-0.3085	-0.2017	-0.1547	-0.6823	-0.604
		KNN	-0.0143	-0.0564	0.0135	-0.1149	-0.6201	-0.7274	-0.9062	-1.0915	-0.9452	-0.7601	-2.5478	-2.4488*
	WTR	10/90	0.7688	0.9291*	0.9487*	0.5951	0.3205	0.3849	0.1702	0.1397	-0.028	0.4014	-0.6603	-0.6634
		30/70	-0.7134	-0.5715	-0.5294	-0.5883	-1.0798**	-1.0601**	-1.6286*	-1.6944*	-1.7746*	-1.3133	-2.2323**	-2.2281**
		50/50	-0.3431	-0.1834	-0.1756	-0.1684	-0.5171	-0.5199	-0.3475	-0.4044	-0.4695	-0.2858	-0.4001	-0.387
		KNN	0.0178	0.1122	0.1205	0.0141	-0.2644	-0.2717	-0.4601	-0.5063	-0.8499	-0.4056	-2.0642	-2.0771
	WST	10/90	0.2069	0.2831	0.2687	0.201	-0.6697	-0.7	0.187	0.0223	-0.0679	-0.3245	-0.9003	-0.9146
		30/70	0.4587	0.508	0.5062	0.5224	0.1064	0.1113	-1.1523	-1.2644	-1.2198	-1.295	-2.3173**	-2.3238**
		50/50	0.0846	0.1011	0.1006	0.1654	-0.022	-0.044	-1.3987**	-1.5023**	-1.5153***	-1.8091***	-1.6245***	-1.6159**
		KNN	-0.2418	-0.1804	-0.1899	-0.0387	-0.7189	-0.7547	-3.4751**	-3.6689**	-3.8258**	-4.4217**	-4.5738**	-4.5414**
Taiwan	GHG	10/90	-0.0695	-0.0606	-0.0521	-0.0514	0.002	0.0591	-0.427	-0.4157	-0.4457	-0.2037	-0.2091	-0.2879
		30/70	0.496	0.4607	0.4485	0.3971	0.5141	0.5624*	-0.501	-0.5185	-0.5358	-0.4118	-0.5332	-0.544
		50/50	0.6814**	0.6521**	0.6774**	0.4953*	0.6021**	0.6381**	-0.3869	-0.386	-0.3852	-0.2854	-0.4239	-0.4028
		KNN	0.5432	0.5453	0.5229	0.5076	0.5939	0.6259	-0.9778	-0.9864	-1.0384	-0.7087	-0.7107	-0.736
	WTR	10/90	-0.4232	-0.5164	-0.5608	-0.5009	-0.3682	-0.3165	-0.3223	-0.2419	-0.2289	-0.144	-0.1044	-0.122
		30/70	0.6086	0.5388	0.5771	0.3586	0.5941	0.6221	-0.2498	-0.1903	-0.1917	0.0511	0.0274	-0.0046
		50/50	0.6322*	0.5571*	0.5879*	0.3444	0.5469	0.5771	-0.0876	-0.0391	-0.0508	-0.0219	-0.0586	-0.1108
		KNN	0.0877	0.0273	-0.0195	-0.5134	-0.7228	-0.6604	-0.7337	-0.7445	-0.7692	-0.254	0.0237	0.0239
	WST	10/90	-0.7512*	-0.8014*	-0.836*	-0.7927	-0.5524	-0.6403	-1.5959**	-1.7144**	-1.7382**	-1.436**	-1.4283**	-1.5117**
		30/70	0.0068	-0.0153	-0.0401	-0.1271	0.1119	0.1329	-0.6018	-0.6184	-0.6375	-0.5817	-0.7757	-0.7612
		50/50	0.6588**	0.6422**	0.6628**	0.5196*	0.6842**	0.6783*	-0.2291	-0.2389	-0.2268	-0.2912	-0.3457	-0.351
		KNN	-0.3831	-0.3503	-0.3845	-0.2647	-0.0254	-0.0114	-0.5353	-0.6043	-0.6348	-0.4099	-0.4038	-0.3803

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Best-fit factor-model which is defined by AICC within a specific indicator are highlighted.

Table 102. Country-wise samples' multiple factor models comparison, part 2

Sample	Variable	Model	Alphas											
			Environmental performance						Environmental momentum					
			Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor	Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor
Canada	GHG	10/90	-0.4254	-0.4336	-0.3535	-0.363	-0.4572	-0.4918	0.2274	-0.474	-0.0249	0.1582	0.0631	0.2789
		30/70	-0.398	-0.5195	-0.4834	-0.5009	-0.5323	-0.5634	-0.5735	-0.9653**	-0.8542**	-0.6912*	-0.6118	-0.6132
		50/50	-0.3953	-0.482	-0.4715	-0.4836	-0.4762	-0.5206	0.0424	-0.2453	-0.1821	-0.1063	-0.0762	-0.1331
		KNN	-0.2826	0.0265	-0.0526	-0.0638	-0.1744	-0.2124	-0.3501	-1.2274	-0.8228	-0.6262	-0.6551	-0.5202
	WTR	10/90	-0.9783*	-1.1861**	-1.1216**	-1.0114*	-1.166**	-1.2263**	0.6506	-0.2837	0.8032	1.0181	0.992	1.2348
		30/70	-0.9111	-1.1082**	-0.9712*	-0.8052	-0.9369*	-0.9347*	0.3282	0.2987	0.5296	0.5649	0.5741	0.6253
		50/50	-0.9065**	-0.9624**	-0.7963*	-0.6582	-0.769*	-0.78*	0.0496	0.1381	0.0927	0.0939	0.1175	0.145
		KNN	-0.5335	-0.819	-0.7179	-0.6151	-0.8492	-0.9377	1.0269	0.2207	1.5224	1.7151	1.6974	1.8437*
	WST	10/90	-0.1975	-0.6719	-0.4596	-0.2956	-0.4011	-0.3906	-0.0144	-0.343	0.251	0.2845	0.2822	0.1847
		30/70	-0.7597	-0.8544	-0.8431	-0.7034	-0.8179	-0.8502	-0.5598	-1.0311*	-0.7366	-0.6873	-0.6076	-0.5707
		50/50	-0.8689**	-1.0448**	-0.8349**	-0.7416*	-0.755**	-0.7748*	0.175	-0.1404	0.0992	0.1101	0.1676	0.1825
		KNN	-0.2671	-0.7075	-0.4555	-0.3142	-0.2175	-0.3186	0.6658	0.4397	0.9186	0.7657	0.851	0.9296
Hong Kong	GHG	10/90	0.1651	0.2904	0.3111	0.333	-0.2207	-0.1455	2.5109	1.8318	2.583	2.1011	3.8079	4.0358
		30/70	-0.2166	-0.1073	-0.0677	-0.1992	-0.617	-0.5634	-0.1706	-0.2544	-0.244	-0.4525	-0.0506	-0.0249
		50/50	-0.3314	-0.2174	-0.1925	-0.3365	-0.6095	-0.5737	0.043	-0.0664	-0.0889	0.0376	0.2629	0.2779
		KNN	-0.4313	-0.3282	-0.3014	-0.6171	-1.2073**	-1.1607**	1.8784	1.1737	1.9434	1.6222	3.3155	3.6846
	WTR	10/90	-0.1571	-0.0215	0.0146	-0.0558	-0.5471	-0.4345	2.3698**	2.8789*	2.933*	1.899	3.1369*	2.9012*
		30/70	-0.2543	-0.1465	-0.1043	-0.2613	-0.5774*	-0.5314*	-0.0555	0.2381	0.3689	0.2329	0.3948	0.44
		50/50	0.296	0.324	0.3486	0.3269	0.0663	0.1067	-0.0599	-0.1638	0.0628	0.1279	0.1679	0.1344
		KNN	-0.1425	-0.138	-0.0639	0.0344	-0.5423	-0.5769	-0.49	-0.4265	-0.0389	0.2448	0.0776	0.1266
	WST	10/90	-0.0944	-0.0504	-0.0213	-0.35	-0.6217	-0.702	0.4783	0.473	0.8945	0.4053	-0.3563	-0.3765
		30/70	-0.1939	-0.3501	-0.3691	-0.3764	-0.6468	-0.69	0.6585	0.7229	0.8099	0.6497	0.074	0.0421
		50/50	-0.2822	-0.4166	-0.4384	-0.3832	-0.6104	-0.6027	0.1276	0.1362	0.2027	0.0917	-0.4111	-0.4359
		KNN	-0.0875	-0.1083	-0.0451	-0.1299	-0.4817	-0.5413	0.3235	0.3811	0.6594	0.4211	-0.0122	-0.0385
Australia	GHG	10/90	-0.5709	-0.7777*	-0.7828	-0.8108	-0.5468	-0.43	-0.665	-0.5806	-0.6295	-0.2035	0.2297	0.2387
		30/70	-0.0048	-0.1201	-0.1161	-0.1592	0.1239	0.1836	-0.05	-0.0512	-0.0477	0.1749	0.2795	0.2305
		50/50	0.0069	-0.1434	-0.1299	-0.1186	0.0666	0.1163	-0.3436	-0.3681	-0.3749	-0.145	0.1162	0.0629
		KNN	-0.2224	-0.3533	-0.3578	-0.4182	-0.0382	0.071	0.4295	0.3766	0.3626	0.4921	0.8749	0.8741
	WTR	10/90	-0.3432	-0.3508	-0.3864	-0.527	-0.447	-0.3665	-0.2855	-0.2277	-0.2131	-0.514	-0.8011	-0.7992
		30/70	-0.0185	-0.094	-0.1618	-0.117	-0.1765	-0.107	0.3526	0.2881	0.2711	0.0452	0.0266	-0.0284
		50/50	-0.0694	-0.1811	-0.2447	-0.1402	-0.2083	-0.1378	0.0572	0.0184	0.0062	-0.2094	-0.063	-0.137
		KNN	0.6977	0.7292	0.708	0.6265	0.6049	0.6592	1.1759	1.1449*	1.1485*	1.5573*	1.5517	1.5515
	WST	10/90	0.1816	0.1146	0.0311	0.2529	0.5553	0.658	-0.2738	-0.4155	-0.52	-0.6412	-0.8249	-0.6361
		30/70	0.0807	-0.0325	-0.0869	0.1021	0.0076	0.0803	-0.2905	-0.1668	-0.2509	-0.0527	0.5936	0.3668
		50/50	-0.0101	-0.1837	-0.238	-0.0319	-0.1302	-0.0571	-0.3243	-0.288	-0.341	-0.3421	0.036	-0.0509
		KNN	0.5114	0.5718	0.5891	0.6308	0.8591	0.8103	0.7342	0.9795	0.8354	0.6123	0.959	0.6937
France	GHG	10/90	-0.802*	-0.2929	-0.6921*	-0.8846**	-1.2978***	-1.3291***	0.0852	0.105	0.125	0.068	0.4412	0.4594
		30/70	-1.0285***	-0.7748***	-0.8437***	-0.9407***	-1.111***	-1.1028***	-0.0706	-0.1614	-0.0547	-0.16	-0.2157	-0.1967
		50/50	-0.575***	-0.3866**	-0.4086*	-0.4214*	-0.604***	-0.613***	-0.3494	-0.4095	-0.3326	-0.4423	-0.4946	-0.4054
		KNN	-0.6402	-0.2177	-0.4054	-0.5599	-0.9598**	-0.9448**	-0.1775	-0.1323	-0.339	-0.5085	-0.4599	-0.2909
	WTR	10/90	-1.0272**	-0.9628**	-1.1589***	-1.3634***	-2.0394***	-2.0149***	-0.6488	-0.783	-0.2815	-0.1378	0.0189	-0.0356
		30/70	-0.7037***	-0.61**	-0.7354***	-0.7783***	-1.1468***	-1.1373***	-0.4247	-0.607	-0.3589	-0.3867	-0.6073	-0.6404
		50/50	-0.4681**	-0.3804*	-0.4729**	-0.5167**	-0.7797***	-0.7666***	-0.236	-0.3887	-0.2137	-0.1557	-0.3141	-0.3449
		KNN	-0.5405	-0.4435	-0.7455*	-0.6282	-1.1054***	-1.1049***	-0.3227	-0.6383	-0.5367	-0.6326	-0.8727	-0.9131
	WST	10/90	-0.3171	-0.2728	-0.6264	-0.838	-0.9613*	-0.94	-0.674	-0.6794	-0.0822	0.0469	-0.0766	0.0272
		30/70	-0.6251**	-0.6829***	-0.6915***	-0.6829***	-0.8534***	-0.8757***	-0.379	-0.4728	-0.1082	-0.0831	-0.1469	-0.1482
		50/50	-0.3852**	-0.402**	-0.3746*	-0.4118*	-0.4559**	-0.4695**	-0.385	-0.4068	-0.1687	-0.1721	-0.2231	-0.1979
		KNN	-0.2721	-0.2532	-0.2667	-0.1648	-0.3338	-0.3332	-0.3087	-0.3115	-0.0803	-0.0652	-0.0822	-0.1697
South Korea	GHG	10/90	0.0714	0.0414	0.0176	0.095	0.1349	0.2846	1.727**	1.7724**	1.7795**	1.3119	1.1725	1.2554
		30/70	0.5191	0.4502	0.4462	0.3519	0.5712	0.6574*	0.5225	0.5718	0.5647	0.0949	-0.1661	-0.1233
		50/50	0.9674***	0.9481***	0.9066**	0.785*	0.7444*	0.831*	0.6794	0.7277	0.7277	0.576	0.37	0.3978
		KNN	0.4424	0.4054	0.3635	0.5565	0.7737	0.8614*	-0.0977	0.1529	0.155	-0.4218	-0.7594	-0.7545
	WTR	10/90	-0.166	-0.1636	-0.1539	-0.6851	-0.5768	-0.4223	1.0865	0.7223	0.7455	0.6554	0.6606	0.6041
		30/70	0.7415	0.7669	0.7428	0.3288	0.4184	0.5547	0.9884	0.8997	0.9246	0.957	0.7413	0.6028
		50/50	0.8695**	0.8632**	0.8042**	0.5693	0.4887	0.5919	0.0762	-0.0077	0.0095	0.063	0.1593	0.025
		KNN	0.7329	0.7557	0.7543	0.4018	0.6134	0.7465	0.4922	0.2861	0.5054	0.6996	0.5805	0.639
	WST	10/90	-0.0623	-0.1214	-0.1636	-0.2683	-0.599	-0.4939	0.6938	0.6229	0.409	0.0355	-0.5388	-0.5236
		30/70	0.0439	-0.0286	-0.0054	-0.0965	-0.0169	0.1125	0.3041	0.304	0.2564	0.2491	0.4296	0.2704
		50/50	0.1679	0.186	0.2501	0.1748	0.175	0.237	0.0594	0.0901	0.0362	0.0857	0.1744	0.082
		KNN	-0.4079	-0.4312	-0.3337	-0.004	-0.6813	-0.6559	-0.3344	-0.3301	-0.3899	-0.3994	0.0932	0.0873

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Best-fit factor-model which is defined by AICC within a specific indicator are highlighted.

Table 103. Country-wise samples' multiple factor models comparison, part 3

Sample	Variable	Model	Alphas											
			Environmental performance						Environmental momentum					
			Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor	Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor
Germany	GHG	10/90	-1.1007*	-0.7564	-1.1149*	-1.2478**	-1.438**	-1.3399**	1.3266	1.6699	2.6521**	2.8009***	2.3887**	2.3534**
		30/70	-0.1482	-0.0392	-0.2441	-0.4112	-0.6323**	-0.5886**	0.2925	0.2591	0.4889	0.4638	0.5964	0.5876
		50/50	-0.1586	-0.1591	-0.2308	-0.2703	-0.4523*	-0.4354*	0.158	0.1394	0.3723	0.3325	0.4783	0.4841
		KNN	-0.1594	-0.0129	-0.4622	-0.6305	-0.9631**	-0.9087**	1.3121*	0.8549	0.8167	0.5411	0.2025	0.2986
	WTR	10/90	0.1365	0.2503	0.0673	-0.2403	-0.369	-0.3511	-0.7563	-0.8738	-0.6875	-0.5086	-0.2926	-0.1962
		30/70	0.162	0.2798	0.1069	-0.081	-0.4423	-0.4076	-0.0863	-0.1866	-0.036	-0.0039	0.2599	0.3255
		50/50	0.0538	0.1186	0.0541	-0.0687	-0.3067	-0.2822	0.0814	0.0615	0.0813	0.0261	0.1286	0.1775
		KNN	0.229	0.3367	0.1379	-0.0249	-0.3738	-0.3159	0.5145	0.4817	0.558	0.6976	0.8598	1.0019
	WST	10/90	-0.6361	-0.5942	-0.8513*	-0.9974**	-1.2127***	-1.1793***	1.8438**	1.6965*	1.9391*	1.6269*	2.0427*	2.0825*
		30/70	-0.1694	-0.1221	-0.1696	-0.3179	-0.592	-0.5573	0.0224	-0.005	0.0577	-0.0724	-0.0183	0.0438
		50/50	-0.1407	-0.119	-0.1094	-0.1902	-0.4385	-0.4104	0.0213	-0.0072	0.0555	-0.0847	-0.0901	-0.0216
		KNN	-0.4112	-0.4328	-0.7735	-0.9765*	-1.0115**	-0.9979**	-0.4216	-0.5372	-0.457	-0.4801	-0.3283	-0.2547
India	GHG	10/90	-0.4082	-0.2757	-0.2012	-0.2936	-0.2403	-0.1984	-1.7602*	-2.0131**	-2.2545**	-2.0597**	-1.9128*	-1.8886*
		30/70	-0.3581	-0.6522	-0.6797	-0.434	-0.6562	-0.6928	-0.0606	-0.2453	-0.3395	-0.6668	-0.5466	-0.5007
		50/50	-0.6642*	-0.7744**	-0.7743*	-0.7119	-0.9503**	-0.9816**	-0.2102	-0.3151	-0.4207	-0.5024	-0.323	-0.4027
		KNN	-0.4848	-0.8283	-0.8378	-0.5067	-0.6311	-0.6261	-0.2132	-0.5346	-0.7295	-0.6054	-0.078	-0.113
	WTR	10/90	-0.0807	-0.457	-0.4352	0.0419	-0.023	-0.1073	-2.0909*	-2.1296*	-2.1687*	-1.5363	-1.0344	-1.1487
		30/70	-0.3545	-0.6493	-0.7218*	-0.5065	-0.8866*	-0.9359*	0.4594	0.4281	0.4236	-0.2232	0.3533	0.3474
		50/50	-0.0757	-0.1848	-0.2503	-0.1852	-0.3726	-0.4371	0.4969	0.4371	0.4467	-0.0052	0.0714	-0.0469
		KNN	-0.4472	-0.752	-0.8472	-0.5502	-1.0326	-1.0963	0.8257	0.4992	0.3736	-0.2948	0.3997	0.0191
	WST	10/90	0.1502	-0.1002	-0.1102	0.1207	-0.3347	-0.3254	0.0276	-0.1086	-0.2095	-0.2129	0.0909	0.6047
		30/70	-0.1027	-0.2031	-0.2605	-0.2198	-0.6542	-0.6468	-0.0484	-0.4177	-0.596	-0.4096	-0.2474	-0.161
		50/50	-0.2949	-0.2792	-0.2838	-0.1797	-0.5426	-0.5228	0.112	-0.0076	-0.1183	0.1115	0.1415	0.1239
		KNN	0.1649	0.1056	0.2387	0.6246	0.3641	0.4004	-1.1115	-1.5718*	-1.5287*	-1.372	-1.3781	-1.17
Italy	GHG	10/90	0.2137	0.3367	0.2637	0.1536	-0.0815	-0.0134	-0.5391	-0.9129	0.0229	-0.4325	-0.5045	-0.5919
		30/70	-0.3415	-0.0339	-0.1839	-0.1404	-0.3752	-0.3285	0.1155	-0.2895	-0.4481	-0.6549	-0.7865	-0.9168
		50/50	-0.2151	0.0965	-0.0875	-0.0472	-0.3659	-0.322	0.1677	-0.2802	-0.1004	-0.1543	-0.2351	-0.2942
		KNN	-0.2772	-0.0719	-0.1374	-0.1613	-0.5345	-0.4946	1.037	0.5518	0.6421	0.4461	0.331	0.2405
	WTR	10/90	-0.1715	0.1441	0.0201	-0.2729	-0.4734	-0.4863	0.5394	0.5707	0.2397	0.0159	-0.7704	-0.7228
		30/70	0.0608	0.3905	-0.0161	-0.0457	-0.333	-0.3162	0.2883	0.2689	0.1218	0.1711	-0.3687	-0.2975
		50/50	0.1103	0.3838	0.0795	0.0215	-0.2683	-0.2504	-0.0466	-0.0657	-0.1474	-0.201	-0.425	-0.3828
		KNN	0.2344	0.5305	0.2555	0.2886	-0.1456	-0.1376	0.0198	-0.0318	-0.1187	-0.103	-0.6894	-0.5977
	WST	10/90	0.582	0.8364	0.2629	0.1398	-0.4673	-0.445	-0.9939	-0.8639	-0.9944	-0.8174	0.7865	0.6532
		30/70	0.2301	0.5388*	0.2154	0.1759	-0.1999	-0.1796	-1.1355*	-1.06	-1.1239	-1.0666	-0.3003	-0.0341
		50/50	0.0482	0.2336	0.013	-0.0242	-0.3633	-0.3319	-0.0466	-0.0768	-0.2624	-0.217	0.3538	0.4035
		KNN	0.1089	0.2166	0.2006	0.2493	0.0252	0.0387	0.1531	0.1124	-0.0816	-0.1965	0.6759	0.9145
Brazil	GHG	10/90	0.4083	0.3258	0.1569	0.6962	1.0444*	1.003	0.779	0.8268	0.9875	0.7011	0.2996	0.338
		30/70	0.113	0.0477	-0.0834	0.2342	0.4652	0.4611	-0.187	-0.1576	-0.0137	-0.4102	-0.6444	-0.6221
		50/50	0.3846	0.3395	0.2076	0.5071	0.6862	0.6747	0.0419	0.1665	0.2894	0.0714	-0.2337	-0.2505
		KNN	0.1344	-0.0058	-0.1231	-0.0055	0.2214	0.2148	0.1191	0.2978	0.3781	-0.0791	-0.4108	-0.3309
	WTR	10/90	0.1801	0.1085	0.1323	0.1688	0.175	0.1976	0.8421	0.7919	0.7093	0.2181	-0.0232	0.2073
		30/70	-0.2292	-0.1621	-0.2869	-0.1932	-0.2067	-0.1834	0.7183	0.8265	0.7705	0.3307	0.3652	0.4162
		50/50	-0.069	-0.0628	-0.1562	-0.1259	-0.0775	-0.0571	0.1528	0.2333	0.2304	-0.2046	-0.205	-0.1975
		KNN	0.2216	0.2315	0.1381	-0.1885	-0.3339	-0.2999	-0.7197	-0.6185	-0.6093	-0.7514	-1.0397	-1.0173
	WST	10/90	0.6094	0.6998	0.5677	0.3783	0.4716	0.4897	-0.7753	-0.6196	-0.4584	-0.0732	-0.3032	-0.1979
		30/70	-0.3536	-0.3063	-0.3747	-0.3817	-0.5297	-0.5072	0.2746	0.3095	0.2387	0.1863	0.1097	0.0366
		50/50	-0.2089	-0.0648	-0.075	-0.1832	-0.4394	-0.4453	-0.3964	-0.349	-0.3662	-0.3579	-0.5814	-0.5748
		KNN	-0.1791	-0.0115	-0.0943	-0.0469	-0.3342	-0.3653	-0.2861	-0.164	-0.0091	-0.5918	-0.7327	-0.7484
Sweden	GHG	10/90	0.8743	0.9372*	0.8237	0.9188	0.7146	0.7376	1.4497**	0.501	0.5695	0.6825	0.9807	1.1227
		30/70	0.1521	0.0594	0.022	0.309	0.0703	0.062	-2.1989**	-1.7893**	-2.1178***	-2.0786***	-0.7828	-0.5058
		50/50	0.3225	0.2603	0.2181	0.4713	0.1815	0.1509	-1.6715**	-1.476**	-1.7065***	-1.7515***	-1.1984	-1.1199
		KNN	0.7575	0.7775	0.7958	0.9609	0.7184	0.7089	-0.0344	-0.3104	-0.3984	-0.3312	0.6093	0.7819
	WTR	10/90	0.6441	0.3544	0.3903	0.3673	0.6309	0.785	0.4624	0.5932	0.7801	0.6279	-0.063	-0.5235
		30/70	-0.1147	-0.0202	0.1958	0.0826	0.3969	0.462	0.0916	0.021	-0.3219	-0.4098	-0.6118	-0.6925
		50/50	0.4057*	0.4389*	0.4916**	0.4968**	0.5826**	0.5919**	-0.0026	0.6133	0.2521	0.2282	0.1398	0.0642
		KNN	-0.1388	0.0958	0.1543	-0.0078	-0.0895	-0.1136	-0.4227	-0.408	-0.5283	-0.572	-1.2953	-1.4818*
	WST	10/90	0.0238	0.2329	-0.0757	0.1372	-0.1886	-0.1311	2.7317	3.4524**	3.4628**	3.3519**	4.5256*	3.3476**
		30/70	-0.0001	-0.0814	-0.1749	-0.0037	-0.2062	-0.1982	-0.5801	-0.3538	-0.4611	-0.3423	0.2198	-0.7974*
		50/50	0.1526	0.0923	-0.0294	0.063	-0.1288	-0.1252	-0.4251	-0.3607	-0.6522	-0.5743	0.0138	-1.0831
		KNN	-0.1226	-0.0532	-0.0303	-0.0895	-0.186	-0.1497	0.4103	0.5947	0.8588	0.9066	1.6468	0.0642

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Best-fit factor-model which is defined by AICC within a specific indicator are highlighted.

Table 104. Country-wise samples' multiple factor models comparison, part 4

Sample	Variable	Model	Alphas											
			Environmental performance						Environmental momentum					
			Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor	Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor
Switzerland	GHG	10/90	0.6527	0.6476	0.4196	0.5277	0.6141	0.6043	-2.0772	-1.1486	-0.806	-0.5198	-1.5395	-1.1769
		30/70	0.2269	0.5512	0.0649	-0.1529	-0.197	-0.1486	0.2896	0.1394	0.11	-0.3277	0.0738	-0.0458
		50/50	0.2304	0.4982*	0.1494	0.0956	0.1238	0.1034	0.2408	0.1888	0.3242	0.0633	1.4235	1.1422
		KNN	0.2741	0.3891	0.0978	0.3537	0.1677	0.1168	0.5589	0.7668	0.624	-0.1314	0.8136	0.9082
	WTR	10/90	-0.6432	-0.606	-0.8443	-1.1473	-1.1206	-1.1273	0.3206	0.3813	0.1305	0.0049	0.2674	0.3557
		30/70	0.4114	0.6471*	0.2076	-0.1174	-0.2856	-0.2797	0.1792	0.2056	0.2915	0.2216	0.3195	0.2825
		50/50	0.1658	0.347	0.0696	-0.1199	-0.274	-0.2824	0.4962	0.7642*	0.7857*	0.7113	0.8142*	0.7673
		KNN	0.2515	0.4953	0.2707	0.1178	-0.1482	-0.1477	-0.3286	-0.3216	-0.7086	-0.7675	-0.5582	-0.5591
	WST	10/90	-0.3414	-0.4717	-0.5054	-0.6605	-0.7459	-0.7572	-1.2506	-1.3675	-1.4599	-1.3782	-1.1783	-1.2137
		30/70	0.399	0.522	0.1632	-0.1013	-0.4303	-0.435	0.0378	0.1014	-0.1118	-0.273	0.4331	0.5704
		50/50	0.3755	0.3977	0.1668	0.0351	-0.1161	-0.1117	0.2168	0.3053	0.0831	-0.0057	0.398	0.4794
		KNN	-0.2878	-0.3006	-0.7595**	-0.6469*	-0.7848**	-0.7909**	-0.4844	-0.422	-0.4271	-0.4604	0.1334	0.3367
South Africa	GHG	10/90	-0.0475	-0.3035	-0.5278	-0.5527	-0.2026	-0.0388	-0.9472	-0.9313	-1.0067	-1.0561	-0.6361	-0.3214
		30/70	-0.324	-0.3084	-0.4204	-0.3665	-0.0016	0.0656	-0.4792	-0.5167	-0.5143	-0.7003	-0.4676	-0.5153
		50/50	-0.2489	-0.3094	-0.4293	-0.3715	-0.1755	-0.1312	-0.3788	-0.3649	-0.3562	-0.5532	-0.4712	-0.4283
		KNN	-0.1303	-0.3344	-0.478	-0.3614	-0.0306	0.0877	0.3189	0.0643	-0.1446	1.7074	2.0582	2.529
	WTR	10/90	-0.4527	-0.2885	-0.3293	0.0259	0.5551	0.7325	0.7856	0.5474	0.3774	1.4403	0.0828	0.3128
		30/70	0.0988	0.0395	0.0258	-0.08	0.2619	0.289	1.4182	1.2774	1.2025	1.2895	0.535	0.712
		50/50	0.0058	-0.0756	-0.1099	-0.2842	0.0712	0.1036	1.4893*	1.3854	1.3268*	1.8928**	0.9339	1.1578
		KNN	0.1392	0.0261	-0.0158	0.0613	0.3931	0.3129	1.8236*	1.8399*	1.5223	1.0697	0.0183	0.2372
	WST	10/90	0.3224	0.4764	0.6913	0.3548	0.6869	0.856	0.4932	0.4772	0.3152	1.3234	1.4507	1.8171
		30/70	-0.069	-0.0292	0.0871	-0.5286	-0.1523	-0.0838	0.8679	0.9591	1.0891	1.5698	1.2708	1.5565
		50/50	-0.1928	-0.3097	-0.2851	-0.6012	-0.3565	-0.2568	-0.3827	-0.3988	-0.3403	-0.0166	-0.2668	-0.111
		KNN	0.0857	-0.2598	-0.4178	-0.0238	0.3692	0.3465	0.8774	0.9706	0.9361	0.9144	0.867	0.9929
Spain	GHG	10/90	1.1561*	1.5591***	1.1048*	0.8114	0.6509	0.638	0.1768	0.9218	0.2777	0.0674	0.1268	-0.261
		30/70	0.5374	0.8784*	0.4493	0.1177	-0.1175	-0.1364	0.1228	0.2348	0.5995	0.7468	0.3562	0.1329
		50/50	0.4444	0.6607*	0.3595	0.062	-0.057	-0.0552	0.2349	0.0842	0.5165	0.7361	0.5302	0.4909
		KNN	0.7368	1.0145**	0.6604	0.3538	0.069	0.0324	-1.2377	-0.9804	-0.7485	-0.5918	-0.5631	-0.5738
	WTR	10/90	0.6205	0.7273	0.4072	0.3862	-0.0212	-0.0504	0.4513	0.6457	0.6281	0.6313	0.2092	0.1909
		30/70	0.8737**	1.1506***	0.8124*	0.5598	0.2172	0.209	-0.0118	-0.283	0.2229	0.6206	0.5292	0.5868
		50/50	0.3863	0.6031*	0.2694	0.0932	-0.1983	-0.2087	-0.0914	-0.2921	0.1169	0.6286	0.6804	0.8411
		KNN	0.3486	0.5945	0.1594	-0.0401	-0.0621	-0.1375	0.3612	0.1816	0.7906	1.1536	1.2093	1.1437
	WST	10/90	-0.1442	-0.0324	-0.2195	-0.4302	-0.3551	-0.3116	0.2207	0.0891	-0.0691	-0.1047	-0.7026	-0.4306
		30/70	0.4641	0.7694**	0.2935	0.0948	-0.0551	-0.0445	0.1438	0.2318	0.323	-0.0044	-0.2385	0.0346
		50/50	0.3652	0.4796	0.2745	0.1903	0.1386	0.1256	-0.0205	0.0507	0.2566	0.0459	-0.3795	-0.1233
		KNN	0.6284*	0.6442*	0.5467*	0.6824*	0.4852	0.5003	0.2264	0.3413	0.5088	0.2094	-0.2461	0.1984
Singapore	GHG	10/90	-0.8933	-1.0614**	-0.9352*	-0.5818	-0.5602	-0.5573	1.7404	1.4474	-0.4043	-1.1729	-2.1226	-2.1557
		30/70	0.037	0.003	0.0133	0.0861	0.1715	0.1848	0.3606	-0.0685	-0.7562	-1.0088	-1.6264	-1.7104
		50/50	0.4342	0.4445	0.3417	0.3711	0.3602	0.364	0.2721	0.2642	0.9966	0.9426	0.3985	0.632
		KNN	0.4147	0.4065	0.4977	0.4686	0.7646	0.7664	-2.9845	-3.0653	-1.863	-2.1588	-2.3968	-4.0581
	WTR	10/90	0.0727	0.0285	0.1825	-0.1239	0.0337	0.0172	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		30/70	0.2991	0.3432	0.3465	0.2036	0.1276	0.1099	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		50/50	0.309	0.3727	0.3465	0.1964	0.0486	0.01	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		KNN	-0.3414	-0.2707	-0.2409	-0.3314	0.2035	0.2697	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	WST	10/90	0.0814	0.1996	0.0174	-0.2844	-0.3604	-0.3666	1.5182	1.2421	0.2553	0.1042	-0.3306	-0.2608
		30/70	-0.454	-0.497	-0.6709	-0.6008	-0.9776*	-0.9632*	0.5181	0.5183	0.3437	0.3525	0.2969	-0.0589
		50/50	-0.1636	-0.1685	-0.3924	-0.3695	-0.6602	-0.6489	0.4135	0.4286	0.3541	0.4423	0.4295	0.0465
		KNN	0.5685	0.8019	0.6672	0.7398	0.6401	0.666	1.439	1.2314	0.4922	0.3796	-0.1191	-0.081
Malaysia	GHG	10/90	1.0368	1.2832	1.3058	0.9494	1.3469	1.3438	1.1624	1.1413	1.0199	1.0837	1.632	1.822
		30/70	0.4126	0.6329	0.6116	0.2676	0.2017	0.1782	-1.227	-0.966	-1.1599	-1.0645	-1.4495	-1.0606
		50/50	0.2012	0.3927	0.3732	0.1164	0.2798	0.2298	-0.5514	-0.4125	-0.9647	-1.3967	-1.7518	-1.4596
		KNN	0.3479	0.603	0.5696	0.1908	-0.0611	-0.0848	-4.1442**	-4.0951**	-4.578**	-6.3074**	-6.5404**	-4.5445**
	WTR	10/90	1.0905	1.3226	0.95	0.3922	0.1229	-0.0586	-6.74	-7.4158*	-10.1973**	-10.207**	-10.781	-9.8297
		30/70	0.0456	0.1659	0.1657	0.0603	-0.0766	-0.087	-1.1677**	-1.2801**	-0.0381	-0.118	0.8111	0.4787
		50/50	0.0457	0.0954	0.1035	0.1297	0.1252	0.1309	-1.0282	-1.0371*	-0.0762	-0.0967	0.9628	0.7008
		KNN	0.0215	0.1562	0.1368	-0.1115	-0.2827	-0.2659	-0.7802	-0.7466	2.2487	2.3291	4.0839	3.4734***
	WST	10/90	-0.0771	-0.097	-0.048	-0.1963	-0.5579	-0.5925	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		30/70	0.9128*	0.8427	0.9059	0.7671	0.4642	0.4205	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		50/50	0.6774*	0.7196**	0.7079**	0.5638	0.4552	0.4506	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		KNN	0.2458	0.2259	0.324	0.1584	0.0972	-0.0066	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Best-fit factor-model which is defined by AICC within a specific indicator are highlighted.

Table 105. Country-wise samples' multiple factor models comparison, part 5

Sample	Variable	Model	Alphas											
			Environmental performance						Environmental momentum					
			Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor	Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor
Norway	GHG	10/90	-0.9225*	-0.8874	-0.9917*	-0.9404*	-0.9445	-0.8894	1.8711	2.0999	1.8565	1.7961	6.1024***	5.3981**
		30/70	-0.3477	-0.2559	-0.0067	0.0741	0.0618	0.0747	2.0769	3.6768*	3.4683	3.5612	4.9893	7.2356**
		50/50	-0.3148	-0.1985	0.0606	0.1447	0.2426	0.2476	0.4714	1.9439	1.5771	1.5667	4.3888	6.2355***
		KNN	0.0298	0.1023	0.6942	1.0659	1.4927*	1.5112*	1.7693	3.9298*	3.8177*	3.8185	5.4506	7.5858**
	WTR	10/90	0.5083	0.6398	0.8945	0.6757	-1.1019	-3.4584	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		30/70	1.0508	0.7702	0.757	0.5585	0.1533	-1.0586	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		50/50	-0.4324	-1.6804*	-1.735	-1.7133	-2.4525	-3.5873**	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		KNN	4.1248*	6.2094**	6.0292***	5.7838**	7.3886**	8.8371**	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	WST	10/90	-0.5441	-0.4167	-0.3025	-0.2061	-0.1535	-0.1226	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		30/70	-0.1597	-0.1533	-0.2585	-0.1351	-0.1525	-0.1478	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		50/50	0.6891	0.6835	0.8562	0.9667*	1.0547*	1.0541*	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		KNN	-0.6255	-0.316	-0.7126	-0.7415	-0.3037	-0.3597	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Finland	GHG	10/90	0.7886	0.8105	0.8777	0.6433	0.827	0.9173	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		30/70	-0.3062	-0.248	-0.3056	-0.1464	-0.1566	-0.0993	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		50/50	0.0029	0.0082	-0.0188	0.1286	0.0897	0.1215	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		KNN	0.1914	0.3626	0.1778	-0.1115	0.0273	0.131	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	WTR	10/90	-0.1075	-0.224	-0.379	-0.0432	-0.0163	0.074	1.4234	1.1326	1.205	1.6972	2.3419	2.2403
		30/70	0.0945	-0.0329	-0.0953	0.1507	0.0601	0.0953	0.3008	0.3072	0.3279	0.9234	1.0787	1.0213
		50/50	-0.1556	-0.3066	-0.4411	-0.2387	-0.2236	-0.2136	0.0095	-0.0148	0.0067	0.1094	-0.1278	-0.203
		KNN	-0.3332	-0.4059	-0.5247	-0.2681	-0.3042	-0.2854	0.9591	0.7822	0.8019	1.2655	1.5625	1.2796
	WST	10/90	0.161	-0.1477	-0.5182	-0.3648	-0.9174	-0.8964	1.5875	1.7882	1.851	1.9724	1.3671	1.4852
		30/70	0.8101	0.5134	0.3262	0.4347	0.2422	0.1897	-0.9085	-0.9307	-0.9426	-0.7649	-1.275	-1.5074
		50/50	0.8063**	0.6769*	0.5214	0.5664	0.4492	0.4169	-1.0078	-1.0179	-0.8769	-0.9806	-1.3417*	-1.6132**
		KNN	0.6331	0.3912	0.175	0.3086	0.1548	0.1019	0.6588	0.878	1.2198	1.03	0.0749	-0.1176
Netherlands	GHG	10/90	-0.2708	0.0564	-0.333	-0.321	-0.1093	-0.0947	2.3978	2.3091	3.9251	0.9372	3.2652	-0.1254
		30/70	0.7684	1.1154**	0.7459	0.6416	0.4238	0.389	1.6527*	1.5639**	2.5901*	1.3728	1.7384	1.2368
		50/50	0.2514	0.5679	0.4089	0.4057	0.1412	0.1234	1.3314	1.2249	2.5481*	1.527	1.834	1.4172
		KNN	0.599	0.8904	0.8524	0.7127	0.4397	0.4293	0.4117	-0.8507	-0.1196	-0.7065	0.0682	1.3628
	WTR	10/90	1.6185**	1.6677**	1.3711*	0.9597	0.9935	0.9768	2.3742	1.2945	1.2173	1.1833	-0.2419	-0.6971
		30/70	0.8361	1.1807*	0.6779	0.4783	0.5216	0.5242	3.0168**	3.6063***	3.8378***	3.9046***	1.639	2.0604
		50/50	-0.1445	-0.0748	-0.288	-0.3947	-0.4639	-0.5324	1.8567*	2.2634***	2.5265***	2.4981***	1.2957**	1.4113
		KNN	1.188	1.3139	0.5948	0.6609	1.1693	1.1542	5.1044***	5.4442***	5.5919***	5.606**	2.0654	4.1103*
	WST	10/90	0.5613	0.6283	0.3055	0.4547	0.6344	0.5871	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		30/70	-0.8061	-0.6773	-0.7859	-0.872	-0.9232*	-1.0222**	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		50/50	-0.4079	-0.4033	-0.464	-0.558	-0.6394*	-0.7094*	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		KNN	-0.5118	-0.2159	-0.5277	-0.6383	-0.4763	-0.4254	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Thailand	GHG	10/90	0.8686	0.8757	0.8743	1.0123	0.9702	0.9096	-2.6659	-2.1642	-1.9943	-2.4447	-2.3045	-2.5141
		30/70	0.5011	0.3904	0.395	0.392	0.4599	0.4464	0.4221	0.7582	0.74	0.8743	1.476	1.2899
		50/50	0.2848	0.1003	0.1063	0.1861	0.3807	0.3656	-0.3069	-0.204	-0.0472	0.2301	0.6594	0.6432
		KNN	0.224	0.1993	0.203	0.1212	0.2405	0.2125	2.9026	4.6947	4.0375	4.0248	4.7738*	4.2123*
	WTR	10/90	0.2651	0.0409	0.0454	0.5629	0.4573	0.5571	0.0814	0.9077	0.9762	1.612**	1.843***	1.6157*
		30/70	0.4529	0.3076	0.3114	0.2719	0.4288	0.434	0.0126	0.1819	0.1499	0.1455	0.0298	-0.1403
		50/50	0.1264	-0.0281	-0.0274	0.0732	0.1863	0.2031	-0.2188	-0.1459	-0.1702	0.0453	0.2828	0.063
		KNN	0.2785	0.1229	0.1173	0.1997	0.1773	0.1413	0.6254	0.5539	0.5463	0.52	0.6224	0.2644
	WST	10/90	0.0437	-0.0397	-0.014	-0.0133	0.7131	0.5973	2.9531	1.9449	0.7616	0.7708	2.066	-2.5935
		30/70	0.1703	0.0347	0.0294	0.0354	0.208	0.2303	1.6207	1.159	1.1908	1.2946	1.7685*	-2.462
		50/50	-0.0059	-0.054	-0.0516	-0.0412	0.131	0.1545	1.1443	0.855	0.9495	0.9058	0.987	-0.3022
		KNN	-0.3047	-0.455	-0.4726	-0.484	-0.1335	-0.1837	1.9358*	1.8147*	0.2376	0.5624	1.513	-2.2635
Russia	GHG	10/90	0.3671	0.4958	0.2416	0.0942	-0.3261	-0.5829	2.8547	2.9185	2.0849	1.9127	6.0726***	5.0405**
		30/70	1.5432*	1.4563	1.492	1.3984	1.4034	1.4032	3.4895	3.4417	3.0061**	2.9168*	1.8492	0.7322
		50/50	0.7945	0.8415	0.916	0.8948	1.4583*	1.423*	0.0111	-0.6651	-0.7466	-0.7606	-1.6226	-2.3298
		KNN	1.1057	1.0781	1.1216	0.9297	0.4075	0.1005	4.2062*	4.9732*	4.3634***	4.183***	5.1218*	3.7161*
	WTR	10/90	1.3536	1.7202**	1.7591**	1.6165*	1.6413*	1.6204*	-0.1493	-0.6764	-0.2415	-0.2605	-0.4969	-0.4585
		30/70	0.5965	0.7615	0.7277	0.9013	0.9275	0.9419	-0.7507	-1.049	-0.9024	-1.1679	-0.943	-0.8987
		50/50	0.4705	0.4765	0.5927*	0.7013**	0.7181**	0.7304**	-0.756*	-0.7887*	-0.7453	-0.9474**	-0.9741**	-0.889
		KNN	0.9701	1.2739	1.1195	0.9848	1.3829	1.3918	-0.112	-0.38	0.0585	-0.6949	-0.5457	-0.2897
	WST	10/90	1.3907	1.546*	1.5788	0.9768	1.0054	1.1006	-0.9968	-1.5207	-1.6978	-2.49	-5.0855	-5.8865**
		30/70	0.4523	0.6616	0.4892	0.3724	0.3806	0.4092	1.2778	1.4357	2.1222***	1.9305**	1.5669	1.1246
		50/50	0.1978	0.3733	0.166	-0.1366	-0.1025	-0.0814	0.7393	0.9728	1.6997***	1.8214**	1.5256	1.0924
		KNN	0.4059	0.3819	0.3324	0.0726	0.1576	0.0243	2.109**	2.2211**	2.8522***	2.6897**	0.3248	-0.1095
Mexico	GHG	10/90	0.1053	-0.3612	-0.009	0.121	0.1868	0.2626	-1.1776	-1.321	-2.3364	-2.9951	-2.7938	-4.6754*
		30/70	-0.2494	-0.6361	-0.5355	-0.5346	-0.6115	-0.6121	1.379**	1.524***	1.1874*	1.0375*	0.9283	1.3461
		50/50	-0.171	-0.4286	-0.3132	-0.3015	-0.3384	-0.3843	0.9615	0.9061*	0.8533*	0.6271	0.3078	0.1647
		KNN	-0.3252	-0.6354	-0.6178	-0.5462	-0.5581	-0.5558	-0.7283	-0.7749	-1.2384	-1.2249	-0.9157	-1.0279
	WTR	10/90	0.4044	0.4976	0.3148	0.2595	0.2556	0.1862	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		30/70	-0.4882	-0.7768	-0.5753	-0.536	-0.522	-0.5353	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		50/50	-0.4053	-0.5378	-0.4753	-0.4564	-0.4375	-0.45	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
		KNN	0.385	-0.025	0.19	0.2786	0.264	0.2353	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	WST	10/90	0.2587	0.3849	0.4402	0.3871	0.3586	0.2734	-0.8207	-1.0731	-0.4605	-0.1785	0.0216	-0.4662
		30/70	0.0738	-0.0702	0.0897	0.0504	0.0858	0.0839	0.7925	0.5678	0.6582	0.7289	1.0252	0.4197
		50/50	0.2161	0.3178	0.3735	0.3785	0.3756	0.367	0.7208	0.6721	0.7413	0.8827	1.0275	0.5707
		KNN	-0.2364	-0.5351	-0.2557	-0.1472	-0.1003	-0.1114	0.91	0.6765	0.6769	0.9189	1.5155	-0.5923

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Best-fit factor-model which is defined by AICC within a specific indicator are highlighted.

Table 106. Sector-wise samples' multiple factor models comparison, part 1

Sample	Variable	Model	Alphas											
			Environmental performance						Environmental momentum					
			Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor	Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor
Industrials	GHG	10/90	0.2298	0.2789	0.3959	0.3937	0.2242	0.2819	-0.509	-0.6347	-0.5648	-0.4761	-0.4905	-0.544
		30/70	-0.0393	0.0458	0.1074	0.1109	0.0202	0.019	0.0094	-0.1555	-0.0139	0.1378	0.2394	0.2183
		50/50	0.2224*	0.2541**	0.2256*	0.213*	0.1242	0.1219	-0.0073	-0.1041	-0.0052	0.0609	0.1867	0.1848
		KNN	0.4757	0.5876*	0.6749**	0.6845**	0.478	0.5303	0.1919	0.0892	0.2687	0.2955	0.2672	0.1085
	WTR	10/90	-0.3641	-0.2914	-0.2374	-0.1942	-0.1384	-0.0967	-0.1782	-0.305	-0.2036	-0.3674	-0.2445	-0.2904
		30/70	-0.1866	-0.2006	-0.1294	-0.1158	-0.1419	-0.1748	-0.5283**	-0.7348***	-0.5821**	-0.5942**	-0.6223**	-0.6381**
		50/50	0.1818	0.132	0.1439	0.1036	0.105	0.1062	-0.4416**	-0.5265**	-0.3999*	-0.4188*	-0.4014*	-0.3922
		KNN	-0.7167**	-0.6528**	-0.6733**	-0.6892**	-0.6479**	-0.6168**	-0.5597	-0.9049	-0.579	-0.5845	-0.4435	-0.5566
	WST	10/90	-0.3522	-0.2463	-0.0982	-0.0448	0.0094	-0.028	-0.4832	-0.8789	-0.5814	-0.5071	-0.617	-0.6968
		30/70	0.05	0.0807	0.0221	0.0019	0.047	0.0384	0.259	0.0386	0.0984	0.1622	0.0518	0.0465
		50/50	0.2137	0.2308	0.1962	0.2032	0.2154	0.2202	-0.1034	0.0605	0.0269	0.0137	-0.045	-0.0259
		KNN	0.1212	0.2851	0.4356	0.459	0.5816	0.5651	-0.3983	-0.7197	-0.4899	-0.361	-0.3651	-0.4192
Materials	GHG	10/90	-0.542	-0.8793**	-0.76*	-0.7786*	-0.5661	-0.5685	0.3812	-0.2077	0.0182	0.212	0.4314	0.5007
		30/70	0.0276	-0.1463	-0.0724	-0.103	0.1071	0.1572	-0.4101	-0.7655**	-0.5913	-0.303	-0.2355	-0.2609
		50/50	0.0876	-0.0008	0.0302	-0.0111	0.1512	0.1727	-0.4712*	-0.5453*	-0.4822*	-0.2615	-0.2095	-0.239
		KNN	-0.5806	-0.9204***	-0.7865**	-0.7795**	-0.6225*	-0.6075*	-0.5038	-0.7169	-0.5938	-0.2613	-0.0703	-0.0047
	WTR	10/90	-0.5964	-0.5766	-0.3905	-0.3402	-0.2076	-0.1815	1.2228***	0.6661	0.8301*	0.8475*	0.9601**	1.0051**
		30/70	-0.1585	-0.3266	-0.2305	-0.2526	-0.1215	-0.082	-0.0053	0.0501	-0.0206	-0.0824	0.1248	0.1153
		50/50	-0.2885	-0.3086	-0.2423	-0.2005	-0.1739	-0.1766	-0.1014	0.0073	-0.0766	-0.1638	0.0467	0.0092
		KNN	-0.5939*	-0.6466**	-0.475	-0.4305	-0.3114	-0.284	0.4739	0.3756	0.2157	0.1354	0.0633	0.055
	WST	10/90	0.2273	0.0383	0.0414	0.0269	0.2095	0.2174	0.0446	-0.4637	-0.3794	-0.0266	0.1527	0.2292
		30/70	0.0885	-0.117	-0.0842	-0.0976	0.1666	0.1965	0.0349	-0.3755	-0.2701	-0.131	-0.1317	-0.0358
		50/50	-0.0095	-0.1477	-0.1356	-0.1472	0.0792	0.1	-0.0743	-0.3717	-0.2833	-0.1143	-0.119	-0.063
		KNN	0.182	0.0514	0.0612	0.085	0.2738	0.2989	-0.1596	-0.6127	-0.3788	0.1232	0.2998	0.4063
Consumer Discretionary	GHG	10/90	-0.4331	-0.6051	-0.3392	-0.3024	-0.6619	-0.7305*	-0.5131	-0.5098	-0.5113	-0.5644	-0.193	-0.2962
		30/70	-0.5056**	-0.5206*	-0.3723	-0.3309	-0.5028*	-0.5171*	-0.3276	-0.3195	-0.3191	-0.3127	-0.1475	-0.1504
		50/50	-0.1761	-0.129	-0.114	-0.0804	-0.068	-0.1037	-0.2604	-0.2172	-0.2445	-0.2925	-0.0206	-0.0221
		KNN	-0.0781	-0.3075	-0.0162	0.1014	-0.1762	-0.1896	0.2888	-0.0906	-0.0893	0.0861	0.185	0.3085
	WTR	10/90	0.341	0.3279	0.5463	0.6721	0.4889	0.5225	0.1346	0.0583	0.1405	0.1777	0.3576	0.3475
		30/70	-0.3139	-0.3516	-0.1584	-0.0403	-0.1619	-0.1736	0.2599	0.2725	0.2821	0.2939	0.4604	0.4591
		50/50	-0.1115	-0.172	-0.0963	-0.0407	-0.0365	-0.0458	0.4599	0.3064	0.3422	0.3676	0.5151**	0.4764*
		KNN	0.191	0.1126	0.3624	0.5225	0.2262	0.2595	0.035	0.2301	0.2808	0.2281	0.6666	0.6709
	WST	10/90	-0.4954	-0.6315	-0.4432	-0.3293	-0.3522	-0.2837	0.6553	0.7334*	0.8055*	0.6542	0.5923	0.6132
		30/70	-0.3314	-0.3026	-0.18	-0.2214	-0.2602	-0.2722	0.236	0.3191	0.3491	0.1724	0.2396	0.2825
		50/50	-0.174	-0.2017	-0.1664	-0.197	-0.2339	-0.243	-0.0906	-0.0079	0.0327	-0.099	-0.0444	-0.0363
		KNN	-0.1892	-0.3899	-0.2099	-0.0741	-0.1611	-0.1056	-0.4071	-0.5104	-0.4943	-0.6124	-0.386	-0.3903
Financials	GHG	10/90	-0.0414	0.128	0.303	0.2723	0.2192	0.2362	-0.8207	-0.5674	-0.6856	-0.7547	-0.9273	-0.9115
		30/70	-0.1252	-0.0915	0.0527	0.0496	0.2221	0.2122	-0.3942	-0.3622	-0.4556	-0.449	-0.7009*	-0.7054*
		50/50	-0.1585	-0.1601	-0.0506	-0.0555	0.1271	0.1171	-0.2933	-0.2655	-0.2974	-0.3161	-0.5278*	-0.5402*
		KNN	-0.0668	0.0566	0.2013	0.1847	0.1275	0.1074	-0.7742	-0.7463	-0.9583*	-0.9516*	-0.9894*	-0.9476*
	WTR	10/90	-0.3358	-0.3392	-0.3416	-0.4082	-0.3862	-0.3968	0.1099	0.2178	0.1567	0.177	-0.2284	-0.2836
		30/70	-0.4718*	-0.4109	-0.3106	-0.3218	-0.2726	-0.2917	-0.1548	-0.2349	-0.2621	-0.3022	-0.4697	-0.4794
		50/50	-0.429**	-0.4425**	-0.3483*	-0.3706*	-0.3667*	-0.3907**	-0.0706	-0.1576	-0.1749	-0.2293	-0.3683	-0.3624
		KNN	-0.9032**	-0.8881**	-0.9351**	-0.9119**	-0.9268*	-0.9236*	0.0648	-0.1	-0.1858	-0.0735	-0.496	-0.5418
	WST	10/90	-0.1972	-0.2633	-0.1571	-0.1453	0.0307	0.0679	-0.594	-0.6118	-0.6477	-0.8384	-0.7596	-0.8167
		30/70	-0.1804	-0.1484	-0.0589	-0.0265	0.062	0.0713	-0.1319	-0.294	-0.3289	-0.3569	-0.5188	-0.5831
		50/50	-0.1569	-0.1281	-0.0536	-0.0394	0.0599	0.0733	-0.311	-0.4615	-0.5425*	-0.5544*	-0.7023**	-0.7356**
		KNN	-0.0388	-0.1089	0.0189	0.0919	0.3772	0.336	-0.7245	-0.8383	-1.0276	-1.0548	-1.371	-1.5395*
Information Technology	GHG	10/90	0.0931	-0.0316	0.1241	0.1149	0.5351	0.6191	-1.0864*	-1.1945**	-1.1647*	-1.1023*	-1.1371*	-1.1692*
		30/70	-0.0582	-0.045	0.166	0.1246	0.3165	0.337	-0.2776	-0.3425	-0.2806	-0.2541	-0.2649	-0.1262
		50/50	0.075	0.1003	0.2046	0.1594	0.2847	0.2628	0.1244	-0.006	-0.0657	-0.0428	-0.1271	-0.0773
		KNN	-0.133	-0.2038	0.0335	0.0211	0.2806	0.4325	-1.1456*	-1.3736**	-1.2247*	-1.1505*	-1.0814*	-0.8859
	WTR	10/90	-0.3433	-0.2186	-0.0045	-0.0389	0.0442	0.0772	-0.0179	-0.1995	-0.3871	-0.5433	-0.6394	-0.628
		30/70	-0.0938	-0.0697	0.0641	0.0383	0.094	0.1197	0.5618	0.5207	0.3288	0.3489	0.1478	0.1165
		50/50	-0.1995	-0.1693	-0.0242	-0.0436	-0.0144	-0.0073	0.9605**	1.0454***	0.8402**	0.8758**	0.7428*	0.7359*
		KNN	0.0006	0.0843	0.1812	0.1737	0.3628	0.4467	0.3908	0.2665	0.0644	-0.0026	-0.0222	-0.0535
	WST	10/90	-0.6166	-0.7267	-0.5077	-0.4474	-0.2089	-0.2005	0.0127	-0.0889	-0.1926	-0.2834	-0.3222	-0.2723
		30/70	-0.2679	-0.2715	-0.0875	-0.0979	0.0035	0.0399	0.588	0.5539	0.5061	0.5099	0.4427	0.4815
		50/50	-0.5019*	-0.536*	-0.3747	-0.405	-0.3087	-0.2794	0.4711	0.4566	0.5439	0.5382	0.6387	0.7133
		KNN	-0.7437	-0.8402	-0.6633	-0.6533	-0.3811	-0.3679	-0.5224	-0.4828	-0.546	-0.6225	-0.5616	-0.592

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Best-fit factor-model which is defined by AICC within a specific indicator are highlighted.

