Journal Pre-proofs

Review

Firms' sustainability, financial performance, and regulatory dynamics: Evidence from European firms

Maria-Eleni K. Agoraki, Maria Giaka, Dimitrios Konstantios, Victoria Patsika

PII: S0261-5606(22)00188-7
DOI: https://doi.org/10.1016/j.jimonfin.2022.102785
Reference: JIMF 102785

To appear in: *Journal of International Money and Finance*

Received Date: 17 November 2022
Accepted Date: 29 November 2022

Please cite this article as: M.K. Agoraki, M. Giaka, D. Konstantios, V. Patsika, Firms' sustainability, financial performance, and regulatory dynamics: Evidence from European firms, *Journal of International Money and Finance* (2022), doi: https://doi.org/10.1016/j.jimonfin.2022.102785

Firms' sustainability, financial performance, and regulatory dynamics: Evidence from European firms[1]

Maria-Eleni K.Agoraki, Maria Giaka, Dimitrios Konstantios, Victoria Patsika*

Abstract

This study examines the association between firms' ESG reputational risk and financial performance under the EU regulatory policy changes and the *COVID-19 period.* Analyzing a panel of 1,816 European listed firms during the period 2007-2021, we document evidence that firms with lower ESG reputational risk have reduced information asymmetry, are less financial constrained and perform better. To establish causality, we design a quasi-natural experiment focusing on the 2014/95/EU directive of non-financial disclosing and the *COVID-19 exogenous shock*. Our findings are robust to several estimation techniques that address endogeneity, self-selection, and model sensitivity.

Key words: ESG reputational risk, financial performance, EU regulatory policy*, COVID-19*

JEL Classification: G10, G12, G14, G30

[1] We are grateful to Mark Spiegel, Zied Ftiti, Dimitrios Gounopoulos, George Kouretas, Sushanta Mallick, Allegret Jean-Pierre and, Nickolaos Tzeremes and conference participants at the Financial Economics Meeting (FEM 2022, Paris) for helpful comments and discussions. Maria-Eleni K.Agoraki is at University of the Peloponnese, Greece, 183, 24100, Kalamata, Greece email: m.agoraki@uop.gr, Maria Giaka is at Department of Communication, Media and Culture, Panteion University, Athens, Greece email: m.giaka@panteion.gr, Dimitrios Konstantios is at Department of Maritime Studies, University of Piraeus, M. Karaoli & A. Dimitriou St. 80, Piraeus, 18534, Greece; email: konstantios@unipi.gr, Patsika Victoria* is at Cardiff Business School, University of Cardiff, Aberconway Building, Colum Dr, Cardiff CF10 3EU, UK; email: patsikv@cardiff.ac.uk.

Firms' sustainability, financial performance, and regulatory dynamics: Evidence from European firms

Abstract

This study examines the association between firms' ESG reputational risk and financial performance under the EU regulatory policy changes and the COVID-19 period. Analyzing a panel of 1,816 European listed firms during the period 2007-2021, we document evidence that firms with lower ESG reputational risk have reduced information asymmetry, are less financial constrained and perform better. To establish causality, we design a quasi-natural experiment focusing on the 2014/95/EU directive of non-financial disclosing and the COVID-19 exogenous shock. Our findings are robust to several estimation techniques that address endogeneity, self-selection, and model sensitivity.

Key words: ESG reputational risk, financial performance, EU regulatory policy, COVID-19

1. Introduction

In recent years, the concept of environmental, social, and governance (ESG) has attracted considerable interest (Stroebel and Wurgler, 2021; Krueger, Sautner, and Starks, 2020), however, its potential impact on firm financial performance is ex ante unclear. Today, modern companies follow ESG strategies not only to boost their performance but also to reflect their values and contribute to a better world (Ferrel *et al*., 2016; Starks *et al*. 2017; Dyck *et al*. 2019; Hartzmark and Sussman, 2019). Moreover, there is an escalated demand from consumers for high ESG standards (Godfrey, 2005) and increased pressure on regulators and policy makers to address environmental pollution, workplace diversity and firms' transparency (Yan et al., 2019). In this direction, the COVID-19 pandemic crisis has amplified the sensitivity to social issues, human capital, health, safety, and responsible practices more than ever before.

According to Reuters[2], ESG-focused funds received a record $649 billion in investments in 2021, making over 10% of all assets globally. These assets have done better than market benchmarks. ESG due diligence involves managing both a financial opportunity as well as risk. For instance, Volkswagen's participation in the Dow Jones Sustainability Index was confirmed just a few days before the US public learned about the 2015 US emission crisis.

However, the CSR ratings did a poor job of foreseeing this catastrophe. The result was the resign of the VW CEO after the firm admitted that 11 million vehicles had defective devices installed to manipulate emissions tests. Since then, various questions have been raised regarding Volkswagen's product management procedures due to the company's suspected violation of the U.S. Clean Air Act, which prompted the firm to recall 482,000 vehicles with a potential impact of up to 11 million vehicles. The overall cost of this issue is more than €32 billion in vehicle upgrades, penalties, and legal fees to date, with the US and Germany bearing the brunt of the financial burden. The case also highlights how traditional valuation approaches, including discounted cash flow, fail to capture the

[2] https://www.reuters.com/markets/us/how-2021-became-year-esg-investing-2021-12-23/

wide range of risks that organizations face today. Volkswagen, a German car maker, is a prime example of how ESG reputational risk can lead to loss of value and market share.

This study aims to investigate the impact of ESG reputational risk on firms' financial performance. Our analysis takes place and develops around two major events, which are the 2014/95/EU directive of non-financial and diversity information and the COVID-19 pandemic crisis. The first because its mandatory nature reinforces consistency and transparency and establishes new views considering the sustainability and environment, while the second has not only changed people's lives but also has brought discontinuity in the global financial system. Overall, the result of the above events is the replacement of "old" views with "new" ones. To our knowledge, this is the first attempt in the literature to investigate the impact of ESG reputational risk on firms' financial performance using the 2014/95/EU directive and the COVID-19 pandemic crisis as exogenous shocks.

We relate and contribute to two different strands of the literature. The first argues that ESG performance has a positive impact on firms' stock market performance by increasing the transparency between all the stakeholders and aligning managers' actions and investors' behavior (Ferrel *et al*., 2016; Lins *et al*., 2017; Dyck *et al*. 2019; Hartzmark and Sussman, 2019; Economidou *et al.* 2022; Chemmanur *et al.,* 2022). Moreover, in comparison with traditional investment reporting, ESG provides new no financial information yet has a financial impact on the market (Cheng, Hasan, and Micale, 2022), thereby mitigating information asymmetry and reducing adverse selection and agency costs. In doing so, firms with high ESG performance increase the investors' attention and consumer loyalty and acquire a competitive advantage (Baker and Kennedy, 2002). Moreover, ESG reputation is a modern way for firms to reflect their social values and align their interests with those of stakeholders and society, thus gaining legitimacy (Lai, Melloni, and Stacchezzini, 2016) to operate (Suchman, 1995). In this direction, firms' strategic goal is to increase investors' engagement and reduce their ideocratic risk through the adaption to ESG regulations and by following sustainable practices (Flammer, 2013; Dimson, Karakas, and Li, 2015). Alternatively, the second strand of the

literature is more hesitant about the implications of the financial materiality of corporate ESG (Auer *et al*. 2015; Dutordoir *et al*. 2018; Serafeim *et al*., 2020). Investing in ESG initiatives can be costly, and thus shareholders and investors who primarily focus on their own profit maximization may punish ESG-responsible firms (Friedman, 1970). In addition, it is possible that high ESG performance will enhance managers' reputations at the expense of shareholders (Kruger 2015), and thus increase agency costs. In this direction, the literature documents negative market reactions for firms with high ESG performance (Jacobs, Singhal, and Subramanian, 2010, Lyon, et al., 2013).

Motivated by the above, our research explores the relationship between ESG reputational risk and European firms' financial performance in the context of stakeholder value maximization. Moreover, although significant steps have been made (such as the 2014/95/EU directive), there are still important limitations to the ESG legal frame. For example, there is still increased informational asymmetry between companies that disclose ESG information considering the detail and the quality of the information they provide, and this makes the European Union an interesting testing ground.

We conjecture that firms with good ESG performance have less agency costs, reduced litigation risks, and increased social acceptance and consumer loyalty and thus achieve greater financial performance. To support our arguments, we employ several econometric techniques, including 2SLS, the Heckman selection model and a quasi-natural experiment. Our findings evidence that our baseline results are not driven by endogeneity and support the argument that ESG reputational risk has a negative impact on firms' financial performance, which is direct support for stakeholder value maximization theory. Overall, our results highlight that ESG plays a significant role in European firms' financial materiality.

One potential explanation for the positive impact of good ESG reputation on firms' financial performance is that firms' ESG risk management performance was most likely caused by their effective governance, which aligns corporate interests with those of society and investors. By doing

this, firms communicate their long-term plans and increase their credibility, social acceptance, investors trust and face less uncertainty about their growth opportunities.

The rest of this paper unfolds as follows. Section 2 describes the theoretical framework and develops the testable hypotheses of the study. Section 3 discusses the data and methodology. Section 4 presents the main empirical analysis. Section 5 conducts the necessary robustness checks, section 6 performs the sensitivity analysis, and finally, Section 7 concludes the paper.

2. Theory and hypotheses development

The modern literature documents increasing interest from corporate stakeholders in investments and funds not only based on sheer profitability, but also on having a positive impact on social and environmental dimensions, thus contributing to a better world (Ferrell et al., 2016; Starks et al., 2017; Dyck et al., 2019; Hartzmark & Sussman, 2019; Fafaliou et al., 2022). Indeed, a report from Morningstar[3] argues that sustainable fixed-income funds have experienced steady growth, climbing by 9% to reach $3.2 billion. Sustainability is one of the topics that strongly concern the business world in our time, and as those numbers reflect, there is a growing awareness among companies, investors and stakeholders about the impact of their business strategies on the planet and society.

There are two opposite strands in the literature considering ESG activities. The first focuses on the stakeholder value view and argues that "good governance" reduces agency costs and better aligns managers' and shareholders' interests by avoiding myopic decisions and incorporating strategies that lead to product market differentiation and higher productivity. In addition, this literature documents that by doing ESG, firms mitigate long-term event and litigation risks (Servaes and Tamayo, 2013; Eccles et al., 2014; Albuquerque et al., 2019). Alternatively, the second strand highlights shareholder expense by recognizing that ESG activities favor short-term decisions that

[3] https://www.morningstar.com/articles/1091550/us-sustainable-fund-flows-slid-in-first-quarter-2022

serve managerial interests and private benefits at the expense of stakeholders (Friedman, 1998; Jensen, 2001; Benabou and Tirole, 2010; Cheng et al., 2013; Kim and Lyon, 2015; Kruger, 2015; Siano et al., 2017).

