Does Sustainable Investing Dull Stock Reactions to Cash Flow News?*

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Abstract

The growing importance of sustainability criteria for investment decisions suggests that cash-flow news may become less significant in determining stock prices. We examine this proposition through earnings announcements, showing that stocks owned by sustainable investors are 45%–58% less sensitive to earnings news. This reduced sensitivity is accompanied by lower trading volume and persists post-announcement, indicating a lasting impact on price formation rather than temporary mispricing. We investigate the reasons behind the weaker earnings response and find that it cannot be explained by differences in earnings news content, market anticipation, or ownership by other investor types. Calibrating a flexible present value framework reveals that lower earnings persistence in high-sustainable-ownership stocks accounts for a large part of the effect. However, our analysis also implies a 1%–3% reduced discount rate for stocks with high sustainable ownership in order to fully align the model-implied price response with the observed data.

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1 Introduction

Traditional finance posits that stock prices are driven by discounted expected future cash flows, linking price shifts to changes in cash flow expectations. This principle assumes that future cash flows are paramount for investors who set prices. However, the investment landscape is evolving as an increasing number of investors integrate "sustainability" considerations, such as ESG (environmental, social, and governance) factors, into their strategies. This shift raises a crucial question: How does sustainable investing affect the traditional link between future cash flows and stock prices?

We tackle this question using earnings announcements, a prime scenario for examining stock price reactions to cash flow news. Typically, significant deviations in reported earnings from forecasts cause notable stock price movements, reflecting shifts in investor expectations about future cash flows. This pattern has been well-documented in finance research over the past decades, with foundational studies by Ball and Brown (1968), Bernard and Thomas (1989), and Bernard and Thomas (1990). By focusing on this established context, we aim to uncover whether the presence of sustainable investors alters these well-known market behaviors.

Our study specifically examines whether stocks with significant sustainable investor ownership react differently to earnings surprises. We structure our empirical analysis around a simple framework, based on Pástor et al. (2021), which suggests that stocks with higher ownership by sustainable investors are likely to show a weaker price response to earnings news. In these stocks, the price component driven by sustainability preferences is substantial relative to that driven by future cash flows. Since cash flow news impacts only the cash-flow component, announcement-day returns for stocks with high sustainable ownership

are expected to be lower. Our framework also predicts a similar response to both positive and negative news, with no price convergence following the announcement. In our empirical work, we test these predictions to examine the sustainability channel and quantify its effects on the cost of capital using an assumption-free present value approach.

Figure 1 illustrates our key finding: the relationship between earnings surprises (X-axis) and abnormal stock returns on the announcement day (Y-axis) differs for stocks with high and low sustainable ownership. Generally, larger earnings surprises lead to higher returns, but we find that stocks with high sustainable ownership exhibit a diminished response to earnings news. This pattern holds for both positive and negative news, and it is most pronounced during extreme earnings events. We define sustainable investors using the value-weighted average ESG scores of their portfolio holdings, with data from MSCI ESG, MSCI KLD, and Refinitiv ESG, as detailed in Section 2. Despite variations in these datasets (see Berg et al., 2022), our results remain consistent, as shown in Panels (a)–(c).

Building on this foundational pattern, we quantify the impact of sustainable ownership using the methodology proposed by DellaVigna and Pollet (2009). Our empirical setup compares stock price reactions to positive versus negative news, across varying levels of sustainable ownership. In the context of Figure 1, this methodology estimates the differences between the slopes of the green and brown lines. Our empirical results in Section 3 show that the immediate price response to news is significantly weaker for stocks with high sustainable ownership, ranging from 45% to 58%, depending on the dataset. Our estimates are robust and not confounded by several well-documented factors, such as the "Friday" effect (DellaVigna and Pollet, 2009), macroeconomic news effects, analyst following (Hirshleifer and Sheng, 2022), clustering of announcements (Hirshleifer et al., 2009), or overall market returns on the announcement day (Gulen and Hwang, 2012).

Our subsequent analysis explores the price dynamics following the announcement day to distinguish between three scenarios. First, the dampened price response of stocks with high sustainable ownership might present an arbitrage opportunity for investors who place greater value on future cash flows, leading to gradual price convergence post-announcement. Second, prices might continue to diverge due to the tendency for prices to "drift" after an announcement, as some investors act immediately while others react with a delay, potentially amplifying the initial differential response (Hong and Stein, 1999; Fedyk, 2024). Lastly, prices might neither converge nor diverge further, permanently reflecting investors' aggregated preferences given the updated information. Our examination reveals that prices do not converge; instead, they tend to diverge further in several tests. For instance, MSCI KLD data shows that the delayed response of stock prices to news is approximately 77% weaker for stocks with high sustainable ownership, indicating a significantly weaker price drift. Other tests yield mixed results, but collectively, these findings suggest that the influence of sustainable ownership is a permanent factor in stock prices rather than temporary mispricing corrected by arbitrageurs.

In our primary analysis, we utilize three distinct datasets, two selection criteria of positive and negative earnings surprises, and two measures of sustainable ownership—one based on discrete cutoffs and the other being continuous—resulting in 12 unique regression specifications, additionally enhanced with variations in fixed effects and control variables. We consistently observe similar magnitudes across these specifications. To further validate our findings, we examine whether the dampened price response of high-sustainable-ownership stocks is accompanied by reduced trading volume, revealing a 68% to 83% decrease in abnormal trading volume on announcement days compared to low-sustainable-ownership stocks. We also consider the potential confounding effects of heterogeneous investors, as Starks et al.

(2023) suggest that long-horizon investors are less likely to sell after negative earnings surprises. Controlling for investor horizon, our results remain robust. Lastly, we confirm that our main findings do not appear in the 1980s and 1990s, when sustainable investing was less prevalent, underscoring the impact of contemporary investor preferences.

To round off our main analysis, we compare stocks with high and low ESG scores instead of conditioning on sustainable ownership and find no significant difference in stock price responses to earnings surprises. This result suggests that our observed pricing effects stem from investors' preferences for sustainable stocks rather than the stocks' ESG attributes themselves. While there is a positive correlation (28% to 65%, depending on the dataset) between ESG scores and sustainable ownership, this indicates that a stock's ESG attributes and investor sustainability preferences do not perfectly align.

In the second half of the paper, we explore why stocks with high sustainable ownership show a dampened price response to cash flow news. It is possible that earnings announcements are less informative for these stocks due to differences in news content, the nature of the investor base, or market anticipation. We investigate these channels from four angles and find no supporting evidence. Specifically, we (i) confirm that SUEs are not smaller for high-sustainable-ownership stocks; (ii) demonstrate that earnings surprises predict future dividends equally for both high- and low-sustainable-ownership stocks; (iii) observe that the pre-announcement drift does not offset the smaller earnings-day response; and (iv) show that passive ownership effects, as noted by Sammon (2024), do not drive our results.

