

Evaluating the Performance of Socially Responsible Investment Funds

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Abstract

The definition and scope of sustainability have evolved over the years, stimulated by debates which have won the attention of investors, thereby creating concepts such as responsible investment, socially responsible investment, responsible finance, etc. The purpose of the paper is to demonstrate whether screening has an effect on the financial performance of mutual funds and whether these effects are positive or negative. The study mainly focuses on the U.S. market as it is well developed and therefore provides greater insight and value. The research method uses the Markowitz and Sharpe market models to determine the market value of SRI and non SRI mutual funds. The study also depicts the investors' attitude towards embedding sustainability driven variables in the decision making process as well as the market response to socially responsible investments.

Keywords: responsible investment; screening; performance; investors' behavior.

JEL classification: L21; M14; G11; C65.

1. INTRODUCTION

The concept of sustainability has often raised either controversial debates or has been taken for granted without much in-depth consideration. Nevertheless, the word itself has become of common use, describing everyday situations; not many days pass by without appearing on the news, on the packaging of commodity goods, gadgets, in political debates, in protests and so on.

Events that rocked the world such as the great oil spill in the Gulf of Mexico, the occurrence of the financial crisis, huge corporate failures, discussions on global warming, climate changes causing droughts and food shortages have all precipitated the necessity of a more sustainable world. While it is true that such issues come to surface after the occurrence of extreme events, they are not solely confined to that. It is also wrong to believe that

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companies should address *Environmental, Social and Governance* (ESG) issues primarily for reputational motives. Leading research firms and agencies in the field have often highlighted the undesirable ESG effects of inappropriate business activities with severe consequences on their financial performance and shareholder value decline (Morrow *et al.*, 2017).

Traditionally, pursuing a neo-liberal doctrine, companies have solely pursued profit maximisation objectives, disregarding the negative externalities of their business. But, under the pressure of misconduct disclosure, the issue has become a reputational one, companies and investors endeavouring to comply with ESG requirements, carefully screening their portfolios of dirty investments which may include ethical problems, pollution, climate change, controversial weapons, adult entertainment, conflict minerals, human rights abuses and so on. On the other hand, companies are embracing the need of operating sustainably, incorporating Corporate Social Responsibility (CSR) activities. Socially Responsible market indexes, sustainability rating agencies, issuance of green bonds, digitalisation and also practical examples of companies built on sustainability principles such as Tesla, etc. become more and more visible. This trend is particularly threatening to the class which adamantly gives no consideration for the concept as the future points towards an increasingly sustainability-conscious society.

Though the idea of sustainability itself finds its way back to the 1700's through the German word "*Nachhaltigkeit*" (Kuhlman and Farrington, 2010, p. 34) which, in forestry, referred to never harvesting more than what the forest yields in new growth, it has, with no doubt, evolved over the centuries and has gained much attention from governments, NGOs, corporations, investors, the general public and so on. A major breakthrough to the official recognition of the concept is the Limit to Growth report compiled by the Club of Rome that had predicted the extension of many natural resources, crucial to human survival, within one or two generations. Following a UN Conference on environment in 1987, the Brundtland Report was issued, stating the main principles of sustainable development. Presently, given the strategic importance of sustainable finance, The EU (European Commission, 2018) has issued an action plan to tackle sustainability driven investments in the region.

The objective of the paper is to further explore on the performance of Socially Responsible Investment (SRI) managed funds in comparison to the conventional ones and to come up with some concrete conclusions and explanations, thus contributing to the literature that supports the new sustainable finance paradigm. The authors seek to shade more light on the increasingly interesting topic of the 21st century.

The paper simulates a sample of the available funds and takes the theoretical perspective of an investor who wants to hold and trade such financial assets. The data was collected from the Forum for Sustainable and Responsible Investment. It is publicly provided for institutional member firms as well as individual investors who wish to assess the historical or current financial performance, costs, voting records as well as the screens of all the listed funds. Data on financial performance is provided by the Bloomberg Environmental, Social and Governance (ESG) Data Service corporations, governments, banks and so on.

Two separate portfolios using the Markowitz and the Sharpe methods were constructed to determine their return. The results prove the expectations that the overall conventional funds perform much better than the SRI ones but, nevertheless, there is a loop, *i.e.* an increase in the demand of accountability by the public, pressure from NGOs, government laws, etc. that are also taken into account. This pressure is most likely to force investors to

consider cleaning their portfolios even though they incur immediate costs, in the hope that the returns from more sustainable finance will be greater in the future.

Sustainable ways of doing business are not only ethical but there are instances where they actually lead to cost reduction and smoother business management. Moreover, when the final consumers demand more sustainable deliveries, businesses who want to maintain their hard-won market share will have no choice but take stock and follow suit. In the equation, SRI is also playing a critical role in helping companies venture into untapped markets through good publicity gained by embedding social responsibility in their business policies.

Indeed, the issue of responsible investment has gained global attention and there is growing acceptance in the materiality of ESG issues in the investment industry. The paper proceeds as follows: [Section 2](#): Socially Responsible Investments revisited, [Section 3](#): Methodology, [Section 4](#): Main results. The remainder of the paper, [Section 5](#), is dedicated to Conclusions.

2. SOCIALLY RESPONSIBLE INVESTMENTS REVISITED

2.1 The meaning and the development of the concept

An African proverb describes the views of a Nigerian tribal chief on the community as one consisting of “many dead, few living and countless others unborn”. Needless to say, the definition and scope of sustainability has evolved over the years through various debates which it has stimulated and has won the attention of investors, thereby creating concepts such as responsible investment, socially responsible investment, responsible finance, etc. Oskar Nielsen (Nielsen, 2014, p. 9) defines SRI as “long-term investments that are inter-generationally efficient and fair” which promote a broader analysis of investment opportunities beyond the conventional strategies. Differently put, responsible investments involve ESG costs and benefits in investment decisions (Urwin *et al.*, 2009, p. 3). Their perspective is in line with the broader mainstream definition of sustainable development where it originates. On the other hand, responsible investment is defined as an investment approach that embeds ESG factors in investment decisions with the purpose of minimizing risk and generating sustainable long-term benefits. There, indeed, a faint line exists between the way *Responsible Investment* and *Socially Responsible Investment* can be defined and the terminology of this topic has raised a great deal of confusion to some (Urwin *et al.*, 2009, p. 3) For the former, responsible investors *have in view the long-term perspective of the negative externalities arising from ESG issues* when initially deciding where to invest their funds. In the latter case, investors may actually decide to *exclude certain sectors or corporations which are considered to have long-term negative impacts* (Eurosif SRI, 2014, p. 9).