This study supports the stakeholder value view research stream arguing that through ESG performance, firms mitigate event, litigation, environment, social, governance and financial risks. Overall, we argue that ESG may have an important impact on firms' financial performance and growth opportunities, especially by reducing information asymmetries and adverse selection costs and enhancing investors' trust and firms' long-term strategies. Consequently, we formulate the following hypothesis:

Hypothesis H_1: ESG reputational risk is negatively associated with firms' financial performance

Prior studies argue that ESG reputational risk is an important factor that may affect firms' equity raising. This strand of the research focuses on firms' idiosyncratic and systematic risk that arises from ESG reputational risk (Sharpe, 1964; McWilliams and Siegel, 2001; Luo and Bhattacharya, 2009; Jo and Na, 2012; Oikonomou et al., 2012;). Companies through good ESG performance signal their long-run strategies and thus increase their social acceptance, enhance investors' trust, and face less uncertainty about their true value (Baker *et al*., 2021). Moreover, higher risk may increase the cost of capital as investors seek additional premiums to invest in risky businesses. Alternatively, firms with good ESG performance have increased transparency, which leads to lower agency costs and thus better terms in equity financing (Jawahar and McLaughlin, 2001; Jensen, 2001; Freeman *et al*., 2004). Overall, we expect that due to long-term interests' alignment in motives-based arguments, firms with high ESG performance suffer fewer capital constraints. Consequently, we formulate the following hypothesis:

Hypothesis H_2: ESG reputational risk is associated with limited access to external financing.

3. Data and methodology

3.1 Sample construction

To construct our sample, we retrieve data from a range of sources. We obtain ESG[4] reputational risk information from the RepRisk database and firm-level financial data from Compustat for the period between January 2007 and December 2021. We exclude financial firms and utility sectors (SIC codes 6000-6999 and 4900-4999) and missing observations for our baseline models. The final sample is an unbalanced panel of 1.816 European firms (16,080 firm-year observations) with available ESG reputational risk information. We chose to keep our panel unbalanced to avoid selection and survivorship bias. All variables are winsorized at the conventional 1st and 99th percentiles to reduce the protentional impact of outliers.

3.1.2 ESG reputational risk measurement

ESG reputational risk data come from the RepRisk, Global Business Intelligence Database, which is one of the world's most effective databases for monitoring companies' exposure to ESG issues. The database uses a combination of machine learning algorithms, artificial intelligence, and human expertise to quantify firms' exposure to accomplish this. One of the advantages is that the database excludes companies' self-disclosures and follows an "outside inside approach[5]" to avoid ESG management strategies that may alter the quality of the data. In doing so, the database screens on a daily basis over 100,000 public sources, media outlets, and stakeholders for possible ESG exposure.

The RepRisk offers an index (*CurrentRRI*), which is a company-specific measure of ESG performance and reflects the current level of a company's reputational exposure to media and

[4] To alleviate ESG measurement concerns, we also use Tomson Routers Refinitive ESG ratings to estimate our baseline models. Our findings are in the same direction as those using the RepRisk ESG reputational risk index.

[5] The severity of a company's issues is recognised by the consequences of the risk exposure, the extent of the impact and the purpose of the exposure. It can be categorized as low, severe, and high severity. The reach of the universal sources (pre-classified) is limited reach (communal public information), medium reach (national and regional public information), and high reach (international public information). The novelty of the issues reviews the times a firm has been exposed to a specific ESG reputational risk.

stakeholder attention. It's important to note that for the construction of this index the database uses external sources and excludes firms self-reported data. Specifically, RepRisk database verifies ESG reputational risk from a pool of various external sources and inspects them based on severity, reach, and novelty. Afterwards, the database corroborates the occurrences for quality control, applying detailed research that ensures the reliability and validity of the data by revealing information for all the companies that are exposed to scandals based on ESG issues.

Our analysis focuses on the RepRisk Index (*CurrentRRI*), which provides information on the current level of firms' ESG reputational risk exposure. To construct the index RepRisk, focuses on 28 ESG-related issues[6] and 67 ESG-related topics such as the authority of sources, the rate of repetition, the timing of the issues, and the novelty and severity of issues. The RRI score ranges form from 0 (lowest) to 100 (highest), and the higher it is the greater the ESG reputational risk exposure. Overall, RepRisk data are timely, precise, effective, and available to stakeholders.

3.2 Methodology

To test our conjecture between ESG reputational risk and firms' financial performance, we estimate the following equation (Eq. 1):

$$FinancialPerformance_{i,t} = a_0 + a_1 RRI\,current_{i,t-1} + a_2 Z_{i,t} + firm_i + year_t + u_{i,t} \quad \text{(Eq.1)}$$

The response variable is firms' financial performance captured by its return on assets *(ROA*), return on equity *(ROE)* and Tobin's Q (*Tobin'sQ*); Z is a vector that includes the regressors, and u is the stochastic term that captures the residuals of the lineal model. Our analysis focuses on firms' ESG reputational risk (*CurrentRRI*). If hypothesis H_1 is true, then we expect the coefficient of ESG reputational risk a_1 to be negative and statistically significant.

[6] The RepRisk database identifies ESG reputational risk by examining the following issues: the environmental issues (E) that incorporate data for the environment's pollution and its impact on the ecosystem; the social issues (S) that present data for misconduct on human interactions on the firm's stakeholders; the governance issues (G) that integrate data for the managing of firm's organizational culture. The UN Global Compact Principles and the SASB Materiality Map present the 28 RepRisk ESG Issues and are available at: https://www.reprisk.com

We include in vector Z a rich set of control variables that might affect firms' financial performance. In doing so, we alleviate the omitted-variable bias and ensure that our model is specified correctly. Specifically, we add firms' size (*FirmSize*) and tangibility (*Tangibility*) to capture asymmetric information and firms' risk. We control for agency cost reducing strategies by including firms' leverage (*Leverage*) (Denis and Osobov, 2008; Blouin et al, 2011), and for firms life life-cycle theories by adding age (*Age*) (Lee and Suh, 2011). We also include market competition (*HHI*) to capture firms' market position (Hoberg et al., 2014; Grullon et al., 2019), considering that highly competitive firms may have better performance regardless of their ESG performance. Finally, following Rozeff (1982), we include cash flow volatility (*CashFlowVol*) and sales growth (SalesGrowth) to capture firms' risk and growth opportunities, respectively. We use firm-fixed effects to estimate our model. In doing so, we separate the stochastic disturbance into a firm-fixed effects component and thus capture time-invariant characteristics and factors that may not be included in the model.

3.3 Accounting for selection bias

To ensure that our findings are not derived by sample selection mechanisms that could affect the validity of our OLS findings and lead to a non-zero covariance between the random error and ESG reputational risk, we use the two-stage Heckman (1979) model. Our motivation is that firms with certain characteristics have a higher probability of facing increased ESG reputational risk. In addition, confounding variables may influence ESG reputational risk and at the same time affect firms' financial performance. In such a case, the estimated coefficient of ESG reputational risk would be biased. Following the two-stage Heckman model in the first stage, we use a probit regression to estimate the probability that firms' ESG reputational risk is above the sample average (*High_ESG_Risk*), and then at the second stage, we incorporate the individual predicted probabilities of the first stage to correct for potential self-selection. The selection equation is presented below:

$$DI_{i,t}^{*} = k\, Z_{i,t} + \varepsilon_{\iota,t} \qquad \textit{(Eq.2)}$$

where: $DI_{i,t} = \begin{cases} 1, & if\ High\_ESG\_Risk_{i,t}^{*} \\ 0, & if\ \ Low\_ESG\_Risk_{i,t}^{*} \end{cases}$

Where DI_i^* is a dummy latent variable that controls the intensity of ESG reputational risk, k is a vector that includes the estimated coefficients, $Z_{i,t}$ includes a set of $DI_{i,t}$ predictor variables, and $\varepsilon_{\iota,t}$ is the error of the model.

In the first stage of the model, we keep the same regressors as in our baseline model and moreover, to account for selection bias on ESG reputational risk, we include the same additional variables that are called exclusion restrictions (Li and Prabhala, 2007), which are government efficiency (*Government efficiency*) and the rule of law (Rule of Law) of the country that a firm belongs (Angelidis and Ibrahim, 2004, Hoi *et al.,* 2013, Dutordoir *et al*., 2018). The idea behind this is that in more efficient countries with good law enforcement there is less tolerance of ESG issues and a higher probability that responsible firms will be punished with fines. We also include Industry Share (*Industry Share*), which is defined as the share of the total number of firms in a country's industry over the total number of firms in the sample that belong to the specific industry[7]. Thus, we control for selection bias that may arise from possible distortions in the distribution of firms between the industries and the countries. In appendix A1, we describe all the former variables.

We construct equations (3) and (4) considering firms with high ESG reputational risk and low ESG reputational risk, respectively.

$$E[FinancialPerformance \mid DI_{i,t} = 1] = \beta' X + \delta + E[e \mid DI_{i,t} = 1] = \beta' X + \delta + \rho\sigma_e \frac{\varphi(\omega' A)}{\Phi(\omega' A)} \qquad \textit{(Eq.3)}$$

$$E[FinancialPerformance \mid DI_{i,t} = 0] = \beta' X + \rho\sigma_e \frac{-\varphi(\omega' A)}{1 - \Phi(\omega' A)} \qquad \textit{(Eq.4)}$$

[7] For example, the fossil fuel industry has higher tendency to encounter ESG issues due to its specific characteristics.

We subtract equation 3 from equation 4 to quantify the impact of ESG reputational risk on firms' financial performance.

$$E[FinancialPerformance \mid DI_{i,t} = 1] - E[FinancialPerformance \mid DI_{i,t} = 0] = \delta + \rho\sigma_e \frac{\varphi(\omega' A)}{\Phi(\omega' A)(1 - \Phi(\omega' A))} \quad (Eq.5)$$

In equation (4), ω' is a vector that includes the estimated coefficients, φ symbolizes the function of the standard normal distribution, and Φ stands for the distribution function of the cumulative distribution function. Equation (6) provides information on the impact of ESG reputational risk on firms' financial performance via the δ coefficient, which is related to the a_1 coefficient of equation 1. The possibility of selection bias can be captured and eliminated through the Mills ratio, which is a correction term.

The calculation of *IMR* is done as follows:

$$IMR = \frac{\varphi(\omega' A)}{\Phi(\omega' A)} if\ DI_{i,t} = 1 \text{ or } IMR = \frac{-\varphi(\omega' A)}{1 - \Phi(\omega' A)} if\ DI_{i,t} = 0 \quad (Eq.6)$$

3.4 Entropy-balanced regressions

In this section, we utilize entropy-balancing regressions, which is an additional technique to address protentional endogeneity (Hainmueller, 2012). In doing so, we reprocess and calibrate the unit weights in our model. This method equalizes the distribution of moments between the treatment and control sample, which in our case comprises firms with ESG risk above and below the sample average, respectively. By using the entropy balance method, we improve the covariate balance and reduce the loss of information as it does not 'match or discard' each unit, as is the case with propensity-score matching techniques. Overall, by using the entropy balance method, we adjust for possible inequalities in the covariance distributions considering the first, second, or even higher moments of the covariate distributions.

3.5 Descriptive statistics

In Table 1, we present the descriptive statistics of the variables. The average (median) of return on assets (*ROA*) for our sample is 8.4% (9.6%), that of return on assets (*ROE*) is 23.3% (14.0%)

and that of Tobin's Q is 1.58% (1.22%). ESG reputational risk (*CurrentRRI*) takes values from 0 to 65.4, and its average value is 6.5. The average list period and size of firms in the stock change in our sample are 6.2 years and 13.34 million $, respectively. The average and median values of firms' *Leverage* are 25.4% and 23.4% respectively. In our sample, the mean (median) firm has tangibility equal to 28.3 (23.4), sales growth of 8.7 (4.2) and cash flow volatility of 20.4 (3.2). Finally, the ESG Country Sector is on average equal to 23.36. In Table 2, we focus on subsamples based on the mean (median) of ESG reputational risk. We also provide the variable mean (median) equality tests between samples of high and low ESG reputational risk. As one can see, firms with high ESG reputational risk exhibit on average (median) less financial performance, and these findings are also statistically significant at the 1% level, which is in line with our hypothesis H_1. In Appendix Table A_2 we provide the correlation table, which includes all the control variables of our analysis. In Appendix Table A1, we provide all variable definitions.

