Can Sustainable Investing Save the World? Reviewing the Impact of Investors on Companies

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Abstract

This article asks how sustainable investing can effectively contribute to societal goals. It conducts a literature review of the impact that investors have on companies' environmental and social performance, distinguishing three mechanisms: shareholder engagement impact, capital allocation impact, and indirect impacts. The shareholder engagement impact is well established, the capital allocation impact remains uncertain and depends on specific circumstances, and indirect impacts are very uncertain. The results imply that the current practice of SI has only modest investor impact and we suggest that sustainable investors could increase their impact by expanding shareholder engagement, by focusing on widely shared priority issues, and by targeting companies that depend on external capital. We also suggest that the potential of SI lies more in diffusing good business practices than in transforming business models. For future research, we highlight the need for investor impact metrics and outline steps to progress towards this goal.

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Introduction

There are growing expectations that sustainable investing (SI), i.e. investing that takes environmental, social, and governance (ESG) information into account, contributes to societal goals. Historically, the Quakers divested to avoid supporting the slave trade, and colleges divested to challenge the South African apartheid regime (Molthan, 2003). Also today, many investors are attracted to SI by altruistic motives (Hartzmark and Sussman, 2017; Riedl and Smeets, 2017), expecting that SI will allow them to make a positive contribution. In line with this desire of investors, policymakers discuss SI as a potential mechanism to mitigate climate change (IPCC, 2014) and to help realize the United Nations' sustainable development goals (SDGs) (Betti, Consolandi, and Eccles, 2018).

Yet in spite of these high expectations, the actual social and environmental impacts of SI remain uncertain. Investment impact, which we define as a "change in a specific social or environmental parameter that is caused by the actions of an investor", consists of both company impact and investor impact (Brest and Born, 2013). The ESG metrics that currently guide SI reflect company impacts, i.e. companies' products and practices and their associated social and environmental impacts. But these metrics ignore the investor impact, i.e. the extent to which actions of an investor cause companies to improve their ESG performance. Due to this omission, it is uncertain whether the enormous growth of SI over the last two decades (GSIA, 2016) has contributed in a meaningful way to societal goals, for example by inducing companies to reduce greenhouse gas emissions. Even more problematic, it is uncertain how SI can contribute most effectively to societal goals such as the SDGs in the future.

Underlying this uncertainty is a scarcity of academic research into investor impact. While there is substantial academic interest into SI (Hartzmark and Sussman, 2017; Liang and Renneboog, 2016; Lins, Servaes, and Tamayo, 2017; Renneboog, Terhorst, and Zhang, 2008; Riedl and Smeets, 2017), most of that research relies on ESG metrics that are limited to company impact. Studies that address the quality of ESG metrics (Chatterji *et al.*, 2016; Vörösmarty *et al.*, 2018) highlight a number of important problems with those metrics, but do not address the lack of attention to investor impact. Those studies that deal with investor impact are published in diverse literature streams and deal with specific parts of investor impact in varying contexts. As a consequence, there is a lack of clarity on what the mechanisms of investor impact are, under what circumstances they are likely to be effective, and which research gaps prevent the development of metrics of investor impact.

Responding to these questions, this article conducts a literature review focused on investor impact. We distinguish shareholder engagement impact, capital allocation impact, and indirect impacts as the three principal mechanisms of investor impact. For each impact mechanism, we evaluate the existing empirical evidence and establish the key determinants that increase or decrease investor impact. Shareholder engagement emerges as the most reliable impact mechanism that is directly supported in the literature. Capital allocation impact is less reliable since there is no direct evidence, but the literature clearly identifies the determinants on which it depends. Indirect effects are potentially relevant, but have little support in the literature so far.

The results hold important implications for investors, ESG data providers, and policymakers. Investors who want to contribute to societal goals could as a first step expand shareholder engagement activities. As a second step, they could increase their capital allocation impact by screening for specific ESG practices with low reform costs in unison with a large coalition of investors, or by focusing on small and medium-sized companies that have positive company impact but lack access to external capital. ESG data providers should consider developing metrics of investor impact, which would profoundly change the decision-making in SI. Policymakers who see SI as a way to drive change should consider that SI seems more effective in spreading ESG practices and less effective in transforming business models and industries.

Conceptual Framework

The literature review in this article is focused on investor impact. To explain this concept and show how it relates to the larger concept of investment impact, we begin by developing a conceptual framework that reflects investment impact as a whole. The framework was developed on the basis of established concepts from development finance. However, it was adapted and refined in consultation with SI practitioners. The framework is illustrated in Figure 1.

Definitions

The notion of impact has originally been developed in development finance. The world bank characterizes impact as "(…) causal effects of a program on an outcome of interest" (Gertler *et al.*, 2011: 8). There is a rich literature concerned with impact evaluation, mostly with applications to development finance and foreign aid (Bamberger, Rugh, and Mabry, 2012). In this literature, impact is consistently described as having three defining characteristics: (1) it

describes a change against a baseline, (2) it relates to a clearly defined parameter, and (3) it implies causality. Applying these characteristics to the case of SI, we define investment impact as "change in a specific social or environmental parameter that is caused by the actions of an investor".

