Can Sustainable Investing Save the World?
Reviewing the Mechanisms of Investor Impact

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Abstract
This article asks how sustainable investing (SI) can effectively contribute to the achievement of societal goals. It conducts a literature review on investor impact, that is to say, the change that investors trigger in companies’ environmental and social impact. We distinguish three mechanisms of investor impact: shareholder engagement, capital allocation, and indirect impacts. The impact of shareholder engagement is well supported; the impact of capital allocation is partially supported; indirect impacts have little support in academic literature to date. These results suggest that sustainable investors could increase their impact by expanding shareholder engagement, by coordinating screening approaches on specific business practices that are easy to implement for companies, and by targeting companies whose growth is limited by external financing conditions. For rating agencies, we outline steps to develop investor impact metrics. For policymakers, we highlight that the potential of SI lies in diffusing good business practices rather than transforming industries.

JEL Classification: A13, G11, G12, Q51, Q56

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Introduction

There are growing expectations that sustainable investing (SI)—that is, investing that takes environmental, social, and governance (ESG) information into account—will contribute to the achievement of societal goals. Historically, the Quakers divested to avoid supporting the slave trade, and colleges divested to challenge the South African apartheid regime (Molthan, 2003). Today too, many investors are attracted to SI due to their altruistic motives (Hartzmark & Sussman, 2017; Riedl & Smeets, 2017), expecting that SI will allow them to make a positive impact. Banks and asset managers are catering to these expectations by offering more and more investment products that emphasize sustainability, responsibility, and—increasingly—impact (GSIA, 2018). Policy makers too are discussing SI as a potential mechanism for mitigating climate change (IPCC, 2018) and for helping us to realize the United Nations’ Sustainable Development Goals (SDGs) (Betti, Consolandi, & Eccles, 2018).

Yet in spite of these high expectations, little is known about the actual impact investors make through SI. We define investor impact as the change that investor activities achieve in company impact, and company impact as the change that company activities achieve in social and environmental parameters. These definitions are consistent with elements of the academic literature (Brest, Gilson, & Wolfson, 2018) as well as with the view of leading institutions in the field of impact evaluation (IFC, 2019).

The concept of investor impact is only beginning to take root in the SI industry. Currently, most SI funds either exclude firms operating in harmful industries or focus on companies that have in the past performed well on metrics of ESG performance. This is a static approach, which ignores that impact is fundamentally about change. Companies can and do change over time, and investors make an impact by triggering or accelerating such change. Due to lack of suitable metrics for investor impact, however, very few investors analyze how their activities cause companies to change. As a result, the majority of the USD 30 billion that are employed in SI today are invested in ways that promise only modest and perhaps negligible investor impact.

Also, the academic literature on SI has so far mostly ignored the concept of investor impact. There is substantial academic interest in SI (Hartzmark & Sussman, 2017; Liang & Renneboog, 2016; Lins, Servaes, & Tamayo, 2017; Renneboog, Terhorst, & Zhang, 2008; Riedl & Smeets, 2017). Most of that research, however, relies on ESG metrics that are, at best, measures of companies’ current impact but that do not reflect the impact investors have
on these companies. Studies that address the quality of ESG metrics (Chatterji, Durand, Levine, & Touboul, 2016; Vörösmarty et al., 2018) highlight a number of important problems with those metrics, but do not address the aforementioned lack of attention given to investor impact. Studies that do actually deal in some way with investor impact are published in diverse literature streams and focus on specific aspects of investor impact in varying contexts. As a consequence, there is a lack of clarity regarding the mechanisms of investor impact.

This article conducts a multidisciplinary review of the academic literature that deals with investor impact. We distinguish shareholder engagement, capital allocation, and indirect impacts as the three principal mechanisms of investor impact. For each mechanism, we evaluate the existing empirical evidence as reported in the literature and establish key determinants that increase or decrease investor impact. Shareholder engagement emerges as the most reliable mechanism, since the entire mechanism has been demonstrated empirically. The impact of capital allocation is less reliable, since not all parts of the mechanism have been studied empirically. Indirect impact mechanisms, which include stigmatization, endorsement, benchmarking, and demonstration have little support in the literature so far.

The findings of this review have important implications for investors, ESG data providers, and policy makers. Investors who want to stimulate real-world impacts could, as a first step, expand their shareholder engagement activities. As a second step, they could increase the impact of their capital allocation by screening for specific ESG practices with a low “cost of reform” in unison with a large coalition of investors, or by focusing on small and medium-sized companies that have positive company impact but are restricted in their growth by external financing conditions. ESG data providers, meanwhile, should consider developing metrics of investor impact, which would profoundly change decision-making in SI. Finally, policy makers should be aware that the potential of SI lies more in diffusing good business practices than in phasing out harmful industries.

**Key Concepts and Scope**

Our literature review aims to gather the available scientific knowledge on the mechanisms of investor impact. To set the scope of the review, we provide a detailed explanation of the concept of investor impact and describe the mechanisms that lead to investor impact, as illustrated in Figure 1.
Investor Impact

The notion of impact in an investment context was originally developed in development finance, where funds are directed toward programs, with the intention of improving livelihoods. The World Bank characterizes impact as “...causal effects of a program on an outcome of interest” (Gertler, Martinez, Premand, Rawlings, & Vermeersch, 2011, p. 8). There is a rich literature concerned with impact evaluation, mostly with applications to development finance, philanthropy, and foreign aid (Bamberger, Rugh, & 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 in the sense that the change would not have occurred in the absence of the activity. The last requirement is also referred to as additionality (see, e.g., Greiner and Michaelowa, 2003). On this basis, we define impact as change in a specific social or environmental parameter that is caused by an activity.