PLEASE INSERT TABLE 1 HERE

Figure 1 shows the ESG industry average reputational risk across EU counties. The highest ESG reputational risk is in Bulgaria while the lowest is in Finland. The large differences of ESG reputational risk between the EU countries indicates that there is considerable variation in ESG performance across EU firms.

PLEASE INSERT FIGURE 1 HERE

4. Empirical Analysis

4.1 Baseline regression results

In this section, we document our baseline findings considering the impact of ESG reputational risk (*CurrentRRI*) on firms' financial performance captured by ROA, ROE, and Tobin's Q. In Table 2, in columns (1) to (3) we initially estimate equation (1) with a pooled OLS estimator while in columns (4) to (6), we use a high-dimension fixed-effect estimator (HDFE) to capture the unobserved

firm-specific heterogeneity. In addition, in columns (7) to (9) to further ensure the robustness of our estimates, we adjust for possible inequalities in the covariance distributions using entropy-balanced weighting estimations.

Our findings document a negative and statistically significant relationship between ESG reputational risk and firms' financial performance, which holds across the different proxies of financial performance and the estimation techniques. Specifically, in columns (1) to (3), we document that the coefficient of ESG reputational risk ranges from -11.4 to -51.9, while in columns (4) to (6) it is from -4.6 to -16.5 and in columns (4) to (6) it is from -3.5 to -17.6, depending on the financial performance proxy; these estimates are statistically significant at the conventional level. Overall, our findings support our hypothesis H_1 that ESG reputational risk has a negative impact on firms' financial performance.

PLEASE INSERT TABLE 2 HERE

In table 3, we document our results of the Heckman (1979) two-step estimator. We follow this technique to correct any protentional selection bias that may arise due to unobservable factors that simultaneously affect ESG reputational risk and firms' financial performance. Our estimates indicate that after addressing selection bias, a 1% increase in ESG reputational risk relates to a decrease of 14.6% in firms' ROA, 69.0% in firms' ROE and 26.6% in Tobin's Q. These findings are in the same direction as those of the baseline models and provide further support for the negative impact of ESG reputational of firms' financial performance (H_1).

PLEASE INSERT TABLE 3 HERE

4.1.1 Propensity score matching

In this section, we apply the propensity score matching technique to further alleviate endogeneity effects. This method clusters firms with similar characteristics based on the control variables of the baseline model (equation 1) using ESG reputational risk and its components as the

independent variables. In this respect, we construct a dummy variable (Dummy_RRI) that takes the value of one when ESG reputational risk if higher than the sample average, and 0 otherwise. By doing so, we compare firms that diverge in their level of ESG reputational risk behavior but have similar characteristics across the control variables. Hence, any observed differences in firms' financial performance are due to their level of exposure to ESG reputational risk.

PLEASE INSERT TABLE 4 HERE

Table 4 illustrates the propensity score matching, which considers the level of Tobin's Q (Columns 1-3), ROA (Columns 4-6) and ROA (Columns 7-9). Three widely accepted matching methods (i.e., nearest neighbor, kernel, and stratification) have been applied for this purpose. The estimates are in line with results derived from OLS and imply that firms with ESG reputational risk above the sample average have reduced financial performance by 10.7 to 12.5 times when we estimate with nearest neighbor matching, 0.04 to 0.05 with kernel matching and 16.3 to 20.4 times with stratification matching, compared with companies that lie under the sample average. Thus, based on the above findings, our Hypothesis (H_1) holds.

4.2 The association between a firm's ESG reputational risk and external financing

In this section, following Schauer et al. (2019), we distinguish firms according to their degree of financial constraints. We use three financial constraint indices, namely the SA index (Hadlock & Pierce, 2010), the WW index (Whited & Wu, 2006) and the KD index. Firms with a higher SA index, WW index, and KD index are more financially constrained and face higher difficulties in raising external capital. Our objective is to investigate the impact of ESG reputational risk on firms' external financing (H2), thus we regress ESG reputational risk on the three financial constraints (*SA index*, *WW index, KD index*), including a vector of control variables.

$$FinacialContraints = a_0 + a_1 RRI\ current_{i,t\ \_\ 1} + a_2 Z_{i,t} + firm_i + year_t + u_{\iota,t} \quad \text{(Eq.7)}$$

We include firm and year-fixed effects in our model to account for time-invariant factors that may not be included in the control set. In Table 2, we document our finding considering the impact of ESG reputational risk on firms' ability to raise capital through external sources. Columns (1) to (3) present our high-dimensional fixed-effects estimations, while columns (4) to (6) document the estimates of the high-dimensional fixed-effects estimator with entropy-balanced weights. As one can see, through all econometric specifications and the different measures of financial constraints, ESG reputational risk has a positive impact on firms' ability to raise capital. Overall, our findings suggest that ESG reputational risk is associated with difficulties in external financing, which is in line with our Hypothesis H_2.

PLEASE INSERT TABLE 5 HERE

5. Identification strategy

Our baseline estimations provide robust evidence that ESG reputational risk is negatively associated with firms' financial performance. Nevertheless, there is always the possibility that the negative association between ESG reputational risk and firms' financial performance can be attributed to other unobserved factors. For instance, firms with ESG reputational risk may follow ESG management strategies and thus achieve better financial performance. Moreover, ESG reputational risk and firms' financial performance may be jointly affected by managements' strategic decisions (Fafaliou et al., 2022). To address these concerns and further ensure that our estimates are not likely to suffer from reverse causality and endogeneity, we a) run instrumental variable regressions (2SLS), and b) utilize quasi-natural experiment using two exogenous shocks, specifically the EU regulatory policy changes due to the 2014/95/EU directive and the COVID-19 global pandemic.

5.1 Instrumental variable approach

To further demonstrate that our initial results do not suffer from endogeneity arising from reverse causality, omitted variables, and measurement error, we follow an instrumental variable

approach and perform a 2SLS analysis. We use as instruments the annual firm's industry average scores of ESG reputational risk (three-digit SIC code). The idea behind the selection of these instruments is that firms that belong to the same industry are more likely to face similar exposures to ESG risk (e.g., El Ghoul et al., 2011; Habib and Hasan, 2017; Hasan et al. 2021). In addition, following Lewbel (2012), we use in our analysis heteroskedasticity-based instruments. The former methodology is applied in the presence of endogenous regressors and identifies the structural parameters in the absence of external instruments. To accomplish identification requires the regressors to be uncorrelated with the product of heteroskedastic errors, which is caused in models where error correlations stem from an unobserved common factor. These instruments are constructed based on the controls of the model by utilizing heterogeneity in the error term of the first-stage regression. Moreover, this technique can be used in the absence of external instruments or as a supplement to external instruments to improve the efficiency of the IV estimator. In the first stage, this approach regresses the instruments and the control variables on the endogenous variable, which is firms' ESG reputational risk. In the second stage, we regress firms' financial performance (indicators) on the control variables, including the predicted residuals of the first stage. We provide below in equations (8) and (9) both the first and second-stage specifications of our 2SLS approach:

$$ESG_{i,t} = a_0 + a_1 Instrument_{i,t} + a_2 Z_{i,t} + firm_i + year_t + u_{\iota,t} \quad \text{(Eq.8)}$$

$$FinancialPerformance_{\,i,t} = a_0 + a_1 Predicted(ESG)_{i,t} + a_2 Z_{i,t} + firm_i + year_t + u_{\iota,t} \quad \text{(Eq.9)}$$

To evaluate the instruments' validity, we apply the Kleibergen and Paap under-identification (LM statistic) test to check if the number of instruments is adequate for the number of endogenous variables. In this test, we need a p-value lower than 0.05 and 0.1 to reject the null hypothesis of under-identification at the 5% and 10% levels, respectively. In addition, to check for possible correlation between the instruments and the residuals of the models, we use the Hansen over-identification test. The null hypothesis of this test supports that the over-identifying restrictions are valid, so we need a

higher p-value than 0.05 and 0.1 to reject it at the 5% and 10% levels, respectively. Finally, to validate the explanatory power of the instruments, we perform a weak identification test. In this test, if the critical values of the model are higher than those of the Cragg-Donald Wald F-statistic, then the instruments are weak and have no explanatory power. Overall, all the above-mentioned tests show that we have conducted the 2SLS estimations properly. After controlling for endogeneity, our estimates remain in line with those of the baseline model and thus provide further support for our Hypothesis H_1.

PLEASE INSERT TABLE 6 HERE

5.2 The impact of the 2014/95/EU directive of non-financial disclosing

The 2014/95/EU directive on non-financial and diversity information aims to strengthen firms' non-financial disclosures (European Union Directive, 2014). The mandatory reporting reinforces the consistency and comparability of reporting for large corporations and fosters social, environmental, and accounting standards (Stubbs and Higgins, 2015; Adams and Abhayawansa, 2021).

Following agency theory, by reporting under a robust and consistent framework firms can reduce asymmetric information and adverse selection problems and signal their values to potential investors (Morris, 1987). Connelly et al. (2011) argue that signaling theory explains the behavior of two parties with information asymmetries. The sender chooses to signal its value by disclosing information, and the receiver must choose how to interpret the signal. In line with this notion, the 2014/95/EU directive helps investors to gain access to non-financial information that has a high financial impact on firms' performance, such as ESG reputational risk. In this way, investors increase the probability of separating the "good" from the "bad" firms and rewarding those that follow the roadmap of efficient and "sustainable" Europe (EU Directive, 2014). Overall, the 2014/95/EU directive is designed to increase transparency and divulge more information than the traditional EU reporting laws.

Our study uses the 2014/95/EU directive as an exogenous shock to examine how increased ESG reputational risk affects firms' financial performance. To establish a causal link between ESG reputational link and firms' financial performance, we introduce the 2014/95/EU directive into our design and argue that the enhanced ESG informational disclosure strengthens the impact that ESG reputational risk has on corporate outcomes. Thus, we expect the negative impact of ESG reputational risk on firms' financial performance to be amplified after the enactment of the 2014/95/EU directive. To test our hypothesis, we follow previous studies that perform natural experiments around regulation changes (Heath and Mace, 2020) and estimate the following regression:

$$Financial\ Performance_{i,t} = b_0 + b_1 * Current\ RRI_{i,t} * Post\_2014/95/EUdirective_t + b_2 * Current\ RRI_{i,t} + b_3 * Controls + Industry\ FE + Year\ FE + \varepsilon_{i,t}. \quad \text{(Eq.10)}$$

where Post_2014/95/EUdirective takes the value of one if a firm operates after 2013. We expect the interaction term (*Current* $RRI_{i,t}$*Post_2014/95/EUdirective*) to have a negative and statistically significant coefficient b_1. In Table 7, we document our estimates. In column (1), we consider as depending variable firms' Tobin's Q, while columns (2) and (3) use ROA and ROE, respectively. As one can see, the coefficient of the interaction term is negative and statistically significant throughout all specifications, indicating that the stronger the ESG disclosure, the greater the negative effect of ESG reputational risk on financial performance, suggesting a causal link.