We apply the idea of investment impact to sustainable investing (SI), which we define broadly as "any form of investing that considers ESG information as part of the investment process". This definition is the lowest common denominator between the definitions provided by various industry associations (USSIF, EUROSIF, SSF, EFAMA, PRI) and also consistent with the view of the European Parliament (European Parliament, 2013).

Insert Figure 1 about here

The components of investment impact

Investors affect the real world *through* the companies they interact with. To reflect this in our framework, we follow Brest & Born (2013) and split investment impact into two components. Company impact describes the impact of a company on the natural and social environment. Investor impact describes the impact of the investor on the company. The overall investment impact is the additional company impact that results from investor impact. Thus, by altering a company's impact, an investor can ultimately influence social or environmental parameters.

Consider for example a company that manufactures solar panels and achieves a certain amount of carbon emission savings with each solar panel sold. The company's carbon reductions are equal to the number of solar panels sold times the carbon emission savings per panel – this is the company impact. Investors can increase this company impact, for example by helping the company to scale and sell more solar panels. Assume an investor provides capital that enables the company to double its output – this is the investor impact. The overall investment impact in this example is the change that the investor caused in the company's impact on global carbon emissions.

This example makes clear that investor impact and company impact are complementary. When a company has zero company impact, investors cannot have an impact through that company. Likewise, when the investor impact is zero, investors cannot have

impact through the company, regardless of how impactful the company's activities may be. Investment impact results only when both investor impact and company impact are present.

The mechanisms for achieving investment impact

Investor impact and company impact can be achieved through several mechanisms, as shown in Figure 1. Investor impact can be achieved through three primary impact mechanisms: (1) *shareholder engagement impact* refers to influencing a company through various communication mechanisms that are open to investors, such as dialogue and shareholder votes. (2) *capital allocation impact* refers to supporting a company by providing capital - or inhibiting a company by denying the provision of capital. (3) *indirect impacts* refer to a range of impacts that investors can have on a company through intermediaries that are not direct agents of the investor, for example the company's stakeholders, rating agencies, or other investors.

Through these mechanisms, investors can achieve two different types of changes in company activities. Investors can either cause a company to scale its activities, for example by enabling the company to grow, or to change its activities, for example by influencing the company to adopt a new technology. Whether such a changing or scaling of activities propagates into a real-world impact depends in turn on the impact of these activities - the company impact.

Company impact can be achieved through two primary mechanisms: (1) directly through the company's operations, e.g. emissions during production, or impacts on employees and (2) indirectly through the products and services the company provides or purchases.

We acknowledge two limitations of this conceptual framework up front. First, investors could have impact not only through companies, but also through other investable entities such as countries, or real estate projects. While the impact mechanisms may be similar for these cases, we did not consider these cases explicitly in the literature review, and our conclusions do not necessarily apply. Second, investors may also have impact while bypassing companies or other investable entities altogether, for example through direct engagement with regulators. While this could be an effective measure to have impact, we exclude these types of direct impacts, because actions such as lobbying are not uniquely available to investors.

Methodology

The aim of this literature review is to identify and to bring together the available stock of scientific knowledge on each of the three mechanisms of investor impact. We then analyze these stocks of knowledge in two specific ways. First, we assess the empirical evidence for each of the mechanisms. Second, we identify the key determinants on which the effectiveness of the mechanisms depends.

For each mechanism, we searched academic databases for suitable keywords. We extended this range by also searching for central concepts and keywords contained within identified articles. For example, the concept of "stock price elasticity" was identified as an important theoretical basis for the capital allocation impact, directing our search towards a large body of literature dealing with stock price elasticity. This approach ensured that we could identify all articles that are important for the various mechanisms, even if they use different terms to describe the mechanisms, or deal only with essential aspects of the mechanisms in our framework.

Using this approach, we identified a total of 51 relevant articles from a range of different disciplines. The capital allocation impact is dealt with mostly in the financial economics literature, specifically asset pricing and corporate finance. The shareholder engagement impact is dealt with mostly in the corporate governance literature, as well as in management science. The indirect effects are dealt with primarily in business ethics, management science, and sociology.

Literature Review

Shareholder engagement impact

Shareholder engagement refers to actions undertaken by shareholders with the intention of changing a company's activities. This includes the right to vote on shareholder proposals during annual general meetings, discussions during informal meetings with management, as well as criticizing corporate practices in news outlets.

The impact of shareholder engagement is relatively straightforward to trace. An investor requests from a company to implement a certain change, and the company either follows through or not. There are four empirical studies that analyze the extent to which companies comply with shareholder engagement requests (Barko, Cremers, and Renneboog, 2017; Dimson, Karakaş, and Li, 2015, 2018; Hoepner *et al.*, 2016).