SRI has been practiced even in the mid 1980's, e.g. through organizing the protest divestment aimed at screening South African portfolios in order to end the apartheid. Some other pieces of literature actually argue that the idea of SRI is not new at all since, as early as the 18 century, universities, religious organisations (e.g. churches) were already using what they called that time sin screens (no tobacco, liquor or gambling investments). Others attribute the birth of this concept to the Vietnam War. During the war, many investors became uncomfortable with their investments indirectly supporting corporations which were sponsoring the war and so began to look for “cleaner” alternatives. As the momentum kept on growing, the nineties were largely characterised by increases in engagement between SRI

funds and corporations. Needless to say, there was also an increasing shareholder pressure for companies to be more transparent about their ESG impacts.

Responsible investment has been widely associated with mission and values-driven investing where exclusionary screens were used to express personal ethics or norms in investment portfolios. Pioneer responsible investors strengthened this view by making clear their investment approach as well as objectives expressed in values, without putting much emphasis on the potential of better financial performance since there was no historical evidence during that time to back up such claims. Instead, the general investment rationale was centred on allowing investors to match their principles, values and their general outlook of life with their investment portfolios. Nevertheless, financial and business schools of thought did not take into account ESG factors, considering that they lead to suboptimal investments.

Still, on the same page, perhaps it is important to challenge the mainstream economic theory which believes economic agents seek only self-interest when, in fact, it is a balanced blend of both self-interest and altruism. Furthermore, [Emerson \(2003\)](#) has been trying to get through the concept of blended value which states that organizations generate their value from the systematic blending of environmental, social as well as financial aspects in order to prosper. Moreover, banks are drawing up voluntary standards to tackle environmental risks ([Fullwiler, 2015](#)). In essence, most investors are moving out from the 20th century way of thinking which allows, firstly, to gather wealth and start doing philanthropy or accounting for the negative externalities later. Instead of compartmentalizing the two buckets, the market of SRI investors now looks at it as a blended spectrum which provides augmented value in their investments.

A few years down the line, the occurrence of the 2007-8 financial crises clearly escalated some fundamental debates on the role investors' influence to positively impact the society and whether industry priorities can be re-aligned ([Fiestas et al., 2010, p. 5](#)). As the biggest challenges of the 21st century involve the facilitation of effective globalization, addressing climate change and alleviation poverty, pension and sovereign funds have greater leverage in tackling such issues ([Urwin et al., 2009, p. 3](#)). Through the introduction of SRIs, a large number of investors are already playing transformative and progressive roles in the initiatives to combat climate change, access to healthcare, etc. ([Fiestas et al., 2010, p. 5](#)). Naturally, ESG issues tend to make the headlines mostly when investors suffer huge losses on their stocks, emanating from poor management of one or even all of the key ESG issues. Assuming that there is only an upside to responsible investment, the paper questions *why not all investors* are taking the issue very seriously in their mainstream decision making. According to independent researches, the majority of companies or investors did not review their ESG performance simply because clients, investors and other stakeholders did not demand to have these addressed. In other cases, responsible investment is ignored when there is no clear value added to their core purpose which is usually profit maximisation. There is, of course, the case of investors demanding clear evidence that integrating ESG issues directly transforms into better financial performance. However, sometimes, investors and companies are not aware, or have insufficient information and resources to embed such issues in measurable metrics ([Hayat and Orsagh, 2015](#)).

Another misconception the idea of social responsibility faces, is the way it is always associated, if not only regarded, as philanthropic activities. It is widely agreed upon that the pre-eminent categories of social responsibility have their focus on aspects like affirmative action programs, equal or fair employment opportunities, the environment, community involvement, product health and safety, energy conservation, conflict minerals, ethical

promotion as well as the ultimate disclosure of the related social responsibility activities (Roberts, 1992). In the same mind set, it is no surprise that authors like Crowther and Guler (2008) come into agreement with this and sees the solid foundation of social responsibility as sustainability, accountability and transparency.

While many responsible investment topics tend to be biased towards the environmental (E) and social (S) aspects, it is of great importance not to overlook the role played by the governance (G) part in responsible business. Previously a neglected subject, the prominent cases of corporate failure in major industries: chemicals, petrol, food, banking, etc. has seen the issue making its way to the top of the responsible investment agenda as well. According to the stewardship model, managers should be good stewards to companies who are working to get the best return for the shareholders (Davis *et al.*, 1997). However, in most cases, conflict of interest arises among these stakeholder groups and often results in moral hazard with severe repercussions to the society as a whole. To this extent, we take the view that the governance part is critical and should be seriously considered in any investment decision. The underlying idea in responsible investment is the view that embedding these factors not only gives an augmented view of the long-term financial performance of investments, but also helps to mitigate the negative externalities inevitably posed by investments on society. We also do not overlook the critical role it plays in ensuring an overall healthy and stable market in the long-run. While many agree that the market-based or capitalist economy has emerged to be the most efficient in fairly allocating scarce economic resources, there is also evidence of a growing array of environmental impacts and social inequalities.

Several studies have been conducted in order to determine the performance of SRIs. A meta-analysis covering at least 2000 studies from the 1970's asserts the fact that at least 90% of them show non-negative but positive correlation between ESG integration and financial performance of companies (Friede *et al.*, 2015). In addition, more interesting findings were published in a report by the Morgan Stanley Institute for Sustainable Investing (2015). They found out that SRI assets, both absolute and risk adjusted, in many cases, met and even exceeded the performance of non SRI managed assets. During their time-frame of analysis, they found out that sustainable equity mutual funds often produced equal or lower volatility and the same or higher median returns than normal equity funds.

