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Gerard, B. (2019). ESG and Socially Responsible Investment: A Critical Review. *Beta*, 33(01), 61-83.
doi:10.18261/issn.1504-3134-2019-01-05

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ESG and Socially Responsible Investment: A Critical Review

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March 31, 2019

Forthcoming: Beta, Scandinavian Journal of Business Research.

ABSTRACT

We review the literature on ESG and Socially Responsible Investment with a special focus on fixed-income investments. Most of the academic research is focused on the link between corporate CSR and ESG activities, investors' SR engagement and stock returns and firm value. Very few studies examine the link between firm ESG policies and bond prices, risks and returns, and the performance of SR FI funds. The studies linking CSR to firm value suggest that higher CSR leads to higher corporate value, higher equity returns and lower risk, enhancing the general collateral value of the firm. The FI income studies provide mixed evidence about the link between issuer ESG scores and bond prices and return characteristics: the bonds of issuers with both excellent and very poor ESG behavior tend to underperform the bonds of issuer with neither very strong nor very poor ESG scores. Lastly while issuers' ESG excellence may have led to both their equity and debt outperforming those of poorer ESG issuers in the 90's, this out-performance halved in the first part of the 2000's and completely disappeared after the financial crisis. Markets seem now to fully price ESG performance in equity and bond prices.

JEL classification: G11, G28, G34, M14

Keywords: Fixed Income, Bonds, Green Bonds, SRI, CSR, ESG.

¹This study was partially funded by NORSIF. The work has benefited from detailed comments and suggestions from an anonymous referee as well as of Karl Høgtun, DNB Asset Management, Annie Bersagel and Joakim Kvamvold, both from Folketrygdfondet, and Marte Siri Storaker, KLP. Gerard is with BI Norwegian Business School, Oslo Norway; phone: +47 4641 0506; email: bruno.gerard@bi.no.

Since the mid 1980s, academic researchers have widely documented the importance of good corporate governance for the firm's short and long-term financial and economic performance. More recently, increased awareness of the public costs of ecologically harmful private behavior has led to increased regulations and penalties for poor environmental stewardship. Similarly, concerns about social responsibility have taken greater pro-emergence for corporate investors, stakeholders and regulators. This has led to the formulation and broad adoption of the UN PRI 6 Principles for Responsible Investment² as guidelines for asset owners and the investment management industry on how to balance social responsibility and fiduciary duty. Further guidelines, more specifically targeting fixed income investors, were formulated in 2014.

The literature refers to two related but slightly different concepts: Corporate Social Responsibility (CSR) or Environmental, Social and Governance (ESG) performance. CSR encompasses the first two elements of ESG, the environmental and the social conduct of the firm. ESG combines the environmental and social impact of the firm, with its Corporate Governance performance. Hence ESG is CSR plus Governance. In the remainder of the discussion, I will persistently distinguish between the ES and the G of ESG. Mutual and investment funds that include some or all ESG concerns in their investment selection are generically called Socially Responsible (SR) funds. The label covers a variety of approaches that runs from simply excluding sin stocks and bonds to incorporating a detailed weighting of E, S, and G scores in the investment process.

To assess the link between investment performance and CSR and G scores, it may be useful to consider five related questions:

1. How does a firm's CSR and/or G performance affect its (equity) value, its financial performance, and its equity risk return trade-off? Answering this first question may help us assess whether screening for CSR and G characteristics may help equity portfolio performance. A related issue is whether investment funds that actually screen on the basis of CSR and G perform better than their non-screening competitors.
2. How does an investor's actions to enhance the firm she holds' CSR or G characteristics affect the returns on her shareholdings? Answers to this question may help evaluate whether active ownership may enhance an investment manager's portfolio returns.

²Principles 1 to 3 deal explicitly with ESG concerns and specify that signatories will incorporate ESG in their investment decision process and in their ownership policies, and will seek ESG disclosures from the entities they invest in. (see: <https://www.unpri.org/pri/what-are-the-principles-for-responsible-investment>)

3. How does a firm's CSR and/or G performance affect its debt value, its credit risk, and its bond risk–return trade-off? Evidence on this third issue may help us assess whether screening for CSR and G characteristics may help bond portfolio performance. In this case as well, a related issue is whether FI funds screening for CSR and G characteristics provide a more attractive performance for their investors.
4. How does a creditor's actions to enhance the CSR or G characteristics of the firm she lends to affect the returns on her bondholdings? Answering this last question may help assess whether active bondholder engagement may enhance the bondholder's returns.
5. Do specialized standards to qualify securities as ESG compliant such as the "green bond" label, enhance the value of these securities, and reduce the ESG risk to their holders?

The rest of the review proceeds as follows. Section I provides a background discussion on the link between CSR and G characteristics and firm value or equity performance, as well as of the benefits of active engagement. Section II discusses the link between a firm's ESG performance and its credit risk and bond value. Section III describes the evidence about SRI bond funds. Section IV discusses the impact of ESG on down-side risk. We review the literature on Green Bonds in Section V. Section VI concludes.

I. CSR, G and firm value

This section briefly discusses the economic mechanisms linking corporate governance and CSR to firm value and equity returns. While not directly focusing on debt value, the links between ESG policies and firm value are important, since, if a firm's ESG conduct affects its value, it also affects the general collateral value of the firm's activities backing the firm's payments to its bondholders. We discuss the CSR and corporate governance separately, and their joint effect. Lastly, we briefly review the evidence on SRI equity mutual funds.

A. Corporate Governance and equity value

The economic arguments in favor of improved corporate governance are simple: good corporate governance reduces agency problems, improves the alignment of manager and shareholders objectives, and thus enhances the long-term prospects and the value of the firm. The empirical evidence strongly supports this view and is too numerous to review here. Three recent works illustrate the evidence. Gompers, Ishii and Metrick (2003) and Bebchuk, Cohen and Ferrell (2009) provide evidence that better governance, as measured by lower values of the managerial entrenchment variable

recorded in the governance provisions of the Investor Responsibility Research Center (IRRC), is related both to higher firm values and to higher returns. Gompers et al. (2003) document that the 10% of the firms with the strongest corporate governance outperformed the 10% of firms with the weakest governance by 8.5% a year over their 1990-1999 sample period, while Bebchuk et al. (2009) show that investing in low-entrenchment firms lead to positive risk adjusted returns. Moreover, both studies provide evidence that firms with stronger shareholder rights have, on average, higher profits, higher sales growth, and lower capital expenditures, which translate in higher market value. Bebchuk, Cohen and Wang (2013) show that, consistent with learning and greater attention to good governance, the positive abnormal returns to investing in firms with better governance disappeared in the first decade of the new millennium, while the link between good governance and both firm value and firm operating performance persisted: while markets value firms with better governance more highly, investing in firms with better governance no longer generates positive abnormal returns.

