

Why and How Investors Use ESG Information: Evidence from a Global Survey

Amir Amel-Zadeh*

Saïd Business School, University of Oxford

George Serafeim

Harvard Business School

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Abstract

Using survey data from a sample of senior investment professionals from mainstream (i.e. not SRI funds) investment organizations we provide insights into why and how investors use reported environmental, social and governance (ESG) information. Relevance to investment performance is the most frequent motivation for use of ESG data followed by client demand and product strategy, bringing change in companies, and then ethical considerations. Important impediments to the use of ESG information are the lack of reporting standards and as a result lack of comparability, reliability, quantifiability and timeliness. Among the different ESG investment styles, negative screening is perceived as the least investment beneficial while full integration into stock valuation and engagement are considered more beneficial but they are all practiced with equal frequency. Current practices of different ESG styles, especially screening, are driven by product and ethical considerations. In contrast, integration is driven by relevance to investment performance. Future practices of ESG styles are driven by relevance to investment performance, bringing change in companies, and concerns about data reliability.

Keywords: *ESG, sustainability, investment performance, nonfinancial, disclosure*

* Corresponding author: Park End Street, Oxford OX1 1HP, UK. Email: amir.amelzadeh@sbs.ox.ac.uk.

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1. Introduction

In the past twenty-five years, the world has seen exponential growth in the number of companies measuring and reporting environmental (i.e. carbon emissions, water consumption, waste generation, etc.), social (i.e. employee, product, customer related, etc.), and governance (i.e. political lobbying, anticorruption, board diversity, etc.) data, collectively ESG data. While fewer than 20 companies disclosed ESG data in the early 1990s, the number of companies issuing sustainability or integrated reports had increased to nearly 9,000 by 2016.

Investor interest in ESG data also grew rapidly. Signatories to the UN Principles for Responsible Investment (PRI), launched in 2006, committed to incorporating ESG issues into their investment analysis and ownership policies and practices. As of 2016, the principles had about 1,400 signatories with total assets under management of about \$60 trillion.¹ As a further sign of the institutionalization of ESG data, Bloomberg terminals integrated ESG data in 2010, dramatically increasing the diffusion of ESG information. As of 2016, more than 100 rating agencies provided ESG data, including large data providers such as Thomson Reuters and Morgan Stanley Capital International (MSCI).

Recent studies have documented that ESG information is associated with numerous economically meaningful effects. Specifically, ESG disclosures are associated with lower capital constraints (Cheng et al. 2014), cost of capital (Dhaliwal et. al 2011), analyst forecast errors (Dhaliwal et. al 2012), and with stock price movements around mandatory ESG disclosure regulations (Grewal, Riedl and Serafeim 2017). Moreover, industry-specific classifications of materiality identify ESG information that is value relevant and predictive of firms' future financial performance (Khan et al.

¹ United Nations Principles for Responsible Investment, <http://www.unpri.org/signatories/signatories/>.

2016) and the disclosure of such information is associated with less stock price synchronicity whereby prices are moving more because of firm-specific information (Grewal, Hauptman and Serafeim 2017).²

While these studies document significant economic effects, we still lack a deeper understanding of why and how investors use ESG information as well as the challenges in using this information. To enhance our understanding and complement archival research, we administered a survey with the collaboration of a global financial institution (i.e. BNY Mellon). We received 413 responses from senior investment professionals with an average response rate across the questions in the survey of 9%. This is in line with other surveys that have collected responses from CFOs and obtained rates of 9, 8.4 and 5.4% (Graham and Harvey 2001; Graham, Harvey and Rajgopal 2005; Dichev et al. 2013). On a value weighted basis, our respondents comprise 43% percent of the global institutional assets under management (AUM), as respondents have \$31 trillion in AUM. Only 8% of the individuals responding to the survey on behalf of their institution have the title of ESG investment professional with the vast majority having the title of portfolio manager. Moreover, the vast majority of the responding institutions had no or only a small allocation in ESG-specific funds. Almost 70% of the sample has less than 10% of the assets in ESG-specific funds. Therefore, in contrast to many surveys in the ESG space, our sample reflects the views of largely mainstream investment professionals.

Although data collected through survey instruments potentially suffer from several problems (response bias, selection bias, attribution bias), surveys offer a way to collect data and provide insights in questions that cannot be addressed at that point in time by archival data. As Dichev et al. (2013) suggest, “Surveys... allow researchers to (i) discover institutional factors that impact practitioners’

² These studies use the materiality definition adopted by the Sustainability Accounting Standards Board, and defined by the U.S. Supreme Court: information is material if there is “a substantial likelihood that the disclosure of the omitted fact would have been viewed by the reasonable investor as having significantly altered the ‘total mix’ of information made available.”

decisions in unexpected ways and (ii) ask key decision makers directed questions about their behavior as opposed to inferring intent from statistical associations between proxy variables surrogating for such intent.” Therefore, our intention is to generate insights that provide directions for future archival research.

First, we address the question of *what motivates investors to use ESG data*. The clear majority of respondents (82%) suggest that they use ESG information because it is financially material to investment performance. We find a higher proportion of US compared to European investors (22% vs 4%) thinking that the information is not material for investment purposes and that using the information would violate their fiduciary duty (22% vs 8%). The latter finding is interesting in the context of recent guidance by the US Department of Labor that clarifies that incorporation of ESG information in investment decisions is consistent with fiduciary duties. A significant percentage of the sample considers the information also from an active ownership viewpoint (Dimson et al. 2015). They believe that engagement with companies can bring change in the corporate sector and address ESG issues, but again this belief is more widespread among European investors. An equal percentage of the sample considers ESG information because of growing client demand or formal client mandates. This is the case for larger asset managers consistent with these managers being reactive to the need to incorporate ESG information. A lower percentage of respondents considers such information because they see it as their ethical responsibility, with European investors being more likely to consider this an ethical responsibility. Overall, we find evidence that the use of ESG information has primarily financial rather than ethical motives in our sample.

Relatedly we assess the *barriers to ESG data use in the investment decision process*. Comparability, timeliness and reliability are all key qualitative characteristics that make financial information decision useful as identified in both US Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS). The biggest challenge to using ESG information for investment

decision making relates to the lack of comparability of reported information across firms. Respondents identify the lack of reporting standards as a major source inhibiting the comparability of reported information. Cost of gathering and analyzing ESG data is also identified as a major barrier. A large number of data providers have expanded their capacity and capabilities to collect and distribute the data to the investment community as a response. Quantification of ESG information is also identified as a major challenge, followed by lack of timeliness and concerns about the reliability of reported information.

In the second and main part of the paper we use our understanding of the motivations and barriers to examine *how the information is used by investors* in our sample and the perceived impact on returns. We find an equal number of investors using ESG information to engage with firms or as an input into their valuation models (37% and 34%). A significant percentage of the respondents use the information to define the investment universe through a screening process. In terms of screening, still the most frequently used approach is negative screening (i.e. excluding sin stocks and/or firms following ESG controversies). Positive screening methods, either across industries or within an industry (i.e. best-in-class) are still rarer (13%). Portfolio overlay, risk factor and thematic styles are all used by approximately 13% of the respondents in the survey. When we ask respondents to rate the different ESG styles and their impact on investment performance we find that negative screening is considered the most detrimental to financial performance. Full integration into stock valuation, active ownership, and positive screening are considered the most beneficial.

Using motivations, barriers and perceived impact on returns as independent variables and the use of different ESG investment styles as the dependent variables in a seemingly unrelated probit regressions framework, we find that investors' use of screening strategies is driven more by product strategy and ethical considerations and less so by economic considerations. In contrast, we find

investors are more likely to practice ESG integration because of economic considerations. All our models include controls for organizational and respondent characteristics.

The next set of results relates to *how investors will use ESG data in the future*. Considering the future, respondents expect that, among different ESG styles, positive screening and active ownership will become more important. Negative screening, thematic investing, best-in-class and full integration in stock valuation are expected to become less important. Our analyses suggest that compared to current practices, future practices are more likely to be driven by the materiality of the actions undertaken, in terms of impact on returns and their effectiveness for bringing about change at portfolio companies. Moreover, we find that the reliability of the data is likely to be an important impediment for the use of some of the styles we examine. The future importance of best-in-class and integration styles are negatively related to data reliability concerns.

Our results have implications for research on investment management and its use of ESG data. A strand of the literature examines the financial performance of sustainable investment portfolios and generally fails to find any performance differences between SRI funds and conventional mutual funds (Statman 2000; Bauer, Koedijk, and Otten 2005; Renneboog, Horst and Zhang 2008). However, the failure to find any differences in fund performance might stem, among other factors, from differences in investment styles. Our paper shows that when considering ESG information for investment decisions, institutional investors exhibit different styles and underlying motivations, suggesting that it is important to consider the different investment styles and use appropriate benchmarks when comparing their performance. Future research that seeks to understand the performance or other investment characteristics of funds that use ESG data needs to recognize the fact that investors exhibit different ‘ESG styles.’ Developing measures of different styles would be a first step to understanding the consequences of such styles for investment performance. For example, the findings in the prior literature of negative investment performance of ESG screening methods is

less surprising considering our findings that screening styles are mostly chosen by ethically driven (i.e., norms-based) investors whose investment objectives might include other factors than financial returns. Furthermore, averaging over all ESG investments when measuring performance irrespective of differences in styles might mask performance differences between screening methods and integration and engagement styles, the use of the latter two we find to be driven by financial motives as well as expected by investors to be more beneficial to performance.