There is evidence that, in most cases, a positive and sometimes neutral relationship between integrating ESG factors and enhancing financial performance are noticeable. Lee and Faff (2009) developed a six-factor model to assess the performance of passively leading and lagging responsible investment portfolios. Their results suggest that while the leading responsible investment portfolios did not outperform the market portfolios, they did outperform the lagging ones. More literature actually provides conflicting arguments as for instance Statman and Glushkov (2009) found evidence that stocks with high social responsibility score provide better financial return while others (Humphrey *et al.*, 2012) argue that there is no difference between the performance of stocks with high or low social responsibility scores.

Further down the line, Bauer *et al.* (2005) state that ethical funds have different investment styles than the conventional ones, being more growth oriented. Nevertheless, results vary according to the funds' country of origin. In the same line of thinking, Renneboog *et al.* (2008) argue that SRI investors are not inclined to accept sub-optimal financial performance in order to pursue ethical objectives.

Barnett and Salomon (2006) show that results differ according to the types of variables used in screening. Their study emphasises that community related screening leads to higher

performance, while environmental and labour related screening lowered the financial performance.

Based on a meta-analysis and experiments, [Revelli and Viviani \(2015\)](#) conclude that there are no relevant results showing that the incorporation of SRI automatically lead to better financial performance.

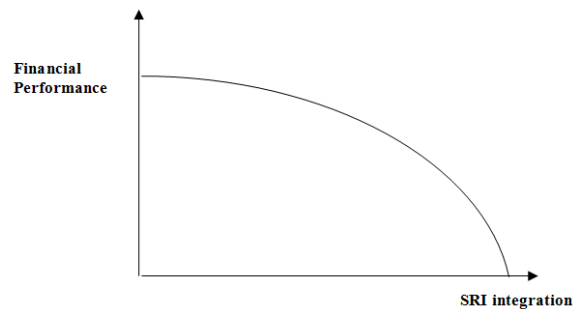
Incorporating SRI in financial performance analysis is still incipient and no ground breaking research has yet occurred. Given the complexity of studies and the multitude of determinants, researches and conclusions cannot be but segmented, considering the influence of each possible variable separately and grouping companies according to their field of expertise, size, financial stance, business environment, business culture, and other macro and micro economic characteristics.

However, a fundamental difference between purely theoretical studies and those made by brokers is that the former only examine ESG issues in isolation while the latter take an inclusive approach. This could possibly result in some datasets experiencing performance biases due to the influence of management fees, transaction costs, etc. Beyond any reasonable doubt, it is arguable that, in the corporate world, this decade, an unprecedented rise of issues such as climate change, human rights, supply chain standards, access to healthcare and water, to mention but a few, have become preoccupying. Furthermore, one cannot neglect the contribution of shady corporate governance practices escalated by major corporate scandals which have excavated issues such as executive compensation, business ethics, corruption, board structure and transparency; to mention just a few.

2.2 Further theoretical foundations and research hypothesis

As the literature review has already alluded, there may be a negative or a positive relationship between incorporating SRI and the financial performance thereof. Exploring more into that theory, the two sides are considered in order to pre-define the hypothesis.

First, *the negative relationship* has its roots in the neoclassical view of economics. The fundamental argument of the *cost-concerned school* is that a trade-off exists between financial performance and corporate social responsibility ([Walley and Whitehead, 1994](#)). It is assumed that companies which seek to address socially harmful practices such as environmental pollution will inevitably incur higher costs of compliance and in turn small gains, leading to the negative impact on their financial performance. [Schaltegger and Wagner \(2010\)](#), therefore support the conclusion that there is a negative relationship between social responsibility and financial performance. Another significant contribution to the theory comes from Milton Friedman who states that CSR activities are not beneficial to participants as they are voluntary and do not follow any market logic. He concludes that CSR activities could be viewed as being on the verge of fraud ([Friedman, 1970](#)). [Figure no. 1](#) shows a graphic representation of both the cost-concerned school and Milton Friedman's views on SRI integration and the financial performance of assets.



Source: own representation

Figure no. 1 – The neoclassical view on SRI integration

On the other hand, another class of theorists, *value creation school*, have challenged the cost-concerned school and argue that there are benefits which accrue to SRI integration if applied correctly.

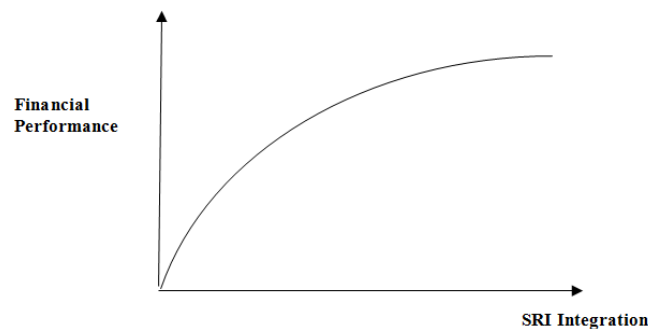
Apart from the vast literature which has already been mentioned, perhaps a significant figure in support of the positive impact of SRI has been Michael Porter. He argues that SRI spurs competitive advantage through the development of new technology and better financial performance as businesses and innovation are approached in a different manner (Porter and van der Linde, 1995).

Furthermore, Porter and Kramer (2011) also state that the trade-off notion in the cost-concerned school stems from the way certain companies window-dress CSR and in the end it becomes just a cosmetic which is often not in line with the companies' strategy and core business. Figure no. 2 shows a graphic representation of both the value creation school and Michael Porter's views on SRI integration and financial performance of assets.

Based on the theoretical foundation and aligning it to the core purpose of this paper, the hypothesis of the study is:

H_1 : SRI screening has a positive or negative (separated from zero) effect on the financial performance of mutual funds.