Next, we investigate whether earnings have lower persistence for stocks with high sustainable ownership, which could explain the reduced importance of earnings news for these stocks. Using the methodology by Kormendi and Lipe (1987), we estimate an autoregressive

process on quarterly earnings changes, interacting the lags with indicators for sustainable ownership. Our findings reveal that earnings changes for high-sustainable-ownership firms are indeed less persistent, leading to a smaller present value of cash flow revisions. This difference in earnings persistence accounts for a substantial part, but not all, of the dampened stock price response to cash flow news.

After thoroughly examining the cash flow dimension, we infer that the remaining unexplained dampened stock price response is due to differences in discount rates between firms with high and low sustainable ownership. Recent literature debates whether sustainable firms have lower discount rates and, consequently, a lower cost of capital compared to less sustainable firms. In our context, lower discount rates lead to higher firm valuations and thus reduce the relative impact of short-term cash flows on overall firm value.

Using the estimated cash flow processes, we evaluate the implied discount rate differences that match the observed differences in earnings responses. We find that a 45% dampened earnings response corresponds to a 1% difference in discount rates, while a 58% dampened response aligns with a 3% difference. In summary, our results show that moderately lower discount rates for high-sustainable-ownership firms fully explain the reduced stock price response to cash flow news. If discount rates were identical for both groups, our findings would partly remain unexplained.

Our study bridges two significant bodies of literature in finance: one that delves into how financial markets respond to fundamental information and another that explores the impact of sustainable investing on asset prices. The seminal works by Ball and Brown (1968), Bernard and Thomas (1989), and Bernard and Thomas (1990) have long established the centrality of understanding how the market incorporates cash flow information during

earnings announcements. A key insight from this research is the substantial variability in stock responses to earnings news, influenced by factors such as limited attention (DellaVigna and Pollet, 2009; Hirshleifer et al., 2009), sentiment (Mian and Sankaraguruswamy, 2012), and behavioral biases (Hartzmark and Shue, 2018). Closer to our focus, Hotchkiss and Strickland (2003) and Sammon (2024) have demonstrated the influence of firms' ownership structure on earnings responses, particularly emphasizing momentum and growth investors as well as passive investors.

Our emphasis on a different type of investors is driven by the burgeoning literature on sustainability preferences and their repercussions on asset prices. Recent research models equilibrium prices in settings where investors harbor non-pecuniary investment motives alongside conventional cash flow preferences (e.g., Pástor et al., 2021; Pedersen et al., 2021; Baker et al., 2022). Fama and French (2007) propose that investor "tastes" exert a lasting impact on stock prices, diverging from disagreements that lead to temporary mispricing. Goldstein et al. (2024) anticipate that sustainable investors can render stock prices less informative about cash flows. Our empirical findings validate these predictions by illustrating both the diminished initial response to cash flow news and its persistence over time.

In related work, Cao et al. (2023) employ a similar ownership metric and find that the SUE signal predicts higher future returns in stocks held by socially responsible investors. However, they do not examine the announcement-day effects, as they initiate their investment strategy up to three months after the announcement. Consequently, their empirical design does not capture the disparities in immediate earnings news responses, hindering a comprehensive comparison with longer-term responses.

Finally, Starks et al. (2023) demonstrate that sustainable investors typically exhibit longer

investment horizons and are less inclined to sell stocks following negative earnings news. In contrast, our study places a direct focus on sustainability preferences and their influence on stock prices. Our findings maintain their robustness even when accounting for the influence of investment horizons and apply consistently to both positive and negative news, aligning with the preference channel.

2 Data and Methodology

Our primary dataset is compiled from eight distinct data sources. We provide a concise overview of the dataset construction process here, with more detailed information available in subsequent sections.

We begin by utilizing three distinct stock-level ESG-score datasets—MSCI ESG, MSCI KLD, and Refinitiv ESG—to formulate a measure of a firm's sustainability. We then link these stock-level sustainability measures with Thomson Reuters Institutional (13F) Holdings data. This linkage allows us to compute sustainability measures at the investor portfolio level and identify investors with pronounced sustainability preferences. As institutional holdings are observed on a quarterly basis, this procedure enables us to calculate the extent of sustainable ownership for each stock at a quarterly frequency.

Subsequently, we obtain earnings announcement data, including announcement dates and earnings estimates, from IBES, following established protocols outlined in prior research (see, e.g., Sammon, 2024). To quantify earnings surprises, we compute standardized unexpected earnings (SUE) as proposed in the literature. We merge the earnings announcement data with the sustainable ownership data, resulting in a combined dataset that captures the level

of sustainable ownership in the calendar quarter of the announcement. This dataset is further enriched with daily stock return data from the CRSP Stock File and stock characteristics sourced from Compustat.

2.1 ESG Data

We incorporate firm-level ESG scores from three reputable rating providers: MSCI ESG, MSCI KLD and Refinitv ESG (formerly Thomson Reuters Asset4).[1] MSCI ESG, the most recent and comprehensive offering by MSCI, is widely utilized by both researchers and practitioners. Its coverage predominantly extends from 2007 to 2022, with a substantial increase in the number of covered companies in 2012 (Pástor et al., 2022).

MSCI KLD, on the other hand, is an older legacy dataset compiled by MSCI. It stands out due to its extensive coverage, spanning from 1992 to 2021. This dataset offers two distinct advantages: its historical depth allows for the evaluation of investor preferences in earlier periods, and its widespread use in prior studies (e.g., Cao et al. 2023 and Starks et al. 2023) facilitates meaningful comparisons with existing research.

Refinitiv ESG, covering the period from 2003 to 2022, is constructed by Thomson Reuters Refinitiv, providing a valuable alternative perspective. Using data from multiple providers helps mitigate concerns regarding the variation in ESG ratings across different sources (Berg et al., 2022). Notably, the pairwise correlations among the three ESG ratings we employ never exceed 0.55. By examining the consistency of our results across these diverse ESG ratings, we can assess the degree to which our findings depend on the specific dataset chosen

[1]Each of these datasets is well-established in financial economics and accounting research, as evidenced by their widespread usage in previous studies. For example, Refinitiv is used by Serafeim and Yoon (2022). MSCI KLD is used by Cao et al. (2023) and by Starks et al. (2023). MSCI ESG is used by Pástor et al. (2022), Serafeim and Yoon (2022), and by Pástor et al. (2024).

for analysis.

The various datasets we utilize employ different scoring systems for ESG assessment:

1. MSCI ESG provides a total ESG score that ranges from 0 to 10.

2. Refinitiv ESG offers a total rating that spans from 0 to 100.

3. MSCI KLD does not offer a total score but instead provides separate scores for ESG strengths and concerns, which are derived from assessments of a company's impact on the environment, social factors (community, diversity, employee relations, and human rights), and corporate governance. These scores are assigned values of 1 or 0 for positive performance indicators ("strengths") and -1 or 0 for negative performance indicators ("concerns"). To create a unified score for MSCI KLD, we employ the aggregation procedure outlined in Starks et al. (2023). Subsequently, we apply linear transformations to the MSCI KLD and Refinitiv scores to standardize them on a scale ranging from 0 to 100. This standardization facilitates direct comparisons across datasets.