B. Corporate Social Responsibility and firm value

The economic arguments in favor of CSR are similar but less straightforward: high CSR scores suggest managerial concern with long-term sustainability and hence should signal higher long-term shareholder value and returns. This is “the doing well by doing good” argument. However, achieving high CSR scores might require large expenditures, significantly affecting short-term and perhaps long-term firm profitability. Although this might enhance the reputation of the firm and its managers, the costs of improved CSR immediately affect the bottom line, while the benefits might be quite uncertain and far in the future. Improved CSR is attractive only as long as the costs are lower than the expected benefits in terms of future profitability and returns. Friedman (1970) famously claims that the “social responsibility of business is to increase its profits.”

The economic arguments supporting a positive link between CSR are of two types and can be summarized as the “good company” and the “good management” hypotheses. According to the first, building good relationships with primary stakeholders by addressing their legitimate interests through CSR generates reputational capital for the firm, which enhances corporate valuation through improved profitability and/or lower losses under adverse events (see for example Hillman and Klein, 2001). Lins, Servaes and Tamayo (2017) suggest that CSR enhances the social capital of the firm, and, since all economic activity relies on some element of trust (Arrow, 1972, Knack and Keefer, 1997), enhances its ability to engage in business transactions. In this view, social capital enhances the trustworthiness of the firm, which becomes especially valuable in periods of economic

uncertainty and crisis, when trust is lower.

The “good management” hypothesis suggests that implementing appropriate and effective CSR policies signals high managerial quality because the task is complex and requires balancing the claims of multiple stakeholders groups and assessing the explicit and implicit costs and benefits of the firm CSR policies (see, for example, Waddock and Graves, 1997). Higher managerial skills may lead to more effective use of corporate assets, higher profitability and higher value. A greater ability to balance the interests of different stakeholders may also signal lower agency problem between management and shareholders, enhancing value.

The evidence about the link between firm value and CSR activities is mixed. In a meta-analysis of 214 research papers, Margolis, Elfenbein and Walsh (2011) find a positive but small effect of CSR on corporate financial performance. Further, they find that this positive relation weakens in the later periods, while the negative impact of revealed social or environmental misdeeds increases. But most of studies covered in the analysis fail to deal properly with the issue that a firm decision to engage in CSR activities correlates with unobservable firm characteristics that may also affect the firm’s profitability (in statistical terms, an “endogeneity problem”) and hence their evidence amounts only to a positive correlation between CSR and corporate financial performance, with no indication of a causal link.

In one of the first papers to provide more rigorous evidence on a possible causal link between CSR and firm value, Dowell, Hart and Yeung (2000) examine whether firms’ voluntary adopting rigorous environmental standards enhance their value. In a sample of US-based multinational enterprises operating in resource extraction and manufacturing in both developed and developing markets, they find that firms adopting a single stringent global environmental standard have higher market values than firms adopting either the US statutory standards worldwide, or the poorly enforced host country standards.

Subsequent work examined whether the CSR status of acquiring and target firms enhanced the returns of merger and acquisitions. The evidence suggests that high-CSR acquirers make better deals for all involved, and high-CSR targets are better deals for the acquirer. Deng, Kang and Low (2013) study a sample of 1,556 completed US mergers for which the Kinder, Lydenberg, Domini Research & Analytics (KLD) ESG ratings are available for the acquirer. They find that acquirers with high CSR ratings have significantly positive announcement returns and post-merger returns, as well as improved operating performance. Further, they document that acquisitions initiated by high-CSR firms, are more likely to succeed and are completed in less time than acquisitions by

low-CSR firms. They also document a positive impact on other stakeholders' wealth. In particular, they document that bondholders of low-CSR acquirers experience a 15% negative abnormal announcement returns, while abnormal announcement-day returns for bondholders of high-CSR acquirers are slightly positive. Aktas, de Bodt and Cousin (2011) examine the impact of the *target* CSR ratings on the acquirer's gain from the transaction and find that acquirers' gains are positively related to the target CSR score. Moreover, they document that the acquirer CSR scores improve after the acquisition of a SR-aware target.

Kruger (2015) identifies 2,116 precisely dated positive (574) and negative (1,542) ESG events between 2001 and 2007 for 745 US companies from the KLD database, and examines the stock performance around the day these events become public. He finds that negative events have a strong negative impact on stock value, more so for environment- and community-related events. Over the 21 days following the public disclosure of the event, the median loss in shareholder value is \$76 millions. Further, Kruger documents that, on average, investors respond weakly negatively to positive events. However, he finds that positive events that follow earlier negative events, and positive events for firms with lower agency problems, are valued more positively. Lastly, events with stronger legal or economic implications generate sharper stock price response.

Ferrell, Liang, and Renneboog (2016) use the MSCI IVA ratings³ for more than 7,000 companies world-wide over the 1999–2011 period to investigate the link between CSR, agency problems, and firm value. They find that companies with lower agency problems engage in more CSR. Moreover, they document a stronger positive link between CSR and firm value for low agency problem firms. Their evidence supports the “good manager” hypothesis.

A weakness of many of the studies reviewed is that there are a large number of alternative measures of CSR, with great variations in specificity and informativeness. Several organization, both for-profit and non-profit, construct and disseminate disaggregated and aggregate CSR measures for companies and countries. However, there are no standards on how to compute them, nor consensus on which measures should be considered, which are material, or on how they should be combined. Hence all studies that evaluate the links between CSR scores and firm or investment performance suffer from a classical joint hypothesis problem, namely they always test jointly (a) that a CSR measure is related or not related to financial performance, and (b), that the chosen CSR score actually measures material CSR performance. An empirical finding of no relation between a spe-

³MSCI IVA ratings combines a company's different ESG scores using an industry specific weighting into an aggregate company rating on a scale from 1 to 7.

