

Do ESG Factors Influence Firm Valuation? Evidence from the Field*

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Abstract

We surveyed more than 300 financial executives' practices in integrating Environmental, Social, and Governance (ESG) factors into corporate valuation. Hypotheses drawn from previous ESG research were pre-registered prior to the survey, tested on responses, and further validated during follow-on interviews with a subset of valuation experts. Findings show that external stakeholders, such as investment advisors, play a crucial role in guiding the use of ESG factors in valuation. We confirm that the low quality of ESG ratings data remains a significant impediment to its integration into valuation processes. Additionally, the discount rate is the key parameter adjusted in valuations based on the discounted cash flow approach. We conclude by interpreting our survey and interview results in light of current efforts by regulatory agencies to promulgate policies on climate-related and ESG reporting.

Keywords: ESG factors; Valuation; Investments; Survey methods.

JEL Classifications: G31; G32; Q54.

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1. Introduction.

Environmental, social, and governance (ESG) factors have emerged as being fundamental to the capital allocation process for investors and firms alike. A sign of their attractiveness to investors is the rise in the number of assets managed by funds applying sustainable investment criteria, with global sustainable fund assets accounting for \$2.5tn as of December 2022, up from \$1.7tn as of December 2020 (Morningstar 2023). A growing share of firms are now linking chief executive officer (CEO) compensation with ESG performance (Cohen et al. 2022). While this provides good evidence of investor and firm commitment to the use of ESG criteria, too little is known about the specific tools used by financial executives seeking to integrate ESG into their decision-making processes. Understanding best practices in how ESG matters for valuation is the goal of this study.

Our study primarily concentrates on the monetary incentives to incorporate ESG factors into firm valuation (Bénabou and Tirole 2010), as opposed to non-pecuniary incentives (Baker et al. 2022; Zerbib 2019). This focus stems from the fact that financial modeling, despite acknowledging the presence of biases (Ruback 2011), fundamentally serves as a value-driven exercise. Once these financial models are established, practitioners can then integrate non-pecuniary preferences as discussed in the existing literature, allowing for a comprehensive understanding of the decision-making process in valuing firms with ESG considerations.

There is an extensive literature affirming the links between corporate social responsibility (CSR), a precursor concept to ESG, and a firm's financial performance (van Beurden & Gössling 2008). A body of evidence is also developing for the ESG-performance link. An early study by Friede et al. (2015) conducted a meta-analysis of more than 2,000 research articles and found that evidence points mostly to a positive link between ESG-linked investments and firms' financial and operating performance. These results imply that changes are needed in how we value assets as more investors factor CSR/ESG into the valuation process. Recent studies document that investors have already started to consider ESG in asset prices. Bessec & Fouquau (2020) and Briere & Ramelli (2021) find that integrating a green sentiment factor into asset pricing models can help better predict stock returns. While studies find empirical evidence of ESG factors linked to asset prices, it is indirect and reveals too little about best practices in such integration. Empirical studies cannot easily identify to what extent equity valuation models used in the context of listed/unlisted firms are adjusted for ESG factors.

The 2016 United Nations Principles for Responsible Investment's [*Practical Guide to ESG Integration for Equity Investing*](#) reports that investors mostly use beta or discount rate adjustments in valuation models to account for ESG (Sloggett & Gerritsen 2016). Some academics suggest that the discount rate reflects market risks, and not company-specific risks. For them, this means that ESG risks and opportunities should be integrated into cash flows rather than the discount rate (Edmans 2023b). In line with this idea, Finance textbook authors like the seminal Brealey et al. (2023) argue that practitioners should avoid adding “fudge factors” to the discount rate. In support of the idea that ESG factors should be included in cash flows, Derrien et al. (2021) find that sell-side analysts incorporate ESG incidents into their earnings forecasts, which in turn enhances the accuracy of their predictions.

On the other hand, recent studies propose a new framework for an ESG-adjusted capital asset pricing model (CAPM) (Pástor et al. 2021; Pedersen et al. 2021; Zerbib 2022). An ESG-CAPM implies a measure of the cost of equity and the discount rate, which could be applied by practitioners to compute the discounted cash flow (DCF) model. Moreover, some academics argue that CSR/ESG risks are systematic risks, which means that these risks should be included in the discount rate rather than in cash flows (Albuquerque et al. 2019). These recent findings still leave the question open as to how practitioners should best integrate ESG into firm value.

Why is a survey of financial executives important? Theory and empirical evidence on ESG are in the early stages of their development. Our survey study is purposefully designed to link empirical findings in the existing literature with finance professionals' practices.¹ We do this by pre-registering four hypotheses based on the literature prior to executing the survey and then by evaluating those hypotheses using a survey of more than 300 professionals and a set of interviews with 15 experienced professionals.²

The first hypothesis draws on the work of Dyck et al. (2019) and Petrenko et al. (2016) in testing whether firm insiders (management, board) or firm outsiders (investors or advisors) influence ESG integration. Open questions abound on the motivations for ESG integration, such as whether ESG actions are a response to a CEO's personal needs for attention and image reinforcement, to the tastes and preferences of board members, or to outside pressures from activist and engaged investors (Bénabou & Tirole 2010). The second hypothesis

¹ We liken our method of scientific inquiry to *hypothetico-deductive* in which the credibility or explanatory power of a falsifiable hypothesis is tested by making predictions based on this hypothesis and determining whether these predictions are consistent with empirical observations.

² Our hypotheses together with our survey instrument were pre-registered on the Open Science Framework website.

investigates whether ESG integration is linked to the trust investment professionals have in the quality of ESG data and ratings. Indeed, Berg et al. (2022) present concerning evidence on the large divergence of ESG ratings data across six prominent ESG rating agencies: KLD, Sustainalytics, Moody's ESG, S&P Global, Refinitiv (formerly, Asset4), and MSCI. In a third hypothesis, we build on the findings of Krueger et al. (2020) by testing whether best practices of firms in different sectors can explain different levels of intensity in the process of ESG integration. Krueger et al. (2020) uncover from their survey of institutional investors that equity valuations do not fully reflect the risks of climate change differently across sectors. The oil sector is perceived as the most overvalued sector overall, followed by traditional car manufacturers and electric utility companies. Finally, in the fourth and last hypothesis, we build on the approach of Gillan et al. (2021) by seeking to identify the mechanism used by investment professionals to factor ESG into corporate valuations. To test this last hypothesis, we examine which parameters of a DCF valuation model (discount rate, cash flows, terminal cash flow or long-term growth rate) investment professionals adjust to factor in ESG. Together, these hypotheses aim to better understand the factors that influence ESG integration, the quality of ESG data, and the mechanisms by which ESG is integrated into corporate valuations.

We anonymously surveyed European finance professionals about their practices for integrating ESG criteria into the valuation process with the support of several European professional organizations. These include the European Federation of Financial Analysts Societies (EFFAS), the Chartered Financial Analyst Institute France (CFA France), the French Society of Financial Analysts (SFAF), the French Society of Valuation Analysts (SFEV), Association of French Institutional Investors (Af2i), the French Financial Management Association (AFG), the ESCP Business School Alumni and the ESSCA School of Management Alumni. Our survey instrument is structured around four themes: (1) the relevance and availability of ESG data, (2) the quality of ESG data, (3) the relation between ESG performance and firm value, and (4) the implementation of valuation techniques. The European financial professionals we survey are familiar with firm valuation issues, but have different functions within the financial sector, including independent valuation experts, portfolio managers, fund managers, as well as corporate financial officers.

The European context is suitable for our survey for several reasons. The European Union is a place where finance professionals are facing rapidly expanding ESG regulations. The European Commission (EC) has implemented new rules for companies in terms of non-financial reporting and has reinforced ESG

transparency obligations with which many European finance professionals are now familiar. They regularly have to deal with the questions asked in our survey, detailed below. Specifically, on April 21, 2021, the EC adopted an ambitious package of measures to help improve the flow of money towards sustainable activities across the European Union. The Commission devised a proposal for a Corporate Sustainability Reporting Directive (CSRD) that extends the scope to all large companies and all companies listed on regulated markets, requires the auditing of reported information, and introduces more detailed reporting requirements. The goal of this regulation is in part to make the EU a global leader in setting standards for ESG finance. Our decision to focus on the European context is supported by the previous literature, which indicates that European institutional investors are more committed than investors in other areas to integrating ESG considerations into investment decision-making (Amel-Zadeh and Serafeim 2018). These studies also suggest that European investors' view ESG performance as linked to systematic risk, indicating that market participants interested in integrating ESG into valuation are more likely to be found in the European context.

We discovered that the majority of respondents - who consisted of a diverse group of investors, analysts, and other financial professionals - utilize ESG data as a crucial component of their analysis of companies. The use of ESG data has become increasingly prevalent in recent years as investors have become more attuned to ESG factors and their potential impact on a company's performance and long-term prospects. Interestingly, we found that the process of incorporating ESG data into investment decisions is being driven primarily by outsiders such as shareholders and debtholders, rather than business insiders such as managers. This suggests that ESG considerations are becoming an important factor for stakeholders outside of the company, who seek to better understand the risks and opportunities associated with investing in a particular company. While our descriptive data supported this finding, we were unable to establish a clear causal link between data quality and the connection between ESG and value. We also found limited evidence that sector specialization affects value and ESG. In terms of modeling, respondents appeared to adjust DCF models by altering the discount rate, rather than changing the cash flow components. This is confirmed by the fact that respondents believe that ESG primarily has an impact on cost of debt then cost of equity, but only a limited impact on margins and return on capital employed. This indicates that ESG considerations are being incorporated into the discount rate as an additional risk factor, rather than as a direct component of cash flows.

Our results explore the link between ESG performance and financial performance, as well as the specific factors that influence this relationship. The literature has mostly found a positive link between ESG and financial performance, but the direction of the causal link has been mixed (Jo & Harjoto 2012; Nelling & Webb 2009). We found that most practitioners believe that ESG directly affects financial performance; even when they believe the relationship goes both ways, they believe that ESG has the strongest effect. Our survey also finds that the stronger the belief in the financial materiality of ESG, the stronger the belief in the causal link going from ESG to financial performance rather than the reverse. We also explore further the influence of each pillar of ESG on valuation practices, following the recommendations of Edmans (2023a). Our study suggests that current DCF models are mostly adjusted for the E and S components of ESG. Additionally, based on interview results, we found that all three criteria (E, S, and G) are important, but that the G factor is more difficult to model and translate into cash-flows when valuing firms.

We recognize that our survey approach undoubtedly features several potential biases. Our survey respondents do not necessarily represent the overall population of valuation experts. It is likely that our respondents are strongly interested in the subject, and we also know that some of the professional associations that took part in our study targeted the members most interested in ESG. That said, the integration of ESG into the valuation process is a new issue that cannot concern all valuation experts at this stage. In this context, we believe that it is difficult to avoid addressing certain experts rather than the general population. Other biases include the well-known response bias (untruthful answers) and, notwithstanding our pre-registration of hypotheses, a publication bias (towards statistically significant results). To limit the effects of these two biases, we complemented our study with interviews of finance professionals. Interviews included open-ended questions on professionals' practices in terms of ESG integration and then close-ended questions focusing on our four hypotheses. Both open- and close-ended questions confirmed many of the results of our survey. We also pre-tested our survey with a wide range of investment professionals and academics. This preliminary effort aimed at ensuring that the way questions were framed would not have an undue influence on our results. The pre-registration of our hypotheses on an open access platform (Open Science Foundation) sought to mitigate bias towards statistically significant results. Our hypotheses could not be biased by our survey results, given that they were built and made public via pre-registration before we collected any responses or conducted interviews. Finally, our survey instrument was provided to partner associations who would then send it to the final

respondents. Partner associations did not provide any final respondent's contact or personal details. Therefore, the full anonymity of survey respondents was ensured.

In this study, we focused on analyzing the parameters of a DCF valuation model that financial professionals use to factor in ESG considerations when valuing companies. We found that while practitioners typically adjust the discount rate as the main parameter, they also often adjust the long-term growth rate as well. This finding is significant because it suggests that practitioners are increasingly recognizing that ESG factors can have a long-term impact on company cash flows. By challenging the previous assumption that ESG integration was primarily done through beta or discount rate adjustments, this study shifts the focus to the importance of considering the long-term growth rate. This result is particularly relevant given the growing awareness of the impact of ESG factors on financial performance and company value. The study suggests that practitioners need to take a more holistic approach to ESG integration and highlights the need for best practices and standards to ensure consistency and transparency in ESG valuations. This research can help financial professionals and investors make better-informed decisions when considering the impact of ESG factors on valuations.

Overall, we offer our survey findings and associated interviews as useful clinical evidence to fuel additional empirical work on how ESG processes, protocols, and related ESG data are incorporated into the valuation process. We believe researchers could use our results to develop new research agendas, several ideas for which are outlined in the conclusions. We also hope that practitioners will learn from our analysis by benchmarking how other firms incorporate ESG decision-making and by improving managerial practices accordingly.

The remainder of this paper is organized as follows: Section 2 sets out our pre-registered hypotheses, we discuss our methodology in Section 3 and in Section 4, we analyze our results. In Section 5, we provide additional results that do not come under the umbrella of our four hypotheses and Section 6 is our conclusion.

2. Development of the pre-registered hypotheses.

In this section, the four empirical hypotheses that we built into the pre-registration report are outlined, along with their reasoning based on the existing ESG literature.

2.1. *Firm insiders and the ESG policy of the firm.*

In our study, we provide a precise definition of insiders, identifying them as the financial managers of the company. Our definition aligns with the division between insiders and outsiders described in the agency theory literature (Jensen & Meckling 1976), which includes advisors and investors. Our primary focus on insiders stems from their key interest in valuing firms during mergers and acquisitions, regardless of whether they are buying or selling. To differentiate between insiders and outsiders, we consider their level of commitment to their firms' use of funds. Insiders are directly committed to their firm's use of funds, while advisors' valuations do not usually involve the use of their own funds. This distinction is crucial to understanding the motivation behind the valuation of firms by insiders and outsiders. Additionally, we note that regulation also creates a distinction between insiders and outsiders, as outsiders are subject to more stringent regulations, such as the Sustainable Finance Disclosure Regulation (SFDR), which increases disclosure requirements for ESG from investors.

The practice of connecting executive compensation to specific sustainability goals exemplifies the divergent perspectives insiders and outsiders have on ESG. Shareholders are increasingly advocating for this method to synchronize management's interests with quantifiable ESG targets (Spierings 2022). However, some researchers argue that simply linking executive pay to long-term value creation is adequate (Edmans 2023b). This shift in market practices offers insight into the evolving ESG approach. According to existing literature, the emphasis should be on fostering long-term value. Although tying executive compensation to sustainability goals may help align incentives, its impact on long-term value creation remains uncertain.

Insiders push CSR/ESG policies through three main channels: reducing ESG controversies, increasing opportunities generated by improved ESG practices, or both. A firm's management may aim at limiting the costs related to ESG controversies and, in doing so, increase firm value. Using four separate measures (ROA, ROE, EBIT/Total Assets and Profit margin), Treepongkaruna et al. (2022) found that ESG controversies limit firm profitability. Krüger (2015), using a dataset of 2,116 corporate events, discovered that investors react negatively to negative CSR news. Other literature has uncovered similar effects of controversies on firm value (Aouadi & Marsat 2018; Capelle-Blancard & Petit 2019). Aware of such issues, management may aim to reduce their exposure to such controversies by pushing CSR/ESG policies within the firm (Bénabou & Tirole 2010).

Insiders often aim to capitalize on the value-creating potential of ESG initiatives. Cornell and Shapiro (2021) identified implicit claims, such as equitable dealings with suppliers and favorable employee treatment,

as the crucial connection between ESG and shareholder value. According to these authors, firms that invest in ESG essentially seek to market these implicit claims to stakeholders. For instance, Facebook offers the unspoken assurance that it will safeguard user data. Users accept this implicit claim, but if Facebook fails to uphold it, the company risks losing users. Empirical evidence shows the potential benefits firms may derive from such implicit claims. Krueger et al. (2020), for instance, found that workers earn 9% lower wages in companies in more sustainable industries. Again, firms in such industries sell the implicit claim that their activity is sustainable and receive lower salary costs. By reducing such costs firms can generate shareholder value. Climate regulations create costs for firms that need to achieve compliance but may generate opportunities for firms pre-empting such regulations (Glavas 2020; Seltzer et al. 2022). In our study, we aim to understand better whether insiders factoring ESG into valuation is a way for insiders to push CSR/ESG policies within the firm.