Furthermore, the availability of scores varies by frequency:

- MSCI KLD and Refinitiv ESG report scores on an annual basis only. Consequently, we use the ESG score from the year preceding the fiscal year of the announcement date for these two datasets. In our robustness tests, we also use the score from the year preceding the calendar year of the announcement day.

- MSCI ESG, while reporting data on a monthly frequency, updates the actual ESG score less frequently. In line with the approach outlined in Pástor et al. (2022), we use the most recent MSCI ESG score available prior to the announcement date.

2.2 Sustainable Ownership

We follow four steps to calculate the sustainable ownership $Sustainable\ Ownership_{n,t}$ for stock n in quarter t. First, using firm-level ESG scores $esg_{n,t}$, we construct the market-adjusted ESG score, $ESG_{n,t}$ of firm n in quarter t following the the procedure in Pástor et al. (2022):

$$ESG_{n,t} = esg_{n,t} - \overline{esg}_t \tag{1}$$

where $\overline{esg}_t$ is the value-weighted average of $esg_{n,t}$ across all firms in quarter t.

Second, using the market-adjusted firm-level ESG scores $ESG_{n,t}$, we compute a measure of an investor's preference for sustainability for each 13F institution. This investor-level sustainability score $ESG_{i,t}$ is determined as a value-weighted average of the ESG scores of all the portfolio stocks that have available ESG scores at the conclusion of each quarter:

$$ESG_{i,t} = \sum_n w_{i,t}(n) ESG_{n,t}. \tag{2}$$

The portfolio weights $w_{i,t}$ are given by:

$$w_{i,t}(n) = \frac{P_{n,t} \times Shares_{n,i,t}}{\sum_m P_{m,t} \times Shares_{m,i,t}}, \tag{3}$$

where $P_{n,t}$ stands for the price of stock n at the end of quarter t, and $Shares_{n,i,t}$ stands for the total number of shares held by investor i.

Third, we classify investors as sustainable. We adopt two distinct approaches for this classification to capture different dimensions of investor preferences.

Time-Invariant Definition: In this approach, we aim to establish a classification of

sustainable investors that is less sensitive to short-term price fluctuations and portfolio adjustments, and that reflects the slow-moving nature of investors' preferences. To achieve this, we calculate the time series average of $ESG_{i,t}$ for each investor, denoted as ESG_i. An investor is categorized as "sustainable" if her ESG_i falls into the top 30% of the distribution across all investors.

Time-Varying Definition: In contrast, the time-varying definition allows us to capture the dynamic nature of investor preferences. Under this definition, an investor is classified as a sustainable investor in a given quarter t if her $ESG_{i,t}$ ranks in the top 30% within that particular quarter.

Both of these definitions assess an investor's sustainability stance relative to other investors, making them independent of broader shifts towards sustainable investing among institutional investors or trends in firms' ESG scores (Starks, 2023). We later evaluate the robustness of our results with respect to these definitions, examining each dataset separately, and find that they yield highly consistent outcomes.

Figure 2 depicts the time series of portfolio-level investor ESG scores across all three datasets. It provides insights into the trends in scores for all 13F investors and for the subgroup of sustainable investors, as defined by the time-invariant criterion.

Several consistent patterns emerge from the figure. Firstly, the MSCI KLD and Refinitiv ESG datasets demonstrate a discernible upward trend in the average portfolio ESG scores, both for all investors and sustainable investors. These trends suggest that both investors and firms are increasingly focusing on sustainability considerations. Furthermore, the gap between sustainable investors and other investors widens over time, with sustainable investors experiencing a more rapid increase in their average portfolio-level ESG scores. This finding

suggests that the most sustainable investors are intensifying their sustainability preferences. Notably, the MSCI ESG data exhibit a decline in portfolio-level ESG scores after 2012, coinciding with MSCI's decision to expand their coverage and incorporate more firms into their dataset (Pástor et al., 2022). Subsequently, the data from MSCI ESG show a consistent rise in scores, along with a notable gap between the two investor groups, aligning with the trends observed in the other two datasets.

Secondly, Figure 2 underscores the substantial differences in absolute scores among the datasets, which persist even after standardizing all scores on a 0-to-100 scale. These disparities likely stem from variations in methodologies employed by different data providers or by the same provider over time, as highlighted by Berg et al. (2022). This result emphasizes the critical importance of utilizing multiple datasets from various providers, as the ESG score is inherently subjective and contingent on provider-specific techniques and definitions.

As a final step, we compute the total amount of sustainable ownership, denoted as $Sustainable\ Ownership_{n,t}$, for each stock-quarter. This metric quantifies the sustainable ownership of a stock in a specific quarter and is calculated as the total number of shares held by sustainable investors divided by the total shares outstanding in that quarter. It is important to note that the amount of sustainable ownership is always time-varying, even when employing the time-invariant definition of sustainable investors.[2]

Figure 3 illustrates the temporal trends in two key statistics that assess the role of sustainable investors. Panel (a) shows the ratio of assets under management (AUM) managed by sustainable investors to the total AUM of all 13F investors. The results indicate that sustainable investors have managed approximately 10%–15% of institutional assets over the past

[2]In our robustness tests, we also normalize the number of shares held by sustainable investors by the total shares held by all institutions to mitigate potential confounding effects arising from variations in institutional ownership. We find that our results remain unaffected by this scaling choice.

decade, with specific estimates varying by dataset. MSCI KLD and Refinitiv ESG datasets provide the upper end of this range, while the estimate from MSCI ESG falls toward the lower end.

Panel (b) displays the dynamics of sustainable ownership, averaged across stocks. The average amount of sustainable ownership for individual stocks typically ranges between 3% and 5% over the same time period, with the largest estimate coming from Refinitiv ESG and the smallest from MSCI KLD.

Furthermore, we observe either an increasing trend (in the case of MSCI ESG) or a non-declining trend (in the case of MSCI KLD and Refinitiv ESG) in both the relative AUM of sustainable investors and the amount of sustainable ownership.[3] When combined with the evidence of increasing ESG scores from Figure 2, these observations yield two key insights. First, the aggregate capital allocated by the most sustainable investors toward sustainable stocks may not have experienced a significant increase. Second, there has been an escalation in the intensity of sustainable investing over time, driven by a more focused approach to active portfolio selection. These interpretations align with the findings of Pástor et al. (2024), who, using an alternative methodology, demonstrate that while the absolute portfolio tilts toward green investing may not have increased, the relative tilts concerning the active share have indeed risen.[4]

[3] A notable drop in sustainable AUM and ownership, as observed in MSCI ESG data, can be attributed to the departure of a small subset of sustainable investors from the dataset. The primary driver is the acquisition of the Barclays Global Investors (BGI) unit by BlackRock from Barclays in 2009, leading to Barclays' exit from the dataset. BGI, which encompassed the iShares ETF unit, had a substantial $1.85 trillion in assets under management prior to the acquisition. Our findings remain consistent regardless of whether we categorize Barclays as a sustainable investor or entirely exclude its holdings from the dataset.