Another strand of the literature investigates the sustainability features of institutional investor holdings. Dyck et al. (2016) show that firm-level ESG performance ratings are positively associated with institutional ownership suggesting that institutional investors consider ESG information in their asset allocations. Their study points to social norms as being a strong driver of institutional holdings in sustainable firms. Hong and Kostovetsky (2012) show that US fund managers' political inclination (whether Democrat or Republican) is associated with their portfolio holdings in sustainable firms. In a recent study, Brandon and Krüger (2017) find that the investment horizon of institutional investors is positively associated with the sustainability of their holdings. Although the prior literature provides some evidence on the determinants of institutional investors' holdings in sustainable firms, little is known about why and how institutional investors consider ESG information in their asset allocation decisions. Our paper uses survey evidence to shed light on these questions that are difficult to address using archival data.

Importantly, our paper highlights that researchers and practitioners need to be careful when they seek to understand the use of ESG data and its implications for performance and, in general, for change. The terms ESG, responsible and sustainable investing are increasingly used in the literature for anyone of the eight styles we document in this paper. However, as our results suggest, investor practices are motivated by different goals thereby leading to different uses of ESG data. As the number of investors developing ESG-related products increases, lack of clarity about the styles adopted by an

investment manager is likely to bring confusion in the marketplace, which in turn would be an impediment to the development of investment practices that integrate ESG data. For example, a large number of products use negative screening or overlay practices but they are described as “ESG integration” products. Moreover, a number of commentators confuse styles that avoid sin stocks with the performance implications of other ESG styles leading to unwarranted conclusions.³

The remainder of the paper is organized as follows. Section 2 describes the design, dissemination and data collection of the survey instrument. Section 3 reports results on why investors use ESG data in their investment process. Section 4 presents results on how investors use ESG data in the investment process. Section 5 concludes.

2. Survey Design and Demographic Data

Survey Design

We developed a first draft of the survey questions based on a review of the literature on corporate social responsibility and responsible investing (Amel-Zadeh 2016). An internet-based survey instrument was then developed with the help of Institutional Investor Research Group, a financial market’s survey design and execution specialist with the aim to reduce biases induced by the questionnaire and to optimize wording and tone of the questions. We solicited feedback on the first draft of the survey from a group of six academic researchers in finance and accounting as well as a group of institutional investors and financial market organizations.⁴ We dropped, shortened, and redrafted survey questions based on feedback received and beta-tested the penultimate version with a

³ See for example: New York Times, “Can Good Corporate Citizenship be Measured?”, <https://www.nytimes.com/2017/06/26/business/dealbook/can-good-corporate-citizenship-be-measured.html>

⁴ Among the organizations we received feedback from BNY Mellon’s Investor Relations Advisory Group, CFA Institute, IASB, ICAEW, PRI, SEC Professional Reporting Group and several global asset managing and asset owning institutions.

small number of investors and financial market experts. The final version of the survey included 30 questions spread over five webpages.

The survey did not require subjects to disclose their names or affiliations, but did allow for space if they chose to do so. Respondents could skip questions if they chose not to answer them other than the basic demographic questions. The order of choices within questions was randomized. The multiple-choice questions allowed for free-text responses or for an exclusive negation of all response choices. Where appropriate we refer to some of the qualitative responses to provide further information.

We distributed the survey via email to a list of senior investment professionals at 4,523 asset managing and asset owning institutions compiled by Bank of New York Mellon and IPREO. The majority of these investment professionals had the title of CEO, CIO, Fund Manager, Portfolio Manager or Investment Analyst. We emailed an invitation to take the survey on 18 January 2016 and closed the survey on 8 April 2016. We received 652 responses, for a response rate of 14.4%. However, across the survey questions included in the analysis for this study the average response rate is approximately 9% as some respondents skipped questions or did not fully complete the survey. The response rate is comparable to and somewhat higher than other email-distributed academic surveys in finance and accounting (Graham and Harvey 2001, Graham et al. 2005, Dichev et al. 2013).

Demographic Data

The survey begins by collecting demographic information about the responding person and institution. We ask for the title/position of the responding person, the type of organization (asset manager, pension fund, insurance firm, endowment, etc.), the location of the firm's headquarters, assets under management, percentage of assets under management allocated to ESG investments, investment focus (diversified, geographically or sector focus), strategy (active versus passive), and asset classes covered.

Table 1 reports the demographic profiles of the responding institutions. The survey captures a large distribution of investors in terms of AUM. 35% of respondents report AUM below US \$1 billion while 15% report AUM of more than US \$100 billion. Overall, the respondents' total AUM is approximately US \$31 trillion, which means that the survey captures the opinions of institutional investors with about 43% of total global assets under management as of year-end 2015.⁵ Moreover, our respondents can generally be considered mainstream investors with almost 70% reporting less than 10% of their AUM allocated to ESG investments and half of those reporting no ESG allocation at all. We also do not have any investors among the respondents that are fully specialized on ESG investing, since none of the respondents report 100% in ESG allocation.

Similarly, among the individuals responding to the survey only 8% are specialists on ESG investing having the title of ESG investment professional. About a quarter of the respondents are senior executives (CEO, CIO, CFO or similar) and another quarter are senior fund or portfolio managers (28%). The majority of investors come from Europe (40%), followed by North America (34%) and Asia (15%). Almost two thirds of the respondents work for professional asset managers, while the other third works for asset owners such as public and private pension funds (19%), financial institutions (4%), charities and endowments (4%), sovereign wealth funds (3%) and family offices (3%). Overall, therefore, our sample is likely to reflect the views of a diverse group of largely mainstream investors.

In the subsequent analyses, we condition the results based on whether investors are above the median of US \$5 billion in AUM (large versus small); based on their ESG allocation at the median cut-off point of 5% of AUM (high versus low); and based on their geography (US versus Europe).

⁵ To estimate the respondents' AUM, for those that have identified themselves in the survey we are able to retrieve the respondents' actual AUM figure from secondary sources and otherwise take the mid-point of the AUM range they selected in the survey. Total global AUM comes from a Boston Consulting Group report on the asset management industry available at <https://www.bcgperspectives.com/content/articles/financial-institutions-global-asset-management-2016-doubling-down-on-data/?chapter=2> (accessed on 17/02/2017).

The size cut-off gives us a value-weighted rather than an equal-weighted view of investor beliefs. The ESG allocation and geography sub-analyses gives us a view on the level of maturity in ESG awareness. We expect that investors with more allocation in ESG and investors in Europe are more ESG-aware.

3. Why investors use ESG data in their investment process

What motivates investors to use ESG data?

Social norms shape economic behavior and may influence market outcomes (Becker 1971; Merton 1987). Social and environmental responsibility has become a societal focal point over the recent years and this trend has spilled over to financial markets. A growing number of socially responsible investors considers ESG information in their investment allocations suggesting that such information has become more important in the investment process.⁶ However, it is still unclear whether mainstream investors, too, use ESG information, and whether they do so having performance motives (i.e. investment performance), financial motives (i.e., product strategy and client demand) or norms-based (i.e., ethical) motives. Consequently, the first part of the survey asks whether investors consider ESG information when making investment decisions and why.

Table 2 contains the results separated into investors that responded “yes” and “no” to the question whether they consider ESG information in their investment decisions, and their corresponding reasons why. The respondents could first pick “yes” or “no” (which were mutually exclusive) and then the corresponding reasons. Among the reasons the respondents could choose one or more alternatives. In Table 2 the responses are rank ordered by the percentage of respondents that

⁶ See most recent US SIF (2016) and Eurosif (2016) reports for the growth and size of the responsible investment industry in the United States and Europe. Available at http://www.ussif.org/store_product.asp?prodid=34 (accessed on 19 Feb 2017) and <https://www.eurosif.org/sri-study-2016/> (accessed on 19 Feb 2017).

chose each reason.⁷ Respondents also had the option to provide free-text answers for other reasons not provided in the answer list.

The results in Table 2 reveal that a large majority of investors (82%) consider ESG information when making investment decisions. The percentage is not statistically different between large (above the median AUM of US \$5 billion) and small investors, but increases to 93% for investors in the high group in terms of ESG allocation (above the median of 5% of AUM), compared to 75% for investors with an ESG allocation below the median. This difference is statistically significant (p -value <0.01). Significant differences also exist between US compared to European investors. A significantly smaller percentage of US investors (75%) compared to those from Europe (84%) responded that they consider ESG information in investment decisions (p -value <0.1).

A key finding in Table 2 is that of the investors that do consider ESG information in their investment decisions the majority (63%) responded that they do so, because ESG information is financially material to investment performance. This percentage is also statistically significantly different from all other possible response choices. Perhaps not surprisingly, the percentage is higher for investors with a high ESG allocation (69% versus 58%, p -value <0.01) and more interestingly is somewhat lower for US compared to European investors (56% versus 64%), although the difference is not statistically significant.

