

# PERCEIVED CORPORATE VALUES

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## ABSTRACT

We show ESG investors trade off returns for lower exposure to regulatory violations and civil lawsuits. We document that flows to ESG funds are highly sensitive to adverse legal events among their holdings. Then, using a revealed-preference approach, we disentangle the socially responsible investments of ESG investors from their return-driven investments. We construct a stock-level measure of socially responsible sentiment to quantify investors' perception of firms' corporate values. An increase in sentiment predicts lower legal risk and lower returns in the future. The trade-off between returns and legal risk is more pronounced for stocks with higher volatility and ESG-rating dispersion.

KEYWORDS: socially responsible investing, corporate responsibility, mutual funds, portfolio choice, misconduct and lawsuits, ESG.

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# 1 INTRODUCTION

In recent years, active institutional investors have increasingly pursued a dual mandate of improving investment performance and incorporating non-pecuniary values into their stock selection. These values include environmental, social, and governance (ESG) considerations, as well as broader ethical, religious, or political beliefs. In particular, institutional ESG investors aim to achieve financial performance while making socially responsible investments.<sup>1</sup> According to our calculations, among active funds specializing in US domestic equity, ESG funds more than tripled their assets under management from 2011 to 2021, managing \$352 billion as of the end of 2021. This amount represents 8% of the assets managed by active equity funds.<sup>2</sup>

Because ESG investors pursue a dual mandate, economic theory predicts that they face a trade-off. Whereas conventional investors select stocks exclusively to achieve superior returns, ESG investors must also evaluate the social responsibility of their portfolio companies and select companies with better corporate values and a lower risk of misconduct and controversies, possibly at the expense of financial performance. Although the trade-off is clear from theory (Fama and French, 2007; Geczy et al., 2021; Pástor et al., 2021; Pedersen et al., 2020), surveys (Giglio et al., 2023; Riedl and Smeets, 2017), and experiments (Bonnefon et al., 2022; Heeb et al., 2023; Humphrey et al., 2021), empirical evidence from the revealed preferences of ESG investors has been elusive thus far.

To evaluate the trade-off between social responsibility and performance in ESG investors' portfolios, a researcher faces two empirical challenges, which we address in this paper. First, the researcher needs timely and objective measures of social responsibility at the firm level. To meet this challenge, we focus on a firm's legal risk, which reflects the firm's negative contribution to stakeholder welfare.<sup>3</sup> Specifically, we use data on penalties imposed on corporations by US federal and local agencies to measure corporate miscon-

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<sup>1</sup>The Parnassus Core Equity Fund, one of the largest active US equity funds, states in its fact sheet: "The Fund strives to outperform the S&P500 Index on a risk-adjusted basis with a high active share." Moreover, in its ESG guidelines, the fact sheet states: "The Fund evaluates financially material ESG factors as part of the investment decision-making process, considering a range of impacts they may have on future revenues, expenses, assets, liabilities, and overall risk."

<sup>2</sup>Across all asset classes available in the US, the Global Sustainable Investment Alliance (GSIA) estimates that sustainable investments amounted to \$17 trillion in 2020 or 33.2% of the total assets under management. In developed markets, sustainable investments exceeded \$35 trillion in 2020, making up 35.9% of the total assets under management (GSIA, 2021). Unlike our calculations, these numbers include investments in passive, non-domestic, and non-equity funds. In this paper, we focus on active US domestic equity funds.

<sup>3</sup>Whereas we can objectively measure a company's negative contribution to stakeholder welfare using regulatory fines and civil lawsuits, one cannot objectively measure its positive contribution to stakeholder welfare as easily. The current US legal system is primarily structured to sanction and compensate for the damages caused by corporations rather than to reward them for the positive externalities they generate.

duct. Additionally, we use a novel dataset of civil lawsuits filed against corporations in state and federal courts to measure corporate controversies.<sup>4</sup>

Second, a researcher needs to disentangle the *return-driven bets* ESG investors place on stocks to attain financial returns from the *socially responsible bets* they place on stocks based on the non-pecuniary values of portfolio companies. Because of their dual mandate, not all assets managed by ESG funds are invested based on social, environmental, or ethical criteria (Pástor et al., 2023). Therefore, we propose a methodology to address this challenge. In our methodology, we compare the holdings of each ESG fund to the holdings of a synthetic portfolio of conventional active funds, which mimic the ESG fund's holdings as closely as possible.

Using these novel data and methodology, we provide a series of findings regarding the incentives and performance of ESG investors. First, we document that flows to ESG funds are markedly more sensitive to regulatory violations and lawsuits among portfolio companies than flows to conventional active funds. Second, we show that, when ESG investors deviate from comparable conventional investors in their holdings, such deviations reflect public information about the non-pecuniary values of portfolio companies. Third, we find that, when ESG investors increase their holdings in a certain company relative to conventional investors, said company will experience fewer fines and lawsuits in the future, but also lower returns. Finally, we show that the trade-off between future returns and exposure to future violations and lawsuits becomes more pronounced for stocks characterized by higher uncertainty.

We begin with a mutual fund-level analysis and show that funds with higher exposure to past regulatory violations and lawsuits among their portfolio companies experience outflows relative to funds with lower exposure. Whereas we observe a relation between past legal exposure and flows among all active funds, possibly reflecting the pecuniary consequences of regulatory fines and civil lawsuits, the relation is one order of magnitude stronger for ESG funds. This finding is consistent with the notion that regulatory fines and lawsuits carry ethical and non-pecuniary consequences. Moreover, we also show that, compared to conventional funds, ESG funds are less exposed to fines and lawsuits through their portfolio companies. These findings indicate that ESG fund managers have particularly strong incentives to evaluate and avoid exposure to legal risks.

We then disentangle the bets ESG investors place on stocks based their commitment to invest responsibly, from the bets they place in pursuit of financial returns. To do this,

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<sup>4</sup>Although regulatory fines and legal controversy do not capture the entire spectrum of socially irresponsible or unethical behavior, they provide objective instances of conduct that, according to US law, caused (or may have caused) harm to the company's stakeholders.

we compare the holdings of an active ESG fund to those of a suitably selected portfolio of conventional active funds. Given a fund’s investment style and passive benchmark, an active ESG fund will deviate from this benchmark to pursue its dual mandate. In particular, the fund will place return-driven investments in stocks, reflecting its expectations about future returns.<sup>5</sup> At the same time, the fund will also place socially responsible bets on stocks, reflecting their perception of companies’ contribution to stakeholder welfare and legal risk. To isolate socially responsible bets from return-driven bets, for each ESG fund in each quarter, we compare the funds’ holdings with the combined holdings of a synthetic portfolio of conventional active funds with the same style as the ESG fund. We choose the weights to assign to conventional active funds so that their combined holdings best replicate the holdings of the ESG fund. Hence, this synthetic portfolio of conventional active funds represents the best available investment for an investor who seeks to recreate the return-driven bets of the ESG fund but has no intention to pursue non-pecuniary corporate values. We use deviations of the ESG fund’s holdings from the synthetic portfolio’s holdings to estimate the socially responsible bets of the fund.

We aggregate socially responsible bets at the stock-quarter level to measure each company’s perceived corporate values in each quarter, which we call *socially responsible sentiment*. By doing so, we aggregate the revealed preferences of all institutional investors with non-pecuniary mandates. The investors’ consensus view should, therefore, reflect relevant information about each firm’s non-pecuniary values and legal risk dispersed across various funds, thus incorporating the wisdom of the institutional ESG crowd.<sup>6</sup> Because socially responsible sentiment reflects the revealed preferences of ESG investors, changes in socially responsible sentiment should predict future corporate misconduct and controversies, even after controlling for public information, such as ESG ratings.<sup>7</sup>

We then proceed with a series of stock-level analyses. First, in the cross-section of firms, we show that socially responsible sentiment reflects existing public information on firms’ non-pecuniary values, as measured by ESG ratings and the companies’ legal track records. Socially responsible sentiment positively correlates with ESG ratings, suggesting ESG funds align their portfolios with ESG rating agencies’ guidance. Additionally,

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<sup>5</sup>Jiang et al. (2014) show active funds’ deviations from their passive benchmarks predict future returns.

<sup>6</sup>Other studies aggregated portfolio holdings at the stock level to show mutual funds’ holdings predict future performance. These studies include Jiang and Sun (2014), Jiang et al. (2014), Antón et al. (2021), Pomorski (2009), Wermers et al. (2012), Chen et al. (2000), and Chen et al. (2002).

<sup>7</sup>According to a survey of institutional investors by Hirai and Brady (2021), asset managers obtain information from multiple third-party ESG rating agencies together with their own proprietary information before making investment decisions. For instance, in a letter to investors, BlackRock states, “We have developed proprietary measurement tools to deepen our understanding of material ESG risks.” This letter is available at <https://www.blackrock.com/au/individual/blackrock-client-letter>.

socially responsible sentiment is negatively correlated with past corporate misconduct and controversies, as measured by past regulatory fines and past lawsuits against the company. These results indicate that ESG investors favor companies with a better track record regarding stakeholder welfare, consistent with their mandate to invest responsibly.

Second, we investigate whether changes in socially responsible sentiment contain forward-looking information on the risk of future misconduct and civil litigation. We find that, even after controlling for changes in ESG ratings and past legal events, an increase in socially responsible sentiment predicts a lower risk of regulatory fines and lawsuits in the future. Economically, a one standard deviation increase in the change of sentiment, equal to 1.42 bps, predicts a decline of 21.6 bps and 24.3 bps in the risk of future regulatory fines and litigation, respectively.

Third, focusing on stock returns, we find that ESG investors sacrifice financial performance to reduce exposure to corporate misconduct and litigation risk. Firms experiencing a larger increase in socially responsible sentiment deliver lower returns in the next quarter. We measure financial returns in terms of raw and risk-adjusted stock returns. Our main tests verify the predictive power of changes in socially responsible sentiment on future returns using Fama and Macbeth (1973) regressions. A one standard deviation increase in the change of socially responsible sentiment, equal to 1.42 bps, is associated with quarterly four-factor alpha -7.5 bps after controlling for stock characteristics.

Finally, we study how the trade-off between returns and legal risk changes based on stocks' pecuniary and non-pecuniary uncertainty. We show that, for stocks characterized by higher uncertainty, changes in sentiment predict lower returns but no lower exposure to legal risk, suggesting a more pronounced trade-off for more uncertain stocks. We measure pecuniary and non-pecuniary uncertainty by using idiosyncratic volatility and dispersion in ESG ratings, respectively. Overall, our results are consistent with the notion that stocks with higher uncertainty are more difficult to evaluate. Hence, ESG investors sacrifice more financial returns to reduce exposure to corporate misconduct and litigation risk among stocks characterized by higher uncertainty.

## 2 RELATED LITERATURE

A growing number of papers study the commitment of ESG funds to their objective of investing responsibly and the performance implications of this commitment (Cremers et al., 2023; Gibson Brandon et al., 2022; Kim and Yoon, 2022; Li et al., 2023; Pástor et al., 2023; Raghunandan and Rajgopal, 2022). In particular, these papers conduct fund-level studies of financial performance and social responsibility, whereas we conduct a stock-level

study. Moreover, Cremers et al. (2023), Kim and Yoon (2022), Li et al. (2023), Pástor et al. (2023), and Gibson Brandon et al. (2022) measure the social responsibility of institutions' holdings using ESG ratings, whereas we focus on legal risk. More importantly, we do not rely on ratings to assess the market's perception of firms' corporate values; instead, we use the revealed preferences of ESG investors.<sup>8</sup>

Among the aforementioned papers, we share with Pástor et al. (2023) the awareness and concern that ESG investors allocate a share of their assets to pursue pecuniary benefits. Starting from this common concern, we take a different approach. Pástor et al. (2023) use the environmental component of MSCI ESG ratings to assess the sustainability of individual assets, thus assessing the green tilt in the portfolios of all investors. We focus on investors who self-identify as ESG-oriented. We then benchmark their holdings against the holdings of a suitably constructed portfolio of conventional active funds to control for their incentives to pursue pecuniary benefits. We then use deviations from the active benchmark portfolio to assess the portfolio tilt attributable to non-pecuniary values. We show our estimated tilts reflect past and forward-looking information on corporate behavior.

In this paper, we study the relation between the portfolio holdings of ESG funds and the legal track record of companies using information about corporate misconduct and lawsuits. Raghunandan and Rajgopal (2022) also use corporate misconduct in its fund-level study of social responsibility, but they focus on the relation between ESG fund holdings and past misconduct. We investigate the information revealed by fund holdings about future misconduct. Our work is also related to von Beschwitz et al. (2023), who show that mutual funds react to ESG scandals reported in the news. Compared to them, we focus on legal risk and not ESG news. We show the holdings of ESG funds reflect not only information that has been revealed to the public in the past but also information about future legal events.

Our research is also related to papers studying the relationship between corporate social responsibility and stock performance. These papers use past corporate emissions (Ardia et al., 2023; Aswani et al., 2023; Bolton and Kacperczyk, 2021, 2023; Choi et al., 2020; Hsu and Tsou, 2023; Matsumura et al., 2014), current ESG ratings (Bansal et al., 2022; Chava, 2014; Ghouil et al., 2011; Pástor et al., 2022), or current social norms (Hong and Kacperczyk, 2009) to evaluate corporate responsibility. We take a revealed-preference approach and use the sentiment of ESG investors, as reflected in their socially responsible bets, to obtain a new measure of perceived corporate values. We show that changes in so-

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<sup>8</sup>Avramov et al. (2022), Berg et al. (2022b), Berg et al. (2022a), and Christensen et al. (2022) show ESG raters may disagree significantly on their assessment of a given firm.

cially responsible sentiment contain forward-looking information about future corporate misconduct and stock performance.

Focusing on firms' environmental impact, a growing literature in finance shows investors incorporate or should incorporate climate risk in their portfolio allocation. Krueger et al. (2020) provide survey evidence from a sample of institutional investors. Studies by Ramelli et al. (2021) and Starks et al. (2018) document that long-horizon investors account for climate-related risk in their asset allocation. Hartzmark and Sussman (2019) show investors value mutual funds' sustainability ratings. Engle et al. (2020) show investors can form portfolios to hedge against climate-change risk arising from climate news and ESG scores. Alekseev et al. (2022) show mutual fund trades around shocks to climate beliefs provide information that can be used to construct a systematic climate-risk factor. Finally, results in Alok et al. (2020) indicate that mutual funds overreact to salient climate disasters.

Some papers investigate the relationship between ESG fund ownership and corporate social responsibility through governance, engagement, or cost of capital. Empirical papers include Azar et al. (2021), Chen et al. (2020), Dikolli et al. (2022), Dyck et al. (2019), Heath et al. (2023), Hoepner et al. (2022), and Lowry et al. (2023). Theoretical papers include Berk and Van Binsbergen (2022), Bisceglia et al. (2023), Broccardo et al. (2022), Edmans et al. (2023), Friedman and Heinle (2016), Green and Roth (2022), Heinkel et al. (2001), Kashyap et al. (2021), Landier and Lovo (2023), and Oehmke and Opp (2024). These papers study if ESG ownership causally affects environmental and social performance. In contrast, we focus on the ability of ESG funds to predict misconduct and controversies, regardless of the funds' ability to influence corporate outcomes directly. According to Berk and Van Binsbergen (2022), the amount of socially responsible capital is too small to affect firms' cost of capital. However, managers may still be able to predict future corporate behavior correctly.

Other papers studying the holdings of ESG funds include Berg et al. (2023) and Chen et al. (2022). They focus on funds' actions in response to changes in ESG information, as provided by ESG rating agencies. In contrast, we study the predictive power of ESG funds' portfolio choices on performance and legal events.