Dimson *et al.* (2015), analyzing a dataset of over 2152 shareholder engagement requests between 1999 and 2009, report that 18% were successful in the sense that the request was implemented by the company. Hoepner *et al.* (2016) report a success rate of 28% in a dataset of 682 engagements between 2005 and 2014. Expanding on these results, Barko *et al.* (2017) report a success rate of 60% in a sample of 847 engagements between 2005 and 2014. Dimson *et al.* (2018) report a success rate of 42% in a sample of 1,671 engagements between 2007 and 2017. Together, these studies provide strong evidence that shareholder engagement is an effective mechanism through which investors can change company activities. While shareholder engagement requests do not always succeed, there is a reasonable probability that they do ranging from 18% to 60% per cent.

The success probability of any particular shareholder engagement depends on a host of determinants related to characteristics of the engagement request, the engaged company, the engaging investor, and the specific process of engagement (Goranova and Ryan, 2014). The studies reviewed above highlight three specific determinants that have an important influence on the average rate of success.

The first determinant is the cost of the reform that is associated with complying with the engagement request. A consistent finding of the reviewed studies is that requests in the environmental domain tend to have lower success rates compared to requests in the social domain, and requests in the corporate governance domain have the highest rate of success. Dimson et al. (2015) attribute this to the fact that reforms in the environmental domain are likely to be costlier than in the governance domain. More explicitly, Barko *et al.* (2017) show that material requests that require some form of reorganization have lower success rates compared to less material requests. Taken together, these findings indicate that the chances of success decrease with the costs of the requested reform.

The second determinant is investor influence. There is evidence that engagement requests are more likely to succeed when the engaging shareholder holds a larger share of the targeted company (Dimson *et al.*, 2015, 2018). However, investor influence increases not only with the size of the holdings. Dimson et al., (2018) find that a group of engaging investors has more influence when the engagement is spearheaded by an investor that is from the same country as the engaged company, suggesting that linguistic and cultural aspects may play a role as well. Additionally, the chances of success rise when asset managers that are large and internationally renowned are part of the group of engaging investors.

The third determinant is the company's level of ESG experience. The success rate of engagement is higher with companies that have previously complied with engagement requests (Barko *et al.*, 2017; Dimson *et al.*, 2015). Furthermore, companies that have high ESG ratings prior to the engagement are more likely to comply with engagement requests (Barko *et al.*, 2017).

Capital allocation impact

The capital allocation impact describes the mechanism where, by allocating capital towards companies with positive company impacts, investors increase these positive company impacts. This mechanism is relevant whenever sustainable investors exclude non-sustainable companies from their portfolios or concentrate their investments in sustainable companies. While the impact of capital allocation may seem intuitive at first sight, it touches upon a rather fundamental question, namely to what extent the decisions of investors influence the course of the real economy.

We were not able to find studies that relate the capital allocation decisions of sustainable investors to corporate investment activities or operational practices. Hence, direct empirical evidence for the capital allocation impact is lacking. However, several strands of literature cover central aspects of capital allocation impact and indicate determinants on which it depends. We structure the review of the literature along the questions: 1) How do investment decisions of sustainable investors influence asset prices? 2) How do changes in asset prices influence companies' activities?

The effect of investment decisions on asset prices

Two empirical studies, which investigate sustainability preferences in stock markets, come to opposing conclusions regarding the effect on share prices. Hong and Kacperczyk (2009) examine the effect of investors excluding "sin stocks", such as tobacco, alcohol, and gambling from their portfolio. They show that sin stocks have depressed share prices and exhibit outperformance of 2.5% per year, relative to comparable stocks. This result implies that the moral aversions of investors against sin companies have decreased stock prices of these companies. At the same time, a related study focusing on the effects of divestment in the context of the South Africa boycotts in the 1980s, concludes that the divestments had no discernible effects on asset prices (Teoh, Welch, and Wazzan, 1996).

Recent studies on green bonds, i.e., bonds that are issued to finance projects with environmental benefits, show that the sustainability preferences of investors can influence

bond prices. Baker *et al.* (2018) find that at issue, yields of green bonds are on average 0.06% below the yields of comparable bonds. They present supporting evidence that the observed differences are caused by non-financial preferences of investors. Similarly, Zerbib (2019) show that sustainability preferences of investors result in a negative yield premium of 0.02% for green bonds. Also, Hachenberg and Schiereck (2018) confirm that green bonds are traded with a negative yield premium.

Taken together, these studies provide evidence that non-financial preferences of investors can affect asset prices. However, the results differ substantially in terms of effect size. At the same time, the studies do not reveal the determinants of the effect size. However, there are other strands of literature in financial economics which are not directly related to SI, but nevertheless shed light on these underlying determinants.

One insightful perspective comes from a strand of literature that models the consequences of investor tastes in equilibrium models. Following the efficent market hypothesis, i.e., assuming full rationality and information of all market participants as well as the absence of transaction costs, prices should purely be defined by fundamentals (Fama, 1970). However, several studies show that the existence of non-financial tastes can distort asset prices, in otherwise efficient markets. Based on standard asset pricing models, Fama and French (2007) argue that taste-neutral investors require a premium for balancing out the portfolio choices of investors sharing a particular taste because it forces the neutral investors to deviate from the market portfolio[1]. The impact of sustainable investors' tastes on asset prices has been explicitly modeled in three papers (Beltratti, 2005; Heinkel, Kraus, and Zechner, 2001; Luo and Balvers, 2017).