Table 107. Sector-wise samples' multiple factor models comparison, part 2

Sample	Variable	Model	Alphas											
			Environmental performance						Environmental momentum					
			Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor	Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor
Consumer Staples	GHG	10/90	-0.373	-0.378	-0.2895	-0.2562	-0.0509	-0.0762	-0.6445*	-0.8974**	-0.7297*	-0.6847*	-0.8626*	-0.9958**
		30/70	-0.2591	-0.3917*	-0.3541	-0.3294	-0.1655	-0.1499	-0.2688	-0.3815	-0.3328	-0.3524	-0.2897	-0.3529
		50/50	-0.011	0.0139	0.0241	0.0219	0.0838	0.0808	-0.2064	-0.2696	-0.2757	-0.2905	-0.2405	-0.2843
		KNN	-0.4054	-0.4318	-0.3265	-0.3293	-0.0242	-0.04	0.2393	0.0936	0.2142	0.2789	0.3733	0.247
	WTR	10/90	-0.4659	-0.5062	-0.4186	-0.3893	-0.3865	-0.4057	0.3629	0.3627	0.503	0.6057	0.6229	0.6474
		30/70	-0.1016	-0.2289	-0.2029	-0.1786	-0.1591	-0.1786	0.0139	-0.0964	0.0062	0.0605	-0.0596	-0.0339
		50/50	-0.179	-0.2198	-0.172	-0.1703	-0.1664	-0.1744	-0.0816	-0.0939	-0.0592	-0.0052	-0.1182	-0.0979
		KNN	-0.4548	-0.5853	-0.4642	-0.4228	-0.4356	-0.4832	0.4252	0.5601	0.6461	0.7426*	0.8802**	0.8486*
	WST	10/90	-0.3589	-0.5506	-0.5143	-0.5299	-0.3125	-0.3751	-0.0953	-0.1862	-0.229	-0.22	-0.3886	-0.4089
		30/70	-0.0074	-0.042	-0.0301	-0.0331	0.0961	0.0794	0.189	0.3661	0.3743	0.3851	0.3536	0.3489
		50/50	-0.0518	-0.0217	-0.0043	-0.0028	0.0235	0.0291	-0.0298	0.0816	0.0555	0.031	-0.0303	-0.0565
		KNN	0.0198	-0.1407	-0.1614	-0.2124	0.1074	0.0741	0.0221	0.097	0.0718	0.0047	-0.1359	-0.0822
Real Estate	GHG	10/90	-0.1794	0.1049	-0.1991	-0.2786	-0.3253	-0.2803	-0.6416	-0.7165	-0.5902	-0.6847	-0.4826	-0.4399
		30/70	0.1831	0.2898	0.1901	0.2078	-0.0464	-0.0268	-0.395	-0.3944	-0.2536	-0.2248	-0.0198	0.0456
		50/50	0.2995	0.3854**	0.2815	0.3077*	0.1759	0.2012	-0.2397	-0.1983	-0.108	-0.1467	-0.0828	-0.0614
		KNN	0.1165	0.1726	0.0765	0.0724	-0.1978	-0.1877	0.2412	0.1346	0.2748	0.2305	0.0701	0.1083
	WTR	10/90	0.0792	-0.2193	-0.1401	-0.223	-0.2788	-0.2656	-0.0539	0.0631	0.1992	0.2585	0.4687	0.5178
		30/70	0.1925	0.1208	0.0857	0.089	-0.1651	-0.1314	-0.047	0.0913	0.062	0.0384	0.1486	0.1513
		50/50	0.2587	0.2583	0.239	0.2177	0.0142	0.0178	-0.468*	-0.4211	-0.4251	-0.4214	-0.3032	-0.2598
		KNN	0.0921	-0.0273	-0.1098	-0.1151	-0.1742	-0.1721	-0.5239	-0.1642	-0.4454	-0.583	-0.4888	-0.4953
	WST	10/90	0.5752	0.4143	0.4076	0.3204	0.2818	0.2302	-0.419	-0.2736	-0.1778	-0.2286	-0.2142	-0.2837
		30/70	0.1609	-0.0134	0.0464	0.0118	-0.158	-0.163	-0.1531	-0.0343	-0.0552	-0.0951	-0.1214	-0.1401
		50/50	0.1175	-0.0095	0.0466	0.0298	-0.0908	-0.0969	-0.3996	-0.2498	-0.3167	-0.3175	-0.3075	-0.3285
		KNN	-0.1447	-0.3818	-0.4326	-0.4975	-0.9318**	-0.9784**	-0.5854	-0.2832	-0.2188	-0.2537	-0.2486	-0.2576
Health Care	GHG	10/90	-0.3991	-0.3539	-0.4917	-0.5391	-0.4756	-0.4732	-1.5885**	-1.4161*	-1.2111*	-1.456**	-1.6755**	-1.8062**
		30/70	-0.299	-0.3101	-0.4257*	-0.462*	-0.2484	-0.2987	-0.4231	-0.5515	-0.5308	-0.6178	-0.5688	-0.5338
		50/50	-0.2081	-0.2082	-0.2488	-0.2658	-0.2191	-0.2465	-0.0942	-0.1393	-0.1228	-0.1349	-0.1366	-0.0619
		KNN	-0.5681	-0.597	-0.7702	-0.8509*	-0.793	-0.7515	-2.0133***	-2.0962***	-1.8367**	-2.0278***	-2.3017***	-2.3922***
	WTR	10/90	-0.2214	-0.3177	-0.409	-0.4861	-0.4854	-0.5625	0.2306	0.0381	-0.0914	0.0071	-0.1519	-0.1499
		30/70	0.0232	0.0082	-0.0251	-0.0317	-0.1626	-0.1369	0.0796	0.0482	-0.0838	-0.0817	-0.2161	-0.2189
		50/50	-0.116	-0.1189	-0.1279	-0.1354	-0.1615	-0.1551	-0.2106	-0.149	-0.2736	-0.2635	-0.3535	-0.3442
		KNN	-0.4413	-0.4155	-0.6258	-0.6571	-0.5451	-0.5917	-0.3387	-0.3746	-0.367	-0.4088	-0.692	-0.6956
	WST	10/90	-0.3261	-0.4079	-0.5887	-0.6484*	-0.6022	-0.63	-1.014*	-1.4108**	-1.2709**	-1.243**	-1.1947*	-1.2657**
		30/70	-0.1866	-0.2027	-0.2763	-0.2757	-0.3044	-0.3338	-0.5511	-0.768*	-0.6155	-0.558	-0.8296**	-0.7375*
		50/50	-0.1479	-0.1794	-0.2109*	-0.1983*	-0.2958**	-0.3268**	-0.4286	-0.4583	-0.3594	-0.3738	-0.5884	-0.4898
		KNN	-0.1232	-0.1703	-0.2788	-0.3151	-0.1492	-0.1892	-0.1509	-0.6002	-0.5028	-0.6183	-1.0284	-1.1089*
Energy	GHG	10/90	0.5197	0.5827	0.5745	0.5817	0.7114*	0.7689*	-0.3718	-0.6234	-0.4389	-0.5702	-0.5965	-0.7611
		30/70	0.2727	0.1507	0.238	0.2457	0.2624	0.1904	-0.2765	-0.4698	-0.3084	-0.2835	-0.3213	-0.3662
		50/50	0.0531	-0.0871	0.0169	0.0725	0.0784	-0.0029	-0.062	-0.104	-0.0143	-0.0354	0.0483	0.0315
		KNN	0.364	0.3974	0.4508	0.4808	0.5984	0.6469	-0.4345	-0.9026	-0.6314	-0.4703	-0.6759	-0.7922
	WTR	10/90	-0.376	-0.176	-0.0979	-0.1057	-0.0228	-0.0501	0.8778	1.0035	0.5366	0.421	0.6301	0.581
		30/70	0.0217	0.0268	0.0991	0.1438	0.2231	0.2247	1.2953**	1.4871**	1.2596**	1.2575**	1.303**	1.005
		50/50	0.1021	-0.043	-0.0681	0.0501	0.2198	0.2528	0.5133*	0.5434**	0.4714*	0.467*	0.4366	0.2619
		KNN	0.2973	0.3629	0.4254	0.5008	0.6074*	0.6097*	0.6695	0.6678	0.6122	0.7825	0.7035	0.3711
	WST	10/90	-0.6898	-0.7188	-0.726	-0.7272	-0.7923	-0.7975	1.2014	0.9373	0.8957	0.9325	1.0874	0.8239
		30/70	0.152	0.1277	0.1569	0.1326	-0.0693	-0.065	0.3848	0.2011	0.3247	0.3524	0.271	0.2118
		50/50	0.1782	0.1516	0.1701	0.1132	0.0354	-0.046	0.4354	0.3712	0.5447	0.5118	0.3529	0.3786
		KNN	-0.2656	-0.2493	-0.1648	-0.1242	-0.4677	-0.4029	0.8815	1.0313	1.0263	1.0112	1.3216	1.039
Utilities	GHG	10/90	-0.2278	-0.0556	-0.0128	-0.1245	-0.4044	-0.3795	-0.3996	-0.4593	-0.3864	-0.1818	-0.1423	-0.0334
		30/70	0.0361	0.1053	0.1043	0.0936	-0.084	-0.0747	-0.329	-0.3797	-0.4141	-0.3186	-0.2648	-0.2067
		50/50	-0.2022	-0.3075	-0.2608	-0.2771	-0.2594	-0.2467	-0.2296	-0.3321	-0.3585	-0.3674	-0.3332	-0.3019
		KNN	0.3571	0.4993	0.469	0.4135	0.1419	0.1722	0.6629	0.7871	1.0219	1.1047	1.1768	1.1718
	WTR	10/90	-0.3507	-0.1897	-0.2965	-0.3098	-0.3586	-0.371	0.2104	0.1563	0.1194	0.1071	0.3507	0.36
		30/70	0.1077	-0.0581	-0.1103	-0.1504	-0.2107	-0.224	0.1103	0.0925	0.0332	-0.0091	0.304	0.3016
		50/50	0.1334	0.0301	-0.027	-0.0383	-0.1618	-0.1611	0.2824	0.3689*	0.3264	0.3265	0.4856**	0.4719**
		KNN	-0.2419	-0.2396	-0.294	-0.339	-0.5217	-0.5196	0.3537	0.1777	0.0352	-0.0448	0.0337	0.0129
	WST	10/90	0.029	-0.0518	-0.0415	-0.0811	0.0067	-0.003	0.0906	-0.117	-0.1729	0.0537	0.4573	0.4183
		30/70	0.0618	-0.0086	0.0702	0.0387	0.2252	0.2482	0.2023	-0.1011	-0.0738	0.1187	0.3231	0.3478
		50/50	-0.0644	-0.1216	-0.0807	-0.0878	0.0394	0.061	-0.1477	-0.2497	-0.2575	-0.2111	-0.0059	0.0241
		KNN	-0.1663	-0.2458	-0.097	-0.0857	-0.0213	-0.0564	0.3707	0.1183	0.2381	0.444	0.7934	0.8345
Communication Services	GHG	10/90	-0.6278	-0.2188	-0.0549	-0.1174	-0.1746	-0.1824	-1.2318	-1.0233	-0.9868	-0.9977	-1.087	-1.2759
		30/70	-0.1653	0.1357	0.2172	0.1144	-0.1663	-0.161	-0.603	-0.5637	-0.5071	-0.479	-1.0092**	-1.1119**
		50/50	0.1874	0.3161	0.3575	0.3194	-0.0224	-0.0199	-0.3993	-0.353	-0.4352	-0.4061	-0.7742**	-0.8521**
		KNN	-0.5149	-0.1422	-0.0074	-0.0038	-0.0113	-0.0369	-0.9457*	-0.9073*	-0.815	-0.8429	-1.1015*	-1.2641**
	WTR	10/90	-0.0058	-0.3342	-0.1754	-0.1218	0.1181	0.0856	0.7382	0.9734*	1.034*	1.0938*	0.6211	0.6209
		30/70	0.3589	0.1613	0.2682	0.311	0.2469	0.1719	-0.4014	-0.6064	-0.4571	-0.4274	-0.5881	-0.6612*
		50/50	0.0948	0.0346	0.1428	0.1609	0.0345	0.0191	-0.1236	-0.1664	-0.1956	-0.2006	-0.075	-0.0998
		KNN	-0.0196	-0.315	-0.2277	-0.1992	0.1889	0.1712	-0.3033	-0.5719	-0.2556	-0.1894	-0.235	-0.2558
	WST	10/90	0.1457	0.1763	0.1958	0.1761	0.3911	0.3917	-0.1454	-0.2319	-0.2876	-0.2743	0.0921	0.0129
		30/70	-0.108	-0.1284	-0.0701	-0.0724	-0.1634	-0.1273	-0.5735	-0.5195	-0.5102	-0.5845	-0.3479	-0.2037
		50/50	-0.4265*	-0.4385*	-0.3873*	-0.4007*	-0.4425*	-0.4344*	-0.1252	-0.1731	-0.24	-0.3513	-0.133	-0.1861
		KNN	0.6334	0.5588	0.518	0.5236	0.5466	0.5421	-1.1195*	-1.0156*	-1.0148*	-1.0884*	-0.6681	-0.6305

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Best-fit factor-model which is defined by AICC within a specific indicator are highlighted.

Table 108. Multi hypothesis robustness check

Hypothesis	Test	p-values											
		Environmental performance						Environmental momentum					
		Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor	Baseline	CAPM	three-factor	Four-factor	Six-factor	Eight-factor
Full sample	Harmonic mean	0.1313	0.1349	0.1841	0.1661	0.0011***	0.0008***	0.0149**	0.0075***	0.0107**	0.0148**	0.0389**	0.0395**
	SCT	0.1479	0.4106	0.307	0.031**	0.0357**	0.0941*	0.0104**	0***	0***	0***	0.0001***	0***
GHG	Harmonic mean	0.0811*	0.1099	0.1785	0.2002	0.0335**	0.0364**	0.0057***	0.0031***	0.0044***	0.0062***	0.0254**	0.0271**
	SCT	0.1845	0.5229	0.5553	0.4034	0.0044***	0.0092***	0.0012***	0***	0***	0.0002***	0.0001***	0***
WTR	Harmonic mean	0.1523	0.1323	0.1513	0.1117	0.0004***	0.0003***	0.1655	0.0347**	0.072*	0.1009	0.1325	0.133
	SCT	0.7308	0.2583	0.5229	0.1158	0.3763	0.5229	0.3341	0.0127**	0.1404	0.0474**	0.3341	0.3341
WST	Harmonic mean	0.2525	0.179	0.2449	0.243	0.0944*	0.0873*	0.0668*	0.0221**	0.0291**	0.0379**	0.0338**	0.0323**
	SCT	0.4034	0.7308	0.069*	0.1845	0.9217	0.7308	0.8389	0.0127**	0.0061***	0.0061***	0.0474**	0.0061***
10/90	Harmonic mean	0.2377	0.1766	0.2152	0.12	0.0003***	0.0002***	0.0042***	0.0023***	0.0034***	0.0049***	0.0186**	0.0252**
	SCT	0.1732	0.6095	0.8204	0.2809	0.4269	0.2809	0.0445**	0.0095***	0.0002***	0.0015***	0.0005***	0.0001***
30/70	Harmonic mean	0.0695*	0.0964*	0.1524	0.1447	0.0075***	0.0056***	0.1807	0.0309**	0.0501*	0.0589*	0.1365	0.1254
	SCT	0.1732	0.8204	0.0998*	0.0125**	0.1401	0.1401	0.58	0.0039***	0.0445**	0.1536	0.3983	0.1536
50/50	Harmonic mean	0.1337	0.1321	0.1765	0.2392	0.081*	0.0707*	0.0621*	0.0216**	0.0272**	0.0336**	0.0358**	0.027**
	SCT	0.0785*	0.0015***	0.2334	0.7335	0.02**	0.02**	0.58	0.0445**	0.0445**	0.1536	0.0857*	0.3983
KNN	Harmonic mean	0.2278	0.1653	0.2061	0.2146	0.1535	0.1488	0.0993*	0.0326**	0.0472**	0.0551*	0.0719*	0.0604*
	SCT	0.0537*	0.4269	0.1732	0.2809	0.2334	0.5325	0.0445**	0.0015***	0.0015***	0.0002***	0.0445**	0.0005***

6.3. Value regression related appendix

Table 109. Greenhouse gas based value regression models. Split by years.

Year	Environmental					Non environmental			
	One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	3.1649**	0.152	0.6534*	5.8383***	-0.1935	3.3555**	0.6614*	5.8119***	-0.165
2005	(1.536)	(0.0962)	(0.3723)	(1.8878)	(0.1595)	(1.6035)	(0.3783)	(1.8601)	(0.15)
	0.0484	*0.1252*	*0.0898*	*0.0044*	*0.2349*	*0.0449*	*0.0906*	*0.0039*	*0.2801*
	0.6783**	-0.0224	0.8906***	6.1597***	-0.0126	0.6802**	0.8762***	6.1235***	-0.0116
2006	(0.2857)	(0.057)	(0.1831)	(1.1431)	(0.0655)	(0.2899)	(0.1937)	(1.1031)	(0.0669)
	0.0188	*0.6953*	*0*	*0*	*0.8483*	*0.0202*	*0*	*0*	*0.8621*
	0.3436**	-0.0484	0.423**	1.2755**	0.353***	0.2967*	0.3975**	1.2968**	0.3467***
2007	(0.1502)	(0.0486)	(0.1918)	(0.5747)	(0.0745)	(0.1538)	(0.1771)	(0.5868)	(0.0744)
	0.0227	*0.3197*	*0.028*	*0.0271*	*0*	*0.0544*	*0.0253*	*0.0277*	*0*
	0.4914***	0.0642**	-0.0193	0.4408***	0.0963***	0.5102***	-0.0221	0.4739***	0.1068***
2008	(0.1243)	(0.0257)	(0.044)	(0.1086)	(0.0158)	(0.1324)	(0.0474)	(0.1169)	(0.0166)
	0.0001	*0.0128*	*0.662*	*0.0001*	*0*	*0.0001*	*0.6403*	*0.0001*	*0*
	0.1402**	0.034	0.5984***	0.1985*	0.0902***	0.1473**	0.6093***	0.2006*	0.0941***
2009	(0.0693)	(0.0292)	(0.1032)	(0.1138)	(0.0239)	(0.0729)	(0.1039)	(0.1137)	(0.0249)
	0.0435	*0.2443*	*0*	*0.0814*	*0.0002*	*0.0437*	*0*	*0.0779*	*0.0002*
	0.496***	0.1036***	0.0895***	0.1877*	-0.0403**	0.5398***	0.0431*	-0.0355	-0.0075
2010	(0.1222)	(0.035)	(0.0288)	(0.1129)	(0.0177)	(0.1275)	(0.0244)	(0.1053)	(0.0132)
	0.0001	*0.0032*	*0.0019*	*0.0969*	*0.0228*	*0*	*0.0773*	*0.7359*	*0.5691*
	0.1259***	0.0193	0.1056*	-0.0175	-0.0018	0.141***	0.0978	-0.0074	0.0029
2011	(0.0406)	(0.013)	(0.0614)	(0.0455)	(0.0196)	(0.0413)	(0.0638)	(0.047)	(0.0201)
	0.002	*0.1368*	*0.0857*	*0.7007*	*0.9281*	*0.0007*	*0.1255*	*0.8743*	*0.8874*
	0.1143***	-0.0474*	-0.0462	0.1061***	0.0485***	0.0901***	-0.0856***	0.0739***	0.0442***
2012	(0.0215)	(0.0242)	(0.0282)	(0.0274)	(0.0142)	(0.0158)	(0.0209)	(0.0175)	(0.0122)
	0	*0.0505*	*0.1008*	*0.0001*	*0.0007*	*0*	*0*	*0*	*0.0003*
	0.0278*	-0.0134	0.1374***	-0.3946***	-0.0071	0.0247**	0.1149***	-0.4032***	-0.0015
2013	(0.0148)	(0.0169)	(0.0437)	(0.1304)	(0.0126)	(0.0123)	(0.0367)	(0.1279)	(0.0068)
	0.0607	*0.4276*	*0.0017*	*0.0025*	*0.5708*	*0.0451*	*0.0018*	*0.0017*	*0.8265*
	0.0232**	-0.0105	-0.0676**	-0.0402	0.119***	0.0177*	-0.0854***	0.0104	0.1238***
2014	(0.011)	(0.0183)	(0.0262)	(0.0859)	(0.0192)	(0.0093)	(0.0141)	(0.1045)	(0.0215)
	0.0358	*0.5664*	*0.01*	*0.6395*	*0*	*0.0566*	*0*	*0.9208*	*0*
	0.0347***	-0.0083	-0.0044	0.0291	0.0267**	0.0328***	-0.0259**	-0.0209	0.0303**
2015	(0.0094)	(0.007)	(0.0211)	(0.0577)	(0.0125)	(0.0092)	(0.0128)	(0.0223)	(0.014)
	0.0002	*0.2306*	*0.8363*	*0.6142*	*0.033*	*0.0004*	*0.0441*	*0.3496*	*0.0303*
	0.0344**	0.0079	0.117*	0.4614***	0.0727***	0.0363**	0.1155*	0.4666***	0.0761***
2016	(0.0164)	(0.0206)	(0.0667)	(0.1784)	(0.0263)	(0.0162)	(0.0691)	(0.1742)	(0.025)
	0.0367	*0.7028*	*0.0794*	*0.0098*	*0.0058*	*0.025*	*0.0945*	*0.0074*	*0.0023*
	0.0428***	-0.0021	-0.0005	0.0001	0.001	0.0415***	0	-0.0002	0.0004
2017	(0.0161)	(0.0061)	(0.0018)	(0.0014)	(0.0009)	(0.0143)	(0.0004)	(0.0023)	(0.0023)
	0.008	*0.726*	*0.7817*	*0.9249*	*0.2309*	*0.0038*	*0.9407*	*0.9378*	*0.8751*
	0.0409***	0.0156*	0.0223**	-0.0255**	-0.0029**	0.0432***	0.0241***	-0.0315***	-0.0025*
2018	(0.01)	(0.0087)	(0.0092)	(0.0122)	(0.0014)	(0.0102)	(0.0093)	(0.012)	(0.0013)
	0	*0.0713*	*0.0153*	*0.0357*	*0.0334*	*0*	*0.0096*	*0.0085*	*0.065*
	0.026***	0.0008	0.2537***	-0.1107***	0.0131***	0.0261***	0.2542***	-0.1109***	0.0132***
2019	(0.0075)	(0.0027)	(0.0532)	(0.0239)	(0.0029)	(0.0076)	(0.0522)	(0.0236)	(0.0027)
	0.0006	*0.7727*	*0*	*0*	*0*	*0.0006*	*0*	*0*	*0*
	0.0348***	0.0005	-0.0001	0.0059	0.0008	0.035***	0.0002	0.0055	0.0008
2020	(0.0058)	(0.0015)	(0.001)	(0.004)	(0.0006)	(0.0058)	(0.0013)	(0.0041)	(0.0006)
	0	*0.7383*	*0.9058*	*0.1397*	*0.1499*	*0*	*0.9051*	*0.1753*	*0.1839*
	0.0281***	0.0002***	0.0184*	0.0006	0.0041	0.0281***	0.0184*	0.0006	0.0041
2021	(0.0047)	(0.0001)	(0.0098)	(0.0415)	(0.0028)	(0.0047)	(0.0099)	(0.0415)	(0.0028)
	0	*0.0011*	*0.062*	*0.9878*	*0.1427*	*0*	*0.062*	*0.9887*	*0.1414*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 110. Water intensity-based value regression models. Split by years.

Year	Environmental					Non environmental			
	One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
2005	2.2355***	0.0009***	0.5076***	6.484***	0.0548*	2.213***	0.5156***	6.6333***	0.0538
	(0.7691)	(0.0002)	(0.1805)	(2.0052)	(0.0317)	(0.7798)	(0.1847)	(2.0253)	(0.0322)
	0.0071	*0.0011*	*0.0089*	*0.0031*	*0.0944*	*0.0082*	*0.0092*	*0.0027*	*0.106*
2006	0.8714	0.0019***	0.9531***	3.2008***	0.0492	0.8658	0.9701***	3.3276***	0.0516
	(0.6604)	(0.0005)	(0.177)	(0.9673)	(0.0475)	(0.6795)	(0.1833)	(0.9876)	(0.0496)
	0.1889	*0.0001*	*0*	*0.0012*	*0.3016*	*0.2044*	*0*	*0.0009*	*0.2992*
2007	0.3254	0.0017*	1.0729***	0.0054***	-0.0016	0.321	1.0955***	0.0053***	-0.0016
	(0.2166)	(0.001)	(0.0788)	(0.0013)	(0.0206)	(0.2172)	(0.0789)	(0.0013)	(0.0211)
	0.1338	*0.0804*	*0*	*0*	*0.9375*	*0.1401*	*0*	*0*	*0.9404*
2008	0.0247***	-0.0002**	0.2487***	0.0184	0.0615***	0.0049	0.2488***	0.0187	0.0618***
	(0.009)	(0.0001)	(0.0566)	(0.1008)	(0.014)	(0.0062)	(0.0564)	(0.1002)	(0.0139)
	0.0064	*0.0205*	*0*	*0.8552*	*0*	*0.4294*	*0*	*0.8519*	*0*
2009	0.0439**	0***	0.6651***	0.0238***	0.038***	0.0451**	0.6652***	0.0238***	0.038***
	(0.0205)	(0)	(0.0525)	(0.0083)	(0.0119)	(0.0206)	(0.0525)	(0.0083)	(0.0119)
	0.0324	*0.0019*	*0*	*0.0041*	*0.0014*	*0.0286*	*0*	*0.0042*	*0.0014*
2010	0.1783***	0.0002	0.3853***	0.4276	0.0579**	0.1877***	0.387***	0.4261	0.0579**
	(0.0631)	(0.0002)	(0.0976)	(0.5211)	(0.0229)	(0.0619)	(0.0977)	(0.5226)	(0.0229)
	0.0048	*0.2665*	*0.0001*	*0.412*	*0.0114*	*0.0025*	*0.0001*	*0.415*	*0.0114*
2011	0.1***	0.0002	0.1111	1.0288**	0.0371	0.1046***	0.1125	1.0339**	0.0372
	(0.0352)	(0.0002)	(0.0897)	(0.521)	(0.0293)	(0.0361)	(0.0896)	(0.5236)	(0.0294)
	0.0045	*0.3038*	*0.2158*	*0.0485*	*0.2058*	*0.0038*	*0.2093*	*0.0485*	*0.2064*
2012	0.0294	0	0.4355***	0.419***	0.0389***	0.0293	0.4355***	0.419***	0.0389***
	(0.0187)	(0)	(0.0567)	(0.1061)	(0.0148)	(0.0179)	(0.0568)	(0.106)	(0.0148)
	0.1156	*0.8895*	*0*	*0.0001*	*0.0087*	*0.1028*	*0*	*0.0001*	*0.0087*
2013	0.0409**	0***	-0.1***	0.3273***	0.1139***	0.0414**	-0.0999***	0.3273***	0.114***
	(0.0186)	(0)	(0.0354)	(0.0617)	(0.0146)	(0.0189)	(0.0356)	(0.0616)	(0.0146)
	0.0281	*0.0002*	*0.0048*	*0*	*0*	*0.0283*	*0.0051*	*0*	*0*
2014	0.0128**	0***	0.0408	0.0586	0.0202	0.0135**	0.0407	0.0581	0.0202
	(0.0063)	(0)	(0.0593)	(0.0587)	(0.0287)	(0.0062)	(0.0592)	(0.0588)	(0.0287)
	0.043	*0*	*0.4912*	*0.3181*	*0.4828*	*0.0286*	*0.4917*	*0.323*	*0.4815*
2015	0.0228***	0***	0.0217	0.0027	0.015	0.0229***	0.0214	0.0013	0.0153
	(0.0055)	(0)	(0.0309)	(0.0684)	(0.0108)	(0.0056)	(0.0309)	(0.0686)	(0.0108)
	0	*0.0017*	*0.4826*	*0.9688*	*0.1628*	*0*	*0.4883*	*0.9853*	*0.1554*
2016	0.0278***	0***	0.0053	0.1782***	0.0532**	0.0281***	0.0053	0.1793***	0.0535**
	(0.0074)	(0)	(0.0229)	(0.066)	(0.0212)	(0.0074)	(0.0227)	(0.0661)	(0.0212)
	0.0002	*0.0087*	*0.8187*	*0.0069*	*0.0124*	*0.0002*	*0.8165*	*0.0067*	*0.0115*
2017	0.0241***	0***	0.0005	0.0004	0.0008	0.0249***	0	0.0008	0.0013
	(0.005)	(0)	(0.0004)	(0.0011)	(0.0011)	(0.0051)	(0.0003)	(0.0011)	(0.0011)
	0	*0.0037*	*0.265*	*0.7404*	*0.4614*	*0*	*0.9402*	*0.4976*	*0.2583*
2018	0.0246***	0.0001**	-0.025	0.0755	0.0238	0.0248***	-0.025	0.0752	0.0239
	(0.0044)	(0)	(0.018)	(0.0536)	(0.0169)	(0.0044)	(0.0181)	(0.0539)	(0.017)
	0	*0.0214*	*0.1644*	*0.159*	*0.1589*	*0*	*0.1673*	*0.163*	*0.1608*
2019	0.0104**	0	0.4457***	-0.1805***	0.0026	0.0104**	0.4464***	-0.1808***	0.0027
	(0.0046)	(0)	(0.0608)	(0.0238)	(0.0099)	(0.0047)	(0.0606)	(0.0237)	(0.0099)
	0.0254	*0.5269*	*0*	*0*	*0.7916*	*0.0253*	*0*	*0*	*0.7875*
2020	0.0276***	0.0001**	-0.0154***	-0.0011	0.012***	0.0279***	-0.016***	-0.0011	0.0125***
	(0.0047)	(0)	(0.0038)	(0.0029)	(0.0024)	(0.0047)	(0.0039)	(0.0029)	(0.0024)
	0	*0.041*	*0*	*0.7117*	*0*	*0*	*0*	*0.6933*	*0*
2021	0.0061	0***	0.3257***	-0.0233	-0.0311	0.0062	0.3259***	-0.0233	-0.0311
	(0.009)	(0)	(0.1104)	(0.0268)	(0.0278)	(0.009)	(0.1105)	(0.0268)	(0.0278)
	0.4936	*0*	*0.0032*	*0.3851*	*0.2638*	*0.493*	*0.0032*	*0.3853*	*0.264*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 111. Waste intensity based value regression models. Split by years.

Year	Environmental					Non environmental			
	One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
2005	2.1866**	0.0019	0.672**	6.2476***	-0.0567	2.2583***	0.6835**	6.19***	-0.061
	(0.8671)	(0.0066)	(0.2815)	(1.9271)	(0.0807)	(0.6563)	(0.2586)	(1.7884)	(0.0733)
	0.0159	*0.7788*	*0.0219*	*0.0024*	*0.4867*	*0.0014*	*0.0117*	*0.0013*	*0.4107*
2006	0.096**	-0.0072	0.9516***	4.0334***	0.0962	0.0923**	0.8322***	4.4054***	0.1138
	(0.0376)	(0.0072)	(0.2471)	(1.0585)	(0.0918)	(0.0364)	(0.2568)	(1.099)	(0.0961)
	0.0115	*0.3214*	*0.0002*	*0.0002*	*0.2957*	*0.012*	*0.0014*	*0.0001*	*0.2378*
2007	0.2885***	0.0009**	0.8153***	1.9015***	0.0518*	0.289***	0.8204***	1.8932***	0.0505*
	(0.1113)	(0.0004)	(0.1076)	(0.4287)	(0.0282)	(0.1116)	(0.1067)	(0.4277)	(0.028)
	0.0099	*0.0225*	*0*	*0*	*0.0671*	*0.0099*	*0*	*0*	*0.072*
2008	0.0383***	0.0017***	0.2784***	-0.0692	0.0419***	0.0383***	0.2799***	-0.0706	0.0419***
	(0.0146)	(0.0006)	(0.0422)	(0.0751)	(0.0092)	(0.0146)	(0.0422)	(0.0751)	(0.0091)
	0.0088	*0.0074*	*0*	*0.3571*	*0*	*0.009*	*0*	*0.3472*	*0*
2009	0.0634***	0.0016**	0.6289***	0.0212***	0.0245**	0.0636***	0.6301***	0.021***	0.0245**
	(0.0207)	(0.0007)	(0.0405)	(0.006)	(0.0101)	(0.0208)	(0.0404)	(0.0058)	(0.01)
	0.0023	*0.0132*	*0*	*0.0004*	*0.0151*	*0.0023*	*0*	*0.0003*	*0.0146*
2010	0.01	0.0151**	0.4953***	0.9583*	0.0431*	0.0101	0.4962***	0.9711*	0.0447*
	(0.0102)	(0.0076)	(0.0986)	(0.5103)	(0.0244)	(0.0103)	(0.0989)	(0.5113)	(0.024)
	0.3256	*0.0466*	*0*	*0.0607*	*0.0785*	*0.3267*	*0*	*0.0578*	*0.0627*
2011	0.0128	0.0134***	0.3141***	0.8846***	0.0672***	0.0132	0.317***	0.8926***	0.0678***
	(0.0084)	(0.003)	(0.0599)	(0.2369)	(0.0213)	(0.0088)	(0.0601)	(0.2363)	(0.0214)
	0.1301	*0*	*0*	*0.0002*	*0.0016*	*0.1346*	*0*	*0.0002*	*0.0016*
2012	0.0048	0.012***	0.4597***	0.602***	0.0389**	0.0049	0.4652***	0.6085***	0.0388**
	(0.0046)	(0.0021)	(0.0508)	(0.1036)	(0.0171)	(0.0048)	(0.0512)	(0.1037)	(0.0172)
	0.3038	*0*	*0*	*0*	*0.0227*	*0.3079*	*0*	*0*	*0.0245*
2013	0.0773***	0.0067**	-0.0074	-0.1886	0.0298*	0.0788***	-0.0065	-0.1888	0.0296*
	(0.024)	(0.0027)	(0.0286)	(0.1413)	(0.0165)	(0.0246)	(0.0292)	(0.1413)	(0.0165)
	0.0013	*0.0124*	*0.7962*	*0.1822*	*0.0707*	*0.0014*	*0.8252*	*0.1817*	*0.0734*
2014	0.0073	-0.0004	0.0261	0.0751	0.0313	0.0073	0.0253	0.0741	0.0312
	(0.0064)	(0.0014)	(0.0628)	(0.0671)	(0.0325)	(0.0063)	(0.0594)	(0.0689)	(0.0328)
	0.2574	*0.7618*	*0.6775*	*0.2637*	*0.3356*	*0.242*	*0.6706*	*0.2822*	*0.3411*
2015	0.0232***	0.0008	0.0096	0.0309	0.0232	0.023***	0.0124	-0.0052	0.023
	(0.0062)	(0.0007)	(0.0384)	(0.0535)	(0.0166)	(0.0062)	(0.0393)	(0.0304)	(0.0168)
	0.0002	*0.2102*	*0.8027*	*0.5627*	*0.1613*	*0.0002*	*0.7535*	*0.8653*	*0.1701*
2016	0.0268***	0.0049*	0.1048*	0.4127**	0.0684**	0.0273***	0.1101*	0.4208**	0.068**
	(0.0101)	(0.0026)	(0.0614)	(0.1814)	(0.028)	(0.0104)	(0.0604)	(0.1815)	(0.0283)
	0.0081	*0.0617*	*0.0881*	*0.023*	*0.0146*	*0.0087*	*0.0682*	*0.0205*	*0.0164*
2017	0.0262***	0***	0	0.0007	0.0012	0.0262***	0	0.0007	0.0012
	(0.0064)	(0)	(0.0003)	(0.0016)	(0.0015)	(0.0064)	(0.0003)	(0.0016)	(0.0015)
	0	*0*	*0.9941*	*0.659*	*0.4323*	*0*	*0.9942*	*0.6593*	*0.4326*
2018	0.0169***	0***	0.0852***	0.0198	0.0571*	0.0169***	0.0852***	0.0197	0.0571*
	(0.0058)	(0)	(0.0302)	(0.0737)	(0.0347)	(0.0058)	(0.0303)	(0.0737)	(0.0347)
	0.0035	*0*	*0.0049*	*0.7885*	*0.0999*	*0.0035*	*0.0049*	*0.7889*	*0.0999*
2019	0.02**	0***	0.3286***	-0.1481***	0.0168	0.0201**	0.3287***	-0.1482***	0.0168
	(0.0083)	(0)	(0.0681)	(0.0243)	(0.0162)	(0.0083)	(0.0681)	(0.0243)	(0.0162)
	0.0155	*0*	*0*	*0*	*0.2987*	*0.0155*	*0*	*0*	*0.2989*
2020	0.0249***	0.0037***	-0.0139*	0.0246	0.0118**	0.0256***	-0.0136*	0.0227	0.0116**
	(0.0034)	(0.0013)	(0.008)	(0.0209)	(0.0053)	(0.0035)	(0.0079)	(0.0197)	(0.0052)
	0	*0.0043*	*0.0801*	*0.2395*	*0.0256*	*0*	*0.0836*	*0.2473*	*0.0268*
2021	0.0206***	0.0013**	0.003	0.0533*	0.0496	0.0207***	0.003	0.0535*	0.0498
	(0.0034)	(0.0005)	(0.0134)	(0.0319)	(0.0315)	(0.0034)	(0.0134)	(0.0319)	(0.0316)
	0	*0.0142*	*0.8237*	*0.0945*	*0.1161*	*0*	*0.8251*	*0.094*	*0.1156*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 112. Greenhouse gas based value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2005	0.7837	0.7769	0.3001	0.7141	34
2006	0.7933	0.793	0.069	0.4925	167
2007	0.6432	0.6407	0.8855	0.5148	384
2008	0.4038	0.3848	7.033***	0.0002	666
2009	0.5558	0.5535	1.3871	0.3044	817
2010	0.1687	0.1292	14.9835***	0	949
2011	0.1572	0.1518	2.3734*	0.091	1109
2012	0.07	0.0505	8.8005***	0	1266
2013	0.0946	0.0925	1.1554	0.3934	1507
2014	0.1392	0.1375	1.1569	0.3928	1813
2015	0.0715	0.0611	7.6493***	0.0001	2051
2016	0.2315	0.231	0.5126	0.6877	2359
2017	0.0289	0.0288	0.1239	0.606	2673
2018	0.069	0.0617	8.1739***	0	3138
2019	0.2511	0.2511	0.0562	0.4517	3661
2020	0.0394	0.0393	0.1029	0.57	3982
2021	0.0601	0.0596	0.5684	0.666	3354

Table 113. Water intensity based value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2005	0.8235	0.8205	0.1611	0.6551	33
2006	0.7501	0.7417	1.8136	0.1838	167
2007	0.6598	0.6565	1.3848	0.3048	424
2008	0.5079	0.5066	0.6427	0.6327	740
2009	0.6399	0.6398	0.1472	0.6379	923
2010	0.4792	0.4785	0.4784	0.699	1085
2011	0.3291	0.3278	0.7676	0.5736	1248
2012	0.5502	0.5502	0.0016*	0.0839	1376
2013	0.1735	0.1717	1.129	0.4046	1515
2014	0.1008	0.0998	0.6391	0.6349	1694
2015	0.0864	0.0856	0.5543	0.6716	1854
2016	0.1209	0.1188	1.641	0.2265	2062
2017	0.0284	0.0269	1.2005	0.3749	2246
2018	0.0551	0.0504	4.1999***	0.0079	2512
2019	0.3924	0.3923	0.2887	0.7223	2776
2020	0.0451	0.0413	3.8445**	0.0128	2906
2021	0.2503	0.2498	0.5292	0.6815	2365

Table 114. Waste intensity based value regression models comparison. Split by years.

Year	r^2		F stat	p (F stat)	Sample size
	Environmental	Non-environmental			
2005	0.8538	0.8536	0.0125	0.2313	44
2006	0.755	0.7515	0.9245	0.4943	201
2007	0.6895	0.6892	0.187	0.6771	480
2008	0.5066	0.5056	0.5599	0.6689	860
2009	0.6204	0.6198	0.5488	0.6735	1025
2010	0.536	0.5334	2.2122	0.1118	1189
2011	0.5752	0.5709	4.4454***	0.0057	1315
2012	0.5857	0.5811	5.4123***	0.0015	1466
2013	0.0958	0.0879	4.6983***	0.004	1617
2014	0.1079	0.1078	0.0926	0.549	1791
2015	0.0904	0.0895	0.6887	0.6119	1929
2016	0.232	0.2278	3.8245**	0.0132	2102
2017	0.0243	0.0239	0.3349	0.7258	2338
2018	0.212	0.2118	0.3046	0.7244	2675
2019	0.3268	0.3267	0.1956	0.6837	3037
2020	0.0467	0.0415	5.8113***	0.0008	3200

Table 115. Full sample, three factor, value regression models performance

Year	Environmental							Non-Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	1.5374*	0.05	0.0021***	0.0074*	0.7499***	7.9363***	0.0209	1.5544*	0.8232***	8.101***	0.014
2006	(0.8125)	(0.0317)	(0.0007)	(0.0037)	(0.2186)	(1.1125)	(0.0691)	(0.8789)	(0.2019)	(1.1377)	(0.0708)
	0.0636	*0.1198*	*0.0022*	*0.0514*	*0.0011*	*0*	*0.7631*	*0.0821*	*0.0001*	*0*	*0.844*
	1.2002**	0.0735**	0.001	0.0123*	0.74***	2.8094***	0.1014**	1.1968**	0.784***	2.9475***	0.0979**
2007	(0.5319)	(0.0298)	(0.0015)	(0.0072)	(0.1379)	(1.0208)	(0.0466)	(0.545)	(0.1387)	(1.0494)	(0.0475)
	0.0256	*0.0149*	*0.4869*	*0.0902*	*0*	*0.0067*	*0.0313*	*0.0297*	*0*	*0.0057*	*0.0412*
	0.2542***	0.122**	0.0001	0.0012**	0.2608***	-0.0437	0.0459**	0.2682***	0.2762***	-0.046	0.0545**
2008	(0.0781)	(0.0504)	(0.0006)	(0.0006)	(0.0633)	(0.0978)	(0.0207)	(0.0891)	(0.066)	(0.1102)	(0.0217)
	0.0013	*0.0163*	*0.8274*	*0.0409*	*0.0001*	*0.6554*	*0.0272*	*0.0029*	*0*	*0.6769*	*0.0126*
	0.3705***	0.0595***	0***	0.001*	0.766***	0.0984	0.0699***	0.2486***	0.8041***	0.1006	0.0751***
2009	(0.0908)	(0.0221)	(0)	(0.0006)	(0.1125)	(0.1134)	(0.0249)	(0.0833)	(0.1121)	(0.1173)	(0.0264)
	0.0001	*0.0074*	*0.0002*	*0.093*	*0*	*0.3864*	*0.0053*	*0.0031*	*0*	*0.392*	*0.0047*
	0.3006***	-0.2469***	0.0011**	0.021**	0.7968***	1.7151	0.0097	0.3061**	0.6408***	2.2655	-0.0957
2010	(0.1082)	(0.0663)	(0.0004)	(0.0091)	(0.1129)	(1.1127)	(0.0345)	(0.123)	(0.1405)	(1.5002)	(0.0636)
	0.0057	*0.0002*	*0.0143*	*0.0213*	*0*	*0.1241*	*0.7784*	*0.0132*	*0*	*0.1319*	*0.1332*
	0.0743	0.0214	0.0005	0.0098***	0.3927***	1.09**	0.004	0.0997*	0.4066***	1.1357**	0.0044
2011	(0.0468)	(0.0328)	(0.0004)	(0.0024)	(0.1121)	(0.5327)	(0.0465)	(0.06)	(0.112)	(0.5409)	(0.0483)
	0.1131	*0.5144*	*0.1676*	*0.0001*	*0.0005*	*0.0413*	*0.9315*	*0.0975*	*0.0003*	*0.0363*	*0.9275*
	0.085	0.0144	0	0.0102***	0.4158***	0.529***	0.0921**	0.0588	0.4298***	0.5362***	0.0948**
2012	(0.0527)	(0.0285)	(0)	(0.0025)	(0.1174)	(0.1656)	(0.04)	(0.0381)	(0.1182)	(0.1661)	(0.0409)
	0.1074	*0.6143*	*0.181*	*0.0001*	*0.0004*	*0.0015*	*0.0218*	*0.1231*	*0.0003*	*0.0013*	*0.0209*
	0.0183	0.0057	0	0.0031	0.1526	0.2106	0.18***	0.0248	0.1616	0.201	0.1787***
2013	(0.0306)	(0.0116)	(0)	(0.002)	(0.1053)	(0.5633)	(0.0327)	(0.034)	(0.1063)	(0.5713)	(0.0329)
	0.5499	*0.6255*	*0.6599*	*0.1308*	*0.1478*	*0.7087*	*0*	*0.4662*	*0.1289*	*0.7251*	*0*
	0.0621*	0.0195	-0.0004	0.0109***	-0.0867*	-0.0265	0.1166***	0.01	-0.0693	-0.174	0.1141***
2014	(0.037)	(0.0174)	(0.0003)	(0.002)	(0.047)	(0.1372)	(0.0258)	(0.0194)	(0.047)	(0.1067)	(0.0261)
	0.0936	*0.2638*	*0.119*	*0*	*0.0655*	*0.8471*	*0*	*0.6083*	*0.1406*	*0.1033*	*0*
	0.0383**	-0.0051	0	0.0037***	0.0037	-0.0326	0.0151	0.0338**	0.0128	-0.0801	0.0115
2015	(0.0166)	(0.0066)	(0.0001)	(0.0008)	(0.0184)	(0.0659)	(0.0095)	(0.0159)	(0.0185)	(0.0689)	(0.0101)
	0.0215	*0.4373*	*0.9921*	*0*	*0.8414*	*0.6205*	*0.1146*	*0.0344*	*0.4888*	*0.2457*	*0.256*
	0.0285**	-0.0453**	0.0001	0.0027*	0.1558	0.6128***	0.1026***	0.0194**	0.1689	0.5586***	0.0738*
2016	(0.0137)	(0.0219)	(0.0001)	(0.0015)	(0.1164)	(0.1821)	(0.0297)	(0.0085)	(0.1232)	(0.213)	(0.0386)
	0.038	*0.0389*	*0.1776*	*0.0783*	*0.1812*	*0.0008*	*0.0006*	*0.0233*	*0.1706*	*0.0089*	*0.0561*
	0.0263**	-0.0076	0.0001***	0.009***	-0.0008	0	0.0015	0.0264***	-0.0001	-0.0005	0
2017	(0.0106)	(0.0067)	(0)	(0.0023)	(0.0017)	(0.0019)	(0.0028)	(0.0099)	(0.0002)	(0.0017)	(0.0017)
	0.0132	*0.2581*	*0.0097*	*0.0001*	*0.6412*	*0.9924*	*0.5863*	*0.0081*	*0.7262*	*0.7637*	*0.9825*
	0.0099	0.0155**	0.0001**	0.0008	0.0956***	0.1924***	0.1467***	0.0123	0.1039***	0.1814***	0.1484***
2018	(0.0072)	(0.0076)	(0)	(0.0031)	(0.0307)	(0.0433)	(0.0348)	(0.0075)	(0.0249)	(0.0473)	(0.0358)
	0.172	*0.0427*	*0.0268*	*0.8108*	*0.0019*	*0*	*0*	*0.1021*	*0*	*0.0001*	*0*
	0.0212*	0.0005	0.0001**	0.0013	0.3431***	-0.164***	0.0253	0.023**	0.3448***	-0.1657***	0.0266
2019	(0.011)	(0.0069)	(0)	(0.0062)	(0.079)	(0.044)	(0.0306)	(0.0111)	(0.0777)	(0.0429)	(0.0305)
	0.0539	*0.937*	*0.0123*	*0.8388*	*0*	*0.0002*	*0.4086*	*0.039*	*0*	*0.0001*	*0.3829*
	0.0272***	0.0102	0.0001	0.0035	0.1541*	0.4629***	0.0548*	0.0315***	0.1606*	0.3751**	0.0533*
2020	(0.0105)	(0.0079)	(0.0001)	(0.0025)	(0.0802)	(0.1534)	(0.0289)	(0.011)	(0.083)	(0.1553)	(0.03)
	0.0095	*0.1997*	*0.1241*	*0.1511*	*0.0549*	*0.0026*	*0.0581*	*0.0042*	*0.0533*	*0.0159*	*0.0754*
	0.0086	0	0.0001*	0.0156***	0.5505***	-0.145	-0.0799***	0.0099	0.561***	-0.1426	-0.0802***
2021	(0.0067)	(0)	(0.0001)	(0.0026)	(0.0403)	(0.1767)	(0.0226)	(0.0063)	(0.0406)	(0.1819)	(0.0231)
	0.1969	*0.4801*	*0.071*	*0*	*0*	*0.4121*	*0.0004*	*0.118*	*0*	*0.433*	*0.0005*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 116. Developed sample, three factor, value regression models performance

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	1.603	0.0138	0.0018**	0.0076**	0.8353***	7.2429***	0.0713	1.6646	0.8876***	7.3013***	0.069
2006	(1.0132)	(0.0524)	(0.0007)	(0.0037)	(0.2332)	(1.1097)	(0.0614)	(1.0729)	(0.2004)	(1.1117)	(0.0604)
	0.1197	*0.7935*	*0.012*	*0.0444*	*0.0008*	*0*	*0.2506*	*0.1265*	*0*	*0*	*0.2582*
	1.0907**	0.0709**	0.0024	0.0123*	0.7339***	2.7128***	0.1151**	1.0114*	0.7839***	2.8508***	0.118**
2007	(0.5361)	(0.0276)	(0.0019)	(0.0073)	(0.1395)	(1.0042)	(0.0463)	(0.5502)	(0.1402)	(1.034)	(0.0475)
	0.0439	*0.0112*	*0.2138*	*0.0951*	*0*	*0.0078*	*0.014*	*0.0682*	*0*	*0.0066*	*0.0142*
	0.2291***	0.1349**	0.0004	-0.0005	0.2605***	-0.0455	0.0452**	0.2486**	0.2727***	-0.048	0.0542**
2008	(0.086)	(0.0567)	(0.0008)	(0.0013)	(0.0636)	(0.1045)	(0.0229)	(0.1009)	(0.0653)	(0.1186)	(0.0242)
	0.0083	*0.0183*	*0.5991*	*0.7186*	*0.0001*	*0.6633*	*0.0496*	*0.0145*	*0*	*0.6859*	*0.0261*
	0.4244***	0.0428*	0.0003	0.023***	0.7299***	0.0941	0.0747***	0.4295***	0.7515***	0.1017	0.079***
2009	(0.1556)	(0.0242)	(0.0005)	(0.0041)	(0.115)	(0.1047)	(0.027)	(0.1605)	(0.1143)	(0.1111)	(0.028)
	0.0068	*0.0781*	*0.4888*	*0*	*0*	*0.3696*	*0.006*	*0.008*	*0*	*0.361*	*0.0053*
	0.51**	0.0229	-0.0002	0.0304***	0.8378***	0.8671	0.0735**	0.4901*	0.8406***	0.902	0.0797**
2010	(0.2435)	(0.0315)	(0.0005)	(0.0046)	(0.1011)	(0.6109)	(0.0332)	(0.256)	(0.0996)	(0.6336)	(0.0329)
	0.0371	*0.4667*	*0.675*	*0*	*0*	*0.1569*	*0.0273*	*0.0565*	*0*	*0.1556*	*0.0161*
	0.5296**	0.1268**	0	0.0219***	0.3405***	0.7644*	-0.0035	0.5637*	0.3603***	0.8219*	0.0032
2011	(0.2578)	(0.0523)	(0.0003)	(0.0056)	(0.1098)	(0.4607)	(0.0456)	(0.2927)	(0.1148)	(0.4731)	(0.0489)
	0.0407	*0.0158*	*0.9509*	*0.0001*	*0.0021*	*0.098*	*0.9396*	*0.055*	*0.0018*	*0.0832*	*0.9476*
	0.6131***	0.0206	0	0.0059**	0.4677***	0.533***	0.0696	0.6396***	0.4767***	0.5466***	0.0716
2012	(0.2367)	(0.025)	(0.0002)	(0.0027)	(0.1269)	(0.1532)	(0.0429)	(0.233)	(0.1259)	(0.1531)	(0.0435)
	0.0099	*0.411*	*0.8024*	*0.0286*	*0.0003*	*0.0006*	*0.1054*	*0.0063*	*0.0002*	*0.0004*	*0.1006*
	0.5654	0.0543**	0.0004	-0.0003	0.3138**	-0.4604	0.1325***	0.5674	0.3267**	-0.529	0.1412***
2013	(0.3962)	(0.0229)	(0.0005)	(0.0012)	(0.1453)	(0.4672)	(0.0349)	(0.4017)	(0.1404)	(0.4948)	(0.0357)
	0.1542	*0.018*	*0.4185*	*0.7775*	*0.0314*	*0.325*	*0.0002*	*0.1586*	*0.0204*	*0.2856*	*0.0001*
	2.4201***	0.0195	0.0001	0.005***	-0.0695	0.1218	0.0716*	2.5377***	-0.0662	0.0583	0.075**
2014	(0.2954)	(0.0274)	(0.0002)	(0.0018)	(0.0518)	(0.2338)	(0.0399)	(0.2969)	(0.047)	(0.1821)	(0.0374)
	0	*0.4764*	*0.6155*	*0.0067*	*0.1798*	*0.6028*	*0.0737*	*0*	*0.1597*	*0.7492*	*0.0457*
	1.6863***	-0.006	0.0003	-0.0025	0.0256	0.0865	-0.0155	1.6186***	0.0072	0.1659	-0.0081
2015	(0.2892)	(0.0152)	(0.0003)	(0.0028)	(0.0229)	(0.1446)	(0.0114)	(0.3134)	(0.0227)	(0.1518)	(0.0085)
	0	*0.691*	*0.4208*	*0.3733*	*0.2642*	*0.55*	*0.176*	*0*	*0.7527*	*0.2749*	*0.343*
	0.1633*	-0.0329	0.0003	0.0062**	0.4222***	1.01***	0.0723**	0.1808*	0.4465***	1.0045***	0.0537**
2016	(0.099)	(0.0272)	(0.0003)	(0.0026)	(0.1013)	(0.2089)	(0.0291)	(0.1061)	(0.1027)	(0.2023)	(0.0215)
	0.0997	*0.2281*	*0.3174*	*0.0184*	*0*	*0*	*0.0131*	*0.0889*	*0*	*0*	*0.0128*
	-0.0106	-0.016	0.0003	0.0093***	-0.0008	0.0022	0.005*	0.004	-0.0001	0.0011	0.0017
2017	(0.0631)	(0.0265)	(0.0005)	(0.0033)	(0.0041)	(0.0021)	(0.0028)	(0.024)	(0.0001)	(0.0024)	(0.0024)
	0.8668	*0.5454*	*0.5973*	*0.0048*	*0.8442*	*0.3017*	*0.0817*	*0.8667*	*0.3121*	*0.6431*	*0.4813*
	-0.045	0.0315	0.0005	-0.004	0.1637***	0.2654**	0.2177***	-0.0424	0.157***	0.2815***	0.228***
2018	(0.0321)	(0.0367)	(0.0004)	(0.0059)	(0.0611)	(0.1121)	(0.0366)	(0.0323)	(0.057)	(0.1043)	(0.0349)
	0.1611	*0.3916*	*0.2269*	*0.4992*	*0.0076*	*0.0182*	*0*	*0.1895*	*0.006*	*0.0071*	*0*
	0.0445	-0.0238***	0.0001	-0.0088*	0.429***	-0.3224***	0.1461***	0.0435	0.4049***	-0.298***	0.1284***
2019	(0.0311)	(0.0092)	(0.0006)	(0.0045)	(0.0537)	(0.0271)	(0.016)	(0.0325)	(0.0623)	(0.0287)	(0.0173)
	0.153	*0.0095*	*0.8397*	*0.0506*	*0*	*0*	*0*	*0.1813*	*0*	*0*	*0*
	0.0238**	-0.0014	0.002***	0.0174***	0.1182*	0.6037**	0.0459*	0.0319*	0.1081	0.6302**	0.0531**
2020	(0.0114)	(0.0124)	(0.0004)	(0.0064)	(0.0624)	(0.2803)	(0.0242)	(0.017)	(0.0688)	(0.2952)	(0.026)
	0.037	*0.9087*	*0*	*0.0069*	*0.0585*	*0.0315*	*0.0583*	*0.0609*	*0.1165*	*0.033*	*0.0412*
	0.0155	0.0378	0.0004**	0.0122***	0.6548***	0.0738	-0.089***	0.0155	0.6737***	0.0501	-0.0854***
2021	(0.0165)	(0.0308)	(0.0002)	(0.0026)	(0.0457)	(0.1772)	(0.027)	(0.0172)	(0.0474)	(0.2105)	(0.0287)
	0.3467	*0.2208*	*0.0101*	*0*	*0*	*0.6772*	*0.001*	*0.3657*	*0*	*0.8118*	*0.003*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 117. Emerging sample, three factor, value regression models performance

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.3021**	0.0429*	0***	-0.0007	1.4898***	0.6716	-0.1032	0.0959	1.58***	0.2772	-0.074
2009	(0.1462)	(0.0217)	(0)	(0.0005)	(0.2728)	(0.7432)	(0.0654)	(0.0772)	(0.2366)	(0.6545)	(0.0635)
	0.0448	*0.0541*	*0.0077*	*0.2079*	*0*	*0.3712*	*0.1216*	*0.2204*	*0*	*0.6739*	*0.2504*
	0.2759***	-0.0534	-0.0002	0.0107***	0.178	6.6885***	0.0139	0.2727***	0.0911	7.1445***	-0.0027
2010	(0.0827)	(0.0534)	(0.0012)	(0.0033)	(0.219)	(1.3592)	(0.064)	(0.0743)	(0.1616)	(1.1687)	(0.0564)
	0.0013	*0.3203*	*0.8996*	*0.0021*	*0.4188*	*0*	*0.8291*	*0.0004*	*0.5745*	*0*	*0.9618*
	0.0391	-0.0293*	0.0003	0.0057***	0.471***	2.969**	0.0217	0.0238	0.4763***	2.8788***	0.0216
2011	(0.0368)	(0.017)	(0.0009)	(0.0019)	(0.1465)	(1.1459)	(0.0341)	(0.0273)	(0.139)	(1.0855)	(0.0325)
	0.2905	*0.0885*	*0.7154*	*0.003*	*0.0017*	*0.0109*	*0.5261*	*0.3854*	*0.0009*	*0.0092*	*0.5079*
	0.1832***	0.0003	-0.0001	0.0159***	0.1297	2.1869***	0.1193***	0.1019**	0.1695	1.7221***	0.1306***
2012	(0.0594)	(0.06)	(0.0001)	(0.0036)	(0.1555)	(0.5322)	(0.0367)	(0.049)	(0.1583)	(0.482)	(0.0448)
	0.0025	*0.9962*	*0.2507*	*0*	*0.4057*	*0.0001*	*0.0015*	*0.0394*	*0.2863*	*0.0005*	*0.0041*
	0.0366*	-0.0132	0*	0.0075***	0.1096	1.8732***	0.1675***	0.0298	0.1124	1.8617***	0.1666***
2013	(0.0212)	(0.0127)	(0)	(0.0023)	(0.1098)	(0.4956)	(0.0345)	(0.0222)	(0.1126)	(0.4883)	(0.0351)
	0.0865	*0.3005*	*0.0869*	*0.0011*	*0.3196*	*0.0002*	*0*	*0.1807*	*0.3193*	*0.0002*	*0*
	0.0695***	-0.0371	-0.0002	0.0082***	0.1896**	0.7396*	0.0839***	-0.0099	0.1705**	0.5541	0.092***
2014	(0.025)	(0.0226)	(0.0002)	(0.0029)	(0.077)	(0.4086)	(0.0321)	(0.0157)	(0.0659)	(0.3797)	(0.0306)
	0.006	*0.1015*	*0.2403*	*0.0044*	*0.0145*	*0.0715*	*0.0095*	*0.5319*	*0.0102*	*0.1457*	*0.0029*
	0.0327**	-0.016**	0	0.0021***	0.1115***	0.5291***	0.0315	0.0197	0.0984***	0.4789***	0.0334*
2015	(0.014)	(0.0075)	(0.0001)	(0.0005)	(0.0362)	(0.1414)	(0.0208)	(0.0142)	(0.0314)	(0.1286)	(0.0201)
	0.0198	*0.0335*	*0.8489*	*0.0001*	*0.0023*	*0.0002*	*0.1315*	*0.166*	*0.0019*	*0.0002*	*0.0973*
	0.0144**	0.0067	0.0001	0.0013	-0.0013	0.2926	0.1807***	0.017***	0.0072	0.2991	0.1809***
2016	(0.0058)	(0.0108)	(0.0001)	(0.0014)	(0.0772)	(0.2426)	(0.0338)	(0.0062)	(0.0771)	(0.2451)	(0.0338)
	0.0132	*0.5343*	*0.3538*	*0.3307*	*0.9863*	*0.2285*	*0*	*0.0066*	*0.9252*	*0.2231*	*0*
	0.0116*	0.0146	0.0001***	0.0035***	0.0887*	1.651***	0.1614***	0.0159**	0.1026**	1.6756***	0.1625***
2017	(0.0062)	(0.0092)	(0)	(0.0011)	(0.0486)	(0.4982)	(0.0544)	(0.0066)	(0.0492)	(0.4948)	(0.0548)
	0.0638	*0.1148*	*0.0027*	*0.0026*	*0.0683*	*0.001*	*0.0031*	*0.0159*	*0.0374*	*0.0008*	*0.0032*
	0.0242**	0.0164	0.0001**	0.0089**	0.189*	0.2816***	0.0398***	0.0256**	0.2142**	0.2214**	0.0365**
2018	(0.0111)	(0.0108)	(0)	(0.0035)	(0.106)	(0.0989)	(0.0146)	(0.0119)	(0.1037)	(0.1068)	(0.0152)
	0.0293	*0.1279*	*0.0216*	*0.0115*	*0.0753*	*0.0046*	*0.0065*	*0.0318*	*0.0393*	*0.0387*	*0.0164*
	0.0129*	0.0027	0.0001*	0.0082***	0.4212***	0.6265**	0.005	0.0148**	0.4351***	0.6056**	0.0033
2019	(0.0071)	(0.0085)	(0.0001)	(0.003)	(0.1128)	(0.3044)	(0.0178)	(0.0074)	(0.1116)	(0.2927)	(0.0176)
	0.0689	*0.75*	*0.0807*	*0.006*	*0.0002*	*0.04*	*0.7787*	*0.0451*	*0.0001*	*0.0389*	*0.8517*
	0.0046	-0.0059	0.0001**	0.0011	0.4542***	0.3607***	0.081***	0.0039	0.4544***	0.3644**	0.0794***
2020	(0.0059)	(0.0044)	(0)	(0.0015)	(0.0519)	(0.1153)	(0.0185)	(0.0051)	(0.0535)	(0.1468)	(0.023)
	0.4378	*0.1793*	*0.0176*	*0.4595*	*0*	*0.0018*	*0*	*0.4422*	*0*	*0.0133*	*0.0006*
	0.0036	0	0.0001	0.0146***	0.4383***	-0.2413***	0.0371	0.0045	0.4448***	-0.2391***	0.0383
2021	(0.0046)	(0)	(0.0001)	(0.0041)	(0.053)	(0.0477)	(0.0259)	(0.0044)	(0.053)	(0.0499)	(0.0266)
	0.4385	*0.5071*	*0.2049*	*0.0004*	*0*	*0*	*0.1527*	*0.3137*	*0*	*0*	*0.1506*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 118. Developed excluding the United States sample, three factor, value regression models performance