We draw from and generalize existing contributions to develop a methodology to measure funds' socially responsible bets and sentiment. Like Jiang and Sun (2014) and Jiang et al. (2014), we estimate a fund's bets as deviations of its portfolio weights from a benchmark and focus on the financial and social performance of stocks that are overweighted and underweighted by ESG funds. Whereas Jiang and Sun (2014) and Jiang et al. (2014) use passive benchmarks to obtain a funds' active bets, we use a portfolio of

conventional active funds to control for active strategies. Our approach is thus analogous to Hunter et al. (2014) and Cohen et al. (2005), who assess the relative performance of an active fund by comparing it with similar funds. However, these authors focus on performance at the fund level, whereas we study stock-level measures of sentiment and performance. Finally, to obtain an optimal portfolio of active funds to which we compare the holdings of an ESG fund, we generalize the methodology proposed by Cremers and Petajisto (2009). Whereas Cremers and Petajisto (2009) look for the single passive portfolio that best replicates the holdings of an active fund, we look for the linear combination of active portfolios that best replicates the holdings of an ESG fund.

### 3 METHODOLOGY

In this section, we introduce our methodology to construct our measure of socially responsible sentiment, which controls for pecuniary incentives to invest in a firm. We then discuss its strengths and limitations and provide a theoretical framework to provide an economic interpretation of the level and change of socially responsible sentiment.

#### 3.1 SOCIALLY RESPONSIBLE SENTIMENT

An active ESG fund may invest in a stock for three reasons. First, it may hold or avoid a stock to follow a benchmark and reduce deviations from comparable funds. Second, the fund may overweight (underweight) the stock compared to the benchmark because the fund expects the stock to deliver superior (inferior) financial returns. Third, the fund may further adjust its position in the company to reflect the manager’s beliefs about the non-pecuniary values of the company. In particular, compared to a conventional but otherwise identical fund manager, an ESG investor may overweight (underweight) stocks that he/she believes will provide superior (inferior) contributions to stakeholder welfare. We refer to the portfolio deviations from this comparable conventional fund as *socially responsible bets*.

To estimate a fund’s socially responsible bets, we compare the holdings of each ESG fund to the holdings of a synthetic portfolio of conventional active funds. Let  $\{1, \dots, F\}$  be the set of all funds in the sample, and let  $\{1, \dots, I\}$  be the set of securities. Consider a fund  $f$  in quarter  $t$ . Let  $w^{ft} := (w_1^{ft}, \dots, w_I^{ft})$  be the fund’s portfolio, where  $w_i^{ft}$  is the share of fund  $f$ ’s assets under management (AUM) invested in stock  $i$  at the end of quarter  $t$ . Let  $S(f, t)$  be the fund’s style.<sup>9</sup> We define  $E(t)$  as the set of active ESG funds at time  $t$ . From

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<sup>9</sup>We use CRSP objective codes to identify a fund’s style.



this set, we exclude funds that, up to quarter  $t$ , have never reached a size of \$5 million in AUM. By doing so and by restricting the sample to funds open to new investors, we reduce incubation bias (Elton et al., 2001; Evans, 2010). We also define  $A(s, t)$  as the subset of conventional active funds with investment style  $s$  at time  $t$ . To reduce incubation bias in the sample, we exclude active funds with AUM below \$5 million or fund age below two years.<sup>10</sup> Finally, we define  $U(i, t) = \{e: \exists f \in \{1, \dots, F\} \text{ s.t. } S(f, t) = S(e, t) \text{ and } w_i^{ft} > 0\}$  as the set of ESG funds whose investment style allows for security  $i$ . In other words,  $e \in U(i, t)$  if, in quarter  $t$ , a fund  $f$  exists with the same style of  $e$  and has positive holdings in stock  $i$ . Note we could have  $f = e$ . In other words,  $U(i, t)$  represents the set of ESG funds whose investment opportunity set in quarter  $t$  contains stock  $i$ .

For each ESG fund  $e \in E(t)$  and for each quarter  $t$ , we construct a portfolio of conventional active funds with the same style as  $e$ . This portfolio replicates the holdings of  $e$  as closely as possible. Formally, we estimate portfolio weights  $\hat{\Theta}^{et} := (\hat{\theta}_1^{et}, \dots, \hat{\theta}_F^{et})$  by solving the following problem:

$$\left(\hat{\theta}_1^{et}, \dots, \hat{\theta}_F^{et}\right) = \arg \min_{(\theta_1, \dots, \theta_F) \in \mathbb{R}^F} \sum_{i=1}^I \left| w_n^{et} - \sum_{a=1}^F \theta_a w_n^{at} \right| \quad (1)$$

$$\text{s.t. } \theta_a = 0 \text{ for all } a \notin A(S(e, t), t) \quad (1a)$$

$$\text{s.t. } \sum_{a=1}^F \theta_a = 1. \quad (1b)$$

In (1), we seek a linear combination of fund portfolios with minimal distance from the portfolio of ESG fund  $e$  in quarter  $t$ . With condition (1a), we restrict the set of fund portfolios to conventional active funds with the same style as ESG fund  $e$ . Condition (1b) imposes that portfolio weights sum up to one. We thus obtain a synthetic portfolio

$$\hat{w}^{et} := \sum_{a=1}^F \hat{\theta}_a^{et} w^{at}$$

of conventional active funds with the same investment objective of fund  $e$  in quarter  $t$ .

By comparing the holdings of fund  $e$ ,  $w^{et}$ , to the synthetic portfolio  $\hat{w}^{et}$ , we thus estimate the socially responsible bets of fund  $e$ . Our methodology is a generalization of the active share in Cremers and Petajisto (2009). Cremers and Petajisto (2009) look for the

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<sup>10</sup>We do not restrict fund age for ESG funds because, as shown in Figure 1(a), ESG funds tend to be relatively new. By filtering by age, we would omit a sizable fraction of our sample of ESG funds. However, our results are not driven by incubation bias in ESG funds. Whereas incubation bias introduces a semblance of outperformance, we find ESG funds overweight stocks that underperform compared to the holdings of conventional active funds.

single passive portfolio that best replicates a fund's holdings. By comparing the fund's holdings with the holdings of its passive benchmark, they estimate the active bets of the fund. We generalize active share by looking for the linear combination of portfolios that best replicates the fund's holdings.

The synthetic portfolio we obtain has desirable features. First, by using holdings of funds with the same style, we control for the portfolio allocation of fund  $e$  that is determined by its benchmark, similar to active share. Second, by estimating the linear combination of active funds that best replicates the ESG fund's portfolio, we also control for the fund's incentives to deviate from its benchmark because of expected performance. Hence, our synthetic portfolio of active funds represents the best outside option for an investor who wants a portfolio exposure similar to fund  $e$ 's but has no intention to pursue social responsibility. Therefore, we estimate the socially responsible bet of fund  $e$  on stock  $i$  in quarter  $t$  as

$$SR\ Bet_i^{et} := w_i^{et} - \hat{w}_i^{et}.$$

For each stock  $i$  and quarter  $t$ , we define *socially responsible sentiment*, and denote it as  $SR\ Sentiment_{it}$ , as the average socially responsible bet of ESG funds on stock  $i$  in quarter  $t$ . To calculate the average, we restrict the sample to funds whose investment style allows for stock  $i$ . That is

$$SR\ Sentiment_{it} := \frac{1}{|U(i, t)|} \sum_{e \in U(i, t)} SR\ Bet_i^{et}$$

By restricting ourselves to the set  $U(i, t)$ , we ensure our sentiment measure is not biased by style considerations. For example, if  $i$  is a large-cap stock, all small-cap funds will not include stock  $i$  in their portfolio. Using our methodology, we would conclude that all small-cap ESG funds make bets equal to zero on the large-cap stock  $i$ . However, one cannot interpret these zero bets as indicating a lack of sentiment on the stock by small-cap ESG funds. Instead, these zero bets reflect the specialization of these funds.

Finally, we define changes in socially responsible sentiment as follows

$$\Delta SR\ Sentiment_{it} := SR\ Sentiment_{it} - SR\ Sentiment_{it-1}.$$

Whereas the level of socially responsible sentiment  $SR\ Sentiment_{it}$  reflects the information accumulated by funds up to time  $t$ , changes in socially responsible sentiment capture new information about the pecuniary and non-pecuniary fundamentals of firm  $i$ . We provide an economic interpretation of the level and change in sentiment in the theoretical framework of section 3.2.

Before introducing a theoretical framework and conducting empirical analysis with

the variables we constructed, we wish to clarify what we *cannot* measure using our methodology. We also justify our focus on the stock-level measure of sentiment rather than fund-level bets. First, we cannot interpret the socially responsible bets of an individual fund, that is, the  $SR\ Bet_i^{et}$  variable, as precise estimates of a fund’s beliefs in the non-pecuniary values of portfolio companies. We could underestimate an individual ESG fund’s perception of a firm’s corporate values if this fund were particularly bearish about the firm’s future returns compared to conventional active funds. Similarly, we could overestimate the ESG fund’s perception of the firm’s corporate values if this fund was particularly bullish compared to conventional funds.

Because individual bets could be measured with error, we do not conduct a fund-level study using funds’ socially responsible bets. Instead, we aggregate individual bets into a socially responsible sentiment at the stock level. By averaging socially responsible bets, we also average over- or under-estimates of individual funds’ perceived corporate values. We then empirically investigate whether socially responsible sentiment successfully captures the wisdom of the crowd regarding a firm’s non-pecuniary values. Our validation tests in section 5.2 and our tests on its forecasting power on future legal risk in section 6.1 suggest that socially responsible sentiment does capture the wisdom of the socially responsible crowd.

Second, we cannot identify the *intentions* behind ESG funds’ choice to overweight or underweight a stock. For example, ESG funds, as a group, may believe certain stocks will deliver superior returns and better corporate values. Regardless of their intentions, we want to study the *outcome* of their decisions. As we show in sections 6.1 and 6.2, ESG funds overweight stocks that will deliver inferior returns but better corporate values.

### 3.2 THEORETICAL FRAMEWORK

Here, we present a theoretical framework and provide an economic interpretation of our measure of socially responsible sentiment and its change. We show changes in socially responsible sentiment reflect forward-looking information about legal risk and alpha. While we describe the framework, we relate the theoretical quantities in the model to their empirical counterparts from section 3.1. We also draw connections between the theoretical results and the empirical tests we conduct ahead in the paper.

There are  $I$  stocks indexed by  $i = 1, \dots, I$ . At time  $t$ , stocks are affected by adverse legal risk  $L_t \in \mathbb{R}^N$ , where  $L_t = -V_t + \varepsilon_t^L$ . The quantity  $V_t$  is an  $I \times 1$  vector of firms’ non-pecuniary values at time  $t$ . The series  $(\varepsilon_t^L)_{t=1}^\infty$  is a series of independent and identically distributed (i.i.d.) shocks with  $E[\varepsilon_t^L] = 0$  and  $E[\varepsilon_t^L \varepsilon_t^{L'}] = \Omega$  for all  $t$ , independent of  $(V_t)_{t=1}^\infty$ . Therefore, we assume that firms with better non-pecuniary values are less exposed to

adverse legal events, such as regulatory fines or lawsuits.

Legal risk carries pecuniary consequences that reduce stock returns by  $\rho L_t$ , with  $\rho \in \mathbb{R}$  and  $\rho \geq 0$ . Stocks are also exposed to returns that are uncorrelated with legal risk,  $\tilde{R} = \tilde{\mu}_t + \tilde{\varepsilon}_t$ . The quantity  $\tilde{\mu}_t$  is a vector of expected (non-legal) returns, independent of  $(V_t)_{t=1}^\infty$  and  $(\varepsilon_t^L)_{t=1}^\infty$ . The series  $(\tilde{\varepsilon}_t)_{t=1}^\infty$  is i.i.d. with  $E[\tilde{\varepsilon}_t] = 0$  and  $E[\tilde{\varepsilon}_t \tilde{\varepsilon}_t'] = \tilde{\Sigma}$  for all  $t$ , independent of  $(\varepsilon_t^L)_{t=1}^\infty$ ,  $(V_t)_{t=1}^\infty$ , and  $(\tilde{\mu}_t)_{t=1}^\infty$ . Therefore, total stock returns are  $R_t := \tilde{R}_t + \rho L_t = \mu_t + \varepsilon_t$ , where  $\mu_t := \tilde{\mu}_t - \rho V_t$ ,  $E[\varepsilon_t] = 0$ , and  $E[\varepsilon_t \varepsilon_t'] = \Sigma := \tilde{\Sigma} + \rho \Omega$ .

Let  $\mathcal{F}_t^*$  be the  $\sigma$ -algebra representing the information of active investors at time  $t$  and let  $\mathcal{F}_t$  be the  $\sigma$ -algebra representing public information at time  $t$ . The information sets of active investors and the public reflect the available information they can use to anticipate returns and legal events. We assume that active investors are strictly more informed than the public; that is,  $\mathcal{F}_t \subset \mathcal{F}_t^*$ . We also assume that active investors' private information is eventually revealed to the public but with a delay. Formally,  $\mathcal{F}_{t+1} = \mathcal{F}_t^*$ . That is, active investors *anticipate* future information.

Firm's non-pecuniary values  $V_t$  and expected returns  $\mu_t$  are unobservable and active investors form beliefs about them so that  $E[V_{t+1}|\mathcal{F}_{t-1}^*] = E[V_t|\mathcal{F}_{t-1}^*]$  and  $E[\mu_{t+1}|\mathcal{F}_{t-1}^*] = E[\mu_t|\mathcal{F}_{t-1}^*]$ . That is, beliefs about non-pecuniary and pecuniary fundamentals are martingales, and a revision in beliefs implies a persistent change in the expected returns and legal risk. In particular,  $E[L_{t+s}|\mathcal{F}_t^*] = E[V_{t+1}|\mathcal{F}_t^*]$  for all  $s = 1, \dots, \infty$ .

We model the preferences of a representative ESG investor similar to Pástor et al. (2021). Specifically, we consider a mean-variance investor with a mandate to tilt its portfolio toward firms with better perceived corporate values. That is, the representative ESG investor chooses portfolio weights  $w$  to maximize the following objective function:

$$w'(pE[R_{t+1} - r\mathbf{1}|\mathcal{F}_t^*] + (1-p)E[V_{t+1}|\mathcal{F}_t^*]) - \frac{1}{2\tau}w'\Sigma w,$$

where  $r$  is the risk-free rate and  $\mathbf{1}$  is an  $I \times 1$  vector of ones. A representative conventional investor has the same objective function but with  $p = 1$ .<sup>11</sup>

As a result, the optimal portfolio of the ESG investor is

$$w^{et} = \tau \Sigma^{-1} (pE[R_{t+1} - r\mathbf{1}|\mathcal{F}_t^*] + (1-p)E[V_{t+1}|\mathcal{F}_t^*]),$$

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<sup>11</sup>Consistent with our empirical methodology, in this framework, we compared the holdings of an ESG investor to those of a conventional investor that most closely resembles the ESG investor. In the context of our model, we therefore consider ESG and active investors with the same information  $\mathcal{F}_t^*$ . However, one can generalize the framework and allow the ESG and conventional investors to possess specialized information  $\mathcal{F}_t^e$  and  $\mathcal{F}_t^a$ , respectively. Under this assumption, the key equation of this theoretical framework, equation (4), would change and include a mean-zero noise term which reflects measurement error made by the least informed investor when estimating stocks' alphas compared to the estimates of the most informed investor.

whereas the optimal portfolio of a conventional investor is

$$w^{at} = \tau \Sigma^{-1} \mathbb{E}[R_{t+1} - r \mathbf{1} | \mathcal{F}_t^*].$$

Similar to our empirical methodology in section 3.1, we define the vector of socially responsible sentiment as the vector of socially responsible bets of the representative ESG investor. That is,

$$SR \text{ Sentiment}_t := w^{et} - w^{at} = \tau \Sigma^{-1} (1 - p) (\mathbb{E}[V_{t+1} | \mathcal{F}_t^*] - \mathbb{E}[R_{t+1} - r \mathbf{1} | \mathcal{F}_t^*]). \quad (2)$$

According to this equation, socially responsible sentiment reflects investors' information about non-pecuniary values  $\mathbb{E}[V_{t+1} | \mathcal{F}_t^*]$  and expected returns. We thus obtain a first prediction.