In accordance with the predictions of Fama and French (2007), all three models show that there are two main determinants on the effect of sustainability tastes on asset prices. First, the total effect size, as well as marginal effect size per additional dollar increases with the fraction of wealth commanded by sustainable investors. Hence the effect of an individual investor's decisions depends on how many others invest according to the same non-financial

[1] Fama and French (2007) also show that disagreement among investors on the probability distributions of future payoffs leads basically to the same price distortions as non-financial tastes of investors. The only difference is that the effects of taste on asset prices are persistent, while the effects of disagreement eventually disappear once the actual development of cash flows is revealed. Hence, the model suggests, for example, that investors, who believe that oil stocks are overpriced given regulatory efforts to limit global warming have the same effect on prices as investors who think oil stocks are ethically unacceptable – until it becomes evident whether oil stocks are indeed overpriced.

preferences. Second, the effect is weaker when a company or industry is easily substitutable from a portfolio diversification perspective, e.g., if its returns are strongly correlated with business cycles.

Another perspective is provided by empirical studies of stock price elasticity. These studies confirm that shifts in investor demand can influence stock prices, even when the asset's fundamental value remains unchanged. A large set of studies makes use of the fact that, due to passive investors, the inclusion or exclusion of companies to or from popular indexes triggers substantial investments in or divestments from these firms. Several studies focus on the S&P 500 index (e.g., Beneish and Wahley, 1996; Lynch and Mendenhall, 1997; Shleifer, 1986; Wurgler and Zhuravskaya, 2002). Kaul, Mehrotra, and Morck (2000) make use of a rule change of the TSE 300 index; Chang, Hong, and Liskovich (2015) focus on additions to the Russel 2000 index, applying a regression discontinuity approach. These studies find that the observed sudden changes in demand do affect stock prices and that, hence, demand curves for stock slope down. Studies that make use of order-books (Ahern, 2014), announcements of equity issues (Loderer, Cooney, and Van Drunen, 1991) or auction repurchases (Bagwell, 1992) come to similar conclusions as the literature on index inclusions.

There is no consensus on how steep demand curves for stocks are, i.e., how strongly changes in demand affect share prices. A useful measure for the steepness of demand curves in stock markets is the price elasticity of demand.[2] Highly negative elasticity values indicate little influence of changes in demand, whereas less negative values indicate a stronger influence of demand on prices. The results by Loderer et al. (1991), Kaul et al. (2000), Wurgler and Zhuravskaya (2002) as well as Ahern (2014) indicate elasticities of around -5 to -10. The studies by Bagwell (1992), Chang et al. (2015) and Shleifer (1986) indicate lower elasticities between -1 and -1.5. While these studies do not agree on how strongly share prices react to changes in demand, price elasticities are higher than, for example, those of food and non-alcoholic beverages, which range from -0.3 to -0.8 (Andreyeva, Long, and Brownell, 2010).

[2] Price elasticity of demand is defined here as (%ΔQ / % ΔP), where Q is the quantity of the demanded good and P it's price. As for stocks, supply curves are vertical, Q can be interpreted as excess demand (Wurgler and Zhuravskaya, 2002). Hence, a price elasticity of -10 implies that a 1% increase in prices leads to an 10% decrease in demand. Vice versa, an increase in demand by 10% would be associated with a 1% increase in prices. The elasticity of flat demand curve would be negative infinity; and changes in demand would not affect prices.

Only a few studies investigate demand effects in private markets, such as markets for private equity and venture capital. Gompers and Lerner (2000) show that a doubling of inflows of capital increases the valuation of new investments of venture capital funds between 7% and 21%. This would correspond to an elasticity of -5 to -14. Diller and Kaserer (2009) confirm that demand effects influence private equity funds' return.

Both Wurgler and Zhuravskaya (2002) and Ahern (2014) find that stocks with low substitutability show a lower price elasticity. This implies that prices for stocks that are not easily replaceable with similar assets react stronger to changes in demand. This is in line with the findings derived from equilibrium models, as reported above.

The effect of changes in asset prices on corporate activities

Even if the preferences of sustainable investors lead to a change in asset prices, this may not necessarily translate into changes in corporate activities. So far, there is no empirical evidence that the capital allocation decisions of sustainable investors have affected corporate activities. However, the reviewed literature identifies two general channels how companies can be affected by changing asset prices: Changes in costs of capital can influence how fast companies are able to scale their activities, while managerial incentives can cause companies to change their activities.

The first channel operates via the cost of capital. As stock markets define the cost of equity capital, they may affect corporate investment activity, as postulated by Fischer and Merton, (1984). An increase in stock market valuation caused by investor's taste may make it more attractive for a company to raise equity capital to implement investment options. Vice versa, depressed share prices may force companies to reduce investment opportunities. However, as pointed out by Beltratti (2005), companies shunned on stock markets may shift towards debt financing if sustainability preferences are not shared by debt investors as well. Accordingly, Hong and Kacperczyk (2009) show that sin companies seem to rely more on debt financing, possibly evading the effect.