cific CSR measure and financial performance might reflect the fact that either CSR does not affect performance, or that the CSR measure chosen does not properly reflect material CSR performance. Combining the results of studies that use many alternative CSR measures with different levels of materiality may lead to biased conclusions about the impact of CSR. This issue is examined in a set of recent papers by Serafeim and various co-authors⁴ (Khan, Serafeim, Yoon, 2016; Serafeim and Grewal, 2017, Grewal, Hauptmann, Serafeim, 2017.) For the six (out of ten) broad industry classifications for which they are available, Khan, Serafeim and Yoon (2016) use the Sustainability Accounting Standards Board (SASB) assessment of which dimensions of CSR are material for firms in each industry to classify the different elements of KLD scores as material or immaterial. They then construct portfolios of stocks of firm with high rank and portfolios of stocks with low rank on either the material or the immaterial scores. They document a significant difference in post-ranking returns between portfolios with high and low “material” scores, but no difference in post-ranking returns when the portfolios were constructed based on the scores on the immaterial elements. These results suggest that different elements of the KLD scores matter differently for different industries, and that aggregate scores may dilute important differences between firms. The investigation covers the period 1992 to 2013. Unfortunately, the sample includes only about 200 firms each year for the first 10 years and jumps to more than 1,000 firms a year in the last 10 years of the sample. Hence, the average characteristics of the firms included in the investigation are likely to change significantly from the first half of the sample period to the later period, which may significantly weaken the inferences we can draw from the evidence.⁵

In a related paper, Grewal, Hauptmann and Serafeim (2017) use the same SASB industry-specific materiality criteria to classify US firms’ voluntary ESG disclosures reported on Bloomberg as material or immaterial for a sample of 1,291 firms from 2007 to 2015. They find that SASB-identified material disclosures improve stock price informativeness, while non-material disclosures, or disclosures in compliance with standards that do not focus on shareholders concerns (such as the GRI standards) do not. Further, material disclosures have a stronger impact on stock price

⁴See also Dorfleitner, Halbritter and Nguyen (2015).

⁵Moreover, Margolis et al. (2011) and Ferrell et al. (2016) report that while there is evidence of a positive link between CSR and performance, it weakens in the more recent periods. Hence, one would like to know whether the results reported by Khan et al. (2016) are robust when considering only the last 10 years of their sample, when the numbers of firms with available data is large. Moreover, abnormal returns to CSR would disappear as learning about the importance of CSR takes place among market participants, while the link between CSR, firm value, and operating performance would remain, as Bebchuk et al. (2013) document for corporate governance.

informativeness for firms with higher exposure to sustainability and for firms with more institutional and SR investors. In contrast, Serafeim and Grewal, 2017, find that disclosure scores constructed by a large asset owner⁶ without explicit consideration of materiality convey no information about future financial performance. Moreover, a higher disclosure score is related to greater negative media attention concurrent and subsequent to the disclosures. In contrast, measures of climate-change performance are significantly related to future financial performance, the more so for firms with higher climate-change risk exposures. These results are to be taken with caution since inclusion in the set of firms monitored for disclosure and performance was not completely systematic and the monitoring was performed intermittently.

C. CSR and G screening and fund performance

The impact of SRI and ESG objectives on mutual fund performance is, at best, mixed. Most studies find very little performance difference between SRI equity funds and their conventional counterpart (e.g., Renneboog, Ter Horst and Zhang, 2008a; Renneboog, Ter Horst and Zhang, 2008b). Moreover, constructing an asset-weighted composite CSR score for a sample of 2,168 US equity funds (irrespective of whether they claim to be SRI or not) over the period 2003 to 2011, El Ghouli and Karoui (2017) document that higher CSR scoring funds have poorer and more persistently poor performance than their low CSR-scoring counterparts.

Studies that investigate the performance of simulated CSR based strategies (in contrast to actual fund performance) suggest that it may be possible to construct portfolios based on ESG scores that outperform the market or portfolios of stocks with low scores. Derwall et al. (2005) construct global portfolios of high environmentally rated stocks and find that they outperform the market benchmark by 4% and a matching portfolio of low rated stocks by 6% over the 1995-2003 period. Statman and Glushkov (2009) find similar results for US companies over the 1992 to 2007 period using ratings provided by KLD. However, Halbritter and Dorfleitner (2015) using three rating providers and a sample period from 1990 to 2012, show that, for all three ratings, the return advantage of highly rated portfolio over a lowly rated portfolio, is large and positive in the 1990 to 2001 period, is about half as large in the 2002 to 2006 period, and disappears completely in the most recent subsample from 2007 to 2012. This suggests that the corporate value and profitability implications of high ESG performance may now be fully reflected in stock valuations.

INSERT TABLE 1 APPROXIMATELY HERE

⁶These scores were constructed by Norges Bank Investment Management (NBIM.)

D. The returns to active engagement

Investors and asset owners face a further issue: even if better ESG performance may improve firm value, does it pay for the asset owners to actively engage with management to effect changes in corporate ESG policies? Such engagement activities might be costly, and the benefits limited or uncertain. Moreover, engagement suffers from a classic free-rider problem, as the active owner bears all the costs of engagement, while the benefits are shared by all shareholders. Direct evidence on this issue is limited. Four papers address this issue head on. Kim and Lyon (2011) show that the companies in the Financial Times Global 500 that responded to institutional investor pressure to participate to the Carbon Disclosure Project experienced increased shareholder value when the likelihood of climate change regulation rose. Dimson, Karakas and Li (2015) examine an extensive sample of 2,152 SR engagements with US public companies between 1999 and 2009 by a single large asset manager with a history of SR engagement predating the start of the study period by 15 years. They find that G engagements are more successful than ES engagements, and that large, mature, poorly performing firms with inferior governance are more susceptible to successful engagement. Moreover, they find substantial positive abnormal returns to successful engagement, but most of these gains arise from corporate governance actions and engagements focusing on climate change. They also document that successful engagements lead to improvements in the target firm's operating performance and profitability, reductions in its stock volatility, improvements in its governance scores, and increased institutional ownership. Overall, the evidence they report suggests that successful engagement enhances stakeholder value and often shareholder value as well, and does not destroy value when it is not successful. These results critically depend on the initiator of the engagements (the provider of the database), as it clearly limited its engagement to companies that had clear and measurable ESG weaknesses, and were experiencing poor performance that made them more susceptible to investors' suggestions. While this investigation is carefully conducted, its main limitation is that it is a case study of one SRI investor with extensive experience in engagements prior to the start of the sample period.