**PREDICTION 1.** *In the cross-section, the level of socially responsible sentiment is positively correlated with available measures of non-pecuniary values.*

Unlike an otherwise identical conventional investor, an ESG investor will intentionally overweight firms with better perceived non-pecuniary values. We empirically document a relation between the level of socially responsible sentiment and current information about corporate values in section 5.2.

We then consider the change in socially responsible sentiment:

$$\Delta SR \text{ Sentiment}_t := SR \text{ Sentiment}_t - SR \text{ Sentiment}_{t-1} \quad (3)$$

We then make two observations. First, by the law of iterated expectations and the martingale property of beliefs, we have  $\mathbb{E}[L_{t+s} | \mathcal{F}_t^*] = \mathbb{E}[V_{t+s} | \mathcal{F}_t^*] = \mathbb{E}[V_{t+1} | \mathcal{F}_t^*]$  for all  $s = 1, \dots, \infty$ . Moreover, because  $\mathcal{F}_{t-1}^* = \mathcal{F}_t$ , we also have  $\mathbb{E}[V_t | \mathcal{F}_{t-1}^*] = \mathbb{E}[V_t | \mathcal{F}_t]$ . Second, we define the alpha of stock  $i$  as the excess return that an active investor expects to earn over the excess return expected by uninformed investors.<sup>12</sup> That is,

$$\mathbb{E}[\alpha_{i,t+1} | \mathcal{F}_t^*] := \mathbb{E}[R_{i,t+1} - r | \mathcal{F}_t^*] - \mathbb{E}[R_{t+1} - r \mathbf{1} | \mathcal{F}_t]$$

---

<sup>12</sup>One could equivalently define the alpha of a stock as

$$\mathbb{E}[\alpha_{i,t+1} | \mathcal{F}_t^*] := \mathbb{E}[R_{i,t+1} - r | \mathcal{F}_t^*] - \frac{\text{Cov}(R_{i,t+1}, w^{Tt'} R_{t+1})}{w^{Tt'} \Sigma w^{Tt}} (\mathbb{E}[w^{Tt'} R_{t+1} | \mathcal{F}_t] - r),$$

where  $w^{Tt}$  is the tangency portfolio based on public information  $\mathcal{F}_t$ . The definitions are equivalent because, for each stock  $i$ ,

$$\mathbb{E}[R_{i,t+1} - r | \mathcal{F}_t] = \frac{\text{Cov}(R_{i,t+1}, w^{Tt'} R_{t+1})}{w^{Tt'} \Sigma w^{Tt}} (\mathbb{E}[w^{Tt'} R_{t+1} | \mathcal{F}_t] - r).$$

We thus observe that, because  $\mathcal{F}_{t+1} = \mathcal{F}_t^*$  and  $E[\mu_{t+1}|\mathcal{F}_{t-1}^*] = E[\mu_t|\mathcal{F}_{t-1}^*]$ , then  $E[\mu_t|\mathcal{F}_{t-1}^*] = E[\mu_{t+1}|\mathcal{F}_t]$ , and, hence,  $E[R_{i,t+1} - r|\mathcal{F}_t^*] - E[R_{t+1} - r\mathbf{1}|\mathcal{F}_{t-1}^*] = E[\alpha_{t+1}|\mathcal{F}_t^*]$ .

Therefore, starting from (3), one can write

$$E[L_{t+i}|\mathcal{F}_t^*] + E[\alpha_{t+1}|\mathcal{F}_t^*] = -\frac{1}{\tau(1-p)}\Sigma\Delta SR\text{ Sentiment}_t + E[V_t|\mathcal{F}_t], \quad s = 1, \dots, \infty. \quad (4)$$

We use equation (4) to provide an economic interpretation of the change in socially responsible sentiment we derived in section 3.1. Specifically, we derive the following prediction.

**PREDICTION 2.** *In the cross-section of stocks, a change in socially responsible sentiment for a certain stock,  $\Delta SR\text{ Sentiment}_{i,t}$ , should predict lower alpha in the next period,  $E[\alpha_{i,t+1}|\mathcal{F}_t^*]$ , and/or less legal risk going forward,  $E[L_{i,t+s}|\mathcal{F}_t^*]$ .*

In other words, changes in socially responsible sentiment reflect changes in the information of active investors as well as the different usage of that information by ESG and conventional investors. If ESG investors increase the holding of a stock compared to conventional investors, then the perceived non-pecuniary fundamentals must have increased compared to the expected returns of the stock. In our empirical tests in sections 6.1 and 6.2, we show that changes in socially responsible sentiment predict *both* lower alpha and less legal risk.

From (4), we obtain also the following prediction.

**PREDICTION 3.** *In the cross-section of stocks, the slope of the relation between changes in socially responsible sentiment and future legal risk and/or alpha is steeper for more volatile stocks.*

Intuitively, a risk-averse investor is more reluctant to take a position in riskier stocks unless motivated by high expected alpha and/or high non-pecuniary values. Both ESG and conventional investors “shrink” their positions toward zero for stocks with higher volatility. Therefore, a given increase in socially responsible sentiment is associated with a larger wedge between non-pecuniary and pecuniary values for stocks with higher risk. In section 7, we show that, although the relation between socially responsible sentiment and future legal risk remains stable across stocks with different volatility, the relation between socially responsible sentiment and future alpha is steeper for more volatile stocks. As discussed in section 7 ahead, this finding is consistent with more volatile stocks being more difficult to assess.

## 4 DATA AND SUMMARY STATISTICS

In this section, we describe the data we use and the set of ESG funds we consider. We also discuss trends in ESG investing in recent years.

### 4.1 DATA

We obtain data on open-ended U.S. mutual funds from the first quarter of 2011 through the first quarter of 2022. The data on mutual fund characteristics and portfolio holdings are from the Center for Research in Securities Prices (CRSP) Survivor Bias-Free U.S. Mutual Fund database. We focus on actively managed diversified equity funds; that is, funds with CRSP objective codes EDYG (Growth), EDYB (Blend), EDYI (Value), EDCM (Mid-Cap), EDCS (Small-Cap), and EDCI (Micro-Cap). We eliminate funds with the CRSP objective code EDCL (S&P 500 Index Objective Funds) to avoid passive funds. We also eliminate funds if their names include the words “index,” “S&P,” or “ETF.” Finally, to exclude possible hedge funds, we do not consider funds with the CRSP objective codes EDYH (Long/Short Equity Funds) or EDYS (Dedicated Short Bias Funds). To avoid multiple counting, we aggregate share-class-level data to the portfolio level. We calculate total net assets (TNA) as the sum of assets across all share classes, and we compute the value-weighted average of a fund’s return across share classes. For the qualitative attributes of the funds, such as name or investment objective, we choose that of the oldest among all share classes.

To study the holdings of mutual funds, we consider common stocks traded on the NYSE, Amex, and Nasdaq. We exclude closed-end funds, Americus trust component, ETF, and REITs in line with previous research. To mitigate the concern that outliers drive our results, we eliminate stocks with prices below \$5 and exclude funds with less than 10 securities. We obtain data on stocks’ monthly returns, prices, and market values from CRSP. The resulting sample covers 9,653 stocks and 3,268 funds. We then match stocks in our sample to their quarterly returns from CRSP and quarterly firm fundamentals from Compustat. We also obtain data on factor returns from Kenneth French’s website.

We obtain data on firm misconduct from the Violation Tracker website. Violation Tracker contains comprehensive data on penalties exceeding \$5,000 assessed by federal and local agencies on corporations. Such agencies include the Environmental Protection Agency, the Occupational Safety and Health Administration, and the Justice Department. Violation Tracker classifies misconduct episodes into nine groups based on the nature of the violation: competition, consumer protection, employment, environment, financial, government contracting, healthcare, safety, and miscellaneous. We attribute the fine to

the parent company when a subsidiary is fined. From 2011 to 2022, we have data on 357,897 penalties, summing up to \$742 billion, assessed by 394 agencies. Among these violations, 39,748 are attributed to 1,856 public companies that paid a total of \$516 billion in penalties.

Data on lawsuits are from Lequity, a start-up ESG rating firm. Unlike other ESG rating firms, Lequity assigns ESG ratings based on the number and materiality of civil lawsuits filed against companies. From Lequity, we obtained data on lawsuits filed against public companies in State and Federal courts. Compared to the Federal Judicial Center's (FJC) data that have been used in other studies in finance and economics (Dougal et al., 2022; Franke et al., 2023; Cassella and Rizzo, 2023; Ash et al., 2022; Lanjouw and Schankerman, 2001), Lequity's data possess two important advantages. First, they include lawsuits filed in state<sup>13</sup> and federal courts, whereas FJC data contain only federal lawsuits. Second, Lequity obtains data from court dockets and identifies all defendants in a lawsuit, whereas only the first defendant can be identified in FJC data.<sup>14</sup> Lequity classifies lawsuits into 49 categories depending on the nature of the dispute. These categories include patents, contracts, worker safety, environmental matters, discrimination, land use disputes, etc. From 2011 to 2022, we have data on 205,287 civil lawsuits filed against 3,025 public companies.

We classify regulatory violations and civil lawsuits as environmental (E), social (S), governance-related (G), or other and restrict our attention to E, S, and G violations and lawsuits. Starting from the more granular classification of violations and lawsuits provided by Violation Tracker and Lequity, we group them into the three E, S, and G categories based on their nature. We provide details of our classification in Table 1.

We also obtain ESG ratings from KLD, MSCI, Refinitiv, Sustainalytics, and TVL. For KLD data, we follow the methodology of Avramov et al. (2022), Berg et al. (2023), and Lins et al. (2017) and sum all the strengths and subtract the concerns. As for the other ratings, we use the MSCI ESG Intangible Value Assessment (UVA) from MSCI, the ESG Combined Score from Refinitiv, the Sustainalytics Rank from Sustainalytics, and the Insight Score from TVL. Similar to Avramov et al. (2022), we transform scores into percentile ranks to ensure all scores are on the same scale and distributed according to the same distribution. Specifically, for each score in each quarter, we rank firms on a scale from 0 to 100, with a higher rank being associated with a better ESG score. After this transformation, all

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<sup>13</sup>Lequity's state court geographic coverage includes more than 90 million US residents; that is, 27% of the US population.

<sup>14</sup>For example, if plaintiff X filed a complaint against company A, company B, and company C, FJC would report the defendants as "Company A et al." Using Lequity data, we can correctly identify the three defendants.



quarterly ESG scores are uniformly distributed over the [0,100] interval.

## 4.2 TRENDS IN ESG INVESTING

Within our sample of US equity active funds, we classify funds as ESG if they are classified as sustainable by Morningstar or if their name contains any of the following strings: sustain, social, esg, pax, green, responsi, clean, impact, water, environm, catholic, parnasus, aquina, women, alternative energy, equality, wind energy, fossil, low carbon, amana, ecolog, eco, epiphany, solar, climate, better world, gender, just, sri, community, and diversity.

We identify a total of 241 active ESG funds in the period from the first quarter of 2011 to the first quarter of 2022. Both the number and AUM of ESG funds grew steadily over this decade, as shown in Figures 1(a) and 1(b). The number of funds available to investors increased from 122 to 171, while their AUM grew from \$104 billion to \$352 billion. Figure 1(c) shows the time series of ESG fund's market share in terms of AUM relative to the total assets managed by US equity active funds. ESG funds' market share was 8% at the end of 2021.

[Insert Figure 1 here]

Despite the growth in the number and AUM of ESG funds, the number of portfolio companies held by ESG funds barely changed over our sample period. Figure 1(d) shows that, between 2011 and 2021, the number of companies held by at least one ESG fund fluctuated between 3,076 and 3,412. This observation indicates that, although the size of the responsible investment industry increased, their investment opportunities remained relatively stable.

## 4.3 SUMMARY STATISTICS

The main variables of interest are the level of socially responsible sentiment and quarterly changes in the sentiment. As discussed in section 3, the level of socially responsible sentiment reflects the perceived non-pecuniary values of a firm based on all available information. Quarterly changes in sentiment measure new information that changed ESG investors' assessment of the firm's corporate values. To reduce the influence of outliers, we winsorize the left and right-tail of the sentiment distribution at the 1% level.

Our empirical tests focus on the relation between sentiment, returns, misconduct, and controversies while controlling for a series of firm-level, time-varying characteristics. In particular, we control for total assets, market cap, book-to-market ratio, return on assets

(ROA), leverage (defined as long-term debt over total assets), quarterly capital expenditures (CAPEX), institutional ownership, the stock's returns over the previous 12 months, the stock's beta, total return volatility, and the ESG breadth of the stock (defined as the ratio of the number of ESG funds holding stock  $i$  to the total number of ESG funds active at date  $t$ ). A comprehensive list of the firm-level variables used in this paper and their descriptions is available in the Appendix in Table 1.

[Insert Table 2 here]

Table 2 presents the summary statistics for sentiment measures and the firm-level control variables in our panel of 99,416 firm-month observations, with the definition of these variables provided in Table 1. Overall, both the level and change of socially responsible sentiment are characterized by a symmetric distribution centered around zero. The standard deviation of socially responsible sentiment is 2.55 bps. Figure 2 in the Appendix plots the distribution of the level of sentiment and the changes in sentiment for the panel.

## 5 VALIDATION

In this section, we validate our methodology along two dimensions. First, we show that ESG funds face stronger incentives than conventional funds to incorporate information about firms' legal risk in their holdings. Second, we show how the level of socially responsible sentiment is correlated, in the cross-section, with firm characteristics and, in particular, publicly available proxies for non-pecuniary values, such as ESG ratings and past legal events.

### 5.1 FUND-LEVEL ANALYSIS

We begin with a fund-level analysis of the relation between exposure to legal risk and fund flows. We document a decline in fund flows following adverse legal events among the fund's portfolio companies. The relation is one order of magnitude stronger for ESG funds compared to conventional funds. We then show that ESG funds take less exposure to legal risk than conventional funds, consistent with ESG investors being more sensitive to legal risk.

#### 5.1.1 LEGAL RISK AND FUND FLOWS

To justify our focus on legal risk, we show that ESG investors face an incentive to develop the skills and acquire the information necessary to avoid regulatory violations and civil

lawsuits among their portfolio companies. Specifically, we document a negative relation between negative legal events among a fund's portfolio companies and subsequent flows. If funds with a worse legal track record among their portfolio companies face outflows, fund managers have an incentive to minimize exposure to legal risk. As shown below, the relation between negative legal events and subsequent flows is one order of magnitude larger for ESG funds than conventional (non-ESG) active funds.

For each fund  $f$  and quarter  $t$ , let  $TNA_{ft}$  denote the fund's total net assets at the end of quarter  $t$  and let  $R_{ft}$  be the fund's net return in quarter  $t$ . We thus define fund flows as  $Fund\ Flows_{ft} := (TNA_{ft} - TNA_{ft-1}(1 + R_{ft}))/TNA_{ft-1}$ , which measures the net inflow of money into the fund during quarter  $t$  as a fraction of the fund's total net assets at the end of quarter  $t - 1$ .