In the context of SI, it is useful to distinguish between the impact of investors and the impact of companies. Investors do not have a direct impact on social and environmental parameters. Instead, investors have an impact on the companies they invest in, which in turn have an impact on social and environmental parameters (Brest and Born, 2013; Brest et al., 2018). Thus, as previously defined, we refer to investor impact as the change that investor activity achieves in company impact, and we refer to company impact as the change that a company’s activities achieve in a social or environmental parameter.

A more formal statement of these definitions reveals that investor impact can be achieved in two different ways. Assume that a social or environmental parameter $P$ depends among other variables on the level of company activity $A_c$. Company activity can refer both to a company’s operations or to its products and services. Then company impact $I_c$ is the marginal change in parameter $P$ per unit of company activity $A_c$, integrated over the level of company activity.

$$ I_c = \int_0^{A_c} \frac{\partial P}{\partial A_c} dA_c $$

(1)
To simplify, we define \( q \), the social or environmental quality of a company’s activities, as the average change in parameter \( P \) per unit of company activity \( A_c \). It follows that company impact is given by the product between the level and the quality of company activity.

\[
I_c = A_c q
\]  

(2)

As previously defined, investor impact \( I_i \) is the change in company impact \( I_c \) achieved by investor activity. Assuming \( I_c \) depends among other variables on the level of investor activity \( A_i \), \( I_i \) is the marginal change in company impact \( I_c \) per unit of investor activity \( A_i \), integrated over the level of investor activity \( A_i \).

\[
I_i = \int_0^{A_i} \frac{\partial I_c}{\partial A_i} dA_i
\]  

(3)

Using Equation 2, we can provide a mathematical definition of investor impact in terms of the changes in the level of company activity \( A_c \) and the quality of company activity \( q \).

\[
I_i = \int_0^{A_i} q \frac{\partial A_c}{\partial A_i} + A_c \frac{\partial q}{\partial A_i} dA_i
\]  

(4)

Equation 4 shows that there are two fundamentally different ways for investors to achieve investor impact. First by growing the level of company activity, second by improving the quality of company activity.

To give an example, consider a company that manufactures solar panels. We will look at impacts on global carbon dioxide emissions per year as the parameter of interest. The level of the company’s activity is measured in solar panels produced, and the quality of the company’s activity is given by the average carbon emission savings achieved with each panel produced. Let’s assume the company sells 10,000 panels per year, each of which, over its life cycle, avoids 3 tons of carbon emissions. Then the company impact is 30,000 tons of avoided carbon emissions per year.

Now, consider an investment in this solar panel manufacturer. Investor activity can be measured in terms of dollars invested, and we will assume there is a USD 1 million investment in the company’s equity. If this is a new financing round, this investment may allow the company to increase its production of solar panels by, for example, 10%. As a result, the company impact will increase by 10% yielding an investor impact of 3,000 tons of avoided carbon emissions. If, however, this is not a new financing round, the investor behind
this investment may use the influence that comes with his or her equity stake to improve the quality of the company’s activity. For example, the investor may convince the company’s management to recycle old solar panels, increasing the carbon emissions avoided per panel by 10%. Again, the company impact will increase by 10%, yielding an investor impact of 3,000 tons of avoided carbon emissions—simply by alternative means.

To illustrate how this example could be applied in practice, one might consider using a company’s ESG practices as a proxy for \( q \) and the company’s size as a proxy for \( A_c \). Positive investor impact could be achieved by either improving the company’s ESG practices, or by increasing the company’s size, provided that its ESG practices are above average.

**Mechanisms of Investor Impact**

There are various mechanisms that lead to investor impact. In order to make sure that our review covers all the relevant mechanisms, we conducted a series of interviews with experts from the sustainable investing industry. We asked them for anecdotal evidence when their activities or the activities of their organizations have led to investor impact. In addition, we shared and obtained feedback on earlier versions of this article from asset managers, asset owners, and regulators in Switzerland and the US during conferences and workshops.

These exchanges pointed to three fundamental mechanisms that may achieve investor impact, namely, shareholder engagement, capital allocation, and indirect impacts. Shareholder engagement refers to the activities of shareholders that are intended to change companies’ ESG practices, often referred to as “voice” (Hirschmann, 1970). These include the right to vote on shareholder proposals during annual general meetings, discussions during informal meetings with management, and criticizing corporate practices in news outlets, as well as threats of exit (see e.g. Admati and Pfleiderer (2009), McCahery, Sautner, and Starks (2016), and Amel-Zadeh and Serafeim (2017)). Capital allocation refers to the rather fundamental investor activity of allocating capital towards particular financial assets. Investors may either buy a company’s financial assets, implicitly backing the company with their capital, or sell a company’s financial assets, denying the company such backing. The latter is commonly referred to as “exit” (Hirschmann, 1970). Indirect impacts include a range of impacts that take effect through third parties. Stigmatization refers to an investor tainting a company’s image in public; endorsement refers to an investor endorsing and promoting a company’s sustainability performance; benchmarking refers to rating agencies measuring and
benchmarking a company’s ESG performance; and demonstration refers to investors encouraging other investors to follow their lead.

The range of mechanisms that are considered is limited to those mechanisms that are uniquely investor specific. For example, investors may have a very important impact by directly engaging with regulators. However, examining this sort of lobbying activity would dilute the focus of the literature review, since lobbying is a mechanism that is also open to many other actors. Furthermore, we focus on the impact that investors have through companies and in association with equity and debt investments in companies. Investors may exert impact also through other investable entities, such as countries or real estate. While such impacts may also be relevant, and in some ways similar, they are not included in this literature review.