PLEASE INSERT TABLE 7 HERE

5.3 Is the effect stronger for the COVID-19 period?

The Covid-19 pandemic crisis has changed not only peoples' lives but also firms' dynamics. Specifically, drastic changes have taken place, affecting poverty, health, climate change, and the stability of the global financial system. The result of all the above is a reconsideration in the corporate industry, replacing "old" views of viability, sustainability, environment, and business performance.

One of the main concerns is that following the Covid-19 crisis, climate change could further increase the financial system's risk and expose its vulnerability (Franklin, 2020). According to Gibb

et al. (2020), there are concerns that future pandemics may arise from non-sustainable society issues such as climate change and deforestation. Prior evidence indicates that corporates battered by the pandemic-induced financial crisis might reduce costly sustainable investments, which may lead to reduced transparency and sustainable performance and increase the overall risk. This is because ESG-responsible firms are less exposed to systematic risk (Wellalage & Kumar, 2020).

Our study uses COVID-19 exogenous shock to examine the relationship between ESG reputational risk and firms' financial performance (Newey and Zahra, 2009). Undoubtedly, the great impact of the pandemic on almost all economic and social dimensions (Zhu et al., 2020) and the challenge that arrived from the shutdowns and widespread restrictions (Ivanov, 2020) generated a severe discontinuity in economic activity. This constitutes an exogenous shock with potentially devastating effects on companies.

The recent literature documents that during the pandemic crisis, the flow of ESG investment reached new heights. Investors showed an increased preference in this high-risk period for low-risk sustainable companies (Albuquerque et al., 2019), and thus firms with high ESG ratings experienced comparatively lower volatility and higher stock returns. Based on the above arguments, we conjecture that COVID-19 exogenous shock amplifies the negative impact of ESG reputational risk on firms' financial performance. To test our hypothesis, we estimate the following regression:

$$Financial\ Performance_{i,t} = \delta_0 + \delta_1 * Current\ RRI_{i,t} * Post\_COVID19_t + \delta_2 * Current\ RRI_{i,t} + \delta_3 * Controls + Industry\ FE + Year\ FE + \varepsilon_{i,t}. \quad \text{(Eq.11)}$$

where *Post_COVID19* takes the value of one 1 if a firm operates after 2019. We expect our variable of interest *(CurrentRRI∗Post_COVID19)* to have a negative and statistically significant coefficient δ_1. We report our estimates in Table 8. We consider as the dependent variable Tobin's Q, ROA, and ROE, in columns (1) to (3), respectively. As one can see, the coefficient of the interaction term is

negative and statistically significant throughout the specifications, indicating a causal link between ESG reputational risk and firms' financial performance.

PLEASE INSERT TABLE 8 HERE

5.4 ESG reputational risk and firm value

In this section, we focus on the relationship between ESG reputational risk and firms' market value. In doing so, we use a sensitive regression model that relates the market value of a firm with its characteristics, as proposed by Fama and French (1998) and Pinkowitz et al. (2006). To explore the relationship between ESG reputational risk and firms' market value, we estimate equation (12) first for firms with ESG reputational risk above the sample average and then for those below.

$$MarketValue_{i,t} = \alpha + \beta_1\, Earnings_{i,t} + \beta_2 \Delta Earnings_{i,t} + \beta_3 \Delta Earnings_{i,t+1} + \beta_4 \Delta NetAssets_{i,t} + \beta_5 \Delta NetAssets_{i,t+1} + \beta_6 R\&D_{i,t} + \beta_7 \Delta R\&D_{i,t} + \beta_8 \Delta R\&D_{i,t+1} + \beta_9 Interest_{i,t} + \beta_{10} \Delta Interest_{i,t} + \beta_{11} \Delta Interest_{i,t+1} + \beta_{12} Cash_{i,t} + \beta_{13} \Delta Cash_{i,t+1} + \beta_{14} \Delta MarketValue_{i,t} + Year_t, + firm_i, + \varepsilon_{i,t} \quad \text{(Eq.12)}$$

Variables X_t and dX_t represent the level of variable X in year t and the change in the level of X from year t−1 over the level of total assets in year t, respectively, while the variable dX_{t+1} stands for the change in the level of *X* from year *t* to year *t*+1 divided by the total assets in year *t*. The variable *MarketValue* expresses the annual firms' market value, *Earnings* stands for its earnings before extraordinary items plus interest, deferred tax credits, and investment tax credits, *NetAssets* is net assets, calculated as the difference between total assets and cash, *R&D*[8] is the firms' research and development expenses, *I* is the interest expense, and *Cash* is liquid assets, proxy by cash and cash equivalents.

We hypothesize that ESG reputational risk reflects agency issues, thus presuming that in firms with high ESG reputational risk cash will be spent on managerial self-serving practices. The estimates of Equation (12) are presented in Table 8. We split our sample based on the ESG reputational risk

[8] Following Pinkowitz et. al. (2006) we set R&D equal to zero when it is missing.

median. Columns (1) and (3) consider firms with low ESG reputational risk, while columns (2) and (4) consider those with high ESG reputational risk. In all columns, we apply the high-dimensional fixed-effect estimator. Moreover, in columns (3) and (4) we weight the standard errors of the model using entropy balance scores based on firms' age and size.

Our findings document that a change in cash by 1% has a negative and statistically significant impact on firms' market value at the 1% level for firms with high ESG reputational risk. Interestingly, confirming agency cost theory, we find that this effect holds only for firms with high ESG reputational risk. Overall, our estimates document that ESG reputational risk has a negative impact on firms' market value.

PLEASE INSERT TABLE 9 HERE

6. Sensitivity analysis

6.1 The negative impact of ESG reputational risk on firms' financial performance is amplified for firms with a higher return on equity (ROE).

In this section, we investigate the heterogeneous impact of ESG reputational risk on firms' return on equity (ROE). In line with the financial literature (Sanchez-Vidal, 2014), we use the unconditional quantile with a fixed-effects estimator modification, given that the method is not influenced by the choice of control variables. We focus on firms' financial performance measurement (ROE) to capture shareholders' interest in the business by accounting for how effectively firms are using shareholders' equity. We conjecture that firms with higher ESG reputational risk have increased event risk (Eccles *et al.,* 2014; Albuquerque *et al.*, 2019), higher uncertainty, and reduced trust and market loyalty, and will thus have reduced ROE.

To explore the impact of ESG reputational risk on the different levels of ROE, we apply unconditional quantile regression by using the Recentered Influence Function (RIF). Following Firpo et al. (2009), we define the RIF of the τ^{th} quantile of the dependent variable's distribution as:

$$RIF(Y_{it};q_\tau,F_{Y_{it}}) = q_\tau + \frac{\tau - 1\{Y_{it} \le q_\tau\}}{f_y(q_\tau)} \quad (13)$$

Where Y_{it} is the response variable, q_t is the value of the response variable at the τ^{th} quantile, $F_{Y_{it}}$ is the cumulative distribution function of the response variable, and $\{Y_{it} \leq q_\tau\}$ is a dummy that takes the value of one if the dependent variable is less than q_t, and $f_y(q_\tau)$ is the density at q_t. We document the estimates of Equation (8) in Table (10). As one can see, the coefficients of ESG reputational risk (*CurrentRRI*) are negative and statistically significant at the conventional levels and the effect is amplified for the upper quantiles. These findings suggest that the impact of ESG reputational risk on firms' ROE is more pronounced for firms with higher levels of ROE.

PLEASE INSERT TABLE 10 HERE

6.2 The association between the ESG reputational risk components (environmental, social, governance) and firms' financial performance.

In this section, we study the relationship between the three major components of ESG reputational risk (environmental reputational risk, social reputational risk, and governance reputational risk) and firms' financial performance to further support our hypothesis (H_1). We, therefore, estimate Equation (7) with a Cox proportional hazards estimator.

$$FinancialPerformance_{i,t} = a_0 + a_1 \begin{bmatrix} Environmental\ Reputational\ Risk \\ Social\ Reputational\ Risk \\ Governance\ Reputational\ Risk \end{bmatrix}_{i,t-1} + a_2 Z_{i,t} + firm_i + year_t + u_{\iota,t} \quad \text{(Eq.7)}$$

In Table 11, we document our estimates. The coefficients of environmental reputational risk, social reputational risk, and governance reputational risk are negatively and statistically significant at the conventional levels. Our findings provide evidence that all the dimensions of ESG reputational risk are negatively associated with firms' performance, with environmental and social having a major impact. Overall, our findings are in the same direction as those of the baseline model, which leads to the acceptance of Hypothesis (*H1*) and provides additional support to our baseline findings.

PLEASE INSERT TABLE 11 HERE

7. Conclusion

This study examines the impact of ESG reputational risk on European firms' financial performance. Using different econometric techniques, we document a causal negative and statistically significant relationship between ESG reputational risk and financial performance. Our findings also have economic significance. In line with asymmetric information theory, we argue that in the presence of ESG reputational risk, there is increased information asymmetry between stakeholders and managers, which leads to adverse selection and increased cost of equity and financial underperformance. In addition, the market may interpret ESG reputational exposure as a negative signal. We draw insights from the literature's distinction between "good" and "bad" firms considering their environmental, social, and governance performance. Consistent with agency costs theory (Friedman, 1998; Jensen, 2001; Benabou and Tirole, 2010; Cheng et al., 2013; Kim and Lyon, 2015; Kruger, 2015; Siano et al., 2017), we document that ESG-responsible firms align better with managers' and stakeholders' interests and decrease managerial myopic decisions (Eccles et al., 2014; Albuquerque et al., 2019); therefore, these firms have comparatively better financial performance and market value.

We further explore the relationship between ESG informational risk and firms' financial performance under the EU regulatory policy changes arising from the 2014/95/EU directive and the COVID-19 global pandemic. We show that ESG reputational risk, both in the presence of lower informational asymmetries (2014/95/EU directive) as well as high informational asymmetries (COVID-19 global pandemic), negatively predicts firms' financial performance. This evidence supports our argument that ESG reputational risk increases financial performance by transmitting important information to investors and signaling firms' true protentional dynamics, thus reducing ex ante uncertainty.

Overall, our study provides comprehensive evidence that ESG performance is a catalyst for firms' performance in the modern financial system. Our findings call on regulators to make further improvements considering ESG disclosures, which will benefit not only firms but also shareholders

and stakeholders. Nevertheless, future research is expected to expand our work by linking firms' ESG reputational risk to value-generating process business objectives and capital investments.

References

Adams, C., Abhayawansa, S. 2021. Connecting the COVID-19 pandemic, environmental, social and governance (ESG) investing and calls for 'harmonisation' of sustainability reporting. *Critical Perspectives on Accounting*, 82, 102309.

Albuquerque, R., Durnev, A., Koskinen, Y. 2019. Corporate social responsibility and firm risk: theory and empirical evidence. *Management Science*, 65(10), 4451-4949.

Angelidis, J., Ibrahim, N., 2004. An exploratory study of the impact of degree of religiousness upon an individual's corporate social responsiveness orientation. *Journal of Business Ethics*, 51(2), 119-128.