There is a distinct cluster of other response choices, all receiving about a third of responses, why investors use ESG information. Among these are in ranking order (i) growing demand from clients and stakeholders; (ii) its effectiveness in changing firms' behavior; (iii) because they consider it part of their product strategy; and (iv) because they see it as their ethical responsibility. Among these a significantly higher percentage of large compared to small firms suggest strategic-financial reasons

⁷ In the actual Internet survey the response choices were scrambled randomly. That is, different respondents saw different ordering of alternatives.

such as growing client demand (54% versus 22%, p-value<0.01) or the development of investment products (43% versus 27%, p-value<0.01) among the motivations. The product development motive is also significantly more important for US investors compared to Europeans (47% compared to 30%, p-values<0.01). In contrast, smaller investors are more likely to see the consideration of ESG information in investment decisions as an ethical responsibility (36% compared to 25%, p-value<0.05) as do European investors compared to US investors (41% compared to 19%, p-value<0.01). A significantly higher percentage of European compared to US investors also believes ESG considerations to be effective in changing firms' behavior (41% versus 26%, p-value<0.05).

Among the minority that responded not considering ESG information in investment decisions a significantly larger percentage of US investors compared to Europeans think that the information is not material for investment purposes (22% versus 4%, p-value<0.05) and that using the information would violate their fiduciary duty (22% vs 8%). The latter finding is interesting in the context of guidance by the US Department of Labor issued in December 2015 that clarifies that using ESG information in investment decisions is consistent with fiduciary duties. Specifically, the DoL guidance states that “[...] *environmental, social and governance factors may have a direct relationship to the economic and financial value of an investment*”.⁸

Overall, the evidence in our sample suggests that the use of ESG information is driven primarily by financial rather than ethical motives, but that there is considerable variation across geographies. Ethical motives seem to play a larger role in Europe compared to the US and, consistent with this, the former believe more strongly that engagement with companies can bring change in the corporate sector and address ESG issues. The textual responses given under “other” in Table 2 provide some more qualitative statements supporting the quantitative evidence. For example,

⁸ See U.S. Department of Labor News Release No. 15-2045-NAT. Available at <https://www.dol.gov/opa/media/press/ebsa/ebsa20152045.htm> (accessed 17 February 2017)

respondents stated that “*ESG information is important to assessing investment risk*”, or “*it helps us identify the risks and opportunities of the investments we make for our clients*” and further “[*ESG information*] *often can give insight into the "Why" for some of the financial information*”, all statements that support the financial motive. Among those that do not consider ESG information the majority of “other reasons” relate to the fact that the respondents follow a passive investment strategy, that they “*need to be able to quantify non-financial information for a large cross section of stocks*” and that it requires “*researching which ESG factors are relevant by asset class and industry*.” We next investigate the barriers to the use of ESG data in more detail.

Barriers to ESG data use in the investment decision process

We found in Table 2 above that almost 18% do not use ESG information for investment decision making and a sizable portion of these respondents (about 21%) cites data problems as one impediment. We examine this in more detail in Table 3.

Table 3 presents results on the relative importance of factors that limit investors’ ability to use ESG information in their investment decisions. The table is rank ordered by the percentage of responses for each choice. Respondents could select more than one alternative. Table 3 reveals that the greatest challenge investors face in integrating ESG information in their investment process is the lack of cross-company comparability and the lack of standards governing the reporting of ESG information. 45% and 43% of respondents state these as the largest impediments. The respondents give slightly less, but similar, weight to the possibility that ESG information is costly to gather and analyze (41%), lacks detail (39%) and is difficult to quantify (38%). The percentage differences between all of these choices are not statistically significant.

The respondents assign statistically lower importance to the possibility that ESG disclosures are too infrequent (28%) or potentially lack reliability or require external assurance (26%). Moreover, only a minority suggests that the reporting of ESG data is too cluttered to be useful (17%) or that their client mandates legally prevent them from incorporating ESG information (1.4%).

Overall, investors globally seem to agree on the main factors that impede an integration of ESG data in the investment process, although a somewhat higher percentage of US investors seem to be concerned about the reliability of the data (32%) compared to investors from Europe (27%). The reliability and a lack of audit of ESG data also concerns large investors significantly more than small investors (47% versus 16%, p-value<0.01), and consistent with this so does the lack of reporting standards (52% versus 39%, p-value<0.01).

The qualitative comments confirm that a lack of standardization and quantification are the main obstacles to ESG data integration. For example, some investors state that “*reliability and standards are the biggest headwinds*” or that ESG disclosures are “*still a very qualitative approach*”, while others also demand “*sector specific ESG data and industry-adjusted scoring.*” To further inform investors’ data needs we next examine how investors incorporate ESG information in their investment process.

4. How investors use ESG data in their investment process

Current ESG investment practices

Little is known about how investors use ESG information. Traditionally the literature has concentrated on comparing the performance of self-labeled SRI funds to conventional mutual funds. In general, these studies find that performance does not differ between SRI and conventional funds (see for example Bauer et al. 2007). A few studies find underperformance of SRI funds (Hong and Kostovetsky 2012) and that this is concentrated in funds that use more screens in their investment process (Barnett and Salomon 2006). While the literature has concentrated on SRI funds that have traditionally used negative screens in their investment process, we know little about how mainstream investment organizations use reported ESG information, the granularity of which allows them to move beyond negative screening based on industry membership or involvement in ‘sin’ businesses.

Table 4 reports results on how investors integrate ESG information in their investment process. We distinguish between investment styles commonly used in practice. Engagement/active ownership is the use of shareholder power to influence corporate behaviour, including through direct corporate engagement (i.e., communicating with senior management and/or boards of companies), filing or co-filing shareholder proposals, and proxy voting that is guided by environmental, social and governance (ESG) guidelines. Full integration into individual stock valuation is the explicit inclusion of ESG factors into traditional financial analysis of individual stocks, for example, as inputs into cash flow forecasts and/or cost of capital estimates. Negative screening is the exclusion of certain sectors, companies or practices from a fund or portfolio based on specific ESG criteria. Positive screening is the inclusion of certain sectors, companies or practices in a fund or portfolio based on specific minimum ESG criteria. Relative/best-in-class screening is the investment in sectors, companies or projects selected for ESG performance relative to industry peers. Overlay/portfolio tilt is use of certain investment strategies or products to change specific aggregate ESG characteristics of a fund or investment portfolio to a desired level. For example, tilting an investment portfolio towards a desired carbon footprint. Thematic investment is investment in themes or assets specifically related to ESG factors such as, for example, clean energy, green technology or sustainable agriculture. Risk factor/risk premium investing is the inclusion of ESG information into the analysis of systematic risks as, for example, in smart beta and factor investment strategies (similar to size, value, momentum, and growth strategies).

The possible choices are rank ordered by the percentage of respondents for each investment style. Respondents were able to select more than one alternative. The table reveals that ESG information is predominantly used to engage with firms (37%), integrated into valuation models (34%) and for portfolio screening, particularly negative screening (30%) as opposed to positive (13%) or

relative screening (9%). Other methods include thematic investments (21%), portfolio overlays (14%), and risk factor investing (11%).⁹

The use of ESG information as a screening tool is more prominent with large investors (50% versus 20%, p-value<0.01, for negative screening and 23% versus 9%, p-value<0.01, for positive screening) and so are Thematic investment styles (29% versus 17%, p-value<0.05) and portfolio overlays (20% versus 12%, p-value<0.05). Investors with a high ESG allocation are generally more likely to use any of the styles. European investors are more likely to use ESG information to engage with firms compared to US investors (48% versus 27%, p-value<0.1). Other uses of ESG information relate to more specialized investment strategies such as thematic investments (21%), which are also more prominent in Europe than in the US (27% compared to 16%, p-values<0.05).

ESG information plays a lesser role in creating portfolio tilts and smart beta strategies and overall almost 17% of our sample states that they do not use ESG information in their investment process with the percentage being higher for small investors (19% versus 11%, p-value<0.05), for firms with low ESG allocation (25% versus 4%, p-value<0.01), and for US-based investors compared to those from Europe (22% versus 12%, p-value<0.05). The finding that US investors are less likely to use ESG data in their investment process, particularly in any other way than as a screening tool, is consistent with these investors having stronger concerns about data reliability (as found in Table 4) as screening methods have the least extensive data needs.

Perceived impact of different ESG investment styles on performance

The literature provides mixed evidence on the financial effects of integrating ESG information in the investment process. The inconclusive evidence is likely due to the variety of different investment styles that have emerged over the years how investors use and incorporate ESG data in investment selection

⁹ We provided definitions of the various investment styles in the survey and repeat those in the description to Table 5.

and portfolio allocation. For example, while some studies find that portfolios that exclude certain firms based on ethical norms (Hong and Kacperczyk 2009) or are formed based on aggregate ESG measures (Brammer et al 2006) underperform their peers, others find that portfolios positively screened on material ESG issues (Khan et al. 2016) or those that are formed based on individual ESG data points such as employee satisfaction (Edmans 2011) outperform their peers. To shed further light on the investment performance of the different ESG investment styles we investigate investors' expectations about the financial performance and future importance of these strategies.