[4] It is important to emphasize that our results focus on the ownership of the most sustainable investors based on distributional cutoffs relative to other investors and may not reflect the broader trend toward sustainability observed among all investors (Starks, 2023).

2.3 Earnings Announcement Data

2.3.1 Measuring Earning Surprises

We source our earnings announcement data from the IBES unadjusted detail file. To pinpoint the moment when investors could first trade based on earnings information, we utilize the earnings release times provided by IBES. Our methodology for determining the earnings date is as follows:

- **Earnings Released on a Trading Day (Monday to Friday) before 4:00 PM ET:** In this scenario, we designate the same day as the earnings date.
- **Earnings Released on a Trading Day (Monday to Friday) at or after 4:00 PM ET:** In this case, we assign the subsequent trading day as the earnings date.
- **Earnings Released on a Weekend or Trading Holiday:** If earnings are made public over the weekend or on a trading holiday, we exclude the announcement event from our sample.

By adhering to this procedure, we ensure that our analysis only encompasses earnings announcements for which investors had the opportunity to trade on earnings information, taking into account variations in release times and trading hours.

We calculate standardized unexpected earnings (SUE) to categorize earnings announcements as either positive or negative news events. In particular, we implement the definition of Foster et al. (1984), which is widely used in the finance literature (Hou et al., 2015; Chen

and Zimmermann, 2022):

$$SUE_{n,t} = \frac{EPS_{n,t} - EPS_{n,t-4}}{\sigma_{t-1,t-8}\left(EPS_{n,t} - EPS_{n,t-4}\right)}, \tag{4}$$

where $EPS_{n,t}$ is the quarterly earnings per share from IBES in quarter t, $EPS_{n,t-4}$ is the quarterly earnings per share in quarter $t-4$ (a year before), and $\sigma_{t-1,t-8}(EPS_{n,t}-EPS_{n,t-4})$ is the standard deviation of the year-on-year changes in EPS over the past 8 quarters.[5] We match CRSP to IBES, keeping only the U.S. common stocks (share codes 10 and 11). The resulting sample includes 400,906 announcements from 12,603 companies from 1992Q3 to 2022Q2.

2.3.2 Measuring Response to Earnings News

We employ multiple metrics to evaluate the stock price response to earnings announcements. The first two measures we consider are the announcement-day abnormal stock return and the post-announcement cumulative abnormal return. These measures quantify the immediate and delayed responses to earnings.

Immediate and Delayed Price Response. We follow the approach from DellaVigna and Pollet (2009) to calculate abnormal returns for different windows around the announcement date. Let $R_{n,d}$ and $R_{m,d}$ denote the return of stock n and the return of the market on day d, respectively. We obtain $R_{n,d}$ from the CRSP daily stock file and $R_{m,d}$ from Kenneth

[5]The actual realized earnings per share (EPS), often referred to as "street earnings," is a measure of actual earnings that is commonly used in financial reporting. It differs from the Generally Accepted Accounting Principles (GAAP) earnings in that it excludes certain expenses and items that are considered nonrecurring or extraordinary in nature. Managers frequently rely on street earnings because they provide a more accurate reflection of the company's ongoing operational performance (Bradshaw and Sloan, 2002). When financial analysts make earnings forecasts, their primary aim is typically to predict this street earnings measure.

French's website. We first estimate market betas for stock n in quarter t using the following regression specification:

$$R_{n,d} = \alpha_{n,t} + \beta_{n,t} R_{m,d} + \epsilon_{n,t}. \tag{5}$$

We estimate equation (5) using daily data which starts 300 days prior to the announcement and ends 46 trading days (2 trading months) before the announcement. For each stock-announcement quarter, we thus include daily observations where $d \in [\tau - 300; \tau - 46]$, with τ being the date of the announcement in quarter t.

We next define the buy-and-hold abnormal return for stock n in quarter t over the period $(\tau + h, \tau + H)$ as:

$$R_{n,t}^{(h,H)} = \left[\prod_{d=\tau+h}^{\tau+H} (1 + R_{n,d}) \right] - 1 - \widehat{\beta}_{n,t} \left[\prod_{d=\tau+h}^{\tau+H} (1 + R_{m,d}) - 1 \right], \tag{6}$$

where $\widehat{\beta}_{n,t}$ is the estimate of the stock's market beta from equation (5). Using equation (6), we calculate the announcement-day return as $R_{n,t}^{(0,0)}$ (i.e., $h = H = 0$) as a measure of the immediate stock price response. In our main analysis, we define the delayed response as $R_{n,t}^{(1,22)}$—the cumulative return over 22 trading days, starting with the day after the announcement. Finally, we winsorize observations with returns at the top and bottom 1% of the distribution within each quarter.

Normalized Delayed Response. We also use the following normalized measure of the delayed response $NDR_{n,t}$:

$$NDR_{n,t} = \begin{cases} \frac{1+R_{n,t}^{(1,22)}}{1+R_{n,t}^{(0,22)}}, & R_{n,t}^{(0,0)} > 0, \\ \frac{1+R_{n,t}^{(0,22)}}{1+R_{n,t}^{(1,22)}}, & R_{n,t}^{(0,0)} < 0. \end{cases} \tag{7}$$

The basic idea is to capture the delayed response after the announcement day relative to the total price response. For example, if the entire price response occurs after the announcement day, $NDR_{n,t}$ takes on its maximum value of one, suggesting that the entire price response is delayed. $NDR_{n,t}$ instead declines as the price response on the announcement day becomes larger relative to delayed response. The NDR is a useful metric because it allows us to compare the timing of price responses across different stocks, irrespective of the absolute differences in the magnitudes of the immediate and delayed responses.[6]

3 Main Results

3.1 Testable Predictions

We examine several testable predictions derived from the theoretical framework based on Pástor et al. (2021), which we detail in Appendix A. The framework demonstrates that, in the presence of investors with sustainability preferences, firms with higher sustainability scores have elevated prices because these investors assign additional value beyond future cash flows. Consequently, the impact of new information about future cash flows on stock prices is relatively weaker. We also show that this effect is expected to occur for both positive and negative news and that it is unlikely to dissipate after the announcement.

[6] DellaVigna and Pollet (2009) use a similar measure to study the response to earnings, while Sammon (2024) employs an analogous metric to examine the magnitudes of the pre-earnings price drift.