Auer, B.R., Schuhmacher, F., 2015. Do socially (ir)responsible investments pay? New evidence from international ESG data. *Quarterly Review of Economics and Finance*, 59(C), 51-62.

Baker, E.D., Boulton, T.J., Braga-Alves, M.V., Morey, M.R. 2021. ESG government risk and international IPO underpricing. *Journal of Corporate Finance*, 67, 101913.

Baker, G.P., Kennedy, R.E. 2002. Survivorship and the economic grim reaper. *Journal of Law, Economics, and Organization*, 18 (2), 324–361.

Benabou, R., Tirole, J. 2010. Individual and Corporate Social Responsibility. *Economica*, 77(305), 1–19.

Blouin, J., Raedy, J., Shackelford, D. 2011. Dividends, Share Repurchases, and Tax Clienteles: Evidence from the 2003 Reductions in Shareholder Taxes. *The Accounting Review*, 86(3), 887-914.

Chemmanur, T., Gounopoulos, D., Koutroumpis, P., Zhang, Y., 2022. Corporate Social Responsibility and Firm Survival: Evidence from the Climate and Pandemic Crises. Working Paper, Boston College

Cheng, B., Ioannou, I., Serafeim, G. 2013. Corporate social responsibility and access to finance. *Strategic Management Journal*, 35(1), 1–23.

Cheng, M., Hasan, I., Micale, J. 2022. Which environmental, social, or governance (ESG) activities are more informative to stock prices? *Journal of Academy Proceedings*, 12658.

Connelly, B.L., Certo, S.T., Ireland, R.D., Reutzel, C.R. 2011. Signaling theory: a review and assessment, *Journal of Management*, 37(1), 39-67.

Denis, D., Osobov, I. (2008). Why do firms pay dividends? International evidence on the determinants of dividend policy. *Journal of Financial Economics,* 89, 62–82.

Dimson, E., Karakas, O., Li, X. 2015. Active ownership. *The Review of Financial Studies*, 28(12), 3225–3268.

Dutordoir, M., Strong, N.C., Sun, P. 2018. Corporate social responsibility and seasoned equity offering. *Journal of Corporate Finance*, 50(C), 158-179.

Dyck, A., Lins, K.V., Roth, L., Wagner, H.F. 2019. Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics,* 131 (3), 693-714

Eccles, R.G., Ioannou, I., Serafeim, G. 2014. The impact of corporate sustainability on organizational process and performance. *Management Science*, 60(1), 2835–2857.

Economidou, C., Gounopoulos, D., Konstantios, D., & Tsiritakis, E. (2022). Is sustainability rating material to the market? *Financial Management*, 00, 1– 53.

El Ghoul, S., Guedhami, O., Kwok, C., Mishra, D., 2011. Does corporate social responsibility affect the cost of capital?. *Journal of Banking of Finance*, 35(9), 2388-2406.

Fafaliou, I., Giaka, M., Konstantios, D., Polemis, M. 2022. Firms' ESG reputational risk and market longevity: A firm-level analysis for the United States. *Journal of Business Research*, 149, 161-177.

Fama, E., French, K. 1998. Value versus Growth: The International Evidence, *Journal of Finance*, 53(6), 1975-99.

Ferrell, A., Liang, H., Renneboog, L. 2016. Socially responsible firms. *Journal of Financial Economics*, 122(3), 585–606.

Firpo, S., Fortin, N.M., Lemieux, T. 2009. Unconditional Quantile Regressions. *Econometrica*, 77(3), 953-973.

Flammer, C. 2013. Corporate social responsibility and shareholder reaction:The environmental awareness of investors. *The Academy of Management Journal*, 56(3), 758–781.

Franklin, J. 2020. Covid-19 boosts European social bond market. *International Financial Law Review* (Spring).

Freeman, R.E., Wicks, A.C., Parmar, B., 2004. Stakeholder theory and "the corporate objective revisited". *Organization Science,* 15(3), 364-369.

Friedman, M. 1970. The Social Responsibility of Business Is to Increase Its Profits. New York Times Magazine, 13, 122–126.

Friedman, M. 1998. The social responsibility of business is to increase its profits. In L. B. Pincus (Ed.), Perspectives in Business Ethics (246–251). Singapore: McGraw- Hill.

Gibb, R., Redding, D.W., Chin, K.Q., Donnelly, C.A., Blackburn, T.M., Newbold, T., Jones, K.E. 2020. Zoonotic host diversity increases in human dominated ecosystems. *Nature*, 584(7821), 398–402.

Godfrey, P. C. (2005). The relationship between corporate philanthropy and shareholder wealth: A risk management perspective. *Academy of Management Review*, 30(4), 777-798.

Grullon, G., Larkin, Y., Michaely, R. 2019. Dividend Policy and Product Market Competition. Working Paper.

Habib, M.A., Ljungqvist, A.P., 2001. Underpricing and Entrepreneurial Wealth Losses in IPOs: Theory and Evidence. *Review of Financial Studies,*14(2), 433-458.

Hadlock, C., Pierce, J. 2010. New evidence on measuring financial constraints: Moving beyond the KZ index. *Review of Financial Studies*, 23, 1909–1940.

Hainmueller, J. 2012. Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies. *Political Analysis,* 20 (1), 25–46.

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.

Hasan, M.M., Habib, A., Zhao, R. 2021. Corporate reputation risk and cash holdings. *Accounting & Finance*, 62(1), 667-707.

Heath, D., Mace, C. 2020. The Strategic Effects of Trademark Protection, *The Review of Financial Studies*, 33(4), 1848–1877.

Heckman, J. (1979). Sample Selection Bias as a Specification Error. *Econometrica*, 47(1), 153-161.

Hoberg, G., Phillips, G., Prabhaka, N. 2014. Product market threats, payouts, and financial flexibility. *The Journal of Finance*, 69, 293-324.

Hoi, C.H., Qiang W., Hao, Z. 2013. Is Corporate social responsibility (CSR) associated with tax avoidance? Evidence from irresponsible CSR activities. *The Accounting Review*, 88. 2025-2059.

Ivanov, D. 2020. Predicting the impacts of epidemic outbreaks on global supply chains: a simulation-based analysis on the coronavirus outbreak (COVID-19/SARS- CoV- 2) case. *Transportation Research Part E:Logistics and Transportation Review*, 136, 101922.

Jacobs, B.W., Singhal, V.R., Subramanian, R. 2010. An empirical investigation of environmental performance and the market value of the firm. *Journal of Operations Management*, 28(5), 430–441.

Jawahar, I.M., McLaughlin, G.L., 2001. Toward a descriptive stakeholder theory: an organizational life cycle approach. *Academy of Management Review*, 26(3), 397-414.

Jensen, M.C. 2001. Value maximization, stakeholder theory, and the corporate objective function. *Journal of Applied Corporate Finance,* 14, 8–12.

Jo, H., & Na, H. 2012. Does CSR reduce firm risk? Evidence from controversial industry sectors. *Journal of Business Ethics, 110*, 441–456.

Kim, E.H., Lyon, T. 2015. Greenwash vs. Brownwash: Exaggeration and Undue Modesty in Corporate Sustainability Disclosure. *Organization Science*, 26, 705–723.

Kruger, P. 2015. Corporate goodness and shareholder wealth. *Journal of Financial Economics*, 115(2), 304–329.

Krueger, P., Sautner, Z., & L. T., Starks (2020). The Importance of Climate Risks for Institutional Investors. *The Review of Financial Studies*, 33(3), 1067–1111.

Lai, A., Melloni, G., Stacchezzini, R. 2016. Corporate sustainable development: Is "integrated reporting" a legitimation strategy?. *Business Strategy and Environment*, 25(3), 165–177.

Lee, B.S., Suh, J. 2011. Cash holdings and share repurchases: International evidence. *Journal of Corporate Finance*, 17(5),1306-1329.

Lewbel, A. 2012. Using Heteroscedasticity to Identify and Estimate Mismeasured and Endogenous Regressor Models. *Journal of Business Economic & Statistics*, 30, 67-80.

Li, K., & Prabhala, N.R. 2007. Self–selection models in corporate finance, Chapter 2. In: Eckbo BE (ed.): Handbook of Corporate Finance: Empirical Corporate Finance, Volume *1*. North–Holland: Handbooks in Finance Series, Elsevier.

Lins, K., Servaes, H., Tamayo, A. 2016. Social capital, trust, and firm performance: The value of corporate social responsibility during the Financial Crisis. *The Journal of Finance*, 72, 1785-1824

Luo, X., & Bhattacharya, C.B. 2009. The debate over doing good: Corporate social performance, strategic marketing levers, and firm-idiosyncratic risk. *Journal of Marketing*, 73, 198–213.

Lyon, T.P., Lu, Y., Shi, X., Yin, Q. 2013. How do shareholders respond to Green Company Awards in China?. *Ecological Economics*, 94, 1–8.

McWilliams, A., Siegel, D. 2001. Corporate social responsibility: A theory of the firm perspective. *Academy of Management Review,* 26(1), 117–127.

Morris, R.D. 1987. Signalling, agency theory and accounting policy choice, *Accounting and Business Research*, 18(69), 47-56.

Newey, L., Zahra, S. 2009. The Evolving Firm: How Dynamic and Operating Capabilities Interact to Enable Entrepreneurship. *British Journal of Management*, 20, S81-S100

Oikonomou, I., Brooks, C., Pavelin, S. 2012. The impact of corporate social performance on financial risk and utility: A longitudinal analysis. *Financial Management*, 41(2), 483–515.

Pinkowitz, L., Stulz, R., Williamson, R. 2006. Does the contribution of corporate cash holdings and dividends to firm value depend on governance? A cross-country analysis. *Journal of Finance,* 61, 2725-2751.

Rock, K. 1986. Why new issues are underpriced. Journal of Financial Economics, 15(1- 2), 187-212.

Rozeff, M. 1982. Growth, beta and agency costs as determinants of dividend payout ratios. The *Journal of Financial Research*, 5(3), 249-259.

Sanchez-Vidal, F.J. 2014. High debt companies' leverage determinants in Spain: A quantile regression approach, *Economic Modelling*, 36, 455-465.

Schauer, C., Elsas, R., Breitkopf, N. 2019. A new measure of financial constraints applicable to private and public firms. *Journal of Banking & Finance*, 101, 270-295

Serafeim, G., Park, D.G., Freiberg, D., Zochowski, R. 2020. Corporate Environmental Impact: Measurement, Data and Information. Working Paper, Harvard Business School.

Servaes, H., & Tamayo, A. 2013. The impact of corporate social responsibility on firm value: The role of customer awareness. *Management Science*, 59(5), 1045–1061.

Sharpe, W.F. 1964. Capital asset prices: A theory of market equilibrium under conditions of risk. *The Journal of Finance*, 19, 425–442.

Siano, A., Vollero, A., Conte, F., Amalibe, S. 2017. More than words: Expanding the taxonomy of greenwashing after the Volkswagen scandal. *Journal of Business Research*, 71, 27–37.

Starks, L., Venkat, P., Zhu, Q. 2017. Corporate ESG profiles and investor horizons. Wharton Research Data Services (WRDS) Research Paper Series.

Stroebel, J., & Wurgler, J. 2021. What do you think about climate finance? *Journal of Financial Economics,* 142(2), 487–498.