**Scope of the Literature Review**

The scope of the review includes scholarly work that addresses the identified mechanisms of investor impact as illustrated in Figure 1. For each mechanism, we queried academic databases with keywords describing the investor impact mechanisms, yielding an initial body of literature. We then extended the range of keywords by searching for central concepts and keywords drawn from identified articles. For example, the concept of “stock price elasticity” was identified as an important theoretical basis for capital allocation, leading us to include a body of literature dealing with stock price elasticity in our review. This approach ensured that we could identify all articles that are important for the identified mechanisms, even if they use different terms to describe the mechanisms, or deal only with particular aspects of the mechanisms.

Using this approach, we identified a total of 64 relevant articles from a range of different disciplines. Capital allocation is dealt with mostly in the financial economics literature, specifically asset pricing and corporate finance. Shareholder engagement is dealt with mostly in the corporate governance literature, as well as in management science. Indirect impacts are dealt with primarily in business ethics, management science, and sociology. We analyze this body of literature to assess the empirical evidence for each mechanism as well as known determinants affecting the effectiveness of the mechanism.
**Literature Review**

Table 1 provides a comparison of the level of empirical evidence for the mechanisms of investor impact, as well as the known determinants that are likely to influence the mechanisms’ effectiveness. Determinants that have a positive influence on effectiveness are denoted with a plus sign, those with a negative influence with a minus sign.

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**Shareholder engagement**

The impact of shareholder engagement on company activities is relatively straightforward to trace. An investor requests that a company implement a certain change, and the company either follows through or not. There are five empirical studies that analyze the extent to which companies comply with shareholder engagement requests (Dimson, Karakaş, & Li, 2015; Hoepner, Starks, Sautner, Zhou, & Oikonomou, 2016; Barko, Cremers, & Renneboog, 2017; Dimson, Karakaş, & Li, 2018; Dyck, Lins, Roth, & Wagner, 2019). The key results of these studies are summarized in Table 2. Taking different approaches and relying on different data, each study reports the success rate of a given number of shareholder engagement requests as part of its analysis. The results show that while shareholder engagement requests do not always succeed, there is a reasonable probability that they do, ranging from 18% to 60% per cent.

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Going further into detail, Barko et al. (2017) and Dyck et al. (2019) show that shareholder proposals are associated with subsequent increases in the ESG rating of targeted companies, providing evidence that shareholder engagement can lead changes in company activities that are detected in data which is not provided by the engagement service itself. Together, these studies provide strong evidence that shareholder engagement is an effective mechanism through which investors can trigger reforms that improve the quality of company activities.

The success rate of shareholder engagements depends on a host of determinants related to characteristics of the engagement request, the company engaged, the investor...
engaging, and the specific process of engagement (Goranova & 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 that 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 those in the governance domain. More explicitly, Barko et al. (2017) show that requests that require some form of costly reorganization have lower success rates compared to less costly requests. Taken together, these findings indicate that the chances of success decrease as the costs of the requested reform rise.

The second determinant is investor influence. There is evidence that engagement requests are more likely to succeed when the shareholder engaging holds a larger share of the targeted company (Dimson et al., 2015, Dimson et al., 2018). However, it is not only the presence of larger holdings that causes investor influence to increase. Dimson et al. (2018) find that a group of investors engaging has more influence when the engagement is spearheaded by an investor who is from the same country as the company being engaged, suggesting that linguistic and cultural elements 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 investors engaging.

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 had high ESG ratings prior to the engagement are more likely to comply with engagement requests (Barko et al., 2017).

Capital Allocation

While the impact of capital allocation on company activities may seem intuitive at first glance, it touches upon a rather fundamental question—namely, to what extent the decisions of investors influence the course of the real economy (see, e.g., Morck, Shleifer, & Vishny, 1989). From the reviewed literature, we identify two mechanisms governing how the capital allocation of sustainable investors may influence company impact: by creating incentives to
improve ESG practices and therefore the quality of company activities, and by affecting growth and therefore the level of company activities. In the following, we review the available literature for each of these two mechanisms.

**Incentivizing Improvements**

Sustainable investors may shift asset prices by applying screening approaches, i.e. by selectively allocating their capital to companies that fulfill certain screening criteria. In this way, investors can create incentives for companies that do not fulfill the criteria to enact reforms. Thus, investors may be able to trigger changes in ESG practices through screening approaches. There is no empirical evidence that explicitly links sustainable investors’ screening approaches to changes in ESG practices. There is, however, evidence that screening approaches affect asset prices, and theoretical models that predict an effect on ESG practices. There remains, however, considerable uncertainty about the effect size.

Several theoretical studies have modelled the consequences of screening on asset prices. In their equilibrium model, Heinkel, Kraus, & Zechner (2001) argue that sustainability preferences of investors can influence asset prices. This is in line with findings of Fama and French (2007) as well as those of Luo and Balvers (2017), both pairs of authors showing—based on standard asset pricing models—that preference-neutral investors require a premium for balancing out the portfolio choices of investors who share a particular non-financial preference, because this forces the preference-neutral investors to deviate from the market portfolio. Further, Heinkel et al. (2001) show that if the decrease in the stock prices of firms that do not conform to the requirements of sustainable investors’ screening approaches is high enough, these firms will start to implement the reforms demanded by sustainable investors. This is in accordance with Edmans, Goldstein, and Jiang (2012), who argue that when managerial incentives are tied to stock market value, managers will be sensitive to shifts in the share price of their corporation. Regarding the proportion of investors that needs to apply a screening approach in order to trigger corporate improvements, Heinkel et al. (2001) provide a numerical example in which at least 20% of investors need to apply a common screening approach to create the incentive for a company to implement reforms that cost 5% of its annual cash flow.