Prior to demonstrating the hypothesis, the SRI background and screening strategies should be revisited

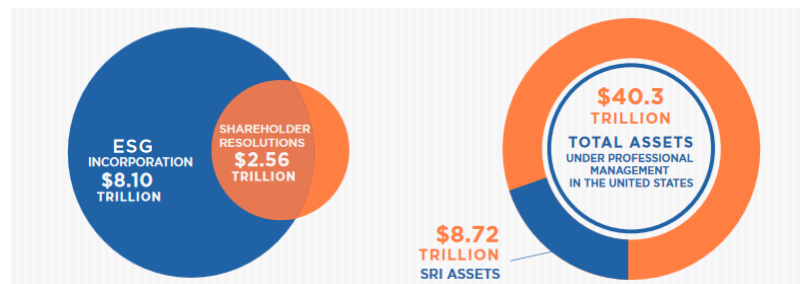


Source: own representation

Figure no. 2 – The value creation school view on SRI integration

2.3 SRI industry background and screening strategies

While there is growing momentum in the adoption of responsible investment in different parts of the world, perhaps the most significant growth has been experienced in the U.S market. In Europe, the countries significantly integrating SRI are France, UK, Germany, Netherlands as well as the Nordics (Sweden, Norway and Finland). In 2006 alone, the Swedish market has been estimated to be approximately 122 SEK billion, the equivalent of U.S. 17.7 billion. For the purpose of our study, we mainly focus on the U.S market as it is well developed and therefore provides greater insight and value. Figure no. 3 shows the size of SRI assets in the U.S. as of 2016.

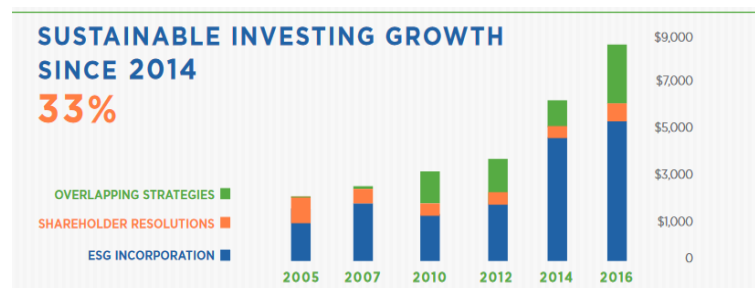


Source: USSIF (2016)

Figure no. 3 – The size of SRI funds in the U.S. and their impact, 2016.

In the United States alone, SRIs are spread across a variety of asset classes and products. Beyond investing solely into public equity investments, SR investors are also casting their nets into alternative investments (CFA Institute, 2016), cash, real estate, variable annuities and even venture capital.

According to The Forum for Sustainable and Responsible Investment out of the US\$ 40.3 Trillion in total assets which are being managed by investment professionals, US\$ 8.72 Trillion of these (22%) are managed on the basis of SRI. This speaks to the fact that the SRI industry is huge and what is even more convincing is the growth that it has experienced within the period 2005 and 2016. SR investors, like any other investors are competitively seeking returns on their investments and the growth of the concept of SRI points to the fact that such investors do not have to incur huge costs to align their investments with sustainable values more than what they would earn in return. Figure no. 4 shows the growth of sustainable investing since 2014.

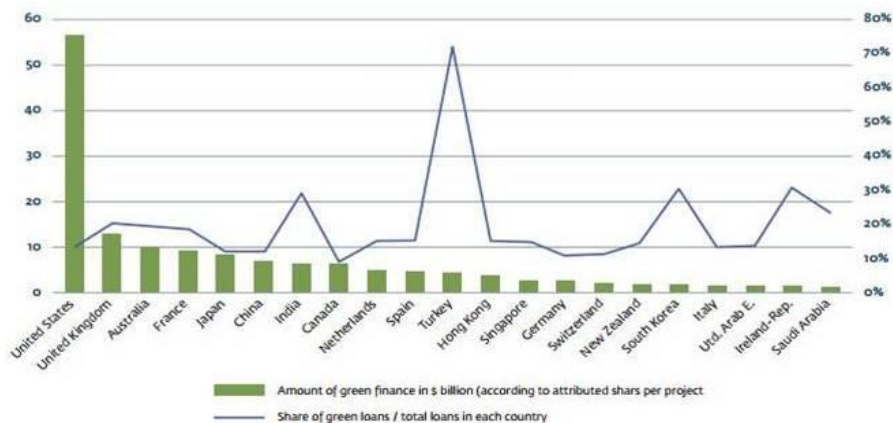


Source: USSIF (2016)

Figure no. 4 – Sustainable investing growth since 2014

As investors consistently seek ways to invest responsibly, SRI indices have been created since the 1990's beginning with the Domini 400 Social Index, which is now the MSCI KLD 400 Social Index. Such indices remain critical in the setting performance benchmarks, setting standards for responsible corporate behaviour, establishing investment universes for asset managers as well as facilitate the comparison of SRI and non-SRI managed assets. Renowned global stock exchanges such as the NASDAQ OMX, Deutsche Boerse, Johannesburg Stock Exchange and the NYSE Euronext have incorporated them. More to that, major financial services companies such as Thomson Reuters, FTSE, S&P Dow Jones, STOXX and MSCI offer such customised indices to investors. To this end, it can be pointed out that the practice and dissemination of responsible investments has stimulated the birth of many innovative investment vehicles. According to Sustainalytics (Morrow *et al.*, 2017), companies are thriving to regain reputation by tackling issues like: bribery, water releases, business ethics, clean energy, etc. that are more prone to impact on the value of their market portfolio.