3.2 Positive and Negative News

To evaluate the impact of sustainable ownership on stock prices in response to earnings announcements, we categorize these announcements into 11 quantiles based on the magnitude of earnings surprises $SUE_{n,t}$. Events with negative and positive earnings surprises are divided into 5 equal-size groups each, with thresholds calculated separately for each quarter. Events with zero earnings surprises are classified into a distinct group. Consequently, negative earning surprises fall into quantiles 1 through 5, zero surprises occupy quantile 6, and positive surprises are found in quantiles 7 through 11. This categorization allows us to explore the influence of sustainable ownership across a spectrum of earnings surprises, comparing the response to negative and positive news.

3.3 Graphical Evidence for Differences in Immediate Responses

We begin by visually analyzing the immediate stock price responses to earnings announcements, distinguishing between stocks with high and low sustainable ownership. Stocks are classified into these two groups based on whether their sustainable ownership levels fall into the top or bottom 30% of the distribution for a given quarter. For each group, we calculate the average announcement-day return across various quantiles of earnings surprises.

The findings, as depicted in Figure 1, reveal a noteworthy difference: stocks with high sustainable ownership exhibit a weaker response to earnings news. This diminished reaction is evident for both positive and negative earnings announcements. Importantly, the statistical significance of these differences is confirmed by the 95% confidence intervals. These results hold consistently across all three datasets and are evident across a wide range of earnings surprise magnitudes. The only exceptions are the middle quantiles, which represent

minimal or zero earnings surprises. In such cases, where the impact of cash flow news is minimal, both groups of stocks exhibit price responses close to zero, as expected.

3.4 Methodology for Estimating Effects of Sustainable Ownership

We proceed by employing a set of regression specifications to provide a formal quantification of the patterns observed in Figure 1. Additionally, we aim to estimate the effects on various other outcomes. Notably, the graphical findings suggest that the disparities between stocks become more prominent when the cash flow news are more substantial. Building on this insight, we adopt an approach inspired by DellaVigna and Pollet (2009) and investigate how different stocks respond to strongly positive news in comparison to strongly negative news.

To examine events with strongly positive and negative earnings surprises, we employ two distinct sampling approaches. In the first approach, we select events from quantile 1 (representing strong negative surprises) and quantile 11 (representing strong positive surprises). In the second approach, we include events from quantiles 1 and 2 for strong negative surprises, and from quantiles 10 and 11 for strong positive surprises. When adopting the second approach, the total number of announcements approximately doubles, relative to the first approach.

The choice between these sampling methods involves a trade-off between the precision of the estimates and the expected effect size. Including additional quantiles results in a larger sample size, enhancing the precision of statistical tests. However, it may also lead to smaller effect sizes because observations with weaker expected price responses to earnings are included. Given the uncertainty about which sampling method offers greater statistical power, we employ both approaches in our analysis to ensure comprehensive coverage and

robust results. The summary statistics for all the variables used in our study across the three datasets and two sampling approaches are presented in Appendix Tables B.1–B.3.

We next estimate the following regression specification:

$$y_{n,t} = \psi_n + \psi_t + \phi_1 \mathbb{1}_{n,t}^{TopSUE} + \phi_2 \mathbb{1}_{n,t}^{HighSustOwn} + \phi_3 \left(\mathbb{1}_{n,t}^{TopSUE} \times \mathbb{1}_{n,t}^{HighSustOwn} \right) + \Gamma X_{n,t} + \varepsilon_{n,t}. \quad (8)$$

In this specification, $y_{n,t}$ denotes the outcome variable for stock n in quarter t. Depending on the sampling approach, the sample only includes the observations from the top and the bottom quantiles (1 and 11) or the top two and the bottom two quantiles (1 and 2, together with 10 and 11). The indicator $\mathbb{1}_{n,t}^{TopSUE}$ equals one if the observation belongs to the top SUE quantile(s) and zero if it belongs to the bottom SUE quantile(s).

To capture the differences in the effects of sustainable ownership, we adopt an approach similar to that depicted in Figure 1. We restrict our sample to stocks with sufficiently high or low levels of sustainable ownership, that is, the top and bottom 30% of the distribution in each quarter. Then, we introduce an indicator variable, $\mathbb{1}_{n,t}^{HighSustOwn}$, which equals one if the stock's sustainable ownership level falls into the top 30% of the distribution, and zero otherwise. This approach simplifies the interpretation of the coefficients, and facilitates a meaningful comparison with the initial graphical findings. In all our analyses, we also directly utilize the continuous measure of sustainable ownership, $Sustainable\ Ownership_{n,t}$, to assess how the results respond to variations in the definition of the measure.

The main coefficient of interest is ϕ_3—the coefficient on the interaction between $\mathbb{1}_{n,t}^{TopSUE}$ and $\mathbb{1}_{n,t}^{HighSustOwn}$. It is interpreted as the additional marginal effect of sustainable ownership for the events with positive earning news, relative to the events with negative earnings news.

The coefficient on $\mathbb{1}_{n,t}^{TopSUE}$, ϕ_1, measures the baseline relative effect of positive earnings news for stocks with low sustainable ownership. Under the null hypothesis of no differences between the stocks, ϕ_3 equals zero. Under the alternative hypothesis where sustainable investors react to cash flow news differently, ϕ_3 can be either positive or negative.

Our regression specifications incorporate a vector of control variables, denoted as $X_{n,t}$, to account for other factors that may influence returns and trading volume, as documented in previous research. Specifically, we include the natural logarithm of the stock's market capitalization, its book-to-market ratio, the natural logarithm of the number of analysts covering the stock, and the natural logarithm of the number of earnings announcements made by other firms on the same day.

In line with the approach outlined in Hirshleifer and Sheng (2022), we introduce two additional control variables. Firstly, we control for the impact of overall market returns on the announcement day by incorporating an indicator variable that equals one when the market return is in the top 10% of its daily return distribution across the sample period. Secondly, we include an indicator variable to account for days featuring macroeconomic news announcements, thus controlling for the effects of macro news.

Figure 1 effectively demonstrates that the magnitude of earnings surprises (as depicted by the quantile means on the X-axis) for stocks with low and high sustainable ownership are quite similar. Thus, it is unlikely that these results are driven by disparities in the magnitude of the surprise across stocks.[7] Nevertheless, to account for any potential differences in the magnitude of earnings surprise ($SUE_{n,t}$) between stocks, we include it as an additional

[7]To formally substantiate this claim, we investigate the differences in the average magnitudes of earnings surprises between stocks with high and low sustainable ownership in Table 5. Across all datasets, the results indicate that the difference in the average magnitudes of earnings surprises is economically small and to a large extent statistically insignificant for both top SUE and bottom SUE events. We further discuss these results in Section 4.1.

control variable in our analysis.