Hoepner et al. (2018) examine whether investors' engagement on ESG topics is associated with subsequent reduction in downside risk of portfolio firms. The study focuses on the engagement activity of a single institutional investor who pursued 682 private direct engagement activities across 296 firms over the period 2005 to 2014. Half of these engagements focus on governance issues, 21% on social issues, 18% on environment and climate and 13% on corporate strategy and risk management. 28% of the engagements concluded successfully. They document that engagement

led to a statistically and economically significant 20% reduction of firm downside risk. Further, they find that strategy and governance engagements, as well as more successful engagements, led to larger risk reductions. As in the Dimson et al. (2015), this is a case study of a single investor's engagement activity and as such, its generality is limited.

More recently, Flammer (2015) examines the impact of CSR shareholder proposals on firm value. Her sample includes 2,729 CSR shareholder proposals made to S&P 1500 companies from 1997 to 2012. Most proposals fail, but average support rose from about 9% in the first half of the sample to about 17% in the latter half. To avoid the endogeneity problem, she only examines close-call proposals, that is, the proposals that were defeated with more than 45% of the votes in favor, and the proposals adopted with less than 55% of the votes. She finds that adoption of a close-call CSR proposal has a positive effect on stock value, on subsequent years' operating performance, and that the positive effect is larger for companies with lower CSR scores prior to the vote. Lastly, she finds that the close-call proposals are more likely to address either employee welfare, or the mitigation of environmental hazards.

II. ESG and bond value

In this section, I review the links between ESG and bond value and performance

A. Corporate Social Responsibility and credit risk

A few academic studies have examined the effects of CSR behavior, especially environmental performance, on corporate bond yields. Menz (2010) focuses on the European corporate bond market and finds that socially responsible firms incur a greater credit spread than non-socially responsible companies, although the result is only marginally significant. In contrast, Stellner, Klein and Zwerger (2015) show that good CSR systematically reduces credit risks. Similarly, Bauer and Hann (2014) show that for a large cross-section of US public companies, strong environmental performance is associated with a lower cost of debt. In contrast, Chava (2014), in a study of 5,879 US bank loan facilities, finds that good KLD environmental scores do not reduce a firm's borrowing costs, while all-in loan costs are significantly higher for firms with poor environmental scores. In a smaller study, Oikonomou, Brooks and Pavelin (2014) show that, for US corporate debt, good CSR performance is rewarded via a lower yield and poor CSR scores are positively correlated with credit risk. Ge and Liu (2015) investigate the impact of CSR disclosure on the new issue discounts of corporate bonds issued in the US primary market, and document that firms reporting favorable

CSR scores can issue new bonds at a premium to those that have lower CSR scores. Attig, El Ghouli and Guedhami (2013) document a positive correlation between a firm’s credit rating and its CSR score, and find that the components of CSR that relate to primary stakeholder management matter most. This suggests that CSR performance provides important information that rating agencies are likely to use in evaluating creditworthiness. Shi and Sun (2015) examine the effect of CSR on the number of bond covenants, and find that bonds issued by high-CSR score borrowers include substantially fewer covenants than bonds of low-CSR borrowers.

B. Corporate Governance and bond value

A single study focuses fully on the effect of corporate governance and bond yields and ratings. Using a sample of 1,005 US industrial bonds issues over the period 1991 to 1996, Bhojraj and Sengupta (2003) show that bonds issued by firms with better corporate governance as proxied by board independence, earn higher ratings and command lower yields after controlling for other potential determinants of ratings and yields. Similarly, they find that issuers with a highly dispersed institutional ownership also have high ratings and require lower yields. In contrast, concentrated ownership is associated with lower ratings and higher yields. Moreover, they find that the impact of governance mechanisms on ratings and yields are greater for lower rated bonds.

C. CSR and G joint effect on bond value

The joint effect of aggregate G and CSR on bond value, borrowing rates and issue yields is unclear, and the research on this topic is limited, and perhaps not of the highest quality. Hoepner et al. (2014) use the Oekom⁷ country and firm sustainability ratings to examine the link between bank loan rates and borrower characteristics for 470 loan facilities across 28 countries. They find that while the borrower’s country sustainability scores are primary drivers of loan rates, borrower-specific sustainability scores are not. The implications of the study are not straightforward. First, nearly half the loans involve US borrowers, and the authors do not control for this in their tests. Second, there is a very high correlation between a country risk rating, its rule of law and investor protection scores and the Oekom country sustainability rating (indeed, some of the indicators used by Oekom as input component of their country sustainability scores are also input components of the country risk rating) and no attempt is made in the paper to isolate the purely ESG component of the country sustainability scores, unrelated to the country’s risk and legal system scores.

⁷Oekom research AG (recently acquired by Institutional Shareholder Services (ISS)) is one of the leading global independent sustainability ratings agency. KLD, now MSCI-ESG and Sustainalytics are two others. Thomson-Reuters and Bloomberg also provide CSR scores, and RepRisk an ESG risk-score, available through Thompson-Reuters.

From a theoretical point of view, improvement in corporate governance reduces the agency problem between shareholders and managers. However, if managers acted more as shareholders would want, this may worsen agency problems between managers and bondholders, and affect bond values negatively. However, if appropriate CSR behavior signals “good managers” who balance the interests of all or most stakeholders appropriately, then improvement in governance may benefit shareholders to the detriment of bondholders for low-CSR companies, while for high-CSR companies, such improvements might benefit both shareholders and bondholders. Consistent with this argument, Deng et al. (2013) document in their sample of 1,556 completed US mergers that bondholders of low-CSR acquirers experience substantial announcement wealth losses, while bondholders of high-CSR acquirers remain whole.

INSERT TABLE 2 APPROXIMATELY HERE

III. ESG and bond returns

This section evaluates the published evidence on the link between bonds or bond portfolios returns and the ESG ratings of the bonds’ issuers. In one of the first published studies, Derwall and Koedijk (2009) examine the performance of socially responsible fixed income and balanced mutual funds. They document that, over the period from September 1987 to March 2003, the performance of US SR bond funds matches that of their non-SR competitors, while SR balanced funds outperformed their non-SR peers by about 1.3% per year. Since the SR funds’ fees were similar to their peers, the evidence suggests that these funds perform no worse and at best do slightly better than their non-SR aware peers. Although this study is one of the first to evaluate the impact of ESG criteria on fixed income funds returns, it suffers from a very small sample: only 16 FI and 9 balanced funds were identified as SR out of a sample of several thousands funds. Hence, the results should be taken with great caution.