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	1.2347	0.0239	0.0015*	0.0092**	0.5444**	8.2747***	0.1706***	1.2952	0.6138***	8.322***	0.1661***
2006	(0.8521)	(0.0529)	(0.0008)	(0.0039)	(0.2122)	(1.0898)	(0.0603)	(0.9355)	(0.183)	(1.1101)	(0.0608)
	0.1551	*0.6544*	*0.053*	*0.0224*	*0.0142*	*0*	*0.0073*	*0.1734*	*0.0017*	*0*	*0.0091*
	1.1645**	0.072***	0.0023	0.0137*	0.6779***	2.5526***	0.1213***	1.0687*	0.7336***	2.6864***	0.1242***
2007	(0.5351)	(0.0259)	(0.002)	(0.0073)	(0.1401)	(0.9343)	(0.0451)	(0.5476)	(0.141)	(0.9692)	(0.0464)
	0.0316	*0.0063*	*0.2465*	*0.0654*	*0*	*0.0073*	*0.0082*	*0.0534*	*0*	*0.0065*	*0.0085*
	0.2293***	0.1314**	0.0004	-0.001	0.2676***	-0.0081	0.0305	0.2465**	0.2848***	-0.0011	0.0364
2008	(0.0865)	(0.0547)	(0.0007)	(0.0014)	(0.0884)	(0.1656)	(0.0221)	(0.0997)	(0.0893)	(0.1756)	(0.0258)
	0.0088	*0.0173*	*0.5862*	*0.4743*	*0.0028*	*0.9609*	*0.1701*	*0.0144*	*0.0017*	*0.9949*	*0.1592*
	0.4448***	0.0457*	0.0004	0.0238***	0.6682***	0.0778	0.0751***	0.4497***	0.6919***	0.0872	0.0803***
2009	(0.1663)	(0.0237)	(0.0005)	(0.0059)	(0.1194)	(0.0914)	(0.0275)	(0.1714)	(0.1191)	(0.0985)	(0.0288)
	0.0081	*0.0557*	*0.3978*	*0.0001*	*0*	*0.3956*	*0.0068*	*0.0094*	*0*	*0.3772*	*0.0059*
	0.575**	0.019	-0.0001	0.0347***	0.7908***	0.6455	0.0695*	0.5557**	0.795***	0.6694	0.0761**
2010	(0.2454)	(0.029)	(0.0005)	(0.0094)	(0.1053)	(0.5016)	(0.036)	(0.2554)	(0.1026)	(0.5178)	(0.0357)
	0.02	*0.5132*	*0.8139*	*0.0003*	*0*	*0.1994*	*0.0549*	*0.0306*	*0*	*0.1974*	*0.0339*
	0.5383**	0.1164**	0.0001	0.0218***	0.3234***	0.5146	-0.0068	0.5711**	0.3479***	0.562	-0.0022
2011	(0.2507)	(0.0462)	(0.0003)	(0.0052)	(0.1028)	(0.3741)	(0.0427)	(0.2832)	(0.108)	(0.3858)	(0.0469)
	0.0327	*0.0125*	*0.6827*	*0*	*0.0018*	*0.1702*	*0.8735*	*0.0448*	*0.0014*	*0.1463*	*0.9621*
	0.6503***	0.0262	0.0001	0.0055**	0.4143***	0.5321***	0.0663	0.6746***	0.4248***	0.5444***	0.0697
2012	(0.2377)	(0.0246)	(0.0001)	(0.0024)	(0.1245)	(0.1837)	(0.0441)	(0.2335)	(0.1252)	(0.1852)	(0.0453)
	0.0066	*0.2872*	*0.5038*	*0.0255*	*0.001*	*0.0041*	*0.1335*	*0.0041*	*0.0008*	*0.0035*	*0.1248*
	0.5618	0.0423**	0.0005	-0.0003	0.3006**	-0.5765	0.1174***	0.5651	0.3106**	-0.6346	0.126***
2013	(0.3779)	(0.021)	(0.0004)	(0.001)	(0.1275)	(0.4351)	(0.0325)	(0.3828)	(0.1245)	(0.4565)	(0.0335)
	0.1381	*0.0448*	*0.2423*	*0.7685*	*0.019*	*0.1861*	*0.0004*	*0.1409*	*0.0131*	*0.1654*	*0.0002*
	2.3326***	0.021	0.0001	0.0038**	-0.0454	0.0576	0.052	2.4314***	-0.0461	0.0039	0.0585*
2014	(0.2815)	(0.0256)	(0.0002)	(0.0017)	(0.0441)	(0.2007)	(0.0351)	(0.2807)	(0.0396)	(0.1553)	(0.032)
	0	*0.413*	*0.4309*	*0.0254*	*0.3044*	*0.7743*	*0.1388*	*0*	*0.2453*	*0.9798*	*0.0685*
	1.6191***	0.0005	0.0003	-0.0024	0.0224	0.157	-0.0192	1.5703***	-0.0001	0.2302	-0.0078
2015	(0.2729)	(0.0146)	(0.0004)	(0.0027)	(0.0248)	(0.1523)	(0.0128)	(0.2909)	(0.0231)	(0.1674)	(0.0072)
	0	*0.9749*	*0.4691*	*0.3745*	*0.3674*	*0.3031*	*0.1352*	*0*	*0.9976*	*0.1697*	*0.2818*
	0.1585*	-0.0111	0.0002	0.005**	0.4416***	0.9789***	0.0499*	0.1734*	0.4547***	0.9894***	0.0448***
2016	(0.095)	(0.0218)	(0.0003)	(0.0022)	(0.0995)	(0.2225)	(0.0258)	(0.1034)	(0.104)	(0.2118)	(0.0148)
	0.096	*0.6104*	*0.5609*	*0.0233*	*0*	*0*	*0.0534*	*0.0943*	*0*	*0*	*0.0026*
	0.0653	0.0729***	0.002***	-0.0011	0.0489***	0.0107*	-0.0046	0.2582*	0.0038**	0.009	0.0095
2017	(0.1501)	(0.0182)	(0.0006)	(0.0028)	(0.0095)	(0.0056)	(0.0064)	(0.147)	(0.0017)	(0.0059)	(0.0059)
	0.6639	*0.0001*	*0.0003*	*0.7064*	*0*	*0.0558*	*0.4684*	*0.0796*	*0.0287*	*0.1273*	*0.1118*
	-0.0376	0.0319	0.0003	-0.0032	0.1486***	0.2481**	0.201***	-0.0359	0.1436***	0.2595**	0.2096***
2018	(0.0309)	(0.0361)	(0.0005)	(0.0055)	(0.0564)	(0.1106)	(0.0383)	(0.0314)	(0.0525)	(0.1018)	(0.0361)
	0.2238	*0.376*	*0.5848*	*0.5579*	*0.0087*	*0.0253*	*0*	*0.2532*	*0.0064*	*0.011*	*0*
	0.0538*	-0.0221***	-0.0003	-0.0085*	0.4216***	-0.3111***	0.1385***	0.0451	0.391***	-0.2819***	0.1184***
2019	(0.0299)	(0.0085)	(0.0006)	(0.0043)	(0.0519)	(0.0277)	(0.0156)	(0.0308)	(0.0613)	(0.0293)	(0.0151)
	0.0728	*0.0097*	*0.6901*	*0.0506*	*0*	*0*	*0*	*0.1435*	*0*	*0*	*0*
	0.0244**	-0.0095	0.0019***	0.0168***	0.105*	0.8528**	0.0639**	0.0318*	0.0931	0.8903**	0.0709**
2020	(0.0122)	(0.0135)	(0.0004)	(0.006)	(0.0563)	(0.338)	(0.0265)	(0.0172)	(0.0612)	(0.3484)	(0.0278)
	0.045	*0.4824*	*0*	*0.005*	*0.0624*	*0.0118*	*0.0161*	*0.0652*	*0.1289*	*0.0108*	*0.011*
	0.0155	0.0274	0.0007*	0.0142***	0.6335***	0.0271	-0.0901***	0.0161	0.6546***	0.0044	-0.0881***
2021	(0.0156)	(0.029)	(0.0004)	(0.0026)	(0.045)	(0.1582)	(0.0242)	(0.0163)	(0.0467)	(0.1876)	(0.0258)
	0.3208	*0.3446*	*0.0774*	*0*	*0*	*0.864*	*0.0002*	*0.322*	*0*	*0.9813*	*0.0007*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 119. European sample, three factor, value regression models performance

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.2877	0.1172	0.0084***	0.033	1.1984***	0.8758	0.1374**	0.2694	1.2283***	1.0877	0.1432**
2007	(0.5093)	(0.3424)	(0.0029)	(0.0286)	(0.2251)	(1.0677)	(0.0609)	(0.5247)	(0.2269)	(1.0849)	(0.0643)
	0.5742	*0.7332*	*0.0045*	*0.2524*	*0*	*0.4151*	*0.0275*	*0.6093*	*0*	*0.3196*	*0.0292*
	0.4392*	0.0432	0.0007	0.054*	0.2175*	-0.0775	0.0403	0.5166**	0.2141*	-0.0787	0.0451*
2008	(0.2453)	(0.0665)	(0.0007)	(0.0324)	(0.1099)	(0.1389)	(0.0246)	(0.2581)	(0.1151)	(0.1485)	(0.0264)
	0.0765	*0.5179*	*0.3621*	*0.099*	*0.0505*	*0.5781*	*0.1053*	*0.048*	*0.0656*	*0.5972*	*0.0897*
	0.7438***	0.0948	-0.0002	0.0212***	0.6941***	0.0483	0.0841**	0.7562***	0.7048***	0.0541	0.0926**
2009	(0.2334)	(0.0889)	(0.0007)	(0.0069)	(0.1376)	(0.0765)	(0.0357)	(0.2368)	(0.1382)	(0.0809)	(0.0366)
	0.0018	*0.2881*	*0.7514*	*0.0026*	*0*	*0.529*	*0.0202*	*0.0018*	*0*	*0.5047*	*0.0127*
	0.4253*	-0.0452	0	0.0158	0.7699***	0.4442	0.1179***	0.4184	0.7584***	0.4442	0.1175***
2010	(0.255)	(0.0721)	(0.0005)	(0.0107)	(0.1286)	(0.379)	(0.0446)	(0.2611)	(0.1232)	(0.3845)	(0.0406)
	0.0975	*0.5319*	*0.9582*	*0.1408*	*0*	*0.243*	*0.0092*	*0.1112*	*0*	*0.2499*	*0.0044*
	0.8104**	0.2155**	-0.0004	0.0165***	0.3368***	0.515	-0.0443	0.9042**	0.3392***	0.5476	-0.0329
2011	(0.3393)	(0.0839)	(0.0004)	(0.0034)	(0.1099)	(0.3994)	(0.0297)	(0.4012)	(0.1205)	(0.416)	(0.0281)
	0.0181	*0.0111*	*0.3872*	*0*	*0.0026*	*0.1991*	*0.1371*	*0.0255*	*0.0055*	*0.1899*	*0.243*
	0.8269***	0.0294	0.0001	0.0025	0.3936**	0.5733**	0.0486	0.8362***	0.4**	0.5876**	0.0534
2012	(0.2939)	(0.0589)	(0.0001)	(0.0033)	(0.1558)	(0.2694)	(0.0447)	(0.2911)	(0.1566)	(0.2678)	(0.046)
	0.0054	*0.6181*	*0.397*	*0.4435*	*0.0123*	*0.0346*	*0.2788*	*0.0045*	*0.0114*	*0.0294*	*0.2467*
	0.0815	0.1624**	-0.0013***	0.0098**	0.2619	-0.7192	0.1272**	-0.0251	0.2841*	-0.8173*	0.1384**
2013	(0.061)	(0.0667)	(0.0005)	(0.0048)	(0.1657)	(0.4479)	(0.0536)	(0.0249)	(0.1702)	(0.4855)	(0.0542)
	0.1829	*0.0157*	*0.0046*	*0.0431*	*0.1155*	*0.1098*	*0.0185*	*0.3138*	*0.0965*	*0.0937*	*0.0113*
	0.0725	0.0104	-0.0004	0.0152***	-0.0892*	-0.0105	0.0972**	-0.0001	-0.0734	-0.0877	0.0895**
2014	(0.0496)	(0.0182)	(0.0003)	(0.0027)	(0.0499)	(0.1521)	(0.0392)	(0.0056)	(0.0457)	(0.1057)	(0.0368)
	0.145	*0.5687*	*0.1012*	*0*	*0.0752*	*0.9449*	*0.0139*	*0.9851*	*0.1096*	*0.4073*	*0.0158*
	0.0114	-0.0038	0.0001*	0.0098***	0.0339	-0.2416	-0.0002	0.0108**	0.0556***	-0.4455***	-0.0027
2015	(0.007)	(0.0075)	(0)	(0.0023)	(0.0253)	(0.2181)	(0.005)	(0.0051)	(0.0179)	(0.1401)	(0.0044)
	0.1026	*0.6174*	*0.072*	*0*	*0.1816*	*0.2689*	*0.9658*	*0.0365*	*0.0021*	*0.0016*	*0.5322*
	0.0064	-0.0146	0.0002*	0.0054	0.4181***	0.9304***	0.0489*	0.0075**	0.4319***	0.9406***	0.0429***
2016	(0.0112)	(0.0306)	(0.0001)	(0.0038)	(0.1132)	(0.2494)	(0.0288)	(0.0036)	(0.1196)	(0.2401)	(0.0108)
	0.5667	*0.6331*	*0.0578*	*0.1568*	*0.0003*	*0.0002*	*0.0908*	*0.0406*	*0.0004*	*0.0001*	*0.0001*
	-0.0561***	0.1507***	0.0001	0.0048***	0.0459***	0.0162***	-0.0096	0.0178**	0.0011	0.0096	0.0102*
2017	(0.014)	(0.0336)	(0.0004)	(0.0017)	(0.0083)	(0.0058)	(0.0068)	(0.0076)	(0.0006)	(0.0059)	(0.0059)
	0.0001	*0*	*0.7606*	*0.0042*	*0*	*0.006*	*0.1585*	*0.0192*	*0.1025*	*0.1028*	*0.083*
	-0.058*	0.0436*	0.0004*	-0.0114	0.1091**	0.2739***	0.1902***	-0.0217	0.1145***	0.2312***	0.1793***
2018	(0.0307)	(0.0229)	(0.0002)	(0.0087)	(0.0439)	(0.0892)	(0.0331)	(0.0238)	(0.0441)	(0.0846)	(0.033)
	0.0599	*0.0575*	*0.0784*	*0.1925*	*0.0133*	*0.0023*	*0*	*0.361*	*0.0097*	*0.0066*	*0*
	0.0165	-0.015**	0.0002	-0.0055	0.3757***	-0.2862***	0.1309***	0.0176	0.3743***	-0.2756***	0.1193***
2019	(0.0233)	(0.007)	(0.0003)	(0.0094)	(0.0771)	(0.0318)	(0.0212)	(0.0179)	(0.0725)	(0.0334)	(0.0173)
	0.4777	*0.0325*	*0.4998*	*0.5613*	*0*	*0*	*0*	*0.3262*	*0*	*0*	*0*
	0.0241	-0.0052	0.0001	0.0404***	0.082**	0.9263***	0.0639***	0.0245*	0.0508	1.0513***	0.0767***
2020	(0.0166)	(0.0105)	(0.0001)	(0.0106)	(0.036)	(0.3513)	(0.0239)	(0.0136)	(0.0418)	(0.3727)	(0.0251)
	0.1468	*0.6195*	*0.6199*	*0.0001*	*0.0231*	*0.0087*	*0.0078*	*0.072*	*0.224*	*0.005*	*0.0023*
	0.0055	0.0073	0.0001	0.0205***	0.6912***	-0.0729	-0.1043***	0.0088	0.7084***	-0.0829	-0.1056***
2021	(0.0159)	(0.0438)	(0.0002)	(0.0061)	(0.0644)	(0.1634)	(0.0253)	(0.0109)	(0.0632)	(0.1855)	(0.0257)
	0.7326	*0.868*	*0.7101*	*0.0008*	*0*	*0.656*	*0*	*0.4192*	*0*	*0.6551*	*0*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 120. Asia Pacific excluding Japan sample, three factor, value regression models performance

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.1579***	0.04***	-0.0058***	0.048**	1.253***	1.5263**	0.0364	0.1768***	1.1917***	1.0393*	0.0104
2009	(0.0454)	(0.011)	(0.0008)	(0.0194)	(0.1408)	(0.5902)	(0.0491)	(0.0532)	(0.1467)	(0.5202)	(0.0524)
	0.0017	*0.0011*	*0*	*0.02*	*0*	*0.0154*	*0.4655*	*0.0024*	*0*	*0.0549*	*0.8441*
	0.1162	0.0443***	-0.0014	0.0279***	0.9884***	3.2512**	0.0599	0.1202*	0.9848***	3.3581**	0.0669
2010	(0.0764)	(0.0131)	(0.0017)	(0.0069)	(0.2027)	(1.2774)	(0.0586)	(0.0709)	(0.202)	(1.3109)	(0.0593)
	0.1341	*0.0013*	*0.4317*	*0.0002*	*0*	*0.0139*	*0.311*	*0.0958*	*0*	*0.0131*	*0.2636*
	0.0541	0.0024	0.0015	0.0067	0.2066	1.511*	0.1096**	0.0647*	0.2158	1.5552*	0.1102**
2011	(0.0432)	(0.0403)	(0.0013)	(0.0068)	(0.1815)	(0.8932)	(0.0489)	(0.0374)	(0.1883)	(0.8824)	(0.0518)
	0.2142	*0.9518*	*0.2502*	*0.3301*	*0.2587*	*0.0949*	*0.0281*	*0.0881*	*0.2552*	*0.0819*	*0.0364*
	0.1447**	-0.0575	0.0017	0.0105	0.3692*	2.4082***	0.0845**	0.1577**	0.3608*	2.452***	0.0713
2012	(0.0643)	(0.0814)	(0.0017)	(0.0111)	(0.1915)	(0.6431)	(0.0382)	(0.0664)	(0.1829)	(0.6732)	(0.0481)
	0.0267	*0.4818*	*0.3399*	*0.3464*	*0.0567*	*0.0003*	*0.0291*	*0.0194*	*0.0512*	*0.0004*	*0.1417*
	0.1572***	0.0047	0.001	-0.002	0.0224	2.397***	0.1475***	0.1556***	0.0237	2.4429***	0.1516***
2013	(0.0532)	(0.0263)	(0.0014)	(0.0063)	(0.0743)	(0.7322)	(0.0312)	(0.0504)	(0.0757)	(0.7198)	(0.031)
	0.0037	*0.8583*	*0.4479*	*0.7489*	*0.7638*	*0.0014*	*0*	*0.0025*	*0.7546*	*0.0009*	*0*
	0.1705***	0.0482**	0.0014	-0.0054	0.1433**	2.9503***	0.1252***	0.1711***	0.1583***	2.8844***	0.1406***
2014	(0.0322)	(0.0239)	(0.0009)	(0.0071)	(0.0565)	(0.4644)	(0.0265)	(0.0324)	(0.06)	(0.4618)	(0.0271)
	0	*0.0456*	*0.1097*	*0.447*	*0.012*	*0*	*0*	*0*	*0.0091*	*0*	*0*
	0.0467**	0.0444**	0	0.0015	0.2756**	1.3262***	0.0946***	0.0463**	0.2846**	1.1859***	0.104***
2015	(0.0206)	(0.0223)	(0.0007)	(0.0019)	(0.1077)	(0.4332)	(0.032)	(0.0201)	(0.1134)	(0.3519)	(0.0348)
	0.0243	*0.0481*	*0.9622*	*0.4229*	*0.0112*	*0.0025*	*0.0034*	*0.0219*	*0.0128*	*0.0009*	*0.0031*
	0.0464***	-0.0414	-0.0022**	0.0419***	0.5183***	2.0455***	0.0849***	0.0217	0.4629***	1.6887***	0.086***
2016	(0.0103)	(0.0381)	(0.0011)	(0.0125)	(0.033)	(0.2054)	(0.0138)	(0.0186)	(0.0718)	(0.3995)	(0.0144)
	0	*0.2786*	*0.0493*	*0.0009*	*0*	*0*	*0*	*0.2454*	*0*	*0*	*0*
	0.0435**	0.023	0	0.0106**	0.6569***	1.482***	0.0616**	0.0484***	0.6617***	1.4887***	0.068**
2017	(0.0172)	(0.0183)	(0.0001)	(0.0043)	(0.0487)	(0.1669)	(0.0261)	(0.0162)	(0.0502)	(0.18)	(0.0279)
	0.0118	*0.2101*	*0.7302*	*0.0138*	*0*	*0*	*0.0188*	*0.0031*	*0*	*0*	*0.0153*
	0.0201	0.0283**	0	0.025***	0.4358***	0.3211	0.0148	0.0213	0.4489***	0.3266	0.0183
2018	(0.0149)	(0.0142)	(0.0001)	(0.0053)	(0.0612)	(0.2755)	(0.0159)	(0.0155)	(0.0613)	(0.2786)	(0.0159)
	0.1779	*0.0461*	*0.975*	*0*	*0*	*0.2445*	*0.3544*	*0.1701*	*0*	*0.2418*	*0.2512*
	0.0303***	0.0205**	-0.0002*	0.0237*	0.5356***	0.2402***	0.0152	0.0293***	0.537***	0.2345**	0.0189
2019	(0.009)	(0.0101)	(0.0001)	(0.0143)	(0.0351)	(0.0925)	(0.0218)	(0.0102)	(0.0346)	(0.091)	(0.022)
	0.0008	*0.0427*	*0.0689*	*0.0984*	*0*	*0.0097*	*0.4872*	*0.0042*	*0*	*0.0103*	*0.3897*
	0.006	0.0073	0.0001	-0.0005**	0.4074***	0.2025	0.0919***	0.0059	0.4103***	0.2059	0.0945***
2020	(0.0039)	(0.0078)	(0.0001)	(0.0002)	(0.0432)	(0.1759)	(0.0227)	(0.0039)	(0.043)	(0.1767)	(0.0229)
	0.1237	*0.3463*	*0.5149*	*0.0118*	*0*	*0.2502*	*0.0001*	*0.1335*	*0*	*0.2446*	*0*
	0.0121*	0	0.0001	0.029***	0.3823***	0.3659	0.0235	0.0127*	0.3881***	0.4115	0.0238
2021	(0.0067)	(0)	(0.0001)	(0.0072)	(0.041)	(0.3214)	(0.0263)	(0.0069)	(0.0412)	(0.3328)	(0.027)
	0.0727	*0.8734*	*0.3845*	*0.0001*	*0*	*0.2554*	*0.3706*	*0.0665*	*0*	*0.2167*	*0.3786*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 121. North American sample, three factor, value regression models performance

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	5.2988**	0.2618	-0.0014	-0.0078**	0.4463***	0.0272	0.0775**	4.6042**	0.3109**	0.2144	0.106***
2008	(2.1615)	(0.4026)	(0.0093)	(0.0029)	(0.0775)	(0.1786)	(0.034)	(1.8091)	(0.1182)	(0.1892)	(0.0346)
	0.0197	*0.5201*	*0.8777*	*0.0128*	*0*	*0.8799*	*0.0292*	*0.0154*	*0.0125*	*0.2647*	*0.0041*
	2.3284**	0.4545	0.005	0.0056	1.0858***	2.5114***	-0.0101	2.5911**	1.1833***	2.7174***	-0.0187
2009	(0.9685)	(0.4334)	(0.0062)	(0.0045)	(0.1485)	(0.7783)	(0.0278)	(1.0017)	(0.1391)	(0.8211)	(0.0292)
	0.0201	*0.2996*	*0.4233*	*0.2183*	*0*	*0.0023*	*0.7171*	*0.0126*	*0*	*0.0017*	*0.5244*
	3.1104***	0.0657	0.0059*	0.023***	0.8372***	3.0259**	0.073**	3.2043***	0.8441***	3.4957***	0.0733**
2010	(0.6706)	(0.1011)	(0.0032)	(0.0038)	(0.15)	(1.2458)	(0.0335)	(0.7302)	(0.1579)	(1.2635)	(0.033)
	0	*0.5179*	*0.0737*	*0*	*0*	*0.0178*	*0.0331*	*0*	*0*	*0.0072*	*0.0296*
	1.8351***	0.0783***	-0.0026	0.0229***	0.5666***	2.322*	0.0757**	1.9592**	0.5664***	2.4551*	0.0761*
2011	(0.6936)	(0.0228)	(0.0016)	(0.0058)	(0.1148)	(1.214)	(0.0378)	(0.7642)	(0.1203)	(1.2913)	(0.0388)
	0.0096	*0.0009*	*0.1126*	*0.0002*	*0*	*0.059*	*0.0481*	*0.012*	*0*	*0.0604*	*0.0529*
	3.5312***	0.0289	-0.0055***	0.0012	0.9189***	1.3798***	0.0424	3.8448***	0.7876***	1.3161***	0.0474*
2012	(0.8545)	(0.0385)	(0.0014)	(0.0035)	(0.1411)	(0.2136)	(0.0288)	(0.8953)	(0.133)	(0.2082)	(0.0282)
	0.0001	*0.4543*	*0.0002*	*0.7185*	*0*	*0*	*0.1441*	*0*	*0*	*0*	*0.0955*
	0.767	0.0281	-0.0037**	-0.0058***	0.8923***	1.0983*	0.2636***	0.9188**	0.6001***	1.2982**	0.3148***
2013	(0.488)	(0.0538)	(0.0017)	(0.0008)	(0.1327)	(0.5663)	(0.0718)	(0.4323)	(0.1403)	(0.5118)	(0.0752)
	0.1185	*0.6022*	*0.0325*	*0*	*0*	*0.0547*	*0.0004*	*0.0354*	*0*	*0.0124*	*0.0001*
	0.6442**	0.0018	0.0002	-0.0028	0.7147***	1.8563***	0.2387***	0.6502**	0.6514***	1.9723***	0.2566***
2014	(0.3244)	(0.0179)	(0.0002)	(0.003)	(0.11)	(0.5493)	(0.0529)	(0.3177)	(0.0965)	(0.5117)	(0.0546)
	0.0489	*0.9214*	*0.241*	*0.3541*	*0*	*0.0009*	*0*	*0.0425*	*0*	*0.0002*	*0*
	0.1578	-0.0214***	-0.0002	-0.0084***	0.475***	0.3543	0.3078***	0.1424	0.2186**	0.6131***	0.3419***
2015	(0.1726)	(0.0075)	(0.0005)	(0.0024)	(0.1125)	(0.2233)	(0.0429)	(0.2286)	(0.0845)	(0.1924)	(0.04)
	0.3618	*0.005*	*0.6912*	*0.0005*	*0*	*0.1145*	*0*	*0.5342*	*0.0105*	*0.0017*	*0*
	0.0274	0.0004	0.0004	0.0013	0.3953**	0.3414	0.4091***	0.0276	0.4124***	0.2799	0.4098***
2016	(0.0565)	(0.0165)	(0.0003)	(0.0036)	(0.183)	(0.2744)	(0.0453)	(0.053)	(0.1435)	(0.2189)	(0.0416)
	0.628	*0.9813*	*0.2665*	*0.7271*	*0.0319*	*0.2148*	*0*	*0.6032*	*0.0045*	*0.2023*	*0*
	0.7384***	-0.0322	0.001**	0.027***	-0.2317***	0.5081***	0.1455***	0.8797***	-0.1655***	0.6607***	0.0635**
2017	(0.2107)	(0.0619)	(0.0005)	(0.0067)	(0.0459)	(0.1917)	(0.033)	(0.2848)	(0.0584)	(0.2462)	(0.0309)
	0.0006	*0.6036*	*0.0286*	*0.0001*	*0*	*0.0086*	*0*	*0.0023*	*0.005*	*0.0078*	*0.0411*
	-0.1891	-0.0879**	0.0017***	0.0142***	-0.0288	0.3986	0.1734***	-0.2337	0.1109	0.2533	0.0982**
2018	(0.2054)	(0.0352)	(0.0004)	(0.0037)	(0.1153)	(0.3338)	(0.0329)	(0.2224)	(0.1095)	(0.3141)	(0.0445)
	0.358	*0.0131*	*0*	*0.0002*	*0.803*	*0.2335*	*0*	*0.2943*	*0.3123*	*0.4208*	*0.0283*
	0.1354	0.1791***	0.0005	0.0053	0.3037***	2.5651***	0.0786*	0.2133**	0.4916***	1.6639***	-0.0304
2019	(0.1176)	(0.0524)	(0.0006)	(0.004)	(0.109)	(0.4551)	(0.0414)	(0.0995)	(0.1455)	(0.4131)	(0.064)
	0.2507	*0.0007*	*0.3807*	*0.189*	*0.0057*	*0*	*0.0586*	*0.0328*	*0.0008*	*0.0001*	*0.6351*
	0.3186***	-0.0764	0.0025***	-0.0039	0.7459***	-0.3199	-0.1008**	0.2098	0.7216***	-0.2772	-0.0969**
2020	(0.1058)	(0.0503)	(0.0007)	(0.0039)	(0.1053)	(0.4158)	(0.0396)	(0.1375)	(0.0972)	(0.4062)	(0.0398)
	0.0028	*0.1297*	*0.0003*	*0.3254*	*0*	*0.4424*	*0.0115*	*0.1279*	*0*	*0.4953*	*0.0154*
	0.0196	-0.0303	0.0001**	0.0039	0.8361***	-0.0171	0.2946***	0.0194	0.8573***	0.009	0.2798***
2021	(0.1351)	(0.0379)	(0.0001)	(0.0027)	(0.1056)	(0.0945)	(0.0572)	(0.1356)	(0.1007)	(0.0921)	(0.0529)
	0.8849	*0.4239*	*0.0309*	*0.1486*	*0*	*0.8566*	*0*	*0.8863*	*0*	*0.9222*	*0*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 122. Latin American sample, three factor, value regression models performance

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.0195	0.0615	0.0011	-0.0229	0.0541	6.3588***	0.1045**	0.0185	0.0964	6.0973***	0.1228*
2011	(0.0234)	(0.1477)	(0.0009)	(0.025)	(0.0823)	(0.9728)	(0.0511)	(0.0295)	(0.1)	(0.873)	(0.065)
	0.4115	*0.6804*	*0.2369*	*0.3684*	*0.5157*	*0*	*0.0497*	*0.534*	*0.3418*	*0*	*0.0678*
	0.1954	0.1794	0.0018**	0.0174	-0.1995	3.3651**	0.2744***	0.3893***	-0.1356	2.7691**	0.2833***
2012	(0.1506)	(0.1315)	(0.0009)	(0.0296)	(0.1351)	(1.4549)	(0.0631)	(0.1296)	(0.1163)	(1.1334)	(0.0654)
	0.2044	*0.1826*	*0.0478*	*0.5595*	*0.1502*	*0.0278*	*0.0001*	*0.0051*	*0.252*	*0.0201*	*0.0001*
	0.0072	0.3684**	0.0001***	0.053***	0.1627*	1.7993**	0.1158**	0.0101	0.226**	1.3125*	0.1423**
2013	(0.0337)	(0.1803)	(0)	(0.0157)	(0.082)	(0.856)	(0.0559)	(0.0354)	(0.0929)	(0.7297)	(0.0575)
	0.8309	*0.0481*	*0.0029*	*0.0017*	*0.0545*	*0.0422*	*0.0452*	*0.7757*	*0.0194*	*0.0794*	*0.0175*
	0.3198***	0.0371	0.0001**	0.0406***	0.1652**	0.2415	0.0168	0.3417***	0.1981**	-0.0339	0.0193
2014	(0.1183)	(0.0561)	(0)	(0.0122)	(0.0772)	(0.3576)	(0.0247)	(0.1228)	(0.0808)	(0.3502)	(0.0264)
	0.0098	*0.5123*	*0.0144*	*0.0018*	*0.0381*	*0.503*	*0.5006*	*0.0078*	*0.018*	*0.9234*	*0.4687*
	0.1962**	0.1321**	-0.0011**	0.0073**	0.2138***	0.3199***	-0.0241*	0.2237***	0.1762***	0.3044***	-0.0124
2015	(0.082)	(0.055)	(0.0004)	(0.0032)	(0.0384)	(0.0814)	(0.0124)	(0.0749)	(0.045)	(0.0765)	(0.0126)
	0.0214	*0.021*	*0.0106*	*0.0262*	*0*	*0.0003*	*0.0601*	*0.0046*	*0.0003*	*0.0003*	*0.3295*
	0.0035**	0.0032	0.0012**	0.0357*	0.7414***	0.0372	-0.0096	0.0033*	0.7972***	0.0456	-0.0114
2016	(0.0016)	(0.0769)	(0.0005)	(0.0183)	(0.1232)	(0.096)	(0.0506)	(0.0018)	(0.1323)	(0.0947)	(0.0574)
	0.0278	*0.9673*	*0.0116*	*0.0557*	*0*	*0.7*	*0.8498*	*0.0712*	*0*	*0.6324*	*0.8428*
	0.0014	0.011	0***	0.075*	1.0249***	0.4567	-0.0952**	0.001	1.0703***	0.2238	-0.0971**
2017	(0.0015)	(0.027)	(0)	(0.0439)	(0.1003)	(0.8016)	(0.0404)	(0.0015)	(0.0998)	(1.008)	(0.0432)
	0.3386	*0.6857*	*0.0039*	*0.0928*	*0*	*0.5708*	*0.0217*	*0.4981*	*0*	*0.825*	*0.0279*
	0.0077*	-0.0277	0	0.0315	0.4284**	2.3303***	0.122***	0.0075**	0.4303***	2.3298***	0.1156***
2018	(0.004)	(0.0513)	(0)	(0.0249)	(0.1686)	(0.7656)	(0.0282)	(0.0037)	(0.1476)	(0.8242)	(0.0396)
	0.0554	*0.5913*	*0.1729*	*0.2106*	*0.0133*	*0.0033*	*0*	*0.0468*	*0.0047*	*0.0061*	*0.0047*
	-0.0011	-0.1119***	0*	-0.0591***	1.1275***	1.9872***	0.0202	0.0019	0.8294***	1.557***	0.0231
2019	(0.0011)	(0.0316)	(0)	(0.0097)	(0.0889)	(0.2019)	(0.0148)	(0.0018)	(0.1413)	(0.2524)	(0.022)
	0.3153	*0.0008*	*0.0631*	*0*	*0*	*0*	*0.1772*	*0.3016*	*0*	*0*	*0.2972*
	0.0691***	-0.0386	0.0002	-0.0059**	0.6258***	0.3761	0.0919*	0.0679***	0.5581***	0.5695**	0.0849*
2020	(0.0233)	(0.0607)	(0.0006)	(0.0025)	(0.162)	(0.3749)	(0.055)	(0.0234)	(0.1278)	(0.2214)	(0.0467)
	0.0043	*0.5271*	*0.7708*	*0.0193*	*0.0003*	*0.3195*	*0.0992*	*0.005*	*0*	*0.0123*	*0.0736*
	-0.0084	0.0153	0	0.0051	0.5762***	-0.2362	0.1293	-0.0077	0.5927***	-0.2585	0.1358
2021	(0.0168)	(0.0222)	(0.0001)	(0.0036)	(0.2122)	(0.1771)	(0.0849)	(0.0176)	(0.1898)	(0.1576)	(0.0847)
	0.6167	*0.4928*	*0.9536*	*0.1656*	*0.0089*	*0.1882*	*0.1339*	*0.6638*	*0.0028*	*0.1066*	*0.1145*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 123. Middle Eastern and North African sample, three factor, value regression models performance

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	-0.3867***	0.1138***	0.0004***	0.003**	-0.1885**	-1.8189	0.5542***	0.0325	-0.0309	-1.2894	0.2837***
2016	(0.1285)	(0.0293)	(0.0001)	(0.0013)	(0.084)	(1.6007)	(0.1194)	(0.0584)	(0.0714)	(1.2487)	(0.09)
	0.0056	*0.0006*	*0*	*0.0344*	*0.0333*	*0.2658*	*0.0001*	*0.5825*	*0.668*	*0.31*	*0.0037*
	-0.516**	0.1366***	0.001***	0.0042**	-0.1991***	0.0298	0.5403***	-0.0419	-0.0282	0.1607	0.1949
2017	(0.1882)	(0.0415)	(0.0003)	(0.0016)	(0.0555)	(0.438)	(0.1385)	(0.1238)	(0.0521)	(0.6253)	(0.1201)
	0.0102	*0.0026*	*0.001*	*0.0145*	*0.0012*	*0.9463*	*0.0005*	*0.7371*	*0.5924*	*0.7988*	*0.114*
	0.0956*	-0.0216**	0.0005***	0.0062***	0.2851**	0.4176***	0.1624**	0.0352	0.3056***	0.4289***	0.1916**
2018	(0.0471)	(0.0101)	(0.0001)	(0.0018)	(0.1105)	(0.1131)	(0.0751)	(0.038)	(0.1125)	(0.1217)	(0.0809)
	0.0501	*0.0387*	*0.0011*	*0.0014*	*0.0142*	*0.0008*	*0.0376*	*0.3608*	*0.0099*	*0.0011*	*0.0231*
	-0.0354	-0.0104	0.0004**	0.015***	0.5338**	1.442***	0.0488	-0.0166	0.3554**	0.636*	0.104
2019	(0.0496)	(0.0107)	(0.0002)	(0.0038)	(0.2306)	(0.3902)	(0.0578)	(0.0247)	(0.1584)	(0.3184)	(0.0658)
	0.4806	*0.337*	*0.0268*	*0.0004*	*0.0264*	*0.0007*	*0.4043*	*0.5072*	*0.0306*	*0.0528*	*0.1219*
	-0.0611	0.0036	0.0002***	0.0137***	0.8641***	0.9693***	0.0285	-0.0269*	0.5094***	0.1328	0.0801
2020	(0.0515)	(0.012)	(0)	(0.0034)	(0.1527)	(0.2134)	(0.0367)	(0.0156)	(0.1529)	(0.0788)	(0.048)
	0.2443	*0.7678*	*0.0022*	*0.0003*	*0*	*0.0001*	*0.4435*	*0.0932*	*0.002*	*0.1004*	*0.1038*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 124. Communication services, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.2988**	-0.6699	-0.056	4.7284	0.2594	4.9925**	0.3522***	0.201*	0.3672*	3.6183*	0.2804***
2016	(0.1368)	(1.0308)	(0.088)	(12.6194)	(0.2083)	(1.8832)	(0.0842)	(0.102)	(0.1907)	(1.7998)	(0.0754)
	0.0366	*0.5206*	*0.5288*	*0.7104*	*0.2222*	*0.0125*	*0.0002*	*0.0571*	*0.0625*	*0.0524*	*0.0007*
	0.1529**	-1.7821***	0.1006	-22.9105	0.4142**	3.2409**	0.5905***	0.0394	0.3106	4.3156**	0.3797***
2017	(0.0746)	(0.6401)	(0.0818)	(16.575)	(0.1699)	(1.5459)	(0.1127)	(0.1045)	(0.2378)	(2.0041)	(0.0685)
	0.0471	*0.0082*	*0.2266*	*0.1748*	*0.0194*	*0.0426*	*0*	*0.7079*	*0.1987*	*0.0371*	*0*
	0.0039	3.9504*	-3.4186***	76.7717***	0.7076***	5.8416***	0.0383	0.0219	0.385**	2.8445***	0.3168**
2018	(0.0265)	(2.2745)	(1.1512)	(12.1679)	(0.1025)	(0.6346)	(0.0921)	(0.0341)	(0.1797)	(0.7141)	(0.1206)
	0.8823	*0.0894*	*0.0048*	*0*	*0*	*0*	*0.6794*	*0.524*	*0.0374*	*0.0002*	*0.0116*
	0.0441	1.8903	-1.9654*	-8.0016***	0.7469***	1.2971	0.3226***	0.0535	0.753***	1.4571	0.0805*
2019	(0.0314)	(2.2476)	(1.0554)	(2.6403)	(0.1349)	(1.0169)	(0.0921)	(0.0331)	(0.1332)	(0.9693)	(0.0455)
	0.1672	*0.4044*	*0.0686*	*0.0039*	*0*	*0.2081*	*0.001*	*0.1121*	*0*	*0.1388*	*0.0825*
	-0.0018	-3.3773***	0.3834***	-26.5701***	0.3492**	4.5997***	0.5826***	0.0017	0.4215***	4.4606***	0.2764***
2020	(0.0031)	(1.0286)	(0.1067)	(7.0217)	(0.1549)	(0.8275)	(0.0837)	(0.0015)	(0.1526)	(0.7988)	(0.05)
	0.5547	*0.0018*	*0.0007*	*0.0004*	*0.0284*	*0*	*0*	*0.2352*	*0.0078*	*0*	*0*
	0.0965**	-1.3496	-0.5075	-30.3709***	0.1687	0.5746	0.7648***	0.0968**	0.1024	1.117*	0.5322***
2021	(0.0424)	(1.8285)	(1.1503)	(8.3742)	(0.1437)	(0.9169)	(0.1198)	(0.0431)	(0.1278)	(0.6573)	(0.0983)
	0.0291	*0.4653*	*0.6618*	*0.0009*	*0.2482*	*0.5348*	*0*	*0.0306*	*0.4281*	*0.0972*	*0*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 125. Energy sector, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.0491***	-0.3687*	-0.0069***	0.0114***	0.2202***	3.291***	0.2795***	0.0497**	0.0622*	1.5706**	0.1935***
2014	(0.0065)	(0.2057)	(0.0018)	(0.0023)	(0.0466)	(0.6584)	(0.0601)	(0.0222)	(0.0313)	(0.7227)	(0.0269)
	0	*0.0838*	*0.0005*	*0*	*0.0001*	*0*	*0.0001*	*0.0325*	*0.0559*	*0.0375*	*0*
	0.0517***	-0.1949	0.0015	-0.0021*	0.1423	0.5772	0.2243***	0.0436***	0.1052	0.6441	0.1813***
2015	(0.0144)	(0.194)	(0.0022)	(0.001)	(0.0905)	(0.8279)	(0.0565)	(0.0105)	(0.0691)	(0.7083)	(0.0389)
	0.0011	*0.3225*	*0.4879*	*0.0543*	*0.1258*	*0.4907*	*0.0004*	*0.0002*	*0.1371*	*0.3694*	*0*
	-0.0414*	0.3217	-0.0079***	-0.1156	0.9127***	0.7824***	-0.0626	-0.0122	0.7785***	0.6558***	0.0438
2016	(0.0225)	(0.2615)	(0.0028)	(1.3095)	(0.1954)	(0.1667)	(0.0904)	(0.0233)	(0.203)	(0.1455)	(0.0635)
	0.0731	*0.226*	*0.0078*	*0.9301*	*0*	*0*	*0.4924*	*0.6018*	*0.0004*	*0.0001*	*0.4942*
	-0.0369	-0.1058	-0.0032*	2.5748**	0.463**	1.1184***	0.2874***	0.0108	0.2952**	0.934***	0.3202***
2017	(0.0303)	(0.2067)	(0.0017)	(0.9696)	(0.2037)	(0.3182)	(0.0839)	(0.0223)	(0.1447)	(0.1754)	(0.0783)
	0.2296	*0.6113*	*0.0593*	*0.0111*	*0.028*	*0.0011*	*0.0014*	*0.6303*	*0.0471*	*0*	*0.0002*
	-0.0492*	0.3323**	-0.0089***	-0.0795	0.5088***	1.8116***	0.1043**	-0.0081	0.3997***	1.3195***	0.1895***
2018	(0.0266)	(0.1414)	(0.002)	(0.4141)	(0.0932)	(0.1693)	(0.0411)	(0.0267)	(0.1254)	(0.1424)	(0.0501)
	0.0699	*0.0227*	*0*	*0.8485*	*0*	*0*	*0.0142*	*0.7626*	*0.0024*	*0*	*0.0004*
	0.0359	0.1371*	-0.0011	-0.08	0.2149	0.7852	0.2007***	0.0426	0.2246	0.9239	0.2252***
2019	(0.0311)	(0.0739)	(0.0026)	(0.1769)	(0.1638)	(0.7834)	(0.0454)	(0.0305)	(0.159)	(0.7003)	(0.0583)
	0.2528	*0.0687*	*0.6706*	*0.6527*	*0.1949*	*0.3205*	*0*	*0.1676*	*0.163*	*0.1922*	*0.0003*
	0.0339**	0.0814	0.0003	-0.0172**	0.2592***	-0.1181	0.0658**	0.0369**	0.2666***	-0.1231	0.0875***
2020	(0.0145)	(0.0737)	(0.0005)	(0.0068)	(0.0509)	(0.1387)	(0.0324)	(0.0178)	(0.045)	(0.1289)	(0.0306)
	0.0231	*0.2742*	*0.5097*	*0.0143*	*0*	*0.398*	*0.0466*	*0.042*	*0*	*0.3431*	*0.0057*
	-0.0328*	0.1242	-0.0003	-0.0711***	0.6914***	-0.2037***	0.0056	-0.0205	0.6217***	-0.2181***	0.0463
2021	(0.018)	(0.0835)	(0.0007)	(0.0133)	(0.0925)	(0.0727)	(0.0322)	(0.0184)	(0.1092)	(0.049)	(0.0324)
	0.0735	*0.1432*	*0.6837*	*0*	*0*	*0.0072*	*0.8619*	*0.271*	*0*	*0*	*0.1582*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 126. Consumer Discretionary, three factor, value regression models performance

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.8897	0.5403	-0.0577	0.8918	0.8702***	3.8729*	-0.0347	0.9828	0.7708***	4.1281*	0.0001
2010	(0.6728)	(0.3341)	(0.0846)	(2.7994)	(0.1785)	(2.0374)	(0.1272)	(0.6683)	(0.1926)	(2.2536)	(0.0698)
	0.1957	*0.116*	*0.5003*	*0.7522*	*0*	*0.0666*	*0.7869*	*0.1506*	*0.0003*	*0.0758*	*0.9992*
	0.3555	0.0419	0.0006	0.7897	0.7929***	1.8763*	-0.0454**	0.351	0.8031***	1.9267*	-0.0389**
2011	(0.5329)	(0.5117)	(0.0482)	(0.5448)	(0.0911)	(1.101)	(0.0198)	(0.5156)	(0.0962)	(1.0808)	(0.0191)
	0.5085	*0.9351*	*0.9907*	*0.155*	*0*	*0.0961*	*0.0271*	*0.4996*	*0*	*0.0817*	*0.0477*
	0.3892*	-1.1483	0.176***	-0.1688	0.9796***	0.8969***	-0.0163	0.4964***	1.1345***	0.5259***	-0.0547*
2012	(0.199)	(0.8407)	(0.0576)	(0.2824)	(0.1762)	(0.1612)	(0.0425)	(0.1842)	(0.1709)	(0.1289)	(0.0308)
	0.0564	*0.1785*	*0.0037*	*0.5529*	*0*	*0*	*0.7032*	*0.0096*	*0*	*0.0002*	*0.0818*
	0.0308	-0.3023	0.0172	1.501	1.1075***	0.5967***	0.0156	0.037	1.1325***	0.6116***	0.0135
2013	(0.2086)	(0.2266)	(0.0111)	(1.154)	(0.225)	(0.1646)	(0.0472)	(0.1389)	(0.2291)	(0.1741)	(0.0496)
	0.8832	*0.1881*	*0.126*	*0.1992*	*0*	*0.0007*	*0.7416*	*0.7909*	*0*	*0.0009*	*0.7857*
	0.2892***	0.2947	-0.0005***	1.8793	0.5747***	0.8631	0.06*	0.3456***	0.6095***	0.6383	0.0701**
2014	(0.0796)	(0.1972)	(0.0001)	(1.2815)	(0.0955)	(0.6239)	(0.0336)	(0.0718)	(0.1073)	(0.6641)	(0.0285)
	0.0006	*0.1401*	*0.0002*	*0.1476*	*0*	*0.1715*	*0.0792*	*0*	*0*	*0.34*	*0.0165*
	0.0579	0.3528*	-0.0042**	1.5411	0.4614***	0.0446	0.1185**	0.1383	0.5176***	-0.1807	0.1132**
2015	(0.0885)	(0.2099)	(0.0019)	(4.1433)	(0.1009)	(0.3342)	(0.0477)	(0.1035)	(0.1442)	(0.372)	(0.0433)
	0.5153	*0.0971*	*0.0299*	*0.711*	*0*	*0.8941*	*0.0151*	*0.1852*	*0.0006*	*0.6285*	*0.0107*
	0.0226	0.1897	-0.0067**	0.0143*	0.4628***	-0.0415	0.1823***	0.055	0.4737***	-0.132	0.1689***
2016	(0.0663)	(0.2083)	(0.0026)	(0.0076)	(0.0908)	(0.5611)	(0.0343)	(0.0722)	(0.094)	(0.569)	(0.0415)
	0.7338	*0.3647*	*0.0124*	*0.0636*	*0*	*0.9412*	*0*	*0.4481*	*0*	*0.817*	*0.0001*
	-0.0502	0.0968	-0.0034	-2.7256***	0.6721***	0.2655	0.237***	-0.037	1.055***	0.3017***	-0.206***
2017	(0.0603)	(0.1895)	(0.004)	(0.3112)	(0.1743)	(0.1752)	(0.0638)	(0.0688)	(0.1832)	(0.0734)	(0.0359)
	0.4067	*0.6107*	*0.3975*	*0*	*0.0002*	*0.1324*	*0.0003*	*0.5914*	*0*	*0.0001*	*0*
	-0.0026	0.2565	-0.0004	1.8139***	0.2104*	0.4397	0.2019***	0.0342	0.1908	0.4041	0.2411***
2018	(0.057)	(0.2375)	(0.005)	(0.4424)	(0.1268)	(0.3637)	(0.0571)	(0.0518)	(0.1412)	(0.4101)	(0.0597)
	0.964	*0.2822*	*0.9404*	*0.0001*	*0.0994*	*0.2288*	*0.0006*	*0.5106*	*0.1787*	*0.3261*	*0.0001*
	0.0388	0.1754*	0.0012	0.005	0.4552***	1.6423**	0.0594	0.0487	0.4679***	1.7016**	0.0638
2019	(0.0404)	(0.0949)	(0.0044)	(0.0079)	(0.0879)	(0.7192)	(0.0439)	(0.0406)	(0.0886)	(0.7278)	(0.0435)
	0.3385	*0.0662*	*0.78*	*0.5331*	*0*	*0.0237*	*0.178*	*0.2325*	*0*	*0.0206*	*0.1445*
	-0.0674	0.5777***	0.0172**	0.0074	0.467***	-0.0681	-0.0643*	-0.0311	0.5142***	-0.063	-0.057
2020	(0.0449)	(0.2087)	(0.0073)	(0.0084)	(0.1209)	(0.1773)	(0.0354)	(0.0475)	(0.1314)	(0.2)	(0.04)
	0.1351	*0.0062*	*0.0193*	*0.3751*	*0.0002*	*0.7013*	*0.0714*	*0.5135*	*0.0001*	*0.7532*	*0.1554*
	-0.0779***	0.4985	0.0243**	0.2091***	0.5622***	-0.7084***	-0.1033***	-0.0401	0.6273***	-0.7882***	-0.1069***
2021	(0.0282)	(0.3673)	(0.0114)	(0.0371)	(0.0724)	(0.2009)	(0.0217)	(0.0303)	(0.0824)	(0.2299)	(0.0271)
	0.0064	*0.1768*	*0.035*	*0*	*0*	*0.0006*	*0*	*0.1872*	*0*	*0.0008*	*0.0001*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 127. Consumer staples, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	-0.2691	-0.4327	0.0069	0.0512	0.5687*	12.4097***	-0.1313	-0.2511	0.5868**	12.1688***	-0.1451
2011	(0.5009)	(1.9063)	(0.0251)	(0.9399)	(0.3221)	(2.1962)	(0.1091)	(0.4897)	(0.2335)	(2.0231)	(0.092)
	0.5949	*0.8219*	*0.7853*	*0.9569*	*0.087*	*0*	*0.2375*	*0.6114*	*0.0167*	*0*	*0.1238*
	1.0666**	1.3719	0.006	-0.3195	1.577***	0.7898*	-0.2238**	0.8823	1.5453***	0.5824*	-0.1077*
2012	(0.5205)	(1.242)	(0.0244)	(0.4543)	(0.282)	(0.4241)	(0.0875)	(0.5806)	(0.2474)	(0.3087)	(0.0584)
	0.0469	*0.2758*	*0.8065*	*0.4859*	*0*	*0.0698*	*0.0143*	*0.1357*	*0*	*0.0659*	*0.0719*
	0.6858*	-2.2807**	0.0038*	0.4593	1.3226***	1.7036	0.0776	0.7584*	1.267***	2.1523	-0.1026
2013	(0.3628)	(0.9704)	(0.002)	(0.5135)	(0.2729)	(2.1968)	(0.1018)	(0.3888)	(0.2933)	(2.4385)	(0.1015)
	0.064	*0.0224*	*0.059*	*0.375*	*0*	*0.4414*	*0.4492*	*0.056*	*0.0001*	*0.3811*	*0.3163*
	-0.0182	1.4006***	-0.0018	0.1994*	1.0807***	4.0413**	-0.1144	0.106	1.3561***	0.9429*	-0.0651
2014	(0.2381)	(0.5264)	(0.0011)	(0.1034)	(0.2035)	(1.5324)	(0.0795)	(0.187)	(0.2016)	(0.5007)	(0.0747)
	0.9393	*0.0098*	*0.11*	*0.0581*	*0*	*0.0104*	*0.1549*	*0.5726*	*0*	*0.0639*	*0.3863*
	0.0498	1.1242**	-0.0011***	-0.0161	1.121***	2.3985**	-0.1685***	0.0853	1.248***	1.9363	-0.1565***
2015	(0.1166)	(0.4787)	(0.0003)	(0.0427)	(0.2369)	(1.1318)	(0.0464)	(0.094)	(0.1875)	(1.7041)	(0.0576)
	0.6708	*0.0216*	*0.0024*	*0.7073*	*0*	*0.0376*	*0.0005*	*0.3672*	*0*	*0.2595*	*0.0082*
	0.0108***	1.7196***	-0.0008**	0.2667***	-0.1391	6.9475***	0.1223	0.0112***	-0.1311	7.0484***	0.2293*
2016	(0.0012)	(0.6068)	(0.0003)	(0.0704)	(0.0913)	(2.2546)	(0.1011)	(0.0018)	(0.137)	(2.4549)	(0.1184)
	0	*0.0058*	*0.0102*	*0.0003*	*0.1313*	*0.0028*	*0.2298*	*0*	*0.3412*	*0.0051*	*0.0559*
	0.001	-0.3231***	0.0005***	0.0992**	0.7734***	5.1561***	0.2078***	0.0015	0.7419***	4.9999***	0.1777***
2017	(0.0018)	(0.0967)	(0.0002)	(0.0475)	(0.1856)	(1.4958)	(0.059)	(0.0016)	(0.1723)	(1.3768)	(0.0528)
	0.5784	*0.0012*	*0.0077*	*0.0395*	*0.0001*	*0.0008*	*0.0007*	*0.3541*	*0*	*0.0004*	*0.0011*
	0.0017*	-0.2965***	0.0011***	0.0521	0.8259***	3.3148***	0.0622**	0.0026**	0.7584***	2.9966***	0.0444*
2018	(0.001)	(0.0497)	(0.0001)	(0.0355)	(0.0881)	(0.3567)	(0.027)	(0.0012)	(0.09)	(0.3397)	(0.0249)
	0.0982	*0*	*0*	*0.1455*	*0*	*0*	*0.0229*	*0.0311*	*0*	*0*	*0.0777*
	-0.0027**	-0.3608***	0.0006***	0.1925***	1.1907***	0.5449***	0.064	-0.0001	0.8869***	0.4944***	0.1048
2019	(0.0013)	(0.08)	(0.0001)	(0.0562)	(0.1437)	(0.1359)	(0.0644)	(0.0016)	(0.1917)	(0.1722)	(0.0804)
	0.0328	*0*	*0*	*0.0008*	*0*	*0.0001*	*0.3225*	*0.9307*	*0*	*0.0048*	*0.1945*
	0.1271**	-0.3371***	0.0004***	0.0901	0.9792***	0.1554	0.0525*	0.1257**	0.7439***	0.3989	0.0709**
2020	(0.051)	(0.0895)	(0.0001)	(0.0752)	(0.1102)	(0.279)	(0.0306)	(0.0517)	(0.1159)	(0.2952)	(0.0327)
	0.0139	*0.0002*	*0*	*0.233*	*0*	*0.5785*	*0.0883*	*0.0164*	*0*	*0.1789*	*0.0316*
	0.085*	-0.203	0.0002	0.02***	0.8448***	-0.2778	0.0163	0.076	0.7822***	-0.0814	0.0105
2021	(0.0481)	(0.1622)	(0.0006)	(0.0049)	(0.09)	(0.7425)	(0.0291)	(0.0461)	(0.0799)	(0.7446)	(0.0327)
	0.0796	*0.2133*	*0.688*	*0.0001*	*0*	*0.709*	*0.5759*	*0.1023*	*0*	*0.9131*	*0.748*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 128. Financials sector, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.3826	31.1333	0.0482***	0.2562	0.38**	2.5969	0.0247	0.2936	0.4863***	4.1495**	0.0142
2010	(0.3657)	(22.2704)	(0.0135)	(0.1691)	(0.1653)	(1.9324)	(0.04)	(0.3571)	(0.1529)	(1.9064)	(0.0437)
	0.3051	*0.1739*	*0.0014*	*0.1418*	*0.0298*	*0.1906*	*0.5428*	*0.4177*	*0.0035*	*0.0378*	*0.7467*
	0.2025***	25.7583	9.0009***	-0.051	0.1004	1.1321***	-0.1112*	0.256***	0.5937***	0.4091*	-0.1875***
2011	(0.0432)	(16.0055)	(2.7231)	(0.0474)	(0.174)	(0.3453)	(0.0619)	(0.0897)	(0.1138)	(0.2324)	(0.0584)
	0	*0.1158*	*0.0021*	*0.2884*	*0.5673*	*0.0022*	*0.0802*	*0.0067*	*0*	*0.0857*	*0.0026*
	0.5214**	-14.0017	2.5377	0.0718**	0.4806***	1.4117***	0.1708***	0.489**	0.4762***	1.0781***	0.1984***
2012	(0.2203)	(10.34)	(1.5905)	(0.0349)	(0.108)	(0.2936)	(0.0496)	(0.2402)	(0.0961)	(0.2534)	(0.0495)
	0.0224	*0.1826*	*0.1178*	*0.0457*	*0.0001*	*0*	*0.0013*	*0.0474*	*0*	*0.0001*	*0.0002*
	0.1865**	8.645	-0.9607	190.241	0.6278***	2.2978***	0.1548*	0.1849**	0.6489***	2.5933***	0.1635**
2013	(0.0775)	(10.1746)	(0.8753)	(260.3635)	(0.1104)	(0.386)	(0.0814)	(0.0854)	(0.0944)	(0.3215)	(0.079)
	0.0202	*0.3999*	*0.2781*	*0.4687*	*0*	*0*	*0.0637*	*0.0352*	*0*	*0*	*0.0438*
	0.2215***	8.887	4.709**	68.566***	0.4195***	0.4723***	0.1459**	0.2482***	0.5802***	0.2499***	0.1941***
2014	(0.0493)	(21.4324)	(1.8751)	(17.0543)	(0.1143)	(0.1046)	(0.0604)	(0.0701)	(0.0879)	(0.0378)	(0.0557)
	0	*0.6803*	*0.0156*	*0.0002*	*0.0006*	*0*	*0.0197*	*0.0009*	*0*	*0*	*0.001*
	0.1464***	34.067**	-3.0997***	907.6225***	0.1572	2.1443***	0.1266**	0.0792	0.2899**	1.6839**	0.1488**
2015	(0.0362)	(13.4467)	(0.6458)	(225.0743)	(0.1033)	(0.6076)	(0.0595)	(0.0627)	(0.1414)	(0.83)	(0.0591)
	0.0002	*0.0143*	*0*	*0.0002*	*0.1342*	*0.0009*	*0.038*	*0.2116*	*0.045*	*0.0472*	*0.0148*
	0.0792*	0.5739	-1.2675**	116.2252	0.409***	2.9463***	0.1148**	0.029	0.4251***	2.9013***	0.0993**
2016	(0.0434)	(0.3994)	(0.5805)	(80.8955)	(0.0689)	(0.8695)	(0.0482)	(0.0355)	(0.0686)	(0.9086)	(0.0406)
	0.0726	*0.1558*	*0.0328*	*0.1558*	*0*	*0.0012*	*0.0204*	*0.4161*	*0*	*0.0022*	*0.0171*
	0.058**	-33.8936***	0.0104	371.9809***	0.6532***	2.5923***	0.0976***	0.0468*	0.5615***	2.5648**	0.1033***
2017	(0.0232)	(10.145)	(0.5451)	(110.8832)	(0.0705)	(0.9782)	(0.0299)	(0.024)	(0.0802)	(1.1666)	(0.0254)
	0.0145	*0.0013*	*0.9848*	*0.0012*	*0*	*0.0098*	*0.0017*	*0.0548*	*0*	*0.0308*	*0.0001*
	0.0383***	0.4795	-0.5827	-2.1644***	0.4334***	0.0235	0.1498***	0.0693**	0.0397	0.2423	0.3025***
2018	(0.0141)	(0.5928)	(0.7405)	(0.2202)	(0.0562)	(0.0295)	(0.0445)	(0.0281)	(0.0954)	(0.2618)	(0.0673)
	0.0077	*0.4203*	*0.433*	*0*	*0*	*0.4262*	*0.0011*	*0.015*	*0.6781*	*0.3567*	*0*
	0.078***	-0.0394	-0.0021***	-0.5933*	0.3597***	3.1015***	-0.0396	0.0525***	0.3586***	3.0722***	-0.0369
2019	(0.0151)	(0.031)	(0.0005)	(0.3444)	(0.0799)	(0.9027)	(0.0431)	(0.0196)	(0.0743)	(0.8593)	(0.0433)
	0	*0.2066*	*0.0002*	*0.0876*	*0*	*0.0008*	*0.3597*	*0.0086*	*0*	*0.0005*	*0.3956*
	0.0756**	-0.0234	-0.0926	2.4615	0.3531***	1.7924***	0.0451*	0.0749**	0.3616***	1.7129***	0.0401*
2020	(0.0292)	(0.2956)	(0.4236)	(1.5056)	(0.0503)	(0.6473)	(0.0268)	(0.0292)	(0.0497)	(0.6301)	(0.0236)
	0.0106	*0.937*	*0.8274*	*0.1046*	*0*	*0.0065*	*0.0948*	*0.0114*	*0*	*0.0075*	*0.0922*
	0.0501	-0.2125	0.3	1.7765***	0.3567***	1.0439	0.0314	0.0549	0.3615***	1.0485	0.0286
2021	(0.0404)	(0.2778)	(0.5138)	(0.2787)	(0.0672)	(0.7512)	(0.0507)	(0.0394)	(0.0664)	(0.7086)	(0.0485)
	0.2181	*0.4459*	*0.5605*	*0*	*0*	*0.1675*	*0.5373*	*0.1665*	*0*	*0.1417*	*0.5569*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 129. Health Care sector, three variables, value regression models by years