Firm outsiders, mostly investors in our study, may also drive the inclusion of ESG criteria in valuation. Investors have three main means to drive firms' CSR/ESG policy: the positive or negative selection of stocks, engagement, and integrating ESG into stock valuation. Investors use screening to analyze the long-term viability and societal effects of investments in a firm. Investors avoid firms that have a negative impact on the environment or society, or that have inadequate governance standards, when using negative screening. Positive screening seeks organizations with a positive influence on the environment and society. In their survey of senior investment professionals, Amel-Zadeh and Serafeim (2018) found that ESG data is most frequently used to screen firms and, more specifically, to apply negative screening. Although screening affects the way investors build their portfolios, it also appears to have a positive risk-adjusted return effect (Verheyden et al. 2016). Therefore, screening allows investors to apply ESG investment guidelines while maintaining risk-adjusted returns.

The process of investors engaging with the firms in which they invest to persuade them to improve their ESG practices is referred to as engagement. This might include investors conveying their concerns and expectations about a business's ESG performance, as well as collaborating with the firm to develop plans to remedy any issues or enhance overall ESG performance. In their survey, Amel-Zadeh and Serafeim (2018) observe that investors, while commonly using negative screening, believe investor engagement will develop in the future.

The last method through which investors may influence firms' ESG policies is valuation. By integrating ESG factors into their decision-making process investors push firms into maximizing their ESG performance to improve their valuation. In this context, our study intends to further understand whether firm outsiders or firm insiders are the most involved in integrating ESG into the valuation process. This leads us to our first null hypothesis that we seek to falsify with survey evidence:

H1: Firm insiders integrate the impact of ESG on valuation the same as firm outsiders.

In our pre-registered discussion of this null hypothesis, we expected to reject it in favor of the specific alternative hypothesis that firm insiders would integrate the impact of ESG on valuation with more intensity.

2.2. ESG impact on value and the quality of ESG ratings data.

The quality of ESG data is a critical concern for investors who want to make informed decisions about potential investments, as investors believe that this data is value-relevant (Amel-Zadeh & Serafeim 2018). The literature has identified three key reasons why investors still lack trust in ESG data. First, there is a lack of commonly accepted ESG reporting standards or a low level of ESG reporting regulation at the firm level. This leads to comparability issues that limit the capacity of investors to select firms based on ESG data, especially when they use screening methods (Amel-Zadeh & Serafeim 2018). Second, data providers change their methodologies, which sometimes implies rewriting historical data (Berg et al. 2020), limiting data reliability and data comparability across time. Third, differences in ESG providers' methodologies lead to low correlations between ESG ratings (Berg et al. 2022). This low level of ESG data correlation leads to a difficulty for investors using ESG criteria to build their investment portfolio. Our study intends to explore more thoroughly whether these well-known issues with ESG data prevent or limit the use of ESG data in business valuation.

Practitioners might argue that the unreliability of ESG data could impede the market's capacity to effectively incorporate ESG factors into firms' valuations. This perception stems from an expectation that other economic agents may not integrate ESG considerations into their decision-making processes, leading to the belief that ESG factors have no discernible impact on valuation. However, the core issue lies not in the existence of a fundamental link between ESG factors and valuation, but rather in the market's expectation regarding ESG's influence on valuation. This viewpoint highlights a potential concern: the market could underestimate the significance of ESG factors due to limitations in ESG data quality and availability (Berg et al. 2022). A primary challenge in this field is the absence of standardized methodologies for collecting, measuring, and reporting

ESG metrics. This deficiency may result in inconsistencies in ESG information, which could, in turn, diminish its credibility.

This leads us to our second null hypothesis that we intend to falsify:

H2: The perceived reliability of ESG ratings does not affect market participants' expected link between ESG and valuation.

Drawing on existing research, our pre-registered expectation was to reject the null in favor of the specific alternative hypothesis that financial executives who rely on internal assessments or those who rely on more than one external rating would perceive a weaker link between ESG factors and valuation.

2.3. Role of the industry in the relationship between ESG and value.

Some industries may have a higher appetite for ESG practices, or some industries may structurally benefit from the integration of ESG criteria into valuation as compared to others. Borghesi et al. (2014) demonstrate that CSR metrics vary significantly across industries. For example, the computer hardware, banking, and consumer goods sectors tend to exhibit above-average CSR indicators, while the chemicals and aircraft industries typically display below-average performance in CSR measures.

In their survey of investors, Krueger et al. (2020) found that investors believe that the underpricing of climate risks is the most important pricing factor in some specific industries (oil industry, car manufacturers and electric utilities). They discovered that this underpricing view is common among investors who use ESG investment criteria, or who present a high level of engagement. According to the survey, some sectors are considered to be neglected by investors, such as the coal and unconventional oil industries.

Bessec and Fouquau (2020) developed a green sentiment index to gauge media coverage of environmental issues. When incorporated into a Fama-French model, they discovered that green sentiment influences stock returns differently across industries. Increased media attention on environmental matters negatively impacted stock returns in the energy and materials sectors, while positively affecting real estate and utilities. The authors attributed these results to investors' perception of certain industries as polluters (particularly the materials sector) and the ongoing transition of others towards a low-carbon model (electric utilities and real estate). Consequently, investors assess the relationship between environmental risks and value in a sector-specific manner.

Industry effects on the relationship between ESG and value are also evident when considering the social component of ESG. Krueger et al. (2020) discovered that employees in sustainable sectors earn lower wages compared to those in less sustainable industries. According to the authors, the wage gap between sustainable and less sustainable industries contributes to the difference in cash flow generation between these two types of firms. This variation in cash flow generation in turn leads to differences in valuation. Consequently, our study investigates industry effects on the relationship between ESG and value generation.

This leads us to our third null hypothesis that we aim to falsify:

H3: Industry or sector affiliation of a firm does not impact market participants' expected links between ESG and valuation.

Our priors outlined in the pre-registered report were that the survey evidence would likely not be definitive, given that the population of executives was to be drawn from the buy-side among asset managers, and less among corporate executives, where an industry focus is not front of mind.

2.4. ESG and valuation model adjustments.

Literature thoroughly explores the impact of ESG factors on company valuations and associated moderating factors. Gillan et al. (2021) proposed that CSR/ESG initiatives can generate value by enhancing shareholder wealth. They pinpointed two potential pathways for wealth creation: increased cash flows (stemming from cost reductions or revenue growth) and a reduced discount rate (resulting from lower costs of capital or debt). Conversely, some literature does not anticipate a link between operational performance and ESG (Awaysheh et al. 2020; Cornell & Damodaran 2020).

First, several scholars contend that ESG factors should be incorporated into firm value through long-term cash flows (Edmans 2023b). They argue that these factors, rather than representing systematic risks, are elements that generate value at the firm level over time. Supporting this notion, sell-side analysts appear to factor ESG incidents into cash flow projections, leading to more accurate forecasts (Derrien et al. 2021). By incorporating ESG factors into long-term cash flow analysis, a clearer understanding of the firm's value and future performance may be achieved.

Several studies have explored the potential impact of ESG factors on the risks faced by firms and, consequently, their cost of capital (Albuquerque et al. 2019; Seltzer et al. 2022). These studies propose that ESG factors may affect various types of risk, including systematic risk, transition risk, and physical risk. Given the

systematic nature of such risks, part of the literature considers that cost of capital should integrate such risks by computing an ESG-adjusted CAPM (Pástor et al. 2021; Pedersen et al. 2021; Zerbib 2022).

Finally, a segment of the literature asserts that there is only a weak correlation between operational performance and social responsibility outcomes (Awaysheh et al. 2020; Cornell & Damodaran 2020). This suggests that higher ESG performance may not necessarily translate into increased cash flows. These authors propose that ESG primarily influences the cost of capital, but only when ESG performance is low. Consequently, the literature contends that ESG has an asymmetric effect; it can increase the cost of capital, but not reduce it. This perspective emphasizes the distinction between ESG's impact on cost of capital versus cash flows and underscores the asymmetric nature of its influence on financial performance.

However, determining how specific practices contribute to integrating ESG factors into valuations remains an area that needs further exploration. To investigate these conflicting perspectives, we closely examined the valuation practices employed by industry professionals. Our initial objective is to understand how they integrate ESG factors into valuations and whether they modify their approach through adjustments to a firm's cash flows or its discount rate. This investigation will help shed light on the practical implications of these theoretical viewpoints, considering the intricate relationship between ESG factors, cash flows, and cost of capital as evidenced in the literature.

This leads us to our fourth null hypothesis that we intend to falsify:

H4: There is no difference in how a firm's ESG performance is integrated into the valuation process through the firm's cash flows and/or its discount rate.

Our pre-registration report proposes, based on the net balance of ESG research to date, that ESG factors would be more reliably integrated into discounted cash-flow-based valuation approaches by means of operating profits or cash flows themselves rather than the discount rate. We fully expected to reject this fourth null hypothesis in favor of that specific alternative hypothesis.

3. Survey methodology and execution.

3.1. Survey design.

Our online survey was six pages long and included 32 compulsory questions and eight optional questions. All compulsory questions except one were multiple choice and all optional questions were open-

ended. The questionnaire was structured around five major topics: (1) General information about respondents, (2) Relevance and availability of ESG data, (3) ESG and rating agencies, (4) ESG performance and company value, and (5) Valuation techniques. The respondents were allowed to go back and amend their answers. The questionnaire took between 15 and 20 minutes to complete.

Questions in the survey instrument were built around the four hypotheses reflecting the state of the academic debate on ESG and valuation: (H1) Firm insiders (management, board) do not integrate the impact of ESG on valuation in the same way as firm outsiders (advisors or investors), (H2) the perceived reliability of ESG ratings affects market participants' expected link between ESG and valuation, (H3) industry is a key driver of market participants' expected link between ESG and valuation, and (H4) the firm's ESG performance is integrated into the valuation process through firm cash-flows and/or discount rate. The survey project was a collaborative effort with several professional European finance associations. These associations view the question of the use of ESG data to value firms as a major concern for their members that merits an in-depth investigation. Some of these associations are made up of pure valuation specialists who intervene, for example, in the context of fairness opinions or disputes on valuation issues. Other associations bring together financiers whose firm valuation is only one of the components of their activities. For example, the CFOs who participated in our survey may be called on to carry out evaluations, but this is not the primary component of their work.

We developed a draft survey questionnaire based on a review of the literature and circulated it to several academics and practitioners for their feedback. We revised the questionnaire based on their feedback and suggestions. After several rounds of revisions and discussions with these academics and professionals, we developed a final version of the survey instrument used, which is provided in Appendix A.

3.2. *Hypotheses pre-registration process.*

We used the Open Science Framework (OSF) repository to pre-register our study hypotheses, survey design, and distribution methods, which allowed us to limit the impact of researcher confirmation bias and allowed our research process to be transparent. The pre-registration process also helped to mitigate publication biases (Franco et al. 2014) and increased the efficiency of our research process. The literature has documented that pre-registration is more specifically efficient for exploratory research, as is the case in our article (Nosek et al. 2018). Our pre-registration was filed before we started collecting the data and has not been modified at any point since pre-registration. The pre-registration was also made publicly available at the registration date. Our

article reports the same hypotheses, survey techniques, and analyses as the pre-registration plan uploaded in OSF.

We posted our hypotheses and research design on the OSF website. The pre-registration more specifically included: (1) the research hypotheses; (2) the study type; (3) the study design; (4) the data collection procedures; (5) the detailed variables collected; (6) the analysis plan; and (7) any identified limitations to our study.

We pre-registered the study type in the “observational study” category, which typically includes surveys. In the study design section, we included the questionnaire in Appendix A, along with all survey sponsors, the non-exhaustive list of survey participants’ occupations, and all survey transmission dates. The collection procedure detailed how the survey was distributed and the data collected. We split the measured variables into the six following categories: (1) respondents’ general information; (2) respondents’ views on ESG data; (3) respondents’ views on ESG rating agencies; (4) respondents’ views on the link between ESG and valuation; and (5) respondents’ views on the valuation techniques they use. The analysis plan included the analysis of descriptive statistics, means comparison, and regression analysis.

Lastly, we recognized two main limitations to our study prior to analyzing the data. The first limitation stems from the anticipated overrepresentation of French respondents, which can be attributed to the nature of the survey sponsors. This potential bias could affect the generalizability of our findings to a wider audience. The second limitation concerns the likelihood that respondents with a heightened interest in ESG topics may be more inclined to participate in our survey. This selection bias could result in an overemphasis on the perspectives of ESG enthusiasts, potentially skewing the study's conclusions. By acknowledging these limitations, we aimed to provide a more transparent and comprehensive understanding of our research outcomes.

3.3. *Survey distribution.*

The survey instrument was launched online using *LimeSurvey*. We provided the link to the survey as well as an explanatory email (see Internet Appendix B) to the eight survey distributors. The survey was anonymous, and the survey information was strictly confidential. The survey distributors are leading organizations in financial analysis and business valuation as well as business school alumni. The sponsors include the following: (1) the European Federation of Financial Analysts Societies (EFFAS); (2) the Chartered Financial Analyst Institute France (CFA France); (3) the French Society of Financial Analysts (SFAF); (4) the

French Society of Valuation Analysts (SFEV); (5) the Association of French Institutional Investors (Af2i); (6) the French Financial Management Association (AFG); (7) ESCP Business School Alumni; and (8) ESSCA School of Management Alumni. The explanatory email that went with the weblink clearly stated that if the respondents received the survey through one of the other sponsors, they were kindly requested not to fill in the survey a second time, to limit the risk of redundancy.

We ensured the full anonymity of respondents by sending the survey link to the survey distributors, who then distributed the link to the final respondents. We sent the links to distributors between March 3, 2022 and March 24, 2022. The distributors then sent the questionnaires to the final respondents between March 10, 2022 and April 11, 2022. We collected the data on May 27, 2022. The final database comprised 303 responses, with an estimated response rate of 6.5%. This response rate varied significantly according to the sponsor. This may be explained by the fact that some sponsors sent the survey to members that belong to internal groups specialized in ESG, while others sent the survey to a broader audience. Table I provides details about the response rates.

[Table I about here]

3.4. *Interview design.*

In addition to the surveys, we conducted fifteen interviews, which included the following: four asset managers (in two diversified funds, one long-short fund, and one ESG oriented fund), three valuation experts (consultants in Finance specializing in valuation), two ESG consultants (in implementation of ESG strategy and debt advisory), two private equity (PE) fund managers (one leveraged buyout fund and one social impact fund), two financial analysts, one CFO of a non-listed company, and one investment banker.

We wanted to interview different valuation experts who worked in different areas of finance and for different clients across several industries. These experts occupy different hierarchical positions in their respective organizations. Some are "junior" (analysts), and others are experienced professionals. Most are not specialized in a sector with a particular activity or a given financial product. Of the 15 experts interviewed, eight had participated in our survey, while seven had not. The seven experts who did not participate in the survey were ESG specialists but were not affiliated with the professional associations that helped distribute our questionnaire.

Each interview was organized as follows. It started with open questions on the practices of experts in ESG and business valuation. We did this to understand how they used ESG data, the degree of trust they placed

in them and, more generally, what ESG offered them in their valuation practices. The second part then asked the experts about their points of view on the validity of our four theoretical hypotheses presented earlier in this article, without mentioning that these were derived from the literature as empirical hypotheses. This second part of the interview allowed us to discuss and collect the points of views of the experts about the pertinence of our hypotheses. See Appendix C for the interview script notes.

Through these interviews, we collected additional data about ESG and valuation practices. We used our interviews to challenge the results of our survey and to better understand the underlying mechanisms behind our results.

3.5. *Respondent summary statistics.*

The survey respondents' characteristics are summarized in Table II below. All data used in the study is listed and defined in Table A1 in the Internet Appendix. Our sample mainly comprises portfolio managers (21%), financial analysts (20%), valuation experts (14%), chief financial officers or financial managers (8%), investment bankers (4%), and other types of respondents (34%), who primarily include ESG analysts, heads of ESG departments, and risk officers³. Most respondents were working in a private (non-listed) company (28%), followed by banks or insurance companies (25%). Some of the respondents were employed in listed companies (13%) and mutual funds (10%), while the other respondents were working in private equity funds (7%), pension funds (2%), and other types of organizations (16%)³. Other organizations represented by the respondents primarily included consulting firms, freelancers, and state-owned organizations. Most analysts were buy-side (45%) as opposed to sell-side analysts (15%); the remainder (40%) did not define themselves as sell- or buy-side analysts.

[Table II about here]

A majority of the respondents work in large-size companies with revenues above €1 billion (47%), followed by those employed in small-size companies (22%) with revenues less than €10 million. Most of our respondents had a master's degree or equivalent (48%) at the time of the study, with a small portion of respondents holding a bachelor's degree (2%). Our respondents were mostly experienced professionals (75%); a smaller proportion of them were less experienced respondents with between zero and five years of experience

³ The sum of all percentages does not equal 100% due to rounding.