Table 5 presents results on investors' expectations about the effects of the investment styles of Table 4 on investment returns. Respondents were asked to rate the investment impact of the different ESG investment strategies compared to a market benchmark on a scale from 1-5, where 1 equals significantly negative, 3 is neutral, and 5 significantly positive. The table is rank ordered by the average rating for the respective style. The table reveals that full ESG integration is considered the most beneficial investment strategy by investors in terms of its impact on investment performance. The rating for this strategy is statistically higher than for any other strategy except for active ownership, which is the second highest ranked ESG strategy. 61% of investors believe that full ESG integration and 53% believe direct engagement with companies on ESG issues has a moderately or significantly positive impact on financial returns. In contrast, only 6% and 7%, respectively, believe these strategies to have a moderately or significantly negative impact on returns. The results are consistent with the results in Table 4 that investors are most likely to use these strategies. The third most beneficial investment strategy is positive screening for which 60% of investors believe the financial impact to be moderately or significantly positive and 11% think the opposite. However, this strategy is much less frequently used.

Overall, investors consider all strategies, except for negative screening methods, to have a positive impact on returns as all of these have a statistically significantly higher rating than 3. Negative

screening is the least financially beneficial ESG investment method, albeit with a neutral impact on returns, according to our sampled investors. Only 39% believe this screening method to have a moderately or significantly positive impact on returns, while 28% believe it has at least a moderately negative impact. This result stands in contrast to results in Table 4 that ranks negative screening the third most used investment style suggesting that negative screening is used for motivations other than financial materiality – something we investigate further next.

Investors with a high ESG allocation and those from Europe are generally more optimistic about the financial impact of the different ESG strategies. Somewhat surprisingly large investors are more skeptical about the financial effects of active ownership although they tend to have larger stakes in firms and thus potentially more influence. European investors are significantly more optimistic about the impact of full integration and active ownership compared to US investors (average rating of 3.8 versus 3.5, p -value <0.05), while US investors think positive screening has a more positive effect, albeit the differences are not statistically. Risk factor investing and portfolio tilts are also considered more positive for investment returns by European investors than US investors.

Determinants of current ESG investment practices

Next we examine the association between three types of variables in a seemingly unrelated regression framework. First, we examine whether the perceived impact on returns from a given ESG style is associated with the investor's current use of the ESG style. In each model we include as independent variable the perceived impact on returns of the style that we use as a dependent variable (i.e. when the investor uses engagement we use the perceived impact on returns from engagement as the independent variable of interest). Second, we include in our models variables from Table 3 that measure different impediments to the use of ESG information in investment decisions. We do not use lack of standards as a determinant as we consider this a primitive variable that defines lack of

reliability, comparability and timeliness.¹⁰ Third, we include variables for the different motivation from Table 2 that might be guiding an investor to use ESG data to understand how different motivations are associated with the use of different ESG styles.¹¹ We provide correlations between the independent variables in Table 6. The correlations between the perceived returns of the different styles are generally significantly positive. The table also reveals generally positive correlations between the motivations for ESG investing such as effectiveness for change, growing client demand, product strategy and ethical responsibility. In all our models we control for geography, fund size, respondent role, respondent type, and percentage of assets in ESG products. The models are estimated using seemingly unrelated multivariate probit regressions with heteroscedasticity robust standard errors.¹² In unreported univariate correlations we find that investor styles cluster in different groups. For example, investors that use one screening style are more likely to use other screening styles. Investors that use portfolio overlay are more likely to use a risk factor style. Investors that use thematic or engagement are not any more likely to use other strategies. Finally, engagement is also more likely to be used with negative or positive screening.

Table 7 summarizes the regression results. We find evidence of a positive association between the perceived impact on returns and the use of the particular style. However, the estimated coefficients are surprisingly weak suggesting that economic considerations might not be as strong of a predictor of the use of a given style as one would expect. For example, the marginal effect for negative and positive screening is only 9.7% and 8.2% respectively. Integration is the style where impact on returns is the highest with a marginal effect of 20%. In terms of impediments we find only weak evidence that

¹⁰ We further subsume into lack of comparability the lack of comparability across firms and over time (variables 1 and 6 from Table 3), into cost of information gathering variables 3 and 9 from Table 3 and into lack of quantifiability variables 4 and 5 from Table 3 and further drop variable 10 due to its low frequency.

¹¹ Here, we subsume variables 1 and 6 from Table 2 into financial materiality and variables 2 and 7 into client demand.

¹² Our results are robust to estimating the equations as linear probability models using FGLS. We find significantly positive and negative correlations between the error terms of the individual equations for the different investment styles suggesting that estimating the equations as seemingly unrelated regressions is more appropriate than in separate probit regressions.

impediments are associated negatively with the use of different styles. We actually find that investors that perceive a lack of comparability in the data are more likely to use thematic or engagement styles. This makes sense as compared to portfolio strategies that require comparing a wide set of securities these two strategies are more concentrated on specific industries where companies provide solutions to a specific problem (i.e. water or energy) or on specific companies that the investor is trying to engage with about a specific problem.

In terms of motivation, we find strong evidence that an investor's product strategy drives style choices. This is true across screening, thematic, risk factor, and engagement. Moreover, the marginal effects are economically meaningful at 17% for negative screening, risk factor and engagement and at 27% for thematic. In contrast, an integration style is more likely when the motivation for ESG investing is financial materiality with the marginal effect being 21%. Finally, we find that ethical motivations are associated with a higher likelihood of negative and positive screening and with a significantly lower probability of thematic investments or integration. The marginal effects for negative and positive screening are 14% while for thematic and integration -14% and -19%, respectively.

Our control variables suggest that larger funds are more likely to use screening and asset owners are more likely to use engagement. Also, US investors are more likely to use screening and less likely to use risk factor and thematic investment. Overall, the results above suggest that the current use of ESG styles, especially screening strategies, is driven more by product strategy and ethical considerations and less so by financial performance considerations. In contrast, we find that investors are more likely to practice integration because of their beliefs in its financial impact.

Future ESG investment practices

Given that ESG investment styles have grown recently, we are interested in understanding practitioners' perceptions about the future evolution of the field. Table 8 presents results on how

important the ESG investment strategies will be for investors in their investment process in the next five years. Respondents were asked to rank the importance of the ESG investment strategies on a scale from 1-3, from (1) not important to (2) somewhat important to (3) very important. The table is rank ordered by the average rating for the respective strategy.

Overall investors ranked positive screening methods as the most important in the future although its rating is not statistically higher than the rating for active ownership, the second ranked, negative screening, the third ranked, and full integration, the fourth. All four strategies are considered somewhat important in the next five years. In contrast, thematic investment, relative screening, risk factor as well as portfolio tilts are all considered less important in the next five years by our sample of investors. Their average ratings are statistically significantly lower than 2 (p-values ranging from $p < 0.01$ to $p < 0.1$).

Large investors consider positive screening, full integration and thematic investments are more important compared to small investors; and investors with a high ESG allocation naturally assign a higher importance to all ESG strategies than those with a low ESG allocation. More interestingly, investors in Europe consider all strategies, except for positive screening, relatively more important than US investors, with the difference in opinions being the widest for active ownership (p-value < 0.01). Perhaps most surprising here is the decline in the importance of full integration in stock valuation because at the same time this is the style that is identified as the most financially beneficial in Table 5. We attempt to understand this finding in the next section.

Determinants of Future Practices

In Table 9 we examine the association between the importance of ESG investment styles in the future and the same set of variables that we examined in Table 6. The only difference is that the dependent variable is a discrete variable taking the values 1 (not important), 2 (somewhat important) or 3 (very

important). We estimate the regression models using seemingly unrelated multivariate ordered probit regressions with heteroscedasticity robust standard errors

We find strong and significant associations between the impact on returns from the use of a strategy and the importance of that strategy in the future. This is true across the board. This relationship seems to be much stronger, compared to the one we documented in Table 7, suggesting that the style's impact on returns will be a more significant predictor of practices in the future. Apart from the higher statistical significance on the estimated coefficients, we find that the marginal effect on the predicted outcome being 'very important' is closer to 20% across styles.

In contrast, to current practices, impediments also seem to matter more for future practices. The one variable that stands out is lack of reliability. Lack of reliability is associated with lower likelihood of use in the future of relative screening, overlay, risk factor and integration styles. The marginal effect for all of them is close to -15%.

In terms of motivation, there are two key results that emerge. First, when motivation for the use of ESG information is to bring change in companies the future prominence of thematic, integration and engagement styles is higher. As expected, engagement, which has the most direct effect on changing a company's practices, has the highest marginal effect at 25%. Second, ethical motivations are associated with a higher likelihood of all three screening strategies. The marginal effect is close to 12% for all three screening styles.

Overall, we observe that compared to current practices, future practices are more likely to be driven by the materiality of the actions undertaken, in terms of impact on returns and their effectiveness for bringing about change. Moreover, we find that reliability of the data is likely to be an important impediment for the use of some of the styles we examine.