Similarly, the equilibrium model of Gollier and Pouget (2014) shows that by “voting with their feet”—that is, by consistently divesting from companies that do not fulfill certain criteria—investors can lower asset prices for these companies and with that incentivize firms
to invest in order to fulfill the criteria. Based on the findings of the Stern Review (Stern, 2008), Gollier and Pouget (2014) estimate that 8% of investors applying the same screening approach is required to incentivize the investments in the new technologies required to mitigate climate change. However, both the quantitative estimates of Gollier and Pouget (2014) as well as Heinkel et al. (2001) must be considered with caution as they depend strongly on stylized assumptions and are not based on empirical data. Both studies predict, but do not show an effect of sustainable screening approaches on company activity.

A series of studies provide empirical evidence that screening approaches of sustainable investors can affect asset prices in stock and bond markets, as well as in markets for venture capital and private equity. The reviewed studies differ substantially, however, in terms of the reported effect size.

Two empirical studies that 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 portfolios. They show that sin stocks have depressed prices and exhibit outperformance of 2.5% per year, relative to comparable stocks. This result implies that the moral aversion of investors for sin-stock companies has decreased the 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 these divestments had no discernible effects on asset prices (Teoh, Welch, & Wazzan, 1996).

Recent studies on green bonds—that is, bonds that are issued to finance projects with environmental benefits—indicate that the sustainability preferences of investors can influence bond prices. Baker, Bergstresser, Serafeim, and Wurgler (2018) find that at issue, the 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) shows that sustainability preferences of investors result in a negative yield premium of 0.02% for green bonds. Hachenberg and Schiereck (2018) too confirm that green bonds are traded with a negative yield premium, while Tang and Zhang (2018) do not find such a premium.

Studies of stock price elasticity in public equity markets confirm that shifts in investor demand can influence stock prices, even when fundamental values remain unchanged. A large set of studies makes use of the fact that, due to passive investors, the inclusion or exclusion of
companies in or from popular indexes, including the S&P 500 index, triggers substantial investments in or divestments from these firms (Shleifer, 1986; Lynch & Mendenhall, 1997; Beneish & Wahley, 1996; Kaul, Mehrotra, & Morck, 2000; Wurgler & Zhuravskaya, 2002; Chang, Hong, & Liskovich, 2015). All in all, 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, & Van Drunen, 1991), or auction repurchases (Bagwell, 1992) come to similar conclusions.

However, there is no consensus on how steep demand curves for stocks are, that is, how strongly a given change in demand affects share prices. A useful measure for the steepness of demand curves in stock markets is the price elasticity of demand.\(^1\) 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 presented by Loderer et al. (1991), Kaul et al. (2000), and 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, of between -1 and -1.5.

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 by between 7% and 21%, corresponding to an elasticity of -5 to -14. This is in line with the findings of Diller and Kaserer (2009) who find that demand effects influence private equity funds’ returns.

Taken together, the literature provides evidence that the capital allocation of sustainable investors can affect asset prices. However, it leaves open two important questions. First, there is no agreement on the size of the effect sustainable investors have on asset prices, making it difficult to judge whether the effect is material. Second, while there is evidence that

\(^1\) Price elasticity of demand is defined here as \((\%\Delta Q / \%\Delta P)\), where \(Q\) is the quantity of the demanded good and \(P\) its price. As for stocks, supply curves are vertical, \(Q\) can be interpreted as excess demand (Wurgler & 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 a flat demand curve would be negative infinity; and changes in demand would not affect prices at all.
the capital allocation of sustainable investors has affected asset prices in some cases, there is so far no evidence that such changes in asset prices have translated into changes in ESG practices. Nevertheless, the literature reviewed above highlights three specific determinants that increase the likelihood that sustainable investors’ screening approaches lead to improvements in the quality of companies’ activities.

Firstly, the effect of an investor’s screening approach is likely to be higher if a large proportion of investors apply the same approach. The equilibrium models of Heinkel et al., (2001), Fama and French (2007), Gollier and Pouget (2014), and Luo and Balvers (2017) indicate that the total effect of screening approaches on asset prices, as well as the marginal effect per additional dollar involved, increases with the fraction of wealth commanded by investors that apply the same screening approach. Hence, the effect of an individual investor’s decisions depends on how many other investors apply the same screening approach.

Secondly, the effect of investors’ screening approaches is likely to be higher for companies whose assets are not easily substitutable. The models of Heinkel et al. (2001) and Fama and French (2007) show that the capital allocation of sustainable investors has a stronger effect on the prices of assets whose returns are only weakly correlated with the market portfolio, that is, assets that are not easily substitutable. Counterbalancing sustainable investors’ demand for these assets requires a higher deviation from an optimally diversified portfolio from neutral investors than is the case for stocks that have very close substitutes. Accordingly, both Wurgler and Zhuravskaya (2002) and Ahern (2014) find empirical evidence that stocks with low substitutability exhibit a lower price elasticity.