Empirical work shows that reduced costs of capital do not necessarily translate in increased corporate investment and growth. Baker et al. (2003) show that the sensitivity of investment activity to non-fundamental movements in stock prices is only high for firms that depend on external capital. According to Kaplan and Zingales (1997) many publicly traded companies do not depend on external capital. Especially large, established companies often have sufficiently large cash flows to cover investments. In contrast, a series of empirical

studies show that small firms, young firms, firms operating in less mature financial markets with weak institutions as well as firms with less tangible assets are more likely to be restricted in their investment activity by the cost of external financing (Almeida and Campello, 2007; Beck *et al.*, 2006; Beck, Demirguc-Kunt, and Maksimovic, 2008; Bloom *et al.*, 2010; Rajan and Zingales, 1996). Especially in developing countries, many small and medium-sized companies are completely lacking access to external financing (Beck and Demirguc-Kunt, 2006). The finding that many small firms are restricted by the cost of capital or even access to capital is consistent with the finding that most small companies use retained earnings, insider finance, and trade credit to finance their investments (Berger and Udell, 1998; Carpenter and Petersen, 2002). Financing constraints seem to have a particularly strong inhibiting effect on entrepreneurial activities. Evans and Jovanovic (1989), as well as Holtz-Eakin, Joulfaian, and Rosen (1994) show that wealthy individuals are much more likely to become successful entrepreneurs. Hence, the likelihood that changes in asset prices influence the growth of a company increases with the degree to which a company is restricted by external financing conditions.

The second channel operates via managerial incentives. Edmans et al. (2012) argue that when managerial incentives are tied to stock market value, managers will be sensitive to shifts in the share price of their corporation – regardless of the reliance on external financing. Thus, if SI leads to a shift in asset prices, conforming to the expectations of sustainable investors can be profitable (Gollier and Pouget, 2014). The key criterion for this to hold is that the cost of reform is lower than the expected gain in market valuation. Based on their equilibrium model, Heinkel et al. (2001) provide a numerical example in which at least 20% of the market need to apply a common screen, to create the incentives to implement reforms that cost a company 5% of its annual cash flow. This number, however, is rather speculative as it depends strongly on model assumptions and has no basis in empirical data.

Indirect Impacts

Next to the impacts of shareholder engagement and capital allocation, investors may also influence companies indirectly through intermediaries. We identified four different indirect impact mechanisms: stigmatization impact, endorsement impact, benchmarking impact, and demonstration impact.

Stigmatization impact

Investors can stigmatize a company by divesting the company's assets or categorically excluding it from their portfolio. Apart from a capital allocation impact that this might have, the action can also impact other relevant stakeholders of the company. For example, people might be deterred from working at a company that is excluded by investors. Literature on this stigmatization impact, however, is thin. In a detailed assessment of the carbon divestment movement, Ansar, Caldecott, and Tilbury (2013) postulate that one of its most important impacts might be the stigmatization of the fossil fuel industry. For the anti-apartheid divestment campaign, there is anecdotal evidence that it helped to lift the issue of Apartheid on the political agenda. Desmond Tutu, South African archbishop and an important figure in the struggle against the Apartheid regime commented that the disinvestment campaign in the US added punch to their political struggle (Knight, 1990). However, we were not able to find studies that analyze to what extent exclusion decisions by sustainable investors have led to stigmatization.

Endorsement impact

Investors can endorse companies for their social or environmental performance by including them in their portfolio or sustainability index. Such an endorsement may help to increase the visibility and reputation of a company, indirectly helping the company to gain customers or motivate employees. We were not able to identify studies that analyze to what extent company reputation was improved as a consequence of investor endorsement. There are two studies, however, that investigate whether companies that were included in a sustainability index decided subsequently to communicate this inclusion to stakeholders (Carlos and Lewis, 2018; Searcy and Elkhawas, 2012). The fact that companies communicate index inclusion suggests that such an inclusion helps to improve reputation, yet the studies do not investigate the magnitude of this impact. They show, however, that nearly half of the companies that were included in the Dow Jones Sustainability Index chose not to communicate their inclusion publicly. Carlos and Lewis (2018) find that companies are more likely to remain silent about their index membership, when they have a strong reputation for ESG performance already. Thus, one important determinant of the endorsement effect seems to be a company's prior ESG reputation.

Benchmarking impact

SI is feeding a growing industry of ESG rating agencies. These rating agencies develop standards, create ESG benchmarks, and request increasing amounts of data from companies. The growth of this industry is likely to encourage companies to report on their ESG practices, in order to satisfy the increasing data demands. Measuring and reporting may then also induce companies to improve their performance, for example because companies are benchmarked against peers.