5. Discussion

Using survey data from senior investment professionals of organizations around the world we provide insights into why and how investors use ESG data. Moreover, we document what investors believe will be important ESG investing styles in the future. In interpreting our data, readers should exercise caution. There is often a selection bias in who responds to surveys. Therefore, on average we expect that our sample represents more ESG-aware investors. However, at the same time the investors in our sample do not specialize in ESG and represent organizations collectively holding more than 40% of assets under management by institutional investors around the world. Therefore, we believe that the results in this study provide interesting directions for future research.

We find investors exhibiting different ESG investing styles. Developing measures of these different styles would be a first step to understanding the consequences of such styles for investment performance. Which investors use positive screening and which investors negative screening? How does the investment process differ and what is the effect on management fees and other expenses? How do investors integrate ESG data in fundamental analysis and stock valuation?

Moreover, investors expect that ESG styles related to positive screening and active ownership will become more important in the future. This creates interesting opportunities for research both in valuation and corporate governance. How does increasing positive screening affect the cost of capital and market valuation of firms that perform well on material ESG issues? Similarly, how does active ownership change firms' governance, managerial practices and performance on ESG issues as well as their financial performance? What does active ownership mean in the face of increasing indexing?

We also document that the vast majority of investors are motivated by financial reasons rather than ethical reasons in using ESG data. The majority of the respondents suggests that ESG information is material to investment performance. However, which information is material likely varies systematically across countries (e.g. a country where water pollution is a more serious issue versus a country where corruption is a more serious issue), industries (e.g. an industry affected

dramatically by climate change versus an industry affected by violations of human rights in the supply chain) and even firm strategies (e.g. firms that follow differentiation versus a low price strategy). For example, Khan et al. (2016) show that the vast majority of ESG data for any given industry is immaterial to investment performance and that the material information varies across industries within a sample of US stocks. Understanding how the materiality of ESG information varies across countries, industries and firm strategies therefore is of primary importance.

Finally, a large number of investors use ESG information because of client demand or as part of their product development process. This raises interesting questions about new products that use ESG information. A good example is green bonds where the proceeds of those bonds are to be allocated for projects that improve environmental outcomes. Understanding the structure and pricing of those contracts could shed light into investor preferences and how such financial instruments improve societal outcomes.

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Table 1: Demographic information of investor sample

| Assets under Management (in US \$ billion) | | Respondents Titles/Positions | |
|--|------|--|------|
| < 1 | 35% | Fund/ Portfolio Manager | 28% |
| 1 - 5 | 20% | Chief Executive Officer | 13% |
| 5 - 10 | 11% | Investment Analyst/Strategist | 13% |
| 10 - 50 | 12% | Executive/Managing Director | 11% |
| 50 - 100 | 6% | Chief Investment Officer | 8% |
| > 100 | 15% | ESG/Responsible Investment Specialist | 8% |
| | 100% | CFO/COO/Chairman/Other Executive | 5% |
| Percentage of AUM allocated to ESG | | Other | 13% |
| 0% | 35% | | 100% |
| 1-5% | 27% | Geographical Location | |
| 5 -10% | 7% | Europe | 40% |
| 10-25% | 16% | North America | 34% |
| 25-50% | 5% | Asia | 15% |
| 50-99% | 10% | South America | 3% |
| 100% | 0% | Middle east | 3% |
| | 100% | Africa | 2% |
| | | Central America | 1% |
| | | | 100% |
| | | Type of Organization | |
| | | Asset Management Company | 65% |
| | | Corporate Pension Fund | 13% |
| | | Public/ Local Authority Pension Fund | 6% |
| | | Charity/ Endowment/ Religious Organization | 4% |
| | | Insurance/Financial Institution | 4% |
| | | Sovereign Wealth Fund/ Government Agency | 3% |
| | | Family office | 2% |
| | | Other | 2% |
| | | | 100% |

Table 2: ESG information in investment decisions

Survey responses to the question: Do you consider ESG information when making investment decisions?

| | ALL | | AUM Size | | | ESG Allocation | | | Region | | |
|--|--------------|---|--------------|--------------|---------------------|----------------|--------------|---------------------|--------------|--------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| | | Significant difference in proportion vs. rows | >5 US\$bn | <5 US\$bn | Diff (3)- (4) | >5% | <5% | Diff (6)- (7) | US | Europe | Diff (9)- (10) |
| N = 419 | | | | | | | | | | | |
| Yes, because... | 82.1% | | 85.9% | 80.3% | | 93.2% | 75.0% | *** | 75.2% | 84.4% | * |
| 1 ... ESG information is material to investment performance | 63.1% | 2-8 | 60.3% | 64.5% | | 69.3% | 58.3% | ** | 55.7% | 64.4% | |
| 2 ... of growing client/stakeholder demand | 33.1% | 1, 7-8 | 54.3% | 22.4% | *** | 35.3% | 31.8% | | 33.0% | 39.3% | |
| 3 ... we believe such policy to be effective in bringing about change at firms | 32.6% | 1, 7-8 | 31.9% | 32.9% | | 46.0% | 22.4% | *** | 25.8% | 40.7% | ** |
| 4 ... it is part of our investment product strategy | 32.6% | 1, 7-8 | 43.1% | 27.2% | *** | 38.7% | 28.1% | ** | 47.4% | 30.4% | *** |
| 5 ... we see it as an ethical responsibility | 32.6% | 1, 7-8 | 25.0% | 36.4% | ** | 41.3% | 26.0% | *** | 18.6% | 40.7% | *** |
| 6 ... we anticipate it to become material in the near future | 31.7% | 1, 7-8 | 31.9% | 31.6% | | 34.0% | 30.2% | | 29.9% | 37.0% | |
| 7 ... of formal client mandates | 25.0% | 1-3, 5-6, 8 | 37.1% | 18.9% | *** | 33.3% | 18.8% | *** | 23.7% | 30.4% | |
| No, because... | 17.9% | | 14.1% | 19.7% | | 6.8% | 25.0% | *** | 24.8% | 15.6% | * |
| 1 ... there is no stakeholder demand for such policy | 26.7% | 3-5, 6-8 | 15.8% | 30.4% | | 9.1% | 29.7% | * | 21.9% | 24.0% | |
| 2 ... we lack access to reliable nonfinancial data | 21.3% | 6-7 | 21.1% | 21.4% | | 9.1% | 23.4% | | 18.8% | 32.0% | |
| 3 ... ESG information is not material to investment performance | 13.3% | 1, 7 | 5.3% | 16.1% | | 18.2% | 12.5% | | 21.9% | 4.0% | ** |
| 4 ... we believe such policy to be ineffective in inducing change at firms | 12.0% | 1, 7 | 15.8% | 10.7% | | 18.2% | 10.9% | | 12.5% | 16.0% | |
| 5 ... it would violate our fiduciary duty to our stakeholders | 12.0% | 1, 7 | 5.3% | 14.3% | | 9.1% | 12.5% | | 21.9% | 8.0% | |
| 6 ... such information is not material to a diversified investment portfolio | 10.7% | 1-2 | 5.3% | 12.5% | | 9.1% | 10.9% | | 6.3% | 16.0% | |
| 7 ... including such information is detrimental to investment performance | 4.0% | 1-5, 8 | 5.3% | 3.6% | | 0.0% | 4.7% | * | 6.3% | 4.0% | |
| p-value of difference (yes vs. no) | <0.001 | | <0.001 | <0.001 | | <0.001 | <0.001 | | <0.001 | <0.001 | |

Column (1) presents the percent of respondents choosing the response in a given row. Column (2) shows the results of a t-test of the null hypothesis that the percentage for a given alternative is equal to the percentage for each of the other alternative responses, where only significant differences at the 5 percent level are reported. For example, for response 1 the recorded “2–8” in the column signifies that the percentage for the response in row 1 is significantly different from the percentages for the responses in rows 2 to 8. Column (3) and (4) report the percentages for investors with AUM >\$ 5 billion (large) and AUM <\$ 5 billion (small), respectively. Column (5)

reports the results of a test of the null hypothesis that the percentages in Columns (3) and (4) are equal to each other. Column (5) and (6) report the percentages for investors with ESG allocation > 5% of AUM (high) and ESG allocation < 5% of AUM (low), respectively. Column (7) reports the results of a test of the null hypothesis that the percentages in Columns (5) and (6) are equal to each other. Columns (9) to (11) report the percentages by geographical regions and the respective tests of the null hypothesis that the percentages in the specified columns are equal to each other. ***, **, * denotes significance at the 1%, 5%, and 10%-level, respectively.