In a more recent study, Henke (2016) examines the performance of 38 US and 65 Euro-zone SR bond funds over the period from January 2001 to December 2014. The study documents that SR bond funds outperform their non-SR by about 25 basis points a year in the US, and about 50 basis points in the Eurozone. Strikingly, this out-performance mostly accrues in recession periods (as determined by the NBER), as the SR funds underperform their peers in non-recession periods. Moreover, the difference between Eurozone and US funds can be linked to a greater difference

in aggregate ESG scores of the bonds by European funds relative to their non-SR peers.⁸ This evidence is consistent with the hypothesis that high ESG scores reduce downside risk.

Leite and Cortez (2018), focus solely on SR fixed income and balanced funds available to retail investors in France and Germany. They cover 28 bond funds and 23 balanced funds (37 available in France and 14 in Germany) from early 2002 until the end of 2014. In contrast to Derwall and Koedijk (2009), they find that balanced SR funds match their peers, but that pure SR bond funds outperform their non-SR peers. However, they find that the main driver of this out-performance is the country allocation of the funds. The focus on ESG and sustainability criteria led SR FI funds to have substantially lower holdings of sovereigns issued by the countries most affected by the Euro sovereign debt crisis than non-SR funds. This evidence confirms that the main return benefit of an ESG focus arises from limiting downside risk. However, this study is only a refinement of Henke (2016) as it focuses on a subset of the funds and of the period investigated in the earlier paper.

Hoepner and Nilsson (2017a) investigate whether differences in ESG expertise across SR *corporate* bond funds are associated with difference in performance. Using a global sample of 108 SR fixed-income funds over the period October 2000 to April 2013, they find that neither SRI AUM of the fund management companies, nor each funds' SRI screening intensity were related to fund performance. However, they find substantial and significant differences in fund performance between funds managed by companies that have explicit ESG engagement policies and funds managed by companies without engagement policies. They conclude that the ESG engagement expertise of the fund management company is critical to the effective use of ESG criteria to enhance the performance of SR corporate bond funds. However, as with the other studies, the sample is small and the empirical approach used does not fully warrant the inferences the authors make.

Hoepner and Nilsson (2017b) study whether a bond portfolio strategy based on the ESG ratings of the issuing company has merits. They collect prices and returns on 5,240 bonds issued by 425 companies over the period January 2001 to December 2014, and the annual KLD scores for the issuing companies. They find that portfolios of bonds of issuers with either strong or weak KLD scores both underperform portfolios of bond issued by companies with neutral scores. The evidence suggests that both issuer ESG strengths and concerns negatively affect bond returns, and that bonds from issuer with neither ESG strengths nor weaknesses perform best. Unfortunately, the bond return data used is estimated from quotes and not transaction prices.

⁸Interestingly, the aggregate ESG scores of the non-SR funds are very similar in the US and Europe. However European SR-funds have a substantially higher ESG scores than their US peers.

In a recent review, Bektic (2018) come to a similar conclusion: there is little empirical evidence about the link between a bond's issuer ESG score and the bond's performance, and what little evidence there is, is mixed.

IV. ESG and downside risk

Environmental and social performance involves compliance both with public statutes and private contracts that can engage substantial liability for the firm, as well as with social norms and expectations, which engage the firm's social and reputational capital. The firm's social capital might be crucial when its economic activity faces increased uncertainty, for example in periods of recession or financial crisis. Firm-specific ESG events may also have large economic consequences. In particular, accidents and adverse pollution events that stem from poor environmental performance can generate very large liabilities that could threaten a firm's survival. Most of the studies investigating ESG and downside risk focus on stock value. Those studies are relevant for bondholders as well, as changes in firm value affect its creditworthiness. Typically, liability claims from adverse ESG events (e.g. faulty product safety, pollution event, etc.) have seniority over other claimants. Hence an event that significantly affects the distribution of residual value to shareholders is likely to also affect the likelihood of full payouts to bondholders, typically less senior than the ESG liability claims.

Konar and Cohen (2001) investigate the link between the S&P 500 companies' (excluding finance and insurance) market value and their environmental performance. They find that poor environmental performance is negatively related with the intangible asset value of firms, and estimate the average "intangible liability" for the firms in the sample to be about 9% of the replacement value of the tangible assets.

Lins, Servaes and Tamayo (2017) examine the link between firm social capital as measured by its CSR intensity and firm performance during periods of lower trust towards markets and corporations. They document that during the 2008-2009 financial crisis, the stock returns of firms with high CSR intensity (and hence presumably higher social capital) were four to eight percent higher than the returns of firms with low CSR intensity. Moreover, high social capital firms experienced higher profitability and growth than low-CSR firms, and were able to access debt markets more easily. They find similar differences in equity returns between high- and low-CSR firms during the Enron crisis of the early 2000s. This suggests that investments in social capital pay off when confidence in markets and institutions is low.

Kim, Li and Li (2014) investigate whether CSR mitigates stock price crash risk, where they define crash risk as the conditional negative skewness of the return distribution. Using a sample of 850 US firms over the period 1995 to 2009, they relate end of year KLD CSR scores with subsequent year stock returns conditional negative skewness and find that firms' with poor CSR performance have greater subsequent realized crash risk. Further, they find that the mitigating effect of CSR on crash risk is stronger when firms have less effective corporate governance or a lower level of institutional ownership.

Grossner (2017) investigates whether firms with high CSR risk have low subsequent returns. He uses the RepRisk ESG-issues score for 2,592 US firms, from 2007 to 2016, and finds that high ESG-risk firms have negative long-run abnormal returns after controlling for other sources of risk and premia, while there are no discernible abnormal returns for firms with low or medium ESG-risk. Moreover, he finds that firms with high ESG-risk scores have significantly greater number of *subsequent* negative events, and that these events are further associated with negative abnormal returns. Although this paper uses an interesting new metric of ESG-risk, it covers a very short sample period. Furthermore, the number of firms with high ESG-risk is very small relative to the total sample: from 38 in 2009, to 95 in 2014.

Hong and Liskovich (2016) examine enforcement actions of the Foreign Corrupt Practice Act against US corporations and find that prosecutors offer more lenient settlements to firms with high CSR scores, although it is not an explicit factor in sentencing guidelines. Moreover, after adjusting for common risk factors, high CSR firms' equity outperforms low CSR firms by 2.4% in the six months following the date the settlement is made public.⁹

Flammer (2013) investigates whether a firm's environmental CSR rating affects the stock market response to company-specific positive or negative environmental news, and finds that the negative abnormal announcement returns associated with company-specific eco-harmful events news, are significantly attenuated for firms with high KLD environmental strengths, while they were significantly accentuated for firms with poor environmental CSR. In contrast, the response to positive events was smaller for high than for low environmental CSR firms.