We then aggregate firm-level legal events at the fund level. Let variable  $Legal\ Event_{i,t-4 \rightarrow t-1}$  be an indicator taking the value of one if firm  $i$  was exposed to at least one legal event in the year (four quarters) up to and including quarter  $t - 1$ . We consider both regulatory penalties and civil lawsuits filed against the company as legal events. We then aggregate legal events at the fund's level by using a weighted average of individual firm's legal events with weights equal to the portfolio weights of the fund. Specifically, let  $w_i^{ft}$  be the share of fund  $f$ 's AUM invested in stock  $i$  at the end of quarter  $t$ . We thus define a fund's exposure to past legal events as

$$Legal\ Exposure_{f,t-4 \rightarrow t-1} := \sum_{i=1}^I w_i^{ft} Legal\ Event_{i,t-4 \rightarrow t-1}$$

where  $I$  is the total number of stocks in the sample.

We then run the following regression for the entire sample of US equity active funds:

$$Fund\ Flows_{ft} = \psi_0 ESG\ Fund_f + \psi_1 Legal\ Exposure_{f,t-4 \rightarrow t-1} + \psi_2 ESG\ Fund_f \times Legal\ Exposure_{f,t-4 \rightarrow t-1} + \beta' Z_{ft} + FE_{ft} + \epsilon_{ft},$$

where  $ESG\ Fund_f$  is an indicator variable taking the value of 1 if fund  $f$  is an ESG fund, and where  $Z_{ft}$  is a vector of controls that include the average ESG ratings of each fund's holdings and the fund's past flows. The fixed effects,  $FE_{ft}$ , are either time or style-time fixed effects.

If  $\psi_1 < 0$ , active funds experience larger outflows when exposed to more negative legal events through their portfolio companies. Even though the coefficient  $\psi_1$  measures the relation between negative legal events and flows among conventional active funds, we might still find a positive coefficient because legal events are associated with negative

pecuniary consequences.

If  $\psi_2 < 0$ , ESG funds experience additional outflows compared to other active funds when exposed to negative legal events. Therefore, a negative  $\psi_2$  coefficient suggests that ESG investors are more sensitive to negative legal events than performance-seeking investors, consistent with the notion that misconduct and litigation bear ethical and non-pecuniary implications in addition to monetary ones.

[Insert Table 3 here]

Table 3 shows the results. Among active funds, a one-standard deviation increase in exposure to legal events in a fund's portfolio is associated with a 0.539% decline in net flows when controlling for style-time fixed effects. This result, indicating a negative  $\psi_1$  coefficient, is consistent with legal events bearing some pecuniary consequences.

More importantly, for our research questions, we observe that the relation between net flows and exposure to negative legal events is an order of magnitude larger for ESG funds than regular active funds. When controlling for style-time fixed effects, flows to ESG funds decline by an additional 3.350% for a one-standard deviation increase in exposure to legal events.

In columns 3 and 4 of Table 3, we control for the ESG ratings on funds' portfolio companies and past fund flows. The results are robust to the inclusion of these controls. After controlling for ESG ratings, the incremental relation between fund flows and legal exposure in ESG funds remains virtually unchanged. When controlling for past flows, the estimated coefficient is smaller but remains statistically significant.

Because fund investors are more likely to observe the top-10 holdings of funds reported frequently on funds' websites and Morningstar, in the Online Appendix, we provide alternative tests in which we use legal events among the top-10 holdings of the fund instead of all fund holdings. Table A.1 in the Online Appendix shows results are robust to this alternative specification. The estimated magnitude of the relation between legal events and flows is larger when using top-10 holdings than the entire portfolio. This finding is consistent with Agarwal et al. (2022), who document that funds' top-10 holdings are salient for investors' capital allocation decisions.

Overall, these results suggest that ESG funds should be particularly concerned with the risk of corporate misconduct and litigation among their portfolio companies. After controlling style-time fixed effects, across various regression specifications flows to ESG funds are 4.8 to 7.6 times more sensitive to adverse legal events than flows to conventional active funds. Whereas both ESG and conventional investors may have an incentive to avoid legal risk because of its associated pecuniary component, ESG investors appear

more sensitive to legal risk, consistent with regulatory violations and civil lawsuits reflecting episodes in which portfolio companies allegedly caused damages to stakeholders.

### 5.1.2 INCIDENCE OF LEGAL RISK IN FUNDS' PORTFOLIOS

According to the results in Table 3, ESG funds should be more concerned about legal risk in their portfolio than conventional funds. As a result, ESG funds should have lower exposure to legal risk compared to conventional funds with the same investment style. We test this hypothesis using the following regression:

$$Legal\ Exposure_{f,t-3 \rightarrow t} = \eta ESG\ Fund_f + Style-Time\ FE_{ft} + \epsilon_{ft}. \quad (5)$$

If  $\eta < 0$ , then ESG funds have lower exposure to legal risk in their portfolio than conventional funds, consistent with ESG funds' flows being more sensitive to negative legal events.

[Insert Figure 3 here]

We plot the estimate and 95% confidence interval for the coefficient  $\eta$  in Figure 3. We separately consider misconduct, measured by regulatory violations, and controversies, measured by civil litigation. We also consider subsamples of environmental, social, or governance-related legal events. Consistently across all specifications, we find negative and statistically significant estimates for the coefficient  $\eta$ , thus confirming that ESG funds have lower exposure to legal risk compared to conventional funds.

## 5.2 STOCK-LEVEL ANALYSIS

Next, we study the relationship between the level of socially responsible sentiment and firm characteristics, including firm fundamentals, past stock performance, ESG ratings, and legal events. In particular, we validate socially responsible sentiment as a measure of perceived corporate values. If socially responsible sentiment captures the consensus view of ESG investors about a firm's contribution to stakeholder welfare, it should reflect public information about the firm's non-pecuniary values. Consistent with this observation, we find that socially responsible sentiment correlates positively with ESG ratings and firms' past exposure to regulatory fines and civil lawsuits.

### 5.2.1 FIRM-LEVEL CHARACTERISTICS

We start by studying the relationship between socially responsible sentiment, firm fundamentals, and past stock performance in a multivariate setting. To evaluate how socially responsible sentiment varies with firm-level characteristics, we run the following panel regression:

$$SR\ Sentiment_{it} = \beta' X_{it} + FE_{it} + \epsilon_{it}, \quad (6)$$

where the dependent variable,  $SR\ Sentiment_{it}$ , is measured as defined in section 3.1 and  $X_{it}$  is a vector of fundamental and stock-market variables for firm  $i$  at year-quarter  $t$ . These variables, defined in Table 1, include total assets, book-to-market, ROA, leverage, CAPEX, institutional ownership, past annual return, past CAPM beta, past return volatility, and ESG breadth. As fixed effects,  $FE_{it}$ , we use either time fixed effects (year-quarter) or time-industry fixed effects, for which we use the Fama-French 48-industry classification. By using time fixed effects, we control for average time-series variation of sentiment and firm characteristics. By including industry-time fixed effects, we control for comovements between sentiment and firm-level characteristics across industries at any time. We cluster standard errors at the firm level.

[Insert Table 4 here]

We report results in Table 4. In column 1, we do not include fixed effects. In column 2, we include time fixed effects. In column 3, we use industry-time fixed effects. According to the estimates, firms with a higher socially responsible sentiment tend to be smaller in size, less profitable in terms of ROA, and more leveraged. They also possess higher book-to-market ratios. In regard to their past stock-market performance, firms with higher sentiment provided lower returns, carried higher market risk as measured by their CAPM beta, and, as one should expect, were more broadly held by ESG funds, as indicated by a higher ESG breadth.

### 5.2.2 CURRENT ESG RATINGS

We first validate socially responsible sentiment as a measure of perceived corporate values. Specifically, we show that socially responsible sentiment is positively correlated with the ESG ratings assigned by five major ESG rating agencies: KLD, MSCI, Refinitiv, Sustainalytics, and TVL. If ESG investors acquire information about non-pecuniary corporate values, we should expect their holdings to reflect the advice of ESG rating agencies.

First, we compute simple correlations between socially responsible sentiment and the ESG scores obtained from the original ratings, using the methodology described in section 4.1. The results are in Panel A of Table 5. Consistent with our conjecture, we find that socially responsible sentiment highly correlates with all five ESG scores.

[Insert Table 5 here]

Second, we run a regression similar to (6) in which we now include ESG scores individually or combined. By doing so, we control for firm characteristics and industry-time fixed effects, which may drive the correlation between ESG ratings and socially responsible sentiment. Moreover, by including all ESG scores in a single regression, we assess which ones possess the highest predictive power on investors' perception of corporate values as reflected in socially responsible sentiment. Because ESG raters disagree substantially (Avramov et al., 2022; Berg et al., 2022b; Christensen et al., 2022), one might expect ESG ratings to have heterogeneous explanatory power on socially responsible sentiment.

Panel B of Table 5 reports the results. When ESG ratings are included individually in columns 1 to 5, we find that all of them positively correlate with socially responsible sentiment, with highly statistically significant coefficients, even after controlling for firm characteristics and industry-time fixed effects. When combined in a single regression in column 6, we find that ESG ratings have heterogeneous explanatory power on socially responsible sentiment. In particular, MSCI and Refinitiv scores are statistically significant at the 1% level, while Sustainalytics is marginally significant at the 10% level. Therefore, our results suggest that, after controlling for firm characteristics, ESG investors appear to primarily incorporate information from MSCI and Refinitiv among the set of available ESG ratings.

Finally, according to the  $R^2$  in column 6 of Table 5, we conclude that ESG ratings, firm-level characteristics, and time-industry fixed effects explain only 14% of the variance of socially responsible sentiment. A positive correlation between ESG ratings and socially responsible sentiment validates our measure of perceived corporate values. However, the low  $R^2$  suggests that socially responsible sentiment incorporates information in addition to that provided by ESG raters. As we show in section 6.1, socially responsible sentiment does indeed contain information about the future risk of corporate misconduct and firm controversies.

### 5.2.3 PAST CORPORATE MISCONDUCT AND LITIGATION

We provide a second validation of socially responsible sentiment as a measure of perceived corporate values. We now consider firms' track records in terms of past miscon-

duct and controversies, as reflected in past regulatory fines and civil lawsuits, respectively. If socially responsible sentiment is a valid measure of perceived corporate values, firms with worse track records in terms of misconduct and controversies should be characterized by a lower socially responsible sentiment. In other words, compared to other active investors, ESG investors should underweight companies that contributed negatively to stakeholder welfare in the past. For corporate misconduct, we use data on fines and penalties imposed on the firm by US federal and local agencies. To assess companies' exposure to controversies, we use Lequity's data on civil lawsuits filed against the firm in state and federal courts.

We run the following panel regression:

$$SR\ Sentiment_{it} = \gamma Legal\ Event_{i,t-3 \rightarrow t} + \beta' X_{it} + FE_{it} + \epsilon_{it} \quad (7)$$

where the dependent variable,  $SR\ Sentiment_{it}$ , was defined in section 3.1. The variable  $Legal\ Event_{i,t-3 \rightarrow t}$  measures firm  $i$ 's exposure to legal events in the year (four quarters) up to and including quarter  $t$ . As legal events, we consider either regulatory penalties or civil lawsuits filed against the company. Specifically, we define  $Misconduct_{i,t-3 \rightarrow t}$  as an indicator taking the value of one if the firm was fined by a state or federal agency in the four quarters leading up to and including quarter  $t$ . We define  $Litigation_{i,t-3 \rightarrow t}$  as an indicator taking the value of one if the firm was named defendant in a civil lawsuit in the four quarters leading up to and including quarter  $t$ . The vector  $X_{it}$  contains the same firm-level characteristics for firm  $i$  at year-quarter  $t$  used in regression (6), and includes total assets, book-to-market, ROA, leverage, CAPEX, institutional ownership, annual return, CAPM beta, return volatility, and ESG breadth. These firm-level variables are defined in Table 1 in the appendix. As fixed effects,  $FE_{it}$ , we include either time or time-industry fixed effects. We cluster standard errors at the firm level.

[Insert Table 6 here]

We present results in Table 6. We find that companies that experienced a regulatory fine in the previous year exhibit levels of socially responsible sentiment which are reduced by 0.11 to 0.13 units of standard deviation, which is equal to 2.55 bps. An analogous interpretation emerges when examining the link between civil lawsuits and socially responsible sentiment. Firms that were named defendant in civil lawsuits in the previous year exhibit levels of socially responsible sentiment which are reduced by .02 to 0.09 units of standard deviation.

Overall, our results show that ESG investors not only tilt their holdings consistently with ESG ratings but also incorporate past information about companies' track records



regarding stakeholder welfare, as reflected in the legal system. In the next section, we investigate whether ESG investors incorporate forward-looking information on corporate values when forming their portfolios.

## 6 MAIN FINDINGS

In this section, we document that changes in socially responsible sentiment reflect forward-looking information on legal risk and stock performance, as suggested by our framework in section 3.2. Specifically, we show changes in sentiment predict a lower risk of regulatory fines and civil lawsuits in the future. However, they also predict lower risk-adjusted returns in the following quarters.

### 6.1 FUTURE MISCONDUCT AND CONTROVERSIES

Here, we show the revealed preferences of ESG investors contain forward-looking information about future corporate misconduct and controversies. If ESG investors acquire new information about corporate values, they will adjust their holdings accordingly in anticipation of future legal events. Specifically, we show that changes in socially responsible sentiment predict a lower probability of regulatory fines and civil litigation in the future. Furthermore, ESG investors appear to incorporate forward-looking information on firm values specifically related to environmental and labor concerns.

#### 6.1.1 FUTURE MISCONDUCT

In section 5.2, we showed firms with a track record of past misconduct have lower levels of socially responsible sentiment. Now, we study whether changes in socially responsible sentiment predict future episodes of corporate misconduct. To investigate the predictive power of changes in sentiment on misconduct, we run the following linear probability model:

$$Misconduct_{i,t+1 \rightarrow t+4} = \lambda \Delta SR Sentiment_{it} + \beta' X_{it} + FE_{it} + \epsilon_{it} \quad (8)$$

where the dependent variable  $Misconduct_{i,t+1 \rightarrow t+4}$  is an indicator variable taking the value of one if firm  $i$  received a regulatory fine in quarters  $t + 1$  through  $t + 4$ . The main explanatory variable  $\Delta SR Sentiment_{it}$  is the change in  $SR Sentiment_{it}$  from quarter  $t - 1$  to quarter  $t$ . We measure  $SR Sentiment_{it}$  as in section 3.1. In our regressions, we standardize  $\Delta SR Sentiment_{it}$  for ease of interpretation, thus expressing it in units of standard deviation. We express the dependent variable as a percentage. The vector  $X_{it}$  contains the

same firm-level characteristics for firm  $i$  at year-quarter  $t$  used in regression (6), and include total assets, book-to-market, ROA, leverage, CAPEX, institutional ownership, annual return, CAPM beta, return volatility, and ESG breadth. These firm-level variables are defined in Table 1 in the appendix. As fixed effects,  $FE_{it}$ , we include either time or time-industry fixed effects. We cluster standard errors at the firm level.

[Insert Table 7 here]

We present results in the first two columns of Panel A in Table 7. We find that, regardless of the fixed effects we include, an increase in socially responsible sentiment predicts a lower probability of firms being fined by regulators. This effect is statistically significant at the 1% level and economically important. Based on the estimate in column 2, a one standard deviation increase in  $\Delta SR\ Sentiment_{it}$ , which is equal to 1.42 bps, is associated with a 21.6 bps decline in the probability of being fined in the future. Given that, according to our sample, the empirical probability of a firm being fined by US regulators in a one-year period is 23%, this effect represents 1% of the unconditional probability.