Table 3: Impediments to ESG integration

Survey responses to question: *Which of the following factors limit your firm's ability to use ESG information in your investment decisions?*

| | N = 368 | ALL | | AUM Size | | | ESG Allocation | | | Region | | |
|----|---|-------|--|----------|-------|---------------------|----------------|-------|---------------------|--------|--------|----------------------|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| | | | Significant difference in proportion vs. rows | Large | Small | Diff (3)- (4) | High | Low | Diff (6)- (7) | US | Europe | Diff (9)- (10) |
| 1 | Lack of comparability across firms | 44.8% | 5-11 | 49.2% | 42.7% | | 51.7% | 41.8% | * | 45.8% | 49.3% | |
| 2 | Lack of standards in reporting ESG information | 43.2% | 6-11 | 51.6% | 39.0% | ** | 46.3% | 42.7% | | 42.1% | 48.6% | |
| 3 | The cost of gathering and analyzing ESG information | 40.5% | 7-11 | 41.8% | 39.8% | | 42.9% | 40.4% | | 40.2% | 45.0% | |
| 4 | ESG information disclosed by firms is too general to be useful | 39.4% | 7-11 | 45.1% | 36.6% | | 42.2% | 39.0% | | 42.1% | 42.1% | |
| 5 | Lack of quantifiable ESG information | 37.8% | 1, 7-11 | 43.4% | 35.0% | | 38.1% | 39.0% | | 40.2% | 40.0% | |
| 6 | Lack of comparability over time | 34.8% | 1-2, 7-11 | 38.5% | 32.9% | | 40.1% | 32.4% | | 38.3% | 35.7% | |
| 7 | The disclosure of ESG information by firms is too infrequent to be useful | 28.3% | 1-6, 9-11 | 27.9% | 28.5% | | 30.6% | 27.7% | | 31.8% | 28.6% | |
| 8 | Lack of reliability of data/lack of audit and assurance | 26.4% | 1-6, 9-11 | 46.7% | 16.3% | *** | 23.8% | 29.1% | | 31.8% | 27.1% | |
| 9 | There is too much disclosure making it difficult to filter out what is material | 16.6% | 1-8, 10-11 | 16.4% | 16.7% | | 15.6% | 17.8% | | 14.0% | 20.0% | |
| 10 | Our clients' mandates prevent us from using ESG information | 1.4% | 1-9, 11 | 0.8% | 1.6% | | 2.0% | 0.9% | | 1.9% | 1.4% | |

Column (1) presents the percentage of respondents choosing the response in a given row. Column (2) shows the results of a t-test of the null hypothesis that the percentage for a given alternative is equal to the percentage for each of the other alternative responses, where only significant differences at the 5 percent level are reported. For example, for response 1 the recorded “5–11” in the column signifies that the percentage for the response in row 1 is significantly different from the percentages for the responses in rows 5 to 11. Column (3) and (4) report the percentages for investors with AUM >\$ 5 billion (large) and AUM <\$ 5 billion (small), respectively. Column (5) reports the results of a test of the null hypothesis that the percentages in Columns (3) and (4) are equal to each other. Column (5) and (6) report the percentages for investors with ESG allocation > 5% of AUM (high) and ESG allocation < 5% of AUM (low), respectively. Column (7) reports the results of a test of the null hypothesis that the percentages in Columns (5) and (6) are equal to each other. Columns (9) to (11) report the percentages by geographical regions and the respective tests of the null hypothesis that the percentages in the specified columns are equal to each other. ***, **, * denotes significance at the 1%, 5%, and 10%-level, respectively.

Table 4: ESG investment styles

Survey responses to question: How do you integrate material ESG information in your investment process/how do you use ESG information to define your investment universe?

| | ALL | | AUM Size | | | ESG Allocation | | | Region | | |
|---|-------|---|----------|-------|--------------|----------------|-------|--------------|--------|--------|---------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| | | Significant difference in proportion vs. rows | Large | Small | Diff (3)-(4) | High | Low | Diff (6)-(7) | US | Europe | Diff (9)-(10) |
| N = 337 | | | | | | | | | | | |
| 1 Engagement/active ownership | 37.1% | 3-9 | 42.7% | 34.4% | | 57.6% | 23.9% | *** | 27.1% | 48.1% | *** |
| 2 Full integration into individual stock valuation | 34.4% | 4-9 | 37.3% | 33.0% | | 43.2% | 28.8% | *** | 27.1% | 35.9% | |
| 3 Negative screening | 30.0% | 1, 4-9 | 50.0% | 20.3% | *** | 52.3% | 30.2% | *** | 40.2% | 32.8% | |
| 4 Thematic investment | 20.8% | 1-3, 5-9 | 29.1% | 16.7% | ** | 26.5% | 17.1% | ** | 15.9% | 26.7% | ** |
| 5 Overlay/portfolio tilt | 14.2% | 1-4, 8 | 20.0% | 11.5% | ** | 20.5% | 10.2% | ** | 13.1% | 19.1% | |
| 6 Positive screening | 13.4% | 1-4 | 22.7% | 8.8% | *** | 20.5% | 8.8% | *** | 17.8% | 14.5% | |
| 7 Risk factor/risk premium investing | 11.3% | 1-4, 9 | 9.1% | 12.3% | | 15.2% | 8.8% | * | 6.5% | 11.5% | |
| 8 Relative screening/ best-in-class screening | 9.2% | 1-5, 9 | 10.9% | 8.4% | | 15.2% | 5.4% | *** | 11.2% | 9.9% | |
| 9 We do not use ESG information in our investment process | 16.6% | 1-3, 7-8 | 10.9% | 19.4% | ** | 3.8% | 24.9% | *** | 21.5% | 11.5% | ** |

Column (1) presents the percentage of respondents choosing the response in a given row. Column (2) shows the results of a t-test of the null hypothesis that the percentage for a given alternative is equal to the percentage for each of the other alternative responses, where only significant differences at the 5 percent level are reported. For example, for response 1 the recorded “3-9” in the column signifies that the percentage for the response in row 1 is significantly different from the percentages for the responses in rows 3 to 9. Column (3) and (4) report the percentages for investors with AUM >\$ 5 billion (large) and AUM <\$ 5 billion (small), respectively. Column (5) reports the results of a test of the null hypothesis that the percentages in Columns (3) and (4) are equal to each other. Column (5) and (6) report the percentages for investors with ESG allocation > 5% of AUM (high) and ESG allocation < 5% of AUM (low), respectively. Column (7) reports the results of a test of the null hypothesis that the percentages in Columns (5) and (6) are equal to each other. Columns (9) to (11) report the percentages by geographical regions and the respective tests of the null hypothesis that the percentages in the specified columns are equal to each other. ***, **, * denotes significance at the 1%, 5%, and 10%-level, respectively.

Investment style definitions:

Engagement/active ownership is the use of shareholder power to influence corporate behaviour, including through direct corporate engagement (i.e., communicating with senior management and/or boards of companies), filing or co-filing shareholder proposals, and proxy voting that is guided by environmental, social and governance (ESG) guidelines. Full integration into individual stock valuation is the explicit inclusion of ESG factors into traditional financial analysis of individual stocks, for example, as inputs into cash flow forecasts and/or cost of capital estimates. Negative screening is the exclusion of certain sectors, companies or practices from a fund or portfolio

based on specific ESG criteria. Positive screening is the inclusion of certain sectors, companies or practices in a fund or portfolio based on specific minimum ESG criteria. Relative/best-in-class screening is the investment in sectors, companies or projects selected for ESG performance relative to industry peers. Overlay/portfolio tilt is use of certain investment strategies or products to change specific aggregate ESG characteristics of a fund or investment portfolio to a desired level. For example, tilting an investment portfolio towards a desired carbon footprint. Thematic investment is investment in themes or assets specifically related to ESG factors such as, for example, clean energy, green technology or sustainable agriculture. Risk factor/risk premium investing is the inclusion of ESG information into the analysis of systematic risks as, for example, in smart beta and factor investment strategies (similar to size, value, momentum, and growth strategies).

Table 5: ESG investment styles and investment returns

Survey responses to question: *Which of the following ESG strategies do you believe improve or reduce investment returns compared to a market benchmark? (Scale: 5 = significantly positive, 4 = moderately positive, 3 = neutral, 2 = moderately negative, 1 = significantly negative)*

| N = 295 | | ALL | | | | | AUM Size | | | ESG Allocation | | | Region | | |
|---------|--|---|---|-------------------|--|---------------------------------|----------|-------|---------------------|----------------|------|----------------------|--------|--------|-----------------------|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| | | % moderately/ significantly positive | % moderately/ significantly negative | Average Rating | Significant difference in average rating vs rows | H0: Average rating = 3 | Large | Small | Diff (6)- (7) | High | Low | Diff (9)- (10) | US | Europe | Diff (12)- (13) |
| 1 | Full integration into individual stock valuation | 61.2% | 5.8% | 3.71 | 3-8 | *** | 3.70 | 3.71 | | 3.96 | 3.53 | *** | 3.54 | 3.81 | ** |
| 2 | Engagement/active ownership | 52.7% | 6.5% | 3.63 | 1, 5-8 | *** | 3.47 | 3.70 | ** | 3.83 | 3.48 | *** | 3.46 | 3.80 | *** |
| 3 | Positive screening | 59.6% | 10.5% | 3.55 | 1, 5-8 | *** | 3.64 | 3.51 | | 3.69 | 3.45 | ** | 3.60 | 3.56 | |
| 4 | Risk factor/risk premium investing | 42.4% | 8.4% | 3.49 | 1, 7-8 | *** | 3.43 | 3.52 | | 3.70 | 3.35 | *** | 3.26 | 3.52 | ** |
| 5 | Relative screening/ best-in-class screening | 49.7% | 11.0% | 3.46 | 1, 7-8 | *** | 3.34 | 3.52 | * | 3.67 | 3.32 | *** | 3.38 | 3.49 | |
| 6 | Thematic investment | 42.4% | 10.4% | 3.37 | 1-3, 8 | *** | 3.35 | 3.38 | | 3.42 | 3.34 | | 3.34 | 3.36 | |
| 7 | Overlay/portfolio tilt | 37.4% | 11.0% | 3.31 | 1-5, 8 | *** | 3.24 | 3.35 | | 3.49 | 3.18 | *** | 3.17 | 3.31 | ** |
| 8 | Negative screening | 39.1% | 28.2% | 3.09 | 1-7 | | 3.07 | 3.09 | | 3.14 | 3.05 | | 3.07 | 3.12 | |