(14%). We asked respondents whether they specialized in a specific sector, with most answering that they did not work on a specific sector (80%), while the most commonly cited sector for specialized respondents was Finance, Insurance, and Real Estate (9%), followed by Retail Trade (2%), with other sectors each accounting for less than 2% of the respondents. Given the types of sponsors for this study and as expected in our pre-registration, a large majority of the respondents were based in France (69%), with other respondents mainly based in Portugal (7%), Germany (4%), and Italy (4%). As pointed out in our hypothesis pre-registration, *Most partner associations of this study have a majority of French members, which may lead to a high share of French respondents. In August 2015, France implemented in its Article 173 of the Energy Transition Law rules to compel institutional investors to publish ESG reports. This may bias the results of our study, as the quality of ESG data may be improved in France with respect to other countries due to the early implementation of this law.*

4. Results.

4.1. Preliminary regression tests.

After analyzing the descriptive statistics, we investigated the determinants of ESG data usage. Researchers have found that institutional investors play a key role in ESG data usage (Ailman et al. 2017). Moreover, this study also demonstrated that investors believe that integration into stock valuation is the most beneficial way to use ESG data (Amel-Zadeh & Serafeim 2018).

We further investigated these predictions by testing which type of respondent is most likely to use ESG data (see Table III). Using Question 9, we built the variable *ESG Use* equal to 1 when the respondent uses ESG data to adjust firm valuation, and zero otherwise. This helped us identify which respondents use data to value firms. We then used the answers to Question 1 to uncover the occupation of each respondent and build the group of indicator variables, *Respondent Position*, whereby the variable *Respondent Position* is translated into a binary variable (e.g., equal to 1 when the respondent is a financial analyst and zero otherwise, and so on). We then measured whether the buy- or sell-side position in transactions affects ESG data usage. We did this using Question 3 and building the group of indicator variables, *Operation Side*. It is a group of two binary variables, *Sell-side* and *Buy-side*. *Sell-side* is equal to 1 when the respondent is sell-side and zero otherwise. *Buy-side* is equal to 1 when the respondent is buy-side and zero otherwise. Finally, we added the sponsor through which

the survey was received into our analysis to understand better the practices of group members. Therefore, we built the *Distribution Channel* group of indicator variables. *Distribution Channel* is expressed as a group of indicator variables identifying the sponsor through which the questionnaire was received (e.g., equal to 1 when the respondent received the questionnaire through SFAF and zero otherwise, and so on).

We then regressed, using the logit model, *ESG Use* against *Respondent Position*, *Operation Side*, and *Distribution Channel* to test which variable best explains ESG data usage. Model 1 to Model 4 in Table III present our regression results. In Model 1, we first tested the impact of the respondents' occupations on ESG data usage. We found a highly significant (at the 1% level) and positive link between the portfolio manager position and ESG usage. When we ran average marginal effects, we found that respondents who were portfolio managers increased their likelihood of using ESG data to value firms by 46%. We also found that the category *Other*, mainly composed of ESG specialists, yielded a positive and significant coefficient (at the 5% level). In Model 2, we measured how the operation side of the respondents impacts ESG data usage. We determined that the coefficient for *Buy-side* is positively and significantly linked to ESG data usage. Average marginal effects indicate that a buy-side analyst has a 26% higher probability of using ESG data. In Model 3, we looked at the impact that membership in a specific association has on ESG data usage for firm valuation. We found a positive link between membership in Af2i, the CFA France, EFFAS, the SFAF, and ESG data usage. Af2i brings together institutional investors, further confirming the role of these investors as pointed out in the literature (Ailman et al. 2017). These results also suggest that specialized valuation experts seem to integrate ESG into firm valuation. In Model 4, we regressed *ESG Use* against *Respondent Position*, *Operation Side*, and *Distribution Channel* to assess whether our results still held. The results confirmed the importance of portfolio managers and other professions in explaining ESG data usage, with significant and positive coefficients for *Portfolio Manager*, *Investment Banker* and *Other*. Two professional organizations, Af2i and the SFAF, still have positive and significant coefficients. These two organizations' members are mostly institutional investors and specialized financial analysts. Aside from confirming results from the previous literature on the importance of institutional investors in driving ESG data usage, these results suggest that financial expertise plays a material role.

[Table III about here]

4.2. *Role of insiders and outsiders.*

In our questionnaire we included two questions intended to address the question of insiders' or outsiders' reliance on ESG data. Questions 1 - "What is your position?" - and 2 - "Do you work in a ____?" - focused on the type of company in which respondents worked and made it possible for us to map firm insiders and outsiders. See the detailed classification in Table X. Question 9 - "When you value a firm, do you use ESG data?" - revealed the degree of integration of ESG data into the valuation and decision-making process of the respondent.

Figure I shows the general response to this question as well as the insiders' responses and the outsiders' responses. About two-thirds of the respondents use ESG data in valuation. First, we observed that the majority of the sample of insiders (53%) stated that they do not use ESG data in valuation. When the sample of outsiders was considered, we deduced that a large majority of respondents use ESG data (75%). Therefore, the descriptive data seems to suggest that firm outsiders use ESG data more.

[Figure I about here]

We next conducted a regression analysis with *ESG Use* as a dependent variable, and the binary variable *Insider* equal to one when the respondent is an insider and zero when the respondent is an outsider as the key independent variable (see the detailed classification in Table X). Model 1 to Model 3 in Table IV present our regression results. In Model 1, we regressed *ESG Use* against *Insider* and control variables. The control variables include *Experience*, *Diploma*, and *Sector Specialist*. In Question 5, we asked respondents for their level of experience, which helped us build the variable *Experience*. We built the variable *Diploma* from Question 7, where respondents indicated their highest level of education. *Sector specialist* is a binary variable equal to one when the respondent is specialized in a specific sector and zero otherwise. Therefore, Model 1 allowed us to test the effect of the respondent being an insider on her/his usage of ESG data. The coefficient for *Insider* is negative and significant at the 1% level in Model 1, meaning that respondents who were firm insiders were less likely to use ESG data to value firms. Among the control variables, only *Experience* is positive and significant at the 5% level; professionals with a higher experience were more likely to use ESG data to value firms. Measuring the average marginal effects, we observed that insiders were 23% less likely to use ESG data, while each additional level of experience increased by 13% the likelihood of using ESG data.

In Model 2 we used the same specification as in Model 1 but added *Operation side* as a control. We have seen that *Operation Side* has an individual impact on *ESG usage* in Table III, so we intended to control

for this effect in Model 2. In Model 2, *Insider* becomes significant at the 5% level while still being negative. *Experience* is still positive and significant at the 5% level and *Buy-side* is positive and significant at the 5% level. Marginal effects revealed that insiders were 18% less likely to use ESG data, while every additional experience level increased the likelihood of using such data by 13%. Interestingly, buy-side professionals were 23% more likely to use ESG data in valuation, confirming the results of Table III. In Model 3, we used the same specification as in Model 2 but added *Distribution Channel* as a control. We did not add *Respondent Position* as a control variable to avoid multicollinearity issues, as the variable *Insider* was built using the respondents' positions and would therefore be highly correlated. In Model 3, the coefficient for *Insider* remained significant at the 5% level. Among control variables, *Experience* remained positive and significant, as it did among respondents who received our survey through Af2i, EFFAS, and SFEV. The coefficient for *Buy-side* became significant at the 10% level, confirming the weaker effect of this variable when further controls are added to regression analyses. Insiders were 16% less likely to use ESG data, and each level of experience increased the likelihood of using such data by 13%. We observed that *Insider* remained significant across all specifications, with an effect below -15% on the likelihood of using ESG data.

[Table IV about here]

Our results confirm previous research findings on the key role of institutional investors, who turned out to be the main type of outsiders in this study, in pushing the CSR agenda (Buchanan et al. 2018; Chen et al. 2020). These results also tend to confirm our pre-registered priors in rejecting the first null hypothesis. We view this failure to incorporate ESG factors into valuation from insiders as stemming from various reasons. Firstly, ESG information may not be available or may be of inadequate quality. Secondly, there may be perceived risks associated with including ESG factors, as they may already be implicitly considered in the business plan. Thirdly, there may be no regulatory or marketing incentives to do so. Finally, some may believe that ESG factors do not directly link to financial performance and value. Based on the interviews, it appears that the second argument resonates with insiders. While acknowledging the significance of ESG data, they contend that their valuations already factor in ESG, and any adjustments with ESG data would amount to double counting. Additionally, insiders may exhibit less standardized behaviors than outsiders, as they are not obligated to communicate or adhere to legal requirements in connection with ESG. In contrast, outsiders must comply

with growing regulatory scrutiny and reporting requirements, which necessitate demonstrating ESG activity, despite limited time and expertise to properly utilize the data.

The size of the firm is also a key issue. Mid-sized companies struggle to gather the necessary information and expertise to quantify the impacts of ESG on value. In this context, insiders' practices, in terms of integration of ESG issues into the valuation process, are more heterogeneous than the practices of outsiders.

Moreover, the experts we interviewed underlined that many outsiders operate in regulated environments under the pressure of institutional investors or governments. For example, it is mandatory for asset managers to explain to their clients how their ESG policies influence their investment decisions, which leads to common practices for this category of outsiders.

4.3. Importance of ESG data quality.

Aside from Question 9 - "When you value a firm, do you use ESG data?" - we included three questions to test in different ways the level of confidence respondents have in ESG data. In Question 12 we asked whether respondents used several ESG data providers. Using several data providers may help professionals pick the data they deem trustworthy that is offered by each provider. We expect that the higher the number of ESG data providers used, the lower the trust in ESG data from the respondents would be. In Question 13, we asked "Do you use an internal ESG scoring system?", with most respondents answering that they computed their own ESG scores. When respondents indicate that they use their own methodologies to compute ESG scores, it means that they have a low level of confidence in scores computed by providers, or that the information provided does not match their needs. In Question 14, we asked professionals whether they believed ESG data is sufficiently standardized, i.e., whether ESG performance is comparable from one firm to another.⁴ Through Question 14, we further tested the reliance of respondents on the data and, more specifically, their view on the standardization of this data (Amel-Zadeh & Serafeim 2018).

The descriptive data in Figure II show that most respondents used more than one ESG data provider, with most respondents using two data providers (31%). We also observed that respondents mostly used their

⁴ In this article, the term "standardized ESG data" denotes information gathered by various ESG data providers, each employing distinct methodologies for collecting ESG data and calculating ESG ratings. The standardization of ESG data would facilitate the comparison of ESG metrics and ratings across these providers, fostering more reliable and comprehensive analyses.

own scoring system (66%), thinking that ESG data is not sufficiently standardized (86%). This descriptive data supports the idea that respondents have a low level of confidence in ESG data.

[Figure II about here]

Next, the results of ordered logistic models are shown with *ESG Materiality*, which indicates the belief that ESG has an impact on stock price performance as a dependent variable. *ESG Reliability*, equal to 1 when respondents answered that ESG data is sufficiently standardized and zero otherwise, is our key independent variable. We then showed the coefficient for the interaction term between *ESG Reliability* and *Insider*. Our control variables were *Experience*, *Diploma*, and *Sector Specialist* as in Table III and Table IV. Model 1 to Model 3 in Table V present our regression results. In Model 1, we regressed *ESG Materiality* against *ESG Reliability* and *Insider*, and further added control variables to check for alternative explanations. Coefficients for both *ESG Reliability* and *Insider* were positive but not significant, and the coefficient for the interaction term between these two variables was negative and also not significant. The control variables did not yield any significant result, with *Sector Specialist* having the lowest p-value (0.12) with a negative sign. Our Chi-square test yielded a non-significant result indicating that coefficients may jointly be equal to zero.

In Model 2, we applied the same specification as in Model 1 but added *Operation Side* as a control. Again, *ESG Materiality* and *Insider* yielded non-significant coefficients and a positive result, while the interaction term yielded a negative and non-significant coefficient. Control variables, including the newly added *Buy-side* and *Sell-side*, did not yield significant coefficients. The Chi-square test was not significant, indicating that coefficients may jointly be equal to zero.

In Model 3, we used the same specification as in Model 2 but included *Distribution Channel* controls. The coefficient for *ESG Materiality* was positive and significant at the 10% level, while *Insider* was not significant and positive, and the interaction term yielded a negative and non-significant coefficient. Among the control variables, *Sector Specialist* had a negative and significant (at the 10% level) coefficient. The Chi-square test was again not significant, indicating that coefficients may jointly be equal to zero.

These results indicate that the lack of trust in ESG cannot be explained by the belief that there is a link between ESG and financial performance. These results are consistent with the results of the Amel-Zadeh & Serafeim (2018) survey, where investors believed that ESG information is material, but they also pointed out issues linked to comparability of this information. There does not seem to be an apparent direct effect of the

belief in ESG data quality and ESG materiality; rather, it seems that investors will continue using ESG data in the absence of better information.

[Table V about here]

While it is clear that practitioners use several data providers when they believe that one provider will not be able to offer all necessary data or data of sufficient quality, we know that there may be another reason why investors use several data providers. Practitioners may have preferences that one ESG data provider may not match (Berg et al. 2022). The same reason can lead investors to use their own ESG rating model. To further strengthen our understanding of practitioners' use of ESG data, we complement our results with interviews covering this topic.

The interviews provided valuable insights into the impact of the quality of ESG information on valuations, with a particular emphasis on ESG reporting. All interviewees highlighted the numerous weaknesses of current ESG reporting practices and the consequent necessity to develop their own internal measures of ESG performance. ESG data is often perceived as only marginally reliable and lacking comparability between companies, which poses significant challenges for valuation experts. The importance of ESG reporting in the valuation process cannot be overstated, as it serves as a crucial source of information for investors and stakeholders. However, the current state of ESG reporting leaves much to be desired. To address these concerns, there is a pressing need for both broad and comparable data, as well as more specific databases that deliver information tailored to the unique challenges each valuation expert must face. Achieving this balance can be facilitated by utilizing multiple ESG databases, which can offer a more comprehensive and nuanced view of a company's ESG performance. The primary difficulty in implementing this proposition lies in striking a balance between a statistical approach that encompasses all sectors and simultaneously analyzing the specificities of a company operating within a specific industry. ESG reporting must evolve to address these challenges, enabling a more accurate and reliable integration of ESG factors into the valuation process. Enhanced ESG reporting practices will ultimately lead to better-informed investment decisions.

4.4. A role for industry.

Our sample presents a very unbalanced share of specialized (20%) as compared to multi-sector (80%) finance professionals. This sample structure makes it difficult to test specific sectors against the use of ESG data or the materiality of ESG data. Still, we can use Question 32 - "Which factors between sector, firm size,

listing, country, shareholding, and relationship with banks most influences the ESG performance of firms?” – to show that sector had by far the highest share of strongly agree responses (43% against 21% for country, 19% for listing, 18% for shareholding, 16% for size, and 4% for relationship with banks). This result held when we aggregated positive responses: 91% of respondents agree or strongly agree on the role of sector in ESG performance, against 69% for country, 65% for firm size, 65% for shareholding, 63% for listing and 47% for relationships with banks. Finally, it was the only response that did not receive any rejection from respondents (0% of respondents disagree or strongly disagree).

In order to study further the importance of the sector, we tested the multi-sector or single-sector nature of the respondents’ position. To do so, we created the variable *Sector Specialist*, equal to 1 when the respondent is a sector specialist and zero otherwise. We then built the count variable *Size* which is equal to 1 when the respondents' company has a level of sales of less than €10 million, 2 when the level of sales is between €10 and €100 million, 3 when the level of sales is between €100 million and €1 billion, and 4 when it is above €1 billion. We first ran an ordered logistic regression with *ESG Materiality* as a dependent variable and *Experience*, *Diploma*, *Size*, *Operation Side*, and *Distribution Channel* as independent variables. To assess the predictive power of sector on *ESG Materiality*, we ran a second regression using the same specification, but adding *Sector Specialist*. Model 1 and Model 2 in Table VI present our regression results.

We found that *Experience*, *Diploma*, *Size* are not associated with significant coefficients in Model 1. This was also the case for *Buy-side* and *Sell-side*, which are not associated with significant coefficients. In Model 2, we found that the coefficient for *Sector Specialist* is negative and significant at the 10% level, which indicates that specialized analysts are less likely to respond that they strongly agree with the idea that ESG performance influences stock price performance (Question 26).

Next, we assessed the added value of *Sector Specialist* in explaining *ESG Materiality*. First, we discovered that the model excluding *Sector Specialist* (Model 1) had a 2% lower pseudo-R-squared than the model that included this variable. Second, we found that a model including *Sector Specialist* has a lower Akaike information criterion (Akaike 1974) and a lower Bayesian information criterion (Schwarz 1978). These two criteria measure a model’s quality in terms of trade-off between complexity and accuracy. A lower value on each criterion means higher model quality. Model 2 including *Sector Specialist* had a lower Akaike information criterion and a lower Bayesian information criterion than Model 1, indicating a better model quality. This

indicates that *Sector Specialist* brings further explanatory power to the model and that sector-related variables may have played a role in the financial professionals' expected link between ESG and firm value creation.