Jagannathan, Ravikumar and Sammon (2017) produce evidence that ESG-related issues can

⁹In contrast, Karpoff, Lott and Wehrly (2005), examine 478 cases alleged or confirmed environmental violations by publicly traded firms over the period 1980-2000. They find that the firms experienced a significant market-value loss when the violations became public: However, the market-value losses were of similar magnitude to the total legal penalties (fines plus compliance and remediation costs), and firms did not experience additional reputational penalties.

cause sudden regulatory changes and shifts in customer preferences, inducing large asset price swings and exposing portfolios to downside risk. They show that an optimal portfolio construction algorithm that explicitly incorporates ESG criteria, tilts holdings toward assets with lower ESG risk, thereby reducing and managing exposure to these rare but potentially large risks.

Albuquerque, Koskinen and Zhang (2017) develop a theoretical model in which a firm's efforts to increase product differentiation through higher CSR investments decreases the firm's systematic risk and increases the firm's value. Using KLD data for US firms from 2003 to 2015, they document a statistically and economically significant reduction in systematic risk for firms with higher CSR scores, and find this effect stronger for companies with more differentiated product. This effect on risk has a companion and inverse effect on value: higher CSR score, higher firm value. Lastly, they show that high CSR firms' profits are less correlated with the business cycle, which supports the evidence of lower systematic risk. Similarly, Oikonomou, Brooks and Pavelin (2014) show that firm risks, including downside risks, are related to corporate ESG ratings (as measured by MSCI KLD scores).

Hoepner et al. (2018) focus specifically on whether investors' engagement on ESG topics leads to subsequent reduction in downside risk of portfolio firms. Their sample covers a single investor's 682 private direct engagement activities across 296 firms over the period 2005 to 2014, of which 28% concluded successfully. They find that engagement led to a statistically and economically significant 20% reduction of firm downside risk for all three measures of downside risk used. Further, they document larger risk reductions for more successful engagements as well as for strategy and governance engagements compared to social or environmental engagements.

A related but indirect approach to investigate the link between CSR and firm and portfolio risk is proposed by Gibson and Kruger (2018). Using 13F filings for institutional investors, they construct an aggregate CSR portfolio score for each institution by combining the CSR scores of the individual holdings. They find that investors with longer investment horizons display higher portfolio CSR scores, and that higher CSR scores portfolio earn higher risk adjusted returns at both quarterly and annual horizon. Further, they show this is primarily due to the lower risk of high CSR portfolios.

The single study that explicitly links corporate governance and downside risk for bonds is Bhojraj and Sengupta (2003). Their results suggest that corporate governance mechanisms have a greater role in reducing default risk for poorly rated issuers.

INSERT TABLE 3 APPROXIMATELY HERE

V. Green Bonds

A special class of fixed-income instruments that satisfies ESG criteria is “green bonds.” According to the “Green Bond Principles” formulated by the International Capital Market Association (ICMA 2017), green bonds are associated with “*several broad categories of eligibility for Green Projects to address key areas of environmental concern such as climate change, natural resources depletion, loss of biodiversity, and air, water or soil pollution.*” This would typically include projects targeted at renewable energy, efficiency, sustainable waste management and land use, biodiversity conservation, clean transportation and clean water. Green bonds are issued by corporations, national and local governments as well as international organizations. In 2017 alone, about \$150 billion of green bonds were issued, nearly double the amount issued in 2016 (\$87 billion) and new issuances in 2018 are forecasted to range between \$150 and \$300 billion (Chestney, 2018). A nascent research stream is evaluating whether the green label is just a marketing gimmick or whether green bonds differ from their “brown” counterpart.

Karpf and Mandel (2017) compare the prices and yields of 1,880 US municipal bonds labeled as green to 34,100 non-green labeled bonds from the same set of issuers. Using 2 million secondary market transactions, they document that green bonds trade on average at a 5 to 7 basis points higher yield to “brown” bonds with similar characteristics. This suggests that, for investors, the green label may proxy for additional risks, or as a newer asset class, requires higher returns to be attractive.

Zerbib (2017) examines the differences in prices and yields on a sample of 135 investment-grade senior bullet fixed-coupon green bonds, with a matched sample of bonds from the same issuers and with the same characteristics (rating, seniority, etc.). The sample includes both supranational, sovereign, sub-sovereign and corporate bonds, and cover ask quotes from April 2012 to December 2016. The study documents that the median difference between green and matching bonds ask yields is 2 bps. After taking into account difference in liquidity (the matching “brown” bonds are typically more liquid), the green premium is estimated at 8bps. The premium is smaller for more highly rated bonds and bonds with greater amount outstanding. Although the methods used in this paper are robust and the investigation carefully performed, it suffers from a relatively small sample and the use of quoted ask yields. Using transaction prices as in the Karpf and Mandel paper would strengthen the inferences.

Wulandri, Schaefer, Andreas and Sun (2018) investigate the link between liquidity, green project-specific credit risk, and yields on green bonds using a sample of 64 green and 56 matching

bonds traded on the London and Luxembourg stock exchanges, and find that liquidity risk is not an important determinant of the yield spread between green and brown bonds. However, this study suffers from a small sample and poor matching of the conventional bonds to the green bonds. Katori (2018) compares the issue discount relative to sovereigns of green bonds that simply satisfy the “Green Bond Principles” to that of green bonds that also either comply with the Climate Bonds Standard or obtain a Green Bond Rating from Moody’s or other rating agencies. Despite having longer maturity at issuance, bonds complying with the stricter Climate Bonds Standards tend to command a lower premium relative to sovereigns than general-issue green bonds, although the evidence is based on a very limited sample and very rudimentary control for differing bond characteristics. Reed, Cort and Yonavjak (2017) argue that the lack of price premium for "green bonds" is the consequence of the current green label referring only on the initial issue process without accounting for difference in green impact.