Thirdly, a screening approach is more likely to cause companies to improve their ESG practices if for a company to implement the reforms required to conform to the requirements embodied in the screening the costs are low. The models of Heinkel et al. (2001) and Gollier and Pouget (2014) point out that whether changes in asset prices caused by screening approaches of sustainable investors provide sufficient incentives for companies to improve the quality of their activities depends on how costly the reforms demanded by sustainable investors are.

Affecting Growth

The capital allocation of sustainable investors may also affect the growth of companies by changing the financing conditions these companies face. In this way, sustainable investors
may be able to alter the levels of activity of particularly sustainable or unsustainable companies. The literature studies two ways in which investors can change financing conditions for companies and highlights that the impact depends on further characteristics such as company size, company age, and market maturity.

A direct way in which sustainable investors may enhance a company’s financing condition is by providing capital on concessionary terms. Subsidizing companies that are deemed beneficial for development by providing them with financing at below market conditions is widely practiced by development finance institutions and other public sector actors and has been shown to enhance corporate investment (see, e.g., Yaron & Schreiner, 2001; Cravo & Piza, 2016; Kersten, Harms, Liket, & Maas, 2017). Brest and Born (2013) and Brest et al. (2018) as well as Chowdhry, Davies, and Waters (2019) argue that private investors too can promote sustainable companies by providing them with capital on concessionary terms, that is, with better conditions than these companies would obtain from preference-neutral investors. Thus, there is evidence that concessionary provision of capital can improve financing conditions.

A more indirect way for sustainable investors to alter financing conditions is by affecting the prices of company’s financial assets for the entire market. As discussed in the previous section, the capital allocation of sustainable investors can affect asset prices under specific conditions, most notably the condition that sustainable investors represent a substantial market share. In this way, capital allocation may not only create managerial incentives to change but also change the cost at which affected companies raise capital from other investors (see, e.g., Fischer & Merton, 1984). In an equilibrium model Beltratti (2005) shows that if investors underweight unsustainable companies, this can increase the cost of capital for these companies, reduce their investment activity, and thus decrease their market

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2 Brest and Born (2013) as well as Brest, Gilson, and Wolfson (2018) point out that investors can make concessions in different ways. Brest and Born (2013) list six ways in which sustainable investors can provide capital to companies at conditions these companies would not otherwise enjoy: (1) making investments at below market conditions, (2) providing loan guarantees, (3) taking subordinated debt or equity positions, (4) accepting longer terms before exit, (5) providing flexibility in adapting investments, and (6) identification of investment opportunities that the market fails to notice, which, as Brest et al. (2018) argue, is associated with concessions in the form of increased due diligence and monitoring costs.
share. However, while effects of non-concessionary capital allocation on asset prices and the cost of capital are supported in the empirical literature, associated changes in growth are not.

Regardless how investors alter a company’s financing conditions, the literature points to several company characteristics that determine whether a change in financing conditions translates into accelerated growth of company activities. A non-fundamental movement in stock prices, such as the one created by the demand of sustainable investors, only translates into corporate investment activity when the company depends on external capital to finance these investments (Baker, Stein, and Wurgler, 2003). According to Kaplan and Zingales (1997) many publicly traded companies do not depend on external capital. Large, established companies in particular often have sufficiently large cash flows to cover investments. While a number of studies show that large companies with good ESG ratings enjoy a lower cost of capital (e.g. Chava, 2014), it is ambiguous whether this is due to investor demand—and thus an investor impact—or due to superior risk characteristics of those companies.

In contrast, a series of empirical studies show that small firms and young firms as well as firms operating in less mature financial markets with weak institutions are more likely to be restricted in their growth by the cost of external financing (Rajan & Zingales, 1996; Beck, Demirguc-Kunt, Laeven, & Maksimovic, 2006; Beck, Demirguc-Kunt, & Maksimovic, 2008; Bloom, Mahajan, McKenzie, & Roberts, 2010). Especially in developing countries, many small and medium-sized companies lacking any access to external financing (Beck & 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 & Udell, 1998; Carpenter & 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.

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3 In fact, changes in the cost of capital caused by sustainable investors’ capital allocation can also be viewed as a concession. As illustrated by the model of Beltratti (2005), increased costs of capital for unsustainable companies are associated with decreased returns for sustainable investors.
Taken together, there is only partial empirical evidence that the capital allocation by sustainable investors can enhance the growth of sustainable companies. Nevertheless, the literature points to determinants on which such an impact likely depends. The first determinant is whether the investor changes the company’s financing conditions, either by lowering the cost of capital or improving access to finance. Additional determinants arise from the issue that a change in financing conditions only affects the level of company activity when the company’s growth is constrained by external financing. Company size, age, and the maturity of the financial market in which the company’s financial assets are traded all tend to reduce the degree to which growth is constrained in this way. Thus, capital allocation is more likely to affect growth for young, small firms in immature markets than for large, established firms in mature financial markets.

**Stigmatization**

Investors can stigmatize a company by divesting the company’s assets or categorically excluding it from their portfolio. Apart from the 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 made by sustainable investors have led to stigmatization.

**Endorsement**

Investors can endorse companies for their social or environmental performance by including them in their portfolio or sustainability index. Such endorsement may help to increase the visibility and reputation of a company, indirectly helping it to gain customers or motivate employees. We were not able to identify studies that analyze to what extent company reputation and sales were 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 & Lewis, 2018; Searcy & Elkhawas, 2012). The fact that companies communicate index inclusion suggests that such 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**

SI is feeding a growing industry of ESG rating agencies (Eccles & Stroehle, 2018). These rating agencies develop standards, create ESG benchmarks, and request increasing amounts of data from companies. The growth of this industry may encourage companies to report on their ESG practices in order to satisfy these increasing data demands. Measuring and reporting may then also induce companies to improve their performance, for example because companies are benchmarked against peers, or simply because measuring ESG performance indicators enables companies to also manage their ESG performance.