[Table VI about here]

It is difficult to make a strong claim on this alternative hypothesis due to limits to our dataset. We partially expected this in our pre-registration report. At this stage, our results fail to reconcile with the key findings of the survey by Krueger et al. (2020), which found a strong sector-level heterogeneity in the way climate risks are assessed.

According to the interviewees, ESG concerns are relevant to all companies, regardless of their industry. However, the emphasis on specific ESG factors varies depending on the sector. For instance, in the energy industry, the environmental (E) aspect plays a pivotal role due to the potential impact on natural resources and climate change. Conversely, in the services sector, the social (S) component is more critical, as it encompasses employee welfare, labor practices, and relationships with customers and communities. By recognizing the unique ESG priorities within each industry, investors can tailor their sustainable strategies.

4.5. *ESG integration in business valuation practices.*

Finally, we asked the respondents how they factor ESG into business valuation. First, we asked professionals which DCF model parameter is most impacted by ESG factors (Question 18), and then reported their answers in Figure III. We observed that respondents mostly linked ESG factors with the discount rate and the long-term growth rate rather than the business plan or terminal cash flow. For instance, the respondents answered that ESG affects cost of debt (15% strongly agree) and cost of equity (13% strongly agree) as well as long-term growth (26%). These results are consistent with the idea that ESG factors mostly impact risk (37% strongly agree).

[Figure III about here]

For Question 30, we more directly tested respondents on each DCF model parameter as reported in Figure IV. Consistent with the previous responses, Figure IV shows that the respondents mostly adjusted the discount rate (10% strongly agree) and the long-term growth rate (12% strongly agree) in a DCF model. The response on the long-term growth rate is also consistent with Question 20 where we questioned professionals on the time horizon in which they believe ESG performance translates into financial performance. Most

respondents (59%) answered that ESG performance will affect financial performance in the long term (more than 5 years).

[Figure IV about here]

In Table VII, in Models 1 to 8, we tested responses to Question 30 on each DCF model parameter against *ESG Materiality* and *Insider*. In Model 1, we tested how *ESG Materiality* impacts the responses to Question 30. The coefficient for *ESG Materiality* was positive and significant at the 5% level. We further see that an additional point of *ESG Materiality* increases by 11% the likelihood of the respondent agreeing with the idea that cash flows should be adjusted to factor in ESG. Every unit of *ESG Materiality* decreased by 8% the likelihood of answering “disagree” when asked whether ESG factors should be included in the cash flow parameter of the DCF. In Model 2, we observe a positive and significant coefficient at the 5% level for *ESG Materiality* when we added *Operation Side* and *Distribution Channel* fixed effects. Looking at average marginal effects in Model 3 and Model 4, we measured how *ESG Materiality* impacts the use of the terminal value to adjust DCF models based on ESG data. The coefficient for *ESG Materiality* is positive and significant at the 10% level in both models. These results remain inconclusive as the Chi-squared test is not significant meaning that all coefficients may jointly be equal to zero.

In Model 5 and Model 6, we measured how *ESG Materiality* impacts the respondents’ use of the discount rate to take ESG into account in DCF models, finding a positive and significant coefficient at the 1% level for *ESG Materiality*. One additional point of *ESG Materiality* increased the respondents’ likelihood of using the discount rate to adjust the DCF to take ESG into account by 11%. The respondents’ likelihood of disagreeing with this statement also decreased by 7% to 8% for each additional unit of *ESG Materiality*. The coefficient for *Insider* was negative and significant in Model 5 and Model 6; therefore, insiders demonstrated a lower probability of using discount rates to adjust DCF models to factor in ESG. In Model 7 and Model 8, we tested how *ESG Materiality* impacts the use of long-term growth to factor ESG into DCF models. Both coefficients for *ESG Materiality* were positive but not significant. Again, the Chi-squared test is not significant meaning that coefficients may jointly be equal to zero.

[Table VII about here]

These results indicate that a higher belief in the link between ESG and value creation is stronger for respondents who adjust the discount rate in their DCF model. These models also present a significant Chi-square

test, which means that we can reject the hypothesis of all coefficients being jointly equal to 0. We can therefore expect that outsiders and insiders do not affect the outcome in terms of DCF model adjustment. Finally, hypothesis four seems to hold mostly for the discount rate rather than for cash flows, in line with Cornell and Damodaran's (2020) predictions.

The interviews helped confirm our survey results. If we focus on the implementation of the DCF, a valuation expert's primary challenge is integrating ESG into the cash flows. In practice, valuation experts do not always have the information to integrate ESG in the business plan or terminal value. In this context, if a valuation expert wishes to integrate ESG, they will favor an adjustment on the discount rate. Affecting the other parameters of the DCF model, such as cash flows or the long-term growth rate, is in this context more difficult to achieve. Moreover, in terms of valuation techniques, during our interviews, we did not identify any new consensual practices aimed, for example, at adjusting multiples or beta coefficients for ESG issues.

In conclusion, based on the survey data's descriptive statistics, the subsequent analysis, and insights gleaned from the interviews, it becomes evident that practitioners predominantly adjust discount rates, rather than cash flows, when incorporating ESG factors into their valuation processes. The interviews indicate that this preference can be primarily attributed to the challenges associated with utilizing ESG data and the absence of a widely accepted methodological approach for integrating ESG considerations into valuations.

5. Additional results.

5.1. Causality between ESG performance and financial performance.

The link between CSR/ESG and financial performance has been extensively studied in the literature, with most studies finding a positive relationship (Friede et al. 2015). Some researchers have tried to find the direction of the causal link between ESG and financial performance with mixed evidence (Jo & Harjoto 2012; Nelling & Webb 2009), with most studies examining this relationship using data rather than direct survey techniques. To further explore this question, we directly asked finance practitioners their opinion on the causal link between ESG and financial performance in Question 19. The respondents answered primarily that ESG directly affects financial performance (25%), as compared to the reverse relationship (3%). Interestingly, most respondents answered that the relationship goes both ways (72%), but that ESG performance has the largest impact (42%) as compared to financial performance (30%). In Question 26, we tested finance practitioners on

whether they thought that ESG performance impacts the stock price. Respondents answered mostly that this was the case, which translates both in extreme responses (16% strongly believe it is the case as compared to 0% that strongly believe it is not) and in the general view (82% believe or strongly believe it is the case).

Based on the answers to Question 19, we created the variable *Causality*, equal to 2 if the respondent thought that ESG performance impacts financial performance, 1 if the respondent supposed that the causality goes both ways but that ESG performance is the main driver, -1 if the respondent surmised that the causality goes both ways, but that financial performance is the main driver, and -2 if the respondent thought that financial performance drives the ESG performance. To test the causality direction, an ordered logit model with *Causality* as dependent variable and *ESG Materiality*, *Insider*, and an interaction term between both variables as independent variables was utilized. Model 1 to Model 3 in Table VIII present our regression results. In Model 1, the coefficient for *ESG Materiality* is positive and significant at the 1% level. Coefficients for *Insider* and the interaction term were not significant, indicating that there was not a high level of heterogeneity between insiders and outsiders when responding to Question 19. Control variables are not associated with significant coefficients. Average marginal effects indicate that an additional unit of *ESG Materiality* leads to a 15% decrease in the likelihood of answering that the causality goes both ways, but that financial performance is the main driver. On the contrary, an additional unit of *ESG Materiality* led to a 16% increase of likelihood of answering that ESG performance impacts financial performance.

In Model 2, we used the same specification as in Model 1, but added *Operation Side* as a control in our regression analysis. The coefficient for *ESG Materiality* is positive and significant at the 1% level. Coefficients for *Insider* and the interaction term were not significant, meaning again that insiders did not have different views on ESG-financial performance causality relations as compared to outsiders. Control variables are not associated with significant coefficients. Average marginal effects indicate that an additional unit of *ESG Materiality* led to a 15% decrease in the likelihood of answering that the causality goes both ways, but that financial performance is the main driver. On the contrary, an additional unit of *ESG Materiality* led to a 16% increase in the likelihood of answering that ESG performance impacts financial performance.

In Model 3, we used the same specification as in Model 2, but added *Distribution Channel* as a control to our regression analysis. The coefficient for *ESG Materiality* was positive and significant at the 1% level. Coefficients for *Insider* and the interaction term were not significant. Control variables are not associated with

significant coefficients. Average marginal effects indicate that an additional unit of *ESG Materiality* led to a 15% decrease in the likelihood of answering that the causality goes both ways, but that financial performance is the main driver. On the contrary, an additional unit of *ESG Materiality* led to a 15% increase in the likelihood of answering that ESG performance impacts financial performance.

We consistently found that the stronger the belief in the financial materiality of ESG, the stronger the belief in the causal link going from ESG to financial performance rather than the reverse. This conclusion confirms previous empirical literature findings on the causal link between CSR/ESG and financial performance (Friede et al. 2015; Jo & Harjoto 2012).

[Table VIII about here]

Our results support the assumption that practitioners expect the causal link to go from ESG to financial performance rather than the reverse.

For most experts we interviewed, the primary issue concerning this subject is the ability to control ESG risk. Failure to understand ESG risk (a “controversy”) can have major consequences on the value of securities in the short term. In the long term, most of our experts consider that the best firm, according to the ESG performance, will generate better financial performance, but they also consider that ESG is very difficult to model.

5.2. *Influence of E, S, or G factors.*

By testing ESG factors indiscriminately, we can barely distinguish which factors most influence finance practitioners. As discussed by Edmans (2023a), a global study of ESG, instead of specific components of ESG, may lead to contradictory and imprecise results. In our study, we therefore tested the impact of each component (environmental, social, or governance) to see whether respondents consider these components separately. In Question 21, we asked finance practitioners what they think about each component’s impact on value. In Figure V, we show the responses for each component. Interestingly, we see that respondents mostly believe that the governance component influences firm value (55% believe it has a very strong influence on firm value), with the social component being the weakest (18% believe it has a very strong influence on firm value).

As shown in Table IX, we tested the effect of each ESG pillar more specifically using the baseline specification from Table VIII, with *E driver*, *S driver*, and *G driver* as dependent variables. *E driver* (resp. *S* and *G*) is equal to 2 if the respondent believes that the E (resp. S and G) pillar of ESG very strongly influences

firm value, 1 if he/she believes that it strongly influences firm value, 0 if he/she does not know or is neutral, -1 if he/she believes it has a low influence on firm value, and -2 if he/she believes it has no impact on firm value (Question 21). In Models 1 to 3 with *E driver* as dependent variable, we found a significant and positive coefficient for *ESG Materiality* and a significant negative result for the interaction between *ESG Materiality* and *Insider*. In Models 4 to 6 with *S driver* as dependent variable, we estimate a positive and significant coefficient for *ESG Materiality*. Finally, only in Model 9 with *G driver* as dependent variable is there a positive and significant (at the 5% level) coefficient for *ESG Materiality*, which is not the case in Models 7 and 8.

Looking at the marginal effects of Models 1 to 6, with *E driver* and *S driver* as dependent variables, we find that one additional point of *ESG Materiality* increases the likelihood of answering “Very strong influence” to Question 21 by 11% to 17%. This result is not consistently significant at the 5% level in Models 7 to 9 with *G driver* as dependent variable. In Models 7 to 9, with *G driver* as dependent variable we do not consistently find effects that are significant at the 5% level. We provide data on the perceived impact on firm value of subfactors within each E, S or G pillar in the Internet Appendix, Figure 1 to Figure 3. These results indicate a strong link between the belief in ESG generating value and the E and S drivers.

[Table IX about here]

These results also confirm that DCF models are currently mostly adjusted for the E component and S component of ESG. We believe that this is due to the difficulty in adjusting models for the G driver or because models already factor in this component before any adjustment.

Based on the interviews, it has been revealed that the valuation of a firm does not consistently consider each pillar of ESG. This implies that when interviewees respond positively to Question 9 - Do you use ESG data when valuing a firm?" - they consider the use of only one aspect of ESG, i.e., environmental, social, or governance, to be equivalent to the incorporation of ESG data into the valuation. Most of the experts we interviewed stressed that the three criteria, "E," "S," and "G" were important. However, the regulations, more particularly the European taxonomy, have emphasized the environmental factors. The next regulatory changes should concern the "S" factor. Aside from the regulatory pressure, interviewees considered that the G factor is probably more difficult to model and to translate concretely into additional cash-flows.

6. Conclusions and some future research ideas.

Our survey of financial executives confirms that ESG is being integrated into the valuation process because, as with all intangible assets, it is a necessity to consider long-term valuation factors. By definition, valuing a company involves considering E, S, and G issues. They further confirm that the integration of ESG into the valuation process has made significant progress, in large part because a new set of ESG information is now available. ESG is clearly set to be transformed from a niche subfield into a mainstream practice.

In this study, we sought to understand how practitioners are integrating this new ESG framework into valuations. We tested four pre-registered hypotheses explaining the link between CSR/ESG and valuation with a group of 303 finance professionals, including finance managers within companies, and investors. We also conducted interviews to challenge our survey results and to better understand the underlying mechanisms explaining them.

Our findings revealed several key insights regarding the use of ESG data in firm valuation. First, we observed that a significant majority of respondents utilize ESG data for this purpose, with outsiders (i.e., shareholders and debtholders) primarily driving this process, rather than firm insiders (i.e., managers). Second, although our descriptive data indicated some evidence, our analysis did not consistently demonstrate that data quality influences the relationship between ESG and valuation. Third, we found only weak evidence supporting the role of sector specialization in connecting valuation and ESG. Fourth, it appears that respondents tend to adjust DCF models by modifying the discount rate rather than altering cash flow components. Additionally, our supplementary results indicate that practitioners perceive the causal link to primarily flow from ESG to financial performance, rather than the reverse. Lastly, we discovered that ESG data, particularly the environmental and social aspects, are predominantly relevant for adjusting DCF models. These findings provide valuable insights into the current application of ESG data in firm valuation practices.

In our view, this study provides evidence in support of approaches that incentivize investors to integrate more ESG corporate performance information through regulations mandating climate-related and other ESG disclosures by corporates. First, investors who are subject to greater regulatory pressure are also more likely to advance ESG integration into their valuation models. Second, respondents are likely to push for further regulations to standardize ESG data, both to increase their reliability and to foster comparability between firms. Our research also contributes usefully to the existing literature by examining the link between value and ESG.

Our findings are consistent with those on the primary role of firm outsiders and on the key parameters that practitioners adjust to value firms. Further research may explore in greater depth the importance of sector-specific factors in business valuation and the role of ESG data quality.

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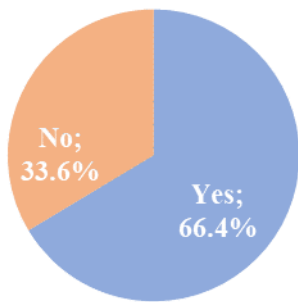
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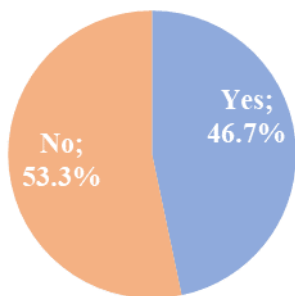
Figure I: Survey responses on use of ESG ratings by financial officers.

The figure below displays summary statistics for responses to crucial questions from our survey of 303 finance professionals, with a particular emphasis on Question 9: “When you value a firm, do you use ESG ratings data?”. The variable *Insider* is assigned a value of 1 if the respondent is an insider of the company (i.e., management) and 0 otherwise. For a detailed breakdown of insiders and outsiders, please refer to Table X.