Our regression specifications also incorporate a set of fixed effects to account for various factors that may influence our outcomes. The quarter fixed effect ψ_t adjusts for quarter-specific fluctuations in outcomes, capturing any variations that may be specific to certain quarters. The stock fixed effect ψ_n helps control for unobserved, slow-moving stock-specific confounding factors. These factors can include industry-specific effects or idiosyncratic characteristics of individual stocks. We also include a day-of-the-week fixed effect to control for the possibility of differential responses to earnings announcements on different weekdays, including phenomena like the "Friday effect" as documented by DellaVigna and Pollet (2009). Finally, we add a calendar-month fixed effect to account for any seasonality effects in earnings announcements and their impact on stock market outcomes. In all our tests, standard errors are double-clustered by stock and quarter.

3.5 Sustainable Ownership and Immediate Response to Earnings

Table 1 presents the results from estimating Equation (8) with the announcement-day abnormal return $R_{n,t}^{(0,0)}$ as the dependent variable. Panels A, B, and C present the results based on MSCI ESG, MSCI KLD, and Refinitiv data, respectively.

Starting with Panel A for MSCI ESG data, column (1) presents the results from the baseline estimation with no control variables. The coefficient on $\mathbb{1}_{n,t}^{TopSUE}$ suggests that stocks with low sustainable ownership experience a 4.6 percentage point higher announcement-day return following positive cash flow news compared to negative cash flow news. The coefficient on the interaction term, $\mathbb{1}_{n,t}^{TopSUE} \times \mathbb{1}_{n,t}^{HighSustOwn}$, is -1.2%, indicating that the return differential between positive and negative news is reduced by 26% (1.2%/4.6%) for

stocks with high sustainable ownership.

The inclusion of quarter and stock fixed effects in column (2) does not significantly alter these estimates. However, the introduction of more control variables in column (3) reduces the baseline effect for stocks with low sustainable ownership to a mere 2.7%. Intriguingly, the incremental effect of sustainable ownership remains consistent at −1.2%. This result suggests that sustainable ownership diminishes the immediate response to earnings by 44% (1.2%/2.7%). The findings in column (4) from the sample with additional quantiles substantiate this effect, showcasing a similar magnitude of 45% (1%/2.2%). For the sake of conciseness, we do not present the estimated coefficients of the control variables in the main tables, but they are detailed in Appendix Tables B.4–B.6.

The estimates of the effects of sustainable ownership from the MSCI KLD and Refinitiv datasets are strikingly consistent with those from MSCI ESG. In column (3) of Panels B and C, the results indicate a reduction in announcement day returns of 53% (1.6%/3.0%) and 58% (1.7%/2.9%), respectively. Furthermore, the estimates from the larger samples in column (4) exhibit similar economic magnitudes of 59% (1.3%/2.2%) and 58% (1.4%/2.4%). This uniformity across datasets underscores the robustness of our findings to the choice of the ESG data source.

In columns (5) and (6), we adopt a specification using the continuous variable $Sustainable\ Ownership_{n,t}$ instead of the discrete indicator $\mathbb{1}_{n,t}^{HighSustOwn}$. Column (5) demonstrates that the influence of sustainable ownership remains negative and statistically significant in the small two-quantile samples for MSCI KLD and Refinitiv. In the larger four-quantile samples, column (6) confirms that the effects of sustainable ownership are statistically significant across all three datasets. Overall, this alternative specification reinforces the consistency of

our results.

To summarize, our findings, derived from three distinct datasets using two different sustainable ownership definitions and two sampling methods, consistently demonstrate that stocks with high sustainable ownership exhibit a significantly diminished immediate stock price response to earnings news. This core result suggests a reduced reliance on expected cash flows as a determining factor for stock prices. Moreover, our basic robustness tests further strengthen these findings. Appendix Tables B.7 and B.8 demonstrate that our results hold when we modify the method of computing sustainable ownership by considering the total number of shares held by institutions rather than total shares outstanding, and when assigning ESG scores based on the next calendar year rather than the next fiscal year.

3.6 Sustainable Ownership and Delayed Response to Earnings

We next focus on the effects on price dynamics in the post-announcement period. Figure 4 presents the cumulative abnormal returns $R_{n,t}^{(h,H)}$ over the first month after the announcement, separately for high- and low-sustainable-ownership stocks and separately for positive and negative news. The day 0 represents the announcement day.

First, we can clearly observe the basic effects of sustainable ownership on the immediate response. For example, Panel (a) (MSCI ESG data) shows that the difference in responses to good and bad news for stocks with low sustainable ownership equals nearly 4.5%. The same difference is much smaller for stocks with high sustainable ownership, being equal to around 3.2%. These graphical results put the effect of sustainable ownership at approximately -1.3% (3.2%–4.5%), with the relative magnitude being equal to -29% ($-1.3\%/4.5\%$). This estimate is roughly equal to the results from the specification with no controls from column (1) of

Table 1.

Second, this differential effect persists throughout the post-announcement month, indicating that the influence of sustainable investors on stock prices endures beyond the announcement day. In some cases, especially for negative news and specific datasets like MSCI KLD and Refinitiv, the gap between the two groups of stocks even widens during the post-announcement period. This finding suggests that the initially less pronounced reaction to news, influenced by sustainable ownership, is not transitory but rather a new lasting feature of the market landscape.

To further explore and quantify the prolonged effects of sustainable ownership on stock prices after earnings announcements, we turn to the delayed response, as captured by the variable $R_{n,t}^{(1,22)}$. This approach allows us to gauge how sustainable ownership influences stock prices in the subsequent 22 trading days following the announcement. We utilize the same specifications as presented in Equation (8) to maintain consistency with the methodologies employed in previous analyses. In our discussion below, we focus on the twelve specifications corresponding to columns (3)–(6) of Table 1 across Panels A, B, and C, which take into account all relevant control variables and encompass variations in datasets, definitions of sustainable ownership, and samples of earnings announcements.

The findings from Table 2 corroborate the graphical evidence, indicating that the initial underreaction to cash flow news persists after the earnings announcement. However, the question of whether prices diverge further after the announcement remains somewhat contingent on how sustainable ownership is defined.

For all specifications employing the discrete definition, the results consistently suggest that sustainable ownership weakens the delayed response, implying further divergence in

prices. For instance, in column (4) of Panel B, the coefficient on $\mathbb{1}_{n,t}^{TopSUE}$ equals 0.009, signifying an additional difference of 0.9 percentage points in returns between low-sustainable-ownership stocks with positive and negative news after the announcement. The coefficient on the interaction, which equals -0.007, suggests that the post-announcement return is 77% (0.7%/0.9%) smaller for stocks with high sustainable ownership, further supporting the notion of prices diverging.