Investment banks and international organizations have also evaluated the green bond markets. Inderst, Kaminker and Stewart (OECD, 2012) argue that green bonds show low correlation with other fixed-income securities and provide diversification benefits to investors. A recent OECD (2017) report states that issuers will offer the same conditions on green bonds as on conventional bonds ("flat pricing") because investors are not willing to pay a premium for green investments. I4CE (2016) argues that although increasing socially responsible investors’ demand for green bonds is likely to lower the yield, there is "no clear evidence" that green bonds reduce the cost of capital for their issuers. Three bank reports (Preclaw & Bakshi, Barclays, 2015; Bloomberg, 2017; and HSBC, 2016) investigate the presence of a green bond premium on the secondary market. However their samples are very small, and fail to control for differences in liquidity and other relevant bond characteristics. The first two studies suggest that green bonds enjoy a large negative yield premium (-17 bps and -25 bps, respectively.) HSBC (2016) finds a high variation in green bond yield premia from negative to positive, and concludes that this finding does not support the existence of a systemically negative premium.

Flammer (2018) investigates the impact of issuing green bonds on the performance of the issuing corporation. Her sample includes 368 corporate green bonds issued between January 2013 and December 2017. Green bond issuance is more prevalent in industries where environmental issues are financially material to the firms’ operations, such as utilities, energy, and transport. Her analysis documents that firms issuing a green bond experience a positive stock market reaction upon announcement of the issue and a long-term increase in value following the issue. Moreover, these

firms display a significant improvement in environmental performance, and experience, following the issuance, an increase in ownership by long-term and green investors. These results suggest that the process of issuing a green bond is a commitment mechanism for the firm, which is recognized and valued as such by investors.

VI. Conclusions

Several broad themes emerge from the studies reviewed in this document. First, the evidence suggests that firms' ESG performance is related to their financial performance, valuation, and risk. Higher ESG scores are related to higher profitability, higher stock values (and hence greater general collateral value), lower risk as well as more positive returns from M&A activity. Second, ESG events significantly affect firm value: negative events reduce firm value and positive events have positive valuation consequences if they follow negative events, or if they occur to firms with good governance. Third, the G in ESG is critical: there is a stronger link between ESG scores and firm performance for firms with low agency problems and good governance. Moreover, firms with better governance suffer smaller negative firm-value responses to adverse ESG events and positive rather than negative responses to positive ESG events. Fourth, while differentiating stocks on the basis of their aggregate ESG scores in the early 1990s (when ESG awareness was not as widespread) may have led to superior investment performance, by the early 2010s this performance difference had disappeared as broader awareness of the importance of ESG concerns has led to their partial, if not full, recognition in stock values. Last, investor action that improves governance, or that improves CSR for firms with low CSR, has a positive effect on security values.

Several issues remain unresolved. First and perhaps most importantly is the issue of materiality: not all dimensions of ESG performance matter for all firms, and aggregate ESG scores may wash away critical differences in material ESG scores between competing firms: which dimension of ESG is more economically important in industry A than industry B, and vice-versa? Second is the link between (material) ESG scores and occurrence of positive or negative ESG event: is a firm with a high ESG score less likely to experience a negative ESG event, and hence have reduced exposure to ESG risk? Is that difference measurable and significant? There is some evidence that firms with very high ESG risk experience much more frequent negative ESG events than the general firm population, but none on whether firms with very low ESG risk and/or very high ESG scores are affected by fewer negative ESG events than the general firm population. Third, what are the

criteria that should lead investors to pursue engagement: which engagements are most beneficial to the investors? Among the beneficial engagements, which are most likely to succeed and when?

Most of the evidence on which these broad themes are drawn relies on studies investigating the link between ESG and stock values. The evidence reviewed relating corporate ESG performance and bond values, returns and risk is much more limited and does not allow for broad conclusions yet. Therefore it is also difficult to define what an appropriate and attractive SR fixed-income investment strategy would entail. Nor is it easy to formulate what kind of SR active engagement bondholders should pursue to enhance both the returns on their bond holdings and ESG performance of the issuer. Progress in resolving these issues requires solid empirical evidence on many related questions. First, what is the relation between issuer ESG scores and bond prices, returns and risks, across a broad cross-section of issuer, industries, and countries, and over time? What is the relation between issuer ESG scores and subsequent bond default experience? Second, what are the dimensions of ESG scores that are material for bond issuers and bond investors? Third, what are the consequences of negative and positive ESG events on bond prices and risk? Fourth, can the dimensions of ESG scores material to bondholders be affected by active engagement? Perhaps, the most promising is the paper of Flammer, 2018. It suggest that the issue of green bonds by a firm is a commitment to good ESG conduct that leads to increases in short- and long-term firm value. What this study still has to show is whether it is also beneficial to bond investors.

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Table 1: Studies on the ESG - Corporate Financial Performance relation

Study	Focus	Dep. Var.	Main Findings
<i>a. Corporate Governance & Firm Value</i>			
Gompers, Ishii, Metrick, 2003	G	ER, EV, FV, OP	Positive for all
Bebchuk, Cohen, Ferrell, 2009	G	ER, EV, FV, OP	Positive for all
Bebchuk, Cohen, Wang, 2013	G	ER, EV, FV, OP	Positive for EV, FV, OP; ER positive before 2000, zero after 2000
<i>b. Corporate Social Responsibility & Firm Value</i>			
Margolis, Elfenbein, Walsh, 2011	E,S	EV, FV, OP	Small positive declining over time for all
Dowell, Hart, Yeung, 2000	E	EV, FV	Positive
Deng, Kang, Low, 2013	E,S	Merger ER,BR	Positive
Aktas, de Bodt, Cousin, 2011	E,S	Merger ER	Positive
Kruger, 2015	E,S,G	ESG event ER	None for good news, Strongly negative for bad news
Ferrell, Liang, Renneboog, 2016	E,S	EV, FV, OP	Positive, increasing in G
Khan, Serafeim, Yoon, 2016	E,S	ER	Positive for "material" score, none for "non-material"score
Grewal, Hauptmann, Serafeim, 2017	E,S	ER	Positive for "material" score, none for "non-material"score
<i>c. Mutual fund and portfolio performance</i>			
Renneboog, Ter Horst, Zhang, 2008a	SRI	MFR	Negative or zero risk adj. perf.
Renneboog, Ter Horst, Zhang, 2008b	SRI	MFR	Negative or zero risk adj. perf.
El Ghouli, Karoui, 2017	E,S	MFR	Negative link CSR score & MFR
Derwall et al., 2005	E	SPR	Positive wrt passive benchmark
Statman, Glushkov, 2009	E,S	SPR	Positive, portf. high vs low CSR score, characteristic matched stocks.
Halbritter, Dorfleitner, 2015	E,S	SPR	High vs low CSR score eq. ptfs, large pos. 1990-2001, small pos. 2002-06, zero 2007-12
<i>d. Active Engagement</i>			
Kim, Lyon, 2011	E	EV, FV	Positive
Dimson, Karakas, Li, 2015	E,S,G	ER, EV, FV, OP	Success & benefits high for G, low for E, zero for S
Hoepner et al., 2018	E,S,G	ER, EV,	30% success, positive if success, both higher for G
Flammer, 2015	E,S	EV,FV, OP	Positive, for winning close-call shareholder proposals (mostly employee, and E)