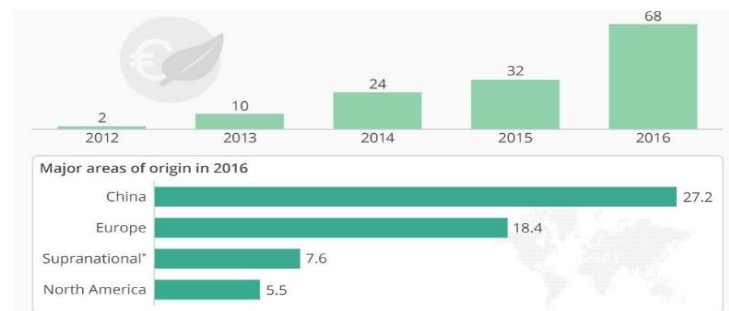
Positive examples may be easily found in banking that is intensely looking at the investment preferences of *millennials*, adjusting their products accordingly and the emergence of value based banking, etc. (Institute for Social Banking, 2015). Associated, the concept of green finance (Figures no. 5 and no. 6) has become an integrated part of lending institutions policies. According to The World Economic Forum, in recently, the market for green bonds has increased by 78% to \$156 billion, the fastest growing being the thematic bonds associated with education, health, housing, food projects (World Economic Forum, 2018).



Source: IFC (2017)

Figure no. 5 – Green loans in \$ billions vs. the percentage share of green loans per country

Recent studies conducted by the EUROSIF on SRI show that there are 7 distinct ways through which investors may screen their investments (Eurosif SRI, 2014, p. 8) These are the most common approaches which typically demonstrate the rising interest in tackling responsible investments more seriously. Many accredited organizations, more or less, agree on the same strategies used by investors though they are sometimes presented differently. Based on these screening strategies, the SRI industry is offering many customized deliverables to responsible investors.



Source: *World Economic Forum (2018)*

Figure no. 6 – Major issuers of green bonds

The best in class responsible investment approach which involves the intentional selection of the top performing companies within a specific sector based on their integration of ESG issues. This method is also known as *the Best in Universe or Best in Effort*, both referring to the same concept. As an example, an investor willing to put money into the Healthcare or Pharmaceutical sector may give specific instructions to the investment manager to consider only the top 25% (outperformers) within the sector based on ESG standing (Stenstrom, 2007, p. 4).

The norm-based screening involves screening the potential or actual companies held in an investor's portfolio against certain ESG standards. This helps investors to make decisions regarding the adherence of their companies of interest to global norms on environmental protection, human rights, labour standards, and anticorruption. The standards could be internationally recognized such as ISO certifications, Organization for Economic Cooperation and Development (OECD) Guidelines for Multinational Corporations, the United Nations Global Compact (UNGC), World Health Organization (WHO), the ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy and various others.

The sustainability themed investment screening is very broad and addresses a variety of issues such as water preservation, forests management, energy efficiency, climate change, etc. While the motivations behind investors' decisions to take up this approach vary widely, the principal idea is to help transform certain industries into producing or consuming in a sustainable manner. For instance, there has been an increase in atmospheric concentrations by at least 40% as compared to the 18th century which is a great cause of alarm and provokes various stakeholders to action. On the other hand, the demand for water has been estimated to exceed its supply by 40% within the next two decades, provided that the global water consumption continues to grow at the current rate. Agriculture is the world's biggest consumer of water, accounting for roughly 70% of water use and meeting the estimated demand for food (which will increase to 70% by 2050) will put even more pressure on water resources.

The exclusions or negative screening strategy which involves the intentional removal or exclusion of certain companies or even sectors from a designed portfolio or investable universe. There are several motivations that directly or indirectly force an investor to consider this approach and which stem from risk management, ethical and moral reasons, and mission-based requirements, etc. As an example, faith based organizations will not want to invest in companies sponsoring wars, abusing human rights or taking part in adult entertainment and so on, as a result, will exclude such sectors from its portfolio.

Impact investing has its origins in the United States and has since been associated with social investments. A simple definition provided by [Brest and Born \(2013\)](#) states that impact investing refers to such investments which are made in order to come up with measurable socio-economic benefits alongside financial gains. It is also important to note that several organizations such as the OECD, Global Impact Investment Network, World Economic Forum etc., have come up with various supporting definitions to the idea of impact investment which are all in line with previous views. However, in order to understand it better, it can discuss under two broad categories as follows:

a. Social integration which encompasses a broad scope of programmes such as access to healthcare services, affordable housing, access to loans and so on. These programmes are usually initiated in developed countries in order to tackle the negative externalities which come along with the market economy progressing.

b. Sustainability related projects such as in primary industries as production but also helps to ensure access to seeds, renewable energy, and water and so on. However, at the moment this particular category focuses mostly on delivering such services to developing economies.

The engagement and voting strategy is basically built around the notion of Shareholder Stewardship. The fundamental idea lies in the argument that since shareholders are stewards to the assets they invest in, they are also accountable to their beneficiaries through the way they choose to manage their assets. Investors can indeed take active roles within businesses through engaging ESG decisions as well as voting for or against the executive pay packages as an example. It is investors or shareholders who can also stand up against controversial practices and suggest ways of improvement as well as demand for more transparency and commitment within certain areas that may cause concern. It is through doing this that they ensure that the company is actually honouring its social responsibility promises.

3. METHODOLOGY

In order to develop the theoretical foundations which have already been laid down for this paper, a case study is developed in order to come up with empirical evidence, results and conclusions. Since the central focus of this study is to evaluate the performance of SRI funds, a number of responsible funds have been selected.

The responsible investment funds data was collected from [USSIF \(2016\)](#), The Forum for Sustainable and Responsible Investment. The data is publicly provided for institutional member firms as well as individual investors who wish to assess the historical or current financial performance, costs, voting records as well as the screens of all the listed funds.

The case study starts off with the returns data of 224 SRI Funds which were inceptioned as early as 1987 for example, the Calvert Equity Portfolio. The returns frequency has been chosen on a monthly basis due to the availability of the information and spread over a period of 4 years (2013 – 2016). The types of funds included within the broad list comprise Bonds (Fixed Income), Balanced, Equity Large Cap, Equity Medium-Small Cap, Equity Speciality, Int'l Global as well as All Cap. Several benchmarks have been provided for each mutual fund and the most common ones are the Russell, MSCI World, S&P 500, Barclays Capital, Merrill Lynch High Yield Master I among other several indexes relevant to the industry.