Column 1 (2) reports the percentage of respondents indicating the impact levels of 4 or 5 (1 or 2) on a scale of 1 to 5. Column 3 presents the average rating. Column 4 shows the results of a t-test of the null hypothesis that the average rating for a given row is equal to the percentage for each of the other rows, where only significant differences at the 5 percent level are reported. For example, for row 2 the recorded “1, 5–9” in the column signifies that the percentage for the response in row 2 is significantly different from the percentages for the responses in rows 1 and 5 to 9. Column 5 reports the results of a t-test of the null hypothesis that the average rating for a given row is equal to 3. Columns (6) and (7) report the average rating for investors with AUM >\$ 5 billion (large) and AUM <\$ 5 billion (small), respectively. Column (8) reports the results of a t-test of the null hypothesis that the average ratings in Columns (6) and (7) are equal to each other. Column (9) and (10) report the average rating for investors with ESG allocation > 5% of AUM (high) and ESG allocation < 5% of AUM (low), respectively. Column (11) reports the results of a t-test of the null hypothesis that the average ratings in Columns (9) and (10) are equal to each other. Columns (12) to (14) report the percentages by geographical regions and the respective tests of the null hypothesis that the percentages in the specified columns are equal to each other. ***, **, * denotes significance at the 1%, 5%, and 10%-level, respectively.

Table 6: Correlation Matrix

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | |
|--|-------|-------|-------|-------|--------|-------|-------|--------|-------|------|-------|-------|-------|-------|-------|-------|-------|----|--|
| 1 Negative screening returns | 1 | | | | | | | | | | | | | | | | | | |
| 2 Positive screening returns | 0.41* | 1 | | | | | | | | | | | | | | | | | |
| 3 Relative screening returns | 0.16 | 0.65* | 1 | | | | | | | | | | | | | | | | |
| 4 Overlay returns | 0.20* | 0.33* | 0.51* | 1 | | | | | | | | | | | | | | | |
| 5 Risk factor returns | 0.15 | 0.28* | 0.39* | 0.55* | 1 | | | | | | | | | | | | | | |
| 6 Thematic investment returns | 0.21* | 0.35* | 0.22* | 0.26* | 0.29* | 1 | | | | | | | | | | | | | |
| 7 Integration returns | 0.02 | 0.18 | 0.31* | 0.38* | 0.46* | 0.22* | 1 | | | | | | | | | | | | |
| 8 Engagement returns | 0.06 | 0.22* | 0.33* | 0.31* | 0.35* | 0.29* | 0.53* | 1 | | | | | | | | | | | |
| 9 Cost of information gathering | 0.03 | 0.13 | 0.14 | 0.03 | 0.05 | 0.08 | 0.04 | 0.03 | 1 | | | | | | | | | | |
| 10 Infrequent disclosure | -0.05 | 0.14 | 0.19 | 0.16 | 0.00 | 0.00 | 0.09 | 0.03 | 0.16 | 1 | | | | | | | | | |
| 11 Lack of Quantifiability | 0.05 | 0.02 | 0.00 | 0.07 | -0.04 | -0.04 | 0.09 | 0.04 | 0.20* | 0.1 | 1 | | | | | | | | |
| 12 Lack of Comparability | 0.07 | 0.06 | 0.09 | 0.15 | 0.02 | 0.07 | 0.08 | 0.06 | -0.08 | 0.18 | 0.17 | 1 | | | | | | | |
| 13 Lack of reliability | 0.05 | -0.01 | -0.1 | -0.08 | -0.20* | -0.09 | -0.07 | -0.24* | 0.03 | 0.06 | 0.23* | 0.12 | 1 | | | | | | |
| 14 Financially material | -0.04 | 0.02 | 0.07 | 0.00 | 0.04 | 0.02 | 0.18 | 0.08 | 0.02 | 0.12 | 0.13 | 0.09 | 0.04 | 1 | | | | | |
| 15 Effective for change Growing client | 0.09 | 0.09 | 0.11 | 0.17 | 0.17 | 0.12 | 0.26* | 0.19* | 0.09 | 0.12 | 0.12 | 0.27* | -0.08 | 0.18 | 1 | | | | |
| 16 demand | 0.08 | 0.12 | -0.02 | 0.11 | 0.08 | 0.03 | 0.08 | 0.04 | 0.11 | 0.06 | 0.17 | 0.11 | 0.24* | 0.04 | 0.23* | 1 | | | |
| 17 Product Strategy | 0.08 | 0.15 | 0.08 | 0.04 | -0.07 | 0.01 | 0.00 | 0.11 | -0.09 | 0.04 | 0.08 | 0.06 | 0.24* | -0.02 | 0.21* | 0.24* | 1 | | |
| 18 Ethical responsibility | 0.02 | 0.17 | 0.22* | 0.22* | 0.18 | 0.14 | 0.14 | 0.23* | 0.13 | 0.10 | 0.07 | 0.15 | -0.08 | 0.08 | 0.30* | 0.17 | 0.22* | 1 | |

This table shows Pearson correlation coefficients between the independent variables in the regressions in Table 7 and 9. * denotes significance at the 5%-level.

Table 7: Determinants of currently practiced ESG investment styles

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|-------------------------------|--------------------|--------------------|--------------------|-------------------|-------------------|---------------------|---------------------|-------------------|
| VARIABLES | Negative Screening | Positive Screening | Relative Screening | Overlay | Risk factor | Thematic | Integration | Engagement |
| Impact on returns | 0.270 (2.86)*** | 0.458 (2.98)*** | 0.355 (1.94)* | 0.352 (1.95)* | 0.367 (2.27)** | 0.579 (4.06)*** | 0.499 (3.97)*** | 0.265 (2.12)** |
| <u>Impediments</u> | | | | | | | | |
| Cost of information gathering | -0.229 (-1.11) | -0.062 (-0.24) | -0.119 (-0.43) | 0.457 (1.74)* | -0.023 (-0.08) | 0.136 (0.57) | 0.176 (0.86) | 0.269 (1.31) |
| Infrequent disclosure | 0.334 (1.51) | -0.151 (-0.57) | 0.007 (0.03) | 0.255 (1.01) | 0.447 (1.57) | 0.029 (0.11) | 0.119 (0.56) | 0.207 (0.97) |
| Lack of Quantifiability | -0.148 (-0.67) | -0.512 (-1.91)* | -0.278 (-0.99) | 0.093 (0.35) | 0.780 (2.33)** | -0.286 (-1.10) | 0.221 (1.01) | 0.316 (1.44) |
| Lack of Comparability | -0.174 (-0.79) | 0.395 (1.39) | 0.175 (0.58) | 0.113 (0.42) | 0.425 (1.39) | 0.867 (3.15)*** | 0.330 (1.48) | 0.393 (1.85)* |
| Lack of reliability | 0.143 (0.60) | 0.269 (0.97) | 0.147 (0.49) | -0.284 (-0.98) | -0.119 (-0.33) | 0.584 (2.01)** | 0.140 (0.58) | 0.106 (0.42) |
| <u>Motivation</u> | | | | | | | | |
| Financially material | 0.095 (0.40) | -0.047 (-0.16) | 0.243 (0.71) | 0.369 (1.22) | -0.026 (-0.08) | -0.208 (-0.76) | 0.593 (2.53)** | 0.112 (0.51) |
| Effective for change | 0.099 (0.43) | -0.052 (-0.19) | 0.050 (0.17) | 0.148 (0.53) | -0.145 (-0.48) | 0.283 (1.10) | 0.289 (1.30) | 0.296 (1.33) |
| Growing client demand | 0.320 (1.43) | 0.427 (1.51) | 0.244 (0.79) | 0.337 (1.26) | -0.117 (-0.39) | 0.282 (1.08) | -0.191 (-0.88) | -0.065 (-0.29) |
| Product Strategy | 0.447 (1.99)** | 0.191 (0.72) | 0.263 (0.90) | 0.158 (0.58) | 0.789 (2.37)** | 0.968 (3.45)*** | -0.028 (-0.12) | 0.402 (1.71)* |
| Ethical responsibility | 0.404 (1.75)* | 0.696 (2.48)** | 0.303 (1.02) | -0.220 (-0.75) | -0.194 (-0.62) | -0.593 (-2.10)** | -0.489 (-2.15)** | 0.067 (0.30) |
| Firm controls | yes | yes | yes | yes | yes | yes | yes | yes |
| Respondent role fixed effects | yes | yes | yes | yes | yes | yes | yes | yes |
| Observations | 236 | 236 | 236 | 236 | 236 | 236 | 236 | 236 |
| Chi-squared | 256.9 | 256.9 | 256.9 | 256.9 | 256.9 | 256.9 | 256.9 | 256.9 |

This table presents results of Seemingly Unrelated Probit Regressions on the use of the particular ESG investment style indicated in the column headings (1) to (8). The independent variables include the perceived impact on returns of the particular investment style (Table 5) and variables from Table 2 and 3. Firm controls include an indicator variable equal to 1 if AUM >\$ 5 billion and zero otherwise, an indicator variable equal to 1 if the institutions ESG allocation > 5% of AUM and zero otherwise, as well as an indicator variable for asset owners and one for investors located in the US. All regressions further include respondent role fixed effects. z-statistics using heteroskedasticity-robust standard errors are reported in parentheses. ***, **, * denotes significance at the 1%, 5%, and 10%-level, respectively.