The literature provides no direct evidence that investors have impact via their support of ESG rating agencies. However, a number of studies have investigated the impact of standards and ratings on social and environmental performance. Regarding standards, there is one study that concludes that the introduction of the voluntary ISO 14000 standard for environmental management has led firms to improve their environmental outcomes (Melnyk, Sroufe, and Calantone, 2003). Another study, however, concludes the adoption of this standard had no discernible effect on environmental outcomes (Hertin *et al.*, 2008).

Studying ESG benchmarks specifically, Chatterji and Toffel (2010) provide evidence that companies improve environmental performance in response to receiving a low rank in an environmental benchmark. They find this especially to be the case when the cost of reform is low, and when the industry operates in a highly regulated industry. A problem with this effect, however, is that there are remarkable differences between ESG benchmarks compiled by different agencies (Chatterji *et al.*, 2016). Due to these differences, the authors conclude that "SRI ratings will have a limited impact on driving rated firms toward any particular shared behaviors" (Chatterji *et al.*, 2016: 1609). One important determinant of the effectiveness of the benchmarking impact is thus the consistency of ESG benchmarks.

Demonstration impact

One investor engaging in SI may encourage other investors to do the same so that the original investor has an indirect effect through those additional investors. While exactly this "mainstreaming" of SI was a key goal of industry associations such as the Principles for Responsible Investing (PRI), we found no research documenting such a demonstration effect in the context of SI.

Discussion

The key result of this article is a comprehensive assessment and comparison of available scientific evidence for different investor impact mechanisms. Table 1 reports the level of empirical evidence for each investor impact mechanism, as well as the known determinants that are likely to influence the mechanism's effectiveness. Determinants that have positive influence on effectiveness are denoted with a plus sign, those with a negative influence with a minus sign.

Insert Table 1 about here

Shareholder engagement emerges from the literature review as a relatively certain way to achieve impact. Several studies provide direct evidence that investors have impact on company activities through shareholder engagement. The studies also identify three key determinants. The investor impact of shareholder engagement increases with the influence of the engaging investor and the ESG experience of the engaged company. The investor impact decreases with the cost of the requested reforms. Shareholder engagement is, therefore, suited as a mechanism that reliably results in impacts.

The capital allocation impact emerges from the literature review as a somewhat uncertain way to achieve impact since the literature provides no direct evidence that SI influences company activities through capital allocation. However, its individual parts have been analyzed in detail and are well understood. As a result, there are clear indications regarding the determinants on which capital allocation impacts depend. The capital allocation impact increases with the share of sustainable investors having the same sustainability preferences, the extent to which these preferences result in deviations from the market portfolio, and the company's dependency on external capital. The capital allocation impact diminishes with the substitutability of the assets that are under- or overweighted as well as with the cost of reform. Given the lack of direct quantitative evidence, the capital allocation effect could range between substantial and negligible, depending on these determinants.

Finally, indirect impacts emerge as very uncertain from the literature review. By definition, indirect impacts are routed through an additional intermediary, which prolongs the causal chain between an investor's action and its effect on a company. While there is anecdotal evidence for indirect impacts, none of these impacts has been analyzed

comprehensively, in the sense that the action of an investor was related to company activities. There is no empirical evidence for the stigmatization and the demonstration impact. There is partial evidence for the endorsement and the benchmarking impact. Endorsements are likely to be more valuable when the endorsed company has a low ESG reputation. Benchmarking is likely to be more effective when different ESG benchmarks are consistent, i.e. they identify the same laggards and leaders. It's important to note that the evidence on these indirect impacts is only partial, there may be additional determinants that have not been identified yet.

Contribution and future research

This article addresses a gap between the growing expectation of investors (Hartzmark and Sussman, 2017; Riedl and Smeets, 2017) and policymakers (Betti *et al.*, 2018) that SI contributes to societal goals and the scientific reality that the actual contribution of SI to societal goals is relatively uncertain. Within the academic literature on SI, the article identifies the analysis of investor impact as a fundamental problem which is currently dealt with selectively and in disconnected literature streams. This article's contribution is to systematically gather the existing studies that are relevant for the evaluation of investor impact, draw conclusions based on current knowledge, and to provide a foundation for future investigations.

The article also contributes to the effort of improving ESG metrics which inform the practice and academic analysis of SI. We acknowledge that there is still a significant amount of work to be done before company impact is measured adequately (Chatterji *et al.*, 2016; Vörösmarty *et al.*, 2018). However, from the perspective of investors who wish to contribute to societal goals, the complete lack of investor impact metrics may be the more pressing problem. For example, the recently released principles for impact management by the International Finance Corporation (IFC) stipulate that investors should establish a narrative that outlines how the investor contributed to the achievement of company impact (IFC, 2019). The results of this article deliver a first qualitative assessment of investor impact and thus help to base such narratives on evidence.

With a view to the development of ESG metrics that reflect investor impact, the article reveals that there are still substantial gaps that need to be closed. Regarding shareholder engagement, an important question is how to quantify the impact of engagement activities in a comparable way. Existing studies have quantified the success rate of engagement requests, but it is also necessary to quantify how substantial an engagement

request is (Barko *et al.*, 2017). One substantial request may have greater impact than several superficial requests. Combining the success rate with a measure of how substantive a request is could yield a comparable measure. Such a standard for reporting the impacts of engagement activities could make shareholder engagement impacts comparable, and also more visible and marketable.