Year				Environmental						Environmental	
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	5.0966***	5.0253	-0.0651	19.6921	0.5706***	4.912***	0.0433**	4.7684***	0.7693***	5.3836***	0.0685**
2010	(1.45)	(4.5553)	(0.0792)	(16.5706)	(0.1738)	(0.7908)	(0.0196)	(1.6546)	(0.1689)	(0.6347)	(0.0266)
	0.0017	*0.2805*	*0.4184*	*0.2459*	*0.003*	*0*	*0.0365*	*0.0075*	*0.0001*	*0*	*0.0157*
	1.7996***	5.4648	-0.1003**	32.0455	0.6496***	5.1878***	0.0329	1.3631**	0.9171***	5.3581***	0.0674
2011	(0.5583)	(3.8717)	(0.0475)	(24.7419)	(0.2282)	(1.5576)	(0.0226)	(0.6336)	(0.2477)	(1.8048)	(0.0415)
	0.0033	*0.1695*	*0.0439*	*0.2062*	*0.0083*	*0.0025*	*0.1578*	*0.0396*	*0.0009*	*0.0058*	*0.1146*
	5.1313***	1.5873	0.0782***	-19.9221	1.2148***	3.5341***	0.0279	2.7511	1.3524***	3.2254***	0.0379
2012	(1.4494)	(3.6175)	(0.0245)	(22.6237)	(0.1263)	(0.4799)	(0.0219)	(1.8766)	(0.1911)	(0.5229)	(0.0326)
	0.0013	*0.664*	*0.0033*	*0.3855*	*0*	*0*	*0.212*	*0.1521*	*0*	*0*	*0.2546*
	2.7183	5.4753	0.1363**	-42.3057	0.8176**	8.6094***	0.1452***	-1.7788	0.9792**	10.1334***	0.1178**
2013	(1.689)	(6.297)	(0.0628)	(34.9558)	(0.3086)	(2.0959)	(0.0227)	(1.5013)	(0.4297)	(2.626)	(0.0454)
	0.1177	*0.3913*	*0.0377*	*0.2353*	*0.0126*	*0.0003*	*0*	*0.2443*	*0.0291*	*0.0005*	*0.0139*
	-0.1648	5.6295	0.002	-46.0585	1.4547***	7.8099**	0.1215*	0.0204	0.6338	13.44***	0.0202
2014	(0.4983)	(4.2645)	(0.0817)	(30.3997)	(0.5269)	(3.6013)	(0.0698)	(0.356)	(0.5584)	(3.9239)	(0.1074)
	0.7427	*0.1945*	*0.9804*	*0.1378*	*0.0087*	*0.0363*	*0.0896*	*0.9545*	*0.2628*	*0.0014*	*0.852*
	-1.4528	3.187	-0.1759*	-16.134	2.423***	0.1997	0.1827***	-0.572	1.9089***	1.0543	0.196***
2015	(1.4859)	(5.219)	(0.0921)	(39.5725)	(0.4505)	(1.9681)	(0.0641)	(1.588)	(0.4655)	(2.0498)	(0.0522)
	0.3344	*0.5451*	*0.0637*	*0.6858*	*0*	*0.9197*	*0.007*	*0.7205*	*0.0002*	*0.6098*	*0.0005*
	3.969***	-2.7092	0.2232*	5.5661	1.3405***	5.7852***	0.1103	3.3239***	1.572***	4.2752**	0.1322
2016	(0.7363)	(4.7295)	(0.1138)	(31.8931)	(0.2437)	(1.474)	(0.0716)	(0.7553)	(0.2762)	(1.9888)	(0.0839)
	0	*0.5694*	*0.0556*	*0.8622*	*0*	*0.0003*	*0.13*	*0.0001*	*0*	*0.0363*	*0.1211*
	-0.0205	1.3423	-0.0429	0.7125	2.0959***	1.0022***	0.104	0.0906	2.087***	0.973***	0.1117
2017	(0.2945)	(1.9733)	(0.0587)	(11.9469)	(0.3651)	(0.297)	(0.0847)	(0.1337)	(0.2954)	(0.2905)	(0.0875)
	0.9447	*0.4991*	*0.4677*	*0.9526*	*0*	*0.0013*	*0.2244*	*0.5006*	*0*	*0.0014*	*0.2065*
	0.3356**	1.2823**	-0.1441*	0.4307	1.2295***	3.0225*	0.0815*	0.3377**	1.1548***	3.0716**	0.0868*
2018	(0.1579)	(0.6096)	(0.0861)	(0.3176)	(0.2392)	(1.6009)	(0.0472)	(0.1448)	(0.1902)	(1.4965)	(0.047)
	0.0372	*0.0391*	*0.0989*	*0.1795*	*0*	*0.0633*	*0.0888*	*0.0225*	*0*	*0.0438*	*0.0693*
	0.3235***	-0.1015	-0.0589	-1.0644***	1.5005***	3.1569**	0.0434	0.2771***	1.2877***	3.192***	0.0359
2019	(0.1144)	(0.5435)	(0.0476)	(0.2354)	(0.176)	(1.2192)	(0.0357)	(0.0962)	(0.1471)	(1.1137)	(0.0291)
	0.0059	*0.8524*	*0.2201*	*0*	*0*	*0.0114*	*0.2281*	*0.0051*	*0*	*0.0053*	*0.2211*
	-0.2145	-0.1136	-0.1078***	-0.0291	1.7216***	2.5684**	0.1825***	-0.0224	1.3151***	1.8091*	0.1291***
2020	(0.2047)	(1.1)	(0.0388)	(0.2143)	(0.2193)	(1.051)	(0.0421)	(0.2129)	(0.2518)	(1.0874)	(0.0484)
	0.2978	*0.918*	*0.0067*	*0.8923*	*0*	*0.0167*	*0*	*0.9164*	*0*	*0.0998*	*0.0091*
	0.3879**	-7.5106***	0.0575	1.2627***	0.9623***	3.1966**	0.7405**	0.1907	1.3563***	2.8727	-0.2675
2021	(0.1469)	(2.0365)	(0.0654)	(0.135)	(0.3015)	(1.3939)	(0.3489)	(0.1786)	(0.3657)	(1.7522)	(0.3309)
	0.0104	*0.0005*	*0.3825*	*0*	*0.0022*	*0.0252*	*0.0378*	*0.2895*	*0.0004*	*0.1059*	*0.4218*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 130. Industrials sector, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.6498**	0.0176	-0.0031*	-0.0134	0.8763***	1.6117***	-0.0494*	0.6816***	0.8522***	1.5915***	-0.0448*
2008	(0.2586)	(0.0523)	(0.0018)	(0.0265)	(0.1233)	(0.4525)	(0.028)	(0.2438)	(0.1103)	(0.4274)	(0.0259)
	0.017	*0.7379*	*0.0958*	*0.6177*	*0*	*0.0011*	*0.087*	*0.0083*	*0*	*0.0007*	*0.0919*
	0.2756	-0.0612	-0.0037	0.0335***	1.0893***	0.6792**	0.0072	0.2308	1.023***	0.7098**	0.0182
2009	(0.2744)	(0.0616)	(0.0031)	(0.0066)	(0.1975)	(0.3346)	(0.0484)	(0.2871)	(0.1614)	(0.3422)	(0.0478)
	0.3209	*0.3256*	*0.2327*	*0*	*0*	*0.0485*	*0.883*	*0.4257*	*0*	*0.0437*	*0.7049*
	0.4962***	-0.0059	-0.0008	0.0021	0.8282***	1.9916***	0.075	0.4953***	0.8203***	2.0073***	0.0755
2010	(0.1606)	(0.0554)	(0.0032)	(0.0167)	(0.1808)	(0.6956)	(0.0506)	(0.1613)	(0.1603)	(0.6783)	(0.0477)
	0.003	*0.9159*	*0.7983*	*0.8984*	*0*	*0.0057*	*0.1433*	*0.0031*	*0*	*0.0043*	*0.1181*
	0.4972	-0.025	0.0024	0.0026	0.2829*	4.6617***	0.0165	0.5001	0.3067**	4.5184***	0.0122
2011	(0.3267)	(0.0554)	(0.0031)	(0.0057)	(0.1427)	(0.9442)	(0.0398)	(0.3054)	(0.1348)	(0.8921)	(0.0316)
	0.1327	*0.6534*	*0.4346*	*0.6447*	*0.0515*	*0*	*0.68*	*0.106*	*0.0259*	*0*	*0.7017*
	0.9276***	-0.1199**	-0.008***	-0.1643**	0.6776***	1.1138***	0.0805*	1.1496***	0.6667***	0.8716***	0.002
2012	(0.2828)	(0.0597)	(0.0024)	(0.0633)	(0.1507)	(0.1783)	(0.0446)	(0.327)	(0.1219)	(0.2348)	(0.0385)
	0.0015	*0.0479*	*0.0012*	*0.0111*	*0*	*0*	*0.0744*	*0.0007*	*0*	*0.0004*	*0.9583*
	0.046	0.01	-0.0015	-0.0425	0.8511***	0.8855*	0.0724	0.0463	0.9157***	0.8253*	0.0403
2013	(0.2036)	(0.0991)	(0.0026)	(0.0329)	(0.2099)	(0.505)	(0.0656)	(0.1938)	(0.1814)	(0.4774)	(0.0513)
	0.8216	*0.92*	*0.5736*	*0.2004*	*0.0001*	*0.0827*	*0.2723*	*0.8115*	*0*	*0.087*	*0.4335*
	0.0652	0.1191	-0.0096***	-0.0291	0.9537***	0.4318	-0.0156	0.2365**	0.9181***	0.054	-0.0949*
2014	(0.1043)	(0.0806)	(0.0015)	(0.0269)	(0.1276)	(0.5675)	(0.0218)	(0.1158)	(0.1278)	(0.7108)	(0.0496)
	0.5328	*0.1426*	*0*	*0.2818*	*0*	*0.4484*	*0.4752*	*0.0434*	*0*	*0.9396*	*0.0582*
	0.2252***	0.0918***	-0.0018	0.0521**	0.4186***	-0.256	-0.076**	0.2476***	0.4657***	-0.3119	-0.0828***
2015	(0.0639)	(0.0327)	(0.0013)	(0.022)	(0.1086)	(0.2938)	(0.035)	(0.0625)	(0.1665)	(0.3116)	(0.0293)
	0.0006	*0.0058*	*0.155*	*0.0197*	*0.0002*	*0.3852*	*0.0316*	*0.0001*	*0.0059*	*0.3187*	*0.0055*
	-0.0293	-0.0305	-0.0004	-0.0442***	0.532***	2.0348***	0.1056***	-0.0218	0.55***	2.0737***	0.074***
2016	(0.0828)	(0.0642)	(0.0021)	(0.0112)	(0.0875)	(0.4012)	(0.0272)	(0.0787)	(0.0612)	(0.3522)	(0.011)
	0.7243	*0.6352*	*0.855*	*0.0001*	*0*	*0*	*0.0002*	*0.7822*	*0*	*0*	*0*
	0.0535	0.2025***	0.0123*	-0.0624	0.2376***	-0.1384	-0.0128	0.1321	0.0617***	-0.4676**	0.0493
2017	(0.0891)	(0.0455)	(0.0071)	(0.0998)	(0.0821)	(0.2124)	(0.0419)	(0.0945)	(0.018)	(0.2037)	(0.0339)
	0.5487	*0*	*0.0862*	*0.5329*	*0.0043*	*0.5155*	*0.7606*	*0.1639*	*0.0008*	*0.0229*	*0.1467*
	0.032	0.0239	-0.0111*	-0.0042	-0.0544	0.5694	0.1429***	-0.0046	-0.0632	0.0284	0.134***
2018	(0.0345)	(0.0409)	(0.0064)	(0.0066)	(0.1048)	(0.3478)	(0.029)	(0.0351)	(0.0862)	(0.1035)	(0.0254)
	0.3545	*0.5597*	*0.0849*	*0.5203*	*0.6044*	*0.1031*	*0*	*0.8954*	*0.4646*	*0.784*	*0*
	0.0385*	0.0092	0.0001	0.036**	0.0209	0.1332	0.0657***	0.0329*	0.0297	0.0071	0.0675***
2019	(0.0202)	(0.0061)	(0.0017)	(0.018)	(0.1105)	(0.1087)	(0.0207)	(0.0177)	(0.0993)	(0.0757)	(0.0193)
	0.0579	*0.1356*	*0.9632*	*0.0464*	*0.8504*	*0.2215*	*0.0017*	*0.0648*	*0.7655*	*0.9254*	*0.0005*
	0.0209	-0.0088	0.0035**	0.074	0.206**	0.8319***	0.1748***	0.0551***	0.1175***	1.0096***	0.1974***
2020	(0.0165)	(0.0065)	(0.0017)	(0.0909)	(0.0952)	(0.2075)	(0.0433)	(0.0124)	(0.015)	(0.1275)	(0.0241)
	0.2067	*0.1783*	*0.0363*	*0.4165*	*0.0315*	*0.0001*	*0.0001*	*0*	*0*	*0*	*0*
	0.0242***	0.0788*	0.0014***	0.0095	0.3678***	-0.0114	0.1529***	0.0251***	0.3806***	-0.1079	0.1612***
2021	(0.0052)	(0.0412)	(0.0002)	(0.0058)	(0.0649)	(0.0756)	(0.0463)	(0.006)	(0.0675)	(0.0679)	(0.0472)
	0	*0.057*	*0*	*0.1031*	*0*	*0.8804*	*0.0011*	*0*	*0*	*0.1137*	*0.0008*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 131. Information Technology sector, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.3413*	-1.4747	0.1016	-7.7356	1.0631***	2.1023**	0.1334	0.4799***	1.002***	1.9388*	0.1113
2009	(0.1946)	(4.5881)	(0.1194)	(15.3762)	(0.2232)	(0.965)	(0.1031)	(0.1514)	(0.1775)	(1.0084)	(0.0687)
	0.0922	*0.7507*	*0.4031*	*0.6195*	*0.0001*	*0.0394*	*0.2081*	*0.0038*	*0*	*0.0651*	*0.1168*
	0.5687***	2.0111	-0.0301**	-9.9908	1.2625***	2.4257*	-0.0911	0.3312*	1.2502***	2.6578**	-0.0538
2010	(0.2012)	(1.4886)	(0.0126)	(7.0886)	(0.2158)	(1.2777)	(0.0598)	(0.1738)	(0.1519)	(1.2173)	(0.0512)
	0.008	*0.1862*	*0.0233*	*0.1684*	*0*	*0.0667*	*0.1375*	*0.0649*	*0*	*0.0358*	*0.2997*
	-0.159**	-0.0388	0.0565	-5.244	0.5927***	2.6342**	0.0351	-0.0832	0.8161***	1.1412**	0.0008
2011	(0.0699)	(1.0815)	(0.0453)	(3.3808)	(0.1511)	(1.2989)	(0.0229)	(0.0792)	(0.1168)	(0.527)	(0.0233)
	0.0286	*0.9716*	*0.2194*	*0.1289*	*0.0003*	*0.0494*	*0.1328*	*0.2995*	*0*	*0.0361*	*0.974*
	-0.0117	0.7613	0.014	-4.3522	0.1779*	0.1287	0.1051***	0.0613	0.2184**	0.0376	0.1008***
2012	(0.0569)	(0.7506)	(0.0222)	(3.7566)	(0.0952)	(0.1395)	(0.0207)	(0.0476)	(0.099)	(0.1253)	(0.021)
	0.8383	*0.3147*	*0.5308*	*0.2515*	*0.0667*	*0.3604*	*0*	*0.2029*	*0.0313*	*0.7652*	*0*
	0.2488***	0.5523	-0.0049	-1.8761	0.101	-0.5862**	0.0927***	0.2931***	0.1478*	-0.6482**	0.0857***
2013	(0.0811)	(0.5943)	(0.0189)	(4.4316)	(0.0937)	(0.2694)	(0.0249)	(0.0625)	(0.0798)	(0.2708)	(0.0251)
	0.003	*0.3556*	*0.7939*	*0.6732*	*0.2844*	*0.0326*	*0.0004*	*0*	*0.0675*	*0.019*	*0.001*
	0.1198	0.4266***	0.0077***	-11.5896*	-0.2512***	1.2865	0.214***	0.1638**	-0.2793***	1.2639	0.1826***
2014	(0.084)	(0.1574)	(0.0023)	(6.6233)	(0.0785)	(0.8592)	(0.0395)	(0.0778)	(0.0625)	(0.8903)	(0.039)
	0.1572	*0.0081*	*0.0013*	*0.0836*	*0.0019*	*0.1378*	*0*	*0.0381*	*0*	*0.1591*	*0*
	0.0918*	-0.2912	0.0095**	-2.4896**	-0.154	0.6188	0.1258***	0.0963*	-0.2066***	0.9538	0.0905***
2015	(0.0479)	(0.2874)	(0.0039)	(0.9987)	(0.101)	(0.7093)	(0.0226)	(0.0497)	(0.0735)	(0.7522)	(0.0157)
	0.0578	*0.3132*	*0.0157*	*0.0142*	*0.1303*	*0.385*	*0*	*0.0549*	*0.0058*	*0.2075*	*0*
	0.0235	0.0753*	0.0008	-5.7472*	0.6233***	1.0126***	0.0841***	0.0265	0.5045**	1.1819***	0.0742***
2016	(0.029)	(0.0441)	(0.0011)	(3.101)	(0.1438)	(0.3787)	(0.0287)	(0.0286)	(0.2)	(0.336)	(0.0222)
	0.4211	*0.0907*	*0.4796*	*0.0665*	*0*	*0.0087*	*0.0042*	*0.3566*	*0.013*	*0.0006*	*0.0011*
	0.2629**	-0.1906	-0.0045	-3.9142	-0.0201	0.0617	0.1784***	0.1897**	-0.2123***	0.1949***	0.1912***
2017	(0.1312)	(0.5149)	(0.0037)	(4.4247)	(0.1506)	(0.1157)	(0.0593)	(0.0921)	(0.0527)	(0.0551)	(0.0542)
	0.0472	*0.7118*	*0.2258*	*0.378*	*0.894*	*0.5944*	*0.0032*	*0.0413*	*0.0001*	*0.0006*	*0.0006*
	-0.1031***	0.4372***	0	-4.0301**	0.6373***	-0.507***	0.0965***	-0.0529*	0.5636***	-0.4711***	0.0761***
2018	(0.0204)	(0.1459)	(0.0018)	(1.9276)	(0.0902)	(0.1778)	(0.0342)	(0.0278)	(0.1356)	(0.1765)	(0.025)
	0	*0.0032*	*0.9863*	*0.0384*	*0*	*0.005*	*0.0055*	*0.0592*	*0.0001*	*0.0085*	*0.0028*
	-0.0246	-0.3118	-0.0002	1.2525***	0.8167***	-0.397***	0.0812***	-0.0346	0.7453***	-0.3897***	0.087***
2019	(0.0344)	(0.2759)	(0.0005)	(0.3679)	(0.1371)	(0.045)	(0.0281)	(0.0401)	(0.1313)	(0.0437)	(0.0279)
	0.4749	*0.2601*	*0.6535*	*0.0008*	*0*	*0*	*0.0044*	*0.3903*	*0*	*0*	*0.0022*
	0.0063	0.1631**	0.0011***	-5.6239***	0.6794***	1.3504*	0.0546	0.0337	0.6262***	2.9535***	-0.0247
2020	(0.0177)	(0.0658)	(0.0002)	(2.0684)	(0.2074)	(0.7933)	(0.0574)	(0.0237)	(0.2079)	(0.7226)	(0.0517)
	0.7248	*0.0141*	*0*	*0.0072*	*0.0013*	*0.0904*	*0.3427*	*0.1575*	*0.003*	*0.0001*	*0.6339*
	-0.0299	-0.1482	0.0042*	1.8069	0.8377***	1.8438***	0.0505	-0.0247	0.8153***	1.6161***	0.0713*
2021	(0.0547)	(0.1622)	(0.0025)	(3.3997)	(0.137)	(0.7043)	(0.0355)	(0.0501)	(0.1489)	(0.232)	(0.0405)
	0.5855	*0.3622*	*0.0948*	*0.5959*	*0*	*0.0098*	*0.1575*	*0.6218*	*0*	*0*	*0.0798*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 132. Materials sector, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.0498	-0.0101	0.0002	0.0006	0.4812**	-0.073	0.0812	0.0488	0.52**	-0.0466	0.066
2008	(0.3355)	(0.0745)	(0.0015)	(0.0008)	(0.2221)	(0.1934)	(0.0701)	(0.3365)	(0.1958)	(0.167)	(0.0775)
	0.8827	*0.8931*	*0.8937*	*0.4423*	*0.0366*	*0.7081*	*0.254*	*0.8853*	*0.0112*	*0.7814*	*0.3995*
	0.4016**	0.0406*	0**	0.0002	1.113***	0.7018	0.0183	0.071	1.1449***	0.5373	0.0595
2009	(0.1958)	(0.0208)	(0)	(0.0006)	(0.1993)	(0.8557)	(0.0813)	(0.0657)	(0.182)	(0.8258)	(0.0706)
	0.046	*0.0568*	*0.0245*	*0.769*	*0*	*0.4163*	*0.8228*	*0.285*	*0*	*0.5183*	*0.4031*
	0.1499*	-0.0196	0.0018	0.0101**	0.3877	9.9297***	-0.1044	0.1483*	0.5505	10.5555***	-0.1689
2010	(0.0808)	(0.037)	(0.0019)	(0.005)	(0.3499)	(1.7765)	(0.1184)	(0.0856)	(0.3419)	(1.6956)	(0.1184)
	0.0689	*0.5985*	*0.3497*	*0.0458*	*0.2726*	*0*	*0.3817*	*0.0884*	*0.1127*	*0*	*0.1589*
	0.0128	-0.0287*	-0.0004	0.0077***	0.4347***	3.1598***	0.1008**	-0.0033	0.4256***	3.1662***	0.0905**
2011	(0.0342)	(0.0158)	(0.0008)	(0.0024)	(0.1366)	(0.8668)	(0.0429)	(0.024)	(0.1214)	(0.8031)	(0.0421)
	0.7096	*0.0726*	*0.6173*	*0.0018*	*0.0021*	*0.0005*	*0.0213*	*0.8899*	*0.0008*	*0.0002*	*0.0346*
	-0.3277	0.0345	0.0001	0.0082***	0.5401***	1.3646**	0.1157**	-0.0468	0.545***	1.463**	0.116**
2012	(0.2374)	(0.0378)	(0.0001)	(0.0028)	(0.1267)	(0.5751)	(0.0503)	(0.0295)	(0.1504)	(0.5884)	(0.0505)
	0.1708	*0.3639*	*0.4177*	*0.0048*	*0*	*0.0197*	*0.0237*	*0.1162*	*0.0005*	*0.0146*	*0.0237*
	-0.045	0.0137	0	-0.0001	0.471***	1.1725*	0.1762***	-0.0327	0.4707***	1.1392*	0.1847***
2013	(0.0275)	(0.0153)	(0)	(0.0019)	(0.1038)	(0.6319)	(0.049)	(0.0274)	(0.0945)	(0.6016)	(0.0519)
	0.1046	*0.3729*	*0.2668*	*0.9517*	*0*	*0.0661*	*0.0005*	*0.2353*	*0*	*0.0607*	*0.0005*
	0.2405***	-0.0901***	0.0001	0.0046***	0.2768***	0.4112	0.3277***	0.2426***	0.1787	0.3496	0.2644***
2014	(0.0503)	(0.0181)	(0.0004)	(0.0011)	(0.0608)	(0.4336)	(0.0396)	(0.0849)	(0.1656)	(0.4028)	(0.0546)
	0	*0*	*0.7771*	*0.0001*	*0*	*0.3448*	*0*	*0.005*	*0.2825*	*0.387*	*0*
	0.1003**	-0.0234**	0.0004***	0.0025***	-0.0135	0.6186	0.2245***	0.0468	0.0101	0.6835*	0.2216***
2015	(0.0432)	(0.011)	(0.0001)	(0.0008)	(0.0662)	(0.4121)	(0.0317)	(0.0336)	(0.0636)	(0.3862)	(0.0302)
	0.0217	*0.036*	*0.008*	*0.0015*	*0.8381*	*0.1355*	*0*	*0.1664*	*0.8744*	*0.0788*	*0*
	0.0895**	-0.0125	0.0007	0.0058***	-0.0705	-0.204	0.2622***	0.0802*	-0.0274	-0.5376	0.2683***
2016	(0.0413)	(0.013)	(0.0012)	(0.002)	(0.0537)	(0.4205)	(0.0697)	(0.0453)	(0.0525)	(0.3879)	(0.0617)
	0.0317	*0.3373*	*0.5514*	*0.0047*	*0.191*	*0.6283*	*0.0002*	*0.0786*	*0.6027*	*0.1676*	*0*
	0.0409	0.0172	0.0021***	0.0057***	-0.1144***	0.4976	0.3904***	0.0519**	-0.1233***	0.3463	0.4831***
2017	(0.0286)	(0.0175)	(0.0006)	(0.0015)	(0.0304)	(0.4158)	(0.0865)	(0.0224)	(0.0381)	(0.3861)	(0.0976)
	0.1536	*0.3259*	*0.0006*	*0.0003*	*0.0002*	*0.2329*	*0*	*0.0213*	*0.0014*	*0.3708*	*0*
	-0.0095	-0.0084	0.0001	0.0008	0.4162***	0.5401***	0.1994***	-0.0151	0.4236***	0.5449***	0.1942***
2018	(0.0143)	(0.0109)	(0.0003)	(0.0024)	(0.0741)	(0.0556)	(0.0382)	(0.0127)	(0.0783)	(0.0562)	(0.0416)
	0.5058	*0.442*	*0.8525*	*0.7311*	*0*	*0*	*0*	*0.2384*	*0*	*0*	*0*
	0.0505	-0.02*	0.0005*	0.008***	0.5327***	1.2783***	0.0409***	0.0103	0.637***	1.0817***	0.0166*
2019	(0.0321)	(0.0104)	(0.0003)	(0.0023)	(0.0735)	(0.1391)	(0.0103)	(0.0363)	(0.0698)	(0.1424)	(0.0088)
	0.1174	*0.0553*	*0.0747*	*0.0005*	*0*	*0*	*0.0001*	*0.7761*	*0*	*0*	*0.0589*
	0.0242	-0.0187*	0.0006**	-0.0009	0.7544***	0.2283*	0.0344	-0.0348**	0.7261***	0.1634*	0.057
2020	(0.0379)	(0.0105)	(0.0003)	(0.0008)	(0.1114)	(0.1332)	(0.0666)	(0.0143)	(0.1207)	(0.0961)	(0.0682)
	0.5244	*0.076*	*0.0498*	*0.272*	*0*	*0.0878*	*0.6066*	*0.0155*	*0*	*0.0903*	*0.4045*
	0.0169	-0.0002***	0	0.0086***	0.7151***	0.1083	0.0861*	0.0167	0.7691***	0.2297	0.0673
2021	(0.0115)	(0)	(0.0001)	(0.0016)	(0.0953)	(0.448)	(0.0514)	(0.0122)	(0.0929)	(0.4649)	(0.0527)
	0.1431	*0*	*0.6747*	*0*	*0*	*0.8093*	*0.0955*	*0.1735*	*0*	*0.6217*	*0.2027*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 133. Real Estate sector, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.0595	-9.4291	0.1475**	0.0158***	0.2674	2.9934***	0.695***	0.1004**	0.0803	3.5866***	0.6056***
2014	(0.0402)	(5.6278)	(0.0713)	(0.001)	(0.1668)	(1.0337)	(0.1728)	(0.0392)	(0.1832)	(1.1504)	(0.1891)
	0.1499	*0.105*	*0.0479*	*0*	*0.1203*	*0.0073*	*0.0004*	*0.0155*	*0.6643*	*0.0039*	*0.0031*
	0.0894*	-0.4321**	-0.0443	0.4601	0.7189***	1.2168**	0.446**	0.0627***	0.6739***	1.3717***	0.4092***
2015	(0.0486)	(0.1857)	(0.0556)	(0.6875)	(0.1381)	(0.6037)	(0.1687)	(0.0216)	(0.1317)	(0.511)	(0.1425)
	0.0727	*0.0246*	*0.4301*	*0.5068*	*0*	*0.05*	*0.0113*	*0.0056*	*0*	*0.01*	*0.0061*
	-0.0455	-0.6018***	0.0968	1.1865	0.6842***	0.8259	0.5363**	0.0195	0.6467***	1.0286	0.598**
2016	(0.0486)	(0.1169)	(0.0679)	(1.321)	(0.1002)	(0.7206)	(0.2586)	(0.0188)	(0.0987)	(0.7366)	(0.2305)
	0.3533	*0*	*0.1596*	*0.3729*	*0*	*0.2566*	*0.0427*	*0.3048*	*0*	*0.1678*	*0.0119*
	0.0185	-0.518***	0.0007***	0.0928***	0.6678***	2.8722***	0.2476*	0.0195	0.6324***	2.9489***	0.2583**
2017	(0.0217)	(0.1308)	(0.0001)	(0.0034)	(0.1012)	(0.9053)	(0.1294)	(0.0217)	(0.1011)	(0.9239)	(0.1276)
	0.397	*0.0002*	*0*	*0*	*0*	*0.0022*	*0.0595*	*0.3699*	*0*	*0.002*	*0.0464*
	-0.0011	-0.0643***	0.0006***	0.0835***	0.4794***	1.7313**	0.1409*	-0.0005	0.4785***	1.7222**	0.1246
2018	(0.0165)	(0.0129)	(0.0001)	(0.0043)	(0.0801)	(0.7972)	(0.0809)	(0.0163)	(0.0791)	(0.7951)	(0.0811)
	0.9455	*0*	*0*	*0*	*0*	*0.0321*	*0.0844*	*0.9741*	*0*	*0.0325*	*0.1271*
	0.0258**	0.4119	0.0016***	0.0567***	0.2646	1.4872**	0.261*	0.0281**	0.2701	1.5482**	0.2716*
2019	(0.0104)	(0.557)	(0.0002)	(0.0057)	(0.1692)	(0.7425)	(0.1338)	(0.0115)	(0.1701)	(0.7801)	(0.1405)
	0.0141	*0.4609*	*0*	*0*	*0.1204*	*0.0473*	*0.0534*	*0.0156*	*0.1148*	*0.0493*	*0.0553*
	0.0019	-0.2082	0.0017***	0.0565***	0.4533***	1.2424***	-0.0573	0.0007	0.4468***	1.214***	-0.0481
2020	(0.0081)	(0.236)	(0.0003)	(0.0038)	(0.0518)	(0.4596)	(0.0988)	(0.0074)	(0.05)	(0.4572)	(0.098)
	0.8176	*0.3791*	*0*	*0*	*0*	*0.0077*	*0.5627*	*0.9249*	*0*	*0.0088*	*0.6241*
	-0.0034	-0.1036	0.0138***	-0.6066**	0.4963***	0.302*	-0.1172***	-0.0009	0.4528***	0.2935*	-0.1041***
2021	(0.0101)	(0.5738)	(0.0038)	(0.3037)	(0.0576)	(0.16)	(0.0209)	(0.0067)	(0.0611)	(0.1736)	(0.0208)
	0.7354	*0.8571*	*0.0005*	*0.0482*	*0*	*0.0617*	*0*	*0.8965*	*0*	*0.0936*	*0*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 134. Utilities sector, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.3876***	0.0555*	0.0003	-1.7081	0.3372	4.1207***	0.1035	0.4158***	0.4229**	3.1209**	0.1053
2010	(0.0921)	(0.0303)	(0.0004)	(1.4757)	(0.2228)	(0.9971)	(0.0774)	(0.1325)	(0.2043)	(1.2079)	(0.0976)
	0.0002	*0.0775*	*0.4517*	*0.2568*	*0.1413*	*0.0003*	*0.1918*	*0.0037*	*0.0469*	*0.0147*	*0.289*
	0.4381***	0.0471***	0	0.0122	0.3022*	4.2628***	-0.0232	0.4489***	0.3354*	4.1918***	0.0044
2011	(0.125)	(0.0158)	(0.0002)	(0.0121)	(0.1746)	(0.9746)	(0.064)	(0.1401)	(0.1896)	(1.0337)	(0.0763)
	0.0014	*0.0053*	*0.9298*	*0.3213*	*0.0931*	*0.0001*	*0.7193*	*0.0029*	*0.0857*	*0.0003*	*0.9538*
	0.3075**	0.0925***	-0.0001	-0.2155	-0.1208	1.9873***	0.2706***	0.3071**	-0.0624	1.3003***	0.3047***
2012	(0.1505)	(0.0181)	(0.0002)	(0.2661)	(0.0736)	(0.4821)	(0.0624)	(0.1161)	(0.0875)	(0.4326)	(0.0548)
	0.0499	*0*	*0.454*	*0.4243*	*0.1113*	*0.0003*	*0.0001*	*0.0124*	*0.4813*	*0.005*	*0*
	-0.147***	0.1167***	0.0001	0.1565	0.3278***	2.4973***	0.0842*	-0.0189**	0.2946**	2**	0.1668**
2013	(0.0319)	(0.0269)	(0.0001)	(0.3808)	(0.0841)	(0.5965)	(0.0442)	(0.0082)	(0.1171)	(0.8498)	(0.0612)
	0.0001	*0.0001*	*0.4776*	*0.6838*	*0.0005*	*0.0002*	*0.0658*	*0.0279*	*0.0168*	*0.0245*	*0.0101*
	-0.091***	0.0571**	0	0.1603	0.3647***	2.0226**	0.0163	-0.0246	0.3871***	1.9074**	0.052
2014	(0.0193)	(0.0212)	(0.0001)	(0.2737)	(0.1133)	(0.9508)	(0.0789)	(0.0149)	(0.1107)	(0.9102)	(0.0748)
	0	*0.0104*	*0.546*	*0.5615*	*0.0026*	*0.0398*	*0.8379*	*0.106*	*0.0011*	*0.0422*	*0.491*
	0.0107	-0.0198	0	0.4631***	0.2114*	0.2537***	-0.0264	0.0013	0.1131*	0.2401***	0.0126
2015	(0.0077)	(0.0156)	(0)	(0.1522)	(0.1086)	(0.0711)	(0.034)	(0.0056)	(0.0605)	(0.0525)	(0.0236)
	0.1729	*0.2121*	*0.9057*	*0.0039*	*0.0579*	*0.0009*	*0.442*	*0.8143*	*0.0678*	*0*	*0.5974*
	-0.002	-0.0248	0.0001*	0.3251**	0.8139***	1.3512*	0.0422	0.0006	0.7456***	1.4834**	0.0712
2016	(0.0074)	(0.0217)	(0.0001)	(0.1242)	(0.1347)	(0.7034)	(0.0753)	(0.0021)	(0.136)	(0.6918)	(0.0567)
	0.7877	*0.2581*	*0.0979*	*0.0114*	*0*	*0.06*	*0.5773*	*0.7806*	*0*	*0.0363*	*0.2144*
	-0.0177***	0.0046	0	0.1831*	1.125***	-0.5392	-0.1279***	-0.0119***	1.2158***	-0.7401	-0.1377***
2017	(0.0045)	(0.0135)	(0)	(0.1073)	(0.1684)	(0.8559)	(0.0338)	(0.0027)	(0.143)	(0.839)	(0.0326)
	0.0002	*0.734*	*0.1249*	*0.0928*	*0*	*0.5309*	*0.0003*	*0*	*0*	*0.3808*	*0.0001*
	-0.0258	-0.0228	0	0.1692	0.647***	1.6971***	0.0802**	-0.0364*	0.6261***	1.7668***	0.0685*
2018	(0.0156)	(0.0173)	(0)	(0.1144)	(0.1086)	(0.2408)	(0.0388)	(0.0202)	(0.1048)	(0.2305)	(0.0402)
	0.1033	*0.1911*	*0.719*	*0.1433*	*0*	*0*	*0.0421*	*0.0759*	*0*	*0*	*0.0929*
	-0.0014	-0.0193	0	0.1512	0.7482***	-0.003	0.0333	-0.0054*	0.7167***	0.0584	0.0292
2019	(0.005)	(0.0197)	(0)	(0.1458)	(0.1139)	(0.2342)	(0.0455)	(0.0029)	(0.1132)	(0.2452)	(0.0423)
	0.7785	*0.3309*	*0.9269*	*0.303*	*0*	*0.9899*	*0.4668*	*0.0612*	*0*	*0.8123*	*0.4919*
	0.0004	-0.0213	0	0.0859	0.5546***	0.8525	0.0895	-0.0032	0.4855***	1.1194	0.09
2020	(0.0056)	(0.0284)	(0.0001)	(0.2214)	(0.134)	(0.7178)	(0.0698)	(0.0032)	(0.1437)	(0.7591)	(0.0683)
	0.9395	*0.4565*	*0.7499*	*0.6991*	*0.0001*	*0.2384*	*0.2033*	*0.325*	*0.0011*	*0.144*	*0.1907*
	0.0058	-0.0464	0	0.3338	0.6171***	1.2239	0.0462	-0.0013	0.5812***	1.1867	0.0199
2021	(0.0063)	(0.0358)	(0.0002)	(0.2612)	(0.1341)	(0.8732)	(0.0621)	(0.003)	(0.1312)	(0.7577)	(0.0594)
	0.3667	*0.2004*	*0.8036*	*0.2055*	*0*	*0.1655*	*0.4591*	*0.6688*	*0*	*0.1217*	*0.7392*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 135. Australian sample, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	-0.0537	-0.0264	0.0133**	-0.0062**	1.3068***	-0.9859	0.349**	-0.091	1.3837***	-1.2101	0.3508**
2017	(0.1718)	(0.0717)	(0.0054)	(0.0023)	(0.1922)	(1.1376)	(0.1297)	(0.1708)	(0.1845)	(1.0639)	(0.1345)
	0.7572	*0.7164*	*0.0218*	*0.0103*	*0*	*0.3944*	*0.0125*	*0.5982*	*0*	*0.265*	*0.0144*
	0.2582	-0.023	0.0209***	-0.0041	0.5189**	2.0486	0.3484**	0.1985	0.6473**	1.5535	0.3617**
2018	(0.385)	(0.1364)	(0.0071)	(0.007)	(0.2504)	(1.5355)	(0.1592)	(0.3904)	(0.256)	(1.5708)	(0.171)
	0.5076	*0.867*	*0.0062*	*0.5653*	*0.0469*	*0.1922*	*0.0366*	*0.6145*	*0.0164*	*0.3299*	*0.042*
	0.7024*	-0.2763**	0.0299**	-0.0249	0.5163***	3.346**	0.47***	0.5987	0.5401***	3.685***	0.4642***
2019	(0.3733)	(0.1113)	(0.0147)	(0.0323)	(0.1718)	(1.6066)	(0.1199)	(0.3815)	(0.1637)	(1.2999)	(0.1167)
	0.0682	*0.018*	*0.0492*	*0.446*	*0.0049*	*0.0447*	*0.0004*	*0.1248*	*0.0021*	*0.0073*	*0.0003*
	1.2343***	0.0762	-0.0144	0.0138	0.3207	1.911**	0.3412***	1.2546***	0.3084	1.9181*	0.2926**
2020	(0.33)	(0.1346)	(0.0196)	(0.0102)	(0.1981)	(0.9433)	(0.1194)	(0.3442)	(0.2115)	(0.9719)	(0.1295)
	0.0005	*0.574*	*0.4672*	*0.1821*	*0.1127*	*0.049*	*0.0065*	*0.0007*	*0.1516*	*0.0545*	*0.0286*
	0.6571***	0.0697	0.0124*	-0.0109	0.7939***	1.61***	0.2*	0.5509***	0.8583***	1.6018***	0.2147*
2021	(0.2202)	(0.0687)	(0.0065)	(0.0066)	(0.1253)	(0.3905)	(0.1061)	(0.1782)	(0.1199)	(0.3693)	(0.1067)
	0.0052	*0.317*	*0.0642*	*0.1069*	*0*	*0.0002*	*0.068*	*0.0038*	*0*	*0.0001*	*0.0516*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 136. Brazilian sample, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	1.7046***	0.4308***	-0.0029**	0.0459***	0.3249**	0.7654	-0.0472	1.8415***	0.109	0.7735	0.0709
2013	(0.4464)	(0.1039)	(0.0012)	(0.0098)	(0.125)	(0.6096)	(0.0733)	(0.4273)	(0.0732)	(0.4738)	(0.0567)
	0.0007	*0.0003*	*0.0221*	*0.0001*	*0.015*	*0.22*	*0.5256*	*0.0002*	*0.1469*	*0.113*	*0.2204*
	1.8406***	0.1953**	-0.0021***	0.0165*	0.1665**	-0.1403	-0.0117	2.0221***	0.0363	0.0272	0.0252*
2014	(0.3885)	(0.0712)	(0.0007)	(0.0095)	(0.0712)	(0.2065)	(0.0237)	(0.4274)	(0.0457)	(0.1864)	(0.0146)
	0.0001	*0.0105*	*0.0051*	*0.0941*	*0.0268*	*0.5024*	*0.6252*	*0*	*0.4331*	*0.8849*	*0.0949*
	0.5721***	0.1301**	-0.0011***	0.0064**	0.1848***	0.4368***	-0.0318**	0.6031***	0.1304***	0.4058***	-0.0166
2015	(0.1511)	(0.051)	(0.0004)	(0.0026)	(0.0374)	(0.059)	(0.0141)	(0.1408)	(0.0401)	(0.0728)	(0.0118)
	0.0007	*0.0163*	*0.0037*	*0.0202*	*0*	*0*	*0.032*	*0.0002*	*0.0027*	*0*	*0.1688*
	0.7035***	-0.0102	0.0004	0.0429***	0.3896***	-0.0351	0.0094	0.725***	0.395***	-0.0441	0.0136
2016	(0.1372)	(0.1291)	(0.0004)	(0.0135)	(0.1393)	(0.0812)	(0.0337)	(0.1344)	(0.139)	(0.0742)	(0.0392)
	0	*0.9373*	*0.3299*	*0.0031*	*0.0082*	*0.6683*	*0.7813*	*0*	*0.0071*	*0.5556*	*0.7309*
	0.6212***	-0.0048	-0.0003	0.0719**	0.6982***	0.4118	-0.0628*	0.6074***	0.7208***	0.163	-0.0632*
2017	(0.2103)	(0.1544)	(0.0006)	(0.0322)	(0.1258)	(0.764)	(0.0365)	(0.1987)	(0.1219)	(0.9715)	(0.0367)
	0.0054	*0.9756*	*0.6135*	*0.0317*	*0*	*0.5931*	*0.0938*	*0.004*	*0*	*0.8676*	*0.093*
	0.2785	0.1078	0.0002	0.0683***	0.1698	3.238**	0.1474***	0.324	0.1713	3.498**	0.161***
2018	(0.2907)	(0.14)	(0.0009)	(0.0229)	(0.2267)	(1.2922)	(0.0409)	(0.2619)	(0.2454)	(1.4446)	(0.0438)
	0.3446	*0.4466*	*0.776*	*0.0052*	*0.4588*	*0.017*	*0.001*	*0.2237*	*0.4895*	*0.0203*	*0.0007*
	1.6035***	0.3467	-0.0028**	0.0281*	0.2332	3.1395***	0.1961***	1.4757***	0.3277	3.1102***	0.1845***
2019	(0.3674)	(0.292)	(0.0011)	(0.0144)	(0.2315)	(0.3835)	(0.0472)	(0.4189)	(0.2668)	(0.3547)	(0.0492)
	0.0002	*0.245*	*0.0182*	*0.0616*	*0.3224*	*0*	*0.0003*	*0.0013*	*0.2286*	*0*	*0.0007*
	1.185***	-0.065	-0.002***	0.0729	0.2172*	3.4427***	0.0907***	0.9426***	0.2604**	3.009***	0.1089***
2020	(0.1887)	(0.1208)	(0.0004)	(0.0437)	(0.116)	(0.3635)	(0.0233)	(0.1996)	(0.1155)	(0.3924)	(0.0334)
	0	*0.5942*	*0*	*0.1047*	*0.0699*	*0*	*0.0004*	*0*	*0.0304*	*0*	*0.0024*
	0.4863	-0.0022	0.0002***	0.0199***	0.6847***	-2.3145***	0.0876	0.5129	0.5726***	-2.0559***	0.1275**
2021	(0.2959)	(0.055)	(0)	(0.0066)	(0.1641)	(0.4884)	(0.055)	(0.31)	(0.1691)	(0.4691)	(0.0536)
	0.1128	*0.9682*	*0*	*0.0056*	*0.0003*	*0.0001*	*0.1239*	*0.1092*	*0.0021*	*0.0001*	*0.0243*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 137. Great Britain's sample, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.8231***	2.6946***	-0.0141	-5.7288***	0.0812	-0.0743	0.0172	0.8114***	0.0596	-0.0772	0.0367
2008	(0.2544)	(0.9553)	(0.009)	(1.8766)	(0.0623)	(0.0761)	(0.0373)	(0.2595)	(0.0746)	(0.0915)	(0.0385)
	0.003	*0.0086*	*0.1275*	*0.0048*	*0.2022*	*0.3372*	*0.6476*	*0.0038*	*0.43*	*0.4052*	*0.3478*
	1.2141***	0.8133***	0.0014	-2.7908***	0.367***	-0.0289	0.1253***	1.1819***	0.3729***	-0.0473	0.0646*
2009	(0.3095)	(0.2648)	(0.0047)	(0.6833)	(0.1095)	(0.2096)	(0.0384)	(0.2577)	(0.1038)	(0.1989)	(0.0356)
	0.0004	*0.0041*	*0.7727*	*0.0002*	*0.0019*	*0.8909*	*0.0024*	*0*	*0.0009*	*0.8133*	*0.0769*
	0.7594**	-0.2737	0.0095	0.0769**	0.7729***	0.2061	0.0524	0.6714**	0.8187***	0.2284	0.0643*
2010	(0.2918)	(0.2763)	(0.0058)	(0.0379)	(0.1268)	(0.1882)	(0.0342)	(0.2926)	(0.128)	(0.1855)	(0.0336)
	0.0133	*0.3282*	*0.1102*	*0.0497*	*0*	*0.2806*	*0.1337*	*0.0271*	*0*	*0.2255*	*0.063*
	-0.088	0.3187*	-0.0046	-0.0777**	0.5628***	2.329**	0.1191**	-0.0167	0.5653***	2.5932**	0.0714*
2011	(0.2679)	(0.1639)	(0.0041)	(0.0359)	(0.1599)	(0.9823)	(0.0465)	(0.2497)	(0.1595)	(1.0327)	(0.0361)
	0.7444	*0.0593*	*0.2695*	*0.0368*	*0.0011*	*0.0229*	*0.0145*	*0.9469*	*0.001*	*0.0161*	*0.0549*
	0.9236***	-0.0424	0.0059**	-0.0191***	0.5063***	5.6712***	-0.0145	0.9061***	0.4636***	5.0103***	0.0023
2012	(0.2162)	(0.0377)	(0.0024)	(0.0034)	(0.1686)	(1.601)	(0.0531)	(0.232)	(0.1612)	(1.5067)	(0.0623)
	0.0001	*0.2668*	*0.016*	*0*	*0.0042*	*0.0009*	*0.786*	*0.0003*	*0.0059*	*0.0016*	*0.9704*
	0.4891	-0.2662*	0.0195***	-0.0026	0.9961***	2.4545*	0.0417	0.5654	1.0917***	2.019**	0.0166
2013	(0.3524)	(0.1508)	(0.0034)	(0.0101)	(0.1333)	(1.4601)	(0.0567)	(0.3492)	(0.1074)	(0.8934)	(0.0529)
	0.1712	*0.0835*	*0*	*0.7984*	*0*	*0.0989*	*0.4653*	*0.1113*	*0*	*0.0279*	*0.7557*
	1.2392***	-0.1213***	0.01**	-0.006	1.0552***	-0.0214	-0.048	1.2645***	0.7711***	0.8802*	-0.0282
2014	(0.4109)	(0.0416)	(0.0039)	(0.0038)	(0.099)	(0.4309)	(0.0399)	(0.3394)	(0.0888)	(0.4875)	(0.0351)
	0.004	*0.0053*	*0.0139*	*0.1206*	*0*	*0.9605*	*0.2351*	*0.0005*	*0*	*0.0765*	*0.4257*
	2.2618***	-0.0833**	0.0027	-0.0009	0.4265***	0.3312	0.0323	1.8721***	0.5094***	0.761***	-0.0331
2015	(0.5137)	(0.0357)	(0.0027)	(0.0058)	(0.1211)	(0.2324)	(0.0497)	(0.5226)	(0.1354)	(0.2271)	(0.0608)
	0.0001	*0.0233*	*0.3269*	*0.8771*	*0.0009*	*0.16*	*0.5185*	*0.0007*	*0.0004*	*0.0015*	*0.5885*
	0.8121**	-0.0477	0.0097*	-0.0068***	0.6621***	0.1344	0.0413	0.4805	0.7016***	0.1874**	0.0823
2016	(0.3354)	(0.0482)	(0.0057)	(0.0022)	(0.0598)	(0.1163)	(0.0433)	(0.3586)	(0.0629)	(0.09)	(0.0547)
	0.0189	*0.3269*	*0.0962*	*0.0032*	*0*	*0.2529*	*0.3447*	*0.1857*	*0*	*0.042*	*0.1386*
	1.9902***	0.0115	0.0098***	-0.0089**	0.5553***	-0.051	-0.2744***	2.1782***	0.461***	0.7993	-0.2928***
2017	(0.5966)	(0.0804)	(0.0034)	(0.004)	(0.1247)	(0.9411)	(0.0591)	(0.663)	(0.1592)	(0.5316)	(0.0577)
	0.0015	*0.8865*	*0.0062*	*0.0307*	*0*	*0.9569*	*0*	*0.0017*	*0.0052*	*0.1378*	*0*
	0.0799	0.1496	0.0033	-0.0274	0.4371***	2.1556***	0.2212***	0.0142	0.4716***	1.9186**	0.2505***
2018	(0.227)	(0.2023)	(0.0023)	(0.0437)	(0.077)	(0.7527)	(0.0502)	(0.2494)	(0.0797)	(0.8318)	(0.052)
	0.7262	*0.4625*	*0.167*	*0.5337*	*0*	*0.0058*	*0*	*0.9547*	*0*	*0.0245*	*0*
	0.0907	-0.2369	0.0144***	0.0099	0.1634	0.4888	0.3365***	0.0477	0.1754	0.5114	0.3299***
2019	(0.327)	(0.2441)	(0.004)	(0.0361)	(0.1416)	(0.4619)	(0.0755)	(0.3351)	(0.1438)	(0.426)	(0.0751)
	0.7824	*0.3354*	*0.0007*	*0.7857*	*0.2528*	*0.2939*	*0*	*0.8872*	*0.227*	*0.2342*	*0*
	0.3129	-0.2206	0.026***	0.0135	0.2844**	0.6092*	0.1221**	0.4353	0.2478*	0.594*	0.0952
2020	(0.195)	(0.1816)	(0.0068)	(0.0376)	(0.1242)	(0.3259)	(0.0557)	(0.2681)	(0.1275)	(0.3188)	(0.066)
	0.113	*0.2284*	*0.0003*	*0.7211*	*0.025*	*0.0657*	*0.0316*	*0.1088*	*0.0557*	*0.0664*	*0.1533*
	-0.0913	0.2219*	0.0005***	0.0052	0.8872***	0.0332	0.1426**	-0.0873	0.858***	-0.068	0.1788**
2021	(0.2234)	(0.1118)	(0.0001)	(0.0057)	(0.102)	(0.0996)	(0.0655)	(0.2723)	(0.1197)	(0.0935)	(0.0768)
	0.6842	*0.0517*	*0*	*0.3633*	*0*	*0.74*	*0.0335*	*0.7497*	*0*	*0.4692*	*0.023*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 138. Canadian sample, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	-2.398***	-0.096***	0.012***	0	0.4639***	-1.2701***	0.6948***	-2.1915***	0.5099***	-1.5802***	0.6923***
2016	(0.3618)	(0.0175)	(0.0021)	(0.0025)	(0.0672)	(0.2657)	(0.0618)	(0.4908)	(0.0839)	(0.2735)	(0.0791)
	0	*0*	*0*	*0.9955*	*0*	*0.0001*	*0*	*0.0001*	*0*	*0*	*0*
	-1.6502**	-0.1161**	0.0165***	0.0099**	0.0729	0.3944***	0.6321***	-0.6038	-0.0562	0.8232*	0.6033***
2017	(0.6925)	(0.0424)	(0.005)	(0.0042)	(0.0962)	(0.1221)	(0.1402)	(0.8757)	(0.1398)	(0.4398)	(0.1417)
	0.0237	*0.0102*	*0.0023*	*0.0263*	*0.4548*	*0.003*	*0.0001*	*0.4953*	*0.69*	*0.0701*	*0.0002*
	0.1546	-0.003	-0.005	-0.0006	0.5272***	1.596	0.2849**	-0.4565	0.4677***	1.6495	0.3303**
2018	(0.5517)	(0.0545)	(0.0046)	(0.0049)	(0.1079)	(0.97)	(0.1382)	(0.322)	(0.0849)	(0.9785)	(0.134)
	0.7811	*0.9558*	*0.284*	*0.8971*	*0*	*0.1103*	*0.048*	*0.1656*	*0*	*0.1013*	*0.019*
	1.1005**	-0.1208	0.0045**	-0.0114**	0.4466***	1.1824*	0.4656***	0.6143*	0.2941**	1.434***	0.5294***
2019	(0.4278)	(0.0936)	(0.0018)	(0.0042)	(0.1521)	(0.5999)	(0.1518)	(0.3616)	(0.1341)	(0.4186)	(0.142)
	0.0146	*0.2058*	*0.0187*	*0.0102*	*0.0059*	*0.0569*	*0.0042*	*0.0978*	*0.0346*	*0.0015*	*0.0006*
	0.2336	-0.2267***	0.0088***	-0.0001	0.5497***	-1.1543	0.1839**	-0.1022	0.5194***	-1.6098**	0.2515***
2020	(0.25)	(0.0503)	(0.002)	(0.0036)	(0.1275)	(0.7551)	(0.0901)	(0.1538)	(0.1105)	(0.7521)	(0.0902)
	0.3557	*0.0001*	*0.0001*	*0.9817*	*0.0001*	*0.134*	*0.0479*	*0.51*	*0*	*0.0379*	*0.0078*
	-0.1037	0.1846***	-0.0077***	-0.0034	1.329***	0.1525*	0.2548**	-0.1467	1.2537***	-0.0166	0.1448
2021	(0.1362)	(0.0219)	(0.0017)	(0.0031)	(0.1455)	(0.0853)	(0.1119)	(0.1116)	(0.1231)	(0.086)	(0.1493)
	0.4516	*0*	*0.0001*	*0.277*	*0*	*0.0822*	*0.0289*	*0.1964*	*0*	*0.8477*	*0.338*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 139. Chinese sample, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	-0.0811**	0.0077	-0.0001	0.0621***	0.566***	0.0383	0.0249	-0.0711**	0.5616***	0.0473	0.0272
2018	(0.0305)	(0.0296)	(0.0005)	(0.0084)	(0.1285)	(0.0893)	(0.0149)	(0.0308)	(0.124)	(0.0943)	(0.0164)
	0.0102	*0.7955*	*0.9067*	*0*	*0.0001*	*0.6701*	*0.1007*	*0.0245*	*0*	*0.6177*	*0.102*
	0.0227***	-0.0139	0.0002	0.0423***	0.5395***	0.3037**	0.0349	0.023***	0.5442***	0.3111**	0.0353
2019	(0.0073)	(0.0181)	(0.0003)	(0.0118)	(0.066)	(0.1402)	(0.0317)	(0.0073)	(0.067)	(0.1402)	(0.0321)
	0.0026	*0.4465*	*0.5465*	*0.0006*	*0*	*0.0336*	*0.2741*	*0.0022*	*0*	*0.0295*	*0.274*
	0.0021	0.0053	-0.0001	0	0.2432**	0.3167	0.1153**	0.0021	0.2462**	0.3199	0.1167**
2020	(0.0181)	(0.0085)	(0.0001)	(0.0002)	(0.0999)	(0.3428)	(0.0578)	(0.0182)	(0.0983)	(0.3431)	(0.0571)
	0.9065	*0.5343*	*0.5613*	*0.929*	*0.0169*	*0.3582*	*0.0489*	*0.9097*	*0.014*	*0.3536*	*0.0439*
	0.0192	0.0001***	0.0002*	0.0859***	0.2161***	0.2168	0.0103	0.0172	0.2361***	0.1657	0.0107
2021	(0.0239)	(0)	(0.0001)	(0.0176)	(0.0663)	(0.4627)	(0.0182)	(0.0253)	(0.0657)	(0.4649)	(0.019)
	0.4237	*0.0016*	*0.0911*	*0*	*0.0015*	*0.6403*	*0.5718*	*0.4988*	*0.0005*	*0.7222*	*0.5758*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 140. French sample, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	5.7234	0.0633	-0.0003	-0.9398**	0.2154	1.9873*	0.3176**	6.8013*	0.1598	2.1637**	0.2572***
2014	(3.9304)	(0.0677)	(0.0002)	(0.3544)	(0.2654)	(1.0637)	(0.1225)	(3.772)	(0.2237)	(1.0157)	(0.0932)
	0.1557	*0.3567*	*0.1718*	*0.0127*	*0.4233*	*0.0715*	*0.0146*	*0.0805*	*0.4801*	*0.0407*	*0.0094*
	4.065*	0.1169	0.0002	-0.5809**	0.5195*	5.4658	0.0673	4.2829**	0.5308**	5.0949*	0.0555
2015	(2.2147)	(0.1062)	(0.0001)	(0.2399)	(0.2878)	(3.4212)	(0.1167)	(1.9393)	(0.251)	(2.9248)	(0.0899)
	0.0755	*0.279*	*0.1713*	*0.0212*	*0.0801*	*0.1197*	*0.568*	*0.0337*	*0.0414*	*0.0901*	*0.5411*
	2.0214	-0.0076	-0.0004	-0.1865	0.6497***	0.9239***	0.2313***	2.1094	0.6301***	0.8762***	0.209***
2016	(1.4838)	(0.1105)	(0.0003)	(0.2001)	(0.0676)	(0.0965)	(0.0467)	(1.4026)	(0.0639)	(0.0734)	(0.0364)
	0.1799	*0.9458*	*0.1906*	*0.3565*	*0*	*0*	*0*	*0.1391*	*0*	*0*	*0*
	3.3087**	-0.1313	0.0002	0.1588	0.7974***	1.9038***	0.2318***	3.2046**	0.7901***	1.957***	0.2214***
2017	(1.3905)	(0.1652)	(0.0005)	(0.2008)	(0.1212)	(0.1945)	(0.0604)	(1.3078)	(0.1146)	(0.1796)	(0.0469)
	0.0216	*0.4309*	*0.7251*	*0.4333*	*0*	*0*	*0.0004*	*0.018*	*0*	*0*	*0*
	2.2072*	0.1898	-0.0005	-0.1809	0.4969***	1.9795***	0.1086***	2.6627**	0.5069***	1.7553***	0.1142***
2018	(1.2792)	(0.1151)	(0.0003)	(0.1663)	(0.0673)	(0.1642)	(0.0172)	(1.204)	(0.0642)	(0.1738)	(0.0156)
	0.091	*0.1058*	*0.1493*	*0.2822*	*0*	*0*	*0*	*0.0316*	*0*	*0*	*0*
	6.3402**	0.0209	0.0002	0.4377	0.5623***	1.6138***	0.0424**	7.2262***	0.5982***	1.1927*	0.045*
2019	(2.4664)	(0.2181)	(0.0006)	(0.4339)	(0.1421)	(0.5754)	(0.0173)	(2.6443)	(0.1513)	(0.6382)	(0.0226)
	0.0135	*0.9241*	*0.7536*	*0.3184*	*0.0003*	*0.0074*	*0.0183*	*0.0087*	*0.0002*	*0.0676*	*0.0517*
	2.2542***	0.2605	0.0001	-1.1988**	0.6908***	1.618***	0.094***	2.7958***	0.576***	1.7441***	0.0985***
2020	(0.5792)	(0.2129)	(0.0005)	(0.5266)	(0.0849)	(0.3611)	(0.0215)	(0.7844)	(0.123)	(0.4608)	(0.0264)
	0.0003	*0.227*	*0.7942*	*0.0273*	*0*	*0*	*0.0001*	*0.0008*	*0*	*0.0004*	*0.0005*
	0.8912	0.5478***	-0.0002	-0.5064	0.5517***	0.2549**	0.1468*	0.6827	0.5745***	0.1614	0.1684**
2021	(0.8574)	(0.112)	(0.0003)	(0.3187)	(0.0862)	(0.0969)	(0.0811)	(0.7861)	(0.0957)	(0.1717)	(0.0694)
	0.305	*0*	*0.4143*	*0.1201*	*0*	*0.0121*	*0.078*	*0.3901*	*0*	*0.3527*	*0.0197*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 141. German sample, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.8885	0.4866*	-0.0035*	-5.6061**	0.4414**	1.5303***	0.2839***	2.6321	0.4787**	1.4591***	0.1685**
2016	(3.7977)	(0.2393)	(0.0018)	(2.3844)	(0.181)	(0.2355)	(0.0763)	(2.2986)	(0.1804)	(0.2436)	(0.0622)
	0.8167	*0.0516*	*0.0634*	*0.026*	*0.0213*	*0*	*0.0009*	*0.2609*	*0.0125*	*0*	*0.0108*
	4.582	-0.4115**	0.0033	4.2149***	0.6683**	0.1799*	0.1765*	6.8859*	0.5938***	0.1532*	0.1588*
2017	(3.305)	(0.1554)	(0.0021)	(1.4275)	(0.2445)	(0.089)	(0.0867)	(3.6972)	(0.2067)	(0.08)	(0.0802)
	0.1755	*0.0126*	*0.1264*	*0.006*	*0.0103*	*0.0519*	*0.0505*	*0.0712*	*0.007*	*0.0638*	*0.056*
	6.2958***	-0.0839	0.001	0.7398**	0.0827	0.2224	0.1484***	6.3949***	0.0624	0.2718*	0.1629***
2018	(2.0758)	(0.0627)	(0.0013)	(0.284)	(0.1134)	(0.1674)	(0.0333)	(2.1898)	(0.1084)	(0.1588)	(0.0358)
	0.0046	*0.1896*	*0.4395*	*0.0135*	*0.471*	*0.1927*	*0.0001*	*0.0059*	*0.5684*	*0.0954*	*0.0001*
	-0.0372	-0.1777***	0.0052***	0.6251***	0.6036**	-0.2531***	0.0121	0.2443	0.5276***	-0.2597***	0.0416
2019	(0.1654)	(0.0652)	(0.0016)	(0.1322)	(0.2249)	(0.0547)	(0.0637)	(0.149)	(0.1929)	(0.0557)	(0.058)
	0.8232	*0.0093*	*0.003*	*0*	*0.0104*	*0*	*0.8502*	*0.1079*	*0.0089*	*0*	*0.4772*
	-0.3213	-0.436	0.0088**	0.5824	0.4604**	0.8375**	-0.0164	0.3188**	0.3204	0.7025*	-0.0448
2020	(0.4248)	(0.3195)	(0.0043)	(0.3476)	(0.1754)	(0.3613)	(0.0859)	(0.1288)	(0.2273)	(0.3561)	(0.062)
	0.4539	*0.1799*	*0.046*	*0.1015*	*0.0121*	*0.0255*	*0.8495*	*0.0172*	*0.1656*	*0.0548*	*0.4736*
	-0.1868**	-0.1622**	0.0048***	-0.2901*	0.5899***	2.651***	0.2589***	0.1939**	0.58***	2.7332***	0.2298***
2021	(0.08)	(0.0741)	(0.0008)	(0.1696)	(0.1773)	(0.3955)	(0.0584)	(0.0728)	(0.1503)	(0.335)	(0.0505)
	0.0251	*0.0349*	*0*	*0.0955*	*0.002*	*0*	*0.0001*	*0.0111*	*0.0004*	*0*	*0*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 142. Hong Kong sample, three variables, value regression models by years