One might be concerned that changes in socially responsible sentiment simply reflect changes in the public perception of corporations. To control for changes in the public perception of a firm's corporate values, in column 3 of Table 7, we control for the change in the composite ESG rating. We find that, after controlling for changes in ESG ratings, the predictive power of changes in sentiment on future misconduct remains unchanged. This finding is consistent with ESG funds using their proprietary expertise and data to evaluate companies.

An additional concern is that misconduct is autocorrelated and that ESG funds change their holdings solely in response to observed misconduct. If this were the case, changes in socially responsible sentiment would not contain forward-looking information on future misconduct. Instead, these variables would be spuriously correlated because of their common correlation with past misconduct. To rule out this concern, in column 4 of Panel A in Table 7, we control for past misconduct. Although misconduct is autocorrelated, as indicated by the positive and statistically significant coefficient on past misconduct, the predictive power of changes in socially responsible sentiment and future misconduct remains virtually unchanged. Therefore, changes in socially responsible sentiment appear to reflect the expertise of ESG funds, which use information beyond past misconduct.

Next, we classify our sample of regulatory violations into three different categories: environmental, social, and governance violations. We report results in Panel B of Table 7. ESG investors appear to incorporate mainly information about future environmental misconduct. We do not find any statistically significant relation between changes in socially

responsible sentiment and future social and governance violations. In terms of economic magnitudes, a one standard deviation increase in  $\Delta SR Sentiment_{it}$ , equal to 1.42 bps, is associated with a 23 bps decline in the probability of environmental fines.

### 6.1.2 FUTURE LITIGATION

Next, we show that changes in socially responsible sentiment predict future civil litigation. We proceed as we did for future misconduct and run a regression similar to (8) in which, now, we use  $Litigation_{i,t+1 \rightarrow t+4}$  as a dependent variable. This variable is an indicator taking the value of one if firm  $i$  was named defendant in a civil suit in quarters  $t + 1$  through  $t + 4$ . To measure litigation, we use a novel dataset of civil complaints filed against corporations in state and federal court, which we described in section 4.1.

[Insert Table 8 here]

We report estimates in Table 8. The results are consistent with our findings on future corporate misconduct. In the first two columns of Panel A, we show an increase in socially responsible sentiment predicts a decline in litigation risk in the future. A one standard deviation increase in  $\Delta SR Sentiment_{it}$ , equal to 1.42 bps, is associated with a decline of about 24.3 bps in the probability of future litigation. The magnitude is similar to our estimated predictive relation between changes in sentiment and future misconduct. Given that the average probability of being named defendant in a one-year period is, according to our sample, 28%, this effect represents about 1% of the unconditional probability.

In column 3, we control for changes in the public perception of a firm's non-pecuniary values using changes in ESG ratings. In column 4, we control for past litigation. Similar to what we found for misconduct, our results in these columns indicate that ESG funds possess the expertise to evaluate a firm's exposure to future litigation and utilize incremental information, compared to the one provided by ESG ratings and past litigation.

In Panel B, we separately consider civil litigation related to three different matters: environmental, social, and governance-related matters. We then run predictive regressions of matter-specific litigation on the change in socially responsible sentiment. We find changes in socially responsible sentiment predict litigation risk in all three categories, but the predictability is strongest for social matters. The relation is highly statistically significant. Economically, a one standard deviation increase in  $\Delta SR Sentiment_{it}$ , equal to 1.42 bps, predicts a decline in the risk of social-related litigation equal to 28.4 bps.

### 6.1.3 PLACEBO TESTS WITH ESG INSTITUTIONAL OWNERSHIP

Ownership by ESG funds has been used extensively in the literature as a measure of a firm’s corporate values and incentives to avoid misconduct and controversies (Azar et al., 2021; Bisetti et al., 2023; Chen et al., 2020; Dikolli et al., 2022; Dyck et al., 2019; Gantchev et al., 2022). However, as discussed in section 3, ESG funds may invest in a firm not only because they believe that the firm contributes positively to stakeholder welfare, but also to pursue higher returns.

Using a placebo test, we document that socially responsible sentiment reflects forward-looking information on corporate behavior that is not captured by a simpler measure of ESG institutional ownership. In Table A.2 of the Online Appendix, we repeat the tests of Panel A of Tables 7 and 8 using changes in stock ownership by ESG funds. The results show that changes in ESG institutional ownership do not predict future violations or civil litigation. Therefore, our measure of perceived corporate values reflects the incremental bets ESG funds place on firms as a result of their incentives to avoid corporate misconduct and litigation and their expertise in assessing firms’ contribution to stakeholder welfare.

## 6.2 FUTURE RETURNS

Next, we explore whether stocks that experience an increase in socially responsible sentiment generate lower returns in the subsequent quarter. We start by investigating whether changes in socially responsible sentiment predict the future performance of stocks. In our main tests, we run Fama and Macbeth (1973) regressions to study the cross-sectional relation between changes in sentiment and future return. In the Online Appendix, we also study the performance of quarterly-rebalanced portfolios of stocks based on changes in sentiment. Both sets of tests indicate that an increase in socially responsible sentiment is associated with negative stock performance in the future.

We show that changes in sentiment predict future negative performance while controlling for stock-level characteristics.

Because various firm-level characteristics correlate with socially responsible sentiment and stock return, we control for them using Fama and Macbeth (1973) regressions. We thus run regressions of stock performance on lagged changes in ESG sentiment and firm-level control variables as follows:

$$R_{it+1} = \rho \Delta SR Sentiment_{it} + \beta' X_{it} + \epsilon_{it} \quad (9)$$

where the dependent variable  $R_{it}$  represents stock  $i$ ’s performance in quarter  $t + 1$ . We

use three different measures of stock performance: the stock’s market-adjusted return, calculated as the difference between the stock’s return and the market return in quarter  $t + 1$ ; CAPM Alpha, calculated as the intercept in a CAPM regression of daily excess stock returns on daily excess market returns in quarter  $t + 1$ ; and four-factor alpha, calculated as the intercept in a four-factor regression of daily excess stock returns on daily returns of the Fama-French-Carhart factors in quarter  $t + 1$ .

The main explanatory variable,  $\Delta SR\ Sentiment_{it}$ , is the change in socially responsible sentiment from quarter  $t - 1$  to quarter  $t$  for stock  $i$ . Socially responsible sentiment was defined in section 3.1, and we standardize  $\Delta SR\ Sentiment_{it}$  for ease of interpretation. The vector  $X_{it}$  includes characteristics for firm  $i$  in quarter  $t$ . These firm-level variables, defined in Table 1 in the appendix, include market-cap, book-to-market, ROA, leverage, CAPEX, institutional ownership, annual return, CAPM beta, return volatility, and ESG breadth. We adjust for potential autocorrelation and heteroskedasticity by employing Newey-West standard errors with a lag length of 3. The results are presented in Table 9.

We find that, regardless of the measure of performance we use, the coefficient on  $\Delta SR\ Sentiment_{it}$  is negative and statistically significant. In economic terms, this negative coefficient indicates that a one standard deviation increase in  $\Delta SR\ Sentiment_{it}$ , equal to 1.42 bps, is associated with a decline in annual performance ranging from  $7.5\text{ bps} \times 4 = 30\text{ bps}$  and  $11.8\text{ bps} \times 4 = 47.2\text{ bps}$  in terms of risk-adjusted returns.

[Insert Table 9 here]

Therefore, we find robust evidence that firms deliver lower expected returns after experiencing an improvement in socially responsible sentiment. These findings are consistent with the notion that to fulfill their dual mandate, ESG investors need to trade off risk-adjusted performance for stakeholder welfare in their portfolio.

As a robustness check on our results, in Table A.3 of the Online Appendix, we construct quarterly rebalanced value-weighted portfolios.<sup>15</sup> For each quarter  $t$ , we sort stocks into portfolios based on the change in socially responsible sentiment from quarter  $t - 1$  to quarter  $t$ . We then study the performance of these portfolios in the subsequent quarter,  $t + 1$ . We assess performance using the portfolios’ alpha in a CAPM and a Fama-French-Carhart factors four-factor model, which includes the market (Mkt - RF), size (SMB), value (HML), and momentum (MOM) factors.

Despite the short time series, we find results that are consistent with those we obtained from the Fama and Macbeth (1973) regressions. In particular, changes in sentiment are associated with worse stock performance in the future. An investor that forms

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<sup>15</sup>We leave these results in the Online Appendix because our time series includes only 44 quarters, thus limiting the sample size we can use for statistical inference.

a value-weighted zero-investment portfolio by going long stocks with a positive change in sentiment and shorting stocks with negative changes in sentiment earns a four-factor alpha of -0.339% each quarter. Over the course of a year, this represents a risk-adjusted return of -1.4%.

## 7 CROSS-SECTIONAL HETEROGENEITY

Lastly, we investigate the cross-sectional heterogeneity in the results. Specifically, we show the trade-off between returns and corporate values is more pronounced for more uncertain stocks. We measure uncertainty using return volatility and the dispersion of ESG ratings. In particular, for stocks with higher return volatility and ESG-rating dispersion, we find that ESG investors earn lower returns for the same reduction in exposure to legal risk. This result is consistent with these stocks being harder to evaluate.

### 7.1 RETURN VOLATILITY

Equation 4 and Prediction 3 suggest their volatility is an important source of heterogeneity across stocks. In particular, for stocks with higher volatility, changes in socially responsible sentiment should be associated with lower returns and/or lower exposure to legal risk. By studying the predictability of returns and legal risk for different levels of volatility, we also assess whether the trade-off faced by ESG investors becomes more pronounced for more volatile stocks. If changes in sentiment are associated with lower returns in high-volatility stocks but no lower exposure to legal risk, then the trade-off between legal risk and return is more pronounced for high-volatility stocks. This result would indicate that funds must sacrifice more returns to achieve the same reduction of legal risk in volatile stocks. This pattern, which we document with our empirical tests ahead, is consistent with higher volatility stocks being more difficult to assess for investors.

To assess cross-sectional heterogeneity in the predictive power of changes in sentiment, we run the following regression:

$$Y_{i,t+1} = \delta_1 \Delta SR \text{ Sentiment}_{it} + \delta_2 Ivol_{it} + \delta_3 \Delta SR \text{ Sentiment}_{it} \times Ivol_{it} + \beta' X_{it} + FE_{it} + \epsilon_{it} \quad (10)$$

where  $Y_{i,t+1}$  is an outcome variable representing either future misconduct, future litigation, or future alpha, similar to the outcome variables used in section 6. We use the same controls and fixed effects used in section 6 for predicting future legal events and alphas.

The quantity  $Ivol_{it}$  represents the demeaned idiosyncratic volatility of stock  $i$  in quarter  $t$ . Idiosyncratic volatility is obtained from the standard deviation of the residual of a CAPM regression that uses daily return data within quarter  $t$ . We subtract the unconditional mean idiosyncratic volatility so that coefficient  $\delta_1$  can be interpreted as the relation between changes in sentiment and future outcomes for a stock with average volatility.

If  $\delta_3 < 0$ , the slope of the relation between changes in socially responsible sentiment and legal outcomes is steeper for more volatile stocks. According to our framework in section 3.2, we should find  $\delta_3 < 0$  when considering either future returns, future legal risk, or both. Moreover, based on our reasoning at the beginning of this section, if we find  $\delta_3 < 0$  for returns and  $\delta_3 = 0$  for legal risk, the result would suggest the trade-off between returns and corporate values is more pronounced for more volatile stocks, consistent with these stocks being more difficult to assess.

[Insert Tables 10 and 11 here]

The first two columns of Table 10 report results for misconduct and litigation. Panel A of Table 11 reports results for returns. Similar to our main tests, a change in sentiment is associated with lower legal risk and lower future alpha for stocks with average volatility. That is, we find  $\delta_1 < 0$  even after controlling for volatility and its interaction with changes in sentiment. Idiosyncratic volatility does not correlate systematically with future returns and legal risk after controlling for firm characteristics, except for a marginally significant correlation with the four-factor alpha.

Furthermore, from Table 10, we cannot reject the hypothesis that  $\delta_3 = 0$  when we consider regressions predicting legal risk. The estimates are not only statistically insignificant but also economically negligible. That is, the relation between changes in sentiment and future legal risk does not vary across stocks with different volatility. However, from Table 11, we find that, for more volatile stocks, changes in sentiment are associated with lower future returns, consistent with our theoretical framework. Overall, because ESG investors sacrifice more returns to obtain the same reduction of legal risk in more volatile stocks, our results suggest the trade-off between returns and corporate values is more pronounced for volatile stocks, which are likely more difficult to evaluate.

## 7.2 DISPERSION IN ESG RATINGS

Next, we consider another proxy for uncertainty: dispersion in ESG ratings. If the trade-off between returns and legal risk is more pronounced for more uncertain stocks, we should obtain similar results when we measure uncertainty in terms of dispersion in ESG

ratings. Whereas volatility is a measure of uncertainty about financial returns, ESG-rating dispersion is a measure of uncertainty about non-pecuniary values.

We, therefore, run a regression similar to (10), in which we replace  $Ivol_{it}$  with  $ESG\ Disp_{it}$ , which measures the dispersion in ESG ratings. We calculate dispersion in ESG ratings using the same methodology as Avramov et al. (2022).<sup>16</sup> We then demean ESG-rating dispersion so that coefficient  $\delta_1$  still represents the relation between changes in sentiment and future outcomes for a stock with average ESG-rating disagreement.

Results are in the last two columns of Table 10 for misconduct and litigation and in Panel B of Table 11 for returns. Similar to our results on the cross-section of volatility, we find the trade-off between returns and legal risk is more pronounced for more uncertain stocks. For stocks with higher ESG-rating dispersion, a change in sentiment predicts lower returns and no lower legal risk. A change in sentiment predicts a lower risk of future litigation, although the estimated  $\delta_3$  coefficient is only marginally statistically significant.

## 8 CONCLUSION

As investors increasingly focus on integrating non-pecuniary values into investment decisions, professional ESG investors face incentives to develop expertise and acquire proprietary information to evaluate firms' ethical, environmental, and social impact. With our research, we provide evidence that ESG investors possess such expertise but trade off performance for lower legal risk in their portfolio.

We construct a measure of the socially responsible sentiment of ESG investors. This measure reflects ESG investors' perceptions of a company's non-pecuniary values and summarizes the wisdom of the ESG crowd. Consistent with ESG investors possessing the expertise to evaluate non-pecuniary corporate values, we find that an increase in socially responsible sentiment predicts a lower risk of regulatory fines and civil litigation. Moreover, the predictive power of socially responsible sentiment remains virtually unchanged after controlling for public information contained in ESG ratings and past legal events, consistent with ESG investors utilizing proprietary data or evaluation models. Finally, we show the trade-off between returns and corporate values is costlier for more uncertain stocks. In particular, for stocks with high volatility or high dispersion in ESG ratings, changes in sentiment predict lower future returns for the same decline in legal risk.

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<sup>16</sup>Like in Avramov et al. (2022), for each stock  $i$  and quarter  $t$ , we calculate all the pairwise standard deviations of ESG scores among all raters pairs. We then take the average of these pairwise standard deviations to obtain a measure of ESG-rating disagreement for each stock  $i$  and quarter  $t$ .