The literature provides no direct evidence that investors have impact via their support for ESG rating agencies. This is also difficult to discern, because even though it is fairly obvious that ESG rating agencies exist due to demand from sustainable investors, it is not clear whether additional investors buying or using ESG ratings will further strengthen these agencies’ benchmarking impact.

However, a number of studies have investigated the impact of standards and ratings on social and environmental performance. Regarding standards, one study concludes that the introduction of the voluntary ISO 14000 standard for environmental management has led firms to improve their environmental outcomes (Melnyk, Sroufe, & Calantone, 2003). Another study, however, concludes that the adoption of this standard had no discernible effect on environmental outcomes (Hertin, Berkhout, Wagner, & Tyteca, 2008). Thus, the mere existence of ESG standards may not suffice to improve outcomes, even though it must be borne in mind that ISO 14000 is just one of many different standards in the ESG domain.

Studying ESG ratings specifically, Chatterji and Toffel (2010) provide evidence that companies improve environmental performance in response to receiving a low ranking in an
environmental benchmark. They find this to be especially the case when the cost of reform is low, and when the company 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, Chatterji et al. (2016, p. 1609) conclude that “SRI ratings will have a limited impact on driving rated firms toward any particular shared behaviors”. One important determinant of the effectiveness of the benchmarking impact is thus the consistency of ESG benchmarks—the more consistent ESG benchmarks are, the greater is their effect on company activities.

**Demonstration**

Besides affecting companies’ impact through their own activity, investors engaging in SI may also encourage other investors to do the same. We identify two mechanisms via which sustainable investors may be able to do so.

Firstly, sustainable investors may help to establish SI as a social norm (see, e.g., Cialdini & Trost, 1998). Research on charitable giving has shown that potential donors are more likely to give if they learn that others give as well (Frey & Meier, 2004; Shang & Croson, 2009; Della Vigna, List, & Malmendier, 2012). Whether this mechanism applies in the context of SI, however, is not clear.

Secondly investors pioneering novel investment approaches may increase subsequent flow of capital into these approaches. For example, Egli, Steffen, and Schmidt (2018) show that learning and associated efficiency gains within the renewable energy finance industry have reduced the cost of capital for renewable energy projects over time. Geddes, Schmidt, and Steffen (2018) argue that enabling financial sector learning is an important way in which development banks encourage private investments in low-carbon energy generation. Thus, early investors in novel approaches or markets may have an impact not only through their own investment, but also through subsequent investments that they enable. Since in these cases investors are one player in an evolving ecosystem involving technology providers, service providers, and regulators, it is very difficult to separate the investor impact in this case from contemporaneous factors, there is no clear empirical evidence for demonstration impacts. Nevertheless, it might be a rather important investor impact mechanism in some settings.
Discussion

Table 1 provides an overview of the reviewed investor impact mechanisms. Shareholder engagement emerges as most reliable in the sense that a relationship between investor activity and a change in the quality of company activity has been demonstrated empirically. Capital allocation has not been studied in its entirety, but important parts of the mechanism are empirically demonstrated, both for incentivizing improvements as well as for affecting growth. Indirect impacts are relatively uncertain, due to a lack of empirical studies that indicate their effectiveness.

The investor impact of shareholder engagement has been demonstrated in several studies. This impact increases with the influence of the investor engaging and the ESG experience of the company engaged. It decreases with the cost of the requested reforms, making it somewhat unclear whether shareholder engagement can trigger major change. Nevertheless, shareholder engagement is a mechanism that has been shown to achieve investor impact reliably.

Capital allocation impact emerges from the literature review as a somewhat less reliable mechanism since we found no study that establishes a direct link between capital allocation by SI investors and a change in company activities. However, key parts of the mechanism have been studied and the results indicate that capital allocation could have investor impact in two different ways.

First, screening approaches may incentivize companies to adapt their practices. There is evidence that screening can affect asset prices; there is, however, no evidence to date that such a change in asset prices has indeed led companies to improve the quality of their activities. The likelihood that screening approaches have such an effect increases with the market share of investors applying the same screening approach, and decreases with the substitutability of the securities that are excluded. A further determinant is the cost of the reform that is required if a company is to evade the screen.

Second, investing in sustainable companies may increase the level of company activities. There is evidence that improved financing conditions can accelerate firm growth, but only when financing is a limiting factor. The likelihood of this impact increases with the improvement in financing conditions that the investor provides to the company compared to the status quo. It decreases with the age and size of the company, as well as with the maturity of the financial market in which the company’s financial assets are traded.
Indirect impacts emerge, with regard to their effectiveness, as very uncertain in the extant literature. While there is anecdotal evidence for indirect impacts, none of the indirect impact mechanisms has been analyzed comprehensively—in the sense that investor activities were related to a change in company activities. There is no empirical evidence for the effects of stigmatization and demonstration. There is empirical evidence, however, for endorsement and benchmarking, yet it covers only part of the mechanisms, so that the extent of investor impact remains speculative. In terms of determinants, there are indications that an investor’s endorsement is more valuable when the endorsed company has a poor prior ESG reputation. Benchmarking would likely be more effective were different ESG benchmarks consistent—that is, if they identified the same laggards and leaders. It is important to note that lack of evidence for indirect impacts does not imply that indirect impacts are irrelevant. They may be relevant, but so far the published academic literature does not provide evidence for their effectiveness.