Regarding capital allocation impact, the critical gap is that there is currently no empirical study that relates capital allocation decisions by sustainable investors to corporate investment decisions or ESG practices. Hong & Kacperczyk (2009) point out that while their study demonstrates an effect on the share prices of tobacco companies, it does not investigate the effects on the activities of tobacco companies. Studies that relate SI not only to asset prices but also investigate the response of affected companies in terms of management and investment decisions would advance the understanding of investor impact decisively because it would provide direct evidence of investor impact through capital allocation. Such a study would be a first essential step towards developing a metric of capital allocation impact.

Regarding indirect impacts, there is a need for studies that investigate the entire causal chain of indirect impacts. Existing studies document indirect impacts only partially. Due to their complexity, indirect impacts are suited for qualitative research methods. Comprehensive case studies that carefully trace indirect impact mechanisms could provide important guidance when indirect impacts matter and in which way they could be pursued most fruitfully.

Implications

Our results have several important practical implications. First, the article suggests that the bulk of assets in SI have little investor impact and suggests concrete ways in which investors and fund managers could evolve the current practice of SI towards greater investment impact. The bulk of SI assets is currently invested in ways that promise relatively modest and perhaps even negligible investment impact. In the US, only 10% of SI assets are associated with shareholder engagement (USSIF, 2018), meaning that the most reliable impact mechanism is only rarely used. Also, the capital allocation impact may not be very relevant in practice. Most SI funds focus on the stocks and bonds of large established companies that have the least financing constraints. In addition, while the overall market share of SI assets is growing, the concrete market shares that could incentivize changes in ESG practices are diluted by disagreement among different ESG ratings (Chatterji *et al.*, 2016). Prominent movements in

SI, such as the fossil fuel divestment movement, rely mainly on indirect impacts, which are quite uncertain based on our results.

From this basis, there are a number of ways to increase investor impact. First, fund managers could expand shareholder engagement. Shareholder engagement is quite flexible, as it can be combined with most existing investment approaches. Second, investors could enhance capital allocation impacts by considering the determinants identified in this article. Regarding market share, sustainable investors could coordinate and focus on a few, widely shared priority issues and make sure that these are consistently assessed. The most promising priority issues would be ESG practices which can be implemented by companies at low or even negative costs. In addition, SI funds might shift their attention from large caps in established markets to companies and markets where external capital is a limiting factor, such as small-cap growth stocks in emerging markets. Third, investors who are convinced that they can have indirect impacts could attempt to demonstrate these effects. While indirect effects have currently little scientific support, SI funds could provide examples and proxies that make these effects more tangible. For instance, investors could measure media attention in response to an exclusion announcement. Fund managers who launch an innovative product could track the uptake of their innovation by others to support their demonstration impact.

As a second implication, the article suggests that ESG data providers could play an important role in changing the SI industry by developing ESG metrics that reflect both, company impact *and* investor impact. Providers of ESG data have an enormous influence, because the SI industry is guided by ESG metrics. Portfolios of SI funds tend to overweight companies with good ESG ratings and underweight companies with poor ESG ratings. SI funds are also benchmarked regarding their portfolio-weighted ESG ratings, such as the Morning Star Sustainability rating. As a result, ESG ratings play an important role in guiding SI decisions. However, at the portfolio level, metrics that exclusively consider company impacts result in misleading assessments of a fund's overall investment impact. For example, a fund that successfully induces emission intensive companies to adopt emission saving practices may appear to have less impact than a fund that invests in companies that already have these practices in place. As a result, metrics based only on company impact does not reflect a fund's overall investment impact.

Therefore, ESG data providers should complement their assessments of company impacts with an assessment of investor impact. This article provides an initial overview of the relevant mechanisms and determinants that would be relevant for such an investor impact

assessment. While estimating investor impact will require investment in novel methodologies, developing these methodologies may be attractive due to their scalability. Company impacts require different methodologies for each industry, investor impacts apply generally to any investment.

Third, our findings imply that policymakers should consider SI more as a mechanism that promotes the diffusion of ESG practices than a mechanism that will fundamentally transform industries. The United Nations Conference on Trade and Development estimates that there is a funding gap of USD 5 to USD 7 trillion per year needed to achieve the Sustainable Development Goals (UNCTAD, 2014). Accordingly, policymakers have stated intentions to "reorient capital flows" towards sustainable investment, e.g. in the Action Plan on Financing Sustainable Growth adopted by the European Commission in March 2018.

However, our findings show that the cost of reform is a consistent impediment to investor impact. Our findings imply that both shareholder activism and a targeted allocation of capital provide incentives for companies to adopt social and environmental ESG practices. However, these incentives are only sufficient to the extent that they are greater than the cost of implementing these ESG practices. Incremental changes in the cost of capital invoked by SI are unlikely to induce companies to abandon unsustainable but profitable business models or to enable companies to grow on sustainable business models that are currently unviable. For example, it seems reasonable that SI can move the global oil and gas industry to adopt stringent policies to minimize social and environmental harm. It seems unlikely that SI can meaningfully diminish the global production of fossil fuel as long as it is profitable to do so.