Our paper opens multiple avenues for future research. First, researchers can adopt our measure of socially responsible sentiment as a proxy for investors' perception of a firm's non-pecuniary values. Specifically, socially responsible sentiment serves as an alternative to ESG ownership, which, although utilized in existing literature, does not account for the return-driven investments of ESG funds and fails to predict future legal events, as demonstrated in our tests. Second, researchers can use socially responsible sentiment to test whether ESG investors predict additional measures of corporate values, such as green patents, employee satisfaction, and green investments. Third, while we apply our revealed-preference approach to disentangle return-driven and non-pecuniary bets to ESG funds, researchers can apply the same approach to any investor pursuing a dual mandate, such as sustainable private equity funds.

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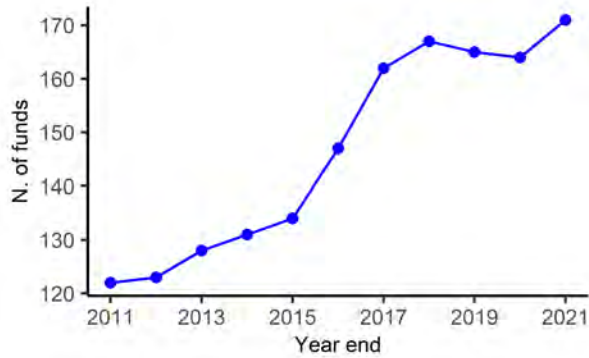
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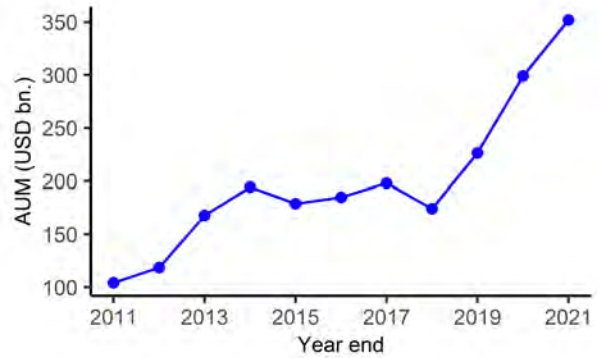
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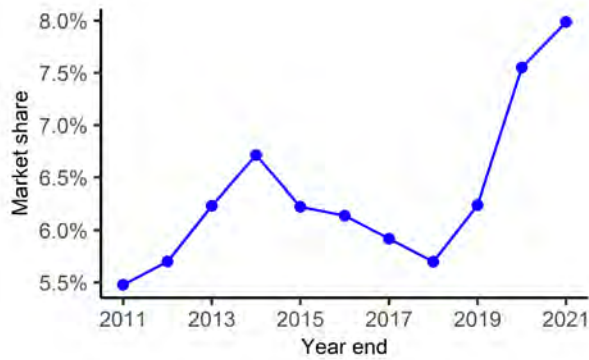
## A FIGURES AND TABLES



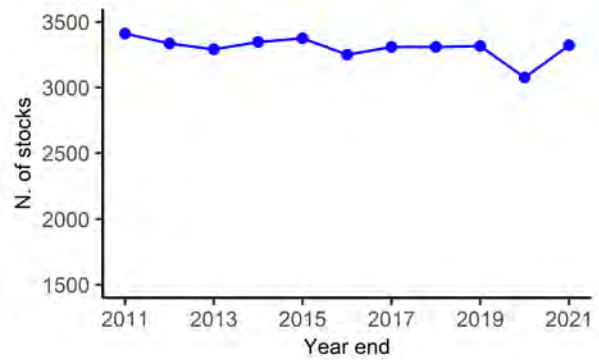
(a) Number of ESG funds



(b) AUM of ESG funds

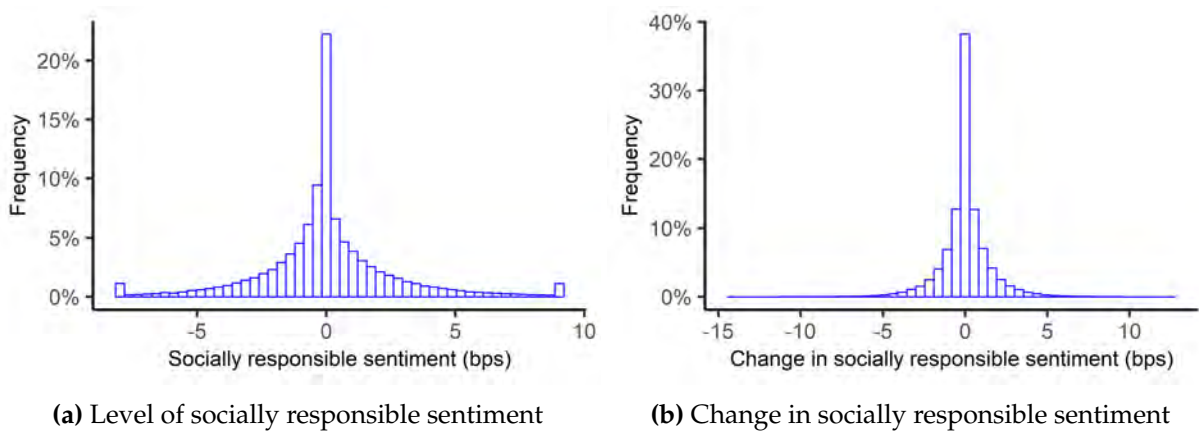


(c) Market share of ESG funds

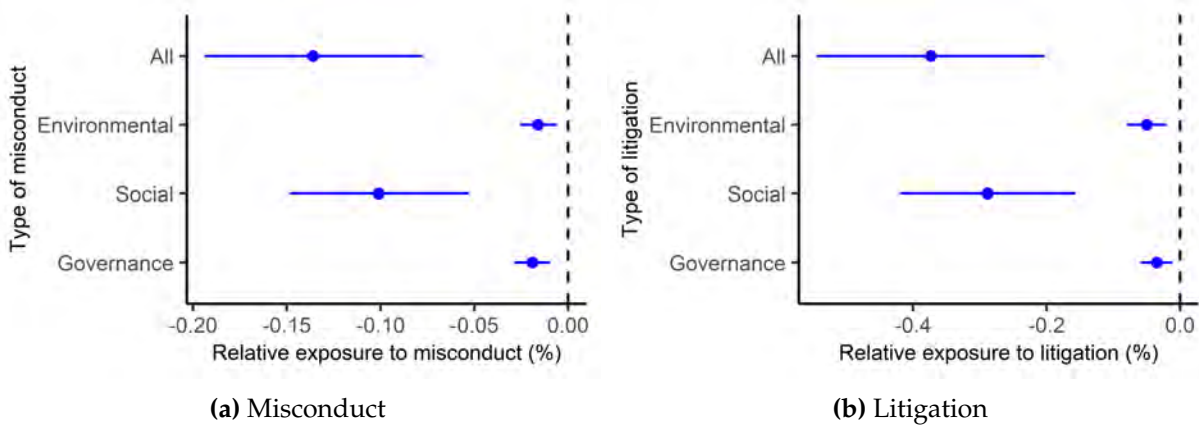


(d) Stocks held by ESG funds

**Figure 1: Trends in ESG investing.** The figures plot the number of ESG funds, their total AUM, the market share in terms of AUM relative to the total assets management by US domestic equity funds, and the number of portfolio companies held by ESG funds.



**Figure 2: Distribution of levels and changes of socially responsible sentiment.** Frequency distribution of the level of socially responsible sentiment and the quarterly changes in socially responsible sentiment in firm-quarter panel data. Sentiment is measured at the firm-quarter level. The change in sentiment is calculated as the quarter-to-quarter change in a firm’s level of sentiment.



**Figure 3: Exposure to legal risk in ESG funds’ portfolios relative to conventional funds’ portfolios.** The figures plot the estimated value and the 95% confidence interval for the coefficient  $\eta$  from regression (5). A negative estimate indicates that ESG funds have lower exposure to legal risk than conventional funds of the same style. Standard errors are clustered at the fund level. We consider all legal events, or subsamples of environmental, social, or governance-related legal events. Figure 3(a) uses regulatory violations as legal events. Figure 3(b) uses civil lawsuits as legal events.



**Table 1: Variable definitions**

Variable	Definition
<i>Sentiment Variables</i>	
SR Sentiment <sub>it</sub>	Computed as the average of the socially responsible bets of ESG funds on stock <i>i</i> in quarter <i>t</i> . We define socially responsible sentiment in section 3.1
ΔSR Sentiment <sub>it</sub>	Defined as the change between <i>t</i> – 1 and <i>t</i> in SR Sentiment <sub>it</sub> .
<i>Firm Variables</i>	
Total Assets <sub>it</sub> (log)	Natural logarithm of a firm’s total assets. Source: Compustat
Market Cap <sub>it</sub> (log)	Natural logarithm of a firm’s market capitalization. Source: CRSP
Book-to-Market <sub>it</sub>	The ratio of the book value of equity to the market value of equity. Source: Compustat.
ROA <sub>it</sub>	Ratio of earnings before interest, taxes, depreciation, and amortization to total assets. Source: Compustat
Leverage <sub>it</sub>	Ratio of long-term debt plus short-term debt to total assets. Source: Compustat
CAPEX <sub>it</sub>	Ratio of firm capital expenditures to total assets. Source: Compustat
Institutional Ownership <sub>it</sub>	The percentage of firm shares held by institutional investors. Source: Thomson Reuters 13F filings.
Annual Return <sub>it</sub>	Cumulative stock return over the 12 months going from <i>t</i> – 12 to <i>t</i> – 1. Source: CRSP.
CAPM Beta <sub>it</sub>	Coefficient obtained by regressing daily firm stock returns on the daily market factor. We require a minimum of 21 days of valid returns in a quarter; otherwise, we code the observation as missing.
Return Volatility <sub>it</sub>	Standard deviation of daily firm stock returns, computed using daily returns in a quarter. We require a minimum of 21 days of valid returns in a quarter; otherwise, we code the observation as missing.
ESG Breadth <sub>it</sub>	Computed as the ratio of the number of ESG funds holding stock <i>i</i> to the total number of ESG funds active at date <i>t</i> .
<i>ESG Rating Variables</i>	
KLD Score <sub>it</sub>	Defined as the sum of all the strengths minus all the concerns. Source: KLD.
MSCI Score <sub>it</sub>	Defined as the MSCI ESG Intangible Value Assessment (UVA). Source: MSCI.
Refinitiv Score <sub>it</sub>	Defined as the ESG Combined Score. Source: Refinitiv.
Sustainalytics Score <sub>it</sub>	Defined as the Sustainalytics Rank. Source: Sustainalytics.
TVL Score <sub>it</sub>	Defined as the Insight Score. Source: TVL.
<i>Corporate Misconduct Variables</i>	
Misconduct <sub>i,t→s</sub>	An indicator variable coded as 1 if the firm is involved in corporate misconduct in the quarters ranging from <i>t</i> to <i>s</i> . We select corporate misconduct classified as environment-, social-, or governance-related. We classify misconduct as environment-related if the “offense group” belongs to the category “environment-related offenses”, or to the category “safety-related offenses”, if those offenses are prosecuted by the “Nuclear Regulatory Commission” agency. We classify misconduct as social-related if the “offense group” belongs to one of the following categories: “consumer-protection-related offenses”; “employment-related offenses”; “healthcare-related offenses”; “safety-related offenses”, if those offenses are not prosecuted by the “Nuclear Regulatory Commission” agency. We classify misconduct as governance-related if the “offense group” belongs to the category “financial offenses”, or if the “primary offense” belongs to one of the following: “False Claims Act and related”, “kickbacks and bribery”, “accounting fraud or deficiencies”, “fraud”, “investor protection violation”, “securities issuance or trading violation”, “false statements”, “insider trading”. We exclude cases related to private litigation. Source: Violation Tracker
Litigation <sub>i,t→s</sub>	An indicator variable coded as 1 if the firm is involved in civil litigation in the quarters ranging from <i>t</i> to <i>s</i> . We select corporate lawsuits classified as environment-, social-, or governance-related. Environment-related lawsuits are any lawsuit whose category type is one of the following: “environmental matter”, “environment”, “environment and land”. Social-related lawsuits are any lawsuit whose category type is one of the following: “discrimination”, “healthcare and pharmaceutical injuries”, “human rights”, “injured workers”, “labor relations”, “worker safety”, “mass injuries”, “wages and benefits”, “product liability”. Governance-related lawsuits are any lawsuit whose category type is one of the following: “fraud and false claims”, “shareholder relations and securities”, “taxes”. Source: Lequity

**Table 2: Summary Statistics**

This table shows mean, standard deviation, 10th percentile, median, 90th percentile, and the number of observations in a quarterly panel of the main firm characteristics used in the paper. The sample period runs from 2011 to 2022. All variables are defined in Table 1 of the Appendix.

	Mean	SD	P10	P50	P90	Observations
SR Sentiment (bps)	-0.00	2.55	-2.72	-0.03	2.79	99,416
$\Delta$ SR Sentiment (bps)	0.00	1.42	-1.45	0.00	1.46	99,416
Total Assets (log \$)	7.93	1.75	5.73	7.85	10.21	99,416
Market Cap (log \$)	7.86	1.61	5.85	7.73	10.03	94,872
Book-to-Market (%)	49.63	46.96	9.66	41.32	99.40	99,416
ROA (%)	0.43	4.67	-2.20	0.76	3.33	99,416
Return Volatility (%)	23.55	22.64	0.00	19.93	51.74	99,416
CAPEX (%)	0.86	1.27	0.01	0.49	2.02	99,416
Institutional Ownership (%)	62.45	33.26	0.00	75.19	94.49	99,416
Annual Return (%)	18.33	65.15	-26.18	11.20	61.66	99,416
CAPM Beta	1.18	0.63	0.49	1.09	1.95	99,416
Return Volatility (%)	2.33	1.36	1.11	1.96	3.99	99,416
ESG Breadth (%)	5.35	4.80	1.29	4.00	11.11	99,416

**Table 3: Fund Flows and Non-Pecuniary Performance**

This table shows the relation between fund flows and the incidence of corporate misconduct or corporate lawsuits in a fund's portfolio. The dependent variable,  $Fund\ Flows_{ft}$ , is computed as  $(TNA_{ft} - TNA_{ft-1}(1 + R_{ft})) / TNA_{ft-1}$ , where  $TNA_{it}$  denote fund  $i$ 's total net assets at the end of quarter  $t$  and  $R_{ft}$  is the fund's net return in quarter  $t$ .  $ESG\ Fund_f$  is an indicator variable taking the value of one if fund  $f$  is an ESG fund.  $Legal\ Exposure_{f,t-4 \rightarrow t-1}$  is calculated as  $\sum_{i=1}^I w_i^{ft} Legal\ Event_{i,t-4 \rightarrow t-1}$ , where  $w_i^{ft}$  is the share of fund  $f$ 's AUM invested in firm  $i$  at the end of quarter  $t$  and  $Legal\ Event_{i,t-4 \rightarrow t-1}$  is an indicator variable taking the value of one if firm  $i$  was fined by a state or federal agency or was named defendant in a civil lawsuit in the four quarters leading up to and including quarter  $t - 1$ .  $Avg.\ ESG\ Rating_{f,t-4 \rightarrow t-1}$  is the average of the fund's holding ESG ratings provided by KLD, MSCI, Refinitiv, Sustainalytics, and TVL in the four quarters leading up to and including quarter  $t - 1$ .  $Fund\ Flows_{f,t-4 \rightarrow t-1}$  is the total net fund flows in the four quarters leading up to and including quarter  $t - 1$  expressed in percentage of the total net assets as of  $t - 4$ . All independent variables are expressed in units of standard deviation. The sample period runs from 2011 to 2022.  $t$ -statistics based on standard errors clustered at the fund level are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level, and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