Table 8: Future importance of ESG investment styles

Survey responses to question: *How important will the following methods of using ESG information in your investment process become in the next 5 years?*

(Scale: 3 = very important, 2 = somewhat important, 1 = not important)

| N = 309 | | ALL | | | | | AUM Size | | | ESG Allocation | | | Region | | |
|---------|---|------------------|-----------------|----------------|--|-------------------------------------|----------|-------|--------------|----------------|------|---------------|--------|--------|----------------|
| | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| | | % very important | % not important | Average Rating | Significant difference in average rating vs rows | H ₀ : Average rating = 2 | Large | Small | Diff (6)-(7) | High | Low | Diff (9)-(10) | US | Europe | Diff (12)-(13) |
| 1 | Positive screening Engagement/active ownership | 32.5% | 28.5% | 2.04 | 6-8 | | 2.17 | 1.98 | ** | 2.24 | 1.90 | *** | 2.05 | 2.11 | |
| 2 | Negative screening | 33.7% | 31.2% | 2.02 | 8 | | 2.09 | 1.99 | | 2.33 | 1.81 | *** | 1.81 | 2.23 | *** |
| 3 | Full integration into individual stock valuation | 29.7% | 29.8% | 1.98 | 8 | | 2.06 | 1.94 | | 2.13 | 1.88 | *** | 1.91 | 2.13 | ** |
| 4 | Thematic investment | 29.0% | 31.7% | 1.98 | 8 | | 2.09 | 1.92 | * | 2.23 | 1.79 | *** | 1.82 | 2.10 | ** |
| 5 | Relative screening/ best-in-class screening | 24.8% | 31.4% | 1.91 | 1, 8 | * | 2.05 | 1.85 | ** | 2.08 | 1.79 | *** | 1.83 | 2.03 | * |
| 6 | Risk factor/risk premium investing | 24.1% | 32.5% | 1.91 | 1, 8 | ** | 1.93 | 1.91 | | 2.13 | 1.76 | *** | 1.76 | 2.01 | ** |
| 7 | Overlay/portfolio tilt | 22.7% | 32.5% | 1.90 | 1-2, 8 | ** | 1.92 | 1.89 | | 2.06 | 1.79 | *** | 1.69 | 1.95 | ** |
| 8 | | 12.1% | 46.0% | 1.62 | 1-7 | *** | 1.67 | 1.60 | | 1.81 | 1.49 | *** | 1.48 | 1.70 | ** |

Column 1 (2) reports the percentage of respondents indicating the importance levels of 2 or 3 (1) on a scale of 1 to 3. Column 3 presents the average rating. Column 4 shows the results of a t-test of the null hypothesis that the average rating for a given row is equal to the percentage for each of the other rows, where only significant differences at the 5 percent level are reported. For example, for row 1 the recorded “6–8” in the column signifies that the percentage for the response in row 2 is significantly different from the percentages for the responses in rows 6 to 8. Column 5 reports the results of a t-test of the null hypothesis that the average rating for a given row is equal to 3. Columns (6) and (7) report the average rating for investors with AUM >\$ 5 billion (large) and AUM <\$ 5 billion (small), respectively. Column (8) reports the results of a t-test of the null hypothesis that the average ratings in Columns (6) and (7) are equal to each other. Column (9) and (10) report the average rating for investors with ESG allocation > 5% of AUM (high) and ESG allocation < 5% of AUM (low), respectively. Column (11) reports the results of a t-test of the null hypothesis that the average ratings in Columns (9) and (10) are equal to each other. Columns (12) to (14) report the percentages by geographical regions and the respective tests of the null hypothesis that the percentages in the specified columns are equal to each other. ***, **, * denotes significance at the 1%, 5%, and 10%-level, respectively.

Table 9: Determinants of future importance of ESG investment styles

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|-------------------------------|---------------------|--------------------|----------------------|--------------------|----------------------|--------------------|---------------------|---------------------|
| VARIABLES | Negative Screening | Positive Screening | Relative Screening | Overlay | Risk factor | Thematic | Integration | Engagement |
| Impact on returns | 0.525 (6.99)*** | 0.762 (8.11)*** | 0.654 (6.87)*** | 0.787 (7.08)*** | 0.693 (6.86)*** | 0.750 (7.56)*** | 0.733 (6.61)*** | 0.737 (6.97)*** |
| <u>Impediments</u> | | | | | | | | |
| Cost of information gathering | 0.231 (1.39) | -0.091 (-0.53) | -0.179 (-1.01) | 0.143 (0.78) | -0.215 (-1.21) | 0.070 (0.40) | 0.125 (0.68) | -0.288 (-1.57) |
| Infrequent disclosure | -0.148 (-0.84) | -0.099 (-0.54) | 0.072 (0.39) | 0.354 (1.93)* | 0.518 (2.80)*** | -0.061 (-0.34) | 0.123 (0.66) | 0.428 (2.28)** |
| Lack of Quantifiability | -0.081 (-0.46) | -0.279 (-1.50) | 0.064 (0.35) | -0.128 (-0.68) | -0.151 (-0.80) | -0.331 (-1.80)* | -0.202 (-1.06) | -0.457 (-2.38)** |
| Lack of Comparability | -0.371 (-2.11)** | -0.247 (-1.36) | -0.018 (-0.10) | 0.118 (0.61) | 0.188 (1.01) | 0.169 (0.93) | 0.613 (3.21)*** | 0.124 (0.67) |
| Lack of reliability | 0.142 (0.72) | -0.005 (-0.03) | -0.700 (-3.41)*** | -0.367 (-1.75)* | -0.562 (-2.62)*** | -0.102 (-0.50) | -0.477 (-2.18)** | 0.056 (0.26) |
| <u>Motivation</u> | | | | | | | | |
| Financially material | 0.062 (0.34) | 0.180 (0.93) | -0.125 (-0.63) | 0.311 (1.52) | 0.186 (0.94) | 0.173 (0.88) | 0.330 (1.64) | 0.348 (1.75)* |
| Effective for change | 0.269 (1.49) | 0.424 (2.22)** | 0.322 (1.68)* | 0.287 (1.49) | 0.129 (0.66) | 0.497 (2.59)*** | 0.395 (2.03)** | 0.684 (3.39)*** |
| Growing client demand | -0.143 (-0.79) | 0.240 (1.27) | 0.392 (2.07)** | 0.040 (0.21) | -0.244 (-1.25) | -0.068 (-0.36) | -0.076 (-0.39) | 0.009 (0.05) |
| Product Strategy | 0.256 (1.33) | 0.284 (1.44) | -0.266 (-1.33) | -0.045 (-0.23) | 0.141 (0.67) | 0.165 (0.82) | 0.082 (0.39) | -0.414 (-1.95)* |
| Ethical responsibility | 0.331 (1.80)* | 0.324 (1.65)* | 0.383 (1.95)* | -0.115 (-0.59) | 0.062 (0.31) | -0.235 (-1.18) | 0.005 (0.02) | 0.028 (0.14) |
| Firm controls | yes | yes | yes | yes | yes | yes | yes | yes |
| Respondent role fixed effects | yes | yes | yes | yes | yes | yes | yes | yes |
| Observations | 236 | 236 | 236 | 236 | 236 | 236 | 236 | 236 |
| Chi-squared | 470.8 | 470.8 | 470.8 | 470.8 | 470.8 | 470.8 | 470.8 | 470.8 |

This table presents results of Seemingly Unrelated Ordered Probit Regressions on the importance over the next 5 years of the particular ESG investment style indicated in the column headings (1) to (8). The dependent variable takes on the values 1 (not important), 2 (somewhat important) or 3 (very important). The independent variables include the perceived impact on returns of the particular investment style (Table 5) and variables from Table 2 and 3. Firm controls include an indicator variable equal to 1 if AUM > \$ 5 billion and zero otherwise, an indicator variable equal to 1 if the institutions ESG allocation > 5% of AUM and zero otherwise, as well as an indicator variable for asset owners and one for investors located in the US. All regressions further include respondent role fixed effects. z-statistics using heteroskedasticity-robust standard errors are reported in parentheses. ***, **, * denotes significance at the 1%, 5%, and 10%-level, respectively.