Stubbs, W., Higgins, C. 2015. Stakeholders' perspectives on the role of regulatory reform in integrated reporting. *Journal of Business Ethics*, 147(3), 1-20.

Suchman, M.C. 1995. Managing legitimacy: Strategic and institutional approaches. *The Academy of Management Review*, 20(3), 571–610.

Wellalage, N.H., Kumar, V. 2020, Does it pay to be green? Environmental performance and firm financing during COVID-19 outbreaks, available at: 10.21203/rs.3.rs-83297/v1

Whited, T. M., Wu, G. 2006. Financial constraints risk. *Review of Financial Studies*, 19(2), 531–559.

Yan, S., Ferraro, F., & Almandoz, J. (2019). The rise of socially responsible investment funds:The paradoxical role of the financial logic. *Administrative Science Quarterly*, 64 (2), 466–501.

Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song,J., Zhao, X., Huang, B., Shi, W., Lu, R., Niu, P. 2020. A novel Coronavirus from patients with pneumonia in China. *New England Journal of Medicine*, 382, 727–733.

Tables

Table 1: Summary statistics. Variable definitions are provided in Table A1, Appendix.

Panel A	N	Mean	Median	SD	Min	Max
ROA	16,080	0.084	0.096	0.125	-0.551	0.387
ROE	16,080	0.233	0.140	0.521	-0.514	3.516
Tobin's Q	16,080	1.580	1.225	1.081	0.588	5.540
Current RRI	16,080	6.500	0	0.101	0	65.400
Age	16,080	6.208	6	4.192	1	30
Size	16,080	13,347	1,166.4	13,003	0	6,494,259
Leverage	16,080	0.254	0.234	0.196	0	0.960
Tangibility	16,080	0.283	0.234	0.230	0	0.894
HHI	16,080	0.202	0.137	0.182	0.031	1
CFL_VOL	16,080	0.204	0.032	3.645	0.145	1.142
SalesGrowth	16,080	0.087	0.042	0.403	-0.848	3.119
ESG Country Sector Average	16,080	23.36	20.468	11.095	0	73.456

Panel B: Variable mean equality test between samples of high and low ESG Reputational Risk. Sample is divided above and below of *ESG reputational*'s sample median.

	High ESG Reputational Risk (mean values)	Low ESG Reputational Risk (mean values)	T-test(diff)/p-values	High ESG Reputational Risk (median values)	Low ESG Reputational Risk (median values)	T-test(diff)/p-values
ROA	.064	.079	0.000	0.078	.094	0.000
ROE	0.18	.219	0.000	0.119	.135	0.000
Tobin's Q	1.32	1.586	0.000	1.12	1.227	0.000

Table 2: This table document the impact of ESG reputational risk on firms' financial performance by utilizing OLS, HDFE and HDFE with entropy balanced weights estimators. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively. Figures in the parentheses report the standard errors. All variables are defined in appendix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	POOLED OLS ESTIMATION			HDFE ESTIMATION			HDFE -ENTROPY MATCHING		
VARIABLES	ROA	ROE	Tobin's Q	ROA	ROE	Tobin's Q	ROA	ROE	Tobin's Q
Current RRI	-0.114***	-0.519***	-0.446***	-0.046***	-0.136**	-0.165**	-0.035***	-0.176*	-0.079**
	(0.009)	(0.059)	(0.090)	(0.008)	(0.053)	(0.083)	(0.007)	(0.097)	(0.039)
Age	-0.000	0.046***	-0.562***	-0.015	0.025	-0.234	0.006	-0.121	-0.264
	(0.005)	(0.018)	(0.064)	(0.013)	(0.082)	(0.191)	(0.012)	(0.211)	(0.203)
Size	0.013***	0.068***	-0.061***	0.008***	0.089***	-0.258***	-0.006**	0.113***	-0.285***
	(0.001)	(0.004)	(0.005)	(0.002)	(0.013)	(0.021)	(0.002)	(0.021)	(0.029)
Leverage	-0.086***	0.229***	-0.092	-0.111***	0.163***	0.068	-0.090***	0.366***	-0.030
	(0.006)	(0.028)	(0.057)	(0.008)	(0.044)	(0.082)	(0.008)	(0.111)	(0.091)
Tangibility	0.039***	0.206***	-0.628***	0.040***	0.088	-0.330***	0.044***	0.022	-0.235*
	(0.003)	(0.018)	(0.035)	(0.011)	(0.058)	(0.098)	(0.011)	(0.154)	(0.125)
HHI	-0.021***	0.022	-0.215***	0.000	-0.041	-0.019	0.012	0.060	0.080
	(0.004)	(0.019)	(0.051)	(0.009)	(0.041)	(0.079)	(0.009)	(0.112)	(0.091)
CFL_VOL	-0.046***	-0.011	0.175***	-0.009	0.028**	0.072	0.004	0.135**	0.099
	(0.009)	(0.008)	(0.056)	(0.007)	(0.012)	(0.078)	(0.011)	(0.056)	(0.114)
SalesGrowth	0.022***	0.020**	0.191***	0.033***	0.044***	0.112***	0.034***	0.065***	0.109***
	(0.004)	(0.010)	(0.028)	(0.003)	(0.009)	(0.021)	(0.004)	(0.025)	(0.029)
Observations	16,080	16,080	16,080	16,080	16,080	16,080	16,080	16,080	16,080
R-squared	0.110	0.086	0.068	0.703	0.599	0.722	-	-	-
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 3: The Impact of ESG reputational risk on firms' financial performance accounting for sample selection using 2 stage Heckman selection Model. The dependent variable is firms ROA, ROE and Tobin's Q. In columns (1), (4) and (7) we show the second step of Heckman estimations while in columns (2), (5) and (8) we provide the first step. Variable definitions are provided in Table A1, Appendix. *** p < 0.01, ** p < 0.05, * p < 0.1. Standard errors are reported in the parenthesis. All specifications include firms and year fixed effects.

	(1)	(2)	(4)	(5)	(7)	(8)
VARIABLES	ROA		ROE		Tobin's Q	
	Second Step	First Step	Second Step	First Step	Second Step	First Step
Current RRI	-0.146***		-0.690***		-0.266*	
	(0.017)		(0.128)		(0.153)	
Age	-0.020***	0.610***	0.186***	0.626***	0.095***	0.631***
	(0.005)	(0.033)	(0.038)	(0.033)	(0.032)	(0.033)
Size	-0.005**	0.332***	0.230***	0.331***	-0.066***	0.329***
	(0.002)	(0.008)	(0.017)	(0.008)	(0.010)	(0.008)
Leverage	-0.085***	-0.029	0.351***	-0.073	-0.222***	-0.062
	(0.008)	(0.084)	(0.065)	(0.085)	(0.072)	(0.085)
Tangibility	0.053***	-0.038	0.302***	-0.029	-0.614***	-0.019
	(0.007)	(0.072)	(0.054)	(0.072)	(0.058)	(0.072)
HHI	-0.038***	0.199**	0.007	0.181**	0.024	0.186**
	(0.008)	(0.087)	(0.065)	(0.089)	(0.072)	(0.089)
CFL_VOL	-0.101***	0.326***	0.194***	0.339***	0.444***	0.336***
	(0.010)	(0.079)	(0.071)	(0.079)	(0.087)	(0.080)
SalesGrowth	0.046***	-0.244***	-0.098**	-0.259***	0.235***	-0.269***
	(0.005)	(0.052)	(0.042)	(0.053)	(0.045)	(0.053)
Government efficiency		-0.050		-0.072		-0.036
		(0.101)		(0.102)		(0.102)
Rule of Law		0.435***		0.414***		0.437***
		(0.099)		(0.100)		(0.099)
Industry Share		-0.189		-0.165		-0.182
		(0.148)		(0.150)		(0.149)
lambda		-0.065***		0.725***		-0.520***
		(0.010)		(0.074)		0.090
headquarters		-0.002***		-0.002***		-0.002***
		(0.001)		(0.001)		(0.001)
Observations	16,080	16,080	16,080	16,080	16,080	16,080
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES

Table 4: This table presents the findings on the impact of ESG reputational risk on firms' financial performance (as measured by Tobin's Q, ROA, and ROE) derived from the application of propensity score matching in our baseline specification (eq 1). We report the average treatment effect of the treated that is the conditional probability to have high versus low ESG reputational risk. Our selection mechanism is based on the control variables as included in our baseline models. All columns consider the entire sample and are estimated via OLS including firm and year fixed effects. Following Zhao (2004), in columns (1), (4), (7) we employ the Nearest-neighbor method, in (2), (5), (7) the Kernel method, and in (3), (6), (9) the Stratification method. In columns (1) to (3), (4) to (6), and (7) to (9) the dependent variable is Tobin's Q, ROA, and ROE respectively. *, ** and *** indicate significance at the 10%, 5% and 1% levels. Figures in the parentheses report the standard errors. Detailed definitions of variables are provided in the Appendix A1.

Dependent variable: Financial Performance									
Treatment variable: Dummy RRI	*Tobin's Q*			*ROA*			*ROE*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Nearest neighbor	-0.125***			-0.040***			-0.204***		
	(0.002)			(0.000)			(0.021)		
Kernel		-0.107***			-0.050***			-0.163***	
		(0.025)			(0.020)			(0.029)	
Stratification			-0.123***			-0.050***			-0.188***
			(0.000)			(0.010)			(0.033)
Obs.	16,080	16,080	16,080	16,080	16,080	16,080	16,080	16,080	16,080
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 5: This table shows the impact of ESG reputational risks on firms' external financing. Firm and year fixed effects are included in all estimations. The standard errors are shown in parentheses below the estimated coefficients. One, two, and three asterisks indicate statistical significance at the 10%, 5%, and 1% levels, respectively. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Al variables are defined in appendix A1.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*WW*	*SA*	*KD*	*WW*	*SA*	*KD*
	HDFE			HDFE entropy matching		
Current RRI	0.057***	1.405***	0.150***	0.033***	0.564***	0.117**
	(0.011)	(0.038)	(0.060)	(0.012)	(0.033)	(0.057)
Size	-0.049***	-0.220***	-0.007***	-0.047***	-0.070***	-0.011***
	(0.001)	(0.004)	(0.000)	(0.001)	(0.004)	(0.000)
Constant	0.026***	-1.620***	0.113***	0.009	-2.787***	5.112**
	(0.005)	(0.025)	(0.003)	(0.007)	(0.028)	(1.993)
Observations	16,080	16,080	16,080	16,080	16,080	16,080
R-squared	0.425	0.592	0.412	0.445	0.589	0.456
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES

Table 6: This table provides the estimates of the two-stage least-squares regression focusing on the relation between ESG reputational risk *(Current RRI)* and firms' financial performance (columns 2 to 4). In column (1) we present the first stage of the 2SLS regression. The instrument we use are the country sector average ESG reputational risk (3-digit SIC) the Lewbel's (2012) heteroscedasticity-based instruments. We report standard errors in parenthesis. Variable definitions are provided in table A1, Appendix. p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)
	First stage	Second Stage		
VARIABLES		*ROA*	*ROE*	*Tobin's Q*
Current RRI		-0.044***	-0.042**	-0.130**
		(0.008)	(0.020)	(0.063)
Age		-0.017	0.054*	-0.242
		(0.013)	(0.031)	(0.191)
Size		0.007***	0.032***	-0.259***
		(0.002)	(0.004)	(0.021)
Leverage		-0.111***	0.093***	0.067
		(0.008)	(0.016)	(0.082)
Tangibility		0.041***	0.076***	-0.328***
		(0.011)	(0.022)	(0.098)
HHI		-0.001	-0.020	-0.024
		(0.009)	(0.020)	(0.079)
CFL_VOL		-0.009	0.005	0.071
		(0.007)	(0.006)	(0.078)
SalesGrowth		0.033***	0.032***	0.113***
		(0.003)	(0.004)	(0.021)
Country Sector Average	0.002***			
	(0.000)			
W_Age	0.033***			
	(0.002)			
W_Size	0.007***			
	(0.002)			
W_Leverage	0.001			
	(0.008)			
W_Tangibility	-0.016			
	(0.011)			
W_HHI	0.035***			
	(0.012)			
W_CFL_VOL	0.001			
	(0.001)			
W_SalesGrowth	-0.003			
	(0.002)			
Observations		16,080	16,080	16,080
Year FE		YES	YES	YES
Firm FE		YES	YES	YES

Table 7: This table documents the estimates of the impact of ESG reputational risk on firms' financial performance, using a quasi-natural experiment that focusing on the exogenous sock that arises from the 2014/95/EU directive. In columns (1), (2) and (3) the dependent variables are *Tobin's Q, ROA,* and *ROE* respectively. We report standard errors in parenthesis. Variable definitions are provided in table A1, Appendix. p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)
VARIABLES	*Tobin's Q*	*ROA*	*ROE*
Current RRI	-0.014	-0.025***	-0.094***
	(0.110)	(0.009)	(0.031)
Current RRI ***x*** *2014/95/EU directive*	-0.204*	-0.029***	-0.054*
	(0.105)	(0.008)	(0.032)
Age	-0.256	-0.017	0.044***
	(0.191)	(0.013)	(0.008)
Size	-0.255***	0.008***	0.024***
	(0.021)	(0.002)	(0.001)
Leverage	0.060	-0.110***	0.148***
	(0.082)	(0.008)	(0.011)
Tangibility	-0.327***	0.040***	0.131***
	(0.098)	(0.011)	(0.008)
HHI	0.113***	0.033***	0.012**
	(0.021)	(0.003)	(0.005)
CFL_VOL	-0.018	0.000	-0.005
	(0.079)	(0.009)	(0.010)
SalesGrowth	0.228	0.001	-0.127***
	(0.185)	(0.025)	(0.018)
Total Effect (Current RRI)	-0.137*	-0.041***	-0.126***
	(0.082)	(0.007)	(0.01)
Observations	16,080	16,080	16,080
R-squared	0.722	0.703	0.684
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

Table 8: This table documents the estimates of the impact of ESG reputational risk on firms' financial performance, using a quasi-natural experiment that focusing on the exogenous sock that arises from the COVID-19 pandemic crisis. In columns (1), (2) and (3) the dependent variables are *Tobin's Q, ROA,* and *ROE* respectively. We report standard errors in parenthesis. Variable definitions are provided in table A1, Appendix. p<0.01, ** p<0.05, * p<0.1.

VARIABLES	(1) *Tobin's Q*	(2) *ROA*	(3) *ROE*
Current RRI	-0.122	-0.033***	-0.117***
	(0.084)	(0.006)	(0.020)
Current RRI x Covid_19	-0.253*	-0.018*	-0.085**
	(0.152)	(0.010)	(0.041)
Age	-0.273	-0.009	0.044***
	(0.190)	(0.009)	(0.008)
Size	-0.254***	-0.001	0.024***
	(0.021)	(0.001)	(0.001)
Leverage	0.060	-0.074***	0.147***
	(0.082)	(0.005)	(0.011)
Tangibility	-0.329***	0.037***	0.131***
	(0.098)	(0.007)	(0.008)
HHI	0.113***	0.026***	0.012**
	(0.021)	(0.002)	(0.005)
CFL_VOL	-0.020	0.003	-0.005
	(0.079)	(0.006)	(0.010)
SalesGrowth	0.233	-0.001	-0.127***
	(0.185)	(0.011)	(0.018)
Total Effect (Current RRI)	-0.155**	-0.045***	-0.128***
	(0.082)	(0.005)	(0.019)
Observations	16,080	16,080	16,080
R-squared	0.722	0.709	0.684
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

Table 9. In this table we report the estimates of equation 12 considering the full sample and the subsamples of high and low ESG reputational risk. The dependent variable $MarketValue_t$ is the market value of equity plus the book value of debt scaled by the book value of total assets. X_t is the level of variable X in year t divided by the book value of assets in year t. ΔX_t is the change in the level of X from year t−1 to year t divided by the book value of assets in year t, $((X_t - X_{t-1})/A_t)$, where A is the book value of assets. ΔX_{t+1} is the change in the level of X from year $t+1$ to year t divided by the book value of assets in year t, $((X_{t+1} - X_t)/A_t)$. *Earnings* is earnings defined as earnings before extraordinary items plus interest plus deferred tax credits plus investment tax credits. *NetAssets* is net assets, which is defined as total assets minus cash. *R&D* is research and development expense. When *R&D* is missing, it is set to zero.I is interest expense. Dividends is common dividends. Cash is cash and short-term investments. All estimations include firm and year fixed effects. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)
VARIABLES	Market Value	Market Value	Market Value	Market Value
	HDFE		HDFE with entropy matching	
	High ESG risk	Low ESG risk	High ESG risk	Low ESG risk
$Earnings_t$	-3.506	4.365*	-4.112	9.413***
	(10.270)	(2.561)	(6.872)	(3.247)
$\Delta Earnings_t$	3.151	-2.353	3.788	-4.176
	(6.068)	(2.004)	(4.097)	(2.572)
$\Delta Earnings_{t+1}$	-1.662	3.218*	-1.959	1.916
	(5.668)	(1.695)	(2.433)	(2.182)
$NetAssets_t$	-3.094	0.045	-3.429*	0.135
	(2.408)	(0.535)	(1.857)	(0.600)
$\Delta NetAssets_{t+1}$	1.052	0.043	1.254	-0.190
	(1.451)	(0.543)	(1.086)	(0.559)
$R\&D_t$	3.839	10.743	5.943	1.406
	(39.017)	(7.939)	(23.261)	(6.311)
$\Delta R\&D_t$	46.169	7.567	58.653*	16.165
	(49.378)	(12.223)	(33.534)	(11.702)
$\Delta R\&D_{t+1}$	38.358	23.616**	54.953**	16.017
	(41.948)	(11.831)	(27.992)	(10.618)
$Interest_t$	-158.058**	-69.118**	-142.723**	-8.133
	(78.583)	(33.550)	(68.844)	(29.102)
$\Delta Interest_t$	40.842	14.500	48.995	7.896
	(75.941)	(26.973)	(45.485)	(23.366)
$\Delta Interest_{t+1}$	28.244	-33.738	52.282	-13.504
	(81.040)	(20.566)	(65.962)	(22.606)
$Cash_t$	-0.211	-1.052	0.624	2.382
	(6.218)	(2.792)	(3.351)	(3.348)
$\Delta Cash_t$	-0.020***	0.000	-0.020*	0.000
	(0.001)	(0.000)	(0.001)	(0.000)
$\Delta Cash_{t\,t+1}$	0.000	-0.000	0.000	0.000
	(0.001)	(0.000)	(0.001)	(0.000)
DIV_t	27.243	19.615**	24.275	22.937*
	(31.448)	(8.393)	(22.448)	(12.843)
ΔDIV_t	-17.705	-1.990	-18.712	-5.548
	(26.969)	(2.422)	(25.708)	(7.005)
ΔDIV_{t+1}	-1.051	10.262*	-10.232	6.742
	(31.365)	(5.612)	(26.356)	(6.885)
$MarketValue_{t+1}$	-0.483***	-0.913***	-0.586	-0.817***
	(0.173)	(0.178)	(0.682)	(0.160)
Observations	7,115	7,115	7,115	7,115
R-squared	0.575	0.886	0.680	0.930
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES

Table 10: This table documents the unconditional quantile with fixed effects estimates at the 10th, 25th ,50th, 75th , and 90th quantiles, respectively. We report standard errors in parenthesis. Variable definitions are provided in table A1, Appendix. p<0.01, ** p<0.05, * p<0.1.

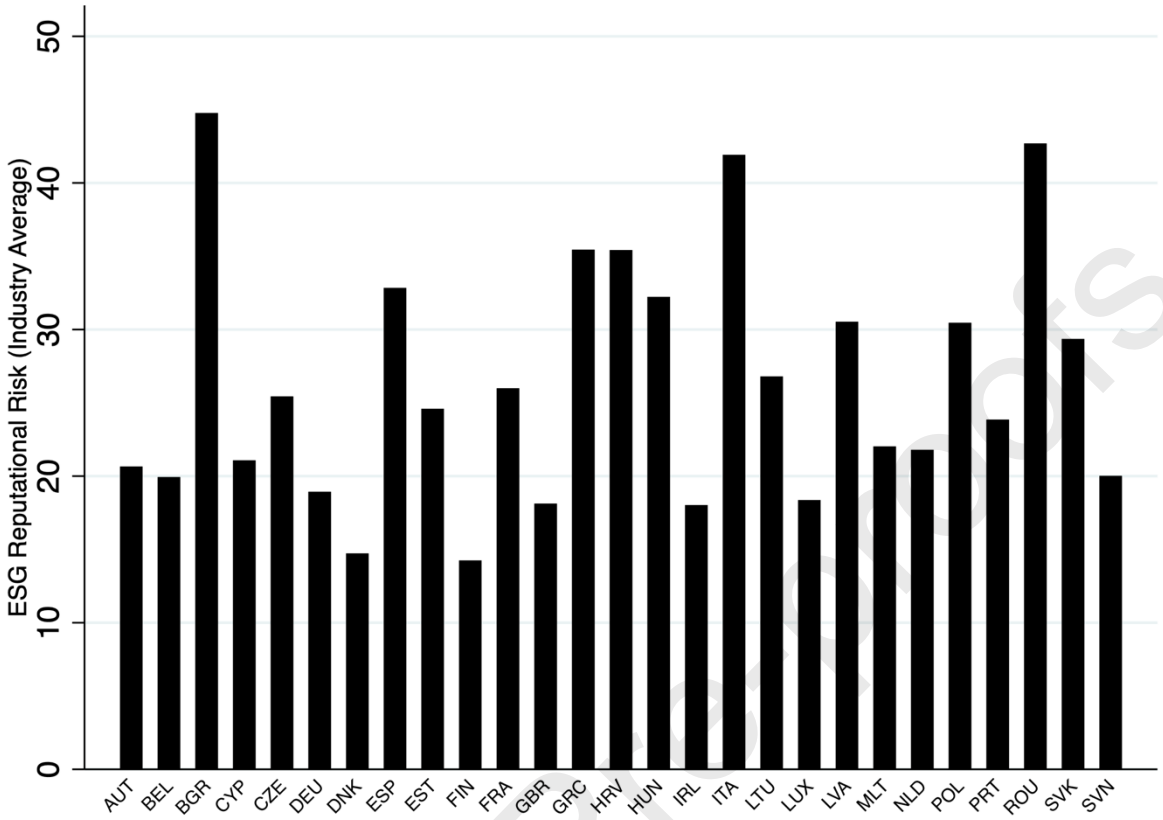
VARIABLES	(1) rif_10	(2) rif_25	(3) rif_50	(4) rif_75	(5) rif_90
Current RRI	-0.257***	-0.080***	-0.036**	-0.051*	-0.489***
	(0.012)	(0.009)	(0.013)	(0.027)	(0.068)
Age	0.027***	0.044***	0.039***	0.054***	0.125***
	(0.005)	(0.004)	(0.006)	(0.008)	(0.026)
Size	0.035***	0.015***	0.012***	0.017***	0.059***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.005)
Leverage	-0.096***	0.028***	0.108***	0.247***	0.719***
	(0.011)	(0.007)	(0.010)	(0.023)	(0.079)
Tangibility	0.066***	0.058***	0.112***	0.177***	0.392***
	(0.009)	(0.009)	(0.010)	(0.015)	(0.052)
HHI	-0.067***	0.001	0.014*	0.029**	0.142***
	(0.013)	(0.007)	(0.007)	(0.010)	(0.034)
CFL_VOL	0.046***	0.006	0.001	0.004	0.014
	(0.013)	(0.004)	(0.004)	(0.008)	(0.026)
SalesGrowth	-0.510***	-0.162***	-0.090***	-0.063**	0.150*
	(0.028)	(0.013)	(0.016)	(0.026)	(0.083)
Constant	-0.230***	-0.128***	-0.079***	-0.101***	-0.531***
	(0.013)	(0.009)	(0.014)	(0.016)	(0.064)
Observations	16,080	16,080	16,080	16,080	16,080
R-squared	0.173	0.121	0.112	0.088	0.052
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES

Table 11: In this table we provide the estimates of high dimensional fixed effects models considering the impact of the three major components of ESG reputational risk, namely Environmental Reputational risk, Social Reputational risk, and Governance Reputational risk on firm's financial performance. In our estimation we include firms and year fixed effects. In the parenthesis bellow of the estimated coefficients, we document the standard errors. All the variables are defined in the Appendix A1. One, two, and three asterisks indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	*Tobin's Q*	*ROA*	*ROE*	*Tobin's Q*	*ROA*	*ROE*	*Tobin's Q*	*ROA*	*ROE*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Environmental Reputational risk	-0.114***	-0.120***	-0.048**						
	(0.032)	(0.040)	(0.021)						
Social Reputational risk				-0.030**	-0.060***	-0.023*			
				(0.013)	(0.020)	(0.013)			
Governance Reputational risk							-0.029**	-0.040**	-0.012*
							(0.013)	(0.020)	(0.007)
Age	-0.411*	-0.020	0.111	-0.421*	-0.021	0.110	-0.409*	-0.020	0.112
	(0.233)	(0.015)	(0.108)	(0.233)	(0.015)	(0.108)	(0.233)	(0.015)	(0.107)
Size	-0.269***	0.008***	0.098***	-0.269***	0.008***	0.099***	-0.269***	0.008***	0.098***
	(0.022)	(0.003)	(0.014)	(0.022)	(0.003)	(0.014)	(0.022)	(0.003)	(0.014)
Leverage	0.096	-0.109***	0.161***	0.092	-0.109***	0.160***	0.092	-0.109***	0.159***
	(0.088)	(0.009)	(0.046)	(0.088)	(0.009)	(0.046)	(0.088)	(0.009)	(0.046)
Tangibility	-0.397***	0.038***	0.104	-0.397***	0.039***	0.105*	-0.400***	0.038***	0.103
	(0.106)	(0.012)	(0.063)	(0.106)	(0.012)	(0.063)	(0.106)	(0.012)	(0.063)
HHI	-0.029	-0.005	-0.040	-0.030	-0.005	-0.040	-0.032	-0.005	-0.041
	(0.079)	(0.009)	(0.042)	(0.079)	(0.009)	(0.042)	(0.079)	(0.009)	(0.042)
CFL_VOL	0.269	-0.004	0.212**	0.267	-0.004	0.212**	0.272	-0.003	0.213**
	(0.193)	(0.028)	(0.092)	(0.194)	(0.028)	(0.092)	(0.194)	(0.028)	(0.091)
SalesGrowth	0.122***	0.032***	0.042***	0.122***	0.032***	0.042***	0.122***	0.032***	0.042***
	(0.023)	(0.003)	(0.009)	(0.023)	(0.003)	(0.009)	(0.023)	(0.003)	(0.009)
Constant	4.424***	0.098***	-0.763***	4.440***	0.097***	-0.767***	4.422***	0.098***	-0.764***
	(0.479)	(0.033)	(0.230)	(0.480)	(0.033)	(0.230)	(0.479)	(0.033)	(0.229)
Observations	16,080	16,080	16,080	16,080	16,080	16,080	16,080	16,080	16,080
R-squared	0.731	0.710	0.609	0.731	0.709	0.609	0.731	0.709	0.609
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
ROBUST	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 1: ESG reputational risk by Country



Appendix A:

Table A1: Variable definitions

Variable	Definition	Source
CurrentRRI	A company's current level of ESG reputational exposure to media and stakeholder attention, ranging from zero (lowest) to 100 (highest) and converted to range from 0 to 1.	RepRisk Global Business Intelligence database
FreeCashFlows	Free Cash Flows as calculated by Richardson's (2006) accounting-based framework.	Author's calculations
TobinsQ	Market-to-book ratio, calculated as the market value of assets((PRCC_F*CSHO) + AT – CEQ)) divided by the book value of assets (AT)	Compustat
ROA	Return on assets defined as operating income before depreciation divided by book value of total assets	Compustat
ROE	Return on assets defined as operating income before depreciation divided by book value of equity	Compustat
Leverage	Total debt scaled by the book value of total assets	Compustat
Age	Number of years elapsing from a firm's foundation day	Orbis database, J.R. Ritter (https://site.warrington.ufl.edu/ritter/ipo-data/)
CashFlowVol	standard deviation of operating cash flows- rolling three year window	Compustat
Size	The natural logarithm of firms total assets	Compustat
Sales Growth	The sales growth constructed as the difference between (sales-sales$_{t-1)}$)/sales	Compustat
Whited-Wu (2006)	Whited-Wu (2006) index = $-0.091CF - 0.062DD + 0.021LEV - 0.44LNTA + 0.102\text{ISG} - 0.035\text{SG}$, where, CF: is operating cash flows scaled by the book value of total assets DD: is a dummy variable, which takes the value of 1 if a firm pays dividends and zero otherwise. LEV: is the Leverage variable LNTA: is the FirmSize variable ISG: is the firm's industry sales growth. Industry is defined as the 3-digit industry sic-code SG: is sales growth between t and t-1	Compustat
Kaplan and Zingales (1997)	Kaplan and Zingales (1997) index: $0.238Q - 1.002CF + 3.139LEVR - 39.368DIV - 1.31$, were, Q: is the TobinsQ variable CF: is operating cash flows scaled by the book value of total assets LEVR: is the Leverage variable DIV: is cash dividends scaled by the book value of total assets CASH: is the firm's cash and cash equivalents dividend by the book value of total assets	Compustat
SA Index	Hadlock and Pierce (2010) index: = $-0.737SIZE + 0.043SIZE^2 - 0.040AGE$, where, SIZE: is the logarithm of total assets AGE: is the FirmAge variable	Author's calculations /Compustat
HHI	Herfindahl-Hirschman index of industry concentration calculated using 3-digit SIC codes	Compustat
Size	Natural logarithm of the book value of total assets.	Compustat
CountrySectorAverageRRI	Average ESG of the sector (second digit-SIC code) that a firm belongs	RepRisk Global Business Intelligence database
MarketValue	*MarketValue* is the market value of the firm calculated at fiscal year end as the sum of the market value of equity, the book value of short-term debt, and the book value of long-term debt	Compustat

Earnings	Earnings before extraordinary items plus interest plus deferred tax credits plus investment tax credits to total assets	Compustat
NetAssets	Total assets minus cash and scaled by total assets	Compustat
Interest	Interest expense scaled by total assets	Compustat
Payouts	Purchases of common and preferred stock plus common dividends to book value of total assets.	Compustat
R&D	Research and development expenditures scaled by total assets	Compustat
Cash	Cash and short-term investment to total assets	Compustat
Government efficiency	Efficiency in government as a result of balanced budgets, rational spending, and the elimination of waste and duplication	World data bank
Rule of Law	A law index provided by world data bank that captures overall rule of law performance	World data bank
Industry Share	The share of the total number of firms in a country's industry over the total number of firms in the sample that belong to the specific industry (Sic digit 3)	World data bank
DummyCurrentRRI,	*DummyCurrentRRI* and *DummyPeakRRI* are indicator variables that take the value of one if *CurrentRRI*	Author calculations
Hadlock and Pierce (2010) index	Hadlock and Pierce (2010) index: = $-0.737SIZE + 0.043SIZE^2 - 0.040AGE$, where, SIZE: is the logarithm of total assets AGE: is the FirmAge variable	Compustat

Table A2: This table documents the results from the entropy balancing approach. Panel A present the mean, variance, and skewness between the treated and control groups before and after weighting. Panel B reports the entropy balancing regression estimates. Standard errors in are reported in parentheses. Variable definitions are reported in table A1, appendix. *** p<0.01, ** p<0.05, * p<0.1

Panel A: Entropy Balancing Weighting

Before: Without weighting	Treat			Control		
	mean	variance	skewness	mean	variance	skewness
Age	2.157	0.192	-0.806	1.932	0.243	-0.196
Size	8.407	3.989	-0.210	6.521	3.156	-0.082
Leverage	0.270	0.031	0.878	0.254	0.039	0.969
Tangibility	0.299	0.048	0.684	0.286	0.053	0.803
Sales Growth	0.050	0.094	4.570	0.087	0.165	4.125
HHI	0.196	0.029	2.052	0.197	0.033	2.086
CFL_VOL	0.054	0.047	41.700	0.081	0.138	22.840
After: Weighting variables	Treat			Control		
	mean	variance	skewness	mean	variance	skewness
Age	2.157	0.192	-0.806	2.157	0.208	-0.750
Size	8.407	3.989	-0.210	8.407	4.189	0.699
Leverage	0.270	0.031	0.878	0.270	0.033	0.670
Tangibility	0.299	0.048	0.684	0.299	0.049	0.705
Sales Growth	0.050	0.094	4.570	0.050	0.068	4.354
HHI	0.196	0.029	2.052	0.196	0.030	2.137
CFL_VOL	0.054	0.047	41.700	0.054	0.107	35.600

Table A3: Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Current RRI	1.000								
(2) Age	0.271***	1.000							
(3) Size	0.138***	0.034***	1.000						
(4) Leverage	0.037***	0.032***	0.004	1.000					
(5) Tangibility	0.045***	0.026***	0.049***	0.226***	1.000				
(6) HHI	-0.025***	0.004	-0.020***	0.010	0.045***	1.000			
(7) CFL_VOL	0.019***	-0.002	-0.005	0.041***	-0.041***	0.038***	1.000		
(8) SalesGrowth	-0.059***	-0.081***	-0.001	-0.042***	0.003	0.025***	0.071***	1.000	
(9) CountrySectorAverageRRI	0.203***	0.205***	0.065***	0.074***	0.078***	-0.053***	-0.023***	-0.038***	1.000

*** $p<0.01$, ** $p<0.05$, * $p<0.1$