When you value a firm, do you
use ESG ratings data? (Question 9)
All Respondents



When you value a firm, do you
use ESG ratings data? (Question 9)
Insiders Only



When you value a firm, do you
use ESG ratings data? (Question 9)
Outsiders Only

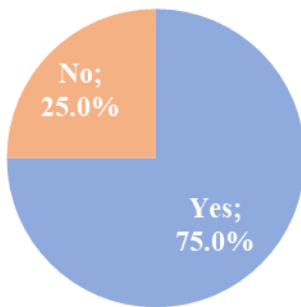
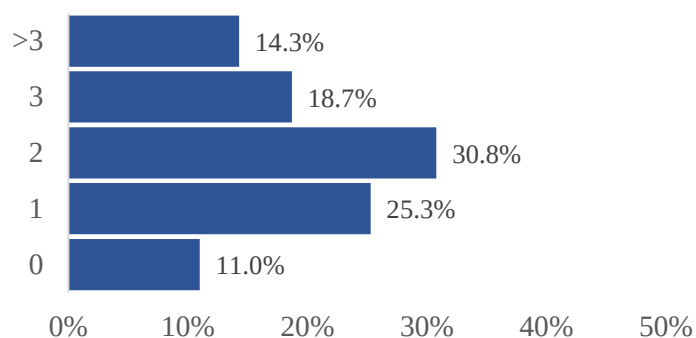


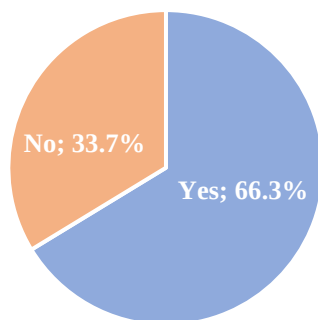
Figure II: Survey responses on quality of ESG ratings data used by financial officers

We present below summary statistics on answers to key questions from the survey of 303 finance professionals. Our focus is on the quality of ESG ratings data, conditional on their affirmative answer to usage (Question 9, Q9). Question 12 (Q12) asks them about the number of external ESG ratings providers to which the firm of the finance professional subscribes. Question 13 (Q13) asks whether an internal ESG scoring system exists. Question 14 (Q14) asks whether ESG ratings data are sufficiently standardized to allow for comparability across vendors.

How many ESG data providers do you use?
(Question 12)



Do you use an internal ESG scoring system?
(Question 13)



Do you think ESG ratings data are
sufficiently standardized ?
(Question 14)

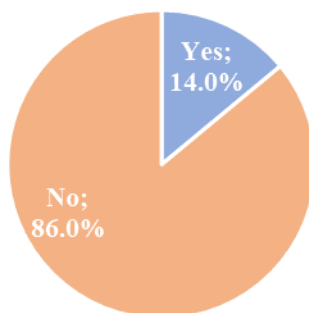
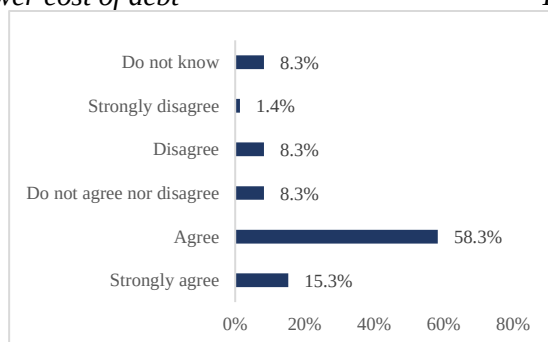


Figure III: Survey responses linking ESG performance and valuation by financial officers

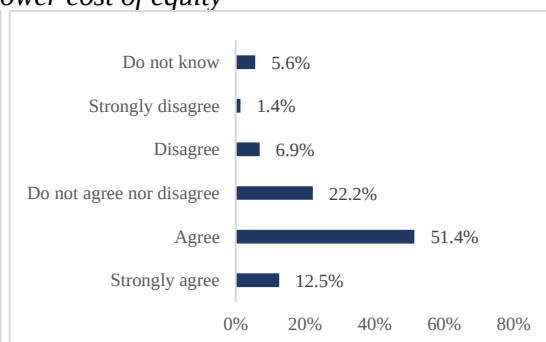
We present below summary statistics on answers to one key question from the survey of 303 finance professionals on linking strong ESG performance of a firm to its overall valuation and the components of that firm's valuation (Question 14, Q14). There are seven different components of valuation: lower cost of debt, lower cost of equity, lower level of risk, stronger sales, higher EBITDA margins (EBITDA/Sales), higher firm's return on capital employed, and increased long-term growth.

Do you agree that a strong firm ESG performance has an impact on the following factors? 1 (Strongly agree) to 5 (Strongly disagree) (Question 18)

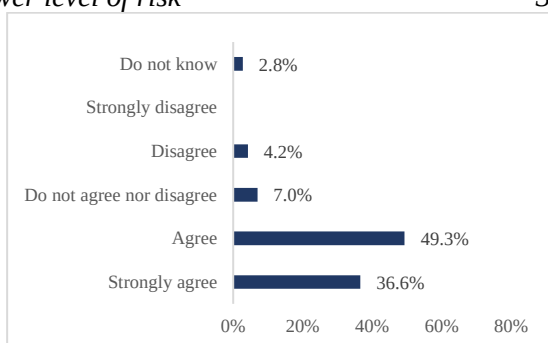
Lower cost of debt



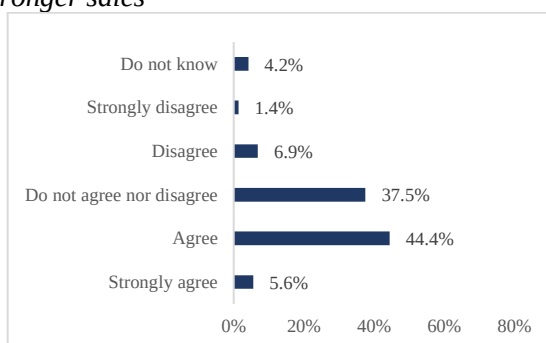
Lower cost of equity



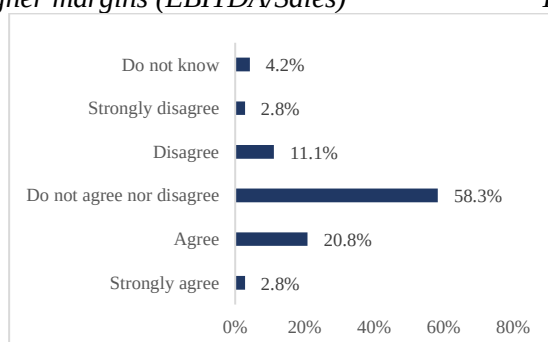
Lower level of risk



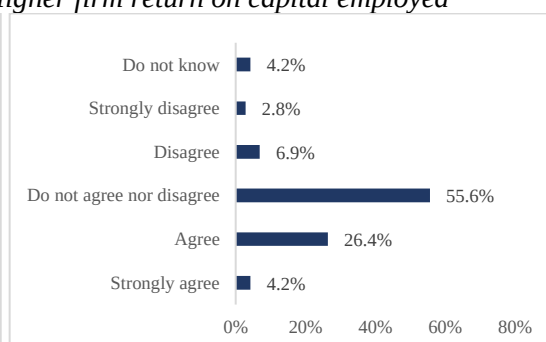
Stronger sales



Higher margins (EBITDA/Sales)



Higher firm return on capital employed



Increased long-term growth

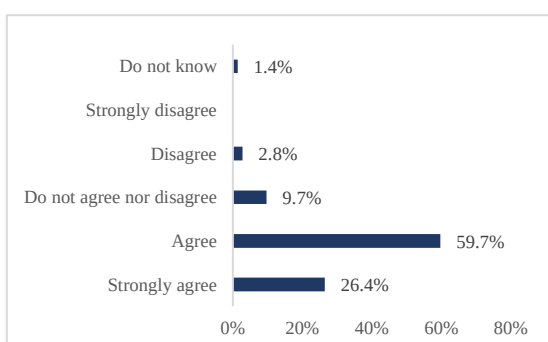
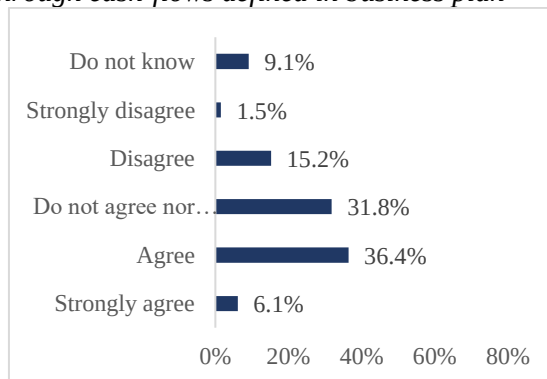


Figure IV: Survey responses linking ESG and valuation techniques used by financial officers

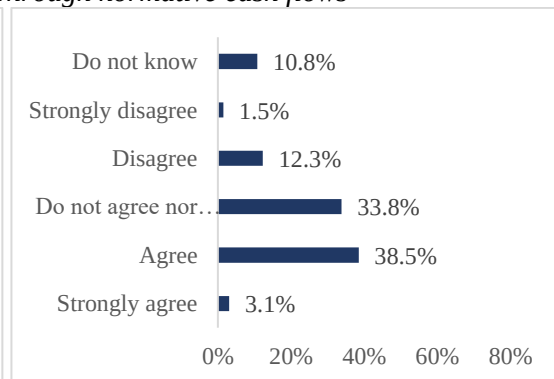
We present below summary statistics on answers to one key question from the survey of 303 finance professionals on linking ESG performance of a firm to the valuation methodologies employed by financial officers (Question 30, Q30). There are four different techniques of valuation featured: through cash flows defined in the firm's business plan, through normative cash flows, through the discount rate, and through the long-term growth rate.

When implementing a discounted cash flow (DCF)-style approach, do you integrate ESG into the following parameters? 1 (Strongly agree) to 5 (Strongly disagree) (Question 30)

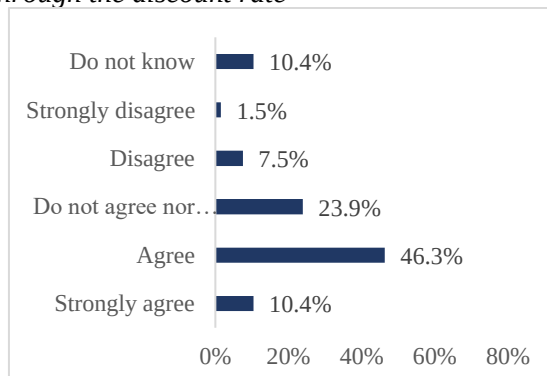
Through cash-flows defined in business plan



Through normative cash flows



Through the discount rate



Through the long-term growth rate

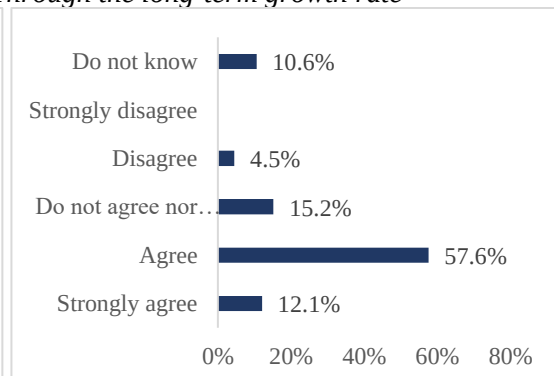


Figure V: Survey responses linking ESG components and valuation by financial officers

We present below summary statistics on answers to one key question from the survey of 303 finance professionals on linking components of ESG performance of a firm to the firm’s valuation by financial officers (Question 21, Q21). “E” denotes Environmental pillar, “S” denotes Social pillar, and “G” denotes Governance pillar.

*Do you think “E”, “S”, or “G” factors influence firm value?
1 (Very strong influence) to 5 (No influence) (Question 21)*

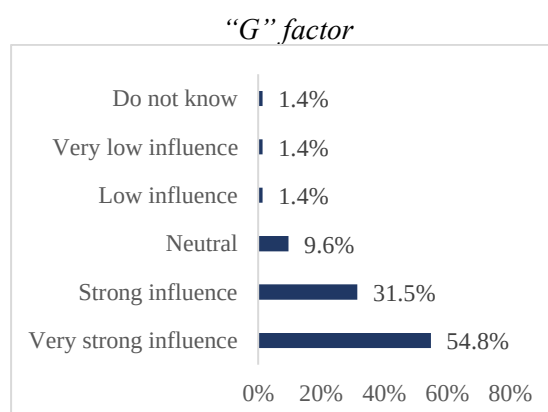
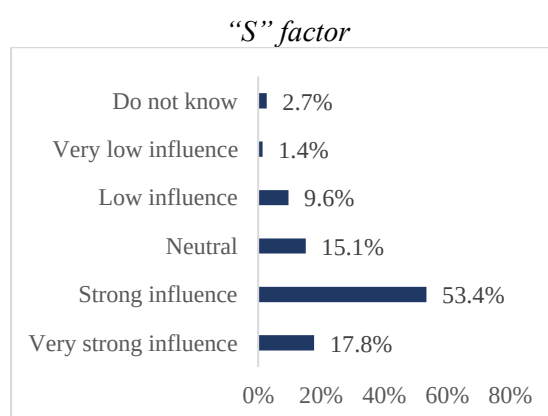
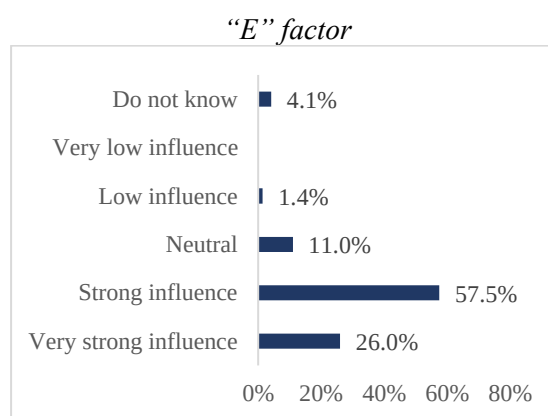


Table I: Survey response rates among survey constituents.

We present below the survey sponsors' names ranked by the number of responses and the acronyms used throughout the study. For each sponsor, we show the number of emails sent, the number of respondents, and the response rate. Note that EFFAS did not provide us with a specific number of emails. The figure disclosed in this table corresponds to three times the number of attendees at its "Taking ESG into Account" conference. We used this figure as an estimate of EFFAS' list of contacts on ESG topics.

Distribution channel	# emails	# responses	Response rate
ESCP Business School Alumni (ESCP Alumni)	1,506	75	5.0%
Association of French Institutional Investors (Af2i)	599	50	8.3%
French Society of Valuation Analysts (SFEV)	241	41	17.0%
ESSCA School of Management Alumni (ESSCA Alumni)	295	36	12.2%
Chartered Financial Analysts Institute France (CFA France)	1,293	32	2.5%
French Society of Financial Analysts (SFAF)	90	21	23.3%
French Financial Management Association (AFG)	200	3	1.5%
Total (excl. EFFAS)	4,224	258	6.1%
European Federation of Financial Analysts Societies (EFFAS)	450	45	10.0%
Total (incl. EFFAS)	4,674	303	6.5%

Table II: Survey and respondents' descriptive statistics

We present below the characteristics of our 303 respondents. The respondents did not answer all questions, which explains why we have fewer than 303 respondents for most characteristics. We show the respondents' positions (Question 1), company types (Question 2), operation sides (Question 3), their companies' level of sales (Question 4), work experience (Question 5), the location of their institutions' headquarters (Question 6), diploma (Question 7), sectors (Question 8 and 8bis), and the distribution channel through which respondents received the questionnaire. The data shown here is the raw data before any data reclassification.

Position (N = 169)	%	Operation side (N = 169)	%
Portfolio Management	20.7	Buy-side	45.0
Financial Analyst	19.5	Sell-side	14.8
Valuation Expert	13.6	Not concerned	40.2
CFO/Financial Manager	8.3		
Investment Banker	4.1		
Other	33.7		
Company Type (N=169)	%	Company's level of sales (N=169)	%
Private Company (not listed)	27.8	[0 ; €10m[	22.42
Bank or insurance company	24.9	[€10m ; €100m]	15.15
Listed Company	13.0	]€100m ; €1bn]	15.76
Mutual fund management	9.5	higher than €1bn	46.67
Private equity fund	6.5		
Pension Fund	2.4		
Other	16.0		
Work experience (N=169)	%	Country (N=163)	%
0 to 5Y	13.6	France	68.7
5Y to 10Y	11.8	Portugal	6.8
More than 10Y	74.6	Germany	3.7
		Italy	3.7
		Others (< 3%)	17.2
Diploma (N=303)	%	Sector (N=164)	%
Bachelor	1.7	Multi-sector	79.9
Master	47.5	Finance, Insurance and Real Estate	8.5
Ph.D.	5.3	Retail Trade	2.4
Other	45.5	Manufacturing	1.2
		Public Administration	1.2
		Services	0.6
		Transportation, Communications	0.6
		Wholesale Trade	0.6
		Agriculture, Forestry, and Fishing	0.6
		Other	4.3
Distribution (N=303)	%		
ESCP Business School Alumni	24.8		
Association of French Institutional Investors (Af2i)	16.5		
Euro Federation of Financial Analysts Societies	14.9		
French Society of Valuation Analysts (SFEV)	13.5		
ESSCA School of Management Alumni (ESSCA)	11.9		
Chartered Financial Analysts Institute France	10.6		
French Society of Financial Analysts (SFAF)	6.9		
French Association of Financial Management	1.0		

Table III: Use of ESG and respondents' characteristics

We present below the logistic regressions where the dependent variable, *ESG use*, is equal to 1 if the respondent uses ESG data to value firms and 0 otherwise (Q9). *Respondent position* (Q1) is a group of indicator variables where each respondent's position is translated into a binary variable (e.g., equal to 1 when the respondent is a financial analyst and 0 otherwise, etc.). *Operation side* (Q3) is split into two binary variables, *Sell-Side* and *Buy-Side*, equal to 1 when the respondent is a sell-side analyst and 0 otherwise, and 1 when he/she is a buy-side analyst and 0 otherwise, respectively (kept at 0 if the answer is "Not concerned by the question"). *Distribution Channel* is a group of indicator variables identifying the sponsor through which the questionnaire was received by the respondent (e.g., equal to 1 when the respondent received the questionnaire through the Association of French Institutional Investors and 0 otherwise, and so on). AFG (Association Française de Gestion) and SFEV (Société Française des Evaluateurs) were excluded from the model due to collinearity issues. We applied a test of joint equality of coefficients across the whole regression. A non-significant test indicates that we cannot rule out all coefficients being equal to 0.