Year	Environmental One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	Environmental One / Price	BVPS / Price	EPS / Price	Revenue / Price
	-0.0108	0.0704	-0.0025	0.8316*	0.4497***	-0.0658	0.2953***	-0.0179	0.469***	-0.0224	0.2852***
2018	(0.0122)	(0.1652)	(0.0026)	(0.4487)	(0.0908)	(0.8705)	(0.0806)	(0.0176)	(0.0973)	(0.9424)	(0.0835)
	0.3825	*0.6725*	*0.3414*	*0.072*	*0*	*0.9402*	*0.0008*	*0.3148*	*0*	*0.9812*	*0.0015*
	0.019*	0.4194**	-0.0013***	0.749**	0.3905***	0.0388	0.0036	-0.002	0.4253***	0.1281	0.0199
2019	(0.0099)	(0.1823)	(0.0003)	(0.3531)	(0.0426)	(0.21)	(0.0474)	(0.0157)	(0.0428)	(0.2692)	(0.0426)
	0.0619	*0.0266*	*0.0001*	*0.04*	*0*	*0.8545*	*0.9396*	*0.8989*	*0*	*0.6365*	*0.6426*
	0.0056***	-0.0103	0.002**	0.0173	0.3762***	-0.0751*	0.0088	0.0058***	0.3743***	-0.0768*	0.0225
2020	(0.0015)	(0.1041)	(0.0008)	(0.0915)	(0.0425)	(0.043)	(0.0454)	(0.0014)	(0.0443)	(0.0429)	(0.0453)
	0.0004	*0.9213*	*0.0174*	*0.8508*	*0*	*0.0871*	*0.847*	*0.0001*	*0*	*0.0791*	*0.6215*
	-0.0159	0.5275	-0.0022	0.0114***	0.3109***	0.1646	0.1417*	-0.0149	0.3318***	0.0706	0.1507**
2021	(0.0251)	(0.5193)	(0.002)	(0.0024)	(0.0447)	(0.3436)	(0.076)	(0.0258)	(0.0442)	(0.3726)	(0.068)
	0.5279	*0.3145*	*0.2712*	*0*	*0*	*0.6339*	*0.0683*	*0.5666*	*0*	*0.8504*	*0.031*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 143. Indian sample, three variables, value regression models by years

Year	Environmental One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	Environmental One / Price	BVPS / Price	EPS / Price	Revenue / Price
	1.7666***	0.1333***	-0.0011***	-0.0276***	-0.6056	10.542***	0.0355	1.3499***	0.1835	4.2822**	0.2711***
2017	(0.476)	(0.0276)	(0.0002)	(0.0082)	(0.4391)	(1.9937)	(0.087)	(0.4615)	(0.4169)	(1.5939)	(0.0417)
	0.0011	*0.0001*	*0*	*0.0026*	*0.1806*	*0*	*0.6873*	*0.0069*	*0.6633*	*0.0122*	*0*
	0.3067*	0.0962***	-0.0009***	-0.0654***	0.0354	10.237***	-0.1298	0.227	0.2983	6.1236**	0.0188
2019	(0.1743)	(0.0155)	(0.0002)	(0.0219)	(0.2049)	(2.5471)	(0.1273)	(0.3523)	(0.2816)	(2.5437)	(0.1287)
	0.0887	*0*	*0*	*0.0056*	*0.8639*	*0.0004*	*0.3161*	*0.5239*	*0.2971*	*0.0218*	*0.8849*
	0.0256	0.0787***	-0.0004***	0.0613***	0.6172***	6.2938***	0.0304	0.0602	0.7741***	3.6896*	0.0721
2020	(0.0519)	(0.0151)	(0.0001)	(0.0129)	(0.1282)	(1.4427)	(0.0522)	(0.076)	(0.1524)	(1.9516)	(0.0658)
	0.6249	*0*	*0.0009*	*0*	*0*	*0.0001*	*0.5645*	*0.4337*	*0*	*0.0672*	*0.2807*
	0.4146	0.1316**	0	-0.0967	1.1007**	4.0646	0.2006	0.4318	1.1871**	4.2727	0.2091
2021	(0.3016)	(0.0589)	(0.0002)	(0.0817)	(0.5058)	(3.7414)	(0.331)	(0.2916)	(0.5175)	(3.3342)	(0.3356)
	0.1806	*0.0339*	*0.853*	*0.2467*	*0.0385*	*0.2869*	*0.5495*	*0.1491*	*0.029*	*0.2098*	*0.5381*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 144. Italian sample, three variables, value regression models by years

Year				Environmental					Environmental		
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.1502	0.0457**	0.0016**	-0.0463	0.2724***	1.3964***	0.1678*	0.165	0.3005***	1.5291***	0.148***
2018	(0.1093)	(0.0187)	(0.0007)	(0.0685)	(0.0573)	(0.225)	(0.0951)	(0.1115)	(0.0578)	(0.2552)	(0.0501)
	0.1795	*0.0208*	*0.023*	*0.504*	*0*	*0*	*0.0879*	*0.1486*	*0*	*0*	*0.0058*
	-0.022	-0.0237***	0.0037***	-0.0237	0.4033***	-0.2877	0.2242***	0.1399	0.3875***	-0.2254***	0.1531**
2019	(0.1949)	(0.0049)	(0.0011)	(0.0867)	(0.0909)	(0.2859)	(0.0595)	(0.2171)	(0.0788)	(0.0713)	(0.0616)
	0.9107	*0*	*0.0015*	*0.7857*	*0.0001*	*0.32*	*0.0005*	*0.5227*	*0*	*0.0028*	*0.0168*
	0.0824	-0.0104*	0.006***	0.1593**	0.2353***	2.0952	0.1495***	0.3516	0.0926	1.9217	0.2044***
2020	(0.1485)	(0.0052)	(0.0016)	(0.072)	(0.0857)	(1.2673)	(0.0539)	(0.2184)	(0.079)	(1.465)	(0.0427)
	0.5819	*0.0527*	*0.0007*	*0.0328*	*0.0091*	*0.1063*	*0.0085*	*0.115*	*0.2482*	*0.1967*	*0*
	0.0409	0.09***	0.0045***	0.1273***	0.4049***	-0.0944	0.1496**	0.0982	0.3992***	-0.0867	0.1826***
2021	(0.1567)	(0.0235)	(0.0011)	(0.0384)	(0.1)	(0.4178)	(0.0599)	(0.1815)	(0.1049)	(0.4425)	(0.0657)
	0.7954	*0.0005*	*0.0004*	*0.0021*	*0.0003*	*0.8225*	*0.0172*	*0.5915*	*0.0005*	*0.8457*	*0.0083*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 145. South Korean sample, three variables, value regression models by years

Year				Environmental					Environmental		
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	1.9455	0.0533**	-0.0009*	0.9595*	0.4149***	0.2237	-0.0042	4.2093***	0.3603***	0.1058	0.0009
2015	(2.0829)	(0.023)	(0.0005)	(0.5331)	(0.0764)	(0.1847)	(0.0287)	(1.5078)	(0.082)	(0.1359)	(0.0253)
	0.3596	*0.0292*	*0.0661*	*0.0845*	*0*	*0.2378*	*0.8853*	*0.0095*	*0.0002*	*0.4429*	*0.9718*
	1.4309***	0.0503*	-0.0012***	-0.1729*	0.3655***	1.9358***	0.0791***	1.4503***	0.366***	1.8578***	0.0727***
2016	(0.192)	(0.0297)	(0.0003)	(0.1002)	(0.0371)	(0.2025)	(0.0111)	(0.2066)	(0.0365)	(0.1879)	(0.0114)
	0	*0.0984*	*0.0001*	*0.0929*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	1.0317***	0.102**	-0.0003	-0.1834	0.4385***	1.0161***	0.0444	1.0525***	0.4267***	1.0014***	0.0615
2017	(0.1804)	(0.0427)	(0.0004)	(0.1385)	(0.0766)	(0.1677)	(0.0325)	(0.2112)	(0.0804)	(0.186)	(0.0383)
	0	*0.0213*	*0.4298*	*0.1923*	*0*	*0*	*0.1788*	*0*	*0*	*0*	*0.1147*
	0.8442***	0.077	0.0013**	-0.3306	0.1977***	0.819**	0.0679**	0.7388***	0.1859***	0.9469**	0.0776**
2018	(0.1596)	(0.0557)	(0.0005)	(0.2304)	(0.062)	(0.3409)	(0.0314)	(0.1329)	(0.0635)	(0.4295)	(0.0318)
	0	*0.1728*	*0.0239*	*0.1575*	*0.0025*	*0.02*	*0.0354*	*0*	*0.005*	*0.0318*	*0.0182*
	0.4458***	0.034	0.0002	-0.2311*	0.4297***	-0.027	-0.0132	0.4541***	0.4306***	0.0427	-0.0179
2019	(0.0962)	(0.0363)	(0.0005)	(0.1352)	(0.0508)	(0.0669)	(0.0274)	(0.0948)	(0.0516)	(0.0601)	(0.0258)
	0	*0.3517*	*0.618*	*0.0924*	*0*	*0.6881*	*0.6329*	*0*	*0*	*0.4802*	*0.4898*
	0.7968***	0.0218	-0.0007	-0.0605	0.371***	-0.3334	0.05	0.8171***	0.3787***	-0.3706	0.0449
2020	(0.2775)	(0.0469)	(0.0006)	(0.1825)	(0.081)	(0.755)	(0.0475)	(0.2799)	(0.0763)	(0.7092)	(0.0425)
	0.0055	*0.6439*	*0.2245*	*0.7412*	*0*	*0.6603*	*0.2968*	*0.0047*	*0*	*0.603*	*0.2941*
	1.3959***	0.3617***	0.0001	-1.1731***	0.3271***	0.6606	0.0077	1.4677***	0.3122***	0.6272	0.0268
2021	(0.3329)	(0.0945)	(0.0004)	(0.2712)	(0.0685)	(0.4865)	(0.0423)	(0.3421)	(0.0713)	(0.4852)	(0.0423)
	0.0001	*0.0003*	*0.7575*	*0.0001*	*0*	*0.1797*	*0.8561*	*0.0001*	*0*	*0.2009*	*0.5288*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 146. Japanese sample, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
2007	4.8558*** (0.8822) *0*	0.0658** (0.0282) *0.0258*	-0.0005 (0.0012) *0.6831*	-1.4642*** (0.3506) *0.0002*	0.4066** (0.1806) *0.0311*	4.7698*** (0.9981) *0*	0.1117** (0.0461) *0.021*	4.2215*** (1.2858) *0.0023*	0.5006** (0.1945) *0.0143*	4.4274*** (1.0959) *0.0003*	0.0485 (0.0645) *0.4573*
2008	3.4657*** (0.8873) *0.0003*	0.122*** (0.0232) *0*	0.0013 (0.001) *0.1753*	1.231 (0.9183) *0.1862*	0.0476 (0.1507) *0.7532*	2.4587*** (0.5467) *0*	0.0126 (0.0513) *0.8072*	3.4398*** (1.065) *0.0021*	0.1145 (0.1654) *0.492*	2.9508*** (0.6834) *0.0001*	0.0162 (0.0488) *0.7417*
2009	0.8361* (0.427) *0.0558*	0.0147 (0.0166) *0.3804*	0.0015 (0.0011) *0.1895*	-0.0251 (0.6283) *0.9683*	0.613*** (0.1384) *0.0001*	1.7717*** (0.5294) *0.0016*	0.1219** (0.0491) *0.0164*	0.825* (0.4252) *0.0577*	0.6381*** (0.1354) *0*	1.865*** (0.5161) *0.0007*	0.128** (0.0506) *0.0145*
2010	1.8662** (0.9163) *0.0464*	0.0103 (0.0219) *0.6386*	0.001 (0.0012) *0.3845*	0.4435 (0.588) *0.4538*	0.7896*** (0.1781) *0*	2.2094 (1.4591) *0.1356*	-0.0227 (0.0677) *0.7382*	1.8186** (0.8824) *0.0437*	0.8193*** (0.1617) *0*	2.4853 (1.5263) *0.1088*	-0.0187 (0.064) *0.7714*
2011	1.6564*** (0.4791) *0.001*	-0.0007 (0.0123) *0.9563*	-0.0003 (0.0007) *0.6387*	0.397 (0.2583) *0.1295*	0.4312*** (0.0781) *0*	3.8315*** (0.4794) *0*	0.0296 (0.03) *0.3284*	1.6003*** (0.487) *0.0017*	0.4358*** (0.073) *0*	3.8899*** (0.4629) *0*	0.0332 (0.03) *0.2729*
2012	1.5951** (0.6415) *0.0156*	0.0063 (0.0159) *0.6952*	-0.0005 (0.001) *0.6543*	-0.282 (0.1926) *0.1482*	0.5065*** (0.1157) *0*	0.5983*** (0.106) *0*	0.0563 (0.0358) *0.1212*	1.4435** (0.6872) *0.0396*	0.5075*** (0.0953) *0*	0.5681*** (0.0999) *0*	0.0504 (0.0331) *0.132*
2013	1.982** (0.8029) *0.0161*	0.0263 (0.0164) *0.1138*	-0.0005 (0.0015) *0.7208*	0.0184 (0.1204) *0.879*	0.6401*** (0.1407) *0*	0.7283*** (0.2543) *0.0056*	0.0469 (0.0523) *0.3734*	1.74** (0.8203) *0.0374*	0.6765*** (0.1349) *0*	0.6122** (0.2627) *0.0226*	0.0464 (0.0518) *0.3736*
2014	0.0541 (1.0294) *0.9582*	0.0278* (0.0159) *0.0852*	-0.0005 (0.0011) *0.6175*	-0.0495 (0.0944) *0.6019*	0.7175*** (0.1224) *0*	2.3292*** (0.8738) *0.0094*	0.0204 (0.032) *0.5254*	-0.0257 (0.9711) *0.9789*	0.7468*** (0.1122) *0*	1.9062** (0.8239) *0.0233*	0.0258 (0.0318) *0.4199*
2015	0.2087 (1.1435) *0.8556*	0.0293** (0.0145) *0.0456*	-0.0011 (0.001) *0.2822*	0.0629 (0.142) *0.6591*	0.6936*** (0.1518) *0*	1.0392 (0.6876) *0.1343*	0.0983* (0.0496) *0.0506*	0.175 (1.1037) *0.8744*	0.7053*** (0.1452) *0*	0.989 (0.666) *0.141*	0.0979* (0.051) *0.0579*
2016	0.074 (1.0707) *0.945*	-0.0262* (0.0139) *0.062*	-0.0011 (0.0007) *0.1211*	-0.0049 (0.1818) *0.9787*	0.6326*** (0.13) *0*	1.6508* (0.9945) *0.1*	0.169*** (0.0633) *0.0088*	0.3118 (1.0661) *0.7705*	0.5772*** (0.1299) *0*	1.6891* (0.9913) *0.0914*	0.1596*** (0.0588) *0.0077*
2017	0.9494 (1.4559) *0.5156*	-0.0585*** (0.0209) *0.0059*	-0.0007 (0.001) *0.4712*	0.2127 (0.3073) *0.4902*	0.8256*** (0.1866) *0*	0.6445 (1.1581) *0.5789*	0.1255** (0.0588) *0.035*	1.067 (1.367) *0.4366*	0.8014*** (0.1723) *0*	0.5822 (1.1362) *0.6093*	0.1089* (0.0587) *0.0659*
2018	0.9013 (0.9191) *0.3287*	-0.0154 (0.0178) *0.3892*	-0.0003 (0.0003) *0.4014*	0.0303 (0.2265) *0.8937*	0.6094*** (0.1008) *0*	2.7011*** (0.8124) *0.0012*	-0.0187 (0.037) *0.6153*	0.9674 (0.9117) *0.2906*	0.6005*** (0.0966) *0*	2.6946*** (0.7938) *0.0009*	-0.023 (0.0369) *0.5336*
2019	2.0144 (1.3232) *0.1303*	-0.0652*** (0.0201) *0.0015*	-0.0006 (0.0006) *0.3109*	-0.0209 (0.1966) *0.9153*	0.7645*** (0.1855) *0.0001*	-0.0712 (0.2856) *0.8035*	0.0506 (0.0532) *0.3432*	2.1206 (1.3465) *0.1176*	0.7411*** (0.1707) *0*	-0.0964 (0.2807) *0.7319*	0.0205 (0.0523) *0.6959*
2020	1.8382*** (0.5286) *0.0007*	-0.0818*** (0.0152) *0*	0.0005 (0.0004) *0.2541*	0.3657*** (0.1068) *0.0008*	0.4566*** (0.0723) *0*	3.4785*** (0.4838) *0*	0.0312 (0.0316) *0.325*	1.996*** (0.5112) *0.0001*	0.4416*** (0.0713) *0*	2.9936*** (0.4592) *0*	0.0294 (0.0264) *0.2686*
2021	2.9173*** (0.8344) *0.0006*	-0.057*** (0.0194) *0.0039*	0.0003 (0.0003) *0.3386*	0.0562 (0.1624) *0.7298*	0.4971*** (0.0986) *0*	2.4242*** (0.717) *0.0009*	-0.0319 (0.0472) *0.5001*	3.0913*** (0.8253) *0.0003*	0.5004*** (0.1027) *0*	2.2635*** (0.7489) *0.003*	-0.059 (0.0498) *0.2382*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 147. Taiwanese sample, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.1173*	-0.4779**	0.0045***	1.4892***	0.7959***	3.0465***	-0.0182	0.087	0.752***	2.5693***	-0.0082
2013	(0.0675)	(0.1798)	(0.0014)	(0.2731)	(0.1479)	(0.7253)	(0.0162)	(0.0599)	(0.1416)	(0.5657)	(0.0142)
	0.0901	*0.0113*	*0.0032*	*0*	*0*	*0.0001*	*0.2685*	*0.1538*	*0*	*0*	*0.5667*
	0.0015	-0.1927	0.0018	0.8403**	0.9462***	1.5266***	0.0312	-0.0061	0.9022***	1.6759***	0.0396
2014	(0.0439)	(0.1876)	(0.0011)	(0.3393)	(0.1272)	(0.4116)	(0.0228)	(0.0465)	(0.1501)	(0.4165)	(0.0269)
	0.9723	*0.3083*	*0.1157*	*0.0161*	*0*	*0.0005*	*0.1759*	*0.8959*	*0*	*0.0002*	*0.1459*
	0.0565	0.0057	0.0008*	0.253	0.476***	1.6037***	0.0194	0.0618*	0.4844***	1.6233***	0.0188
2015	(0.0378)	(0.0612)	(0.0005)	(0.6215)	(0.0988)	(0.494)	(0.0164)	(0.0363)	(0.0954)	(0.4681)	(0.017)
	0.1385	*0.9263*	*0.0832*	*0.685*	*0*	*0.0017*	*0.2402*	*0.0919*	*0*	*0.0008*	*0.2725*
	0.0344	0.0573	-0.0007	-0.0093*	0.6707***	2.4801***	0.0329*	0.0403	0.6764***	2.4381***	0.0331*
2016	(0.0313)	(0.0364)	(0.0016)	(0.0054)	(0.0974)	(0.6888)	(0.0176)	(0.0286)	(0.0972)	(0.6624)	(0.0178)
	0.2753	*0.1192*	*0.6763*	*0.0876*	*0*	*0.0005*	*0.0648*	*0.1625*	*0*	*0.0004*	*0.0658*
	0.0501*	-0.0391	-0.0007	0.3253	0.8756***	1.7828**	0.038	0.045**	0.8657***	1.7451*	0.0403
2017	(0.0255)	(0.12)	(0.0015)	(0.8275)	(0.1168)	(0.8604)	(0.0253)	(0.022)	(0.115)	(0.8912)	(0.026)
	0.0514	*0.7453*	*0.638*	*0.695*	*0*	*0.0406*	*0.1368*	*0.0427*	*0*	*0.0527*	*0.1238*
	0.0816***	-0.0792	-0.0001	0.0822	0.6002***	1.6575***	0.0183	0.0697***	0.5872***	1.6926***	0.019
2018	(0.0242)	(0.0951)	(0.0008)	(0.6537)	(0.0765)	(0.4834)	(0.0141)	(0.0189)	(0.0678)	(0.4327)	(0.0141)
	0.001	*0.4068*	*0.9447*	*0.9001*	*0*	*0.0008*	*0.1968*	*0.0003*	*0*	*0.0002*	*0.1811*
	0.0239	-0.1358	0.0004***	-0.0661	0.8094***	2.2901**	0.0365*	0.0198	0.7736***	2.2489**	0.0368*
2019	(0.0619)	(0.0905)	(0.0001)	(0.3452)	(0.1432)	(0.9393)	(0.0208)	(0.0607)	(0.1483)	(0.9307)	(0.0204)
	0.7006	*0.1359*	*0*	*0.8485*	*0*	*0.0161*	*0.0819*	*0.7448*	*0*	*0.017*	*0.0741*
	0.0016	-0.036*	0.0003*	1.28*	0.944***	2.1325**	0.0222	0.0144	0.946***	2.1884**	0.0234
2020	(0.0613)	(0.0207)	(0.0002)	(0.7096)	(0.1246)	(0.8347)	(0.0176)	(0.0631)	(0.1265)	(0.8425)	(0.0189)
	0.9798	*0.0836*	*0.0865*	*0.0732*	*0*	*0.0116*	*0.2105*	*0.8197*	*0*	*0.0103*	*0.2167*
	0.0593	0.0073	0.0004***	0.6001	1.013***	2.3105**	0.0096	0.0516	1.0477***	2.381**	0.0077
2021	(0.0844)	(0.0134)	(0.0001)	(0.4792)	(0.1531)	(0.9204)	(0.0208)	(0.0862)	(0.1536)	(0.9242)	(0.0212)
	0.4833	*0.5899*	*0.0016*	*0.2126*	*0*	*0.0132*	*0.6447*	*0.5503*	*0*	*0.011*	*0.7168*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 148. Thailand sample, three variables, value regression models by years

Year	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	-0.058**	0.1706	-0.0005	-0.8564	0.0723	7.2819***	0.5886***	-0.0627***	0.1002	7.3292***	0.6365***
2020	(0.0229)	(0.1092)	(0.0011)	(2.0563)	(0.1233)	(1.5303)	(0.1114)	(0.0226)	(0.1458)	(1.4655)	(0.105)
	0.0179	*0.1308*	*0.6651*	*0.6806*	*0.5628*	*0.0001*	*0*	*0.0097*	*0.4974*	*0*	*0*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 149. United States sample, three variables, value regression models by years

Year				Environmental					Environmental		
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	8.5498***	0.2803	-0.0034	0.0194**	0.3423***	0.0861	0.0578**	9.0438***	0.3446***	0.072	0.0679***
2008	(2.6043)	(0.343)	(0.008)	(0.0075)	(0.0698)	(0.1479)	(0.0224)	(2.7391)	(0.0783)	(0.153)	(0.0234)
	0.0028	*0.4208*	*0.6765*	*0.0154*	*0*	*0.5649*	*0.0153*	*0.0024*	*0.0001*	*0.6413*	*0.0069*
	14.9467***	0.7585*	-0.0052	0.016***	0.4717***	2.4707***	-0.0064	15.4088***	0.5516***	2.685***	-0.0118
2009	(1.6166)	(0.3896)	(0.0057)	(0.0055)	(0.1621)	(0.5593)	(0.0217)	(1.639)	(0.1468)	(0.5046)	(0.023)
	0	*0.0582*	*0.3635*	*0.0059*	*0.0058*	*0.0001*	*0.7695*	*0*	*0.0005*	*0*	*0.6103*
	9.1384***	-0.0698	0.0073**	0.014***	0.4804***	3.6828***	0.062*	9.2001***	0.4915***	3.9292***	0.0525*
2010	(2.106)	(0.1006)	(0.0032)	(0.003)	(0.1648)	(1.2687)	(0.0332)	(1.8887)	(0.1516)	(1.2511)	(0.0295)
	0.0001	*0.4905*	*0.0245*	*0*	*0.0051*	*0.0052*	*0.0664*	*0*	*0.0019*	*0.0026*	*0.08*
	6.2069***	0.011	0.0068*	0.0157**	0.4282***	1.9695	0.045	6.2864***	0.4264***	2.2347	0.047
2011	(2.2945)	(0.0763)	(0.0034)	(0.0069)	(0.1505)	(1.5429)	(0.047)	(2.193)	(0.1417)	(1.577)	(0.0503)
	0.0086	*0.8857*	*0.0517*	*0.0253*	*0.0058*	*0.206*	*0.342*	*0.0054*	*0.0036*	*0.1607*	*0.3535*
	5.3943*	-0.0047	-0.0037	0.0192**	0.7794***	1.541***	0.0393	5.3428*	0.7531***	1.5164***	0.0402
2012	(2.9824)	(0.1471)	(0.0074)	(0.0091)	(0.2067)	(0.3576)	(0.0258)	(2.7686)	(0.1951)	(0.3385)	(0.0248)
	0.074	*0.9744*	*0.6151*	*0.0371*	*0.0003*	*0*	*0.1322*	*0.0568*	*0.0002*	*0*	*0.1087*
	7.257***	0.0869	-0.0118	0.0005	0.8237***	2.8183**	0.0827	7.6127***	0.6469***	2.8666***	0.106
2013	(1.9381)	(0.2881)	(0.0118)	(0.0114)	(0.2147)	(1.142)	(0.0834)	(1.8031)	(0.2047)	(1.0704)	(0.086)
	0.0003	*0.7637*	*0.3181*	*0.9623*	*0.0002*	*0.0154*	*0.3238*	*0.0001*	*0.0021*	*0.0087*	*0.2209*
	0.0664	-0.0781	0.0008	0.0088**	0.818***	2.2441**	0.2296***	-0.0258	0.8827***	2.0235**	0.2095***
2014	(2.5672)	(0.1303)	(0.001)	(0.0038)	(0.1883)	(0.9696)	(0.0622)	(2.6586)	(0.17)	(0.8677)	(0.0625)
	0.9794	*0.5503*	*0.4405*	*0.0246*	*0*	*0.0225*	*0.0003*	*0.9923*	*0*	*0.0215*	*0.0011*
	-0.1905	0.211	-0.002	-0.0034	0.8813***	-0.1728	0.2109***	-0.0166	0.8382***	-0.0847	0.2348***
2015	(1.2563)	(0.1583)	(0.0014)	(0.0056)	(0.1451)	(0.3483)	(0.0477)	(1.2178)	(0.1295)	(0.2988)	(0.0455)
	0.8797	*0.1848*	*0.1471*	*0.5431*	*0*	*0.6207*	*0*	*0.9892*	*0*	*0.7772*	*0*
	0.6747	0.0406	-0.0002	0.0155**	0.5961***	0.4521	0.3795***	0.6955	0.6146***	0.4116	0.3864***
2016	(1.4579)	(0.0942)	(0.001)	(0.0065)	(0.1641)	(0.6937)	(0.0651)	(1.4841)	(0.1607)	(0.6921)	(0.0608)
	0.6442	*0.667*	*0.8211*	*0.0188*	*0.0004*	*0.5155*	*0*	*0.64*	*0.0002*	*0.5529*	*0*
	-3.2927	-0.0079	0.0008	0.0441***	-0.1293	0.0382	0.4734***	-3.4997	-0.1135	0.0434	0.4863***
2017	(2.7047)	(0.084)	(0.0006)	(0.0105)	(0.2889)	(0.164)	(0.1373)	(2.7997)	(0.297)	(0.1643)	(0.1343)
	0.2252	*0.9255*	*0.2049*	*0*	*0.6552*	*0.816*	*0.0007*	*0.213*	*0.7028*	*0.7922*	*0.0004*
	0.88	0.0106	0.0004**	0.0119	0.7524***	0.1079	0.2239***	0.8736	0.7731***	0.0906	0.2269***
2018	(0.5934)	(0.0536)	(0.0002)	(0.0082)	(0.1521)	(0.381)	(0.0632)	(0.5994)	(0.1534)	(0.3787)	(0.0618)
	0.1396	*0.8431*	*0.0305*	*0.1478*	*0*	*0.7772*	*0.0005*	*0.1465*	*0*	*0.8111*	*0.0003*
	1.2834***	0.0714	0.0001	0.0089	0.4165**	2.4729***	0.166***	1.3506***	0.4266**	2.5214***	0.1758***
2019	(0.3803)	(0.083)	(0.0005)	(0.008)	(0.2069)	(0.777)	(0.0468)	(0.3898)	(0.2116)	(0.7932)	(0.0471)
	0.0009	*0.3901*	*0.8053*	*0.2642*	*0.0453*	*0.0017*	*0.0005*	*0.0006*	*0.045*	*0.0017*	*0.0002*
	2.5597***	0.0892	0.0009	0.0088	0.7081***	0.0716	-0.1083***	2.7469***	0.7455***	0.0576	-0.1118***
2020	(0.9747)	(0.075)	(0.0006)	(0.0063)	(0.1275)	(0.4419)	(0.0367)	(1.0555)	(0.132)	(0.4712)	(0.0388)
	0.0092	*0.2359*	*0.116*	*0.1635*	*0*	*0.8714*	*0.0035*	*0.0098*	*0*	*0.9029*	*0.0043*
	1.3592**	-0.0186	0.0001*	0.0018	0.8169***	0.2302	0.312***	1.3547**	0.8195***	0.28	0.3056***
2021	(0.6851)	(0.0614)	(0.0001)	(0.0091)	(0.1473)	(0.5313)	(0.0683)	(0.6818)	(0.1481)	(0.5098)	(0.0646)
	0.0495	*0.7624*	*0.063*	*0.8439*	*0*	*0.6656*	*0*	*0.0491*	*0*	*0.5838*	*0*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 150. Full sample value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2006	0.9032	0.8976	1.0701	0.4197	63
2007	0.7615	0.7557	1.1479	0.3929	148
2008	0.5082	0.481	4.3186***	0.0073	242
2009	0.6662	0.657	2.6971*	0.0606	301
2010	0.581	0.4512	38.7109***	0	382
2011	0.4974	0.4855	3.6127**	0.018	464
2012	0.5608	0.5534	3.0422**	0.0382	547
2013	0.4228	0.4189	1.4013	0.2994	631
2014	0.1843	0.1429	12.1595***	0	726
2015	0.0858	0.0718	4.2382***	0.0076	841
2016	0.2791	0.265	6.382***	0.0004	988
2017	0.0398	0.0223	6.8697***	0.0002	1141
2018	0.3472	0.3434	2.5965*	0.0682	1339
2019	0.3299	0.3277	1.6132	0.2341	1493
2020	0.2578	0.2449	9.2878***	0	1612
2021	0.3767	0.3646	8.8394***	0	1364

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 151. Developed sample value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2006	0.9062	0.9024	0.7104	0.5872	59
2007	0.7627	0.7552	1.4197	0.2913	141
2008	0.4974	0.4668	4.2003***	0.0086	214
2009	0.6701	0.6613	2.1604	0.12	251
2010	0.7262	0.7197	2.3102*	0.0993	299
2011	0.5006	0.466	7.905***	0.0001	349
2012	0.5933	0.5907	0.8585	0.528	405
2013	0.458	0.4533	1.2256	0.3639	433
2014	0.3346	0.3274	1.6871	0.2141	477
2015	0.2066	0.2032	0.7698	0.5717	546
2016	0.4059	0.399	2.4389*	0.0839	637
2017	0.0267	0.0085	4.3734***	0.0063	709
2018	0.4453	0.4397	2.6785*	0.0614	813
2019	0.47	0.4523	9.9125***	0	897
2020	0.219	0.1791	16.3079***	0	965
2021	0.4426	0.4265	7.4642***	0.0001	781

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 152. Emerging sample value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2009	0.7304	0.71	1.0876	0.409	50
2010	0.6374	0.6214	1.1242	0.3994	83
2011	0.7296	0.7238	0.7705	0.5656	115
2012	0.6039	0.5758	3.2009**	0.0325	142
2013	0.5601	0.5448	2.2179	0.1119	198
2014	0.4496	0.3919	8.4696***	0	249
2015	0.3283	0.3073	3.0046**	0.0407	295
2016	0.3758	0.3738	0.3682	0.7228	351
2017	0.3974	0.3903	1.6768	0.2168	432
2018	0.3638	0.3461	4.8089***	0.0036	526
2019	0.4531	0.444	3.2885**	0.0276	596
2020	0.5358	0.5296	2.8674**	0.048	647
2021	0.4626	0.452	3.8051**	0.0138	583

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 153. Developed excluding the United States sample value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2006	0.9206	0.9165	0.6795	0.5978	47
2007	0.7537	0.7455	1.2563	0.3488	121
2008	0.506	0.4728	3.853**	0.0138	179
2009	0.6768	0.6674	1.8899	0.1676	202
2010	0.7303	0.7258	1.271	0.3453	234
2011	0.513	0.4735	7.1658***	0.0002	272
2012	0.6157	0.6121	0.9486	0.4842	312
2013	0.4838	0.4784	1.1298	0.4028	333
2014	0.3698	0.3632	1.2355	0.3597	362
2015	0.2422	0.2384	0.6654	0.6213	409
2016	0.4501	0.4454	1.3408	0.3204	479
2017	0.1113	0.0678	8.6118***	0	535
2018	0.452	0.4476	1.5854	0.2417	607
2019	0.5043	0.4815	10.0972***	0	667
2020	0.2597	0.2198	12.7213***	0	715
2021	0.4662	0.4491	6.8914***	0.0002	652

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 154. European sample value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2007	0.7406	0.7224	1.5205	0.2577	72
2008	0.4641	0.4484	0.9735	0.4679	107
2009	0.6766	0.6724	0.543	0.6709	131
2010	0.7092	0.7079	0.2099	0.6927	152
2011	0.5031	0.4618	4.5226***	0.0058	170
2012	0.5612	0.5592	0.2991	0.7224	201
2013	0.3696	0.3534	1.835	0.1791	221
2014	0.1366	0.1024	3.1143**	0.0355	243
2015	0.0704	0.0527	1.707	0.209	277
2016	0.4027	0.3976	0.8994	0.5077	321
2017	0.1072	0.0365	9.2118***	0	356
2018	0.4344	0.4106	5.3679***	0.0017	389
2019	0.4555	0.4506	1.3006	0.335	441
2020	0.2261	0.1944	6.2378***	0.0005	464
2021	0.375	0.3644	2.1802	0.1168	392

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 155. Asia Pacific excluding Japan sample value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2009	0.8095	0.7494	2.8397*	0.0587	34
2010	0.8027	0.7943	0.7558	0.5655	60
2011	0.6128	0.6059	0.4449	0.7019	82
2012	0.6644	0.6569	0.7269	0.5861	105
2013	0.6027	0.6003	0.2634	0.7151	136
2014	0.6693	0.6575	1.9519	0.1554	172
2015	0.6283	0.6112	3.2562**	0.0296	219
2016	0.695	0.6376	15.5631***	0	255
2017	0.6799	0.6724	2.4744*	0.0805	323
2018	0.5423	0.5323	3.0851**	0.0363	432
2019	0.598	0.5924	2.276	0.1034	502
2020	0.5309	0.529	0.7489	0.5819	569
2021	0.4673	0.4586	2.8862**	0.047	538

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 156. North American sample value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2008	0.7531	0.6744	3.505**	0.0273	40
2009	0.8185	0.801	1.5483	0.2485	55
2010	0.8174	0.8016	1.9917	0.1487	76
2011	0.7236	0.7053	1.9922	0.1484	97
2012	0.717	0.6979	2.4871*	0.0807	118
2013	0.7022	0.6645	5.4088***	0.002	135
2014	0.6624	0.6599	0.3551	0.7224	153
2015	0.5584	0.5092	6.2094***	0.0006	174
2016	0.5527	0.5518	0.1423	0.6321	210
2017	0.1856	0.1008	7.8083***	0.0001	232
2018	0.2045	0.1471	6.2757***	0.0005	268
2019	0.4073	0.3062	16.6658***	0	300
2020	0.35	0.3337	2.6585*	0.0636	325
2021	0.6318	0.6292	0.4549	0.7036	198

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 157. Latin American sample value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2011	0.7894	0.7828	0.3145	0.7147	37
2012	0.6585	0.6314	0.7946	0.5363	37
2013	0.5876	0.5289	1.8052	0.185	45
2014	0.5401	0.5125	0.8593	0.5123	50
2015	0.6008	0.5683	1.1101	0.3989	48
2016	0.6277	0.6009	1.2486	0.3469	59
2017	0.67	0.6548	0.9834	0.4596	71
2018	0.6748	0.6681	0.4803	0.6901	76
2019	0.7418	0.6649	6.1584***	0.0011	69
2020	0.6648	0.6527	0.7789	0.5569	72
2021	0.642	0.6384	0.1778	0.6697	60

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 158. Middle Eastern and North African sample value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2016	0.5569	0.386	3.4709**	0.0298	34
2017	0.4906	0.253	4.6623***	0.0083	37
2018	0.6636	0.588	2.6221*	0.0728	42
2019	0.6688	0.4804	6.8279***	0.0008	43
2020	0.6731	0.4942	6.016***	0.002	40

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 159. Communication services sector, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2016	0.7633	0.7074	2.4402*	0.0902	38
2017	0.7806	0.6928	5.1979***	0.0041	46
2018	0.7888	0.6621	8.8032***	0.0001	51
2019	0.6665	0.6214	2.2066	0.1159	56
2020	0.74	0.699	2.7279*	0.0624	59
2021	0.7013	0.6597	1.6736	0.2146	43

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 160. Consumer Discretionary sector, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2010	0.7635	0.7577	0.2566	0.7086	38
2011	0.8483	0.8466	0.149	0.6418	47
2012	0.8203	0.7835	3.2041**	0.036	54
2013	0.7805	0.7699	0.8266	0.5307	58
2014	0.7331	0.7091	1.8618	0.1735	69
2015	0.6488	0.6219	1.9092	0.164	82
2016	0.6475	0.6263	2.0249	0.1426	108
2017	0.6542	0.3481	32.7571***	0	118
2018	0.6255	0.6051	2.4793*	0.0811	144
2019	0.6144	0.6123	0.2993	0.7222	173
2020	0.3697	0.3302	3.596**	0.0193	179
2021	0.3998	0.3555	3.5935**	0.0196	153

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 161. Consumer Staples sector, value regression models comparison. Split by years.

Year	r^2		F stat	p (F stat)	Sample size
	Environmental	Non-environmental			
2011	0.7784	0.7775	0.0428	0.4091	39
2012	0.6499	0.6412	0.3377	0.7169	48
2013	0.6291	0.5962	1.6229	0.2287	62
2014	0.6489	0.5699	4.9539***	0.0042	73
2015	0.551	0.4973	2.8303*	0.0539	78
2016	0.5841	0.4982	5.7827***	0.0014	91
2017	0.7126	0.7007	1.3328	0.32	104
2018	0.692	0.6471	5.4839***	0.0018	120
2019	0.658	0.5953	7.6447***	0.0001	132
2020	0.615	0.5777	4.354***	0.0074	142
2021	0.5768	0.5611	1.4356	0.2857	123

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 162. Energy sector, value regression models comparison. Split by years.

Year	r^2		F stat	p (F stat)	Sample size
	Environmental	Non-environmental			
2014	0.7629	0.652	4.3642**	0.0116	35
2015	0.5887	0.5812	0.1943	0.6817	39
2016	0.7	0.654	1.9952	0.1488	46
2017	0.7393	0.7056	1.8512	0.1756	50
2018	0.8006	0.7443	4.8014***	0.0056	58
2019	0.6502	0.6396	0.5621	0.6564	63
2020	0.6427	0.628	0.8379	0.5275	68
2021	0.7134	0.6756	2.1541	0.1233	56

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 163. Financials sector, value regression models comparison. Split by years.

Year	r^2		F stat	p (F stat)	Sample size
	Environmental	Non-environmental			
2010	0.8365	0.8061	1.6157	0.2272	33
2011	0.6835	0.5169	6.6687***	0.0009	45
2012	0.85	0.8435	0.6393	0.6184	51
2013	0.8645	0.8595	0.5666	0.6518	53
2014	0.8267	0.8025	2.1426	0.1251	53
2015	0.8238	0.7161	10.7871***	0	60
2016	0.8457	0.8361	1.2884	0.3336	69
2017	0.8657	0.8445	3.9938**	0.0129	83
2018	0.7507	0.5211	33.1572***	0	115
2019	0.7473	0.74	1.1079	0.4089	122
2020	0.7484	0.7469	0.2523	0.7118	132
2021	0.6922	0.6841	0.9504	0.4792	116

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 164. Health Care sector, value regression models comparison. Split by years.

Year	r^2 Environmental	Non-environmental	F stat	p (F stat)	Sample size
2010	0.9152	0.8988	1.6097	0.2285	32
2011	0.8619	0.8387	1.512	0.255	34
2012	0.8724	0.834	3.0088**	0.048	37
2013	0.8651	0.7936	5.4829***	0.0036	38
2014	0.7942	0.7365	3.6466**	0.0224	46
2015	0.7159	0.6947	0.9472	0.469	45
2016	0.8245	0.8086	1.45	0.2775	55
2017	0.6906	0.6839	0.4198	0.7065	65
2018	0.653	0.6453	0.503	0.6819	75
2019	0.6386	0.6155	1.7094	0.2076	87
2020	0.5921	0.5266	4.4447***	0.0073	90
2021	0.6689	0.5874	5.0855***	0.0037	69

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 165. Industrials sector, value regression models comparison. Split by years.

Year	r^2 Environmental	Non-environmental	F stat	p (F stat)	Sample size
2008	0.8362	0.8348	0.0927	0.5549	40
2009	0.7424	0.7308	0.647	0.6145	50
2010	0.7623	0.7622	0.0073	0.1771	69
2011	0.7569	0.7554	0.1403	0.6306	75
2012	0.7271	0.6861	4.1978***	0.0098	91
2013	0.6621	0.6568	0.4972	0.6867	103
2014	0.6303	0.4988	12.8053***	0	115
2015	0.3286	0.3073	1.3861	0.3025	138
2016	0.579	0.5657	1.6852	0.2142	167
2017	0.2557	0.1781	6.2207***	0.0006	186
2018	0.2695	0.2345	3.1944**	0.0322	207
2019	0.2076	0.1993	0.8124	0.549	238
2020	0.4688	0.4537	2.3684*	0.0924	257
2021	0.5336	0.522	1.816	0.1833	227

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 166. Information technology sector, value regression models comparison. Split by years.

Year	r^2 Environmental	Non-environmental	F stat	p (F stat)	Sample size
2009	0.763	0.7497	0.4477	0.6856	31
2010	0.8212	0.8007	1.223	0.351	39
2011	0.7927	0.7675	1.5803	0.2387	46
2012	0.5616	0.5398	0.9441	0.4764	64
2013	0.4749	0.4712	0.1798	0.6713	84
2014	0.3257	0.2877	1.6688	0.2178	96
2015	0.2114	0.1675	1.9901	0.1486	114
2016	0.5642	0.5241	3.3397**	0.0277	116
2017	0.2853	0.2547	1.7842	0.1903	132
2018	0.6006	0.5342	7.7037***	0.0001	146
2019	0.5629	0.5508	1.5661	0.2465	177
2020	0.4611	0.4078	6.0009***	0.0008	189
2021	0.5794	0.5708	0.9986	0.4585	153

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 167. Materials sector, value regression models comparison. Split by years.

Year	r^2 Environmental	Non-environmental	F stat	p (F stat)	Sample size
2008	0.6542	0.6522	0.0753	0.5137	45
2009	0.7886	0.7753	0.9644	0.4642	53
2010	0.6373	0.6217	0.8044	0.5427	63
2011	0.7922	0.7762	1.9412	0.1579	83
2012	0.6887	0.6558	3.2847**	0.0301	100
2013	0.6808	0.679	0.2089	0.692	121
2014	0.7499	0.6446	17.9522***	0	135
2015	0.4872	0.4341	5.111***	0.0028	155
2016	0.4328	0.3926	3.9441**	0.0123	174
2017	0.5194	0.4525	9.1344***	0	204
2018	0.6898	0.6888	0.2499	0.7116	227
2019	0.641	0.6133	5.6609***	0.0012	227
2020	0.6075	0.5903	3.6628**	0.0172	258
2021	0.6508	0.631	4.2126***	0.0084	230

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 168. Real Estate sector, value regression models comparison. Split by years.

Year	r^2 Environmental	Non-environmental	F stat	p (F stat)	Sample size
2014	0.7103	0.6507	1.9217	0.162	35
2015	0.8374	0.8295	0.7179	0.581	51
2016	0.8505	0.8366	1.7391	0.2001	63
2017	0.844	0.8284	2.4619*	0.0843	81
2018	0.7665	0.7528	2.0935	0.1311	114
2019	0.5579	0.5452	1.2059	0.3689	133
2020	0.6127	0.5999	1.5488	0.2512	148
2021	0.6273	0.5914	3.5597**	0.021	118

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 169. Utilities sector, value regression models comparison. Split by years.

Year	r^2 Environmental	Non-environmental	F stat	p (F stat)	Sample size
2010	0.8562	0.8275	1.8603	0.1735	35
2011	0.8599	0.8457	1.0852	0.4055	39
2012	0.7593	0.7152	1.8325	0.1791	37
2013	0.7749	0.6646	5.0637***	0.0054	38
2014	0.6472	0.5863	2.2459	0.1115	46
2015	0.3759	0.304	1.7272	0.2025	52
2016	0.8014	0.7895	1.0806	0.4147	61
2017	0.7121	0.7016	0.7953	0.5489	72
2018	0.7349	0.7232	1.0998	0.4096	82
2019	0.6555	0.6509	0.3417	0.7209	84
2020	0.6291	0.6213	0.5658	0.6586	88
2021	0.6399	0.6275	0.7778	0.558	75

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 170. Australian sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2017	0.8696	0.8656	0.26	0.7079	32
2018	0.8427	0.8283	0.9176	0.478	37
2019	0.8796	0.8716	0.7791	0.5471	42
2020	0.7079	0.6964	0.5599	0.6536	50
2021	0.8319	0.8259	0.4081	0.7033	41

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 171. Brazilian sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2013	0.7582	0.6955	2.3326	0.1026	34
2014	0.7305	0.6941	1.2599	0.3356	35
2015	0.6734	0.6276	1.3546	0.3035	36
2016	0.6644	0.6469	0.6244	0.6218	43
2017	0.6894	0.6685	0.8288	0.5243	44
2018	0.6895	0.6664	0.8665	0.5052	42
2019	0.8251	0.7968	1.5051	0.2572	35
2020	0.8591	0.8274	2.4701*	0.0869	40
2021	0.7538	0.7245	0.9939	0.4394	32

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 172. United Kingdom sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2008	0.5742	0.512	1.4122	0.2851	36
2009	0.6923	0.6365	2.1175	0.1295	42
2010	0.7428	0.7316	0.5369	0.6608	44
2011	0.7643	0.7482	0.8659	0.507	45
2012	0.8168	0.7851	2.7678*	0.0599	55
2013	0.7638	0.7376	1.8886	0.1682	58
2014	0.7436	0.698	3.0852**	0.0408	59
2015	0.7171	0.6708	2.8431*	0.0544	59
2016	0.7315	0.7051	1.7366	0.2006	60
2017	0.4878	0.4367	1.9285	0.1604	65
2018	0.7706	0.7552	1.3043	0.3274	65
2019	0.5006	0.4733	1.1673	0.3803	71
2020	0.5227	0.449	3.6537**	0.0198	78
2021	0.6801	0.6401	2.5436*	0.077	68

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 173. Canadian sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2016	0.8007	0.7587	1.9702	0.1534	35
2017	0.6569	0.3967	7.5828***	0.0005	37
2018	0.741	0.724	0.6576	0.6023	37
2019	0.7504	0.7203	1.3704	0.3001	41
2020	0.5998	0.5293	2.4071*	0.0923	48
2021	0.8376	0.7971	2.9935**	0.0476	43

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 174. Chinese sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2018	0.5567	0.5385	0.7268	0.5796	60
2019	0.61	0.6068	0.1967	0.684	79
2020	0.4642	0.4637	0.0259	0.3234	94
2021	0.4049	0.3791	1.5342	0.255	113

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 175. French sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2014	0.7575	0.739	0.7643	0.5509	37
2015	0.7725	0.7661	0.3077	0.7156	40
2016	0.7808	0.7735	0.503	0.6772	52
2017	0.8005	0.7989	0.1225	0.6067	52
2018	0.8051	0.8019	0.2562	0.7106	54
2019	0.7615	0.7485	0.8358	0.5247	53
2020	0.7414	0.7044	2.2906	0.1051	55
2021	0.7122	0.672	1.8199	0.1819	46

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 176. German sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2016	0.7383	0.7036	1.2373	0.3437	35
2017	0.6991	0.6677	1.0771	0.4083	38
2018	0.6546	0.641	0.4463	0.6926	41
2019	0.5812	0.5209	2.0171	0.145	49
2020	0.3681	0.2446	2.6712*	0.0679	48
2021	0.7098	0.6841	1.0914	0.4052	44

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 177. Hong Kong sample, value regression models comparison. Split by years.

Year	r^2 Environmental	Non-environmental	F stat	p (F stat)	Sample size
2018	0.8067	0.7582	3.0121**	0.0466	43
2019	0.7367	0.6935	2.2397	0.1121	48
2020	0.7149	0.701	0.815	0.536	57
2021	0.7097	0.6973	0.7173	0.5833	57

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 178. Indian sample, value regression models comparison. Split by years.

Year	r^2 Environmental	Non-environmental	F stat	p (F stat)	Sample size
2017	0.7874	0.7274	2.2576	0.112	31
2019	0.7029	0.6303	2.4457*	0.0899	37
2020	0.6661	0.5859	2.4801*	0.0863	38
2021	0.6513	0.6385	0.3316	0.7128	34

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 179. Italian sample, value regression models comparison. Split by years.

Year	r^2 Environmental	Non-environmental	F stat	p (F stat)	Sample size
2018	0.726	0.7067	0.7018	0.5811	37
2019	0.6945	0.6276	3.0695**	0.0427	49
2020	0.7075	0.637	3.1304**	0.0403	46
2021	0.6458	0.61	1.2153	0.3555	43

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 180. Japanese sample, value regression models comparison. Split by years.

Year	r^2 Environmental	Non-environmental	F stat	p (F stat)	Sample size
2007	0.8948	0.8598	3.6645**	0.0229	40
2008	0.7924	0.7389	4.2103**	0.0111	56
2009	0.817	0.8136	0.3171	0.719	57
2010	0.8139	0.8111	0.2829	0.7169	63
2011	0.9123	0.9113	0.2138	0.6942	67
2012	0.8725	0.8677	0.7749	0.5583	69
2013	0.8489	0.8469	0.2893	0.7186	75
2014	0.8448	0.8418	0.4835	0.6898	83
2015	0.8315	0.828	0.6063	0.6416	94
2016	0.8258	0.8194	1.2473	0.3518	109
2017	0.814	0.8068	1.4854	0.2699	122
2018	0.8502	0.8493	0.2706	0.7168	132
2019	0.7985	0.7834	3.2695**	0.0299	138
2020	0.7721	0.7561	3.1662**	0.034	142
2021	0.7629	0.7484	2.8731**	0.0493	148

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 181. South Korean sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2015	0.7294	0.7121	0.5089	0.663	31
2016	0.8023	0.7893	0.8129	0.5319	44
2017	0.7258	0.7032	1.2121	0.3591	51
2018	0.6557	0.625	1.4885	0.266	57
2019	0.6652	0.6566	0.5344	0.6691	70
2020	0.6259	0.6228	0.1754	0.6676	72
2021	0.6772	0.6495	1.6845	0.2132	66

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 182. Taiwanese sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2013	0.8659	0.8448	2.0474	0.1401	46
2014	0.853	0.846	0.9712	0.4646	68
2015	0.7957	0.7941	0.2291	0.7023	94
2016	0.8291	0.8268	0.3894	0.716	96
2017	0.7778	0.777	0.1289	0.6145	116
2018	0.7752	0.7738	0.2325	0.7042	126
2019	0.7689	0.7622	1.2687	0.3446	137
2020	0.7594	0.7502	1.9578	0.1544	161
2021	0.7731	0.7665	1.3622	0.3109	146

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 183. Thailand's sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2020	0.78	0.772	0.3026	0.7126	32

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 184. United States sample, value regression models comparison. Split by years.

Year	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
2008	0.801	0.7824	0.8734	0.497	35
2009	0.8998	0.8875	1.7243	0.203	49
2010	0.8388	0.8298	1.0819	0.4149	65
2011	0.7229	0.712	0.915	0.4922	77
2012	0.6901	0.6832	0.6396	0.6264	93
2013	0.7306	0.7183	1.4171	0.291	100
2014	0.6287	0.6221	0.64	0.628	115
2015	0.6024	0.5968	0.6156	0.6402	137
2016	0.5992	0.5961	0.3927	0.7176	158
2017	0.2285	0.2043	1.7467	0.1991	174
2018	0.6115	0.6085	0.5132	0.6844	206
2019	0.5165	0.5122	0.656	0.6242	230
2020	0.3605	0.347	1.7132	0.2074	250
2021	0.6244	0.6237	0.0798	0.5213	129

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 185. Full sample and sector-wised performance of value driver regressions

Sample	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	0.0379***	0.0002**	0*	0.0057***	0.0019	0.0034	0.0025	0.0406***	0.0015	0.0037	0.0027*
Full sample	(0.0055)	(0.0001)	(0)	(0.0009)	(0.0012)	(0.0025)	(0.0016)	(0.0058)	(0.0012)	(0.0026)	(0.0016)
	0	*0.0233*	*0.0602*	*0*	*0.1115*	*0.1818*	*0.1179*	*0*	*0.2251*	*0.1668*	*0.095*
	0.0142	2.5153***	-0.0071	0.756	0.425***	0.4824*	-0.0494	0.019	0.4072***	0.3919	0.0345
Communication Services	(0.0113)	(0.9088)	(0.0064)	(0.9038)	(0.0827)	(0.2873)	(0.0399)	(0.0125)	(0.1137)	(0.3776)	(0.0243)
	0.2096	*0.0059*	*0.2642*	*0.4033*	*0*	*0.0938*	*0.2162*	*0.1295*	*0.0004*	*0.3*	*0.1566*
	-0.0186	0.2165	0.0009***	-0.0531	0.6083***	-0.2882*	-0.0908***	-0.0093	0.6015***	-0.2921	-0.0821***
Consumer Discretionary	(0.0304)	(0.1371)	(0.0003)	(0.0326)	(0.0628)	(0.1694)	(0.0183)	(0.0286)	(0.0633)	(0.1845)	(0.0216)
	0.5422	*0.1145*	*0.0058*	*0.1038*	*0*	*0.0891*	*0*	*0.7454*	*0*	*0.1136*	*0.0002*
	0.0067**	0.0453	0.0001	0.0213***	0.6263***	0.7056*	0.0522	0.0069**	0.608***	0.7113*	0.0637*
Consumer Staples	(0.0031)	(0.1219)	(0.0001)	(0.0073)	(0.1906)	(0.3897)	(0.0359)	(0.003)	(0.1748)	(0.3855)	(0.0342)
	0.0315	*0.7103*	*0.3597*	*0.0034*	*0.0011*	*0.0705*	*0.1458*	*0.0217*	*0.0005*	*0.0653*	*0.0628*
	0.0268***	0.1202**	-0.0001	0.0041	0.0823	0.2981***	0.1777***	0.0321***	0.111**	0.293***	0.2058***
Energy	(0.0096)	(0.0531)	(0.0006)	(0.003)	(0.0521)	(0.0736)	(0.0218)	(0.0091)	(0.0512)	(0.0836)	(0.0225)
	0.0056	*0.0241*	*0.9263*	*0.1713*	*0.1146*	*0.0001*	*0*	*0.0005*	*0.0305*	*0.0005*	*0*
	0.0923***	0.0089	-0.0022**	-0.4621	0.4206***	0.4728*	0.0034	0.0931***	0.3846***	0.539*	0.0145
Financials	(0.0261)	(0.0355)	(0.0009)	(0.3666)	(0.0564)	(0.2484)	(0.0557)	(0.0273)	(0.0857)	(0.302)	(0.0591)
	0.0004	*0.8031*	*0.0178*	*0.2078*	*0*	*0.0573*	*0.9509*	*0.0007*	*0*	*0.0746*	*0.8057*
	0.1834**	-0.1067	-0.051**	-0.1302	1.5316***	2.447***	0.08***	0.1433**	1.409***	2.5088***	0.0685***
Health Care	(0.078)	(0.1642)	(0.023)	(0.359)	(0.085)	(0.587)	(0.0249)	(0.0657)	(0.0845)	(0.6143)	(0.0231)
	0.019	*0.5158*	*0.0266*	*0.7169*	*0*	*0*	*0.0014*	*0.0294*	*0*	*0*	*0.0032*
	0.0681***	-0.0106	-0.0033***	0.0005	-0.034***	0.0858*	0.0987***	0.0572***	0.0088***	-0.0011	0.0381*
Industrials	(0.0128)	(0.019)	(0.0009)	(0.0072)	(0.0109)	(0.0456)	(0.0188)	(0.016)	(0.0032)	(0.0355)	(0.0196)
	0	*0.5787*	*0.0004*	*0.9449*	*0.0018*	*0.0597*	*0*	*0.0004*	*0.0062*	*0.9744*	*0.052*
	0.0793***	-0.0387	-0.0006	-0.3461	0.0033**	0.0006	0.0152**	0.059***	-0.0005	-0.0005	-0.0006
Information Technology	(0.0165)	(0.0396)	(0.0005)	(0.2391)	(0.0016)	(0.0014)	(0.0065)	(0.0128)	(0.0012)	(0.0009)	(0.0009)
	0	*0.3283*	*0.2625*	*0.148*	*0.0335*	*0.6543*	*0.0197*	*0*	*0.6514*	*0.5598*	*0.5021*
	0.0798***	0.0001*	0*	0.0039***	0.0002	0.1806***	0.1509**	0.0867***	0.0142	0.1597***	0.1523**
Materials	(0.0192)	(0)	(0)	(0.0008)	(0.0416)	(0.055)	(0.0593)	(0.0202)	(0.0443)	(0.0513)	(0.0614)
	0	*0.0978*	*0.076*	*0*	*0.9952*	*0.001*	*0.011*	*0*	*0.7495*	*0.0019*	*0.0133*
	0.0094*	0.0132	0.0013***	0.03***	0.467***	0.4635*	-0.0564	0.0099*	0.4695***	0.4686*	-0.0561
Real Estate	(0.0055)	(0.0275)	(0.0002)	(0.0101)	(0.0488)	(0.2527)	(0.0429)	(0.0056)	(0.0486)	(0.2541)	(0.0435)
	0.0869	*0.6321*	*0*	*0.0031*	*0*	*0.067*	*0.1883*	*0.0759*	*0*	*0.0655*	*0.1974*
	0.0008	-0.017	0	0.195**	0.3819***	0.6468**	0.0215	-0.0022	0.3466***	0.6804**	0.0299
Utilities	(0.0071)	(0.016)	(0)	(0.0977)	(0.0906)	(0.2949)	(0.0502)	(0.0057)	(0.1098)	(0.2975)	(0.0485)
	0.9092	*0.2886*	*0.5651*	*0.0464*	*0*	*0.0286*	*0.6682*	*0.7059*	*0.0017*	*0.0225*	*0.5385*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 186. Sector- and Region- wise samples performance of value driver regressions

Sample	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
Developed	0.0311***	-0.0102**	0.0004**	0.0089***	0.0023	0.0009	0.0023**	0.0456***	0.0009	0.0019	0.0014
	(0.0098)	(0.0048)	(0.0002)	(0.0014)	(0.0021)	(0.001)	(0.0012)	(0.0149)	(0.0008)	(0.0015)	(0.001)
	0.0015	*0.034*	*0.0239*	*0*	*0.274*	*0.3645*	*0.0478*	*0.0022*	*0.2769*	*0.2264*	*0.1558*
Emerging	0.0219***	0.0001**	0	0.0022***	0.116**	0.2262***	0.0776***	0.0222***	0.122***	0.2142***	0.0766***
	(0.0047)	(0)	(0)	(0.0007)	(0.0455)	(0.0547)	(0.0162)	(0.0048)	(0.0457)	(0.0534)	(0.0164)
	0	*0.0144*	*0.34*	*0.0023*	*0.0109*	*0*	*0*	*0*	*0.0076*	*0.0001*	*0*
Developed excluding the United States	0.0485***	-0.0088	0.0007***	0.0077***	0.0071***	0.0019	0.0047**	0.0629***	0.0018*	0.0028	0.0024*
	(0.0144)	(0.0079)	(0.0002)	(0.0013)	(0.0024)	(0.0035)	(0.002)	(0.0184)	(0.0011)	(0.0021)	(0.0013)
	0.0008	*0.2625*	*0.0001*	*0*	*0.0035*	*0.5885*	*0.0173*	*0.0006*	*0.0904*	*0.1877*	*0.0588*
Europe	0.0129***	0.0093*	0.0001	0.0136***	0.0041***	0.002	0.0015	0.0226***	0.001	0.0023	0.0017**
	(0.0036)	(0.005)	(0.0001)	(0.0026)	(0.0012)	(0.0022)	(0.0012)	(0.0037)	(0.0009)	(0.0015)	(0.0009)
	0.0003	*0.0635*	*0.572*	*0*	*0.0007*	*0.3545*	*0.2016*	*0*	*0.2362*	*0.1275*	*0.0428*
Asia Pacific excluding Japan	0.021***	0	0.0001**	0.001	0.3664***	0.5339***	0.077***	0.0211***	0.3692***	0.537***	0.0774***
	(0.0061)	(0)	(0.0001)	(0.0014)	(0.046)	(0.1641)	(0.0144)	(0.0061)	(0.0459)	(0.1648)	(0.0145)
	0.0006	*0.2653*	*0.0373*	*0.4553*	*0*	*0.0011*	*0*	*0.0006*	*0*	*0.0011*	*0*
North America	0.243***	0.0142	0.0006***	0.0097***	-0.1428***	0.5545***	0.1008***	0.318***	-0.1198***	0.4361***	0.0823***
	(0.0893)	(0.0194)	(0.0002)	(0.0021)	(0.0309)	(0.1389)	(0.028)	(0.0934)	(0.0275)	(0.12)	(0.0242)
	0.0065	*0.4644*	*0.001*	*0*	*0*	*0.0001*	*0.0003*	*0.0007*	*0*	*0.0003*	*0.0007*
Latin America	0.0146***	-0.0022	0.0001***	0.0097*	0.2733***	-0.0229	0.0016	0.0146***	0.2875***	-0.0264	-0.0014
	(0.0037)	(0.0233)	(0)	(0.0053)	(0.0614)	(0.1521)	(0.0148)	(0.0037)	(0.0604)	(0.1221)	(0.0159)
	0.0001	*0.9252*	*0.0011*	*0.0692*	*0*	*0.8804*	*0.9149*	*0.0001*	*0*	*0.8291*	*0.9308*
Middle East and North Africa	0.1472***	-0.0272***	0***	0.0034***	0.0072	0.0475**	0.06**	0.076***	0.0029	0.049***	0.0693**
	(0.032)	(0.0086)	(0)	(0.0006)	(0.015)	(0.019)	(0.0277)	(0.0215)	(0.0163)	(0.0175)	(0.0325)
	0	*0.0018*	*0.0046*	*0*	*0.6329*	*0.0131*	*0.0312*	*0.0005*	*0.8585*	*0.0054*	*0.0335*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 187. Country-wised performance of value driver regressions, part 1