Conversely, the results from specifications utilizing the continuous measure of sustainable ownership in columns (5) and (6) yield mixed outcomes in terms of statistical significance, albeit a consistent picture in terms of economic magnitude. E.g., the MSCI ESG data suggest a lack of the effect (i.e., neither divergence nor convergence), while the MSCI KLD data imply further divergence. Refinitiv data depict mixed results depending on the sample of earnings announcements. Importantly, however, the consistently negative coefficient on the interaction term in all specifications strongly supports the absence of price convergence.

In summary, the findings suggest that the disparity in the immediate response to earnings is not corrected over time and may even intensify in the post-announcement period. Sustainable ownership not only dampens the immediate reaction to earnings but also perpetuates this effect in the subsequent trading days. The lasting alteration in price formation indicates that the effect is driven by shifts in investor preferences rather than an oversight of information. Furthermore, this effect is not indicative of a transient mispricing since it remains uncorrected, thereby rejecting the notion of arbitrage opportunities.

3.6.1 Day-by-Day Estimations

To further scrutinize this interpretation, we estimate the same specification using cumulative returns over various post-announcement periods, rather than focusing only on the announcement-day or the entire 22-day returns. In particular, we conduct a "day-by-day" analysis, using multiple versions of Equation (8) with $R_{n,t}^{(0,H)}$ for different values of H (ranging from 0 to 22) as outcome variables. Figure 5 presents the main interaction coefficients on the Y-axis and H (the number of post-announcement trading days used to measure the returns) on the X-axis.

The results from the three datasets not only confirm that prices do not converge but also illustrate the absence of any short-term reversals within the entire post-announcement period. All the point estimates are statistically significantly different from zero, affirming the strongly diminished reaction by high-sustainable-ownership stocks. The point estimates steadily decrease over time, suggesting further price divergence. However, the 95% confidence intervals overlap across most of the estimates, implying that, for instance, the effect on 2-day cumulative returns is not significantly different from the effect in 22-day cumulative returns. These patterns are consistent with the mixed results on the effects on the entire 22-day return from Table 2, suggesting limited statistical power to detect further divergence in prices.

3.6.2 Effects on Normalized Delayed Response

As an additional validation test, we examine the effects of sustainable ownership on an alternative measure—the normalized delayed response ($NDR_{n,t}$). Using this measure offers two advantages. First, it allows us to account for the possibility that stocks may have different long-term responses to earnings due to unobserved characteristics. Second, it helps

us estimate whether sustainable ownership affects the fraction of response that is delayed, rather than the total amount of the delayed response.

Table 3 reports mixed results, which are very similar to the findings on the absolute amount of delayed response. Specifically, the results from the MSCI KLD and Refinitiv datasets suggest a weaker delayed response (i.e., further divergence), while the findings from MSCI ESG point to the lack of convergence but no significant divergence. These results suggest that our conclusions do not depend on how we measure the delayed response, further supporting the robustness of our findings.

3.7 Robustness and Validation of Main Results

We conduct a number of additional tests to validate and show the robustness of our main results from the previous sections. This section briefly summarizes these tests, and we provide additional details in Appendix B.

First, we repeat our main analysis when dynamically re-classifying investors as sustainable or non-sustainable every quarter (see Appendix B.1). While investors are classified based on the sample average of their holdings in our baseline analysis, such that time variation in stocks' sustainable ownership results from changes in those sustainable investors' portfolios, one could argue that investors' preferences for sustainability could also change dynamically over time. We find that a time-varying definition of sustainable investors, as discussed in Section 2.2, yields results that are very similar to our baseline analysis, confirming the dampened price response to earnings for stock with high sustainable ownership.

Second, we examine the trading volume of stocks with high and low sustainable ownership stocks on earnings announcement days (see Appendix B.2), and find that high-sustainable-

ownership stocks have significantly lower (that is, less increased) trading volumes on the announcement day than low-sustainable-ownership stocks. Quantitatively, trading volumes increase on earnings days between 8.9% and 13.4% for low-sustainable-ownership stocks, while the increase for high-sustainable-ownership stocks is between 6.8% and 11.2%. We therefore find additional evidence of the less pronounced response to earnings news for high-sustainable-ownership stocks from the perspective of trading volumes.

Third, we ask whether the effects of heterogeneous investor horizons could drive or confound our results (see Appendix B.3). Starks et al. (2023) provide evidence that long-horizon investors are less likely to sell sustainable stocks even after experiencing negative earnings surprises, potentially without having an explicit preference for sustainability. While such patience channel can produce an underreaction to news on the negative side but not on the positive side, we still formally investigate the effects of investor horizon. In particular, we employ the churn ratio used by Starks et al. (2023) as a stock-level measure for investor patience and incorporate it into our regressions, together with an interaction term on the earnings surprise. Our results show that our main findings are qualitatively and quantitatively robust to controlling for the effects of investor horizon.

Fourth, we conduct a placebo test to ensure that our findings are not driven by unobserved differences between sustainable and non-sustainable investors that are unrelated to the sustainability dimension itself (see Appendix B.4). To this end, we repeat our analysis for the period from 1984 to 1992, during which none of the salient ESG databases employed in our paper were available yet. We classify investors in the same way as in our baseline analysis and ask whether stock ownership by investors classified as sustainable after 1992 corresponds to a weaker price response to earnings also in this pre-ESG period. Our results show that this is not the case, and we find that stocks with high ownership by investors

classified as sustainable after 1992 do not respond significantly different to earnings news compared to other stocks in the pre-ESG period. The negative result on this placebo test suggests that the connection between investors classified as sustainable and non-sustainable and stocks' price responses to earnings was not observable during the pre-ESG period and started arising with the availability of ESG ratings.

3.8 Comparison to Direct Effect of ESG Scores

Finally, we investigate whether our results are primarily driven by stock ESG scores, which represent a stock's "sustainability" characteristics. Differentiating between the direct effects of a stock's sustainability and the effects of ownership by sustainable investors is crucial for several reasons. First, if the effects we observe are indeed attributable to investor preferences, then the relevance of a stock's ESG score will depend on its correlation with sustainable ownership. If this correlation is not perfect, then ESG scores themselves may have limited impact on prices. Second, there is an ongoing debate in the asset pricing literature regarding the significance of investor preferences for stock characteristics relative to the characteristics themselves (Koijen and Yogo, 2019). Therefore, our analysis serves to underscore the influence of investor preferences on the pricing of assets with "sustainability" characteristics.

We first examine the correlations between a stock's sustainable ownership and its ESG score. The results displayed in Figure 6 indicate that while there is a positive correlation between ESG scores and sustainable ownership, it is far from perfect. The correlation is 28.1%, 40.2%, and 65.4% for the MSCI ESG, MSCI KLD, and Refinitiv datasets, respectively. Due to the limited correlation, it is possible that the effects of ESG scores on stock prices substantially differ from the effects of sustainable ownership.