Variables	(1) ESG use	(2) ESG use	(3) ESG use	(4) ESG use
Respondent position				
<i>Financial Analyst</i>	0.731 (0.741)			1.779* (1.062)
<i>Investment Banker</i>	2.015 (1.271)			3.281** (1.493)
<i>Portfolio Manager</i>	2.197*** (0.806)			3.051*** (1.131)
<i>Valuation Expert</i>	-0.624 (0.830)			1.473 (1.245)
<i>Other</i>	1.591** (0.732)			2.939*** (1.063)
Operation Side				
<i>Buy-Side</i>		1.235*** (0.388)		0.604 (0.536)
<i>Sell-Side</i>		0.658 (0.566)		0.799 (0.678)
Distribution Channel				
<i>Association of French Institutional Investors</i>			2.408*** (0.749)	2.809** (1.166)
<i>Chartered Financial Analysts Institute France</i>			1.735*** (0.661)	0.987 (0.790)
<i>European Federation of Financial Analysts Societies</i>			1.338** (0.619)	1.226 (0.869)
<i>ESCP Business School Alumni</i>			0.916* (0.545)	0.196 (0.725)
<i>ESSCA School of Management Alumni</i>			-0.000 (0.843)	0.047 (1.106)
<i>French Society of Financial Analysts</i>			2.996*** (1.123)	2.741** (1.295)
Prob > chi2	0.000	0.005	0.001	0.000
Observations	148	148	148	147
Pseudo R-Squared	0.14	0.06	0.12	0.24

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table IV: Impact of insiders, outsiders and intermediaries on ESG use in valuation.

We present below the logistic regressions where the dependent variable *ESG use* is equal to 1 if the respondent uses ESG data to value firms and 0 otherwise (Q9). *Insider* is equal to one if the respondent is an insider of the company (management or board member) and zero otherwise (see detailed mapping of insiders and outsiders in Table X). Control variables include *Diploma*, *Experience*, and *Sector Specialist*. *Diploma* is capturing the diploma of the respondent, where the response "Other" is coded as 1, "Bachelor" as 2, "Master" as 3, and "Ph.D." as 4 (Q7). *Experience* is equal to 1 if the respondent has less than 5 years of experience, 2 if the respondent has between five and 10 years of experience, and 3 if the respondent has over 10 years of experience (Q5). *Sector Specialist* is equal to 1 if the respondent works in a bank, pension fund, mutual fund, or private equity fund and identifies as a sector specialist, and 0 otherwise (Q8). *Respondent Attributes - Operation Side* (Q3) is split into two binary variables, *Sell-Side* and *Buy-Side*, equal to 1 when the respondent is a sell-side analyst and 0 otherwise, and equal to 1 when he/she is a buy-side analyst and 0 otherwise, respectively (kept at 0 if the answer is "Not concerned by the question"). *Questionnaire Attribute - Distribution Channel* is a group of indicator variables identifying the sponsor through which the questionnaire was received by the respondent (e.g., equal to 1 when the respondent received the questionnaire through Af2i and zero otherwise, and so on). We added average marginal effects of the variable *Insider* and named them *AME(Insider)*. We apply a test of joint equality of coefficients across the whole regression. A non-significant test indicates that we cannot rule out all coefficients being equal to 0.

Variables	(1) ESG use	(2) ESG use	(3) ESG use
<i>Insider</i>	-1.165*** (0.389)	-0.935** (0.409)	-0.920** (0.468)
<i>AME (Insider)</i>	-0.234*** (0.069)	-0.178** (0.073)	-0.157** (0.076)
Observations	145	145	144
Pseudo R-Squared	0.09	0.12	0.20
Prob > chi2	0.003	0.001	0.000
Control variables included	Yes	Yes	Yes
Respondent Attributes – Operation Side	No	Yes	Yes
Questionnaire Attribute – Distribution Channel	No	No	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table V: Impact of ESG data quality on trust in link between ESG and value

We present below the ordered logistic regressions where the dependent variable, *ESG Materiality*, is equal to 2 if the respondent strongly agrees, 1 if the respondent agrees, 0 if the respondent does not have an opinion, and -1 if the respondent disagrees with the idea that ESG performance influences stock price performance (Q26). Although it was a possible answer in the questionnaire, no respondent strongly disagrees with the idea that ESG performance influences stock price performance. *ESG Reliability* is equal to 1 if the respondent thinks that ESG ratings data are sufficiently standardized and 0 otherwise (Q14). *Insider* is equal to one if the respondent is an insider of the company (management or board member) and 0 otherwise (see detailed mapping of insiders and outsiders in Table X). Control variables include *Diploma*, *Experience* and *Sector Specialist*. *Diploma* is capturing the diploma of the respondent, where the response "Other" is coded as 1, "Bachelor" as 2, "Master" as 3, and "Ph.D." as 4 (Q7). *Experience* is equal to 1 if the respondent has less than 5 years of experience, 2 if the respondent has between five and 10 years of experience, and 3 if the respondent has more than 10 years of experience (Q5). *Sector Specialist* is equal to one if the respondent works in a bank, pension fund, mutual fund, or private equity fund and identifies as a sector specialist, and zero otherwise (Q8). *Respondent Attributes - Operation Side* (Q3) is split into two binary variables, *Sell-Side* and *Buy-Side*, equal to 1 when the respondent is a sell-side analyst and 0 otherwise, and 1 when he/she is a buy-side analyst and 0 otherwise, respectively (kept at 0 if the answer is "Not concerned by the question"). *Questionnaire Attribute - Distribution Channel* is a group of indicator variables identifying the sponsor through which the questionnaire was received (e.g., equal to 1 when the respondent received the questionnaire through AFG and 0 otherwise, and so on). We apply a test of joint equality of coefficients across the whole regression. A non-significant test indicates that we cannot rule out all coefficients being equal to 0.

Variables	(1) ESG Materiality	(2) ESG Materiality	(3) ESG Materiality
<i>ESG Reliability</i>	1.111 (0.751)	1.187 (0.761)	1.606* (0.862)
<i>Insider</i>	0.100 (0.660)	0.107 (0.699)	0.378 (0.736)
<i>ESG Reliability*Insider</i>	-1.130 (2.125)	-1.021 (2.149)	-2.141 (2.345)
Observations	71	71	71
Pseudo R-squared	0.03	0.04	0.07
Prob > Chi2	0.581	0.708	0.719
Control variables included	Yes	Yes	Yes
Respondent Attributes – Operation Side	No	Yes	Yes
Questionnaire Attribute – Distribution Channel	No	No	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table VI: Impact of respondent's sector on trust in ESG data.

We present below the ordered logistic regressions where the dependent variable, *ESG Materiality* is equal to 2 if the respondent strongly agrees, 1 if the respondent agrees, 0 if the respondent does not have an opinion, and -1 if the respondent disagrees with the idea that ESG performance influences stock price performance (Q26). Although it was a possible answer in the questionnaire, no respondent strongly disagreed with the idea that ESG performance influences stock price performance. *Size* is equal to 1 when the respondents' company has a level of sales of less than €10 million, 2 when it is between €10 and €100 million, 3 when it is between €100 million and €1 billion, and 4 when it is above €1 billion (Q4). *Diploma* is capturing the diploma of the respondent, where the response "Other" is coded as 1, "Bachelor" as 2, "Master" as 3, and "Ph.D." as 4 (Q7). Experience is equal to 1 if the respondent has less than 5 years of experience, 2 if the respondent has between five and 10 years of experience, and 3 if the respondent has over 10 years of experience (Q5). *Sector Specialist* is equal to 1 if the respondent works in a bank, pension fund, mutual fund, or private equity fund and identifies as a sector specialist, and 0 otherwise (Q8). *Respondent Attributes - Operation Side* (Q3) is split into two binary variables, *Sell-Side* and *Buy-Side*, equal to 1 when the respondent is a sell-side analyst and 0 otherwise, and 1 when he/she is a buy-side analyst and 0 otherwise, respectively (kept at 0 if the answer is "Not concerned by the question"). *Questionnaire Attribute - Distribution Channel* is a group of indicator variables identifying the sponsor through which the questionnaire was received (e.g., equal to 1 when the respondent received the questionnaire through AFG and 0 otherwise, and so on). We provide the Akaike Information Criterion (Akaike, 1974) and the Bayesian information criterion (Schwarz, 1978) to measure model quality.

Variables	(1) ESG materiality	(2) ESG materiality
<i>Sector specialist</i>		-1.663* (0.972)
<i>Size</i>	0.255 (0.267)	0.200 (0.270)
<i>Diploma</i>	-0.292 (0.611)	-0.604 (0.673)
<i>Experience</i>	-0.052 (0.651)	-0.258 (0.640)
Observations	71	69
Pseudo R-Squared	0.05	0.07
AIC	162.78	160.01
BIC	194.46	193.52
Respondent Attributes – Operation Side	Yes	Yes
Questionnaire Attribute – Distribution Channel	Yes	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table VII: DCF inputs adjusted to take into account ESG factors.

We present below the ordered logistic regressions where the dependent variable, *ESG Cash Flows*, is equal to -2 if the respondent strongly disagrees, -1 if he/she disagrees, 0 if the respondent does not have an opinion, 1 if he/she agrees, and 2 if he/she strongly agrees with the use of cash flows to account for ESG (Q30). *ESG Terminal Value* is equal to -2 if the respondent strongly disagrees, -1 if he/she disagrees, 0 if the respondent does not have an opinion, 1 if he/she agrees, and 2 if he/she strongly agrees with the use of the terminal value to account for ESG (Q30). *ESG Discount Rate* is equal to -2 if the respondent strongly disagrees, -1 if he/she disagrees, 0 if the respondent does not have an opinion, 1 if he/she agrees, and 2 if he/she strongly agrees with the use of the discount rate to account for ESG (Q30). *ESG Long Term Growth Rate* is equal to -2 if the respondent strongly disagrees, -1 if he/she disagrees, 0 if the respondent does not have an opinion, 1 if he/she agrees, and 2 if he/she strongly agrees with the use of the long-term growth rate to account for ESG (Q30). *ESG Materiality* is equal to 2 if the respondent strongly agrees, 1 if the respondent agrees, 0 if the respondent does not have an opinion, and -1 if the respondent disagrees, and -2 if the respondent strongly disagrees with the idea that ESG performance influences stock price performance (Q26). Although it was a possible answer in the questionnaire, no respondent strongly disagreed with the idea that ESG performance influences stock price performance. *Insider* is equal to 1 if the respondent is an insider of the company (management or board member) and 0 otherwise (see detailed mapping of insiders and outsiders in Table X). Control variables include *Diploma*, *Experience* and *Sector Specialist*. *Diploma* is capturing the diploma of the respondent, where the response "Other" is coded as 1, "Bachelor" as 2, "Master" as 3, and "Ph.D." as 4 (Q7). *Experience* is equal to 1 if the respondent has less than five years of experience, 2 if the respondent has between five and 10 years of experience, and 3 if the respondent has over 10 years of experience (Q5). *Sector Specialist* is equal to 1 if the respondent works in a bank, pension fund, mutual fund, or private equity fund and identifies as a sector specialist, and 0 otherwise (Q8). *Respondent Attributes - Operation Side* (Q3) is split into two binary variables, *Sell-Side* and *Buy-Side*, equal to 1 when the respondent is a sell-side analyst and 0 otherwise, and 1 when he/she is a buy-side analyst and 0 otherwise, respectively (kept at 0 if the answer is "Not concerned by the question"). *Questionnaire Attribute - Distribution Channel* is a group of indicator variables identifying the sponsor through which the questionnaire was received (e.g., equal to 1 when the respondent received the questionnaire through AFG and zero otherwise, and so on). We apply a test of joint equality of coefficients across the whole regression. A non-significant test indicates that we cannot rule out all coefficients being equal to 0. We calculated the average marginal effects of *ESG Materiality* on each outcome of *ESG Cash Flows*, *ESG Terminal Value*, *ESG Discount Rate* and *ESG Long Term Growth Rate*. *AME(Predict=-2)* represents the impact of one additional point of *ESG materiality* on the likelihood of the respondent answering that he/she strongly disagrees with the idea of using cash flows (Models 1 and 2), terminal value (Models 3 and 4), discount rate (Models 5 and 6) and long-term growth rate (Models 7 and 8).

Variables	(1) ESG Cash Flows	(2) ESG Cash Flows	(3) ESG Terminal Value	(4) ESG Terminal Value	(5) ESG Discount Rate	(6) ESG Discount Rate	(7) ESG Long Term Growth Rate	(8) ESG Long Term Growth Rate
<i>ESG Materiality</i>	0.662** (0.326)	0.772** (0.361)	0.546* (0.332)	0.619* (0.364)	1.196*** (0.350)	1.462*** (0.394)	0.018 (0.321)	0.224 (0.352)
<i>AME (Predict=-2)</i>	-0.010 (0.011)	-0.013 (0.014)	-0.009 (0.010)	-0.010 (0.011)	-0.017 (0.017)	-0.021 (0.020)		
<i>AME (Predict=-1)</i>	-0.077** (0.038)	-0.083** (0.039)	-0.055 (0.035)	-0.056* (0.033)	-0.069** (0.029)	-0.075** (0.030)	-0.001 (0.014)	-0.010 (0.016)
<i>AME (Predict=0)</i>	-0.062* (0.035)	-0.054 (0.034)	-0.062 (0.039)	-0.063 (0.040)	-0.135*** (0.042)	-0.155*** (0.044)	-0.003 (0.053)	-0.030 (0.047)
<i>AME (Predict=1)</i>	0.110** (0.051)	0.107** (0.048)	0.109* (0.062)	0.110* (0.062)	0.115*** (0.041)	0.140*** (0.046)	0.002 (0.036)	0.022 (0.036)
<i>AME (Predict=2)</i>	0.039 (0.026)	0.042* (0.025)	0.017 (0.015)	0.019 (0.017)	0.105*** (0.039)	0.112*** (0.038)	0.002 (0.026)	0.017 (0.025)
<i>Insider</i>	0.149 (0.657)	-0.013 (0.014)	0.117 (0.644)	-0.428 (0.734)	-1.818** (0.709)	-1.960** (0.771)	-0.662 (0.665)	-0.991 (0.776)
Observations	64	64	63	63	65	65	64	64
Pseudo R-squared	0.04	0.11	0.03	0.09	0.14	0.20	0.01	0.14
Prob > Chi2	0.255	0.188	0.415	0.425	0.001	0.003	0.875	0.125
Control variables included	No	Yes	No	Yes	No	Yes	No	Yes
Respondent Attributes – Operation Side	No	Yes	No	Yes	No	Yes	No	Yes
Questionnaire Attribute – Distribution Channel	No	Yes	No	Yes	No	Yes	No	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table VIII: Impact of ESG data quality and insiders on trust in the causal link between ESG and value.

We present below the ordered logistic regressions where the dependent variable, *Causality*, is equal to 2 if the respondent believes that ESG performance affects financial performance, 1 if the respondent believes that the causality goes both ways but that ESG performance is the main driver, -1 if the respondent believes that the causality goes both ways but that financial performance is the main driver, and -2 if the respondent believes that financial performance drives the ESG performance (Q19). *Insider* is equal to 1 if the respondent is an insider of the company (management or board member) and 0 otherwise (see the detailed mapping of insiders and outsiders in Table X). *ESG Materiality* is equal to 2 if the respondent strongly agrees, 1 if the respondent agrees, 0 if the respondent does not have an opinion, and -1 if the respondent disagrees, and -2 if the respondent strongly disagrees with the idea that ESG performance influences stock price performance (Q26). *Diploma* is capturing the diploma of the respondent, where the response "Other" is coded as 1, "Bachelor" as 2, "Master" as 3, and "Ph.D." as 4 (Q7). *Experience* is equal to 1 if the respondent has less than five years of experience, 2 if the respondent has between five and 10 years of experience, and 3 if the respondent has over 10 years of experience (Q5). *Sector Specialist* is equal to one if the respondent works in a bank, pension fund, mutual fund, or private equity fund and identifies as a sector specialist, and zero otherwise (Q8). *Respondent Attributes - Operation Side* (Q3) is split into two binary variables, *Sell-Side* and *Buy-Side*, equal to 1 when the respondent is a sell-side analyst and 0 otherwise, and 1 when he/she is a buy-side analyst and 0 otherwise, respectively (kept at 0 if the answer is "Not concerned by the question"). *Questionnaire Attribute - Distribution Channel* is a group of indicator variables identifying the sponsor through which the questionnaire was received (e.g., equal to 1 when the respondent received the questionnaire through AFG and zero otherwise, and so on). We add the average marginal effects of *ESG Materiality* on *Causality*. *AME (Predict causality =-2)* is the impact of one additional point of *ESG materiality* on the likelihood of answering that financial performance drives ESG performance, and so on.