Sample	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
	-0.126	0.0984***	0.0002	0.0244***	-0.1696***	0.762***	0.1441***	-0.0486	-0.1556***	0.7542***	0.1513***
United States	(0.4285)	(0.0359)	(0.0001)	(0.0038)	(0.0504)	(0.2395)	(0.0523)	(0.4585)	(0.0515)	(0.2498)	(0.0535)
	0.7688	*0.0062*	*0.2558*	*0*	*0.0008*	*0.0015*	*0.0059*	*0.9156*	*0.0026*	*0.0026*	*0.0047*
	1.923***	-0.0004	0.0002	-0.144**	0.5162***	0.9169***	0.0552***	1.9219***	0.5097***	0.9222***	0.0545***
Japan	(0.4107)	(0.01)	(0.0003)	(0.0682)	(0.0701)	(0.3074)	(0.0145)	(0.3881)	(0.0633)	(0.3076)	(0.0138)
	0	*0.9719*	*0.5051*	*0.035*	*0*	*0.0029*	*0.0001*	*0*	*0*	*0.0028*	*0.0001*
	0.7253***	0.0034	0.002*	0.0005	0.2814***	0.0941	-0.0054	0.7353***	0.2831***	0.0745	-0.0018
Britain	(0.1409)	(0.0228)	(0.0011)	(0.0011)	(0.0789)	(0.1243)	(0.0571)	(0.143)	(0.0796)	(0.1206)	(0.0564)
	0	*0.8822*	*0.0674*	*0.6563*	*0.0004*	*0.4494*	*0.9246*	*0*	*0.0004*	*0.5371*	*0.9739*
	0.0105	0	0.0002***	0	0.3208***	0.0586	0.0325	0.01	0.3249***	0.0582	0.0338*
China	(0.0156)	(0)	(0.0001)	(0.0002)	(0.0422)	(0.093)	(0.0198)	(0.0158)	(0.0421)	(0.0931)	(0.0201)
	0.4998	*0.1325*	*0.0017*	*0.8171*	*0*	*0.5293*	*0.1013*	*0.5285*	*0*	*0.5319*	*0.0939*
	0.0534***	0.0069	0.0004***	-0.0045	0.723***	1.9071***	0.0189***	0.0559***	0.7296***	1.917***	0.018**
Taiwan	(0.0175)	(0.0054)	(0.0001)	(0.0047)	(0.0437)	(0.1984)	(0.007)	(0.0177)	(0.044)	(0.1982)	(0.0071)
	0.0023	*0.1998*	*0*	*0.3418*	*0*	*0*	*0.0072*	*0.0016*	*0*	*0*	*0.0109*
	-0.1245	0.0134	0.0019	0.0047***	-0.0816**	0.2506	0.4093***	0.1429	-0.1094**	0.1551	0.4438***
Canada	(0.1438)	(0.0155)	(0.0015)	(0.0016)	(0.0336)	(0.1796)	(0.0506)	(0.1254)	(0.0482)	(0.1966)	(0.0623)
	0.3873	*0.3892*	*0.1941*	*0.0043*	*0.0158*	*0.1638*	*0*	*0.2552*	*0.0236*	*0.4306*	*0*
	0.004	0.2268***	-0.0007**	0.0088	0.3984***	0.0794	0.0305	0.0022	0.414***	0.0995	0.0568
Hong Kong	(0.0026)	(0.0714)	(0.0003)	(0.0064)	(0.0272)	(0.1209)	(0.0342)	(0.0034)	(0.0283)	(0.1357)	(0.0379)
	0.1231	*0.0017*	*0.0139*	*0.1722*	*0*	*0.5123*	*0.3734*	*0.5196*	*0*	*0.464*	*0.1347*
	0.2543**	0.1263	-0.0014	0.0048	0.3992***	0.3161	0.3749***	0.2865**	0.4121***	0.3016	0.3852***
Australia	(0.1048)	(0.0928)	(0.0009)	(0.0043)	(0.1076)	(0.2732)	(0.0801)	(0.1153)	(0.1066)	(0.2644)	(0.0823)
	0.0157	*0.1744*	*0.1367*	*0.2662*	*0.0002*	*0.2479*	*0*	*0.0134*	*0.0001*	*0.2548*	*0*
	0.8453	-0.16**	0.0007***	0.653***	0.5643***	0.4521*	0.04**	0.798	0.554***	0.5129**	0.0462**
France	(1.015)	(0.0715)	(0.0003)	(0.2323)	(0.0704)	(0.2303)	(0.0174)	(1.0735)	(0.0707)	(0.2411)	(0.0189)
	0.4054	*0.0256*	*0.0075*	*0.0051*	*0*	*0.0502*	*0.0222*	*0.4576*	*0*	*0.0339*	*0.0148*
	0.6763***	0.0422**	-0.0004	-0.0182	0.3123***	0.4742***	0.0532***	0.6649***	0.3195***	0.4798***	0.0558***
South Korea	(0.1638)	(0.0187)	(0.0003)	(0.0711)	(0.0359)	(0.1567)	(0.0146)	(0.1664)	(0.0368)	(0.1619)	(0.0142)
	0	*0.0247*	*0.1474*	*0.7981*	*0*	*0.0026*	*0.0003*	*0.0001*	*0*	*0.0032*	*0.0001*
	0.4052***	-0.1217***	0.0042***	0.0799	0.0032***	-0.0053***	0.0075**	0.2287***	0.0011**	-0.001	-0.0002
Germany	(0.1397)	(0.0353)	(0.0006)	(0.1399)	(0.0009)	(0.0017)	(0.0033)	(0.078)	(0.0005)	(0.0008)	(0.0005)
	0.0039	*0.0006*	*0*	*0.5683*	*0.0002*	*0.0025*	*0.0242*	*0.0035*	*0.0192*	*0.1972*	*0.7629*
	0.1137**	0.0675***	-0.0003***	0.0022	0.0691	2.3815***	0.1633***	0.0923	0.052	1.7866***	0.2651***
India	(0.0518)	(0.0091)	(0.0001)	(0.0056)	(0.0618)	(0.4442)	(0.037)	(0.0645)	(0.0609)	(0.3423)	(0.0397)
	0.0291	*0*	*0.0023*	*0.6944*	*0.2646*	*0*	*0*	*0.1539*	*0.3941*	*0*	*0*
	0.5027***	-0.0056	0.0006***	0.0596	0.1641**	0.1661**	0.1263***	0.5895***	0.1224***	0.0128	0.1508***
Italy	(0.1792)	(0.0053)	(0.0002)	(0.0382)	(0.0685)	(0.0844)	(0.0302)	(0.1617)	(0.0425)	(0.0408)	(0.0353)
	0.0053	*0.2918*	*0.0008*	*0.1198*	*0.0171*	*0.0499*	*0*	*0.0003*	*0.0042*	*0.754*	*0*
	0.9138***	-0.0294	-0.0001	0.0283***	0.1366***	0.4361***	0.0131	0.9433***	0.1141***	0.4438***	0.0136
Brazil	(0.1005)	(0.0218)	(0.0002)	(0.0095)	(0.0334)	(0.1507)	(0.0137)	(0.105)	(0.0323)	(0.1383)	(0.0125)
	0	*0.1779*	*0.751*	*0.003*	*0.0001*	*0.004*	*0.3397*	*0*	*0.0005*	*0.0014*	*0.2761*
	2.5071***	5.7107***	-0.0028	-1.8474	0.7329***	4.2549***	-0.1724***	2.696***	0.5672***	6.5294***	-0.1162***
Sweden	(0.3466)	(1.0548)	(0.0018)	(1.3181)	(0.1482)	(1.2518)	(0.0297)	(0.5307)	(0.1598)	(1.6433)	(0.0355)
	0	*0*	*0.12*	*0.1649*	*0*	*0.0011*	*0*	*0*	*0.0006*	*0.0001*	*0.0016*
	0.2114***	0.931***	-0.0185**	-0.0165***	0.9141***	1.1645***	0.1842***	0.1861**	1.0393***	1.0739**	0.088**
Switzerland	(0.0813)	(0.3047)	(0.0086)	(0.0059)	(0.0819)	(0.3977)	(0.0488)	(0.075)	(0.077)	(0.4307)	(0.0425)
	0.0098	*0.0024*	*0.032*	*0.0055*	*0*	*0.0037*	*0.0002*	*0.0136*	*0*	*0.0132*	*0.0393*
	0.1429***	-0.0264*	0***	0.0035***	0.0066	0.0444**	0.0557**	0.0643***	0.0023	0.0453***	0.0663**
South Africa	(0.053)	(0.014)	(0)	(0.0006)	(0.0154)	(0.0208)	(0.0268)	(0.0197)	(0.0154)	(0.0164)	(0.0312)
	0.0075	*0.0603*	*0.0036*	*0*	*0.6679*	*0.0339*	*0.0387*	*0.0013*	*0.8807*	*0.0063*	*0.0344*
	0.0269***	0.02	-0.0002	0.0126**	0.007***	-0.0222	0.0025	0.0264***	0.007**	-0.0503	0.0076***
Spain	(0.0056)	(0.0172)	(0.0004)	(0.0063)	(0.0027)	(0.0163)	(0.0029)	(0.0045)	(0.0033)	(0.0306)	(0.0025)
	0	*0.2464*	*0.5923*	*0.0453*	*0.0096*	*0.174*	*0.3938*	*0*	*0.0339*	*0.101*	*0.0024*
	-0.0703	0.0245	-0.0009	0.1636	0.6632***	0.4941	0.0085	-0.0492	0.647***	0.5799	-0.0287
Singapore	(0.0519)	(0.0856)	(0.0013)	(0.9355)	(0.0905)	(0.5009)	(0.0744)	(0.0386)	(0.0775)	(0.4902)	(0.0585)
	0.1795	*0.7755*	*0.488*	*0.8616*	*0*	*0.3269*	*0.9089*	*0.2062*	*0*	*0.2403*	*0.6254*
	0.2501***	-0.0642	0.006	1.2145***	0.011	3.959***	0.1735*	0.2428***	0.1119	3.8932***	0.1406
Malaysia	(0.0663)	(0.2471)	(0.0038)	(0.2279)	(0.2096)	(0.8876)	(0.0965)	(0.0666)	(0.2091)	(0.8847)	(0.1028)
	0.0003	*0.7955*	*0.1151*	*0*	*0.9583*	*0*	*0.0758*	*0.0005*	*0.5938*	*0*	*0.175*
	3.9705***	0.1225	0.0023	-0.1048***	0.5545***	2.5632***	0.1861**	1.0939	0.6126***	3.2395***	0.241***
Norway	(0.7872)	(0.2092)	(0.0029)	(0.0268)	(0.1109)	(0.6986)	(0.0794)	(0.7565)	(0.1385)	(0.8645)	(0.0726)
	0	*0.5604*	*0.4237*	*0.0002*	*0*	*0.0005*	*0.0225*	*0.1532*	*0*	*0.0004*	*0.0015*
Finland	(0.0162)	(1.3368)	(0.0246)	(0.9492)	(0.1543)	(1.5466)	(0.0777)	(0.0154)	(0.1425)	(1.6651)	(0.0338)
	0.6284	*0.0104*	*0.0041*	*0.1676*	*0*	*0.0487*	*0.0336*	*0.5464*	*0.0001*	*0.1593*	*0.0683*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 188. Country-wised performance of value driver regressions, part 2

Sample	Environmental							Environmental			
	One / Price	GHG / Price	WTR / Price	WST / Price	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
Netherlands	3.1855***	0.3575***	-0.0006***	6.1342***	0.6887***	0.88***	-0.0434	3.1662***	0.7608***	0.8713***	0.0054
	(0.4161)	(0.1043)	(0.0002)	(1.1502)	(0.0834)	(0.1679)	(0.0417)	(0.3979)	(0.0896)	(0.2048)	(0.0308)
	0	*0.0008*	*0.0046*	*0*	*0*	*0*	*0.2999*	*0*	*0*	*0*	*0.8622*
Thailand	-0.0109	0.0367*	0	1.7648**	0.6695***	3.3429***	0.1285***	-0.0164	0.7374***	3.3368***	0.1505***
	(0.0131)	(0.0203)	(0)	(0.7694)	(0.0914)	(0.5091)	(0.0264)	(0.0131)	(0.0918)	(0.5406)	(0.031)
	0.4097	*0.0721*	*0.7413*	*0.0229*	*0*	*0*	*0*	*0.2121*	*0*	*0*	*0*
Mexico	0.3204***	0.0777**	-0.0026	0.0377***	-0.4529**	1.8713***	0.229**	0.3437***	-0.339*	1.668***	0.184**
	(0.0608)	(0.0348)	(0.0059)	(0.0053)	(0.2008)	(0.5867)	(0.1024)	(0.0663)	(0.1808)	(0.5591)	(0.0877)
	0	*0.0267*	*0.6637*	*0*	*0.0253*	*0.0017*	*0.0266*	*0*	*0.0624*	*0.0032*	*0.0372*
Russia	0.0155***	-0.029***	-0.0001	0.0215***	0.0674	2.2385***	0.2291***	0.004**	0.0089	3.0517***	0.1607***
	(0.0023)	(0.009)	(0.0001)	(0.0039)	(0.0777)	(0.4141)	(0.047)	(0.0018)	(0.0827)	(0.3551)	(0.0457)
	0	*0.0017*	*0.3831*	*0*	*0.3876*	*0*	*0*	*0.0297*	*0.9141*	*0*	*0.0006*
Denmark	17.0352***	0.409	0.0945***	11.4589***	0.6658*	6.8725***	-0.5897**	14.2757***	0.7595*	8.593***	-0.4498
	(1.6901)	(0.2874)	(0.0268)	(3.4433)	(0.3742)	(1.3002)	(0.2287)	(1.5793)	(0.4545)	(1.5817)	(0.3295)
	0	*0.1585*	*0.0007*	*0.0013*	*0.0789*	*0*	*0.0117*	*0*	*0.0984*	*0*	*0.1759*
Poland	0.1262	0.0493*	-0.0574***	0.0068*	0.7815***	-0.3652	0.0515***	0.7058***	0.3659***	-0.4832	0.0599***
	(0.1759)	(0.0249)	(0.0147)	(0.0037)	(0.1347)	(0.322)	(0.0181)	(0.1747)	(0.0734)	(0.3265)	(0.0209)
	0.4783	*0.0568*	*0.0005*	*0.0779*	*0*	*0.2654*	*0.0077*	*0.0003*	*0*	*0.1481*	*0.0072*
Indonesia	0.0151***	0.0142	-0.008***	0.0001	0.6756***	1.5655***	0.1408**	0.0528***	-0.2235	1.8443**	0.2829***
	(0.0055)	(0.0136)	(0.0009)	(0.0026)	(0.1242)	(0.5416)	(0.0685)	(0.0115)	(0.2369)	(0.6999)	(0.0945)
	0.0087	*0.3013*	*0*	*0.979*	*0*	*0.0063*	*0.0467*	*0*	*0.3508*	*0.0117*	*0.0046*
Philippines	-0.0092	0.1008	-0.0007***	-0.1731**	0.8261***	4.2146***	0.0273	0.0132	0.3897**	2.6367***	0.0759
	(0.0078)	(0.0628)	(0.0002)	(0.0786)	(0.2016)	(0.6979)	(0.077)	(0.0083)	(0.1495)	(0.6946)	(0.0521)
	0.2426	*0.1128*	*0.0001*	*0.0307*	*0.0001*	*0*	*0.7242*	*0.1157*	*0.0109*	*0.0003*	*0.1493*
Belgium	19.325***	0.9887**	0.0017	-2.8115**	0.0742	0.2978	-0.0006	18.9795***	0.0845	0.8112	-0.014
	(3.4172)	(0.3795)	(0.0027)	(1.4064)	(0.0968)	(1.1589)	(0.0296)	(3.1002)	(0.0984)	(1.3595)	(0.0337)
	0	*0.0113*	*0.5208*	*0.0497*	*0.4464*	*0.798*	*0.9834*	*0*	*0.3933*	*0.5526*	*0.6787*
Turkey	-0.0332	0.0221*	0.0031	0.1553	0.1652	0.4108	0.2006***	0.086	0.1353	0.4788*	0.2057***
	(0.089)	(0.0112)	(0.0026)	(0.0945)	(0.1101)	(0.2699)	(0.0366)	(0.057)	(0.0941)	(0.2599)	(0.0375)
	0.7102	*0.0503*	*0.2262*	*0.1031*	*0.1361*	*0.1308*	*0*	*0.1342*	*0.1532*	*0.0679*	*0*
Austria	9.2888**	0.199	-0.0012	-0.1086	0.3897***	1.0173*	-0.032	7.1217***	0.4867***	0.8606*	0.0271
	(4.2975)	(0.3137)	(0.0045)	(0.5569)	(0.1337)	(0.5442)	(0.1189)	(2.0772)	(0.1185)	(0.5037)	(0.0453)
	0.0349	*0.5284*	*0.8005*	*0.8461*	*0.0051*	*0.0667*	*0.7887*	*0.0011*	*0.0001*	*0.0927*	*0.5514*
Chile	0.0023*	-0.1608***	0.0018***	-0.012	0.5727***	-0.3359*	0.2463**	0.0017	0.7724***	-0.4306**	0.0293
	(0.0013)	(0.0377)	(0.0004)	(0.0115)	(0.1597)	(0.1811)	(0.1078)	(0.0011)	(0.1763)	(0.2171)	(0.1469)
	0.0724	*0*	*0*	*0.2977*	*0.0005*	*0.0661*	*0.0242*	*0.1154*	*0*	*0.0496*	*0.8423*
Ireland	18.6169***	-14.8519***	-0.0517**	63.6702***	1.0559***	0.395	0.7198***	0.9327	0.8107*	1.7345**	0.3908*
	(4.7207)	(2.1951)	(0.0236)	(19.0295)	(0.2358)	(0.4373)	(0.2426)	(4.6505)	(0.4796)	(0.6615)	(0.1944)
	0.0004	*0*	*0.0354*	*0.002*	*0.0001*	*0.3726*	*0.0054*	*0.8421*	*0.0991*	*0.0125*	*0.0515*
Greece	2.5537***	-0.1704**	0.0027**	-0.109	0.4365	1.8106**	0.1067**	3.4111***	-0.3199***	2.8307***	0.212***
	(0.9229)	(0.0719)	(0.001)	(0.124)	(0.3424)	(0.7072)	(0.0479)	(0.3478)	(0.0298)	(0.4341)	(0.0217)
	0.0096	*0.0244*	*0.0141*	*0.3864*	*0.2121*	*0.0157*	*0.0335*	*0*	*0*	*0*	*0*
Colombia	0.1199	-0.0363	0***	-0.0118*	1.2114***	0.0962***	-0.036***	0.1275	1.1292***	0.1066***	-0.0294**
	(0.0924)	(0.0471)	(0)	(0.0061)	(0.1122)	(0.0093)	(0.0129)	(0.0895)	(0.1031)	(0.0123)	(0.0127)
	0.199	*0.4429*	*0.0015*	*0.0564*	*0*	*0*	*0.0068*	*0.1586*	*0*	*0*	*0.0232*
Portugal	-1.5305***	-0.6121**	0.0069**	1.3389	1.0415***	0.9952	0.4223***	-1.326***	1.0251***	1.1937	0.3602***
	(0.2732)	(0.2406)	(0.003)	(1.3263)	(0.3132)	(1.4127)	(0.0644)	(0.232)	(0.2493)	(1.4831)	(0.0446)
	0	*0.0133*	*0.0255*	*0.3164*	*0.0014*	*0.4836*	*0*	*0*	*0.0001*	*0.4236*	*0*
Israel	-5.5593***	2.0463*	0.0073	8.468**	1.1115***	0.7557*	0.4717**	-2.034**	0.9446***	1.2181**	0.7468***
	(0.9944)	(1.0372)	(0.0463)	(4.0993)	(0.26)	(0.437)	(0.2164)	(0.7918)	(0.2428)	(0.5711)	(0.1259)
	0	*0.0564*	*0.8759*	*0.0463*	*0.0001*	*0.0926*	*0.0361*	*0.0143*	*0.0004*	*0.0395*	*0*
Sri Lanka	-0.0079	3.6653**	-0.0765***	1.3435	0.7408***	3.1818**	-0.1733**	0.0094	0.6491***	2.3995	-0.0638*
	(0.0162)	(1.3368)	(0.0246)	(0.9492)	(0.1543)	(1.5466)	(0.0777)	(0.0154)	(0.1425)	(1.6651)	(0.0338)
	0.6284	*0.0104*	*0.0041*	*0.1676*	*0*	*0.0487*	*0.0336*	*0.5464*	*0.0001*	*0.1593*	*0.0683*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 189. Each sample value regression models comparison

Sample	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
Full sample	0.0485	0.0363	52.6799***	0	12291
Developed	0.0327	0.0155	47.2281***	0	7985
Emerging	0.3035	0.3007	5.7679***	0.0009	4306
Developed ex US	0.0576	0.026	68.3658***	0	6134
Europe	0.0419	0.0165	35.093***	0	3970
Asia Pacific Ex Japan	0.5134	0.5126	1.8933	0.1667	3469
North America	0.1113	0.063	43.6492***	0	2418
Latin America	0.309	0.3009	2.6193*	0.0664	679
Middle East and Africa	0.3175	0.2509	11.0569***	0	347
United States	0.1245	0.0988	18.0431***	0	1851
Japan	0.7531	0.7524	1.2988	0.3364	1408
United Kingdom	0.3886	0.3796	4.0987***	0.0092	842
China	0.4281	0.4251	0.6557	0.6257	387
Taiwan	0.7592	0.7564	4.0861***	0.0093	1044
Canada	0.3832	0.2952	17.5365***	0	376
Australia	0.6171	0.6113	1.8794	0.1697	379
Hong Kong	0.7121	0.6876	7.2619***	0.0001	263
France	0.5209	0.4978	7.9296***	0	500
South Korea	0.6192	0.6141	2.3126*	0.0987	526
Germany	0.1117	0.0297	13.0235***	0	430
India	0.5171	0.4672	10.1237***	0	301
Italy	0.5619	0.5484	3.5543**	0.0196	352
Brazil	0.5052	0.4896	4.6289***	0.0046	448
Sweden	0.8467	0.7546	16.2279***	0	88
Switzerland	0.7012	0.6846	5.6724***	0.0012	313
South Africa	0.3401	0.2622	10.2299***	0	267
Spain	0.086	0.0646	1.9176	0.162	252
Singapore	0.6074	0.6013	0.4048	0.7122	85
Malaysia	0.5954	0.5688	1.8626	0.1733	92
Norway	0.93	0.8812	13.7022***	0	66
Finland	0.683	0.6292	11.4696***	0	210
Netherlands	0.7375	0.6902	7.9204***	0.0001	139
Thailand	0.7596	0.7533	1.6633	0.2199	196
Mexico	0.3558	0.2868	6.5041***	0.0004	189
Russia	0.7599	0.6522	17.4998***	0	124
Denmark	0.7979	0.7517	6.1723***	0.0009	88
Poland	0.754	0.7003	2.2596	0.1106	38
Indonesia	0.8663	0.7237	13.8587***	0	46
Philippines	0.7436	0.6255	11.5111***	0	82
Turkey	0.6966	0.6869	1.2499	0.3514	124
Belgium	0.6804	0.5986	5.7137***	0.0017	74
Austria	0.8402	0.8363	0.4632	0.6939	64
Chile	0.7158	0.6695	6.3005***	0.0007	123
Ireland	0.8841	0.6836	20.1738***	0	42
Greece	0.8573	0.8294	1.9546	0.1561	37
Colombia	0.8654	0.8584	1.1647	0.3818	74
Portugal	0.8714	0.8619	1.6485	0.2225	74
Israel	0.8813	0.8481	3.2622**	0.0353	42
Sri Lanka	0.7617	0.6808	3.2789**	0.036	36
Communication Services	0.3736	0.3342	9.0103***	0	437
Consumer Discretionary	0.3126	0.2994	8.275***	0	1302
Consumer Staples	0.4416	0.4341	4.8474***	0.0033	1087
Energy	0.5218	0.5147	2.5165*	0.076	520
Financials	0.5755	0.5619	10.6933***	0	1003
Health Care	0.6696	0.6545	11.4197***	0	755
Industrials	0.1928	0.1222	58.0315***	0	1997
Information Technology	0.0809	0.0517	15.049***	0	1427
Materials	0.313	0.2884	25.3035***	0	2122
Real Estate	0.5611	0.5545	4.1769***	0.0083	843
Utilities	0.4406	0.4265	6.4459***	0.0004	775

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 190. Full sample, separate performance of environmental variables

Environmental Variable	Environmental					Non environmental			
	One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
GHG / Price	0.0383***	0	0	0***	0***	0.0383***	0**	0***	0***
	(0.003)	(0)	(0)	(0)	(0)	(0.003)	(0)	(0)	(0)
	0	*0.158*	*0.187*	*0*	*0.0016*	*0*	*0.0308*	*0*	*0*
WTR / Price	0.0289***	0**	0.0011	0.0047*	0.003**	0.0291***	0.001	0.0048*	0.003**
	(0.0021)	(0)	(0.0012)	(0.0026)	(0.0014)	(0.0021)	(0.0012)	(0.0026)	(0.0014)
	0	*0.0313*	*0.3402*	*0.0648*	*0.0385*	*0*	*0.3853*	*0.0644*	*0.0364*
WST / Price	0.0264***	0***	0.0027	0.0084*	0.0057**	0.0264***	0.0027	0.0084*	0.0057**
	(0.002)	(0)	(0.0019)	(0.0047)	(0.0024)	(0.002)	(0.0019)	(0.0047)	(0.0024)
	0	*0*	*0.1671*	*0.0723*	*0.0167*	*0*	*0.1671*	*0.0723*	*0.0167*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 191. Sector-wise sample, separate performance of environmental variables, part 1

Sample	Environmental Variable	Environmental					Non environmental			
		One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
Communication Services	GHG / Price	0.0263***	0.0623*	0.024	0.0769*	0.0313**	0.0268***	0.0227	0.0742*	0.0341**
		(0.0085)	(0.0326)	(0.0326)	(0.0415)	(0.0148)	(0.0087)	(0.0327)	(0.0413)	(0.0146)
		0.002	*0.0567*	*0.4617*	*0.0639*	*0.0344*	*0.0021*	*0.4866*	*0.0729*	*0.0194*
	WTR / Price	0.0331***	0.0051***	0.0614	0.0623	0.0273*	0.0339***	0.0612	0.0585	0.0288*
		(0.0126)	(0.0017)	(0.0484)	(0.0492)	(0.0149)	(0.0129)	(0.0493)	(0.0492)	(0.0157)
		0.0089	*0.0019*	*0.2048*	*0.2052*	*0.0681*	*0.0089*	*0.2145*	*0.2343*	*0.0661*
	WST / Price	0.0201	-0.0006	0.4704***	0.5163	0.0504*	0.0201	0.47***	0.5162	0.0504*
		(0.0125)	(0.0012)	(0.0903)	(0.3803)	(0.0283)	(0.0125)	(0.0898)	(0.3801)	(0.0282)
		0.1077	*0.6203*	*0*	*0.1748*	*0.0749*	*0.1075*	*0*	*0.1748*	*0.0749*
Consumer Discretionary	GHG / Price	0.0472***	0.1672**	0.0277***	0.0321	-0.0039	0.0512***	0.0202*	0.0408*	0.0051*
		(0.0133)	(0.0781)	(0.0081)	(0.0201)	(0.0054)	(0.0147)	(0.0108)	(0.0234)	(0.0029)
		0.0004	*0.0324*	*0.0007*	*0.1104*	*0.4735*	*0.0005*	*0.0607*	*0.0815*	*0.0843*
	WTR / Price	0.021	0.0001***	0.5742***	-0.3002	-0.0542*	0.0213	0.5751***	-0.2999	-0.0542*
		(0.0223)	(0)	(0.0766)	(0.2348)	(0.0326)	(0.0224)	(0.0768)	(0.2352)	(0.0327)
		0.346	*0.0003*	*0*	*0.201*	*0.0969*	*0.3424*	*0*	*0.2024*	*0.0972*
	WST / Price	0.0168	-0.0007	0.5114***	-0.3041	-0.0369	0.0168	0.5113***	-0.3045	-0.037
		(0.0163)	(0.0038)	(0.0598)	(0.2389)	(0.0303)	(0.0163)	(0.0596)	(0.2399)	(0.0304)
		0.3029	*0.8464*	*0*	*0.203*	*0.2229*	*0.3029*	*0*	*0.2044*	*0.2244*
Consumer Staples	GHG / Price	0.0163***	0.0612*	0.3513*	0.7962***	0.0149**	0.0167***	0.3618*	0.8074***	0.0179***
		(0.004)	(0.0369)	(0.1858)	(0.2186)	(0.006)	(0.0042)	(0.1852)	(0.217)	(0.0062)
		0	*0.0977*	*0.0588*	*0.0003*	*0.0128*	*0.0001*	*0.0509*	*0.0002*	*0.0042*
	WTR / Price	0.0118*	0***	0.4227***	1.1905***	0.005	0.0118*	0.4227***	1.1913***	0.0051
		(0.0071)	(0)	(0.1563)	(0.4496)	(0.0075)	(0.0071)	(0.1564)	(0.4498)	(0.0075)
		0.0965	*0.0001*	*0.0069*	*0.0082*	*0.5057*	*0.0961*	*0.0069*	*0.0081*	*0.5032*
	WST / Price	0.0095	0.0023	0.7002***	0.8164***	0.049***	0.0095	0.7004***	0.8182***	0.0492***
		(0.0069)	(0.0046)	(0.0981)	(0.2627)	(0.0141)	(0.0069)	(0.098)	(0.2623)	(0.0141)
		0.1647	*0.6212*	*0*	*0.0019*	*0.0005*	*0.1652*	*0*	*0.0018*	*0.0005*
Energy	GHG / Price	0.0292***	0.0001	-0.0002	0	0	0.0291***	0	0***	0***
		(0.006)	(0.0003)	(0.0003)	(0)	(0.0001)	(0.006)	(0)	(0)	(0)
		0	*0.6476*	*0.6428*	*0.3402*	*0.7334*	*0*	*0.1105*	*0*	*0.0012*
	WTR / Price	0.0114	0.0001**	0.0188	0.0386*	0.0413***	0.0112	0.0187	0.039*	0.0422***
		(0.0091)	(0.0001)	(0.0337)	(0.0212)	(0.0155)	(0.0093)	(0.0338)	(0.0213)	(0.0154)
		0.211	*0.0239*	*0.5764*	*0.0693*	*0.0076*	*0.2275*	*0.5806*	*0.067*	*0.0063*
	WST / Price	0.0438***	0.0124***	0.0907***	-0.083***	0.0953***	0.0457***	0.0914***	-0.0834***	0.0954***
		(0.006)	(0.0032)	(0.024)	(0.0314)	(0.01)	(0.0063)	(0.0243)	(0.0319)	(0.01)
		0	*0.0001*	*0.0002*	*0.0084*	*0*	*0*	*0.0002*	*0.0091*	*0*
Financials	GHG / Price	0.023***	0.0946**	-0.0338***	0.0949**	0.1234***	0.0233***	-0.0338***	0.0937**	0.1245***
		(0.0039)	(0.0455)	(0.0126)	(0.0462)	(0.034)	(0.004)	(0.0125)	(0.0456)	(0.0338)
		0	*0.0375*	*0.0075*	*0.04*	*0.0003*	*0*	*0.0071*	*0.0402*	*0.0002*
	WTR / Price	0.016***	0.0008*	0.3951***	0.3993**	-0.0104	0.0161***	0.3955***	0.3994**	-0.0105
		(0.0034)	(0.0005)	(0.0627)	(0.1909)	(0.0398)	(0.0034)	(0.0626)	(0.191)	(0.0398)
		0	*0.0628*	*0*	*0.0366*	*0.7941*	*0*	*0*	*0.0366*	*0.7913*
	WST / Price	0.0161***	0.0331	0.0039	-0.2316***	0.248***	0.0161***	0.004	-0.2326***	0.2483***
		(0.0025)	(0.0486)	(0.0088)	(0.0558)	(0.0499)	(0.0025)	(0.0089)	(0.0557)	(0.0499)
		0	*0.4963*	*0.6625*	*0*	*0*	*0*	*0.6541*	*0*	*0*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 192. Sector-wise sample, separate performance of environmental variables, part 2

Sample	Environmental Variable	Environmental					Non environmental			
		One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
Health Care	GHG / Price	-0.0311	0.0021	1.3953***	2.8706***	0.0571***	-0.0286	1.3944***	2.8699***	0.0575***
		(0.0336)	(0.0026)	(0.0548)	(0.0925)	(0.0176)	(0.032)	(0.0546)	(0.0923)	(0.0176)
		0.3551	*0.4012*	*0*	*0*	*0.0012*	*0.3721*	*0*	*0*	*0.0011*
	WTR / Price	0.2548***	-0.0046	1.1063***	2.8883***	0.001	0.2522***	1.0966***	2.8885***	0.001
		(0.042)	(0.0033)	(0.0531)	(0.5784)	(0.0146)	(0.0423)	(0.0521)	(0.5786)	(0.0146)
		0	*0.1638*	*0*	*0*	*0.9465*	*0*	*0*	*0*	*0.9452*
	WST / Price	0.0233	0.0003***	1.1714***	2.5584***	-0.0009	0.0231	1.1721***	2.5588***	-0.001
		(0.0301)	(0.0001)	(0.0535)	(0.5526)	(0.0145)	(0.0301)	(0.0535)	(0.5527)	(0.0145)
		0.4395	*0*	*0*	*0*	*0.9479*	*0.4424*	*0*	*0*	*0.9442*
Industrials	GHG / Price	0.0514***	0.0238***	0.0083***	-0.0036**	-0.0012	0.0584***	0.0006**	0.0012	0.0009
		(0.0154)	(0.0063)	(0.0021)	(0.0017)	(0.0008)	(0.0158)	(0.0003)	(0.0019)	(0.0009)
		0.0008	*0.0002*	*0.0001*	*0.0372*	*0.1576*	*0.0002*	*0.049*	*0.5056*	*0.3321*
	WTR / Price	0.0726***	-0.001	-0.0007	0.0552	0.0799***	0.0705***	0.0119**	0.0316	0.0674***
		(0.0195)	(0.0009)	(0.0136)	(0.0519)	(0.0185)	(0.0214)	(0.0048)	(0.0554)	(0.0253)
		0.0002	*0.3066*	*0.9609*	*0.2882*	*0*	*0.001*	*0.0127*	*0.5688*	*0.0078*
	WST / Price	0.0568***	0.0021**	0.0096**	-0.0141	0.0346**	0.0568***	0.0097**	-0.0152	0.0347**
		(0.0171)	(0.001)	(0.0038)	(0.0517)	(0.0147)	(0.0171)	(0.0039)	(0.0522)	(0.0147)
		0.0009	*0.043*	*0.0117*	*0.7853*	*0.0186*	*0.0009*	*0.0124*	*0.7707*	*0.0182*
Information Technology	GHG / Price	0.1078***	-0.0893***	0.0019	-0.0015*	0.0144***	0.0821***	-0.001	-0.0006	-0.0009
		(0.0207)	(0.0298)	(0.0014)	(0.0009)	(0.0051)	(0.018)	(0.0016)	(0.0011)	(0.0012)
		0	*0.0028*	*0.1748*	*0.091*	*0.0048*	*0*	*0.5517*	*0.5591*	*0.4401*
	WTR / Price	0.0361***	-0.0001	-0.0005	-0.0001	-0.0002	0.0356***	-0.0005	-0.0001	-0.0003
		(0.0087)	(0.0002)	(0.0006)	(0.0009)	(0.0006)	(0.0083)	(0.0006)	(0.0009)	(0.0004)
		0	*0.6472*	*0.4077*	*0.8863*	*0.7515*	*0*	*0.412*	*0.8748*	*0.4534*
	WST / Price	0.0374***	0.0004***	0	0.0001	0.0001	0.0374***	0.0001	0.0001	0.0001
		(0.0096)	(0.0001)	(0.0009)	(0.0007)	(0.0006)	(0.0096)	(0.0009)	(0.0007)	(0.0006)
		0.0001	*0*	*0.9613*	*0.8653*	*0.9105*	*0.0001*	*0.938*	*0.8911*	*0.9002*
Materials	GHG / Price	0.059***	0.0001**	0.0643	0.1471***	0.0805***	0.0592***	0.0644	0.1471***	0.0807***
		(0.011)	(0.0001)	(0.0428)	(0.055)	(0.0308)	(0.011)	(0.0428)	(0.055)	(0.0308)
		0	*0.0295*	*0.133*	*0.0075*	*0.009*	*0*	*0.1331*	*0.0075*	*0.0089*
	WTR / Price	0.0471***	0***	0.0115	-0.0097	0.0018	0.0474***	0.0115	-0.0104	0.0019
		(0.0097)	(0)	(0.0102)	(0.012)	(0.0056)	(0.0098)	(0.0102)	(0.0123)	(0.0057)
		0	*0.002*	*0.2612*	*0.4183*	*0.7429*	*0*	*0.2617*	*0.3971*	*0.7366*
	WST / Price	0.0278***	0.0042***	0.0275	0.0839	0.0312**	0.0347***	0.0369	0.0776	0.0293**
		(0.0097)	(0.001)	(0.0335)	(0.0535)	(0.0156)	(0.0113)	(0.0352)	(0.0519)	(0.014)
		0.0042	*0*	*0.4116*	*0.1165*	*0.0453*	*0.0022*	*0.2946*	*0.135*	*0.0359*
Real Estate	GHG / Price	0.003	0.0062***	0.4501***	-0.0006	-0.0289	0.0031	0.4507***	-0.0006	-0.0291
		(0.007)	(0.0008)	(0.0418)	(0.0016)	(0.0375)	(0.007)	(0.0418)	(0.0016)	(0.0375)
		0.6703	*0*	*0*	*0.706*	*0.4407*	*0.6571*	*0*	*0.7068*	*0.4378*
	WTR / Price	0.0274***	0.0016***	0.3557***	0.1239**	0.0059	0.0281***	0.3569***	0.1247**	0.006
		(0.0094)	(0.0003)	(0.0641)	(0.0603)	(0.0463)	(0.0095)	(0.0643)	(0.0605)	(0.0465)
		0.0037	*0*	*0*	*0.04*	*0.898*	*0.0031*	*0*	*0.0395*	*0.8973*
	WST / Price	0.0177**	0.0393***	0.3654***	0.0933*	-0.0395	0.0177**	0.3666***	0.0938*	-0.0394
		(0.0087)	(0.0151)	(0.0728)	(0.0537)	(0.0272)	(0.0087)	(0.073)	(0.0538)	(0.0274)
		0.0422	*0.0095*	*0*	*0.0823*	*0.147*	*0.043*	*0*	*0.0816*	*0.1513*
Utilities	GHG / Price	-0.0037	-0.0146	0.429***	0.6316**	0.0306	-0.0097	0.388***	0.692***	0.0285
		(0.0084)	(0.0106)	(0.0797)	(0.2561)	(0.0439)	(0.0074)	(0.0896)	(0.2644)	(0.0417)
		0.6606	*0.1696*	*0*	*0.0138*	*0.4859*	*0.1911*	*0*	*0.0089*	*0.4944*
	WTR / Price	0.0007	0***	0.2256***	0.0203**	0.0584**	0.0009	0.2319***	0.0204**	0.0586**
		(0.0024)	(0)	(0.0525)	(0.0096)	(0.0242)	(0.0025)	(0.0527)	(0.0096)	(0.0245)
		0.7727	*0.0092*	*0*	*0.0341*	*0.0159*	*0.7163*	*0*	*0.0349*	*0.017*
	WST / Price	-0.0009	0***	0.2634***	0.0601	0.0579**	-0.0009	0.264***	0.06	0.0578**
		(0.0026)	(0)	(0.0653)	(0.0394)	(0.0247)	(0.0026)	(0.0654)	(0.0394)	(0.0247)
		0.7247	*0*	*0.0001*	*0.1277*	*0.0193*	*0.72*	*0.0001*	*0.1276*	*0.0196*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 193. Status- and Region-wise sample, separate performance of environmental variables

Sample	Environmental Variable	Environmental					Non environmental			
		One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
Developed	GHG / Price	0.0323***	0	0	0***	0***	0.0322***	0***	0***	0***
		(0.0035)	(0)	(0)	(0)	(0)	(0.0035)	(0)	(0)	(0)
		0	*0.2332*	*0.2922*	*0*	*0.0002*	*0*	*0.0064*	*0*	*0*
	WTR / Price	0.0304***	0**	0.0008	0.0032	0.002*	0.0311***	0.0006	0.0034	0.0021*
		(0.0054)	(0)	(0.0009)	(0.002)	(0.0012)	(0.0055)	(0.0009)	(0.0021)	(0.0012)
		0	*0.0135*	*0.3704*	*0.1097*	*0.0889*	*0*	*0.4743*	*0.106*	*0.0825*
	WST / Price	0.0244***	0.0013***	0.0021	0.0067*	0.0046**	0.025***	0.0021	0.0067*	0.0046**
		(0.0046)	(0.0005)	(0.0016)	(0.0038)	(0.002)	(0.0046)	(0.0016)	(0.0038)	(0.002)
		0	*0.0063*	*0.1808*	*0.0803*	*0.0229*	*0*	*0.1861*	*0.0812*	*0.0227*
Emerging	GHG / Price	0.0379***	0.0003*	0.0289**	0.0518	0.0015	0.038***	0.0289**	0.0518	0.0016
		(0.0044)	(0.0002)	(0.0129)	(0.0464)	(0.0047)	(0.0044)	(0.0129)	(0.0465)	(0.0047)
		0	*0.0584*	*0.0247*	*0.2651*	*0.7409*	*0*	*0.0248*	*0.2652*	*0.7382*
	WTR / Price	0.0281***	0*	0.0164	0.0027	0.0051	0.0282***	0.0164	0.0026	0.0051
		(0.0023)	(0)	(0.0209)	(0.0074)	(0.0123)	(0.0023)	(0.0209)	(0.0074)	(0.0123)
		0	*0.0671*	*0.433*	*0.7162*	*0.6777*	*0*	*0.4325*	*0.7214*	*0.6786*
	WST / Price	0.0196***	0***	0.1119***	0.1815**	0.0176	0.0196***	0.112***	0.1815**	0.0176
		(0.0031)	(0)	(0.0413)	(0.0789)	(0.0137)	(0.0031)	(0.0413)	(0.079)	(0.0137)
		0	*0*	*0.0068*	*0.0215*	*0.1974*	*0*	*0.0068*	*0.0216*	*0.1978*
Developed excluding the United States	GHG / Price	0.0333***	-0.0001**	0.0001*	0	0.0001**	0.0332***	0*	0***	0**
		(0.0038)	(0.0001)	(0.0001)	(0)	(0)	(0.0038)	(0)	(0)	(0)
		0	*0.0484*	*0.0595*	*0.5625*	*0.0426*	*0*	*0.06*	*0*	*0.0102*
	WTR / Price	0.0327***	0**	0.001	0.0032	0.0021	0.0332***	0.0008	0.0034	0.0022
		(0.006)	(0)	(0.001)	(0.0022)	(0.0014)	(0.0061)	(0.001)	(0.0023)	(0.0014)
		0	*0.0131*	*0.3483*	*0.1406*	*0.1206*	*0*	*0.4369*	*0.1352*	*0.1134*
	WST / Price	0.0268***	0.0019*	0.0028	0.0073*	0.0052**	0.0278***	0.0029	0.0073*	0.0053**
		(0.0049)	(0.001)	(0.002)	(0.0044)	(0.0024)	(0.005)	(0.0021)	(0.0044)	(0.0024)
		0	*0.0639*	*0.1559*	*0.0947*	*0.0288*	*0*	*0.1629*	*0.0959*	*0.0285*
Europe	GHG / Price	0.0343***	-0.0001*	0.0001*	0	0.0001**	0.034***	0	0***	0**
		(0.0057)	(0)	(0.0001)	(0)	(0)	(0.0056)	(0)	(0)	(0)
		0	*0.0524*	*0.0646*	*0.3221*	*0.0403*	*0*	*0.1114*	*0*	*0.0215*
	WTR / Price	0.0151***	0.0001***	0.0009	0.0015	0.0012	0.0166***	0.0005	0.0019	0.0012*
		(0.0012)	(0)	(0.0006)	(0.0011)	(0.0007)	(0.0013)	(0.0006)	(0.0013)	(0.0007)
		0	*0*	*0.1322*	*0.161*	*0.1012*	*0*	*0.4213*	*0.1418*	*0.0753*
	WST / Price	0.0163***	0.0053***	0.0016	0.0034*	0.0025**	0.0168***	0.0015	0.0037*	0.0027**
		(0.0014)	(0.0017)	(0.0011)	(0.0021)	(0.0011)	(0.0014)	(0.0011)	(0.0022)	(0.0012)
		0	*0.0022*	*0.1438*	*0.0978*	*0.0259*	*0*	*0.1991*	*0.0942*	*0.0228*
Asia Pacific excluding Japan	GHG / Price	0.0282***	0.0001*	0.2767***	0.0653***	-0.0143***	0.0282***	0.2768***	0.0653***	-0.0143***
		(0.006)	(0.0001)	(0.0416)	(0.0106)	(0.0023)	(0.006)	(0.0416)	(0.0106)	(0.0023)
		0	*0.085*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	WTR / Price	0.0152***	0**	0.3701***	0.7654***	0.0541***	0.0152***	0.3703***	0.7657***	0.0541***
		(0.0043)	(0)	(0.0298)	(0.1526)	(0.0161)	(0.0043)	(0.0298)	(0.1526)	(0.0161)
		0.0004	*0.0107*	*0*	*0*	*0.0008*	*0.0004*	*0*	*0*	*0.0008*
	WST / Price	0.028***	0***	0.2594***	0.435**	0.0217	0.028***	0.2596***	0.435**	0.0217
		(0.0071)	(0)	(0.0596)	(0.1805)	(0.0393)	(0.0071)	(0.0596)	(0.1805)	(0.0393)
		0.0001	*0*	*0*	*0.016*	*0.5803*	*0.0001*	*0*	*0.016*	*0.5809*
North America	GHG / Price	0.0514	-0.002	0	-0.0004	0	0.0392**	-0.0001	-0.0002	0
		(0.0341)	(0.0036)	(0.0004)	(0.0006)	(0.0001)	(0.016)	(0.0004)	(0.0004)	(0.0001)
		0.1322	*0.5866*	*0.9201*	*0.4794*	*0.7471*	*0.0145*	*0.8777*	*0.6591*	*0.7705*
	WTR / Price	0.2***	0**	-0.056***	0.0079***	0.0393***	0.2018***	-0.0564***	0.008***	0.0396***
		(0.0498)	(0)	(0.0152)	(0.0031)	(0.0145)	(0.0502)	(0.0153)	(0.0031)	(0.0146)
		0.0001	*0.0172*	*0.0002*	*0.0098*	*0.0069*	*0.0001*	*0.0002*	*0.0089*	*0.0068*
	WST / Price	0.1917***	0.0017*	-0.0957***	0.3427***	0.0738***	0.2024***	-0.0938***	0.3255***	0.0712***
		(0.0555)	(0.0009)	(0.0167)	(0.0995)	(0.0145)	(0.0564)	(0.0167)	(0.1018)	(0.0144)
		0.0006	*0.0609*	*0*	*0.0006*	*0*	*0.0003*	*0*	*0.0014*	*0*
Latin America	GHG / Price	0.0139***	-0.0026	0.2957***	-0.0276	0.016	0.0138***	0.2948***	-0.0229	0.0155
		(0.0028)	(0.0203)	(0.063)	(0.119)	(0.0203)	(0.0028)	(0.0633)	(0.1031)	(0.0199)
		0	*0.9*	*0*	*0.8165*	*0.4298*	*0*	*0*	*0.8246*	*0.4376*
	WTR / Price	0.0072*	0.0001***	0.2773***	0.0097*	0.0137	0.0071*	0.2834***	0.0095*	0.0131
		(0.004)	(0)	(0.0553)	(0.0052)	(0.0151)	(0.0041)	(0.0555)	(0.0053)	(0.0152)
		0.0732	*0.0001*	*0*	*0.062*	*0.3629*	*0.0823*	*0*	*0.0708*	*0.3908*
	WST / Price	0.0074	0.0137**	0.3236***	0.02	0.0058	0.0071	0.3325***	0.0193	0.0049
		(0.0048)	(0.006)	(0.0523)	(0.0237)	(0.0112)	(0.0049)	(0.0525)	(0.0242)	(0.0113)
		0.1212	*0.0214*	*0*	*0.3985*	*0.6078*	*0.142*	*0*	*0.4255*	*0.6682*
Middle East and North Africa	GHG / Price	0.0185***	0.0103***	0.0305**	-0.0226	-0.0049*	0.0214***	0.0362***	-0.0285	-0.0053**
		(0.004)	(0.0023)	(0.0131)	(0.0234)	(0.0025)	(0.0051)	(0.0132)	(0.0232)	(0.0025)
		0	*0*	*0.0198*	*0.3359*	*0.055*	*0*	*0.0061*	*0.221*	*0.0376*
	WTR / Price	0.0199***	0***	0.005	-0.0143***	0.0007	0.0202***	0.005	-0.0147***	0.0007
		(0.0031)	(0)	(0.003)	(0.0054)	(0.0017)	(0.0031)	(0.003)	(0.0055)	(0.0017)
		0	*0.0008*	*0.1*	*0.0081*	*0.6712*	*0*	*0.1001*	*0.008*	*0.6691*
	WST / Price	0.0156***	0.003***	0.0055	0.0981***	0.091**	0.0156***	0.0132	0.0813***	0.0932**
		(0.0032)	(0.0005)	(0.0253)	(0.027)	(0.0363)	(0.0033)	(0.0257)	(0.0253)	(0.0382)
		0	*0*	*0.8269*	*0.0003*	*0.0125*	*0*	*0.6091*	*0.0014*	*0.0151*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 194. Country-wise sample, separate performance of environmental variables, part 1

Sample	Environmental Variable	Environmental					Non environmental			
		One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
		0.0157*	0.0009	-0.0001	0	0	0.0215***	0	-0.0001	0
	GHG / Price	(0.0088)	(0.0018)	(0.0001)	(0.0002)	(0.0001)	(0.0066)	(0.0001)	(0.0002)	(0)
		0.0728	*0.6139*	*0.4891*	*0.9679*	*0.6366*	*0.0011*	*0.75*	*0.5595*	*0.7504*
		-1.4698**	0.0007***	0.0751	-0.0092	0.0772***	-1.5023**	0.083	-0.0054	0.0797***
United States	WTR / Price	(0.6936)	(0.0002)	(0.0714)	(0.0072)	(0.0282)	(0.7105)	(0.0724)	(0.0074)	(0.0286)
		0.0342	*0*	*0.2935*	*0.2065*	*0.0063*	*0.0346*	*0.2518*	*0.4612*	*0.0054*
		-0.5756	0.0006***	-0.092*	0.6886***	0.1449***	-0.5759	-0.092*	0.6885***	0.1449***
	WST / Price	(0.5706)	(0.0002)	(0.0523)	(0.1388)	(0.0315)	(0.5708)	(0.0523)	(0.1388)	(0.0315)
		0.3132	*0.0012*	*0.0783*	*0*	*0*	*0.313*	*0.0785*	*0*	*0*
		1.285***	-0.0108	0.4931***	0.7924***	0.0713***	1.2882***	0.4904***	0.7888***	0.0693***
	GHG / Price	(0.3329)	(0.0084)	(0.0431)	(0.1749)	(0.0133)	(0.3342)	(0.042)	(0.175)	(0.013)
		0.0001	*0.1973*	*0*	*0*	*0*	*0.0001*	*0*	*0*	*0*
		0.7191***	0	0.5677***	0.6003***	0.0115***	0.7188***	0.5678***	0.6003***	0.0115***
Japan	WTR / Price	(0.1156)	(0)	(0.0166)	(0.1214)	(0.0042)	(0.1156)	(0.0166)	(0.1214)	(0.0042)
		0	*0.8003*	*0*	*0*	*0.0064*	*0*	*0*	*0*	*0.0062*
		0.8996***	-0.0024	0.5239***	0.5787***	0.0144***	0.9001***	0.5238***	0.5792***	0.0142***
	WST / Price	(0.1072)	(0.0028)	(0.0145)	(0.0857)	(0.0041)	(0.1073)	(0.0145)	(0.0858)	(0.0042)
		0	*0.3918*	*0*	*0*	*0.0005*	*0*	*0*	*0*	*0.0007*
		0.0788	0.0534***	-0.0012	0.0192	0.0092	0.0953*	-0.0008	0.0203	0.0101
	GHG / Price	(0.0563)	(0.0103)	(0.0176)	(0.0158)	(0.0069)	(0.0569)	(0.0187)	(0.0163)	(0.0072)
		0.1616	*0*	*0.9471*	*0.2239*	*0.1825*	*0.0937*	*0.9655*	*0.2135*	*0.1568*
		0.2418***	0.0011***	0.0788	0.3004***	0.0072	0.2459***	0.0764	0.3073***	0.0098
Britain	WTR / Price	(0.0616)	(0.0002)	(0.0645)	(0.0939)	(0.0226)	(0.0624)	(0.0654)	(0.0956)	(0.0231)
		0.0001	*0*	*0.2222*	*0.0014*	*0.7496*	*0.0001*	*0.2432*	*0.0013*	*0.6708*
		0.5193***	0.0036***	0.3821***	0.1053	-0.0339**	0.5299***	0.3842***	0.0991	-0.0343**
	WST / Price	(0.1058)	(0.0014)	(0.0779)	(0.0807)	(0.0136)	(0.1073)	(0.0783)	(0.0768)	(0.0138)
		0	*0.009*	*0*	*0.1923*	*0.013*	*0*	*0*	*0.1969*	*0.0131*
		0.0047	0	0.3527***	0.1032	0.04***	0.0046	0.3529***	0.1031	0.04***
	GHG / Price	(0.009)	(0)	(0.0392)	(0.0963)	(0.0153)	(0.009)	(0.0392)	(0.0963)	(0.0153)
		0.6052	*0.2233*	*0*	*0.2843*	*0.0092*	*0.6071*	*0*	*0.2844*	*0.0092*
		0.0185**	0.0002**	0.4194***	0.2337**	0.0414***	0.0185*	0.4218***	0.2375**	0.0424***
China	WTR / Price	(0.0094)	(0.0001)	(0.0405)	(0.1156)	(0.0155)	(0.0095)	(0.0407)	(0.1167)	(0.0156)
		0.0497	*0.0139*	*0*	*0.0434*	*0.0075*	*0.0518*	*0*	*0.0421*	*0.0066*
		0.0237**	0.0003	0.2965***	0.514***	0.0228	0.0237**	0.2969***	0.5142***	0.0228
	WST / Price	(0.0114)	(0.0005)	(0.0364)	(0.097)	(0.02)	(0.0114)	(0.0364)	(0.097)	(0.02)
		0.038	*0.4934*	*0*	*0*	*0.2538*	*0.0379*	*0*	*0*	*0.2551*
		0.0064	0.0176***	0.8285***	1.1087***	0.0192***	0.0088	0.8317***	1.0975***	0.0198***
	GHG / Price	(0.0189)	(0.006)	(0.0437)	(0.208)	(0.0061)	(0.0189)	(0.0433)	(0.2045)	(0.006)
		0.7345	*0.0033*	*0*	*0*	*0.0016*	*0.6409*	*0*	*0*	*0.0009*
		0.0493***	0.0005***	0.7008***	1.8519***	0.0271***	0.0508***	0.7042***	1.8584***	0.0268***
Taiwan	WTR / Price	(0.0168)	(0.0001)	(0.0421)	(0.206)	(0.0065)	(0.0169)	(0.0423)	(0.207)	(0.0066)
		0.0034	*0*	*0*	*0*	*0*	*0.0027*	*0*	*0*	*0*
		0.0479***	0.0022	0.7324***	1.8298***	0.0234***	0.0479***	0.7325***	1.83***	0.0235***
	WST / Price	(0.0164)	(0.0109)	(0.038)	(0.191)	(0.0064)	(0.0164)	(0.038)	(0.1908)	(0.0064)
		0.0035	*0.8387*	*0*	*0*	*0.0003*	*0.0035*	*0*	*0*	*0.0003*
		-0.2655	0.0204	0.101*	0.148*	0.1676***	-0.2434	0.0995	0.1189	0.1797***
	GHG / Price	(0.164)	(0.0191)	(0.0605)	(0.08)	(0.0457)	(0.1518)	(0.0626)	(0.0936)	(0.0456)
		0.1058	*0.2855*	*0.0954*	*0.0647*	*0.0003*	*0.109*	*0.1119*	*0.2042*	*0.0001*
		0.0926	0**	-0.0423	-0.0029	0.3329***	0.0811	-0.034	0.0219	0.316***
Canada	WTR / Price	(0.0859)	(0)	(0.0452)	(0.064)	(0.0524)	(0.09)	(0.0442)	(0.0714)	(0.0464)
		0.2813	*0.0205*	*0.3498*	*0.9633*	*0*	*0.3676*	*0.441*	*0.7587*	*0*
		-0.4328***	0.0062***	0.0873	0.048	0.1496***	-0.1912	0.0792	-0.0206	0.1443***
	WST / Price	(0.1647)	(0.0016)	(0.0551)	(0.0516)	(0.0403)	(0.1247)	(0.0674)	(0.0644)	(0.0425)
		0.0088	*0.0001*	*0.1132*	*0.3523*	*0.0002*	*0.1256*	*0.2399*	*0.7485*	*0.0007*
		0.0156***	0.2199***	0.1534***	0.0311***	-0.0152***	0.0169***	0.1518***	0.0336***	-0.0079***
	GHG / Price	(0.0039)	(0.0364)	(0.0369)	(0.0079)	(0.0023)	(0.0044)	(0.0396)	(0.0084)	(0.0021)
		0.0001	*0*	*0*	*0.0001*	*0*	*0.0001*	*0.0001*	*0.0001*	*0.0002*
		0.0072*	0.0002	0.3288***	0.4836***	-0.0173	0.0074*	0.3306***	0.4905***	-0.0169
Hong Kong	WTR / Price	(0.0044)	(0.0002)	(0.0519)	(0.1238)	(0.0193)	(0.0044)	(0.0517)	(0.1224)	(0.0192)
		0.0987	*0.1832*	*0*	*0.0001*	*0.3704*	*0.0943*	*0*	*0.0001*	*0.379*
		0.008***	0.0009	0.0778**	0.0789	0.1504***	0.0084***	0.0779**	0.0839	0.1495***
	WST / Price	(0.0029)	(0.0011)	(0.031)	(0.142)	(0.0338)	(0.0027)	(0.031)	(0.1407)	(0.034)
		0.0057	*0.4159*	*0.0123*	*0.5785*	*0*	*0.0017*	*0.0122*	*0.5511*	*0*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 195. Country-wise sample, separate performance of environmental variables, part 2