As this is an enormous amount of data to work with, what follows is choosing the best performing SRI funds from the list of 224 in order to construct an analysis based on them. The criterion chosen is to estimate their return to risk ratio and thus, the best performer. First

of all, the moving average of the returns is calculated on a window of 12, to reflect a year. To calculate the risk, the variance method is used. Since there are at least 30 observations, the population variance (VARP) formula is applied in order to get the risk figure. For a more accurate evaluation of the funds, the returns for these 30 funds were recalculated based on their Open, Close, High and Low monthly prices. In order to facilitate this, more monthly data is gathered from Yahoo Finance for each fund (see [Annex](#)).

Two main theories were taken into account, first the Modern Portfolio Theory developed by Markowitz and "The Market Model", developed by Sharpe. Markowitz laid down the foundations of Portfolio selection and management in the early 1950. In his view, investors can optimize the returns they can gain from financial assets by assuming a certain level of risk. On one spectrum, he gives a picture of an investor as someone who is rational and risk averse. The investor aims to achieve the smallest variance to the return, that is, the highest possible return for the smallest possible risk. On the other hand, he touches the fact that higher risk can be critical in order to obtain higher returns. Markowitz also highlights that the return on an individual asset is not as important as the general behaviour of the entire portfolio of assets, hence the need to build a portfolio wisely.

Under this theory, the starting point is the fact that the return (R_t) of an individual financial asset at a given point in time (t) being defined as:

$$R_t = \ln\left(\frac{P_t}{P_{t-1}}\right) \quad (1)$$

Where: P_t = The current price/value of the financial asset/portfolio

P_{t-1} = The previous price/value of the financial asset/portfolio

Following the mathematical quantification of risk proposed and argued by Markowitz ([Markowitz, 1952](#)), Sharpe believes that the evolution of the individual return of each financial instrument is primarily dependent on general market developments as measured by a stock market index as well as the issuer's activity with the financial instrument. Sharpe proposes through the "Market Model" a new way of quantifying the risk associated with a financial instrument, classified into systematic risk (the part determined by the influence of the stock market, sometimes called non-diversified risk or market risk) and specific risk (determined by characteristics of the financial instrument, also called diversifying risk).

The central argument in Sharpe's model is based on the assumption that the returns of different assets are linked to certain macroeconomic factors, namely the general return on the capital market reflected by the evolution of the general stock market index. According to the "Market Model" the return of each asset is determined alongside random factors and an exogenous element.

The macroeconomic factor analysed by Sharpe is the overall return on the market is:

$$R_i = \alpha_i + \beta_i * R_M + \varepsilon_i$$

[Sharpe \(1963\)](#) draws attention to the *diagonal model* which significantly reduces the amount of information required and the large number of operations used to estimate risk in the Markowitz model. This portfolio selection model has the advantage of being one of the simplest models that can be built on the assumption of inter-correlation between the returns of financial instruments.

The inter-correlation measurement becomes more complex by ignoring the classical formula of covariance (which cannot explain economic dependencies) but by considering the link of dependence between the individual return of each financial instrument and a certain macroeconomic factor usually expressed by a representative stock index Idea taken from “the market model” of the same author). Thus, return and risk are expressed and quantified, as described in the market model. There are some prerequisites for running the model. Error ε represents a null average and a finite variance. The individual return on shares depends only on the overall return of the market index. Errors of two different financial assets are independent, their covariance being null. The covariance of each error with the return of the market index is also nil.

Estimations of the return and risk of the asset i (μ_i) are made in relation to the return of the market index (μ_M). Based on the above, a *diagonal model* is constructed to optimize the portfolio selection. The return and the risk are:

$$\begin{aligned}\mu_p &= \sum p_i \mu_i \\ \sigma_p^2 &= \beta_p^2 \sigma_M^2 + \sum p_i^2 \cdot \sigma_{\varepsilon_i}^2\end{aligned}$$

Where: $\beta_p^2 \sigma_M^2$ is the systematic risk of the portfolio (Market Risk) and, $\sum p_i^2 \cdot \sigma_{\varepsilon_i}^2 = \sigma_p^2 (1 - \rho_{PM}^2)$ representing the specific risk (Unsystematic risk).

The diagonal model, Markowitz's simplified model, expresses the goal of minimizing portfolio risk (σ_p^2) for a given expected return (μ_p^*).

Min ($\beta_p^2 \cdot \sigma_M^2 + \sum p_i^2 \cdot \sigma_{\varepsilon_i}^2$) knowing that:

$$\begin{aligned}\sum p_i \beta_i &= \beta_p \\ \sum p_i \mu_i &= \mu_p^* \\ \sum p_i &= 1\end{aligned}$$

As in Markowitz's model, the solution (p_i) can be obtained by minimizing the Lagrange function built on the diagonal model.

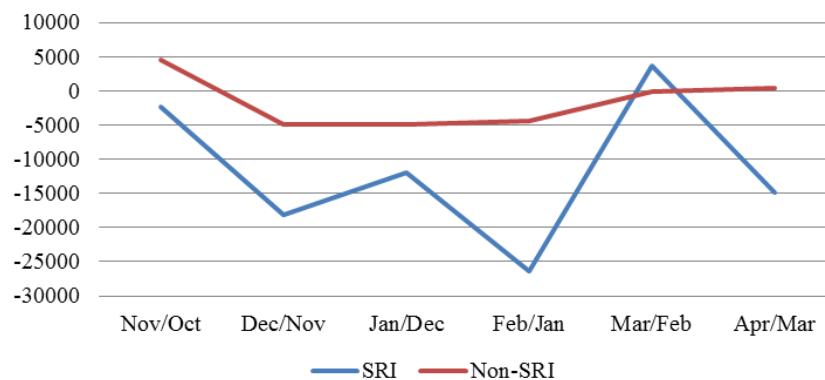
Two portfolios resulting from the application of the *diagonal model* and of the Markowitz model have been built for the scope of the study. The original negative weights were considered to give a Sell Short (SS) signal, while the original positive weights will be considered to give a Buy Long (BL) signal. A theoretical total investment of 10,000 monetary units is considered and the analysis has a purely theoretical relevance. On the other hand, what is overlooked is the hypothesis of the Markowitz model which only admits Long transactions, in order to have an analysis fit for the present market conditions and in order to be able to build a comparison between the results of the two models.