Applying these findings to today’s USD 30 billion market for SI (GSIA, 2018) suggests that the bulk of SI assets are invested in ways that promise rather modest and perhaps negligible investor impact. Shareholder engagement, identified as the most reliable mechanism, is practiced for only 18%\(^4\) of global SI assets, and for a mere 10% in the US.

About 50% of assets are invested in screening approaches, and 32% rely on ESG integration. However, there is a lot of diversity in the screening approaches, and there is inconsistency between different ESG ratings. This diversity means that even though the combined market share of these approaches is substantial, the effective market shares behind specific approaches are small. This dilutes any effect on asset prices and with it the incentives for companies to implement reforms. In addition, some of the most popular screening approaches exclude industries rather than practices, meaning that companies sometimes barely have the opportunity to conform to the investment screen.

A mere 1% of global SI assets is invested in so-called impact investing, where accelerating the growth of sustainable companies is usually an objective. Such investments often include concessions to the investee, and are placed in companies that have limited

\(^4\) This and the percentage numbers that follow are based on GSIA (2018).
access to financing. A slightly higher percentage, 3%, is invested in private equity or venture capital, where a capital allocation impact on growth is more likely given that firms tend to be younger and smaller. Other SI approaches may also have an impact on growth; these are, however, less likely due to the fact that over 80% of SI assets are invested in publicly listed entities, where financing is usually less of a constraint.

In addition, SI may have indirect impacts, even if these are uncertain. For example, it may be that the fossil fuel divestment campaign stirs political and societal debate around fossil fuel consumption, and perhaps ultimately leads to less fossil fuel consumption. Similarly, it may be that the existence of ESG ratings shapes management decisions in a certain way. Most promising, perhaps, demonstrating the feasibility of investments into novel approaches or technologies may trigger subsequent investments. So far, though, there is no clear evidence that investor activity is driving such developments.

**Implications**

Taken together, our results suggest that the investor impact of SI as it is practiced today is rather modest. At the same time, they hold a number of implications for investors, ratings agencies, and policymakers with regard to how it could be increased.

**For Investors**

First, investors could expand their shareholder engagement. There is clear evidence that investors can, through such engagement, have an impact. While the changes that can be achieved at companies may be small, the approach is flexible and can therefore be scaled across entire portfolios.

Second, sustainable investors could coordinate and apply screening approaches concerning very few, widely shared priority issues. The most promising screening approaches would be focused on practices that can be implemented by companies at low or even negative cost and result in substantial improvements in company impact. The way in which the Institutional Investor Coalition on Climate Change communicates its members’ expectations for specific sectors may constitute a step in this direction.

Third, 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. Supplying capital to such companies creates better chances of unlocking the additional growth of sustainable activities.
Fourth, investors who are convinced that they can have indirect impacts could attempt to demonstrate them. While there is currently little scientific evidence for indirect impacts, SI funds could provide examples or look at intermediate proxies for impact that make these impacts more tangible. For instance, investors could measure the level and the tone of media attention in response to an exclusion announcement as a proxy for stigmatization. Similarly, fund managers who launch an innovative product could track the uptake of their innovation by others as a proxy for demonstration.

**Rating agencies**

Rating agencies and ESG data providers could play an important role in changing the SI industry by developing metrics that reflect investor impact. Currently, many rating agencies start to offer metrics of company impact, for example by analyzing which company activities contribute to the SDGs.

However, when these ratings are used to indicate investor impact, the resulting assessment is likely to be highly misleading. For example, a fund that successfully induces emission intensive companies to adopt emission reduction practices may appear to have less impact than a fund that invests in companies that already have these practices in place. This is because the rating provides a static view of company impact, and not a dynamic view that evaluates changes in company activities. A valuable first step would be to look at the changes in ESG ratings, even though these changes are obviously not exclusively driven by investor activity.

Going beyond that, ESG data providers should develop investor impact metrics. For example, the recently released principles for impact management from 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). 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

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5 While there are many efforts to develop measures for company impact, we acknowledge that there may still be a significant amount of work to be done before company impact is measured adequately, as pointed out by Chatterji et al. (2016) and Vörösmarty et al. (2018).
require the application of novel methodologies, developing these methodologies may be attractive due to their scalability. Company impact requires different methodologies for each industry; investor impact applies generally and to any investment.

**Policy makers**

Policy makers should be aware that SI on its own is unlikely to result in the dramatic transformation that is required, for example, for the decarbonization of the economy. Changes of this nature also require policies that directly change the viability of sustainable economic activities, such as taxes on pollution or minimum standards. Rather than making such policies unnecessary, SI may be a suitable complement in that it incentivizes companies to adopt newly viable ESG practices and business models preemptively and comprehensively. This creates an opportunity for regulators to actively cooperate with the SI industry. Many SI proponents argue that material ESG aspects, where doing good coincides with good returns, will drive positive change. However, materiality ultimately depends on operational performance, and operational performance is influenced by policy and technological change. There can, therefore, be a positive feedback loop where regulators enact policies that make certain ESG practices operationally superior, and investors encourage ESG practices that point toward the next regulatory level.

**Limitations**

This article’s aim is to summarize the state of knowledge around investor impact based on a systematic evaluation of the extant academic literature. In this section, we report the article’s limitations and how they may affect our conclusions.