Sample	Environmental Variable	Environmental					Non environmental			
		One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
Australia	GHG / Price	0.0509*	-0.0515	0.2411***	-0.1011	-0.0313***	0.0512*	0.2039**	-0.0861	-0.0323***
		(0.0279)	(0.0422)	(0.0574)	(0.0818)	(0.0121)	(0.0267)	(0.0852)	(0.0636)	(0.0115)
		0.0683	*0.2226*	*0*	*0.2167*	*0.0094*	*0.0555*	*0.0169*	*0.1764*	*0.0051*
	WTR / Price	0.0242	0.0001**	0.3027***	0.3007*	0.1358	0.0245	0.3045***	0.2887*	0.1353
		(0.05)	(0)	(0.1023)	(0.1591)	(0.1122)	(0.0502)	(0.1025)	(0.1559)	(0.1124)
		0.6284	*0.0118*	*0.0032*	*0.0593*	*0.2264*	*0.6254*	*0.0031*	*0.0646*	*0.2291*
	WST / Price	0.1529***	-0.0105***	0.5172***	-0.1375	0.1813***	0.2369**	0.2564*	0.2683**	0.1441***
		(0.0542)	(0.0026)	(0.095)	(0.1283)	(0.043)	(0.0968)	(0.1493)	(0.1039)	(0.0392)
		0.0049	*0*	*0*	*0.2843*	*0*	*0.0146*	*0.0865*	*0.0101*	*0.0003*
France	GHG / Price	0.712	-0.0043***	0.4567***	0.1145	0.0182**	0.7694	0.4568***	0.0936	0.0114
		(0.5081)	(0.0012)	(0.0728)	(0.15)	(0.0093)	(0.5062)	(0.0722)	(0.1484)	(0.0078)
		0.1614	*0.0004*	*0*	*0.4452*	*0.05*	*0.1288*	*0*	*0.5284*	*0.1449*
	WTR / Price	0.331	0	0.5468***	0.2764*	0.0114	0.3353	0.5459***	0.275*	0.0112
		(0.5971)	(0.0002)	(0.0624)	(0.1531)	(0.0077)	(0.6011)	(0.0619)	(0.1527)	(0.0083)
		0.5795	*0.873*	*0*	*0.0714*	*0.136*	*0.5771*	*0*	*0.072*	*0.1773*
	WST / Price	1.1835***	0.0156***	0.3661***	0.1567	0.0353*	1.1858***	0.3667***	0.1607	0.0363*
		(0.4337)	(0.0052)	(0.0599)	(0.1369)	(0.0211)	(0.4364)	(0.0602)	(0.137)	(0.0213)
		0.0065	*0.0029*	*0*	*0.2528*	*0.0945*	*0.0067*	*0*	*0.2409*	*0.0891*
South Korea	GHG / Price	0.1195	0.0175***	0.1064**	0.1791*	0.1056***	0.0581	0.1129**	0.1732*	0.1108***
		(0.2223)	(0.0062)	(0.0522)	(0.0983)	(0.016)	(0.2419)	(0.0531)	(0.0997)	(0.0175)
		0.591	*0.005*	*0.0416*	*0.0687*	*0*	*0.8101*	*0.0337*	*0.0827*	*0*
	WTR / Price	0.6135***	-0.0004	0.2966***	0.452***	0.0646***	0.6293***	0.296***	0.4483***	0.063***
		(0.1587)	(0.0003)	(0.032)	(0.1343)	(0.0134)	(0.1614)	(0.0319)	(0.1336)	(0.0129)
		0.0001	*0.1597*	*0*	*0.0008*	*0*	*0.0001*	*0*	*0.0008*	*0*
	WST / Price	0.6858***	0.0112	0.3503***	0.4709***	0.0486***	0.6866***	0.3511***	0.4693***	0.0487***
		(0.1724)	(0.0573)	(0.0309)	(0.1292)	(0.0114)	(0.1735)	(0.0317)	(0.1329)	(0.0114)
		0.0001	*0.8448*	*0*	*0.0003*	*0*	*0.0001*	*0*	*0.0004*	*0*
Germany	GHG / Price	0.271**	0.0281*	0.001	-0.0007	-0.0045**	0.3744***	0.0009	-0.0019	-0.0009
		(0.1148)	(0.0151)	(0.0009)	(0.0015)	(0.0023)	(0.1133)	(0.0008)	(0.0012)	(0.0008)
		0.0185	*0.0625*	*0.2637*	*0.6429*	*0.0449*	*0.001*	*0.2597*	*0.1221*	*0.2622*
	WTR / Price	0.0245**	0.003***	0.0027***	-0.0004	-0.0051***	-0.0039	0.0009**	0.0002	0.0006*
		(0.0102)	(0.0004)	(0.0005)	(0.0004)	(0.0009)	(0.0074)	(0.0004)	(0.0003)	(0.0003)
		0.0163	*0*	*0*	*0.3045*	*0*	*0.5959*	*0.0127*	*0.6119*	*0.0548*
	WST / Price	0.0016	0.0591	0.0014*	0.0003	0	-0.0066	0.0018***	0.0005	0.0013***
		(0.0155)	(0.0835)	(0.0007)	(0.0006)	(0.0019)	(0.0102)	(0.0004)	(0.0004)	(0.0004)
		0.9159	*0.4793*	*0.0501*	*0.6117*	*0.9937*	*0.5205*	*0*	*0.1737*	*0.0003*
India	GHG / Price	0.2735***	0.0169	0.1571**	1.3492**	0.0793***	0.289***	0.1622**	1.3005**	0.0914***
		(0.0764)	(0.0134)	(0.0725)	(0.5989)	(0.0262)	(0.0834)	(0.0758)	(0.5655)	(0.0282)
		0.0004	*0.207*	*0.0305*	*0.0246*	*0.0025*	*0.0006*	*0.0329*	*0.0218*	*0.0013*
	WTR / Price	0.2619***	0.0001*	0.1475**	1.1978**	0.0921***	0.2654***	0.1481**	1.2056**	0.0923***
		(0.0795)	(0)	(0.0686)	(0.525)	(0.0301)	(0.0804)	(0.0691)	(0.5266)	(0.0303)
		0.001	*0.0698*	*0.0319*	*0.0229*	*0.0023*	*0.001*	*0.0325*	*0.0224*	*0.0024*
	WST / Price	0.175**	0***	0.0608	1.1701***	0.2057***	0.1795**	0.0619	1.1746***	0.2047***
		(0.0868)	(0)	(0.0565)	(0.384)	(0.0269)	(0.0885)	(0.0571)	(0.3859)	(0.027)
		0.0444	*0*	*0.2822*	*0.0024*	*0*	*0.0431*	*0.2785*	*0.0025*	*0*
Italy	GHG / Price	0.0142	0.0082	0.1043***	0.0002	0.1159**	0.0142	0.105***	0.0005	0.1174**
		(0.0094)	(0.0097)	(0.0281)	(0.0502)	(0.0463)	(0.0095)	(0.028)	(0.0508)	(0.0455)
		0.1326	*0.4008*	*0.0002*	*0.9976*	*0.0125*	*0.1347*	*0.0002*	*0.9917*	*0.0102*
	WTR / Price	0.2986***	0.0012***	0.0631***	0.0652	0.0886***	0.3253***	0.0648***	0.0732	0.0947***
		(0.0891)	(0.0002)	(0.0186)	(0.0471)	(0.0313)	(0.0977)	(0.0199)	(0.0501)	(0.033)
		0.0009	*0*	*0.0007*	*0.1674*	*0.0049*	*0.0009*	*0.0012*	*0.1447*	*0.0042*
	WST / Price	0.1517*	0.0383**	0.1173***	0.1194***	0.134***	0.1146	0.0859***	0.0679	0.1544***
		(0.0819)	(0.0193)	(0.0413)	(0.0373)	(0.0147)	(0.0753)	(0.0263)	(0.0432)	(0.0156)
		0.0644	*0.0477*	*0.0046*	*0.0014*	*0*	*0.1287*	*0.0012*	*0.1164*	*0*
Brazil	GHG / Price	0.8127***	-0.0144	0.1135***	0.1496	0.0218**	0.8132***	0.1074***	0.1581	0.0208**
		(0.1081)	(0.0246)	(0.0348)	(0.1672)	(0.0106)	(0.1092)	(0.0323)	(0.163)	(0.0105)
		0	*0.5579*	*0.0012*	*0.3709*	*0.04*	*0*	*0.0009*	*0.3324*	*0.0492*
	WTR / Price	0.723***	-0.0002	0.1691***	0.0142**	0.001	0.7138***	0.1601***	0.0146**	0.0024
		(0.0903)	(0.0003)	(0.0382)	(0.0067)	(0.0086)	(0.0871)	(0.0345)	(0.0069)	(0.0084)
		0	*0.4087*	*0*	*0.0355*	*0.9119*	*0*	*0*	*0.0356*	*0.7712*
	WST / Price	0.0557	0.0336***	0.2856***	0.0328**	-0.0013	0.0563	0.297***	0.0326**	-0.0019
		(0.0483)	(0.0109)	(0.051)	(0.0157)	(0.0112)	(0.049)	(0.0516)	(0.0157)	(0.0115)
		0.2496	*0.0021*	*0*	*0.0368*	*0.9075*	*0.2516*	*0*	*0.0384*	*0.8677*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 196. Country-wise sample, separate performance of environmental variables, part 3

Sample	Environmental Variable	Environmental					Non environmental			
		One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
		1.9709**	-0.65**	0.6213***	-0.1364	-0.0664**	1.9211**	0.5034***	-0.0807	-0.0532**
	GHG / Price	(0.8805)	(0.293)	(0.1362)	(0.2405)	(0.0271)	(0.8444)	(0.115)	(0.204)	(0.0263)
		0.0257	*0.027*	*0*	*0.5709*	*0.0147*	*0.0233*	*0*	*0.6925*	*0.0439*
		1.5276***	-0.0013	0.5424***	6.1205***	-0.1035***	1.5091***	0.4845***	6.1614***	-0.0917***
Sweden	WTR / Price	(0.34)	(0.0012)	(0.0896)	(0.6101)	(0.0215)	(0.3309)	(0.0884)	(0.628)	(0.0209)
		0	*0.3123*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
		1.0325***	0.0072	0.6706***	0.4559***	-0.1253***	1.0345***	0.6801***	0.4579***	-0.1269***
	WST / Price	(0.2049)	(0.0125)	(0.1032)	(0.1153)	(0.0242)	(0.2062)	(0.1019)	(0.1162)	(0.0242)
		0	*0.5656*	*0*	*0.0001*	*0*	*0*	*0*	*0.0001*	*0*
		0.0756	0.0033***	-0.0012	-0.3069***	0.3264***	0.0739	-0.0012	-0.3084***	0.3279***
	GHG / Price	(0.121)	(0.0009)	(0.003)	(0.0494)	(0.0449)	(0.1217)	(0.003)	(0.0493)	(0.0448)
		0.5324	*0.0005*	*0.6944*	*0*	*0*	*0.5441*	*0.6926*	*0*	*0*
		0.0967*	0.0097	1.2047***	0.4157	-0.0939	0.1095**	1.2141***	0.4077	-0.0845
Switzerland	WTR / Price	(0.0581)	(0.0062)	(0.0966)	(0.2601)	(0.0745)	(0.055)	(0.1073)	(0.2676)	(0.0754)
		0.0964	*0.1191*	*0*	*0.1105*	*0.2075*	*0.047*	*0*	*0.1282*	*0.2626*
		-0.1508	0.0008	0.0044*	-0.2289***	0.2223***	-0.1331	0.0043*	-0.2285***	0.2223***
	WST / Price	(0.1607)	(0.001)	(0.0026)	(0.0642)	(0.0678)	(0.1559)	(0.0025)	(0.0646)	(0.0681)
		0.3485	*0.4026*	*0.0881*	*0.0004*	*0.0011*	*0.3934*	*0.0881*	*0.0004*	*0.0012*
		0.046***	0.0061*	0.0156	-0.0332	-0.0042*	0.0599***	0.0154	-0.0425**	-0.0047**
	GHG / Price	(0.0157)	(0.0036)	(0.0096)	(0.0232)	(0.0022)	(0.0127)	(0.01)	(0.0216)	(0.0022)
		0.0034	*0.0883*	*0.1041*	*0.1526*	*0.055*	*0*	*0.1224*	*0.0497*	*0.0327*
		0.0469***	0***	0.0034	-0.0031	0.0006	0.048***	0.0034	-0.003	0.0006
South Africa	WTR / Price	(0.0092)	(0)	(0.0022)	(0.0094)	(0.0013)	(0.0095)	(0.0022)	(0.0097)	(0.0013)
		0	*0.001*	*0.1228*	*0.738*	*0.6155*	*0*	*0.1259*	*0.7558*	*0.6191*
		0.0682***	0.0031***	0.0008	0.0797***	0.0741**	0.0712***	0.0086	0.0624***	0.076**
	WST / Price	(0.0223)	(0.0005)	(0.0191)	(0.0221)	(0.0312)	(0.0225)	(0.0193)	(0.0203)	(0.0333)
		0.0023	*0*	*0.9654*	*0.0004*	*0.018*	*0.0017*	*0.6557*	*0.0023*	*0.0229*
		0.0277***	0.0012***	0.0066**	-0.0387	0.0095**	0.0277***	0.0064**	-0.0401	0.0099***
	GHG / Price	(0.0046)	(0.0001)	(0.0032)	(0.0302)	(0.0038)	(0.0047)	(0.0032)	(0.0308)	(0.0038)
		0	*0*	*0.0428*	*0.2*	*0.0123*	*0*	*0.0492*	*0.1928*	*0.0097*
		0.0248***	0.0001	0.002	0.0085	0.0063**	0.0261***	0.0006*	0.0104	0.0079***
Spain	WTR / Price	(0.0045)	(0.0002)	(0.0026)	(0.0061)	(0.0029)	(0.0038)	(0.0003)	(0.0064)	(0.0022)
		0	*0.5923*	*0.4529*	*0.1649*	*0.0319*	*0*	*0.0782*	*0.1059*	*0.0003*
		0.0275***	0.0129**	0.001**	0.0115	0.0078***	0.0275***	0.0005	0.0137*	0.009***
	WST / Price	(0.0041)	(0.0064)	(0.0004)	(0.0079)	(0.0027)	(0.0042)	(0.0003)	(0.0078)	(0.0027)
		0	*0.0428*	*0.0194*	*0.1486*	*0.0044*	*0*	*0.1709*	*0.0789*	*0.001*
		-0.0425	-0.0181	0.6662***	0.9023*	0.0118	-0.0387	0.6541***	0.9297*	0.0059
	GHG / Price	(0.0342)	(0.015)	(0.0682)	(0.4915)	(0.0315)	(0.034)	(0.0669)	(0.4882)	(0.0316)
		0.2144	*0.2286*	*0*	*0.0675*	*0.7089*	*0.2565*	*0*	*0.058*	*0.8511*
		-0.0829**	-0.0005**	0.7318***	1.0584**	0.0087	-0.0649*	0.7079***	1.0914**	-0.0202
Singapore	WTR / Price	(0.0341)	(0.0003)	(0.0619)	(0.4817)	(0.0319)	(0.0332)	(0.0592)	(0.4616)	(0.0302)
		0.0159	*0.0366*	*0*	*0.0289*	*0.7848*	*0.052*	*0*	*0.0188*	*0.5044*
		-0.0544	-0.2147***	0.7245***	0.8645*	-0.0222	-0.0406	0.6931***	0.9869**	-0.0447**
	WST / Price	(0.038)	(0.0565)	(0.0727)	(0.4847)	(0.0207)	(0.0377)	(0.0728)	(0.4796)	(0.02)
		0.1533	*0.0002*	*0*	*0.0762*	*0.2846*	*0.2829*	*0*	*0.0411*	*0.0271*
		0.0312	0.0066***	0.5232***	0.5022	0.0658**	0.036	0.5128***	0.5259	0.0697**
	GHG / Price	(0.0368)	(0.0019)	(0.0727)	(0.3354)	(0.0314)	(0.0363)	(0.0725)	(0.3358)	(0.032)
		0.3975	*0.0007*	*0*	*0.1354*	*0.0372*	*0.3219*	*0*	*0.1184*	*0.0304*
		0.0325	-0.0001*	0.2441***	1.119**	0.2733***	0.0368	0.2384***	1.1341**	0.2436***
Malaysia	WTR / Price	(0.0236)	(0.0001)	(0.0501)	(0.4487)	(0.0768)	(0.0224)	(0.051)	(0.4457)	(0.0597)
		0.1685	*0.0724*	*0*	*0.0133*	*0.0005*	*0.1025*	*0*	*0.0116*	*0.0001*
		0.0204	0.6995*	0.4563***	0.5168	0.0658**	0.0205	0.4835***	0.477	0.0694**
	WST / Price	(0.0241)	(0.3828)	(0.0922)	(0.3738)	(0.0269)	(0.0252)	(0.0942)	(0.3748)	(0.027)
		0.3984	*0.069*	*0*	*0.1681*	*0.0151*	*0.4178*	*0*	*0.2044*	*0.0107*
		-0.2251***	-0.1505***	0.0444	-0.0684***	0.2054***	-0.1554**	0.1196***	-0.07**	0.0507***
	GHG / Price	(0.0604)	(0.039)	(0.0313)	(0.0199)	(0.0435)	(0.063)	(0.0276)	(0.029)	(0.0124)
		0.0002	*0.0001*	*0.1575*	*0.0007*	*0*	*0.0142*	*0*	*0.0165*	*0.0001*
		-0.0465	0.0144***	0.0159	-0.015	0.1441**	-0.1989	0.0105	-0.004	0.2104**
Norway	WTR / Price	(0.105)	(0.0018)	(0.0581)	(0.0646)	(0.0694)	(0.1319)	(0.0815)	(0.0904)	(0.0935)
		0.659	*0*	*0.7843*	*0.8169*	*0.0405*	*0.1346*	*0.898*	*0.9649*	*0.0266*
		-0.0116	0.0554***	0.0671**	-0.0748**	0.0141	0.0209	0.0657*	-0.0728*	0.0225
	WST / Price	(0.1143)	(0.0134)	(0.0337)	(0.0363)	(0.0178)	(0.1034)	(0.0347)	(0.0373)	(0.0164)
		0.9192	*0.0001*	*0.0477*	*0.0406*	*0.4295*	*0.8399*	*0.0593*	*0.0523*	*0.1721*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 197. Country-wise sample, separate performance of environmental variables, part 4

Sample	Environmental Variable	Environmental					Non environmental			
		One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
		3.0364***	0.1069	0.2313	1.9105***	0.0218	3.0195***	0.2377	1.8798***	0.0345
	GHG / Price	(0.6776)	(0.0721)	(0.146)	(0.4324)	(0.033)	(0.6924)	(0.1517)	(0.4134)	(0.0362)
		0	*0.1391*	*0.1142*	*0*	*0.5091*	*0*	*0.1183*	*0*	*0.3409*
		0.5669***	0.0046***	0.3764**	1.0792**	0.0066	0.5579**	0.4202**	1.1802**	0.0079
Finland	WTR / Price	(0.2107)	(0.001)	(0.1521)	(0.4614)	(0.0417)	(0.2183)	(0.1652)	(0.4946)	(0.0468)
		0.0075	*0*	*0.0138*	*0.0199*	*0.8742*	*0.011*	*0.0114*	*0.0176*	*0.8653*
		0.8323***	0.0416	0.3553***	0.0328	0.0247	0.8087***	0.3514***	0.0267	0.03
	WST / Price	(0.246)	(0.1164)	(0.1288)	(0.1693)	(0.0284)	(0.228)	(0.1305)	(0.155)	(0.0246)
		0.0008	*0.7211*	*0.006*	*0.8463*	*0.3851*	*0.0004*	*0.0073*	*0.8634*	*0.224*
		-1.2149**	0.1558**	0.436***	-0.3394***	0.1753***	-1.0743*	0.4469***	-0.351***	0.1817***
	GHG / Price	(0.6162)	(0.0657)	(0.0726)	(0.1202)	(0.0446)	(0.6143)	(0.0735)	(0.1165)	(0.0437)
		0.0496	*0.0184*	*0*	*0.0051*	*0.0001*	*0.0814*	*0*	*0.0028*	*0*
		-0.7236**	-0.0002	0.6039***	-0.2308	0.0656***	-0.7057**	0.6151***	-0.2466	0.057***
Netherlands	WTR / Price	(0.3137)	(0.0002)	(0.0894)	(0.3382)	(0.0226)	(0.2993)	(0.095)	(0.328)	(0.0174)
		0.022	*0.2225*	*0*	*0.4957*	*0.0041*	*0.0193*	*0*	*0.453*	*0.0012*
		1.8296***	-0.3725***	0.4873***	0.1829	0.0352	-0.6819***	0.5977***	-0.0898	0.0267
	WST / Price	(0.4375)	(0.0604)	(0.0899)	(0.2151)	(0.0294)	(0.2202)	(0.0905)	(0.2448)	(0.031)
		0	*0*	*0*	*0.3958*	*0.2328*	*0.0021*	*0*	*0.714*	*0.3901*
		-0.0077	0.0148	0.7308***	2.1532***	0.1282***	-0.0086	0.7342***	2.1063***	0.1411***
	GHG / Price	(0.0093)	(0.0248)	(0.1249)	(0.7378)	(0.0257)	(0.009)	(0.1201)	(0.6553)	(0.0384)
		0.4102	*0.5506*	*0*	*0.0038*	*0*	*0.3375*	*0*	*0.0015*	*0.0003*
		-0.0097	0***	0.5803***	3.6447***	0.1804***	-0.0098	0.5794***	3.6584***	0.1811***
Thailand	WTR / Price	(0.0115)	(0)	(0.078)	(0.4762)	(0.0276)	(0.0115)	(0.0782)	(0.4766)	(0.0277)
		0.396	*0*	*0*	*0*	*0*	*0.3939*	*0*	*0*	*0*
		-0.0059	0.0016	0.709***	2.1569***	0.1452***	-0.006	0.7106***	2.1547***	0.145***
	WST / Price	(0.0094)	(0.0011)	(0.1283)	(0.6988)	(0.0407)	(0.0094)	(0.1273)	(0.6965)	(0.0406)
		0.5286	*0.1437*	*0*	*0.0022*	*0.0004*	*0.5229*	*0*	*0.0022*	*0.0004*
		0.3902***	0.021	-0.2046*	1.7424***	0.1175***	0.3944***	-0.2019*	1.7697***	0.1207***
	GHG / Price	(0.0782)	(0.0283)	(0.1198)	(0.5878)	(0.0432)	(0.0788)	(0.1192)	(0.578)	(0.0425)
		0	*0.4582*	*0.0887*	*0.0033*	*0.0069*	*0*	*0.0913*	*0.0024*	*0.0049*
		0.363***	0.0002***	-0.0024	0.2552	-0.0248	0.3636***	-0.0026	0.2576	-0.0246
Mexico	WTR / Price	(0.0581)	(0)	(0.068)	(0.2781)	(0.039)	(0.0581)	(0.0682)	(0.2795)	(0.0392)
		0	*0*	*0.9723*	*0.3597*	*0.5247*	*0*	*0.9695*	*0.3575*	*0.5314*
		0.3905***	0.0347***	-0.0635	0.3756	-0.0242	0.3927***	-0.0489	0.3347	-0.024
	WST / Price	(0.0608)	(0.0028)	(0.0572)	(0.2617)	(0.0417)	(0.0617)	(0.0581)	(0.2635)	(0.0419)
		0	*0*	*0.2687*	*0.1525*	*0.5618*	*0*	*0.4016*	*0.2051*	*0.5676*
		0.0167***	-0.0526***	0.1431*	0.4477***	0.2723***	-0.0057	0.0532	0.4489***	0.1975**
	GHG / Price	(0.0061)	(0.0157)	(0.0842)	(0.107)	(0.0644)	(0.0046)	(0.0978)	(0.0998)	(0.0799)
		0.007	*0.001*	*0.091*	*0*	*0*	*0.2176*	*0.587*	*0*	*0.0144*
		0.0008	0	0.1131**	0.8916***	0.1429***	0.0005	0.1147**	0.9414***	0.1303***
Russia	WTR / Price	(0.0016)	(0)	(0.0448)	(0.2801)	(0.0333)	(0.0016)	(0.0445)	(0.3141)	(0.0372)
		0.6081	*0.3975*	*0.0122*	*0.0016*	*0*	*0.7672*	*0.0104*	*0.0029*	*0.0005*
		0.0035**	0.008***	-0.0268	1.202***	0.1975***	0.0035*	-0.0348	1.2844***	0.2093***
	WST / Price	(0.0017)	(0.002)	(0.0714)	(0.3062)	(0.0441)	(0.0018)	(0.0737)	(0.3188)	(0.0456)
		0.0479	*0.0001*	*0.7077*	*0.0001*	*0*	*0.0511*	*0.6374*	*0.0001*	*0*
		6.4039*	-0.0001***	0.0001***	0**	0***	6.4047*	0	0***	0***
	GHG / Price	(3.6546)	(0)	(0)	(0)	(0)	(3.6547)	(0)	(0)	(0)
		0.0812	*0*	*0*	*0.026*	*0*	*0.0811*	*0.1114*	*0*	*0.0019*
		5.4359***	-0.0059***	0.4676***	4.2701***	0.0201	8.075***	0.1704	5.9612***	-0.1765***
Denmark	WTR / Price	(1.0188)	(0.0009)	(0.1557)	(0.8755)	(0.0742)	(1.2907)	(0.1724)	(0.9259)	(0.0655)
		0	*0*	*0.003*	*0*	*0.7863*	*0*	*0.3238*	*0*	*0.0076*
		7.4601***	0.339***	1.3775***	2.9453***	-0.6871***	6.2726***	0.682	3.0201**	-0.3626**
	WST / Price	(0.8744)	(0.0365)	(0.1724)	(0.5843)	(0.0744)	(1.0528)	(0.4171)	(1.2683)	(0.1794)
		0	*0*	*0*	*0*	*0*	*0*	*0.1035*	*0.0181*	*0.0445*
		0.3913*	-0.0795	0.4964***	0.6956	0.082***	0.5015***	0.4197***	0.5114	0.0789***
	GHG / Price	(0.2326)	(0.0511)	(0.1407)	(0.5509)	(0.0288)	(0.1795)	(0.0927)	(0.5445)	(0.0277)
		0.0966	*0.1237*	*0.0007*	*0.2106*	*0.0057*	*0.0066*	*0*	*0.3506*	*0.0056*
		0.4522***	0	0.2196***	0.4169	0.0469***	0.4535***	0.2183***	0.4194	0.0469***
Poland	WTR / Price	(0.0946)	(0)	(0.0439)	(0.2603)	(0.0099)	(0.0961)	(0.0384)	(0.2593)	(0.0097)
		0	*0.8689*	*0*	*0.1119*	*0*	*0*	*0*	*0.1084*	*0*
		0.4105***	0.0004**	0.2358***	1.1131***	0.046***	0.4069***	0.2375***	1.1207***	0.0463***
	WST / Price	(0.1252)	(0.0002)	(0.0417)	(0.3055)	(0.0112)	(0.1257)	(0.0418)	(0.3042)	(0.0113)
		0.0012	*0.0306*	*0*	*0.0003*	*0.0001*	*0.0014*	*0*	*0.0003*	*0.0001*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 198. Country-wise sample, separate performance of environmental variables, part 5

Sample	Environmental Variable	Environmental					Non environmental			
		One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
Indonesia	GHG / Price	0.0254**	-0.0193	0.402**	2.0053***	0.0242	0.0258**	0.3606*	2.0421***	0.0035
		(0.0107)	(0.0278)	(0.1863)	(0.7564)	(0.0955)	(0.0114)	(0.2132)	(0.7082)	(0.0966)
		0.0194	*0.4884*	*0.0331*	*0.0092*	*0.8003*	*0.025*	*0.0935*	*0.0047*	*0.9714*
	WTR / Price	0.0175**	-0.0001	0.256*	0.9287	0.2584**	0.0181***	0.2763*	0.9373	0.228***
		(0.007)	(0)	(0.142)	(0.6019)	(0.1084)	(0.0068)	(0.1439)	(0.6118)	(0.0871)
		0.0129	*0.224*	*0.0732*	*0.1247*	*0.0182*	*0.0082*	*0.0565*	*0.1273*	*0.0096*
	WST / Price	0.0472***	0.0078**	0.0636	1.2435***	0.1809***	0.0502***	0.0608	1.525***	0.1764***
		(0.0131)	(0.0035)	(0.2652)	(0.4185)	(0.056)	(0.0143)	(0.2807)	(0.4987)	(0.0594)
		0.0005	*0.0286*	*0.8108*	*0.0036*	*0.0016*	*0.0007*	*0.829*	*0.0028*	*0.0036*
Philippines	GHG / Price	0.0071	-0.1429***	0.4892***	3.5391***	0.1844***	0.013*	0.3557***	3.4866***	0.1378***
		(0.0068)	(0.0445)	(0.1395)	(0.6879)	(0.0539)	(0.0073)	(0.119)	(0.6788)	(0.0455)
		0.2929	*0.0016*	*0.0006*	*0*	*0.0008*	*0.0793*	*0.0032*	*0*	*0.0028*
	WTR / Price	0.0045	-0.0004***	0.5657***	3.482***	0.1239**	0.0152*	0.4113***	2.8786***	0.0981*
		(0.0069)	(0.0001)	(0.1481)	(0.8324)	(0.0596)	(0.0078)	(0.1306)	(0.7842)	(0.0524)
		0.5106	*0*	*0.0002*	*0*	*0.0393*	*0.0539*	*0.002*	*0.0003*	*0.0631*
	WST / Price	0.0219***	-0.239*	0.284*	3.5794***	0.1538***	0.0175**	0.3466**	3.2242***	0.1289**
		(0.0083)	(0.1416)	(0.1454)	(0.7321)	(0.0583)	(0.0081)	(0.1472)	(0.7467)	(0.0541)
		0.0095	*0.0935*	*0.0527*	*0*	*0.0093*	*0.0328*	*0.0199*	*0*	*0.0184*
Belgium	GHG / Price	6.1444***	0.183**	0.1908***	-0.7238***	-0.0088	6.7101***	0.2188***	-0.872***	-0.0025
		(0.819)	(0.0708)	(0.0576)	(0.2198)	(0.0153)	(0.8409)	(0.0692)	(0.2598)	(0.0169)
		0	*0.0106*	*0.0011*	*0.0012*	*0.5646*	*0*	*0.0019*	*0.001*	*0.881*
	WTR / Price	0.7137	0.0018	0.3688**	-0.2422	-0.0462*	1.0438	0.37**	-0.2472	-0.0458*
		(1.3836)	(0.0017)	(0.1721)	(0.3117)	(0.0269)	(1.4646)	(0.1727)	(0.305)	(0.0265)
		0.6069	*0.2975*	*0.0339*	*0.4384*	*0.0879*	*0.4773*	*0.034*	*0.4191*	*0.0866*
	WST / Price	5.1121***	-0.3272***	0.4797***	-0.6421***	-0.0956***	2.6808***	0.5099***	-0.4938**	-0.1199***
		(1.1196)	(0.1207)	(0.1375)	(0.205)	(0.0305)	(0.9998)	(0.121)	(0.204)	(0.0261)
		0	*0.0074*	*0.0006*	*0.0021*	*0.002*	*0.0081*	*0*	*0.0166*	*0*
Turkey	GHG / Price	0.0844**	0.0215**	0.1892**	0.5659**	0.1828***	0.0911**	0.2057**	0.4918**	0.1875***
		(0.0367)	(0.0106)	(0.0825)	(0.2431)	(0.0318)	(0.0377)	(0.0809)	(0.2327)	(0.0321)
		0.0224	*0.0429*	*0.0227*	*0.0208*	*0*	*0.0165*	*0.0117*	*0.0357*	*0*
	WTR / Price	0.0342	0.0022***	0.3057***	0.527*	0.1536***	0.054*	0.3044***	0.5079*	0.1559***
		(0.0308)	(0.0007)	(0.0937)	(0.2689)	(0.0336)	(0.0303)	(0.0924)	(0.272)	(0.0339)
		0.2678	*0.0037*	*0.0013*	*0.0513*	*0*	*0.0763*	*0.0011*	*0.0632*	*0*
	WST / Price	0.1026**	0.061	0.3708***	0.6268*	0.1021**	0.1076**	0.3726***	0.6455*	0.1017**
		(0.0423)	(0.0887)	(0.1053)	(0.3436)	(0.0449)	(0.0436)	(0.1059)	(0.3484)	(0.0451)
		0.0161	*0.4925*	*0.0005*	*0.0694*	*0.024*	*0.0143*	*0.0005*	*0.0652*	*0.025*
New Zealand	GHG / Price	0.3996***	-0.0202	0.7079***	1.3436***	0.1633***	0.3952***	0.7056***	1.3557***	0.1617***
		(0.1011)	(0.0833)	(0.1409)	(0.5098)	(0.0341)	(0.1106)	(0.1348)	(0.4846)	(0.0328)
		0.0001	*0.8087*	*0*	*0.0091*	*0*	*0.0005*	*0*	*0.0057*	*0*
	WTR / Price	0.2379**	0	0.4427*	1.0147***	0.2372**	0.2349*	0.4816**	1.0428***	0.2255**
		(0.1139)	(0)	(0.2308)	(0.3624)	(0.1019)	(0.1175)	(0.2214)	(0.3768)	(0.1002)
		0.042	*0.3549*	*0.0609*	*0.0073*	*0.0241*	*0.051*	*0.0343*	*0.0079*	*0.0289*
Austria	GHG / Price	2.5161	0.0244	0.7106***	0.7082	0.0169	2.5325	0.7189***	0.7056	0.0171
		(1.8813)	(0.0696)	(0.1058)	(0.4525)	(0.0244)	(1.8789)	(0.0913)	(0.4531)	(0.0244)
		0.1838	*0.7264*	*0*	*0.1203*	*0.4882*	*0.1804*	*0*	*0.1222*	*0.4861*
	WTR / Price	13.207***	0.0026***	0.128	0.6187	-0.0112	13.5674***	0.191	0.6479	-0.0204
		(1.9099)	(0.0009)	(0.1168)	(0.4211)	(0.0278)	(2.1332)	(0.1199)	(0.4558)	(0.0304)
		0	*0.0041*	*0.2746*	*0.1439*	*0.6878*	*0*	*0.1135*	*0.1573*	*0.5036*
	WST / Price	2.0491*	-0.2105	0.6459***	0.8253**	0.0446*	2.1092*	0.6395***	0.8545***	0.0383*
		(1.2074)	(0.4198)	(0.078)	(0.3215)	(0.026)	(1.189)	(0.0741)	(0.3128)	(0.0222)
		0.0914	*0.6167*	*0*	*0.0111*	*0.0888*	*0.0777*	*0*	*0.0069*	*0.0861*
Chile	GHG / Price	0.0013	-0.032*	0.8701***	-0.5079***	0.0435	0.0017*	0.8474***	-0.4748***	0.0218
		(0.001)	(0.0172)	(0.1612)	(0.1875)	(0.108)	(0.0009)	(0.1541)	(0.1817)	(0.1185)
		0.1939	*0.0646*	*0*	*0.0074*	*0.6872*	*0.0632*	*0*	*0.0098*	*0.854*
	WTR / Price	0.0012	0.0011***	0.096	0.174	0.2844**	-0.0008	0.1581	0.1514	0.2912**
		(0.0029)	(0.0002)	(0.113)	(0.1524)	(0.1143)	(0.0035)	(0.136)	(0.1826)	(0.1333)
		0.6846	*0*	*0.3966*	*0.2549*	*0.0136*	*0.8077*	*0.2462*	*0.4079*	*0.03*
	WST / Price	-0.0007	0.0235***	0.1557	0.1686	0.3086**	-0.0019	0.1906	0.1435	0.299**
		(0.0037)	(0.0027)	(0.1467)	(0.1959)	(0.1432)	(0.0041)	(0.1544)	(0.2047)	(0.148)
		0.8578	*0*	*0.2898*	*0.3903*	*0.0322*	*0.6346*	*0.2184*	*0.4841*	*0.0445*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 199. Country-wise sample, separate performance of environmental variables, part 6

Sample	Environmental Variable	Environmental					Non environmental			
		One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
Ireland	GHG / Price	1.1791***	0.5647***	0.071	0.8763**	0.1532***	1.3976***	0.1104	0.8983**	0.1199***
		(0.3984)	(0.1702)	(0.0717)	(0.3899)	(0.0371)	(0.3899)	(0.07)	(0.3892)	(0.0317)
		0.0036	*0.0012*	*0.3236*	*0.0262*	*0.0001*	*0.0005*	*0.117*	*0.0224*	*0.0002*
	WTR / Price	0.4466	-0.021***	0.7715***	0.7457	0.3173***	0.4989	0.298**	1.9664***	0.2405*
		(1.0434)	(0.0049)	(0.1805)	(0.5138)	(0.0694)	(1.1652)	(0.1308)	(0.5126)	(0.135)
		0.6699	*0.0001*	*0.0001*	*0.1512*	*0*	*0.6698*	*0.0257*	*0.0003*	*0.0791*
	WST / Price	-0.9235*	-2.3471	0.4246***	1.4613***	0.4874***	-0.6088	0.4158***	1.2682***	0.326***
		(0.5534)	(1.9312)	(0.1032)	(0.4024)	(0.1291)	(0.5322)	(0.103)	(0.4336)	(0.1149)
		0.0989	*0.2276*	*0.0001*	*0.0005*	*0.0003*	*0.2558*	*0.0001*	*0.0044*	*0.0057*
Greece	GHG / Price	0.2291***	0.0134***	0.0028	0.0306*	0.0154	0.2387***	0.0018	0.0395*	0.0222
		(0.0548)	(0.0041)	(0.0027)	(0.0178)	(0.0127)	(0.0615)	(0.0033)	(0.0211)	(0.015)
		0.0001	*0.0013*	*0.2992*	*0.0886*	*0.2297*	*0.0002*	*0.5896*	*0.0645*	*0.1409*
	WTR / Price	0.203*	-0.0005***	0.0698***	0.0352	0.0757***	0.2577*	0.0182	0.051	0.0751***
		(0.1149)	(0.0002)	(0.0253)	(0.1013)	(0.0165)	(0.1363)	(0.0185)	(0.1185)	(0.0147)
		0.0798	*0.0046*	*0.0067*	*0.7291*	*0*	*0.0612*	*0.3276*	*0.6681*	*0*
	WST / Price	0.1748***	0.3713***	0.0744***	-0.0255	0.0108	0.1828***	0.0779***	-0.0261	0.0154
		(0.0318)	(0.0686)	(0.0191)	(0.0199)	(0.0089)	(0.0354)	(0.022)	(0.0217)	(0.0093)
		0	*0*	*0.0002*	*0.2043*	*0.2304*	*0*	*0.0007*	*0.2329*	*0.1032*
Colombia	GHG / Price	-0.0627***	0.0464	0.966***	0.1823***	-0.005	-0.0663***	0.9924***	0.1769***	-0.0067
		(0.017)	(0.0401)	(0.0556)	(0.0483)	(0.0103)	(0.0169)	(0.0499)	(0.0454)	(0.0101)
		0.0003	*0.2489*	*0*	*0.0002*	*0.6299*	*0.0001*	*0*	*0.0002*	*0.509*
	WTR / Price	0.0097	0*	1.03***	0.149***	-0.0084	0.0144	0.9802***	0.1566***	-0.0043
		(0.0299)	(0)	(0.0929)	(0.0366)	(0.0159)	(0.0295)	(0.082)	(0.0387)	(0.0148)
		0.7462	*0.0907*	*0*	*0.0001*	*0.5981*	*0.6256*	*0*	*0.0001*	*0.7717*
	WST / Price	-0.0435**	0.0134***	0.8991***	0.2199***	0.0103	-0.0438**	0.9016***	0.2204***	0.0103
		(0.0169)	(0.0038)	(0.0768)	(0.0807)	(0.0148)	(0.0169)	(0.0765)	(0.0813)	(0.0149)
		0.0114	*0.0006*	*0*	*0.0074*	*0.4883*	*0.0109*	*0*	*0.0077*	*0.4912*
Portugal	GHG / Price	0.0536	0.139***	0.1105	0.7675**	0.2271***	0.0391	0.1081	0.8467**	0.2525***
		(0.0694)	(0.0521)	(0.1139)	(0.2997)	(0.0441)	(0.0733)	(0.1228)	(0.3379)	(0.044)
		0.4418	*0.0088*	*0.3341*	*0.0117*	*0*	*0.5948*	*0.3805*	*0.0136*	*0*
	WTR / Price	0.2604	0.0071***	0.1139	1.0786	0.0094	0.246	0.1559	1.357	0.0088
		(0.2402)	(0.001)	(0.2224)	(1.0131)	(0.0411)	(0.2861)	(0.2647)	(1.1909)	(0.0457)
		0.2805	*0*	*0.6095*	*0.2892*	*0.8185*	*0.3917*	*0.5571*	*0.2568*	*0.8474*
	WST / Price	-0.0997	1.0248***	0.5517***	0.7581**	-0.015	-0.0897	0.5068***	0.8242**	0.0147
		(0.102)	(0.3707)	(0.1616)	(0.3666)	(0.0322)	(0.1016)	(0.162)	(0.3881)	(0.0365)
		0.3304	*0.0065*	*0.0008*	*0.0406*	*0.6423*	*0.3786*	*0.0022*	*0.0355*	*0.6875*
UAE	GHG / Price	0.0154	-0.7138*	0.7781***	-0.0668	0.0894	0.0334	0.7349***	0.2025	0.0165
		(0.0658)	(0.4204)	(0.1032)	(0.3306)	(0.0888)	(0.0682)	(0.1038)	(0.2503)	(0.0743)
		0.8161	*0.0941*	*0*	*0.8406*	*0.3176*	*0.6254*	*0*	*0.4212*	*0.8245*
	WTR / Price	-0.0174	-0.3231***	0.5435***	-0.6021***	1.5018***	0.0169	0.556***	0.1529	0.1955*
		(0.0474)	(0.0276)	(0.0778)	(0.1303)	(0.1267)	(0.0736)	(0.1411)	(0.3555)	(0.1109)
		0.7159	*0*	*0*	*0.0001*	*0*	*0.8202*	*0.0004*	*0.6699*	*0.087*
	WST / Price	-0.0477	-0.8749*	0.7918***	0.5214	0.3272*	-0.0878	0.9466***	-0.0711	0.0188
		(0.0829)	(0.4393)	(0.2213)	(0.4601)	(0.1772)	(0.0961)	(0.2272)	(0.4245)	(0.048)
		0.5701	*0.0566*	*0.0013*	*0.2671*	*0.0758*	*0.3688*	*0.0003*	*0.8683*	*0.6982*
Luxembourg	GHG / Price	0.6711***	-0.0218	0.4342***	1.7746***	0.1481	0.6672***	0.4393***	1.8975***	0.1086
		(0.1522)	(0.0337)	(0.1425)	(0.4022)	(0.1095)	(0.1552)	(0.1446)	(0.3359)	(0.0832)
		0	*0.5193*	*0.0031*	*0*	*0.1801*	*0*	*0.0032*	*0*	*0.1953*
	WTR / Price	0.6026***	0.0002	0.2204**	2.388***	0.2411***	0.6027***	0.2227***	2.361***	0.2444***
		(0.0767)	(0.0036)	(0.0887)	(0.5892)	(0.0719)	(0.0764)	(0.0784)	(0.3485)	(0.0515)
		0	*0.9462*	*0.016*	*0.0002*	*0.0014*	*0*	*0.0063*	*0*	*0*
	WST / Price	0.8086***	-0.2635**	0.0568	3.3161***	0.353***	0.9094***	0.0053	2.6771***	0.3159***
		(0.1472)	(0.1178)	(0.0799)	(0.9625)	(0.0699)	(0.15)	(0.077)	(0.8585)	(0.0568)
		0	*0.0313*	*0.4813*	*0.0014*	*0*	*0*	*0.9456*	*0.0034*	*0*
Israel	GHG / Price	0.6015**	1.1137***	0.3231**	0.3575	0.2771***	0.7008**	0.2965**	0.4279	0.3493***
		(0.2619)	(0.2821)	(0.1291)	(0.6561)	(0.0863)	(0.2718)	(0.125)	(0.6443)	(0.0931)
		0.0235	*0.0001*	*0.0138*	*0.5869*	*0.0017*	*0.0112*	*0.0194*	*0.508*	*0.0003*
	WTR / Price	0.6244	0.0564***	0.1945	0.0438	0.2668*	0.7579	0.2182	0.1666	0.301*
		(0.7008)	(0.013)	(0.1575)	(0.6617)	(0.1443)	(0.758)	(0.1596)	(0.6493)	(0.1696)
		0.3762	*0*	*0.2214*	*0.9475*	*0.0689*	*0.321*	*0.1763*	*0.7983*	*0.0804*
	WST / Price	-2.4561**	11.2252***	1.6865***	0.8573	-0.0889	0.1696	1.4458***	0.7638	-0.085
		(1.0343)	(2.8217)	(0.2087)	(0.5345)	(0.0777)	(0.4881)	(0.2069)	(0.6004)	(0.1243)
		0.0214	*0.0002*	*0*	*0.1151*	*0.2582*	*0.7297*	*0*	*0.2091*	*0.4972*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 200. Country-wise sample, separate performance of environmental variables, part 7

Sample	Environmental Variable	Environmental					Non environmental			
		One / Price	EV	BVPS / Price	EPS / Price	Revenue / Price	One / Price	BVPS / Price	EPS / Price	Revenue / Price
Peru	GHG / Price	0.076**	0.0236	0.3292**	1.2222*	0.2786**	0.0766**	0.3362**	1.2198*	0.2766**
		(0.0312)	(0.0683)	(0.148)	(0.7157)	(0.1208)	(0.0309)	(0.1402)	(0.717)	(0.1197)
		0.0196	*0.7316*	*0.0318*	*0.0954*	*0.0263*	*0.0175*	*0.0211*	*0.0965*	*0.0259*
	WTR / Price	0.0801***	-0.0006	0.3624***	0.0157**	0.3004**	0.0751***	0.3257**	0.0139**	0.3213**
		(0.0295)	(0.001)	(0.1331)	(0.0059)	(0.131)	(0.0279)	(0.1231)	(0.0053)	(0.1279)
		0.0093	*0.5774*	*0.009*	*0.0103*	*0.0263*	*0.0097*	*0.0109*	*0.012*	*0.0153*
	WST / Price	0.0714**	-0.0072*	0.6667**	-0.1232	0.0778	0.0848***	0.5096***	-0.075	0.1417
		(0.0338)	(0.004)	(0.2616)	(0.0798)	(0.1254)	(0.0302)	(0.1719)	(0.0532)	(0.096)
		0.0391	*0.0759*	*0.0138*	*0.1286*	*0.5375*	*0.0069*	*0.0045*	*0.1644*	*0.1457*
Argentina	GHG / Price	0.1683	-0.0035	0.6894***	2.1766***	-0.0314	0.1549	0.6761***	2.1768***	-0.0255
		(0.1378)	(0.0066)	(0.1493)	(0.4176)	(0.0591)	(0.1258)	(0.1491)	(0.4146)	(0.0573)
		0.2294	*0.6021*	*0*	*0*	*0.5978*	*0.2255*	*0.0001*	*0*	*0.6592*
	WTR / Price	0.203*	0.0008	0.404***	0.9584*	0.0943	0.2073	0.422***	1.0286**	0.0966
		(0.1141)	(0.0005)	(0.0751)	(0.4717)	(0.0627)	(0.1231)	(0.0821)	(0.4726)	(0.0663)
		0.0855	*0.1192*	*0*	*0.0511*	*0.1431*	*0.1021*	*0*	*0.0372*	*0.1553*
	WST / Price	0.3393***	0.1957***	0.5035***	1.03***	-0.0673**	0.3329**	0.5355***	1.0544***	-0.0739**
		(0.1202)	(0.0593)	(0.0791)	(0.2759)	(0.0325)	(0.1244)	(0.0848)	(0.2891)	(0.0346)
		0.0075	*0.0021*	*0*	*0.0006*	*0.0449*	*0.0109*	*0*	*0.0008*	*0.0391*
Sri Lanka	GHG / Price	0.036***	-0.1049	0.5429***	1.5505**	-0.0379	0.0379***	0.4739***	1.6739**	-0.0371
		(0.0075)	(0.0767)	(0.1112)	(0.7121)	(0.0263)	(0.0078)	(0.093)	(0.7291)	(0.0259)
		0	*0.1759*	*0*	*0.0328*	*0.1541*	*0*	*0*	*0.0246*	*0.1561*
	WTR / Price	0.0395***	-0.0031	0.5636***	1.738**	-0.0467	0.0412***	0.543***	1.7469**	-0.0561**
		(0.0081)	(0.0062)	(0.0948)	(0.6858)	(0.0311)	(0.0075)	(0.0898)	(0.6682)	(0.0246)
		0	*0.6115*	*0*	*0.0133*	*0.1374*	*0*	*0*	*0.0107*	*0.0251*
	WST / Price	0.0105	0.2568	0.6763***	2.2097**	-0.07	0.0087	0.6717***	2.2079**	-0.0594*
		(0.0115)	(0.577)	(0.1422)	(0.853)	(0.0466)	(0.0101)	(0.1388)	(0.8561)	(0.0331)
		0.3631	*0.6584*	*0*	*0.0128*	*0.1399*	*0.3938*	*0*	*0.0131*	*0.079*
Romania	WST / Price	-0.0067	-0.0664	0.4464**	1.6321*	0.1719	-0.0051	0.5499***	1.2034	0.0534
		(0.0165)	(0.042)	(0.1918)	(0.8302)	(0.1164)	(0.0151)	(0.1621)	(0.7315)	(0.0772)
		0.6855	*0.1231*	*0.0258*	*0.0573*	*0.1487*	*0.7371*	*0.0017*	*0.1087*	*0.4939*
Croatia	WTR / Price	3.3521***	0.0428**	0.6502***	1.5511**	0.0664	1.7824**	0.7055***	0.8494*	0.2254**
		(0.7996)	(0.0191)	(0.1756)	(0.5786)	(0.1104)	(0.715)	(0.1702)	(0.4633)	(0.1008)
		0.0002	*0.0312*	*0.0007*	*0.0108*	*0.5514*	*0.017*	*0.0002*	*0.0744*	*0.0312*
	WST / Price	2.3462***	5.2316***	0.7967***	0.8123**	0.0483*	2.9508***	0.7561***	1.2564**	0.0684*
		(0.5424)	(1.2738)	(0.1063)	(0.3698)	(0.026)	(0.7218)	(0.1204)	(0.5079)	(0.037)
		0.0001	*0.0001*	*0*	*0.0325*	*0.0687*	*0.0001*	*0*	*0.0166*	*0.0701*
Pakistan	GHG / Price	0.0024	0.0349	0.5418***	1.2999***	0.0913	0.0081	0.4819***	1.504***	0.1568
		(0.0199)	(0.0227)	(0.1396)	(0.3828)	(0.109)	(0.0235)	(0.1445)	(0.4092)	(0.0984)
		0.9047	*0.135*	*0.0005*	*0.0019*	*0.4089*	*0.7324*	*0.0022*	*0.0009*	*0.1213*
	WTR / Price	0.0608***	0	0.5669***	1.6183***	-0.0082	0.0609***	0.5802***	1.6037***	-0.0108
		(0.0173)	(0.0002)	(0.1256)	(0.4829)	(0.0388)	(0.0174)	(0.0998)	(0.4685)	(0.0353)
		0.0009	*0.7696*	*0*	*0.0015*	*0.8338*	*0.001*	*0*	*0.0012*	*0.7605*
	WST / Price	0.0715**	2.7837**	0.4106***	2.1048***	0.0355	0.0667*	0.5828***	2.1762***	0.0065
		(0.0312)	(1.2342)	(0.1283)	(0.4636)	(0.0346)	(0.0352)	(0.1217)	(0.4619)	(0.0356)
		0.0255	*0.028*	*0.0022*	*0*	*0.3094*	*0.0632*	*0*	*0*	*0.8548*
Saudi Arabia	GHG / Price	1.6404	-0.0831	0.1374	0.3432	1.4502**	1.6714	0.1052	0.6745	1.3245**
		(1.7869)	(0.0942)	(0.6999)	(0.8389)	(0.6757)	(1.7881)	(0.7052)	(0.8468)	(0.6087)
		0.3665	*0.3851*	*0.8458*	*0.6856*	*0.0407*	*0.3576*	*0.8824*	*0.4322*	*0.0379*
Slovenia	WST / Price	-0.7363	-1.6368	0.4827***	0.901*	0.0163	-0.3661	0.3196**	0.9479*	0.0229
		(0.9061)	(1.3898)	(0.1365)	(0.494)	(0.0339)	(1.181)	(0.1287)	(0.522)	(0.0362)
		0.4218	*0.2466*	*0.0011*	*0.0765*	*0.6336*	*0.7583*	*0.0177*	*0.0775*	*0.5304*
Hungary	WST / Price	0.0404	6.8779*	0.7978***	0.9756*	-0.0921	-0.0774	0.7638***	1.0928*	-0.0089
		(0.2425)	(3.7886)	(0.1724)	(0.5696)	(0.0698)	(0.25)	(0.1941)	(0.5754)	(0.0637)
		0.8689	*0.0798*	*0.0001*	*0.0974*	*0.1969*	*0.759*	*0.0005*	*0.0672*	*0.8895*

Notes: White (1980) heteroskedasticity consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 201. Full, Status- and Region- wise samples, value regression models comparison, split by variables

Sample	Variable	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
Full sample	GHG / Price	0.0302	0.0302	0.1003	0.5649	29931
	WTR / Price	0.0334	0.0325	8.1682***	0	25926
	WST / Price	0.0373	0.0372	1.0032	0.461	28033
Developed	GHG / Price	0.0146	0.0146	0.0574	0.4558	20853
	WTR / Price	0.016	0.015	6.1975***	0.0005	17695
	WST / Price	0.0229	0.021	13.4233***	0	20237
Emerging	GHG / Price	0.0933	0.0929	1.1754	0.3854	9078
	WTR / Price	0.0862	0.0851	3.1504**	0.0327	8231
	WST / Price	0.1891	0.1888	0.8978	0.5108	7796
Developed excluding the United States	GHG / Price	0.0194	0.0192	0.8677	0.5254	15444
	WTR / Price	0.0193	0.0181	5.7596***	0.0009	14583
	WST / Price	0.0289	0.0263	15.3078***	0	17226
Europe	GHG / Price	0.0163	0.0162	0.5495	0.6738	10123
	WTR / Price	0.0202	0.0172	7.5021***	0.0001	7419
	WST / Price	0.0277	0.0216	18.9278***	0	8994
Asia Pacific excluding Japan	GHG / Price	0.3009	0.3008	0.3497	0.7254	8251
	WTR / Price	0.4773	0.4771	0.9323	0.4942	6451
	WST / Price	0.3394	0.3391	0.7558	0.5799	6048
North America	GHG / Price	0.0058	0.0055	0.6653	0.6232	6969
	WTR / Price	0.0352	0.0344	1.0379	0.445	4135
	WST / Price	0.0679	0.0598	11.5184***	0	3971
Latin America	GHG / Price	0.3143	0.3143	0.0352	0.3692	1232
	WTR / Price	0.3178	0.3134	2.5775*	0.0699	1216
	WST / Price	0.3442	0.3373	4.199***	0.008	1210
Middle East and Africa	GHG / Price	0.064	0.0577	2.7519*	0.0557	1243
	WTR / Price	0.0654	0.0598	1.6555	0.2225	829
	WST / Price	0.2474	0.2214	6.9376***	0.0002	609

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 202. Country-wise samples, value regression models comparison, split by variables, part 1

Sample	Variable	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
United States	GHG / Price	0.0022	0.0022	0.1187	0.5978	5409
	WTR / Price	0.0768	0.0625	16.0668***	0	3112
	WST / Price	0.1171	0.1159	1.374	0.3093	3011
Japan	GHG / Price	0.741	0.7406	0.9164	0.5016	2113
	WTR / Price	0.7421	0.7421	0.0179	0.2699	5876
	WST / Price	0.7358	0.7358	0.5621	0.6687	7201
United Kingdom	GHG / Price	0.0661	0.0586	9.6992***	0	3631
	WTR / Price	0.1796	0.1652	7.8715***	0	1356
	WST / Price	0.3749	0.373	1.5818	0.243	1626
China	GHG / Price	0.4421	0.4421	0.0094	0.1982	994
	WTR / Price	0.4786	0.4771	1.005	0.4596	1063
	WST / Price	0.4197	0.4197	0.0351	0.3685	1027
Taiwan	GHG / Price	0.7525	0.752	1.4307	0.2898	1974
	WTR / Price	0.7594	0.7573	4.8758***	0.0031	1627
	WST / Price	0.7438	0.7438	0.0019*	0.0911	1573
Canada	GHG / Price	0.2506	0.2467	2.0914	0.1303	1227
	WTR / Price	0.2853	0.2807	1.4867	0.2714	708
	WST / Price	0.2602	0.1981	19.3074***	0	696
Australia	GHG / Price	0.1857	0.177	4.5779***	0.0047	1294
	WTR / Price	0.3772	0.3762	0.3674	0.7235	647
	WST / Price	0.5083	0.4034	43.9703***	0	623
Hong Kong	GHG / Price	0.369	0.296	33.4195***	0	872
	WTR / Price	0.5399	0.5384	0.5892	0.6561	532
	WST / Price	0.334	0.3337	0.0876	0.5384	598
France	GHG / Price	0.4256	0.4185	4.7146***	0.0039	1165
	WTR / Price	0.4818	0.4818	0.0215	0.2947	910
	WST / Price	0.4221	0.4203	1.1783	0.3838	1147
South Korea	GHG / Price	0.4843	0.4777	4.3518***	0.0065	1023
	WTR / Price	0.6174	0.6169	0.2598	0.7153	639
	WST / Price	0.633	0.633	0.0119	0.2219	673
Germany	GHG / Price	0.0334	0.0307	0.6613	0.6241	718
	WTR / Price	0.0645	0.0114	13.948***	0	743
	WST / Price	0.0139	0.0136	0.0829	0.5272	876
India	GHG / Price	0.3996	0.3902	3.5675**	0.0189	685
	WTR / Price	0.385	0.3836	0.4358	0.7108	587
	WST / Price	0.4369	0.4347	0.5879	0.6564	458
Italy	GHG / Price	0.3315	0.3303	0.3363	0.7252	554
	WTR / Price	0.4241	0.3948	10.1491***	0	603
	WST / Price	0.4702	0.4537	7.0509***	0.0002	685
Brazil	GHG / Price	0.4399	0.4391	0.3728	0.723	805
	WTR / Price	0.4254	0.4238	0.7354	0.5889	785
	WST / Price	0.3141	0.3028	4.0512***	0.0098	743
Sweden	GHG / Price	0.4304	0.4125	5.012***	0.0027	485
	WTR / Price	0.7554	0.7537	0.7466	0.5819	317
	WST / Price	0.4329	0.4319	0.2488	0.7116	446
Switzerland	GHG / Price	0.3417	0.3409	0.2226	0.7002	549
	WTR / Price	0.624	0.6203	1.9008	0.1652	592
	WST / Price	0.2329	0.2324	0.1468	0.6374	658
South Africa	GHG / Price	0.0631	0.0612	0.5959	0.6537	876
	WTR / Price	0.083	0.0784	0.9771	0.472	589
	WST / Price	0.2886	0.2505	7.5745***	0.0001	430
Spain	GHG / Price	0.0584	0.0562	0.3658	0.7234	486
	WTR / Price	0.051	0.0505	0.0836	0.5291	436
	WST / Price	0.0633	0.0539	1.887	0.168	566
Singapore	GHG / Price	0.6953	0.6934	0.5201	0.6826	258
	WTR / Price	0.7216	0.7159	1.8048	0.1858	269
	WST / Price	0.704	0.696	1.5521	0.2505	177
Malaysia	GHG / Price	0.5159	0.5129	0.5733	0.6616	285
	WTR / Price	0.4977	0.4933	0.6759	0.615	239
	WST / Price	0.495	0.4868	1.2227	0.364	231
Norway	GHG / Price	0.2412	0.1968	5.2438***	0.0021	274
	WTR / Price	0.4251	0.2622	9.3493***	0	104
	WST / Price	0.1806	0.1655	1.2386	0.3575	206

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 203. Country-wise samples, value regression models comparison, split by variables, part 2

Sample	Variable	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
Finland	GHG / Price	0.6192	0.6149	1.176	0.3834	312
	WTR / Price	0.5227	0.4921	7.467***	0.0001	355
	WST / Price	0.4723	0.4721	0.0713	0.4979	478
Netherlands	GHG / Price	0.4782	0.4729	0.987	0.4662	297
	WTR / Price	0.4817	0.4807	0.1405	0.6298	223
	WST / Price	0.5231	0.4354	18.0896***	0	300
Thailand	GHG / Price	0.7122	0.7118	0.1189	0.5986	276
	WTR / Price	0.7428	0.7424	0.1384	0.627	290
	WST / Price	0.7024	0.7024	0.0266	0.3257	271
Mexico	GHG / Price	0.3783	0.3777	0.09	0.5439	300
	WTR / Price	0.2688	0.2653	0.4959	0.6917	312
	WST / Price	0.2956	0.25	5.285***	0.002	250
Russia	GHG / Price	0.5078	0.4198	10.3055***	0	178
	WTR / Price	0.4932	0.4904	0.5835	0.6576	319
	WST / Price	0.5343	0.4968	9.3012***	0	351
Denmark	GHG / Price	0.2372	0.237	0.0147	0.2464	217
	WTR / Price	0.6245	0.5273	18.7359***	0	222
	WST / Price	0.5882	0.4152	30.1084***	0	220
Poland	GHG / Price	0.6406	0.6248	1.0983	0.4102	80
	WTR / Price	0.672	0.672	0.0026	0.1057	122
	WST / Price	0.6629	0.6623	0.1293	0.6147	198
Indonesia	GHG / Price	0.6011	0.5973	0.3584	0.7213	119
	WTR / Price	0.632	0.6307	0.1947	0.6828	177
	WST / Price	0.695	0.6806	1.7312	0.2026	115
Philippines	GHG / Price	0.6907	0.6655	4.4386***	0.0065	168
	WTR / Price	0.6751	0.6282	7.3048***	0.0002	157
	WST / Price	0.6492	0.6439	0.7102	0.5965	146
Turkey	GHG / Price	0.6722	0.6678	0.9814	0.468	229
	WTR / Price	0.6832	0.6762	1.6238	0.2306	228
	WST / Price	0.6564	0.6557	0.1545	0.6465	234
Belgium	GHG / Price	0.4415	0.4243	1.7648	0.1949	177
	WTR / Price	0.2523	0.2492	0.1791	0.6707	137
	WST / Price	0.3214	0.2604	4.6738***	0.0048	161
New Zealand	GHG / Price	0.7947	0.7946	0.0175	0.2682	186
	WTR / Price	0.6747	0.6672	0.3802	0.7134	54
Austria	GHG / Price	0.8006	0.8005	0.0319	0.3549	118
	WTR / Price	0.7607	0.7507	2.0195	0.1432	150
	WST / Price	0.7687	0.7683	0.0926	0.5501	188
Chile	GHG / Price	0.7062	0.7017	0.8921	0.5094	182
	WTR / Price	0.5254	0.4732	7.5914***	0.0001	212
	WST / Price	0.5044	0.4762	4.3534***	0.007	235
Ireland	GHG / Price	0.4592	0.4493	0.8606	0.5235	145
	WTR / Price	0.6323	0.4924	8.8778***	0	75
	WST / Price	0.6419	0.6056	2.8414*	0.0526	89
Greece	GHG / Price	0.2797	0.2463	1.6092	0.2338	109
	WTR / Price	0.5586	0.5242	2.9319**	0.0462	118
	WST / Price	0.4257	0.3529	3.2956**	0.0302	83
Colombia	GHG / Price	0.8098	0.8086	0.2873	0.7202	142
	WTR / Price	0.7953	0.7894	1.1051	0.4101	120
	WST / Price	0.7735	0.7731	0.0597	0.4652	122

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 204. Country-wise samples, value regression models comparison, split by variables, part 3

Sample	Variable	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
Portugal	GHG / Price	0.652	0.6356	1.7765	0.192	118
	WTR / Price	0.5082	0.4058	8.2574***	0.0001	124
	WST / Price	0.5446	0.5072	3.7272**	0.0166	141
Luxembourg	GHG / Price	0.7283	0.7262	0.2153	0.6954	86
	WTR / Price	0.7843	0.7842	0.0025	0.1043	61
	WST / Price	0.7647	0.7424	1.201	0.3617	43
United Arab Emirates	GHG / Price	0.6918	0.6843	0.5543	0.6618	73
	WTR / Price	0.9044	0.6951	23.3414***	0	37
	WST / Price	0.7701	0.6807	3.5009**	0.0288	32
Israel	GHG / Price	0.7203	0.7026	2.356*	0.0949	117
	WTR / Price	0.6261	0.5878	2.2576	0.1083	71
	WST / Price	0.7913	0.7219	5.5457***	0.0025	55
Peru	GHG / Price	0.6967	0.6966	0.0062	0.165	45
	WTR / Price	0.6524	0.6507	0.0759	0.5141	53
	WST / Price	0.7055	0.6911	0.865	0.5127	58
Romania	WST / Price	0.8469	0.837	0.7547	0.559	40
Sri Lanka	GHG / Price	0.7597	0.7556	0.3972	0.7132	76
	WTR / Price	0.7548	0.7536	0.1172	0.5972	83
	WST / Price	0.737	0.7362	0.046	0.42	51
Argentina	GHG / Price	0.728	0.7274	0.0315	0.3564	44
	WTR / Price	0.7235	0.7175	0.2181	0.6949	35
	WST / Price	0.7411	0.7289	0.5964	0.6356	43
Croatia	WTR / Price	0.8708	0.8279	4.2106**	0.0121	43
	WST / Price	0.8452	0.8302	1.6747	0.2154	57
Pakistan	GHG / Price	0.8635	0.8571	0.4684	0.6831	35
	WTR / Price	0.7307	0.7306	0.0074	0.1784	55
	WST / Price	0.7597	0.7388	1.6463	0.2228	62
Slovenia	WST / Price	0.6955	0.6417	2.1203	0.129	41
Saudi Arabia	GHG / Price	0.8666	0.8655	0.0737	0.5113	33
Hungary	WST / Price	0.938	0.934	0.6279	0.6155	34