Variables	(1) Causality	(2) Causality	(3) Causality
<i>ESG Materiality</i>	0.883*** (0.335)	0.887*** (0.336)	0.863** (0.349)
<i>AME (Predict causality =-2)</i>	-0.023 (0.018)	-0.023 (0.018)	-0.023 (0.017)
<i>AME (Predict causality =-1)</i>	-0.152*** (0.051)	-0.153*** (0.051)	-0.147*** (0.054)
<i>AME (Predict causality =1)</i>	0.020 (0.027)	0.021 (0.027)	0.020 (0.027)
<i>AME (Predict causality =2)</i>	0.156*** (0.058)	0.156*** (0.058)	0.150** (0.059)
<i>Insider</i>	-0.226 (1.412)	-0.276 (1.426)	-0.509 (1.480)
<i>ESG Materiality*Insider</i>	0.229 (1.271)	0.226 (1.271)	0.427 (1.375)
Observations	71	71	71
Pseudo R-Squared	0.06	0.06	0.07
Control variables added	Yes	Yes	Yes
Respondent Attributes – Operation Side	No	Yes	Yes
Questionnaire Attribute – Distribution Channel	No	No	Yes

Standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table IX: Impact of ESG data quality and insiders on the influence of E, S, or G factors.

We present below the ordered logistic regressions where the first dependent variable, *E driver*, is equal to 2 if the respondent believes that the E component very strongly influences firm value, 1 if he/she believes that it strongly influences firm value, 0 if he/she does not know or is neutral, -1 if he/she believes it has a low influence on firm value, and -2 if he/she believes it has no impact on firm value (Q21). Other dependent variables are built similarly with the S component (*S driver*) and the G component (*G driver*). *Insider* is equal to 1 if the respondent is an insider of the company (management or board member) and 0 otherwise (see the detailed mapping of insiders and outsiders in Table X). *ESG Materiality* is equal to 2 if the respondent strongly agrees, 1 if the respondent agrees, 0 if the respondent does not have an opinion, -1 if the respondent disagrees, and -2 if the respondent strongly disagrees with the idea that ESG performance influences stock price performance (Q26). Although it was a possible answer in the questionnaire, no respondent strongly disagreed with the idea that ESG performance influences stock price performance. *Diploma* is capturing the diploma of the respondent, where the response "Other" is coded as 1, "Bachelor" as 2, "Master" as 3, and "Ph.D." as 4 (Q7). *Experience* is equal to 1 if the respondent has less than 5 years of experience, 2 if the respondent has between five and 10 years of experience, and 3 if the respondent has over 10 years of experience (Q5). *Sector Specialist* is equal to 1 if the respondent works in a bank, pension fund, mutual fund, or private equity fund and identifies as a sector specialist, and 0 otherwise (Q8). *Respondent Attributes - Operation Side* (Q3) is split into two binary variables, *Sell-Side* and *Buy-Side*, equal to 1 when the respondent is a sell-side analyst and 0 otherwise, and 1 when he/she is a buy-side analyst and 0 otherwise, respectively (kept at 0 if the answer is "Not concerned by the question"). *Questionnaire Attribute - Distribution Channel* is a group of indicator variables identifying the sponsor through which the questionnaire was received (e.g., equal to 1 when the respondent received the questionnaire through Af2i and 0 otherwise, and so on). We add the average marginal effects of *ESG Materiality* on each driver. *AME (Predict causality = -2)* is the impact of one additional point of *ESG materiality* on the likelihood of answering "No influence" to the Question 22 "Do you think the following 'E' factors influence firm value?" and so on.

Variables	(1) E driver	(2) E driver	(3) E driver	(4) S driver	(5) S driver	(6) S driver	(7) G driver	(8) G driver	(9) G driver
<i>ESG Materiality</i>	0.854** (0.339)	1.019*** (0.362)	1.012*** (0.378)	0.811** (0.326)	0.883*** (0.332)	1.301*** (0.379)	0.629* (0.334)	0.596* (0.341)	1.001** (0.414)
<i>AME(Predict driver=-2)</i>				-0.011 (0.011)	-0.011 (0.012)	-0.017 (0.016)	-0.008 (0.009)	-0.008 (0.009)	-0.013 (0.012)
<i>AME(Predict driver=-1)</i>	-0.011 (0.011)	-0.008 (0.007)	-0.008 (0.007)	-0.063** (0.029)	-0.067** (0.030)	-0.094*** (0.034)	-0.008 (0.009)	-0.008 (0.009)	-0.011 (0.011)
<i>AME(Predict driver=0)</i>	-0.097** (0.040)	-0.107*** (0.040)	-0.099** (0.040)	-0.074** (0.031)	-0.079** (0.031)	-0.094*** (0.033)	-0.051* (0.029)	-0.048* (0.029)	-0.063** (0.027)
<i>AME(Predict driver=1)</i>	-0.036 (0.032)	-0.052 (0.036)	-0.051 (0.035)	0.035 (0.030)	0.037 (0.031)	0.046 (0.037)	-0.069* (0.036)	-0.066* (0.037)	-0.085** (0.038)
<i>AME(Predict driver=2)</i>	0.145*** (0.055)	0.167*** (0.054)	0.158*** (0.054)	0.113** (0.047)	0.121** (0.047)	0.159*** (0.047)	0.137** (0.068)	0.130* (0.070)	0.172*** (0.065)
<i>Insider</i>	2.962* (1.776)	3.913** (1.719)	4.724** (1.853)	-0.539 (1.306)	-0.443 (1.309)	-0.485 (1.417)	1.173 (1.702)	1.229 (1.749)	0.869 (1.836)
<i>ESG Materiality*Insider</i>	-3.898** (1.707)	-4.777*** (1.675)	-5.508*** (1.825)	0.276 (1.196)	0.135 (1.188)	-0.344 (1.331)	-0.629 (1.568)	-0.596 (1.605)	-0.616 (1.724)
Observations	71	71	71	71	71	71	71	71	71
Pseudo R-Squared	0.08	0.15	0.19	0.07	0.08	0.15	0.08	0.08	0.21
Control variables added	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Respondent Attributes – Operation Side	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Questionnaire Attribute – Distribution Channel	No	No	Yes	No	No	Yes	No	No	Yes

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table X: Classification of respondents in Insider or Outsider categories.

We present how we built the *Insider* variable below. For each answer to Question 1 and Question 2 we apply a reclassification as detailed in the table below.

Question 1		Question 2	
Initial category	Reclassification	Initial category	Reclassification
Financial Analyst	Determined by Question 2	Listed Company	Insider
Investment Banker	Outsider	Private Company (Not listed)	Insider
Valuation Expert	Determined by Question 2	Pension Fund	Outsider
CFO/Financial Manager	Insider	Bank or insurance company	Outsider
Portfolio Manager	Outsider	Mutual fund management	Outsider
Academic	Outsider	Private equity fund	Outsider
Auditor	Outsider	Consulting	Outsider
Consultant	Outsider	Audit	Outsider
ESG specialist	Determined by Question 2	Educational institution	Outsider

Appendix A

The survey instrument used for the study, entitled “Do ESG criteria influence firm valuation? Evidence from the field”, is reproduced below. It has been anonymized.

General information

1. What is your position?

- ☐ Financial analyst
- ☐ Investment banker
- ☐ Valuation expert
- ☐ CFO / financial manager
- ☐ Portfolio manager
- ☐ Other, please specify: _____

2. Do you work in a?

- ☐ Listed Company
- ☐ Private company (not listed)
- ☐ Pension fund
- ☐ Bank or Insurance company
- ☐ Mutual fund management company
- ☐ Private equity fund
- ☐ Other, please specify: _____

3. Do you do more buy-side or sell-side operations?

- ☐ Buy-side
- ☐ Sell-side
- ☐ Not concerned by the question

4. What is your company's level of sales?

- ☐ Less than 10 million euros
- ☐ Between 10 million euros and 100 million euros
- ☐ Between 100 million euros and 1 billion euros
- ☐ More than 1 billion euros

5. How long have you worked in finance?

- ☐ Less than 5 years
- ☐ Between 5 and 10 years
- ☐ More than 10 years

6. In which country are your institution's headquarters based? _____

7. What diploma(s) do you have? - please indicate if several

- ☐ Bachelor (+3)
- ☐ Master (+5)
- ☐ Ph.D. (+8)
- ☐ Professional certificate
- ☐ Other, please specify: _____

8. Are you valuing firms from multiple sectors?

- ☐ Yes
- ☐ No

If No, please specify in which industry you are specialized:

- ☐ Agriculture, Forestry, and Fishing
- ☐ Mining
- ☐ Construction
- ☐ Manufacturing
- ☐ Transportation, Communications, Electric, Gas and Sanitary service
- ☐ Wholesale Trade
- ☐ Retail Trade
- ☐ Finance, Insurance and Real Estate
- ☐ Services
- ☐ Public Administration
- ☐ Other, please specify: _____

Relevance and availability of ESG data

9. When you value a firm, do you use ESG data?

- ☐ Yes
- ☐ No

If No:

10. You do not use ESG data because - *several answers are possible:*

- ☐ The business plan or financial data already takes ESG data into account
- ☐ ESG data do not significantly impact the financial value of a firm
- ☐ ESG data are not sufficiently reliable to be used
- ☐ It is not possible to evaluate the impact of ESG data on the firm value.
- ☐ Other, please explain _____

End of the questionnaire (if the answer to question 8 is “no”)

If Yes:

ESG Rating agencies

11. Do you know the ESG rating of the firm you value?

- ☐ Yes
- ☐ No

12. How many ESG data providers do you use?

- ☐ None
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ If more than 3, how many? _____

13. Do you use an internal ESG scoring system?

- ☐ Yes
- ☐ No

Quality of ESG data

14. Do you think ESG ratings data are sufficiently standardized (the ESG performance is comparable from one firm to another)?

- ☐ Yes
☐ No

15. Do you think more ESG disclosures would be useful to value firms?

- ☐ Yes
☐ No

16. If yes, which additional information would be useful?

Please indicate information that would be useful _____

17. Do you think the legal framework should be reinforced to push firms into disclosing more ESG data?

- ☐ Yes
☐ No, because ESG is not key to your decision-making process
☐ No, because we value voluntary disclosure
☐ No, for other reasons. Please explain: _____

ESG Performance and firm value

18. Do you agree that a strong firm ESG performance has an impact on the following factors? 1 (Strongly agree) to 5 (Strongly disagree)

	Strongly agree	Agree	Do not agree nor disagree	Disagree	Strongly disagree	Do not know
Lower cost of debt	☐	☐	☐	☐	☐	☐
Lower cost of equity	☐	☐	☐	☐	☐	☐
Lower level of risk	☐	☐	☐	☐	☐	☐
Increasing sales	☐	☐	☐	☐	☐	☐
Higher firm margins (EBITDA/Sales)	☐	☐	☐	☐	☐	☐
Higher firm ROCE (Return on Capital Employed)	☐	☐	☐	☐	☐	☐
Increasing firm long-term growth)	☐	☐	☐	☐	☐	☐

What other factors are impacted by firm ESG performance? _____

19. What is the causal relationship between ESG and financial performance?

- ☐ ESG performance increases financial performance
☐ Financial performance increases ESG performance
☐ The causality goes both ways, but ESG performance is the main driver of the relationship
☐ The causality goes both ways, but financial performance is the main driver of the relationship

20. The ESG performance impacts financial performance in:

- ☐ The short term (less than 1 year)
☐ The medium term (between 1 and 5 years)
☐ The long term (more than 5 years)

21. Do you think “E”, “S”, or “G” factors influence firm value? 1 (Very strong influence) to 5 (No influence)

	Very strong influence	Strong influence	Neutral	Low influence	No influence	Do not know
E component	☐	☐	☐	☐	☐	☐
S component	☐	☐	☐	☐	☐	☐
G component	☐	☐	☐	☐	☐	☐

22. Do you think the following “E” factors influence firm value? 1 (Very strong influence) to 5 (No influence)

	Very strong influence	Strong influence	Neutral	Low influence	No influence	Do not know
GHG emissions	☐	☐	☐	☐	☐	☐
Resource use	☐	☐	☐	☐	☐	☐
Waste management	☐	☐	☐	☐	☐	☐

What other “E” factors influence firm value? _____

23. What is the impact of the following climate risks on firm value? 1 (Very strong impact) to 5 (No impact)

	Very strong impact	Strong impact	Neutral	Low impact	No impact	Do not know
Physical risks	☐	☐	☐	☐	☐	☐
Transition risks	☐	☐	☐	☐	☐	☐
Legal risks	☐	☐	☐	☐	☐	☐

What other climate risks influence firm value? _____

24. Do you think the following “S” factors influence firm value? 1 (Very strong influence) to 5 (No influence)

	Very strong influence	Strong influence	Neutral	Low influence	No influence	Do not know
Workforce	☐	☐	☐	☐	☐	☐
Human rights	☐	☐	☐	☐	☐	☐
Community	☐	☐	☐	☐	☐	☐
Product responsibility	☐	☐	☐	☐	☐	☐
Gender	☐	☐	☐	☐	☐	☐

What other “S” factors influence firm value? _____

25. Do you think the following “G” factors influence firm value? 1 (Very strong influence) to 5 (No influence)

	Very strong influence	Strong influence	Neutral	Low influence	No influence	Do not know
Management (board, compensation, etc.)	☐	☐	☐	☐	☐	☐
Shareholders (Shareholder Rights Policy, etc.)	☐	☐	☐	☐	☐	☐
CSR strategy (ESG Reporting Scope, etc.)	☐	☐	☐	☐	☐	☐

What other “G” factors influence firm value?_____

26. Do you think the ESG performance influences the stock price performance of a listed firm?

- ☐ Strongly agree
- ☐ Agree
- ☐ Do not agree or disagree
- ☐ Disagree
- ☐ Strongly disagree

27. Do you think that firms that present a good ESG performance will overperform on stock exchanges (better return)?

- ☐ Yes
- ☐ No

28. Do you think that firms that do not engage with shareholders on ESG matters are at risk of divestment?

- ☐ Yes
- ☐ No

29. Do you think the following shareholders are concerned by ESG ratings? 1 (Strongly agree) to 5 (Strongly disagree)

	Strongly agree	Agree	Do not agree nor disagree	Disagree	Strongly disagree	Do not know
Institutional	☐	☐	☐	☐	☐	☐
Government	☐	☐	☐	☐	☐	☐
Activist	☐	☐	☐	☐	☐	☐
Family	☐	☐	☐	☐	☐	☐

What other types of shareholders are concerned by ESG ratings?_____

Valuation techniques

30. When implementing a Discounted Cash Flow (DCF)-style approach, do you integrate ESG into the following parameters? 1 (Strongly agree) to 5 (Strongly disagree)

	Strongly agree	Agree	Do not agree nor disagree	Disagree	Strongly disagree	Do not know
Through cash-flows defined in the firm business plan	☐	☐	☐	☐	☐	☐
Through the terminal normative free cash flow	☐	☐	☐	☐	☐	☐
Through discount rate	☐	☐	☐	☐	☐	☐
Through long-term growth rate	☐	☐	☐	☐	☐	☐

In what other DCF parameters do you integrate ESG? _____

31. When implementing a multiples approach to value a firm, do you adjust your valuation according to the ESG performance?

☐ Yes

☐ No

If yes, please explain how _____

32. Do you think the influence of the ESG performance on firm value depends on the following factors? 1 (Strongly agree) to 5 (Strongly disagree)

	Strongly agree	Agree	Do not agree nor disagree	Disagree	Strongly disagree	Do not know
The sector	☐	☐	☐	☐	☐	☐
The firm size	☐	☐	☐	☐	☐	☐
The listing of a firm	☐	☐	☐	☐	☐	☐
The country of the firm growth rate	☐	☐	☐	☐	☐	☐
The firm shareholding	☐	☐	☐	☐	☐	☐
Relationship with banks	☐	☐	☐	☐	☐	☐

What other factors influence the impact of ESG performance on firm value? _____

End of the questionnaire

Appendix B

The cover letter for the survey instrument that was shared through the respective organizations and associations is below. It has been anonymized.