The simplification of the diagonal model produces a certain deviation of its results from the ones of the Markowitz's model. The more diversified the portfolio and the volatility of the structure of the market portfolio, the more the results obtained by applying the diagonal model are closer to the results of Markowitz. The problem is that by bringing

together the two portfolios, the results obtained from the two investment schemes are close. As in the case of the first portfolio, the second one fails to provide investor with any gains, as it generates negative returns.

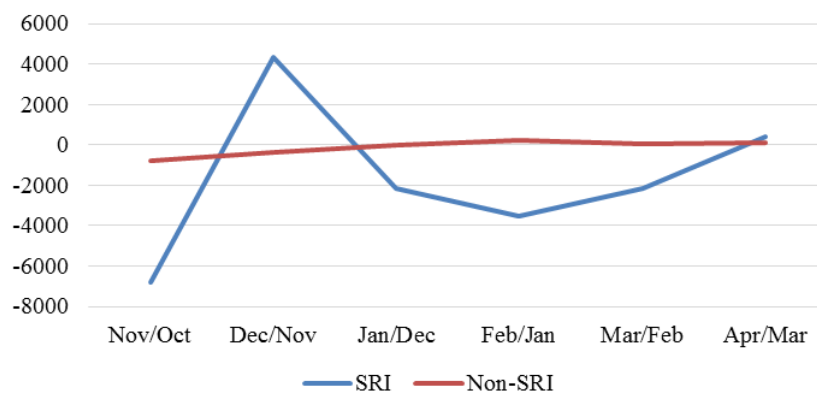
4. MAIN RESULTS

After testing the Sharpe and the Markowitz models making use of both SRI funds and non-SRI funds we arrive at several interesting results. As both of the models take slightly different approaches, one is able to assume different perspectives on the performance of SRI and non-SRI Funds. The main distinguishing factor is the separation of SRI and non-SRI funds, which helps determine whether or not the concept of social responsibility has an impact on the performance of the selected financial assets. The evaluation was also performed making use of both the Markowitz and the Sharpe models in order not to come up with robust results. [Figure no. 7](#) shows a graphic representation of the SRI and Non-SRI funds returns estimated based on the Markowitz theory and [Figure no. 8](#) shows the returns of SRI and non SRI funds based on Sharpe theory.



Source: own calculations

Figure no. 7 – SRI and Non-SRI Funds under Markowitz theory



Source: own calculations

Figure no. 8 – SRI and Non-SRI Funds under the Sharpe theory

Both the Markowitz and the Sharpe methods are applied in the estimations. First of all, what can be observed is that the non-SRI funds actually perform better than the SRI funds, based on the returns calculated for 6 time periods. According to this analysis, an investor would lose more money by trading a certain portfolio of SRI financial assets as compared to non-SRI financial assets. An investor who has his main focus on earning higher returns will solely build his profile based on the financial potential of financial assets and therefore stands to get better returns.

In this instance, the cost-concerned school theory appears to be valid as it is assumed that socially responsible investors face higher costs of compliance and consequently lower returns. However, Milton Friedman's views (Friedman, 1970) are a bit extreme and unrealistic as he simply writes off SRI as non-beneficial and being ones which do not follow any market logic. The Sharpe theory helps to shade light on how the SRI funds can actually follow the market logic, in our case the evolution of the S&P 500. What is also clear is that the SRI funds have the potential to even exceed the returns of the non-SRI funds in some instances.

Looking at the bigger picture and long-term perspective, one can generally agree to a more stable rise in the returns of SRI funds while the non-SRI funds remain volatile or unstable. From this it can be assumed that the perspective that SRIs are starting to build up in their ability to provide greater returns for investors which is proof that the concept is not necessarily a mere myth but rather tangible opportunities for agents who wish to invest in clean portfolios.

Another possible explanation could be found in the general behaviour of the modern investor. As the investor is learning more about responsible investment, there is a behavioural change going on which is resulting in investors choosing to clean their portfolios.

5. CONCLUSIONS

Based on the limited data, some interesting observations and conclusions can be drawn from the sample. Undoubtedly, considering the results found in literature and the findings of the paper, portfolio screening is important providing relevant information on the financial performance SRI and non SRI funds. For the present stage of SRI awareness and implementation, the non-SRI funds show better performance in their ability to yield higher returns for the investors. Beyond any reasonable doubt, an investor who falls under the *cost concerned school* has his main focus on reducing costs and yielding higher returns. This drives the investment decision-making and does not necessarily consider the negative externalities which succumb to the particular investment. As the investor selects the best performing financial assets, he stands a chance to obtain returns better than someone who tries to clean the portfolio.

While it is true that the SRI funds may not yield as much return as the non-SRI funds, future trends point towards more responsible finance and therefore investors who embrace the various positions of this concept stand good chances to increase their returns in the future. As the study shows (Figure no. 8) SRI funds have the potential to perform better than non-SRI funds, but the results are, still, more volatile and have a short term of occurrence. From a behavioural perspective, such a stance is reasonable and can be explained by the fact that problems are prone to become obvious in most cases when *choices and consequences are treated separately* (Thaler and Sunstein, 2008).

For investment goods, which also include the financial assets under study, the costs are borne instantaneously while the benefits lay way in the future. More practically, while SRI

investors may incur compliance and adoption costs imminently, they stand chances to benefit from greater returns in the future. On the other hand of the spectrum lays “sinful goods” whose pleasure is enjoyed immediately but then inflict consequences later on. In our case, while non-SRI funds may outperform SRI funds in immediate returns, they are at risk of providing lower returns in the future as the responsible investment concept gains momentum.

As responsible investment becomes mainstream, the future infrastructure and framework will favour mostly investments and corporations that make consideration for social responsibility. Researches, analysis and audits conducted by independent agencies start to disclose investments that fail to pursue SRI requirements. Investors who choose to ignore such issues may find themselves in compromising situations in the future, due to various stakeholders demanding social accountability of various investors. Therefore, the increase in awareness could actually be a factor of great influence in building up the way SRI funds evolve overtime.