This table lists all the papers discussed in Section I and summarizes their main results. The first column lists the authors and publication year of the study. The second column reports the focus of the study, where E, S, G stand for Environmental, Social, Governance ratings or concerns respectively, and SRI for Socially Responsible Investment. The third column reports the outcome variables, where ER denotes Equity (abnormal) Returns; EV, Equity Value; FV, Firm Value; OP, Operating Performance; MFR, Mutual Fund Abnormal Returns; SPR Simulated Portfolio Returns. The fourth column reports the main findings.

Table 2: Studies on the ESG - Bond Value relation

Study	Focus	Dep. Var.	Main Findings
<i>a. Corporate Social Responsibility & Credit Risk</i>			
Menz, 2010	E,S	CS	High CSR score increases CS
Stellner, Klein, Zwergel, 2015	E,S	CS	High CSR score reduces CS
Bauer, Hann, 2014	E	CS, BV	High E score, increases BV, decreases CS
Chava, 2014	E	CS	Low E scores increase CS, high scores no impact
Oikonomou, Brooks, Pavelin, 2014	E,S	CS	CS negatively related to CSR score
Ge, Liu, 2015	E,S	BV	New issue discount negatively related to CSR score
Attig, El Ghouli, Guedhami, 2013	E,S	CR	Positively related to CSR score
Shi, Sun, 2015	E,S	Cov	# of covenants negatively related to CSR score
<i>b. CSR and G & Bond Value</i>			
Bhojraj, Sengupta, 2003	G	CS,CR	Better G, lower CS, higher CR
Hoepner et al., 2014	E	CS	Cross-country, country score matters, issuer score does not
Deng, Kang, Low, 2013	E,S	Merger BR	Negative, low CSR acquirers; zero, high CSR acquirers
<i>c. CSR and G & Bond Returns</i>			
Derwall, Koedijk, 2009	SRI	MFR	No difference with non-SR funds
Henke, 2016	SRI	MFR	Outperforms non-SR-peers in recession, underperform in expansions, overall positive
Leite, Cortez, 2018	SRI	MFR	Outperform non-SR peers, due to lower holdings of low sustainability sovereigns.
Hoepner, Nilsson, 2017a	SRI	MFR	SR bond funds from firms with ESG expertise outperform SR-peers
Hoepner, Nilsson, 2017b	E,S,G	SPR	Neutral score bond portfolios outperform both low and high score portfolios
Bektic, 2018	E,S,G	MFR/SPR	Mixed

This table lists all the papers discussed in Section II & III and summarizes their main results. The first column lists the authors and publication year of the study. The second column reports the focus of the study, where E, S, G stand for Environmental, Social, Governance ratings or concerns respectively, and SRI for Socially Responsible Investment. The third column reports the outcome variables, where BR denotes Bond (abnormal) Return; BV, Bond Value; CR, Credit Rating; CS, Credit Spread; Cov, Covenants; MFR, Mutual Fund Abnormal Returns; SPR Simulated Portfolio Returns. The fourth column reports the main findings.

Table 3: Studies on ESG and Downside Risk & Green Bonds

Study	Focus	Dep. Var.	Main Findings
<i>a. ESG & Downside Risk</i>			
Konar, Cohen, 2001	E	EV,FV	Low E performance reduce ER, FV
Lins, Servaes, Tamayo, 2017	E,S	ER,FV,OP	Higher CSR, higher ER; FV & OP in crisis
Kim, Li, Li, 2014	E,S,G	ERD	Lower CSR scores increase stock crash risk (returns' negative conditional skew)
Grossner, 2017	E,S,G	SPR	High ESG risk leads to negative long run abnormal returns, and higher incidence of negative ESG events
Hong, Liskovich, 2016	E,S	ER,FV	Smaller penalties for foreign corruption violations and higher post-penalty ER, FV for high CSR firms
Flammer, 2013	E	ER	Large negative (small positive) abnormal returns to negative (positive) company-specific eco-news. Attenuated response to eco-news for high E rated firms.
Jagannathan et al., 2017	E,S,G	SPR	Portfolios with lower ESD risk exposure have lower downside risk
Albuquerque et al., 2017	E,S	ER,ERD	Higher CSR score, lower systematic risk and required return, higher firm value
Oikonomou, Brooks, Pavelin, 2014	E,S,G	ERD	Total and downside risk negatively related to ESG score
Hoepner et al., 2018	E,S,G	IPR	Engagement reduces downside risk, more for G than E & S
Gibson, Kruger, 2018	E,S	IPR	High CSR scores institutional portfolios earn similar LR returns than low CSR score portfolios, at substantially lower risk
Bhojraj, Sengupta, 2003	G	BD,CR	Better G, lower default risk for low rated debt
<i>b. Green Bonds</i>			
Karpf, Mandel, 2017	E	CS,BR	Green bonds have higher CS, higher BR
Zerbib, 2017	E	CS	Higher CS
Wulandri et al., 2018	E	CS	Higher CS not due to lower liquidity
Katori, 2018	E	CS	Bonds complying with stricter green standards have lower CS than non-green or regular green bonds
Flammer, 2018	E	ER,FV,OP	Green bond issuers: Positive announcement return and LT FV increase, improved E performance.

This table lists all the papers discussed in Section IV & V and summarizes their main results. The first column lists the authors and publication year of the study. The second column reports the focus of the study, where E, S, G stand for Environmental, Social, Governance ratings or concerns respectively, and SRI for Socially Responsible Investment. The third column reports the outcome variables, where BD denotes Bond Default; BR, Bond (abnormal) Return; CR, Credit Rating; CS, Credit Spread; ER, Equity (abnormal) Returns; ERD, Equity Return Distribution; EV, Equity Value; FV, Firm Value; OP, firm Operating Performance; IPR, Institutional Portfolio Return; SPR Simulated Portfolio Returns. The fourth column reports the main findings.