Thus, SI on its own is unlikely to result in a dramatic transformation that is required, for example, for a decarbonization of the economy. Such changes require policies that directly change the viability of sustainable economic activities, as, e.g. taxes on pollution or public R&D spending into new technologies. Rather than replacing such policies, promoting SI may be a suitable complement in that SI incentivizes companies to adopt newly viable ESG practices and business models pre-emptively and comprehensively.

Limitations

We acknowledge three limitations. First, the presented recommendations are based on qualitative observations. While the literature review allowed us to identify mechanisms and determinants, we cannot judge the relative importance of some determinants in comparison to

others. Such a quantitative comparison would, however, be an interesting future research project.

Second, the academic literature is biased towards publicly listed corporations and stock markets, due to data availability. Accordingly, also this literature review is somewhat biased towards public stock markets. There are potentially further relevant impact mechanisms in specific financial markets, such as corporate debt, private equity, bank lending, and real estate, which are not reflected in this article.

Third, this review article was limited to investor impact, even though company impact is an equally important component of investment impact. It is challenging to review company impacts, given that company impacts are very industry specific. Nevertheless, a thorough review of company impacts would provide a helpful complement to this article.

Conclusion

SI is increasingly thought of as a tool to achieve societal goals, such as the United Nation's sustainable development goals (SDG). However, the ESG metrics that currently guide SI are not adequate to assess such outcomes, because they fail to reflect the investor impact on companies. This article undertakes a comprehensive literature review which identifies and compares the relevant mechanisms of investor impact. It shows that shareholder engagement impacts are relatively reliable, capital allocation impacts are likely to work under the right set of circumstances, and indirect impacts are relatively uncertain. The results allow a qualitative assessment of investor impact and support the development of more comprehensive ESG metrics that truly reflect the contribution of SI to societal goals.

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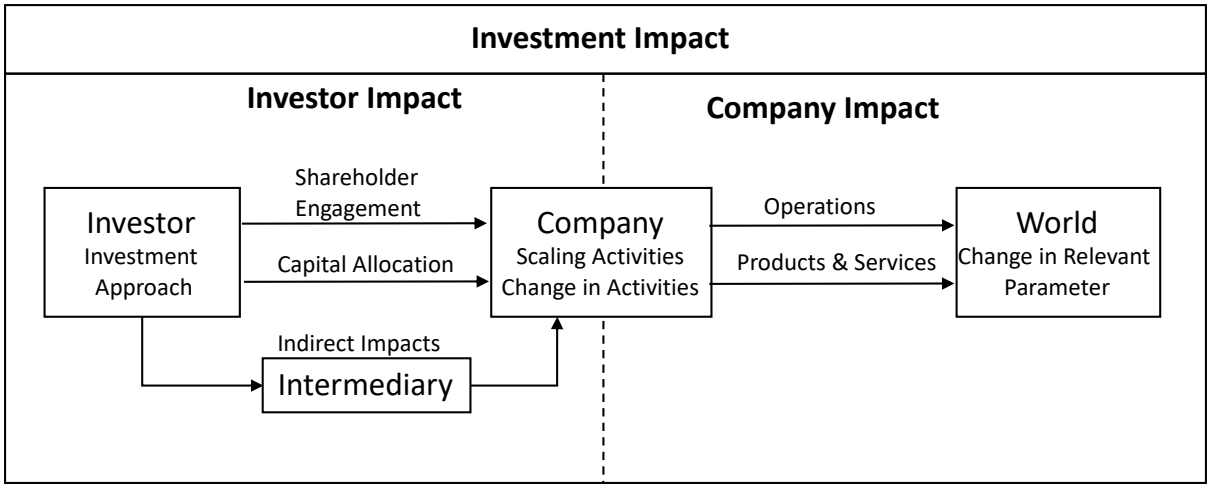

Figure 1: Framework outlining the components and mechanisms of investment impact

Table 1: Comparison of impact mechanisms

Mechanism	Level of empirical evidence	Key Determinants
Direct Impacts		
Shareholder Engagement Impact	**Direct evidence** Entire mechanism has been analyzed	1. Investor influence (+) 2. Company's level of ESG experience (+) 3. Cost of requested reform (-)
Capital Allocation Impact	**Indirect evidence** Key parts of the mechanism have been analyzed separately	1. Market share of SI investors (+) 2. Deviation from market portfolio (+) 3. Substitutability (-) 4. Cost of reform (-) 5. Dependence on external capital (+)
Indirect Impacts		
Stigmatization Impact	**No evidence**	
Endorsement Impact	**Partial evidence** Some parts of the mechanism have been analyzed in isolation	1. ESG reputation prior to endorsement (-)
Benchmarking Impact	**Partial evidence** Some parts of the mechanism have been analyzed in isolation	1. Consistency of ESG benchmarks (+)
Demonstration Impact	**No evidence**	