We acknowledge that investors may have a variety of motivations to engage in SI, and that the motivation to make an impact may not be important for all SI investors. For example, investors may have a desire to be morally aligned with their portfolio. If so, excluding certain industries that are perceived as “dirty” may be perfectly consistent with the investor’s motivation, even if it has no impact on the excluded industries (see, e.g., Haidt 2007). Other investors may engage in SI out of a financial motivation—expecting less risk for example. If so, integrating certain ESG factors into investment decisions is perfectly consistent with that motivation (see, e.g. Friede, Busch, & Bassen, 2015). In both of these cases, investor impact is irrelevant to investor motivation. However, we argue that from a societal perspective investor impact is the essential feature of SI, and that the motivation to make an impact almost always plays a role, even if it is hidden behind other motivations. If SI does not make
a difference, policy makers would have no reason to foster it, and academics would have little reason to study it.

This review is limited to published academic results, which may not fully capture all relevant aspects of investor impact. The academic literature is biased toward publicly listed corporations and stock markets, due to data availability. Accordingly, this literature review is also somewhat biased toward public stock markets. And 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 here. Also, aspects that are difficult to measure or are currently unfolding may not be represented appropriately. For example, there are increasing numbers of alliances of asset owners promoting sustainable finance, such as the Investor Coalition on Climate Change. These asset owner alliances may be having impacts on asset managers—impacts that though they are not yet covered in the academic literature may be important.

Future Research

This article concludes that shareholder engagement is a promising way to ensure investor impact. An important question that remains, however, 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 aforementioned 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, one critical knowledge gap is that there is currently no empirical study that relates capital allocation decisions made by sustainable investors to corporate growth or to improvements in corporate practices. Hong and 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 not only relate SI 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. Such a study would be a first essential step toward developing a metric of capital allocation impact.
Regarding indirect impacts, there is a need for studies that either investigate the entire causal chain of indirect impacts or inform critical pieces that are currently missing. It would be valuable to conduct, for example, a case study of the Fossil Free divestment campaign, to establish the consequences of the campaign in terms of media attention, investor behavior, and corporate decisions, as well as to relate it to broader economic, political, and cultural dynamics around the fossil fuel industry. Such a study would close important gaps in the scientific understanding of the investor impact of stigmatization and would provide guidance as to how and when to pursue it.

**Conclusion**

SI is increasingly thought of as a mechanism via which we can achieve societal goals such as the United Nation’s Sustainable Development Goals (SDGs). The ESG metrics that currently guide SI are, however, not adequate to assess the contribution of SI to societal goals because they fail to reflect investors’ impact on companies. Based on a comprehensive literature review, we conclude that investor impact through shareholder engagement is a relatively reliable mechanism, that capital allocation is likely to have impact under the right set of circumstances, and that indirect impacts remain uncertain. The results suggest that the current practice of SI has only a modest impact, and call for the development of more comprehensive ESG metrics that truly reflect the contribution of SI to societal goals.
References


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### Table 1: Comparison of the Evidence for and Determinants of Investor Impact

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Empirical Evidence</th>
<th>Key Determinants</th>
</tr>
</thead>
</table>
| **Shareholder engagement** | Entire mechanism has been analyzed. Evidence for effect on quality of company activity. | 1. Investor influence (+)  
2. Company’s level of ESG experience (+)  
3. Cost of requested reform (-) |
| **Capital allocation**    |                                                                                     |                                                                                  |
| **Incentivizing improvements** | Key parts of the mechanism have been analyzed separately.  
Indications for effect on quality of company activity. | 1. Market share of investors applying a screening approach (+)  
2. Substitutability of affected assets (-)  
3. Cost of requested reform (-) |
| **Affecting growth**     | Key parts of the mechanism have been analyzed separately.  
Indications for effect on level of company activity. | 1. Improvement in financing conditions (+)  
2. Size of company (-)  
3. Age of company (-)  
4. Maturity of financial markets (-) |
| **Stigmatization**       | No evidence.                                                                        |                                                                                  |
| **Endorsement**          | Some parts of the mechanism have been analyzed in isolation.  
Insufficient evidence for effect on level or quality of company activity. | 1. ESG reputation prior to endorsement (-) |
| **Benchmarking**         | Some parts of the mechanism have been analyzed in isolation.  
Insufficient evidence for effect on level or quality of company activity. | 1. Consistency of ESG benchmarks (+) |
| **Demonstration**        | No evidence                                                                         |                                                                                  |
Table 2: Success Rates of Shareholder Engagement Requests

<table>
<thead>
<tr>
<th>Reference</th>
<th># of requests</th>
<th>Sample period</th>
<th>Success rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimson et al. (2015)</td>
<td>2,152</td>
<td>1999-2009</td>
<td>18%</td>
</tr>
<tr>
<td>Hoepner et al. (2016)</td>
<td>682</td>
<td>2005-2014</td>
<td>28%</td>
</tr>
<tr>
<td>Barko et al. (2017)</td>
<td>847</td>
<td>2005-2014</td>
<td>60%</td>
</tr>
<tr>
<td>Dimson et al. (2018)</td>
<td>1,671</td>
<td>2007-2017</td>
<td>42%</td>
</tr>
<tr>
<td>Dyck et al. (2019)</td>
<td>147</td>
<td>2004–2013</td>
<td>33%</td>
</tr>
</tbody>
</table>

Figure 1: Key Concepts and Mechanisms

- Mechanisms:
  - Investor activity \( A_i \)
    - 1) Engagement
    - 2) Capital allocation
    - 3) Indirect mechanisms
  - Company activity
    - a) Change of level \( A_c \)
    - b) Change of quality \( q \)
  - World
    - Change in relevant parameter \( P \)

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