	Fund Flows $_{ft}$ (%)			
	(1)	(2)	(3)	(4)
ESG Fund $_{it}$	1.685** (2.24)	1.432* (1.87)	1.553** (1.98)	0.681 (1.57)
Legal Exposure $_{i,t-1 \rightarrow t-4}$	-0.407*** (-3.08)	-0.593*** (-3.54)	-0.685*** (-3.59)	-0.257** (-2.47)
ESG Fund $_{it} \times$ Legal Exposure $_{i,t-1 \rightarrow t-4}$	-2.992** (-2.47)	-3.350*** (-2.69)	-3.299*** (-2.64)	-1.944*** (-2.76)
Avg. ESG Rating $_{i,t-1 \rightarrow t-4}$			0.200 (0.76)	
Fund Flows $_{i,t-1 \rightarrow t-4}$				9.030*** (33.95)
Time FE	Yes	Yes	Yes	Yes
Time x Style FE		Yes	Yes	Yes
Observations	68,594	68,594	68,594	68,594
Adjusted $R^2$	0.096	0.100	0.100	0.274

**Table 4: Socially Responsible Sentiment and Firm-Level Characteristics**

This table shows the relation between socially responsible sentiment and contemporaneous firm characteristics. The dependent variable,  $SR\ Sentiment_{it}$ , is computed as the average socially responsible bet of ESG funds on stock  $i$  in quarter  $t$ , as described in section 3.1. All independent variables are expressed in units of standard deviation. The sample period runs from 2011 to 2022.  $t$ -statistics based on standard errors clustered at the firm level are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level, and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

	SR Sentiment $_{it}$		
	(1)	(2)	(3)
Total Assets $_{it}$	-0.552*** (-11.79)	-0.572*** (-11.86)	-0.729*** (-13.35)
Book-to-Market $_{it}$	0.206*** (6.10)	0.222*** (6.12)	0.135*** (4.39)
ROA $_{it}$	-0.049*** (-3.38)	-0.045*** (-3.22)	-0.068*** (-3.94)
Leverage $_{it}$	0.106*** (3.09)	0.101*** (2.92)	0.118*** (3.23)
CAPEX $_{it}$	-0.066*** (-2.91)	-0.057** (-2.49)	-0.026 (-0.90)
Institutional Ownership $_{it}$	0.007 (0.33)	0.011 (0.48)	0.019 (0.79)
Annual Return $_{it}$	-0.043*** (-2.63)	-0.046** (-2.49)	-0.059*** (-2.91)
CAPM Beta $_{it}$	0.035 (1.43)	0.043* (1.76)	0.063** (2.51)
Return Volatility $_{it}$	-0.070*** (-4.90)	-0.083*** (-4.34)	0.016 (0.72)
ESG Breadth $_{it}$	0.624*** (8.16)	0.652*** (8.09)	0.779*** (9.04)
Time FE		Yes	Absorbed
Time x Industry FE			Yes
Observations	99,416	99,416	99,416
Adjusted $R^2$	0.042	0.043	0.070

**Table 5: Socially Responsible Sentiment and ESG Ratings**

This table shows the relation between socially responsible sentiment and contemporaneous ESG Ratings. Panel A shows correlations between a firm’s socially responsible sentiment and the firm’s ESG Ratings. Panel B shows the results of panel regressions of socially responsible sentiment on ESG ratings and firm characteristics. The dependent variable,  $SR\ Sentiment_{it}$ , is computed as the average socially responsible bet of ESG funds on stock  $i$  in quarter  $t$ , as described in section 3.1. ESG ratings come from KLD (column 1), MSCI (column 2), Refinitiv (column 3), Sustainalytics (column 4), and TVL (column 5). In column 6, we include all ratings. Ratings are transformed into scores ranging from 0 to 100 using the methodology described in section 4.1 and are expressed in units of standard deviation. Firm characteristics include all the variables used in Table 4. The sample period runs from 2011 to 2022.  $t$ -statistics based on standard errors clustered at the firm level are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

Panel A: Correlation						
	SR Sentiment $_{it}$	KLD Score $_{it}$	MSCI Score $_{it}$	Refinitiv Score $_{it}$	Sustainalytics Score $_{it}$	TVL Score $_{it}$
SR Sentiment $_{it}$	1.000					
KLD Score $_{it}$	0.031***	1.000				
MSCI Score $_{it}$	0.113***	0.373***	1.000			
Refinitiv Score $_{it}$	0.058***	0.492***	0.370***	1.000		
Sustainalytics Score $_{it}$	0.043***	0.354***	0.272***	0.427***	1.000	
TVL Score $_{it}$	0.048***	0.046***	0.129***	0.037***	0.025***	1.000

Panel B: Multivariate Analysis						
	SR Sentiment $_{it}$					
	(1)	(2)	(3)	(4)	(5)	(6)
KLD Score $_{it}$	0.102** (2.18)					-0.068 (-1.12)
MSCI Score $_{it}$		0.187*** (4.63)				0.163*** (2.89)
Refinitiv Score $_{it}$			0.249*** (5.05)			0.242*** (3.51)
Sustainalytics Score $_{it}$				0.331*** (4.27)		0.184* (1.88)
TVL Score $_{it}$					0.071*** (2.84)	0.043 (1.17)
Firm Characteristics $_{it}$	Yes	Yes	Yes	Yes	Yes	Yes
Time x Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	85,261	79,522	74,449	70,581	83,926	45,963
Adjusted $R^2$	0.098	0.101	0.113	0.110	0.095	0.140

**Table 6: Socially Responsible Sentiment and Past Legal Events**

This table shows the relation between socially responsible sentiment and past corporate misconduct and litigation. The dependent variable,  $SR\ Sentiment_{it}$ , is computed as the average socially responsible bet of ESG funds on stock  $i$  in quarter  $t$ , as described in section 3.1. All independent variables are expressed in units of standard deviation. In the first three columns, the independent variable  $Misconduct_{i,t-3 \rightarrow t}$  is an indicator taking the value of one if the firm was fined by a state or federal agency in the four quarters leading up to and including quarter  $t$ . In the last three columns, the main independent variable  $Litigation_{i,t-3 \rightarrow t}$  is an indicator taking the value of one if the firm was named defendant in a civil lawsuit in the four quarters leading up to and including quarter  $t$ . Firm characteristics include all the variables used in Table 4. The sample period runs from 2011 to 2022.  $t$ -statistics based on standard errors clustered at the firm level are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

	SR Sentiment <sub>it</sub>					
	(1)	(2)	(3)	(4)	(5)	(6)
Misconduct <sub>it</sub>	-0.108*** (-3.37)	-0.106*** (-3.30)	-0.126*** (-3.93)			
Litigation <sub>it</sub>				-0.022*** (-2.90)	-0.090*** (-2.68)	-0.059* (-1.78)
Total Assets <sub>it</sub>	-0.518*** (-11.40)	-0.539*** (-11.48)	-0.684*** (-12.82)	-0.111*** (-9.44)	-0.544*** (-11.44)	-0.707*** (-13.02)
Book-to-Market <sub>it</sub>	0.204*** (6.06)	0.220*** (6.09)	0.132*** (4.33)	0.041*** (5.63)	0.216*** (6.11)	0.132*** (4.35)
ROA <sub>it</sub>	-0.049*** (-3.41)	-0.045*** (-3.22)	-0.071*** (-4.14)	-0.008** (-2.36)	-0.045*** (-3.21)	-0.069*** (-4.00)
Leverage <sub>it</sub>	0.111*** (3.19)	0.105*** (3.04)	0.117*** (3.19)	0.024*** (3.06)	0.104*** (3.08)	0.118*** (3.26)
CAPEX <sub>it</sub>	-0.052** (-2.36)	-0.044** (-1.97)	-0.024 (-0.84)	-0.012** (-2.02)	-0.052** (-2.28)	-0.025 (-0.88)
Institutional Ownership <sub>it</sub>	0.014 (0.65)	0.018 (0.78)	0.025 (1.04)	0.002 (0.47)	0.014 (0.62)	0.021 (0.87)
Annual Return <sub>it</sub>	-0.045*** (-2.67)	-0.046** (-2.52)	-0.059*** (-2.95)	-0.009*** (-2.66)	-0.046** (-2.53)	-0.059*** (-2.94)
CAPM Beta <sub>it</sub>	0.038 (1.55)	0.046* (1.85)	0.064** (2.54)	0.009 (1.64)	0.043* (1.74)	0.062** (2.46)
Return Volatility <sub>it</sub>	-0.072*** (-5.07)	-0.082*** (-4.32)	0.016 (0.70)	-0.015*** (-4.82)	-0.083*** (-4.34)	0.015 (0.67)
ESG Breadth <sub>it</sub>	0.633*** (8.17)	0.660*** (8.10)	0.786*** (9.04)	0.125*** (6.85)	0.664*** (8.25)	0.785*** (9.12)
Time FE		Yes	Absorbed		Yes	Absorbed
Time x Industry FE			Yes			Yes
Observations	99,416	99,416	99,416	99,416	99,416	99,416
Adjusted R <sup>2</sup>	0.044	0.045	0.091	0.043	0.045	0.090

**Table 7: Changes in Socially Responsible Sentiment and Future Misconduct**

This table shows the relation between changes in socially responsible sentiment and future corporate misconduct.  $\Delta SR\text{ Sentiment}_{it}$  is the change in socially responsible sentiment from quarter  $t - 1$  to quarter  $t$  for firm  $i$ , and it is expressed in units of standard deviation. In Panel A, the dependent variable is an indicator taking the value of one if the firm is fined by a federal or local government agency in the subsequent four quarters. In Panel B, we separately consider regulatory fines related to environmental, social, and governance violations in quarters  $t + 1$  through  $t + 4$ .  $\Delta ESG\text{ Rating}_{it}$  measures the change in the combined ESG score assigned to firm  $i$  by KLD, MSCI, Refinitiv, Sustainalytics, and TVL. Firm characteristics include all variables in Table 4. The sample period runs from 2011 to 2022.  $t$ -statistics based on standard errors clustered at the firm level are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

Panel A: All Misconduct Categories				
	Misconduct $_{i,t+1 \rightarrow t+4}$			
	(1)	(2)	(3)	(4)
$\Delta SR\text{ Sentiment}_{it}$	-0.256*** (-2.78)	-0.216** (-2.39)	-0.216** (-2.39)	-0.209** (-2.16)
$\Delta ESG\text{ Rating}_{it}$			0.135 (0.28)	
Misconduct $_{i,t-4 \rightarrow t-1}$				0.371*** (33.54)
Firm Characteristics $_{it}$	Yes	Yes	Yes	Yes
Time FE	Yes	Absorbed	Absorbed	Absorbed
Time x Industry FE		Yes	Yes	Yes
Observations	96,921	96,921	96,921	96,921
Adjusted $R^2$	0.167	0.291	0.291	0.392

Panel B: Specific Misconduct Categories				
	Misconduct $_{i,t+1 \rightarrow t+4}$ by category			
	Environment (1)	Social (2)	Governance (3)	
$\Delta SR\text{ Sentiment}_{it}$	-0.230*** (-3.28)	-0.090 (-0.99)	-0.044 (-0.97)	
Firm Characteristics $_{it}$	Yes	Yes	Yes	Yes
Time x Industry FE	Yes	Yes	Yes	Yes
Observations	96,921	96,921	96,921	96,921
Adjusted $R^2$	0.086	0.129	0.061	

**Table 8: Changes in Socially Responsible Sentiment and Future Litigation**

This table shows the relation between changes in socially responsible sentiment and future civil litigation.  $\Delta SR\ Sentiment_{it}$  is the change in socially responsible sentiment from quarter  $t - 1$  to quarter  $t$  for firm  $i$ , and is expressed in units of standard deviation. In Panel A, the dependent variable is an indicator taking the value of one if the firm is named defendant in a civil lawsuit at a federal or state court in the subsequent four quarters. In Panel B, we separately consider civil lawsuits related to environmental, social, and governance matters in quarters  $t + 1$  through  $t + 4$ .  $\Delta ESG\ Rating_{it}$  measures the change in the combined ESG score assigned to firm  $i$  by KLD, MSCI, Refinitiv, Sustainalytics, and TVL. Firm characteristics include all variables in Table 4. The sample period runs from 2011 to 2022.  $t$ -statistics based on standard errors clustered at the firm level are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

Panel A: All Lawsuit Categories				
	Litigation $_{i,t+1 \rightarrow t+4}$			
	(1)	(2)	(3)	(4)
$\Delta SR\ Sentiment_{it}$	-0.288*** (-3.42)	-0.243*** (-2.91)	-0.243*** (-2.91)	-0.201** (-2.36)
$\Delta ESG\ Rating_{it}$			0.089 (0.19)	
Litigation $_{i,t-4 \rightarrow t-1}$				0.411*** (38.72)
Firm Characteristics $_{it}$	Yes	Yes	Yes	Yes
Time FE	Yes	Absorbed	Absorbed	Absorbed
Time x Industry FE		Yes	Yes	Yes
Observations	96,921	96,921	96,921	96,921
Adjusted $R^2$	0.181	0.229	0.229	0.402

Panel B: Specific Lawsuit Categories				
	Litigation $_{i,t+1 \rightarrow t+4}$ by category			
	Environment (1)	Social (2)	Governance (3)	
$\Delta SR\ Sentiment_{it}$	-0.114* (-1.85)	-0.284*** (-3.41)		-0.104* (-1.75)
Firm Characteristics $_{it}$	Yes	Yes		Yes
Time x Industry FE	Yes	Yes		Yes
Observations	96,921	96,921		96,921
Adjusted $R^2$	0.101	0.176		0.083



**Table 9: Changes in Socially Responsible Sentiment and Future Stock Performance**

This table shows estimates from Fama and Macbeth (1973) regressions of stock performance on lagged changes in socially responsible sentiment and firm characteristics. The dependent variable is stock performance in quarter  $t + 1$  and it is measured as the quarterly return in excess of the market (column 1), quarterly CAPM alpha (column 2), and quarterly four-factor alpha (column 6), for which we used the four Fama-French-Carhart factors. Quarterly alphas are estimated from daily returns in the quarter. All returns are expressed as percentages.  $\Delta SR Sentiment_{it}$  is the change in socially responsible sentiment from quarter  $t - 1$  to quarter  $t$  for firm  $i$  and is expressed in units of standard deviations. The sample period runs from 2011 to 2022. We adjust for potential autocorrelation and heteroskedasticity by employing Newey-West standard errors with a lag length of three quarters.  $t$ -statistics are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level, and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

	Market-Adjusted Return $_{it+1}$ (1)	CAPM Alpha $_{it+1}$ (2)	Four-Factor Alpha $_{it+1}$ (3)
$\Delta SR Sentiment_{it}$	-0.118*** (-3.77)	-0.091** (-2.69)	-0.075** (-2.26)
Size $_{it}$	-0.186 (-1.26)	-0.052 (-0.33)	-0.271* (-2.02)
Book-to-Market $_{it}$	0.196 (0.29)	0.201 (0.30)	0.458 (1.67)
ROA $_{it}$	28.365*** (6.80)	28.675*** (6.55)	25.028*** (8.25)
Leverage $_{it}$	0.410 (0.56)	1.096 (1.40)	1.051* (1.86)
CAPEX $_{it}$	-22.352 (-1.33)	-26.160 (-1.57)	-18.292 (-1.30)
Institutional Ownership $_{it}$	0.926*** (6.72)	0.809*** (4.79)	0.622*** (3.23)
CAPM Beta $_{it}$	-0.009 (-0.01)	-0.855* (-1.80)	-0.660* (-1.98)
Annual Return $_{it}$	-0.021 (-0.05)	-0.108 (-0.27)	-0.257 (-0.94)
Return Volatility $_{it}$	22.503 (0.79)	-28.819 (-1.47)	7.825 (0.49)
ESG Breadth $_{it}$	1.567 (0.87)	-1.298 (-0.64)	-2.571 (-1.22)
Observations	99,538	99,538	99,538
Adjusted $R^2$	0.087	0.073	0.042