It therefore becomes the individual investor’s decisions whether he is ready to sacrifice current benefits in expectation of future returns, which is the central pillar in the classical investment definition. Behavioural change is not easy, especially when the positive benefits are not imminent. [Thaler and Sunstein \(2008\)](#) therefore suggests that there is need for nudges in order to help people (investors) make difficult decisions on opportunities which may present themselves as costs in the present day but actually withhold enormous returns in the future. An example which comes into discussion is Tesla motors who are investing a lot into electric cars which use clean energy and therefore reduce the carbon footprint. While the company is presently making losses, it stands to provide further evidence that innovation is progressing, seeking more and more sustainable means of life.

There is, also, evidence of a handful of government initiatives, pressure groups, non-governmental organizations and so on, standing up in support of responsible finance. Since these issues can no longer be ignored, policy makers have already begun inscribing such principles in their formal agendas. Countless laws and norms today exist in regulating financial markets, minimizing carbon emissions, combating climate change, etc. It is obvious that for the present instance neoclassical and emerging approaches seem to be in conflict, the traditional investment theory and practice being challenged.

The conclusions do not go without pinpointing that the models built are not immune to certain loopholes which they are exposed to. First of all, there is naturally an element of bias involved when comparing two classes of investment funds whose prices or performance is determined or estimated making use of different sets of parameters. Furthermore, the regressions that are calculated using the Sharpe method are not always independent. Another evident weakness is that our theoretical models may not be that practical. They do not take into account the fact that trading financial assets is done in packages and thus an investor cannot trade any amount of assets or split them randomly. Of course an in-depth research should be conducted including separate groups of funds, with different characteristics.

The topic under discussion is a broad one and is still in development. Many authors have spent countless hours studying the subject and making their own contributions. However, as the years go by, social responsibility has both evolved and become critical in such a way that it provides a very broad avenue and space for further investigations and study. More statistical or econometric models could be applied on larger amounts of data and over longer time-frames, as the availability of data allows, in order to gain more credible results.

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ANNEX

SRI Funds

Ticker	Name
ACASX	Access Capital Community Investment Fund Class A
ACCSX	Access Capital Community Investment Fund Institutional Class
WISEX	Azzad Wise Capital Fund
CSIFX	Calvert Balanced Fund Class A
CBAIX	Calvert Balanced Fund Class I
CBDIX	Calvert Bond Fund Class I
CSIYX	Calvert Bond Fund
CCLAX	Calvert Conservative Allocation Fund Class A

Ticker	Name
CALCX	Calvert Conservative Allocation Fund Class C
CYBAX	Calvert High Yield Bond Fund Class A
CYBIX	Calvert High Yield Bond Fund Class I
CYBYX	Calvert High Yield Bond Fund
CINCX	Calvert Income Fund Class I
CIFYX	Calvert Income Fund
CSDAX	Calvert Short Duration Income Fund Class A
CDICX	Calvert Short Duration Income Fund Class C
CDSIX	Calvert Short Duration Income Fund Class I
CSDYX	Calvert Short-Duration Income Fund
CISIX	Calvert US Large Cap Core Responsible Index Fund Class I
CULAX	Calvert Ultra-Short Duration Income Fund Class A
CULYX	Calvert Ultra-Short Duration Income Y
CRANX	CRA Qualified Investment Institutional Shares
DSBIX	Domini Impact Bond Fund Institutional Shares
PRFIX	Parnassus Fixed Income Fund
MCONX	Praxis Genesis Conservative Portfolio Class A
MIIX	Praxis Impact Bond Fund Class I
MIAX	Praxis Impact Bond Fund Class A
TSBIX	TIAA-CREF Social Choice Bond Fund Institutional Class
TSBPX	TIAA-CREF Social Choice Bond Fund Premier Class
TSBRX	TIAA-CREF Social Choice Bond Fund Retail Class
TSBBX	TIAA-CREF Social Choice Bond Fund Retirement Class

Non SRI Funds

Ticker	Name
FEIGX	First Eagle Gold Fund Class I
SGGDY	First Eagle Gold Fund Class A
FEIGX	First Eagle Gold Fund Class C
FGADY	Franklin Gold and Precious Metals Fund Advisor Class
FKRCX	Franklin Gold and Precious Metals Fund Class A
KMKNX	Kinetics Market Opportunities Fund No Load Class
KMKYX	Kinetics Market Opportunities Fund Class Institutional
BFOCX	Berkshire Focus Fund
INPIX	ProFunds Internet UltraSector Fund Investor Class
POLRX	Polen Growth Fund Investor Class
INPSX	ProFunds Internet UltraSector Fund Service Class
POLIX	Polen Growth Institutional
FSPTX	Fidelity® Select Technology Portfolio
FTHCX	Fidelity Advisor® Technology Fund Class C
FATEX	Fidelity Advisor® Technology Fund Class M
FADTX	Fidelity Advisor® Technology Fund Class A
RISAX	Manning & Napier Rainier International Discovery Series Class K
RAIIX	Manning & Napier Rainier International Discovery Series Class I
DSMLX	Touchstone Large Company Growth Fund Class Institutional
CSYIX	Columbia Seligman Global Technology Fund
TBEGX	Touchstone Mid Cap Growth Fund
CSFIX	Columbia Seligman Communications and Information Fund Inc

Ticker	Name
WESNX	William Blair Emerging Markets Small Cap Growth Fund Class N
BESIX	William Blair Emerging Markets Small Cap Growth Fund Class I
WESJX	William Blair Emerging Markets Small Cap Growth Fund Institutional Class
JACCX	Janus Henderson Forty Fund Class C
RRGSX	T. Rowe Price Growth Stock Fund R Class
DSMGX	Touchstone International Growth Opportunities Fund Institutional Class
JARTX	Janus Henderson Forty Fund Class S
TRLGX	T. Rowe Price Institutional Large Cap Growth Fund
BIPSX	ProFunds Biotechnology UltraSector Fund Service Class

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