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 205. Sector-wise samples, value regression models comparison, split by variables

Sample	Variable	r^2 Environmental	r^2 Non-environmental	F stat	p (F stat)	Sample size
Communication Services	GHG / Price	0.0903	0.0887	0.874	0.5219	1426
	WTR / Price	0.1414	0.1381	1.078	0.4265	845
	WST / Price	0.42	0.42	0.0096	0.2001	1015
Consumer Discretionary	GHG / Price	0.0689	0.0588	12.7667***	0	3507
	WTR / Price	0.3466	0.3454	1.7703	0.1938	2845
	WST / Price	0.3544	0.3544	0.0166	0.2609	3188
Consumer Staples	GHG / Price	0.266	0.264	2.1792	0.1165	2409
	WTR / Price	0.3301	0.3297	0.4362	0.7114	2333
	WST / Price	0.5352	0.5351	0.0595	0.4624	2538
Energy	GHG / Price	0.0384	0.0383	0.0285	0.3353	1697
	WTR / Price	0.1609	0.1582	1.3564	0.3153	1270
	WST / Price	0.3989	0.3941	3.2859**	0.0274	1255
Financials	GHG / Price	0.1314	0.1301	1.8514	0.1755	3498
	WTR / Price	0.5056	0.5055	0.154	0.6457	2213
	WST / Price	0.3085	0.3083	0.21	0.6932	2045
Health Care	GHG / Price	0.646	0.646	0.084	0.5298	1413
	WTR / Price	0.6498	0.6493	0.6171	0.6448	1505
	WST / Price	0.6296	0.6289	0.9524	0.4843	1634
Industrials	GHG / Price	0.0494	0.0373	22.1318***	0	5227
	WTR / Price	0.2112	0.1979	26.4997***	0	4716
	WST / Price	0.1306	0.1301	1.2789	0.3442	5678
Information Technology	GHG / Price	0.0735	0.0491	25.9329***	0	2953
	WTR / Price	0.0296	0.0294	0.1299	0.615	2579
	WST / Price	0.0291	0.0285	0.6198	0.6439	3058
Materials	GHG / Price	0.2369	0.2368	0.1907	0.6801	4069
	WTR / Price	0.0616	0.0592	3.7977**	0.0136	4325
	WST / Price	0.1511	0.1294	38.5777***	0	4549
Real Estate	GHG / Price	0.5206	0.5201	0.6814	0.6153	1910
	WTR / Price	0.4569	0.4528	4.0925***	0.0092	1625
	WST / Price	0.4456	0.442	2.8355**	0.0499	1325
Utilities	GHG / Price	0.4207	0.4162	4.5902***	0.0046	1753
	WTR / Price	0.366	0.3629	2.6082*	0.0671	1619
	WST / Price	0.3876	0.3867	0.7926	0.5616	1672

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 206. Trading strategies' performance in each sample

Sample	Environmental	Non-environmental	alphas					
			constant	CAPM	3-factor	4-factor	6-factor	8-factor
Full Sample	9.629%	8.899%	0.096	0.1923	0.2202	0.2121	0.1871	0.2339
Developed	0.606%	-4.054%	0.3428	0.4202	0.3794	0.265	0.246	0.24
Emerging	8.497%	10.045%	-0.1063	-0.1192	-0.1207	0.2012	0.1932	0.2476
Developed excluding the United States	1.061%	-4.747%	0.3287	0.4275	0.4153	0.1688	0.166	0.1566
Europe	9.012%	9.020%	-0.0628	-0.0663	-0.1225	-0.2711	-0.4692	-0.5333
Asia Pacific excluding Japan	4.770%	4.725%	0.0044	-0.0382	-0.028	0.0057	-0.0366	-0.0456
North America	-2.486%	1.857%	-0.3555*	-0.4177	-0.4818*	-0.4853*	-0.3362	-0.3679
Latin America	5.828%	8.321%	-0.3048	-0.611	-0.6817	-0.1756	0.0253	0.0475
Middle East and North Africa	33.773%	-29.028%	4.8965**	5.0587**	5.0484***	5.454**	5.3931*	5.4822*
Australia	1.762%	1.928%	0.0012	0.003	-0.0196	-0.0213	-0.0152	-0.0142
Brazil	9.864%	21.668%	-0.7064	-1.1387	-1.1185	-0.8303	-0.5234	-0.5184
Canada	1.734%	2.487%	-0.0974	0.0728	-0.0905	-0.0946	-0.2318	-0.2117
China	-3.610%	-3.267%	0.3371	0.3243	0.3778	0.36	0.2415	0.2419
France	-0.349%	0.338%	-0.0478	-0.0569	-0.1541	-0.1648	-0.1573	-0.1334
Germany	-6.050%	0.670%	-0.7448	-0.9223	-1.0786*	-1.1955*	-0.997*	-1.106*
Hong Kong	3.974%	5.538%	-0.1018	-0.0477	-0.0994	-0.1798	-0.1822	-0.179
India	-9.628%	-18.497%	0.7425*	0.7471*	0.7447	0.7403	0.3758	0.3428
Italy	4.257%	-1.500%	0.2164	0.401	-0.9492	-1.2026	-1.4425	-1.4929
Japan	1.134%	3.484%	-0.2098	-0.2063	-0.2221	-0.2086	-0.1565	-0.1496
South Korea	-5.806%	-3.707%	-0.1929	-0.2051	-0.1926	-0.1366	-0.172	-0.1563
Taiwan	-5.182%	-5.643%	0.0461	0.0529	0.0444	0.0761	0.0872	0.0913
Thailand	-10.754%	-9.948%	-0.0732**	-0.0754**	-0.0884	-0.0823	-0.0922	-0.1137
United States	1.693%	-0.549%	0.1918	0.1312	0.1207	0.1166	0.0907	0.0987
United Kingdom	-9.249%	-7.452%	-0.2135	-0.1027	-0.1839	-0.2908	-0.1959	-0.14
Communication Services	-5.697%	-8.899%	0.1375	0.1443	0.1538	0.1557	0.1501	0.163
Consumer Discretionary	1.850%	-1.486%	0.2827	0.2367	0.2522	0.2754	0.1421	0.1151
Consumer Staples	1.826%	4.003%	-0.214	-0.1577	-0.1932	-0.1672	-0.2556	-0.2876
Energy	1.356%	8.506%	-0.6202**	-0.5039*	-0.534**	-0.5301*	-0.5076*	-0.477*
Financials	1.013%	-3.496%	0.3637	0.4137	0.4803	0.467	0.4583	0.4588
Health Care	-5.905%	-3.458%	-0.215	-0.2581	-0.3306	-0.3651*	-0.3494	-0.3215
Industrials	-7.066%	-5.085%	-0.242	-0.2888	-0.1992	-0.165	-0.3036	-0.3168
Information Technology	-5.689%	-3.939%	-0.1935	-0.244	-0.2996	-0.2932	-0.3188	-0.3675
Materials	5.187%	7.245%	-0.1792	-0.1936	-0.198	-0.1868	-0.3171	-0.3139
Real Estate	-3.732%	-4.786%	0.092	-0.03	0.005	0.0108	-0.0397	-0.0331
Utilities	5.480%	5.608%	-0.0355	0.0022	-0.0159	-0.011	-0.0021	0.0072

Notes: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

6.4. ESG momentum related

Table 207. Full sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.2554	-0.6826	0.1376*	0.938	0.1177	-0.8203
	(0.2914)	(0.5972)	(0.0763)	(0.5952)	(0.2739)	(0.5785)
	0.3845	*0.2577*	*0.0766*	*0.1204*	*0.6689*	*0.1616*
Carhart four-factor	0.2879	-0.6678	0.1157	0.9557*	0.1722	-0.7835
	(0.3319)	(0.5882)	(0.0859)	(0.57)	(0.3299)	(0.5557)
	0.3894	*0.2612*	*0.1832*	*0.0993*	*0.6038*	*0.1642*
Fama-French six-factor	0.3851	-0.6622	0.1456*	1.0473*	0.2395	-0.8078
	(0.2993)	(0.5688)	(0.08)	(0.527)	(0.3005)	(0.5387)
	0.2038	*0.2496*	*0.0743*	*0.0521*	*0.429*	*0.1397*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 208. Anticipation minus adjusted sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.5004*	-0.6277	0.1241	1.1281**	0.3763	-0.7519**
	(0.2734)	(0.3992)	(0.0765)	(0.4609)	(0.287)	(0.3542)
	0.0723	*0.1213*	*0.1102*	*0.0174*	*0.1951*	*0.038*
Carhart four-factor	0.5977**	-0.5468	0.1013	1.1445**	0.4964*	-0.6481*
	(0.2635)	(0.4393)	(0.0869)	(0.448)	(0.2756)	(0.3756)
	0.0273	*0.2185*	*0.2485*	*0.0134*	*0.0772*	*0.09*
Fama-French six-factor	0.7266***	-0.526	0.1283	1.2526***	0.5983**	-0.6543*
	(0.2395)	(0.4169)	(0.0802)	(0.443)	(0.2527)	(0.3594)
	0.0037	*0.2126*	*0.1156*	*0.0066*	*0.0216*	*0.0744*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 209. Leaders' sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.25	-0.5997	0.2607***	0.8497	-0.0106	-0.8604
	(0.3419)	(0.5443)	(0.0763)	(0.5812)	(0.355)	(0.5349)
	0.4676	*0.2751*	*0.0012*	*0.1491*	*0.9762*	*0.1132*
Carhart four-factor	0.2982	-0.5484	0.1828***	0.8466	0.1154	-0.7312
	(0.3587)	(0.6469)	(0.0638)	(0.6632)	(0.343)	(0.6282)
	0.4094	*0.4003*	*0.0059*	*0.2072*	*0.7378*	*0.2495*
Fama-French six-factor	0.4115	-0.5931	0.1936***	1.0045	0.2179	-0.7867
	(0.3484)	(0.6189)	(0.0606)	(0.6463)	(0.3326)	(0.6045)
	0.2428	*0.3423*	*0.0024*	*0.1261*	*0.5153*	*0.1988*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 210. Laggards' sample estimations' results

Model	Portfolio			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.187	0.3736	-0.0213	-0.1865	0.2083	0.3949
	(0.4321)	(0.6281)	(0.1574)	(0.5186)	(0.4602)	(0.6416)
	0.6667	*0.5543*	*0.8929*	*0.7204*	*0.6525*	*0.5407*
Carhart four-factor	0.3605	0.5371	0.0402	-0.1767	0.3203	0.4969
	(0.3526)	(0.7137)	(0.173)	(0.578)	(0.3855)	(0.6982)
	0.3111	*0.4549*	*0.8171*	*0.7611*	*0.4097*	*0.4796*
Fama-French six-factor	0.5029	0.7926	0.1104	-0.2897	0.3925	0.6822
	(0.3072)	(0.5841)	(0.1619)	(0.5131)	(0.3556)	(0.6231)
	0.1075	*0.1806*	*0.4984*	*0.5747*	*0.2747*	*0.2785*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 211. Developed sample estimations' results

Model	Portfolio			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.6137**	-0.715**	0.1232**	1.3287***	0.4905*	-0.8382**
	(0.2673)	(0.3359)	(0.0538)	(0.4303)	(0.2811)	(0.3503)
	0.0253	*0.0376*	*0.0255*	*0.0031*	*0.0863*	*0.02*
Carhart four-factor	0.6443**	-0.7221*	0.0652**	1.3664***	0.5791**	-0.7873**
	(0.2476)	(0.3755)	(0.028)	(0.4129)	(0.2652)	(0.3888)
	0.0119	*0.0596*	*0.0235*	*0.0017*	*0.0333*	*0.0477*
Fama-French six-factor	0.7383***	-0.7343**	0.0566**	1.4726***	0.6817**	-0.7909**
	(0.2453)	(0.3488)	(0.0234)	(0.395)	(0.2557)	(0.3579)
	0.004	*0.04*	*0.0188*	*0.0005*	*0.0102*	*0.0314*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 212. Emerging sample estimations' results

Model	Portfolio			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.384	-0.1204	0.3268**	0.5044	0.0573	-0.4471
	(0.3424)	(0.4696)	(0.1445)	(0.5435)	(0.33)	(0.4698)
	0.2667	*0.7986*	*0.0275*	*0.3573*	*0.8629*	*0.3452*
Carhart four-factor	1.0422**	-0.5522	0.3783**	1.5944*	0.6639	-0.9305
	(0.4779)	(0.6212)	(0.185)	(0.8137)	(0.5404)	(0.6066)
	0.0335	*0.3779*	*0.0457*	*0.0551*	*0.2245*	*0.1307*
Fama-French six-factor	1.0267**	-0.3489	0.3758**	1.3756**	0.6509	-0.7247*
	(0.4863)	(0.4278)	(0.1835)	(0.6613)	(0.5379)	(0.4239)
	0.0395	*0.4184*	*0.0456*	*0.0424*	*0.2316*	*0.0932*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 213. United States sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.5745*	-0.9657	0.1067	1.5402**	0.4678	-1.0724*
	(0.292)	(0.5984)	(0.0698)	(0.7092)	(0.3198)	(0.6034)
	0.0539	*0.112*	*0.132*	*0.034*	*0.1489*	*0.0808*
Carhart four-factor	0.5882**	-0.737	0.0745**	1.3252**	0.5137*	-0.8115
	(0.2798)	(0.5379)	(0.034)	(0.6234)	(0.2996)	(0.5463)
	0.0402	*0.1762*	*0.0329*	*0.038*	*0.092*	*0.1432*
Fama-French six-factor	0.6885**	-0.8442	0.0546**	1.5327**	0.6338*	-0.8989
	(0.3054)	(0.578)	(0.0259)	(0.6137)	(0.3216)	(0.5909)
	0.0284	*0.15*	*0.0397*	*0.0156*	*0.054*	*0.1342*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 214. Developed countries excluding United States sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.5615**	0.0643	0.1073**	0.4972	0.4542*	-0.0429
	(0.2612)	(0.4773)	(0.0458)	(0.5246)	(0.2708)	(0.4763)
	0.0358	*0.8933*	*0.0226*	*0.3472*	*0.0988*	*0.9285*
Carhart four-factor	0.5621*	-0.0614	0.1041***	0.6235	0.4579	-0.1656
	(0.2935)	(0.5043)	(0.0283)	(0.6021)	(0.304)	(0.5055)
	0.0607	*0.9035*	*0.0005*	*0.305*	*0.1377*	*0.7445*
Fama-French six-factor	0.5825**	-0.1365	0.1191***	0.719	0.4634	-0.2556
	(0.2781)	(0.548)	(0.0288)	(0.6268)	(0.2941)	(0.5458)
	0.041	*0.8042*	*0.0001*	*0.2565*	*0.121*	*0.6414*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 215. European sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.5055	0.2266	0.0555	0.2788	0.45	0.1711
	(0.374)	(0.6493)	(0.0665)	(0.6399)	(0.3781)	(0.6353)
	0.1818	*0.7283*	*0.4072*	*0.6647*	*0.2389*	*0.7886*
Carhart four-factor	0.7469*	0.2934	0.0792	0.4535	0.6677	0.2142
	(0.4351)	(0.6775)	(0.0513)	(0.7512)	(0.4561)	(0.6696)
	0.0917	*0.6667*	*0.128*	*0.5486*	*0.1489*	*0.7503*
Fama-French six-factor	0.5732	0.4955	0.1021*	0.0778	0.4712	0.3934
	(0.3631)	(0.8064)	(0.0555)	(0.8153)	(0.3802)	(0.8004)
	0.1204	*0.5416*	*0.0714*	*0.9244*	*0.2206*	*0.6251*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 216. Japanese sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.8047	0.5644	0.0998*	0.2404	0.7049	0.4646
	(0.6971)	(0.7512)	(0.0507)	(0.9511)	(0.7269)	(0.7727)
	0.2531	*0.4555*	*0.0541*	*0.8014*	*0.3362*	*0.55*
Carhart four-factor	0.6713	0.2549	0.0712*	0.4164	0.6001	0.1837
	(0.6968)	(0.6237)	(0.0381)	(0.9196)	(0.7213)	(0.6422)
	0.3396	*0.6844*	*0.0671*	*0.6525*	*0.409*	*0.7759*
Fama-French six-factor	0.5072	0.3168	0.0761**	0.1904	0.4311	0.2408
	(0.595)	(0.6178)	(0.0356)	(0.9203)	(0.6155)	(0.6343)
	0.3979	*0.6102*	*0.0375*	*0.8369*	*0.4867*	*0.7058*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 217. Asia Pacific excluding Japan sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.2385	0.3533	0.662**	-0.1147	-0.4235	-0.3087
	(0.4713)	(0.4814)	(0.3054)	(0.5382)	(0.4631)	(0.4495)
	0.6147	*0.466*	*0.0343*	*0.8319*	*0.3643*	*0.4949*
Carhart four-factor	0.1414	0.0259	0.4394	0.1155	-0.2981	-0.4136
	(0.4466)	(0.5651)	(0.3099)	(0.5945)	(0.4706)	(0.5534)
	0.7528	*0.9637*	*0.1619*	*0.8467*	*0.5291*	*0.4581*
Fama-French six-factor	0.5966	0.1341	0.7234**	0.4625	-0.1268	-0.5893
	(0.4184)	(0.6299)	(0.3364)	(0.6579)	(0.4378)	(0.6538)
	0.1598	*0.8323*	*0.0361*	*0.4851*	*0.7733*	*0.3715*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 218. North American sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.594**	-0.8261	0.1315**	1.4201**	0.4625	-0.9576*
	(0.2856)	(0.5503)	(0.0626)	(0.6592)	(0.3111)	(0.562)
	0.0419	*0.1387*	*0.04*	*0.0354*	*0.1426*	*0.0937*
Carhart four-factor	0.6347**	-0.6483	0.0628*	1.283**	0.5719*	-0.7112
	(0.2686)	(0.5317)	(0.034)	(0.591)	(0.2903)	(0.5356)
	0.0217	*0.2279*	*0.0702*	*0.0343*	*0.0539*	*0.1897*
Fama-French six-factor	0.7284***	-0.7439	0.051	1.4723**	0.6775**	-0.7949
	(0.2628)	(0.532)	(0.0332)	(0.5563)	(0.2806)	(0.5357)
	0.0077	*0.1678*	*0.1313*	*0.0107*	*0.0193*	*0.1438*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 219. Developed leaders sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.2598	-0.6585	0.2879***	0.9183*	-0.0281	-0.9464**
	(0.3536)	(0.3947)	(0.098)	(0.4679)	(0.362)	(0.4136)
	0.4654	*0.1007*	*0.0047*	*0.0545*	*0.9385*	*0.0258*
Carhart four-factor	0.226	-0.7178	0.1736**	0.9438*	0.0524	-0.8915*
	(0.3585)	(0.4785)	(0.0662)	(0.5295)	(0.3521)	(0.499)
	0.531	*0.1393*	*0.0113*	*0.0802*	*0.8823*	*0.0795*
Fama-French six-factor	0.3193	-0.7663*	0.1736**	1.0857**	0.1457	-0.94*
	(0.3475)	(0.4536)	(0.0659)	(0.4998)	(0.342)	(0.4725)
	0.3623	*0.097*	*0.011*	*0.0343*	*0.6718*	*0.0518*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 220. Developed laggards sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.6506	1.2122	-0.1272	-0.5615	0.7778	1.3393
	(0.4382)	(0.8273)	(0.1339)	(0.8326)	(0.4804)	(0.8711)
	0.143	*0.1483*	*0.3463*	*0.5027*	*0.1108*	*0.1296*
Carhart four-factor	0.8758**	1.0362	-0.0184	-0.1603	0.8943**	1.0546
	(0.4125)	(0.9301)	(0.1118)	(0.9676)	(0.4337)	(0.9466)
	0.0382	*0.2701*	*0.8697*	*0.869*	*0.044*	*0.2701*
Fama-French six-factor	0.9403**	1.223	-0.0274	-0.2827	0.9678**	1.2505
	(0.3931)	(0.8362)	(0.1123)	(0.8346)	(0.4087)	(0.8594)
	0.0203	*0.1495*	*0.8078*	*0.7361*	*0.0216*	*0.1515*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 221. Emerging leaders sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	-0.5414	-0.4293	0.3151	-0.1121	-0.8565	-0.7443
	(0.6852)	(0.8521)	(0.1948)	(0.9003)	(0.6749)	(0.7783)
	0.4327	*0.6163*	*0.1112*	*0.9013*	*0.2095*	*0.3429*
Carhart four-factor	-0.2794	-0.7543	0.3213	0.4749	-0.6006	-1.0756
	(1.0635)	(1.0377)	(0.2151)	(1.4577)	(1.0984)	(1.0715)
	0.7938	*0.4704*	*0.141*	*0.7458*	*0.5867*	*0.3199*
Fama-French six-factor	-0.243	-0.6165	0.2656	0.3734	-0.5086	-0.8821
	(1.0696)	(1.0512)	(0.1829)	(1.5166)	(1.1173)	(1.0023)
	0.8211	*0.5601*	*0.1524*	*0.8064*	*0.6508*	*0.3828*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 222. Emerging laggards sample estimations' results

Model	Portfolio			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	-0.0898	0.0338	0.3461	-0.1236	-0.4359	-0.3123
	(0.4337)	(0.5878)	(0.2284)	(0.5746)	(0.3979)	(0.5621)
	0.8367	*0.9543*	*0.1351*	*0.8304*	*0.2778*	*0.5806*
Carhart four-factor	0.6276	0.1972	0.4318	0.4303	0.1957	-0.2346
	(0.4728)	(0.7211)	(0.2967)	(0.7479)	(0.5259)	(0.7158)
	0.1899	*0.7855*	*0.1513*	*0.5674*	*0.7112*	*0.7443*
Fama-French six-factor	0.6552	0.2655	0.4433	0.3897	0.2119	-0.1778
	(0.4617)	(0.7362)	(0.2915)	(0.7771)	(0.5066)	(0.7735)
	0.1617	*0.7198*	*0.1342*	*0.6181*	*0.6774*	*0.8191*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 223. Extraction sample estimations' results

Model	Portfolio			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.7143	0.7925	-0.4872**	-0.0781	1.2016*	1.2797
	(0.5529)	(0.8615)	(0.2391)	(1.1543)	(0.713)	(0.8637)
	0.2015	*0.3615*	*0.0462*	*0.9463*	*0.0973*	*0.1439*
Carhart four-factor	1.1275*	1.1746	-0.112	-0.0471	1.2395*	1.2866
	(0.5724)	(0.8762)	(0.2206)	(1.1853)	(0.6802)	(0.8694)
	0.0539	*0.1856*	*0.6139*	*0.9684*	*0.0738*	*0.1446*
Fama-French six-factor	1.3117**	1.1705	-0.067	0.1411	1.3786*	1.2375
	(0.544)	(0.924)	(0.2355)	(1.1899)	(0.6939)	(0.93)
	0.0194	*0.2108*	*0.7772*	*0.9061*	*0.0521*	*0.189*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 224. Production sample estimations' results

Model	Portfolio			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.3218	-1.0706*	0.0838	1.3923*	0.238	-1.1543**
	(0.4873)	(0.59)	(0.1618)	(0.783)	(0.4806)	(0.5236)
	0.5117	*0.0748*	*0.6067*	*0.0806*	*0.6223*	*0.0315*
Carhart four-factor	0.1892	-0.8356	0.022	1.0248	0.1672	-0.8575
	(0.372)	(0.5875)	(0.1531)	(0.641)	(0.3736)	(0.526)
	0.6131	*0.1606*	*0.8864*	*0.1156*	*0.6562*	*0.1087*
Fama-French six-factor	0.3223	-0.8867	0.0464	1.2091*	0.2759	-0.9332
	(0.3819)	(0.6055)	(0.1441)	(0.6732)	(0.3433)	(0.5655)
	0.4025	*0.149*	*0.7486*	*0.0782*	*0.4252*	*0.1048*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 225. Services sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.5695**	-0.2056	0.2886***	0.7751*	0.281	-0.4942
	(0.2252)	(0.4788)	(0.0973)	(0.4038)	(0.2622)	(0.4743)
	0.0142	*0.6692*	*0.0044*	*0.0598*	*0.2884*	*0.3018*
Carhart four-factor	0.7748***	-0.2848	0.2053**	1.0596**	0.5695**	-0.4901
	(0.2204)	(0.5591)	(0.0998)	(0.4848)	(0.2296)	(0.5328)
	0.0009	*0.6125*	*0.0444*	*0.0331*	*0.0162*	*0.3617*
Fama-French six-factor	0.8958***	-0.2465	0.2327**	1.1424**	0.6631***	-0.4792
	(0.2373)	(0.5565)	(0.0977)	(0.4684)	(0.2459)	(0.53)
	0.0004	*0.6595*	*0.0209*	*0.0181*	*0.0094*	*0.3699*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 226. Large companies sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.5591*	-0.7509	0.0873	1.31**	0.4718	-0.8382*
	(0.3166)	(0.5019)	(0.0632)	(0.5935)	(0.3407)	(0.4696)
	0.0827	*0.14*	*0.1728*	*0.0313*	*0.1714*	*0.0795*
Carhart four-factor	0.6335**	-0.6887	0.0126	1.3222**	0.6209*	-0.7014
	(0.2995)	(0.5404)	(0.0662)	(0.5803)	(0.3131)	(0.4901)
	0.039	*0.2079*	*0.8496*	*0.0266*	*0.0524*	*0.1581*
Fama-French six-factor	0.7863***	-0.6375	0.0405	1.4238**	0.7458**	-0.678
	(0.2731)	(0.51)	(0.0571)	(0.5736)	(0.2933)	(0.4716)
	0.0057	*0.2168*	*0.4807*	*0.0163*	*0.014*	*0.1564*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 227. Small companies sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.9107	1.7856**	1.1704***	-0.8749	-0.2598	0.6151
	(0.6847)	(0.8145)	(0.3569)	(0.9416)	(0.829)	(0.8162)
	0.1887	*0.0324*	*0.0018*	*0.3567*	*0.7551*	*0.4541*
Carhart four-factor	1.0003	2.3786**	1.3372***	-1.3783	-0.3369	1.0415
	(0.7059)	(0.9982)	(0.3184)	(1.3075)	(0.779)	(0.9703)
	0.1621	*0.0207*	*0.0001*	*0.2964*	*0.6671*	*0.2878*
Fama-French six-factor	1.117*	2.461**	1.4227***	-1.344	-0.3057	1.0383
	(0.6301)	(0.9831)	(0.3176)	(1.1962)	(0.7524)	(1.0007)
	0.082	*0.0154*	*0*	*0.2662*	*0.6861*	*0.3042*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 228. Growth companies sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.9991**	-0.8134*	0.6694***	1.8126**	0.3297	-1.4829***
	(0.4943)	(0.4786)	(0.1919)	(0.7532)	(0.4508)	(0.476)
	0.0479	*0.0946*	*0.0009*	*0.0193*	*0.4675*	*0.0029*
Carhart four-factor	0.5712	-1.1451**	0.2901***	1.7163**	0.2812	-1.4352***
	(0.4156)	(0.4923)	(0.0746)	(0.702)	(0.4347)	(0.4676)
	0.1749	*0.0237*	*0.0003*	*0.0177*	*0.5204*	*0.0033*
Fama-French six-factor	0.746*	-1.1175**	0.3019***	1.8634***	0.444	-1.4194***
	(0.3784)	(0.4627)	(0.0749)	(0.6934)	(0.3898)	(0.4468)
	0.0539	*0.0192*	*0.0002*	*0.0096*	*0.2598*	*0.0025*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 229. Value companies sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	-0.2628	-0.3499	-0.3184	0.0871	0.0556	-0.0315
	(0.5593)	(0.4716)	(0.2995)	(0.4405)	(0.3475)	(0.3114)
	0.6402	*0.4611*	*0.2922*	*0.8439*	*0.8735*	*0.9197*
Carhart four-factor	0.6613*	0.0934	0.2315	0.5678	0.4297	-0.1381
	(0.3631)	(0.3589)	(0.1673)	(0.4153)	(0.3174)	(0.3111)
	0.074	*0.7956*	*0.1721*	*0.1771*	*0.1814*	*0.659*
Fama-French six-factor	0.7522**	0.0398	0.3025*	0.7124*	0.4497	-0.2627
	(0.366)	(0.3282)	(0.1602)	(0.4016)	(0.3133)	(0.2881)
	0.0448	*0.904*	*0.0645*	*0.0818*	*0.157*	*0.366*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 230. Large companies from developed countries sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	0.6554**	-0.8379**	0.1054	1.4933***	0.55*	-0.9433**
	(0.3056)	(0.3978)	(0.0802)	(0.529)	(0.3184)	(0.4148)
	0.0362	*0.0395*	*0.1939*	*0.0065*	*0.0894*	*0.0267*
Carhart four-factor	0.666**	-0.9178**	0.0016	1.5838***	0.6644**	-0.9194**
	(0.2746)	(0.4363)	(0.0314)	(0.4928)	(0.2896)	(0.4564)
	0.0186	*0.04*	*0.96*	*0.0022*	*0.0256*	*0.0489*
Fama-French six-factor	0.7773***	-0.9157**	-0.0062	1.693***	0.7835***	-0.9095**
	(0.2715)	(0.4101)	(0.0257)	(0.4723)	(0.2812)	(0.4272)
	0.006	*0.0298*	*0.8108*	*0.0007*	*0.0074*	*0.0379*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 231. Small companies from developed countries sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	1.8044	1.4042	1.4351***	0.4001	0.3693	-0.0309
	(1.1173)	(0.9475)	(0.3)	(1.429)	(1.1213)	(0.9503)
	0.1117	*0.1438*	*0*	*0.7805*	*0.7431*	*0.9742*
Carhart four-factor	2.0934*	2.3668**	1.642***	-0.2735	0.4514	0.7249
	(1.1379)	(1.0098)	(0.1688)	(1.492)	(1.1264)	(1.0352)
	0.0712	*0.0227*	*0*	*0.8552*	*0.6902*	*0.4867*
Fama-French six-factor	2.133*	2.2719**	1.7043***	-0.1389	0.4287	0.5676
	(1.1017)	(1.0317)	(0.161)	(1.4099)	(1.1252)	(1.0598)
	0.0582	*0.032*	*0*	*0.9219*	*0.7047*	*0.5945*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 232. Growth companies from developed countries sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	1.1027**	-0.5583	0.7083***	1.661**	0.3944	-1.2666**
	(0.486)	(0.4553)	(0.2065)	(0.7465)	(0.4345)	(0.479)
	0.027	*0.225*	*0.0011*	*0.03*	*0.3678*	*0.0105*
Carhart four-factor	0.5244	-1.1622**	0.2596***	1.6866**	0.2648	-1.4218***
	(0.4219)	(0.4868)	(0.067)	(0.6348)	(0.4456)	(0.5128)
	0.2192	*0.0204*	*0.0003*	*0.0103*	*0.5549*	*0.0076*
Fama-French six-factor	0.6274	-1.1341***	0.2287***	1.7615***	0.3986	-1.3629***
	(0.3868)	(0.4245)	(0.0753)	(0.5834)	(0.4062)	(0.4488)
	0.1108	*0.01*	*0.0037*	*0.0039*	*0.3309*	*0.0037*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 233. Value companies from developed countries sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	-0.2817	-0.294	-0.4251	0.0123	0.1434	0.1311
	(0.6027)	(0.5124)	(0.3042)	(0.6083)	(0.3856)	(0.4357)
	0.642	*0.5684*	*0.1676*	*0.9839*	*0.7114*	*0.7646*
Carhart four-factor	0.6548*	0.2728	0.1842*	0.3821	0.4707	0.0886
	(0.3887)	(0.439)	(0.1054)	(0.5808)	(0.3671)	(0.4782)
	0.0977	*0.5369*	*0.0863*	*0.5134*	*0.2051*	*0.8537*
Fama-French six-factor	0.7845*	0.1407	0.2241**	0.6437	0.5604	-0.0833
	(0.3943)	(0.3585)	(0.1005)	(0.5454)	(0.3705)	(0.4012)
	0.0518	*0.6962*	*0.0301*	*0.2432*	*0.1363*	*0.8363*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 234. Anticipation sample estimations' results

Model	Portfolio			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.5596**	-0.3619	0.1263	0.9215**	0.4333	-0.4882
	(0.2628)	(0.3891)	(0.0765)	(0.4316)	(0.2644)	(0.3431)
	0.0374	*0.3563*	*0.1039*	*0.037*	*0.1067*	*0.1602*
Carhart four-factor	0.6632**	-0.2909	0.1037	0.9541**	0.5595*	-0.3946
	(0.2794)	(0.4028)	(0.0858)	(0.4635)	(0.2974)	(0.345)
	0.0211	*0.4732*	*0.232*	*0.0443*	*0.0652*	*0.2577*
Fama-French six-factor	0.7444***	-0.2179	0.1323	0.9623**	0.6121**	-0.3503
	(0.2666)	(0.3613)	(0.0795)	(0.4347)	(0.2731)	(0.3112)
	0.0073	*0.549*	*0.1021*	*0.0312*	*0.0292*	*0.2655*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 235. Adjustment sample estimations' results

Model	Portfolio			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.3382	-0.9747*	0.1357*	1.3129**	0.2024	-1.1104**
	(0.3262)	(0.5372)	(0.0764)	(0.6081)	(0.3312)	(0.5051)
	0.3042	*0.0748*	*0.0811*	*0.035*	*0.5435*	*0.0319*
Carhart four-factor	0.4363	-0.9353	0.1138	1.3716**	0.3225	-1.0491*
	(0.2984)	(0.6001)	(0.0869)	(0.5945)	(0.2994)	(0.5453)
	0.1494	*0.1249*	*0.1956*	*0.0248*	*0.2862*	*0.0596*
Fama-French six-factor	0.5889**	-0.9731	0.1421*	1.562***	0.4468*	-1.1152**
	(0.2504)	(0.5841)	(0.0807)	(0.5796)	(0.2592)	(0.5369)
	0.0224	*0.1016*	*0.0839*	*0.0094*	*0.0906*	*0.0427*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 236. Middle Eastern and North African sample estimations' results

Model	Portfolio			Differences		
	Upgrades	Downgrades	Control	U-D	U-C	D-C
CAPM	0.9652	1.8057**	0.3357	-0.8405	0.6295	1.47*
	(0.8105)	(0.7895)	(0.3791)	(1.1834)	(0.7933)	(0.7642)
	0.2385	*0.0259*	*0.3794*	*0.4804*	*0.4308*	*0.0593*
Carhart four-factor	1.4877	2.6236**	1.1835***	-1.1359	0.3042	1.4401
	(1.118)	(1.2435)	(0.4102)	(1.8537)	(1.1453)	(1.1799)
	0.1888	*0.0394*	*0.0056*	*0.5425*	*0.7916*	*0.2275*
Fama-French six-factor	1.2715	2.5098**	1.2022***	-1.2383	0.0693	1.3076
	(1.0394)	(1.1502)	(0.4052)	(1.7447)	(1.0499)	(1.0945)
	0.2266	*0.0336*	*0.0045*	*0.481*	*0.9476*	*0.2375*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Table 237. Latin American sample estimations' results

Model	Portfolio			Differences		
	Upgrades	**Downgrades**	**Control**	**U-D**	**U-C**	**D-C**
CAPM	-0.8166	0.0749	-0.4594	-0.8915	-0.3572	0.5343
	(1.2307)	(0.9577)	(0.5674)	(1.4218)	(0.8834)	(0.9411)
	0.5096	*0.9379*	*0.4214*	*0.5331*	*0.6874*	*0.5724*
Carhart four-factor	-0.8433	0.5358	-0.3207	-1.3791	-0.5226	0.8565
	(1.3191)	(1.1706)	(0.5589)	(2.0667)	(1.3623)	(1.3035)
	0.5253	*0.649*	*0.5684*	*0.5074*	*0.7027*	*0.5139*
Fama-French six-factor	-0.7874	0.2559	-0.4037	-1.0433	-0.3836	0.6597
	(1.2973)	(1.2729)	(0.5417)	(2.1052)	(1.309)	(1.4016)
	0.5465	*0.8414*	*0.4594*	*0.6222*	*0.7706*	*0.6398*

Notes: Newey-West (1987) heteroskedasticity and autocorrelation consistent robust standard errors presented in parenthesis. P-values reported in italics. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

7. References

Abrams, R., Han, S., & Hossain, M. T. (2021). Environmental performance, environmental management and company valuation. *Journal of Global Responsibility.*

Al-Tuwaijri, S. A., Christensen, T. E., & Hughes Ii, K. E. (2004). The relations among environmental disclosure, environmental performance, and economic performance: a simultaneous equations approach. *Accounting, organizations and society*, *29*(5-6), 447-471.

Albarrak, M. S., Elnahass, M., & Salama, A. (2019). The effect of carbon dissemination on cost of equity. *Business Strategy and the Environment, 28(6), 1179-1198.*

Alda, M. (2020). ESG fund scores in UK SRI and conventional pension funds: Are the ESG concerns of the SRI niche affecting the conventional mainstream? *Finance research letters*, *36*, 101313.

Ambec, S., & Lanoie, P. (2008). Does it pay to be green? A systematic overview. *The Academy of Management Perspectives*, 45-62.

Ammann, M., Hemauer, T., & Straumann, S. (2022). Resurrecting the Value Factor from its Redundancy.

Aouadi, A., & Marsat, S. (2018). Do ESG controversies matter for firm value? Evidence from international data. *Journal of Business Ethics, 151(4), 1027-1047.*

Arjaliès, D. L. (2010). A social movement perspective on finance: How socially responsible investment mattered. Journal of business ethics, 92(1), 57-78.

Ashwin Kumar, N. C., Smith, C., Badis, L., Wang, N., Ambrosy, P., & Tavares, R. (2016). ESG factors and risk-adjusted performance: a new quantitative model. *Journal of Sustainable Finance & Investment*, *6*(4), 292-300.

Ashwin Kumar, N. C., Smith, C., Badis, L., Wang, N., Ambrosy, P., & Tavares, R. (2016). ESG factors and risk-adjusted performance: A new quantitative model. Journal of Sustainable Finance & Investment, 6(4), 292-300.

Asness, C., & Frazzini, A. (2013). The devil in HML's details. The Journal of Portfolio Management, 39(4), 49-68.

Baker, M., Bergstresser, D., Serafeim, G., & Wurgler, J. (2018). *Financing the response to climate change: The pricing and ownership of US green bonds* (No. w25194). National Bureau of Economic Research.

Bansal, R., Ochoa, M., & Kiku, D. (2017). *Climate change and growth risks* (No. w23009). National Bureau of Economic Research.

Barber, B. M., Morse, A., & Yasuda, A. (2021). Impact investing. *Journal of Financial Economics*, *139*(1), 162-185.

Barnett, M. L., & Salomon, R. M. (2006). Beyond dichotomy: The curvilinear relationship between social responsibility and financial performance. *Strategic management journal*, *27*(11), 1101-1122.

Barth, F., Hübel, B., & Scholz, H. (2020). ESG and corporate credit spreads. *Available at SSRN 3179468*.

Basu, S. (1983). The relationship between earnings' yield, market value and return for NYSE common stocks: Further evidence. Journal of financial economics, 12(1), 129-156.

Bauer, R., Derwall, J., & Otten, R. (2007). The ethical mutual fund performance debate: New evidence from Canada. *Journal of Business Ethics*, *70*(2), 111-124.

Bauer, R., Koedijk, K., & Otten, R. (2005). International evidence on ethical mutual fund performance and investment style. *Journal of Banking & Finance*, *29*(7), 1751-1767.

Bauer, R., Otten, R., & Rad, A. T. (2006). Ethical investing in Australia: Is there a financial penalty?. *Pacific-Basin Finance Journal*, *14*(1), 33-48.

Ben-Amar, W., & McIlkenny, P. (2015). Board effectiveness and the voluntary disclosure of climate change information. Business Strategy and the Environment, 24(8), 704-719.

Benjamin, S. J., Regasa, D. G., Wellalage, N. H., & M Marathamuthu, M. S. (2020). Waste disclosure and corporate cash holdings. *Applied Economics*, *52*(49), 5399-5412.

Berg, F., Koelbel, J. F., & Rigobon, R. (2019). *Aggregate confusion: The divergence of ESG ratings*. MIT Sloan School of Management.

Bialkowski, J., & Starks, L. T. (2016). SRI funds: Investor demand, exogenous shocks and ESG profiles.

Blacconiere, W. G., & Patten, D. M. (1994). Environmental disclosures, regulatory costs, and changes in firm value. Journal of accounting and economics, 18(3), 357-377.

Bollen, N. P. (2007). Mutual fund attributes and investor behavior. Journal of financial and quantitative analysis, 42(3), 683-708.

Bolton, P., & Kacperczyk, M. (2021). Do investors care about carbon risk?. *Journal of financial economics, 142(2), 517-549.*

Bolton, P., & Kacperczyk, M. (2021). Global pricing of carbon-transition risk (No. w28510). *National Bureau of Economic Research.*

Bonifant, B., Arnold, M. and Long, F. (1995), “Gaining competitive advantage through environmental investments”, Business Horizons, Vol. 38 No. 4, pp. 37-47.

Borgers, A., Derwall, J., Koedijk, K., & Ter Horst, J. (2015). Do social factors influence investment behavior and performance? Evidence from mutual fund holdings. Journal of Banking & Finance, 60, 112-126.

Boulatoff, C., & Boyer, C. M. (2009). Green recovery: how are environmental stocks doing?. *The Journal of Wealth Management*, *12*(2), 9-20.

Brammer, S., Brooks, C., & Pavelin, S. (2006). Corporate social performance and stock returns: UK evidence from disaggregate measures. Financial management, 35(3), 97-116.

Brown, S. J., & Warner, J. B. (1985). Using daily stock returns: The case of event studies. Journal of financial economics, 14(1), 3-31.

Brzeszczynski, J., & McIntosh, G. (2014). Performance of portfolios composed of British SRI stocks. *Journal of Business Ethics, 120*(3), 335-362.

Brzeszczynski, J., Ghimire, B., Jamasb, T., & McIntosh, G. (2016**).** *Socially responsible investment and market performance: the case of energy and resource firms* (No 1605). EPRG.

Brzeszczynski, J., Ghimire, B., Jamasb, T., & McIntosh, G. (2019). Socially responsible investment and market performance: the case of energy and resource companies. *The Energy Journal*, *40*(5), 17-72.

Capelle-Blancard, G., & Laguna, M. A. (2010). How does the stock market respond to chemical disasters? Journal of Environmental Economics and Management, 59(2), 192-205.

Carhart, M. M. (1997). On persistence in mutual fund performance. *The Journal of finance*, *52*(1), 57-82.

Chen, H. Y., & Yang, S. S. (2020). Do investors exaggerate corporate ESG information? Evidence of the ESG momentum effect in the Taiwanese market. *Pacific-Basin Finance Journal*, *63*, 101407.

Choi, D., Gao, Z., & Jiang, W. (2020). Attention to global warming. *The Review of Financial Studies*, *33*(3), 1112-1145.

Chong, J., & Phillips, G. M. (2016). ESG investing: A simple approach. The Journal of Wealth Management, 19(2), 73-88.

Chow, K. V., & Denning, K. C. (1993). A simple multiple variance ratio test. *Journal of Econometrics*, *58*(3), 385-401.

Clementino, E., & Perkins, R. (2021). How do companies respond to environmental, social and governance (ESG) ratings? Evidence from Italy. *Journal of Business Ethics*, *171*(2), 379-397.

Climent, F., & Soriano, P. (2011). Green and good? The investment performance of US environmental mutual funds. *Journal of Business Ethics, 103(2), 275-287.*

Cochrane, J. (1999). Portfolio advice for a multifactor world (No. 7170). National Bureau of Economic Research.

Cohen, M. A., Fenn, S., & Naimon, J. S. (1995). *Environmental and financial performance: are they related?*. Washington, DC: Investor Responsibility Research Center, Environmental Information Service.

Cohen, M. A., Fenn, S., & Naimon, J. S. (1995). Environmental and financial performance: are they related?. Washington, DC: Investor Responsibility Research Center, Environmental Information Service.

Consolandi, C., Eccles, R. G., & Gabbi, G. (2020). How material is a material issue? Stock returns and the financial relevance and financial intensity of ESG materiality. *Journal of Sustainable Finance & Investment*, 1-24.

Cordeiro, J. J., & Sarkis, J. (1997). Environmental proactivism and firm performance: evidence from security analyst earnings forecasts. *Business strategy and the environment*, *6*(2), 104-114.

Dorfleitner, G., Halbritter, G., & Nguyen, M. (2015). Measuring the level and risk of corporate responsibility–An empirical comparison of different ESG rating approaches. *Journal of Asset Management*, *16*(7), 450-466.

Dyckman, T., Philbrick, D., & Stephan, J. (1984). A comparison of event study methodologies using daily stock returns: A simulation approach. Journal of Accounting Research, 1-30.

Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. Management science, 60(11), 2835-2857.

Fama, E. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, *25*(2), 383-417.

Fama, E., & French, K. (1992). The cross-section of expected stock returns. *The Journal of Finance*, *47*(2), 427-465.

Fama, E., & French, K. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, *33*(1), 3-56.

Fama, E., & French, K. (2016). Dissecting anomalies with a five-factor model. *The Review of Financial Studies*, *29*(1), 69-103.

Fama, E., & French, K. (2018). Choosing factors. *Journal of Financial Economics*, *128*(2), 234-252.

Fama, E., & MacBeth, J. (1973). Risk, return, and equilibrium: Empirical tests. *Journal of Political Economy*, *81*(3), 607-636.

Favre, L., & Galeano, J. A. (2002). Mean-modified value-at-risk optimization with hedge funds. *The journal of alternative investments*, *5*(2), 21-25.

Ferson, W. E., & Schadt, R. W. (1996). Measuring fund strategy and performance in changing economic conditions. The Journal of finance, 51(2), 425-461.

Freeman, R. E., Wicks, A. C., & Parmar, B. (2004). Stakeholder theory and "the corporate objective revisited". *Organization science*, *15*(3), 364-369.
Freeman, R. E., Wicks, A. C., & Parmar, B. (2004). Stakeholder theory and "the corporate objective revisited". *Organization science*, *15*(3), 364-369.

Freeman, R., Wicks, A., & Parmar, B. (2004). Stakeholder theory and "the corporate objective revisited". *Organization science, 15*(3), 364-369.

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of sustainable finance & investment*, *5*(4), 210-233.

Friedman M., "The social responsibility of a business is to increase its profits," *New York Times Magazine,* 1970, p. 32-33.

Friedman, M. (2007). The social responsibility of business is to increase its profits. In *Corporate ethics and corporate governance* (pp. 173-178). Springer, Berlin, Heidelberg.

Geczy, C. C., Stambaugh, R. F., & Levin, D. (2021). Investing in socially responsible mutual funds. *The Review of Asset Pricing Studies*, *11*(2), 309-351.

Ghimire, B., & Shanaev, S. (2018). Does it pay to pollute? Carbon major entities portfolio performance and the natural disaster premium. Paper presented at the Summer Conference on Financial Implications of Sustainability and CSR, Nice, France.

Gibson, R., Krueger, P., & Schmidt, P. S. (2019). ESG rating disagreement and stock returns. *Swiss Finance Institute Research Paper*, (19-67).

Giese, G., Lee, L. E., Melas, D., Nagy, Z., & Nishikawa, L. (2019). Foundations of ESG investing: How ESG affects equity valuation, risk, and performance. *The Journal of Portfolio Management*, *45*(5), 69-83.

Gilley, K. M., Worrell, D. L., Davidson III, W. N., & El–Jelly, A. (2000). Corporate environmental initiatives and anticipated firm performance: the differential effects of process-driven versus product-driven greening initiatives. *Journal of management*, *26*(6), 1199-1216.

Goldreyer, E. F., Ahmed, P., & Diltz, J. D. (1999). The performance of socially responsible mutual funds: Incorporating sociopolitical information in portfolio selection. *Managerial Finance*.

Görgen, M., Jacob, A., Nerlinger, M., Riordan, R., Rohleder, M., & Wilkens, M. (2018). *Carbon Risk.* https://dx.doi.org/10.2139/ssrn.2930897.

Gregory, A., Matatko, J., & Luther, R. (1997). Ethical unit trust financial performance: small company effects and fund size effects. *Journal of Business Finance & Accounting*, *24*(5), 705-725.

Gyönyörová, L., Stachoň, M., & Stašek, D. (2021). ESG ratings: relevant information or misleading clue? Evidence from the S&P Global 1200. *Journal of Sustainable Finance & Investment*, 1-35.

Halbritter, G., & Dorfleitner, G. (2015). The wages of social responsibility—where are they? A critical review of ESG investing. *Review of Financial Economics*, *26*, 25-35.

Hamilton, J. T. (1995). Pollution as news: Media and stock market reactions to the toxics release inventory data. *Journal of environmental economics and management*, *28*(1), 98-113.

Hamilton, S., Jo, H., & Statman, M. (1993). Doing well while doing good? The investment performance of socially responsible mutual funds. *Financial Analysts Journal*, *49*(6), 62-66.

Hart, S. L., & Ahuja, G. (1996). Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. *Business strategy and the Environment*, *5*(1), 30-37.

Hartzmark, S. M., & Sussman, A. B. (2019). Do investors value sustainability? A natural experiment examining ranking and fund flows. *The Journal of Finance, 74(6), 2789-2837.*

Heinkel, R., Kraus, A., & Zechner, J. (2001). The effect of green investment on corporate behavior. *Journal of financial and quantitative analysis*, *36*(4), 431-449.

Hübel, B., & Scholz, H. (2018). *Performance of socially responsible portfolios: The role of CSR exposures and CSR ratings.* https://dx.doi.org/10.2139/ssrn.3091666

Ibikunle, G., & Steffen, T. (2017). European green mutual fund performance: A comparative analysis with their conventional and black peers. *Journal of Business Ethics, 145(2), 337-355.*

Jaffe, J. F. (1974). Special information and insider trading. *The Journal of Business*, *47*(3), 410-428.

Jaffe, J., Keim, D. B., & Westerfield, R. (1989). Earnings yields, market values, and stock returns. The Journal of Finance, 44(1), 135-148.

Jitmaneeroj, B. Synergistic effects of CSR practices on firm value: Evidence from Asia Pacific emerging markets.

Jones, S., Van der Laan, S., Frost, G., & Loftus, J. (2008). The investment performance of socially responsible investment funds in Australia. *Journal of Business Ethics, 80(2), 181-203.*

Judge, W. Q., & Douglas, T. J. (1998). Performance implications of incorporating natural environmental issues into the strategic planning process: An empirical assessment. *Journal of management Studies*, *35*(2), 241-262.

Kaiser, L. (2020). ESG integration: value, growth and momentum. *Journal of Asset Management*, *21*(1), 32-51.

Kempf, A., & Osthoff, P. (2007). The effect of socially responsible investing on portfolio performance. European financial management, 13(5), 908-922.

Khan, M. (2019). Corporate governance, ESG, and stock returns around the world. Financial Analysts Journal, 75(4), 103-123.

Khan, M., Serafeim, G., & Yoon, A. (2016). Corporate sustainability: First evidence on materiality. The accounting review, 91(6), 1697-1724.

King, A. A., & Lenox, M. J. (2001). Does it really pay to be green? An empirical study of firm environmental and financial performance: An empirical study of firm environmental and financial performance. *Journal of Industrial Ecology*, *5*(1), 105-116.

King, A., & Lenox, M. (2002). Exploring the locus of profitable pollution reduction. *Management Science*, *48*(2), 289-299.

Klassen, R. D., & McLaughlin, C. P. (1996). The impact of environmental management on firm performance. *Management science*, *42*(8), 1199-1214.

Koh, K. (2020). Revisiting the investment anomaly: Financing constraints or limits-to-arbitrage?. Review of Financial Economics, 38(4), 655-673.

Konar, S., & Cohen, M. A. (2001). Does the market value environmental performance?. *Review of economics and statistics*, *83*(2), 281-289.

Kouloukoui, D., Sant'Anna, Â. M. O., da Silva Gomes, S. M., de Oliveira Marinho, M. M., de Jong, P., Kiperstok, A., & Torres, E. A. (2019). Factors influencing the level of environmental disclosures in sustainability reports: Case of climate risk disclosure by Brazilian companies. Corporate Social Responsibility and Environmental Management, 26(4), 791-804.

Kreander, N., Gray, R. H., Power, D. M., & Sinclair, C. D. (2005). Evaluating the performance of ethical and non-ethical funds: a matched pair analysis. *Journal of Business Finance & Accounting*, *32*(7-8), 1465-1493.

Kumar, S., & Shetty, S. (2018). Does environmental performance improve market valuation of the firm: evidence from Indian market. *Environmental Economics and Policy Studies, 20(2), 241-260.*

Kupiec, P. H. (1995). *Techniques for verifying the accuracy of risk measurement models* (Vol. 95, No. 24). Division of Research and Statistics, Division of Monetary Affairs, Federal Reserve Board.

Li, D., Li, T., Yi, K., & Liu, Y. (2022). Size effect and the measurement of firm size. Managerial and Decision Economics, 43(4), 894-905.

Liu, J., Nissim, D., & Thomas, J. (2002). Equity valuation using multiples. *Journal of Accounting Research, 40(1), 135-172.*

Liu, X., & Anbumozhi, V. (2009). Determinant factors of corporate environmental information disclosure: an empirical study of Chinese listed companies. Journal of cleaner production, 17(6), 593-600.

Luther, R. G., & Matatko, J. (1994). The performance of ethical unit trusts: choosing an appropriate benchmark. *The British Accounting Review*, *26*(1), 77-89.

Luther, R. G., Matatko, J., & Corner, D. C. (1992). The Investment Performance of UK"Ethical"Unit Trusts. *Accounting, Auditing & Accountability Journal*, *5*(4), 0-0.

MacKinlay, A. C. (1997). Event studies in economics and finance. Journal of economic literature, 35(1), 13-39.

Madhavan, A., Sobczyk, A., & Ang, A. (2021). Toward ESG alpha: Analyzing ESG exposures through a factor lens. *Financial Analysts Journal, 77(1), 69-88.*

Maiti, M. (2021). Is ESG the succeeding risk factor?. Journal of Sustainable Finance & Investment, 11(3), 199-213.

Mallin, C. A., Saadouni, B., & Briston, R. J. (1995). The financial performance of ethical investment funds. *Journal of Business Finance and Accounting*, *22*, 483-483.

Markowitz, H. (1952). Portfolio selection. The Journal of Finance, 7(1), 77-91.

Markowitz, H. M. (1968). Portfolio selection. Yale university press

Melnyk, S. A., Sroufe, R. P., & Calantone, R. (2003). Assessing the impact of environmental management systems on corporate and environmental performance. *Journal of operations management*, *21*(3), 329-351.

Mitchell, M. L., & Stafford, E. (2000). Managerial decisions and long-term stock price performance. *The Journal of Business*, *73*(3), 287-329.

Molina-Azorín, J. F., Claver-Cortés, E., López-Gamero, M. D., & Tarí, J. J. (2009). Green management and financial performance: a literature review. *Management Decision*.

Muñoz, F., Vargas, M., & Marco, I. (2014). Environmental mutual funds: Financial performance and managerial abilities. *Journal of Business Ethics, 124(4), 551-569.*

Naffa, H., & Fain, M. (2021). A factor approach to the performance of ESG leaders and laggards. Finance Research Letters, 102073.

Nagy, Z., Kassam, A., & Lee, L. E. (2016). Can ESG add alpha? An analysis of ESG tilt and momentum strategies. *The Journal of Investing*, *25*(2), 113-124.

Nakao, Y., Amano, A., Matsumura, K., Genba, K., & Nakano, M. (2007). Relationship between environmental performance and financial performance: an empirical analysis of Japanese corporations. *Business Strategy and the Environment*, *16*(2), 106-118.

Nerlinger, M. (2020). Enhancing the accuracy of firm valuation with multiples using carbon emissions. *On the Impact of Sustainability and Climate Change on Assets and Investors, 105.*

Ng, A. C., & Rezaee, Z. (2015). Business sustainability performance and cost of equity capital. *Journal of Corporate Finance, 34, 128-149.*

Nordhaus, W. D. (1993). Reflections on the economics of climate change. Journal of economic Perspectives, 7(4), 11-25.

Nordhaus, W. D., & Yang, Z. (1996). A regional dynamic general-equilibrium model of alternative climate-change strategies. The American Economic Review, 741-765.

Olsthoorn, X., Tyteca, D., Wehrmeyer, W., & Wagner, M. (2001). Environmental indicators for business: a review of the literature and standardisation methods. Journal of cleaner production, 9(5), 453-463.

Pástor, Ľ., Stambaugh, R. F., & Taylor, L. A. (2020). Sustainable investing in equilibrium. *Journal of Financial Economics*.

Pedersen, L. H., Fitzgibbons, S., & Pomorski, L. (2021). Responsible investing: The ESG-efficient frontier. Journal of Financial Economics, 142(2), 572-597.

Porter, M. E., & Van der Linde, C. (1995). Toward a new conception of the environment-competitiveness relationship. *Journal of economic perspectives, 9(4), 97-118.*

Puopolo, G. W., Teti, E., & Milani, V. (2015). Does the market reward for going green?. *Journal of Management Development*.

Rankin, M., Windsor, C., & Wahyuni, D. (2011). An investigation of voluntary corporate greenhouse gas emissions reporting in a market governance system: Australian evidence. Accounting, Auditing & Accountability Journal.

Reboredo, J. C. (2015). Is there dependence and systemic risk between oil and renewable energy stock prices? Energy Economics, 48(1), 32-45.

Reinhardt, F. (1999). Market failure and the environmental policies of firms: Economic rationales for "beyond compliance" behavior. *Journal of industrial ecology, 3(1), 9-21.*

Reinhardt, F. L. (1999). Bringing the environment down to earth. *Harvard business review, 77(4), 149-149.*

Renneboog, L., Ter Horst, J., & Zhang, C. (2006). Is ethical money financially smart?. *ECGI-Finance Working Paper*, (117).

Renneboog, L., Ter Horst, J., & Zhang, C. (2008). Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of banking & finance*, *32*(9), 1723-1742.

Renneboog, L., Ter Horst, J., & Zhang, C. (2008). The price of ethics and stakeholder governance: The performance of socially responsible mutual funds. *Journal of corporate finance*, *14*(3), 302-322.

Renneboog, L., Ter Horst, J., & Zhang, C. (2011). Is ethical money financially smart? Nonfinancial attributes and money flows of socially responsible investment funds. *Journal of Financial Intermediation*, *20*(4), 562-588.

Revelli, C., & Viviani, J. (2015). Financial performance of socially responsible investing (SRI): what have we learned? A meta-analysis. Business Ethics: A European Review, 24(2), 158-185.

Riedl, A., & Smeets, P. (2017). Why do investors hold socially responsible mutual funds?. *The Journal of Finance, 72(6), 2505-2550.*

Rudd, A. (1981). Social responsibility and portfolio performance. California Management Review, 23(4), 55-61.

Russo, M. V., & Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of management Journal*, *40*(3), 534-559.

Schröder, M. (2004). The performance of socially responsible investments: investment funds and indices. *Financial markets and portfolio management*, *18*(2), 122.

Serafeim, G., & Yoon, A. (2022). Which Corporate ESG News does the Market React to?. Financial Analysts Journal, 78(1), 59-78.

Shanaev, S., & Ghimire, B. (2021). When ESG meets AAA: The effect of ESG rating changes on stock returns. Finance Research Letters, 102302.

Sharma, S., & Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strategic management journal*, *19*(8), 729-753.

Shephard, C. S. (2022). Esg pricing in the Australian equity market: an empirical analysis (Doctoral dissertation).

Sortino, F., & Satchell, S. (Eds.). (2001). *Managing downside risk in financial markets*. Butterworth-Heinemann.

Statman, M. (2000). Socially responsible mutual funds (corrected). *Financial Analysts Journal*, *56*(3), 30-39.

Subramaniam, N., Wahyuni, D., Cooper, B. J., Leung, P., & Wines, G. (2015). Integration of carbon risks and opportunities in enterprise risk management systems: evidence from Australian firms. Journal of Cleaner Production, 96, 407-417.

Verheyden, T., Eccles, R. G., & Feiner, A. (2016). ESG for all? The impact of ESG screening on return, risk, and diversification. Journal of Applied Corporate Finance, 28(2), 47-55.

Wagner, M., Van Phu, N., Azomahou, T., & Wehrmeyer, W. (2002). The relationship between the environmental and economic performance of firms: an empirical analysis of the European paper industry. *Corporate social responsibility and Environmental Management*, *9*(3), 133-146.

Wahyuni, D., Rankin, M., & Windsor, C. A. (2009). Towards emissions trading: the role of environmental management systems in voluntarily disclosing greenhouse gas emissions. In Accounting and Finance Association of Australia and New Zealand Conference.

Walley, N., & Whitehead, B. (1994). It's not easy being green. Reader in *Business and the Environment, 36(81), 4.*

Wilson, D. J. (2019). The harmonic mean p-value for combining dependent tests. *Proceedings of the National Academy of Sciences, 116(4), 1195-1200.*

Wong, W. C., Batten, J. A., Mohamed-Arshad, S. B., Nordin, S., & Adzis, A. A. (2021). Does ESG certification add firm value?. Finance Research Letters, 39, 101593.

Xu, X. D., Zeng, S. X., & Tam, C. M. (2012). Stock market's reaction to disclosure of environmental violations: evidence from China. Journal of Business Ethics, 107(2), 227-237.

Zulkufly, R. (2012). Impact of corporate governance quality on the cost of equity capital in an emerging market: Evidence from Malaysian listed firms. *African Journal of Business Management, 6(4), 1733-1748.*

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