**Table 10: Changes in Socially Responsible Sentiment and Future Legal Risk: Cross-Sectional Heterogeneity**

This table explores how the relation between changes in socially responsible sentiment and future corporate misconduct or litigation changes based on different values of idiosyncratic volatility and ESG rating disagreement. In columns 1 and 2, we interact changes in socially responsible sentiment between quarter  $t - 1$  and quarter  $t$  with the idiosyncratic volatility of firm  $i$  in quarter  $t$ ,  $Ivol_{it}$ . In columns 3 and 4, we interact changes in socially responsible sentiment between quarter  $t - 1$  and quarter  $t$  with the ESG-rating dispersion of firm  $i$  in quarter  $t$ ,  $ESG\ Disp_{it}$ .  $\Delta SR\ Sentiment_{it}$  is the change in socially responsible sentiment from quarter  $t - 1$  to quarter  $t$  for firm  $i$ , and it is expressed in units of standard deviation. In columns 1 and 3, the dependent variable,  $Misconduct_{i,t+1 \rightarrow t+4}$ , is an indicator taking the value of one if the firm is fined by a federal or local government agency in the subsequent four quarters. In columns 2 and 4, the dependent variable,  $Litigation_{i,t+1 \rightarrow t+4}$ , is an indicator taking the value of one if the firm is named defendant in a civil lawsuit at a federal or state court in the subsequent four quarters. Idiosyncratic volatility is computed as the standard deviation of the residuals from a regression of daily returns over a quarter on the daily market factor. Firm-level controls include all variables in Table 4. The sample period runs from 2011 to 2022.  $t$ -statistics based on standard errors clustered at the firm level are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

	Misconduct $_{i,t+1 \rightarrow t+4}$ (1)	Litigation $_{i,t+1 \rightarrow t+4}$ (2)	Misconduct $_{i,t+1 \rightarrow t+4}$ (3)	Litigation $_{i,t+1 \rightarrow t+4}$ (4)
$\Delta SR\ Sentiment_{it}$	-0.170* (-1.72)	-0.234** (-2.54)	-0.186* (-1.95)	-0.226*** (-2.67)
$Ivol_{it}$	0.201 (0.60)	-0.433 (-1.20)		
$\Delta SR\ Sentiment_{it} \times Ivol_{it}$	0.011 (0.09)	0.012 (0.09)		
$ESG\ Disp_{it}$			0.322 (1.05)	-0.040 (-0.13)
$\Delta SR\ Sentiment_{it} \times ESG\ Disp_{it}$			-0.129 (-1.20)	0.157* (1.67)
Firm Characteristics $_{it}$	Yes	Yes	Yes	Yes
Time x Industry FE	Yes	Yes	Yes	Yes
Observations	96,921	96,921	96,921	96,921
$R^2$	0.305	0.247	0.305	0.247

**Table 11: Changes in Socially Responsible Sentiment and Future Stock Performance: Cross-Sectional Heterogeneity**

This table shows estimates from Fama and Macbeth (1973) regressions of stock performance on lagged changes in socially responsible sentiment interacted with idiosyncratic volatility or ESG rating disagreement. In Panel A, we interact changes in socially responsible sentiment between quarter  $t - 1$  and quarter  $t$  with the idiosyncratic volatility of firm  $i$  in quarter  $t$ ,  $Ivol_{it}$ . In Panel B, we interact changes in socially responsible sentiment between quarter  $t - 1$  and quarter  $t$  with the ESG-rating dispersion of firm  $i$  in quarter  $t$ ,  $ESG\ Disp_{it}$ . The dependent variable is stock performance in quarter  $t + 1$  and it is measured as the quarterly return in excess of the market (column 1), quarterly CAPM alpha (column 2), and quarterly four-factor alpha (column 6), for which we used the four Fama-French-Carhart factors. Quarterly alphas are estimated from daily returns in the quarter. All returns are expressed as percentages.  $\Delta SR\ Sentiment_{it}$  is the change in socially responsible sentiment from quarter  $t - 1$  to quarter  $t$  for firm  $i$  and is expressed in units of standard deviations. Idiosyncratic volatility is computed as the standard deviation of the residuals from a regression of daily returns over a quarter on the daily market factor. Firm characteristics include all variables used in Table 4. The sample period runs from 2011 to 2022. We adjust for potential autocorrelation and heteroskedasticity by employing Newey-West standard errors with a lag length of three quarters.  $t$ -statistics are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level, and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

Panel A: Heterogeneity in Idiosyncratic Volatility			
	Market-Adjusted Return $_{it+1}$ (1)	CAPM Alpha $_{it+1}$ (2)	Four-Factor Alpha $_{it+1}$ (3)
$\Delta SR\ Sentiment_{it}$	-0.200*** (-2.87)	-0.155** (-2.14)	-0.128* (-1.85)
$Ivol_{it}$	0.254 (0.55)	0.271 (0.59)	0.712* (1.98)
$\Delta SR\ Sentiment_{it} \times Ivol_{it}$	-0.185** (-2.44)	-0.146** (-2.31)	-0.121** (-2.04)
Firm Characteristics $_{it}$	Yes	Yes	Yes
Observations	99,538	99,538	99,538
Adjusted $R^2$	0.090	0.075	0.044
Panel B: Heterogeneity in ESG Disagreement			
	Market-Adjusted Return $_{it+1}$ (1)	CAPM Alpha $_{it+1}$ (2)	Four-Factor Alpha $_{it+1}$ (3)
$\Delta SR\ Sentiment_{it}$	-0.125*** (-4.74)	-0.095*** (-2.78)	-0.079** (-2.59)
$ESG\ Disp_{it}$	-0.025 (-0.32)	-0.041 (-0.59)	-0.030 (-0.38)
$\Delta SR\ Sentiment_{it} \times ESG\ Disp_{it}$	-0.079** (-2.16)	-0.069* (-1.71)	-0.075* (-1.94)
Firm Characteristics $_{it}$	Yes	Yes	Yes
Observations	99,538	99,538	99,538
Adjusted $R^2$	0.088	0.074	0.043

# ONLINE APPENDIX

**Table A.1: Fund Flows and the Non-Pecuniary Performance of the Top 10 Holdings**

This table shows the relation between fund flows and the incidence of corporate misconduct or corporate lawsuits among a fund's top 10 holdings. The dependent variable,  $Fund\ Flows_{ft}$ , is computed as  $(TNA_{ft} - TNA_{ft-1}(1 + R_{ft}))/TNA_{ft-1}$ , where  $TNA_{it}$  denote fund  $i$ 's total net assets at the end of quarter  $t$  and  $R_{ft}$  is the fund's net return in quarter  $t$ .  $ESG\ Fund_f$  is an indicator variable taking the value of one if fund  $f$  is an ESG fund.  $Legal\ Exposure_{f,t-4 \rightarrow t-1}$  is calculated as  $\sum_{i=1}^I w_i^{ft} Legal\ Event_{i,t-4 \rightarrow t-1}$ , where  $w_i^{ft}$  is the share of fund  $f$ 's AUM invested in firm  $i$  at the end of quarter  $t$  and  $Legal\ Event_{i,t-4 \rightarrow t-1}$  is an indicator variable taking the value of one if firm  $i$  was fined by a state or federal agency or was named defendant in a civil lawsuit in the four quarters leading up to and including quarter  $t - 1$ .  $Top\ 10\ ESG\ Rating_{f,t-4 \rightarrow t-1}$  is the average of the ESG ratings of the fund's top 10 holdings provided by KLD, MSCI, Refinitiv, Sustainalytics, and TVL in the four quarters leading up to and including quarter  $t - 1$ .  $Fund\ Flows_{f,t-4 \rightarrow t-1}$  is the total net fund flows in the four quarters leading up to and including quarter  $t - 1$  expressed in percentage of the total net assets as of  $t - 4$ . All independent variables are expressed in units of standard deviation. The sample period runs from 2011 to 2022.  $t$ -statistics based on standard errors clustered at the firm level are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level, and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

	Fund Flows $_{ft}$ (%)			
	(1)	(2)	(3)	(4)
ESG Fund $_f$	6.709*** (3.47)	6.572*** (3.41)	6.571*** (3.41)	4.148*** (3.38)
Top 10 Legal Event $_{f,t-4 \rightarrow t-1}$	-1.305*** (-2.59)	-1.328** (-2.47)	-1.291** (-2.45)	-0.694* (-1.86)
ESG Fund $_f \times$ Top 10 Legal Event $_{f,t-4 \rightarrow t-1}$	-3.876** (-2.00)	-3.728* (-1.93)	-3.787* (-1.96)	-2.744** (-2.22)
Top 10 ESG Rating $_{f,t-1 \rightarrow t-4}$			-0.102 (-0.56)	
Fund Flows $_{f,t-1 \rightarrow t-4}$				9.862*** (33.93)
Time FE	Yes	Yes	Yes	Yes
Time x Style FE		Yes	Yes	Yes
Observations	68,594	68,594	68,594	68,594
Adjusted $R^2$	0.096	0.099	0.099	0.274

**Table A.2: Changes in ESG Institutional Ownership, Future Misconduct, and Future Litigation**

This table shows the relation between changes in ownership by ESG funds, future misconduct, and future civil litigation.  $\Delta ESG\ Ownership_{it}$  is the change in the fraction of firm  $i$ 's outstanding shares held by ESG funds from quarter  $t - 1$  to quarter  $t$ , and it is expressed in units of standard deviation. In Panel A, the dependent variable is an indicator taking the value of one if the firm is fined by a federal or local government agency in the subsequent four quarters. In Panel B, the dependent variable is an indicator taking the value of one if the firm is named defendant in a civil lawsuit at a federal or state court in the subsequent four quarters. Firm characteristics include all variables in Table 4. The sample period runs from 2011 to 2022.  $t$ -statistics based on standard errors clustered at the firm level are reported in parentheses. \* denotes significance at the 10% level, \*\* denotes significance at the 5% level and \*\*\* denotes significance at the 1% level. All variables are defined in Table 1 of the Appendix.

Panel A: Misconduct				
	Misconduct $_{i,t+1 \rightarrow t+4}$			
	(1)	(2)	(3)	(4)
$\Delta ESG\ Ownership_{it}$	-0.173 (-1.64)	-0.035 (-0.35)	-0.035 (-0.34)	-0.035 (-0.36)
$\Delta ESG\ Rating_{it}$			-0.287 (-0.56)	
Misconduct $_{i,t-4 \rightarrow t-1}$				0.395*** (34.66)
Firm Characteristics $_{it}$	Yes	Yes	Yes	Yes
Time FE	Yes	Absorbed	Absorbed	Absorbed
Time x Industry FE		Yes	Yes	Yes
Observations	96,921	96,921	96,921	96,921
Adjusted $R^2$	0.164	0.290	0.290	0.395
Panel B: Litigation				
	Litigation $_{i,t+1 \rightarrow t+4}$			
	(1)	(2)	(3)	(4)
$\Delta ESG\ Ownership_{it}$	-0.091 (-0.86)	-0.002 (-0.02)	-0.002 (-0.02)	-0.090 (-0.85)
$\Delta ESG\ Rating_{it}$			-0.137 (-0.29)	
Misconduct $_{i,t-4 \rightarrow t-1}$				0.450*** (40.74)
Firm Characteristics $_{it}$	Yes	Yes	Yes	Yes
Time FE	Yes	Absorbed	Absorbed	Absorbed
Time x Industry FE		Yes	Yes	Yes
Observations	96,921	96,921	96,921	96,921
Adjusted $R^2$	0.181	0.229	0.229	0.402

**Table A.3: Changes in Socially Responsible Sentiment and Future Stock Performance: Quarterly-Rebalanced Portfolios**

This table shows estimates from factor regressions using quarterly value-weighted portfolio and factor returns. The dependent variables are excess returns of portfolios formed based on changes in sentiment. In Panel A, we use the CAPM model; in Panel B the factors are the four Fama-French-Carhart factors. At the end of each quarter  $t$ , we sort stocks into portfolios using changes in socially responsible sentiment from quarter  $t - 1$  to  $t$ . We then consider the portfolios' returns in quarter  $t + 1$ . We consider portfolios of stocks with negative changes in socially responsible sentiment (column 1), portfolios of stocks with positive changes in socially responsible sentiment (column 2), long-short portfolios that buy stocks with positive changes in socially responsible sentiment and short stocks with negative changes in socially responsible sentiment (column 3), portfolios of stocks in the bottom quintile by changes in socially responsible sentiment (column 4), portfolios of stocks in the top quintile by changes in socially responsible sentiment (column 5), and long-short portfolios that buy stocks in the top quintile by changes in socially responsible sentiment and short stocks in the bottom quintile by changes in socially responsible sentiment (column 6). Returns are expressed as percentages. The sample period runs from 2011 to 2022.  $t$ -statistics based on heteroskedasticity-robust standard errors are reported in parentheses. \*, \*\*, and \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Table 1 of the Appendix.

Panel A: CAPM						
	Excess Returns in Quarter $t + 1$ of Portfolios Sorted by $\Delta SR Sentiment_{it}$					
	Neg. - RF (1)	Pos. - RF (2)	Pos. -Neg. (3)	Q1 - RF (4)	Q5 - RF (5)	Q5 - Q1 (6)
Alpha	1.274* (1.91)	0.921 (1.35)	-0.353*** (-2.86)	1.541* (1.99)	1.257 (1.57)	-0.284*** (-2.78)
Mkt $_{t+1}$ -RF $_{t+1}$	0.269* (1.87)	0.255 (1.62)	-0.014 (-0.48)	0.308* (1.76)	0.284 (1.55)	-0.023 (-0.85)
N. Quarters	44	44	44	44	44	44
Adjusted $R^2$	0.058	0.051	0.005	0.057	0.046	0.021
Panel B: Fama-French-Carhart 4-factor Model						
	Excess Returns in Quarter $t + 1$ of Portfolios Sorted by $\Delta SR Sentiment_{it}$					
	Neg. - RF (1)	Pos. - RF (2)	Pos. -Neg. (3)	Q1 - RF (4)	Q5 - RF (5)	Q5 - Q1 (6)
Alpha	1.369** (2.15)	1.030 (1.63)	-0.339** (-2.57)	1.676** (2.37)	1.417* (1.95)	-0.259** (-2.69)
Mkt $_{t+1}$ -RF $_{t+1}$	0.134 (0.76)	0.082 (0.44)	-0.052 (-1.47)	0.169 (0.79)	0.094 (0.43)	-0.075** (-2.44)
SMB $_{t+1}$	0.200 (0.68)	0.244 (0.84)	0.044 (0.81)	0.143 (0.45)	0.210 (0.64)	0.067 (1.51)
HML $_{t+1}$	-0.216 (-1.12)	-0.150 (-0.80)	0.066* (1.98)	-0.263 (-1.21)	-0.236 (-1.07)	0.027 (0.90)
MOM $_{t+1}$	-0.253 (-1.60)	-0.248 (-1.49)	0.004 (0.15)	-0.314* (-1.69)	-0.345* (-1.73)	-0.030 (-1.27)
N. Quarters	44	44	44	44	44	44
Adjusted $R^2$	0.162	0.147	0.100	0.171	0.173	0.178