Dear Madam, Dear Sir,

During the last two decades, academic research has focused on the relationship between financial and extra-financial performance. Despite major advances, we know little about the Environmental, Social, and Governance (ESG) practices of financial experts. For example, there is little information about how professionals integrate ESG criteria in their decision process, what difficulties they face, and how they use or manage ESG data.

With the sponsorship of XXXX and several European financial associations, Professors XXXX (school name), YYYY (school name), and ZZZZ (school name) are conducting a survey about ESG practices that aims to fill this knowledge gap. This survey's target audience is finance professionals (financial analysts, CFOs, investors, etc.) in Europe. Our primary goal is to understand if some consensual ESG practices exist or depend on specific factors.

We kindly ask you to take part in this survey that will allow you to share your experience as a financial expert. Participation in the survey is voluntary. The survey is anonymous, and the answers you will provide will stay strictly confidential. The survey data will be used for academic purposes only. Responses collected will be anonymous and their access will be strictly limited. We do not anticipate any risks from participating in this research.

Sharing your valuable experience will allow improving professional practices and academic research on ESG practices. You may also benefit from this study by learning about other professionals' practices. We will be glad to send you a copy of the findings of our study and our academic research paper will be available to respondents.

The survey will take only 10 to 15 minutes. Please, access the survey through the following link to complete the questionnaire. If you have already answered to the questionnaire once (through another channel), please do not do it again.

If you have any questions about the research, please contact Professor XXXX (email address). If you have questions or concerns regarding your rights as a participant in this study, you may contact Institutional Review Board (IRB) for Human Participants at YYYY or access their website at (university website).

Thank you for your consideration and time.

Sincerely,

XXXX

YYYY

ZZZZ

Appendix C

There were several follow-up interviews with individual members of the organizations and associations that were targeted by the survey instrument. Below is the rubric that was used to conduct the interviews.

Part 1: how do you integrate ESG into your valuation process?

Do you trust ESG data? If you do not trust ESG data what are the material issues you have identified with it? Do you create your own ESG data? Do you use the scores provided by ESG rating agencies or do you have to build your own scores? What do you think are the relations between firm performance and firm value? How do you integrate ESG data into valuation?

Part 2: What do you think of the four following proposals?

H1: Firm insiders do not integrate the impact of ESG on valuation the same way as firm outsiders.

H2: The perceived reliability of ESG ratings affects market participants' expected link between ESG and valuation.

H3: Industry is a key driver of market participants' expected link between ESG and valuation.

H4: The firm ESG performance is integrated into the valuation process through firm cash-flows and/or discount rate.

**Do ESG Factors Influence Firm Valuation?
Evidence from the Field**

**Do ESG Factors Influence Firm Valuation? Evidence from the
Field**

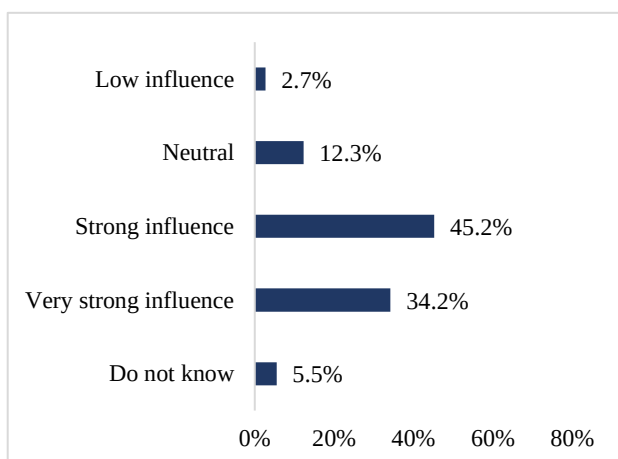
Internet Appendix

Internet Appendix Figure 1: Survey responses on the influence of environmental factors on firm value

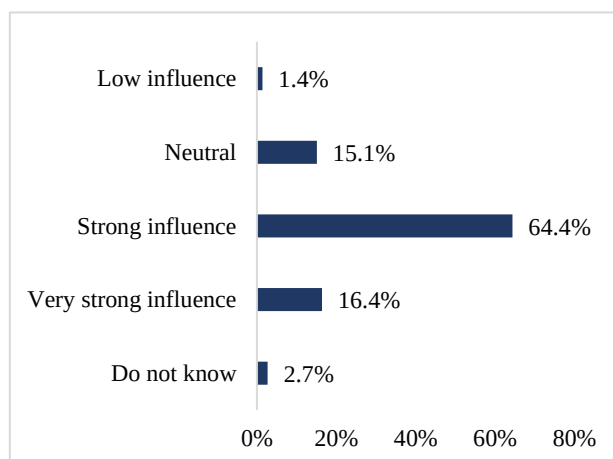
We present the summary statistics below on answers to one question from the survey of 303 finance professionals on the impact of environmental factors on firm value (Question 22, Q22). We test three different environmental factors: greenhouse gas (GHG) emissions, resource use and waste management.

Do you think the following “E” factors influence firm value? 1 (Very strong influence) to 5 (No influence) (Question 22)

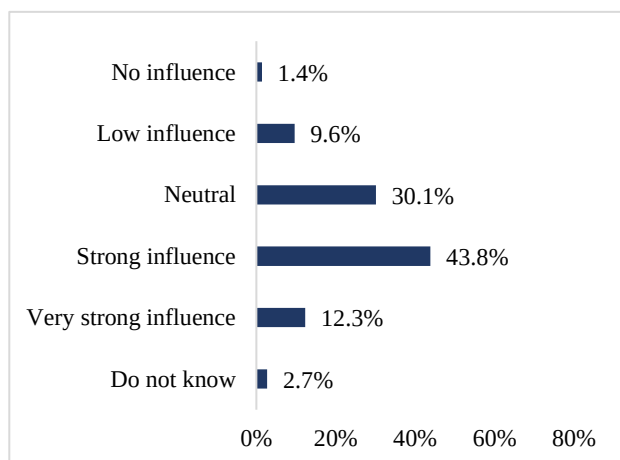
GHG emissions



Resource Use



Waste Management

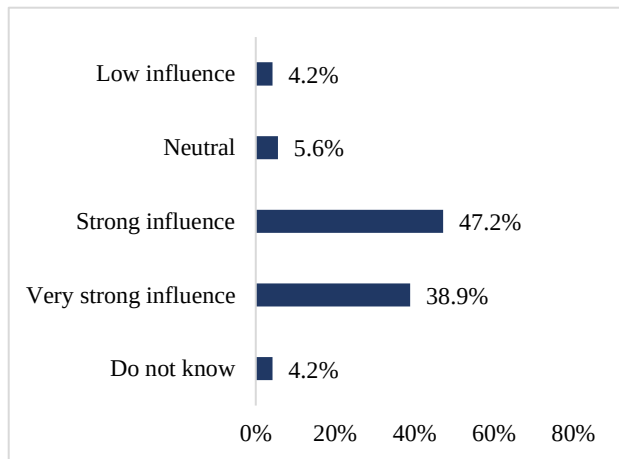


Internet Appendix Figure 2: Survey responses on the influence of social factors on firm value

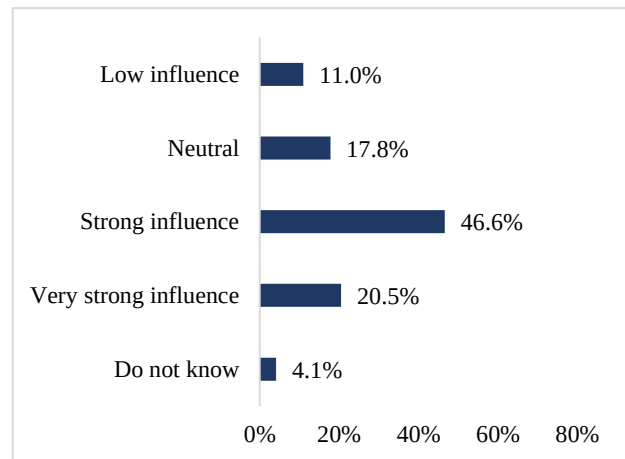
We present below summary statistics on answers to one question from the survey of 303 finance professionals on the impact of social factors on firm value (Question 24, Q24). We test five different social factors: workforce, human rights, community, product responsibility, and gender.

Do you think the following “S” factors influence firm value? 1 (Very strong influence) to 5 (No influence) (Question 24)

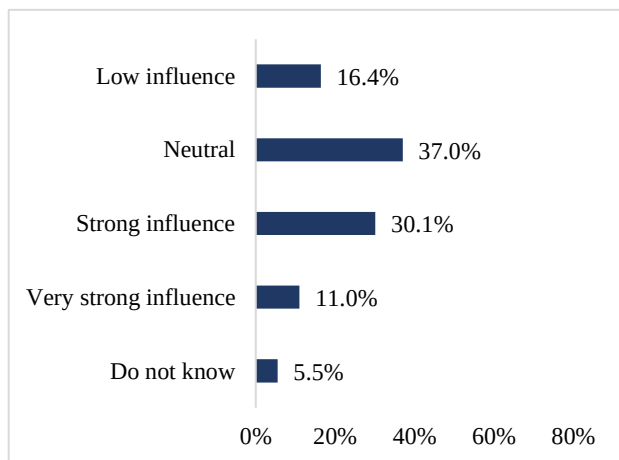
Workforce



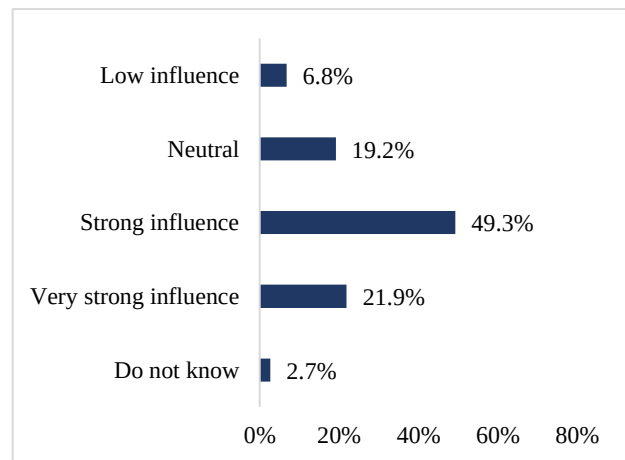
Human rights



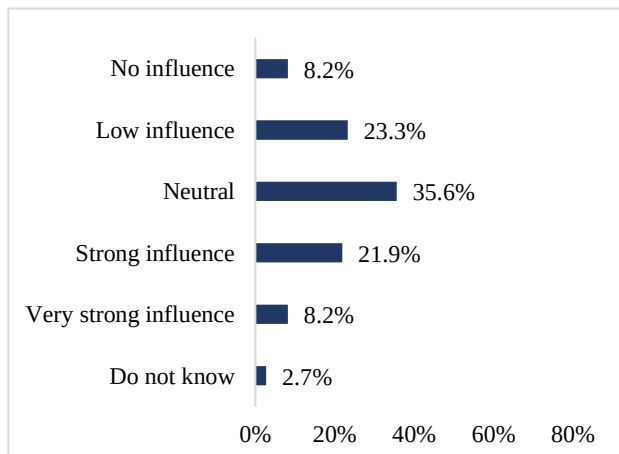
Community



Product responsibility



Gender

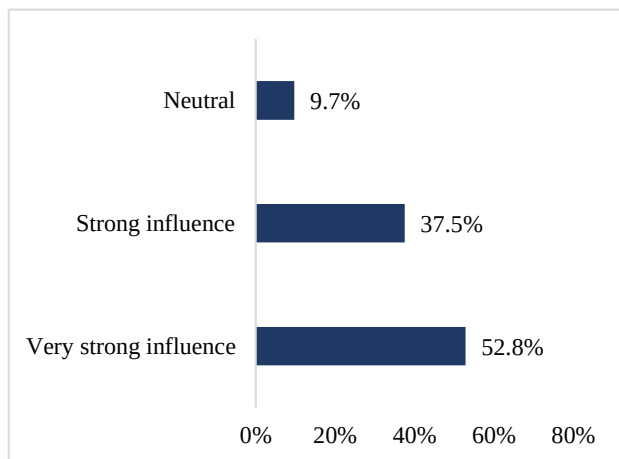


Internet Appendix Figure 3: Survey responses on the influence of governance factors on firm value

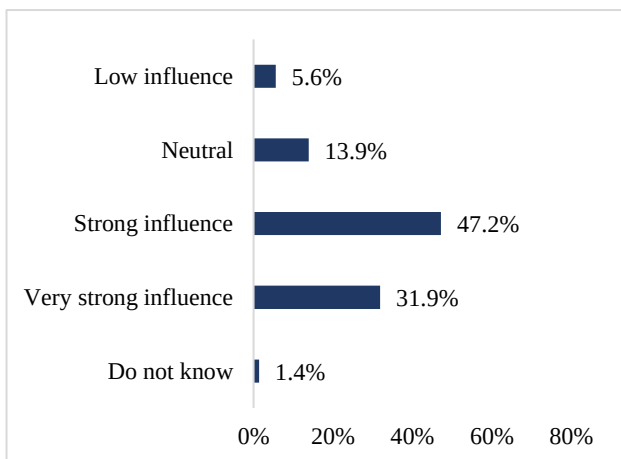
We present below summary statistics on answers to one question from the survey of 303 finance professionals on the impact of governance factors on firm value (Question 25, Q25). We examine three different governance factors: management, shareholders and CSR strategy.

Do you think the following “G” factors influence firm value? 1 (Very strong influence) to 5 (No influence) (Question 25)

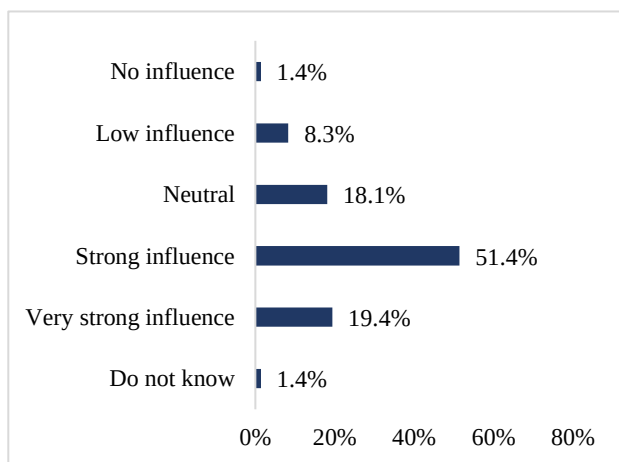
Management



Shareholders



CSR Strategy



Internet Appendix Table 1: Key variables definitions

Below are the definitions of the variables used in our study as well as their corresponding survey questions. Some variables are built out of several question answers.

Variable	Definition	Survey question
Diploma	Diploma is a count variable capturing the diploma of the respondent, where the response "NA" is coded as 0, "Other" as 1, "Bachelor" as 2, "Master" as 3 and "Ph.D." as 4.	Q7
Distribution Channel	Distribution channel is expressed as a group of indicator variables identifying the sponsor through which the questionnaire was received (e.g., equal to 1 when the respondent received the questionnaire through AFG and zero otherwise, etc.).	
Experience	Experience is a count variable equal to 1 if the respondent has less than 5 years of experience, 2 if the respondent has between five and ten years of experience, and 3 if the respondent has more than ten years of experience.	Q5
ESG Materiality	ESG Materiality is a count variable equal to 2 if the respondent strongly agrees, 1 if the respondent agrees, 0 if the respondent does not have an opinion and -1 if the respondent disagrees with the idea that ESG performance influences stock price performance.	Q26
ESG Reliability	ESG Reliability is a binary variable equal to 1 if the respondent thinks that ESG ratings data are sufficiently standardized and 0 otherwise.	Q14
Insider	Insider is a binary variable equal to 1 if the respondent is an insider of the company (management or board member) and zero otherwise (see detailed mapping of insiders and outsiders in Table X).	Q1/Q2
Operation Side	Operation side is expressed as a group of two binary variables, sell-side and buy-side, equal to 1 when the respondent is a sell-side analyst and 1 when he/she is a buy-side analyst respectively (kept to zero if the answer is "Not concerned by the question").	Q3
Respondent Position	Respondent Position is expressed as a group of indicator variables where each respondent's position is translated into a binary variable (e.g., equal to 1 when the respondent is a financial analyst and zero otherwise, etc.).	Q1
Size	Size is a count variable equal to 1 when the respondents' company has a level of sales of less than 10 million euros, 2 when the level of sales is between 10 and 100 million euros, 3 when the level of sales is between 100 million and one billion euros, and 4 when it is above 1 billion euros.	Q4