To explore this further, we repeat our main analysis using ESG scores instead of sustainable ownership. Specifically, we categorize firms as having high or low ESG scores based on whether they fell within the top 30% or bottom 30% of the ESG score distribution in a given quarter.[8] Figure 7 illustrates the immediate response of stock returns to earnings surprises for firms with high and low ESG scores across the 11 earnings surprise quantiles. The results show minimal differences in the response between high-ESG-score and low-ESG-score firms. This figure contrasts with our baseline findings in Figure 1, which reveal a more pronounced and consistent price response difference between high- and low-sustainable-ownership firms across various levels of earnings surprises. These findings indicate that it is ownership by sustainable investors, rather than ESG scores themselves, that primarily drives the observed price effects.

The regression analysis presented in Table 4 supports the conclusion that there is no significant difference in earnings responses between high- and low-ESG-score firms. Utilizing our main specification from Equation (8) with the two-quantile approach, we find that the coefficient on the interaction between the indicator for having a high ESG score and the indicator for being in the top earnings surprise quantiles is statistically insignificant and economically small. This result is consistent across all three datasets, indicating that it is not contingent on the methodology used to calculate the ESG score.

[8]Since MSCI KLD and Refinitiv report ESG scores at the yearly frequency, the stock's classification remains unchanged between quarters within a year for these two datasets. For MSCI ESG, we use the most recent available score.

4 What Explains the Role of Sustainable Ownership for Earnings Responses?

The main result of this paper is that stocks with high sustainable ownership respond less strongly to earnings news compared to low-sustainable-ownership stocks. This dampened response can potentially be explained by two main mechanisms. First, it is possible that earnings news are less informative of future cash flows for high-sustainable-ownership firms, for example due to a greater anticipation of information or a lower cash flow persistence. Second, there is the possibility that the cash flows affected by earnings news have a smaller share in the overall firm value for high-sustainable-ownership firms, as it would be the case, for example, if earnings mainly affect short-term cash flows and most of the firm value comes from longer-term cash flows, but also if the value of high-sustainable-ownership firms exhibits a sustainability component in addition to the present value of cash flows.

Formally, denote the earnings-day return of firm i as the relative price change from t^- (the day before the announcement) to t,

$$IR_{n,t} = \frac{P_{n,t} - P_{n,t^-}}{P_{n,t^-}} = \frac{\sum_{k=0}^{\infty}(1+r_n)^{-k}(E[CF_{n,t+k} \mid \mathcal{F}_{n,t}] - E[CF_{n,t+k} \mid \mathcal{F}_{n,t-}])}{\sum_{k=0}^{\infty}(1+r_n)^{-k}E[CF_{n,t+k} \mid \mathcal{F}_{n,t^-}]}, \quad (9)$$

where $CF_{n,t+k}$ are future cash flows, r_n are firm-specific discount rates (cost of capital), and $\mathcal{F}_{n,t^-}$ and $\mathcal{F}_{n,t}$ describe the information sets related to firm n before and after the earnings announcement.

If earnings news are differently informative for high- and low-sustainable-ownership firms, the updating of cash flow expectations captured by the numerator of (9) differs across the two types of firms, resulting in a different stock price response. We analyze this possibility

in Section 4.1. Similarly, a different earnings persistence across both types of firms yields a different effect of current earnings news on cash flows in the future, which we investigate in Section 4.2. On the contrary, if earnings news lead to an update of expected future cash flows in a similar magnitude for both groups of firms, differences in the stock price reaction can be driven by the share of cash flows affected by earnings news relative to the overall firm value. In particular, differences in discount rates between both types of firms can lead to a different stock price reaction, as they substantially influence the magnitude of the denominator of (9). Section 4.3 considers this potential mechanism, and quantitatively examines to what extent lower discount rates for high-sustainable-ownership firms induced through a sustainability premium may be responsible for the dampened price response to earnings observed in the data.

4.1 Sustainable Ownership and the Information Content of Earnings News

To investigate whether earnings announcements are differently informative for firms with high- versus low-sustainable-ownership, we conduct four distinct analyses.

First, we examine whether the average magnitude of earnings surprises differs between high- and low-sustainable-ownership stocks. If so, such difference could explain the observed differential stock price reactions for the two groups of stocks. We compute the average standardized unexpected earnings (SUE) for the cross-section of high- and low-sustainable-ownership firms in each quarter and report their time-series averages in Table 5, separately for the top and bottom SUE quantiles as employed in our analysis. When testing whether the difference in SUEs between high- and low-sustainable-ownership firms is different from zero,

we find that the difference is not statistically significant in the vast majority of cases. The few cases where there is a significant difference all indicate that positive SUEs may be greater for stocks with high sustainable ownership, which could explain a stronger market response, but not a weaker one. Altogether, the analysis of SUEs in different sustainable ownership subsamples strongly suggests that differences in measured earnings surprises cannot explain the dampened response to earnings news for high-sustainable-ownership stocks.

Second, we investigate whether the price drift *prior to* earnings announcements differs between high- and low-sustainable-ownership stocks. Indeed, stronger anticipation and earlier information incorporation could explain a weaker reaction on the actual event day. Figure 8 shows the pre-announcement drift for both groups of stocks, starting from 22 days prior to the earnings announcement. Overall, it is eye-catching that there is no significant difference in cumulative abnormal returns on any day prior to the earnings announcement between high- and low-sustainable-ownership stocks for any of the three datasets, both on the negative and on the positive side. For negative earnings surprises, we even find a less pronounced drift for high-sustainable-ownership stocks in addition to the weaker earnings-day response, clearly indicating that the anticipation of earnings news cannot explain the difference in earnings-day returns. For positive earnings surprises, a slightly (even though insignificantly) stronger drift prior to the announcement is observed for high-sustainable-ownership stocks when considering the sustainable ownership classification based on the MSCI ESG and Refinitiv scores. To assess quantitatively whether the pre-announcement drift affects our main results, we repeat our baseline analysis from Table 1 and consider cumulative returns from 22 days prior to the earnings day until and including the earnings day itself. The results in Table 6 show that accounting for the pre-announcement drift does not fundamentally change our main findings: the cumulative returns for high sustainable ownership are significantly

dampened across all cases and specifications, consistent with our baseline results.

Our third test further extends on this point and particularly relates to Sammon (2024), who shows that stocks with higher passive ownership show less anticipation before the earnings day but react more strongly to earnings news on the actual event day. We rigorously examine whether our results are confounded by passive ownership. Panel A of Table 7 tests whether greater sustainable ownership coincides with lower ownership by passive investors, which could explain a less pronounced earnings-day market reaction as a result of the effect documented by Sammon (2024). However, our results indicate the opposite: High-sustainable-ownership firms also have significantly higher passive ownership. This suggests that the dampened market response to earnings news for these firms must be explained by a different channel than passive ownership. To further validate our argument, we include three measures of passive ownership and their interactions with $\mathbb{1}_{n,t}^{TopSUE}$ as controls in our baseline regressions, and report the coefficient on our main interaction term, $\mathbb{1}_{n,t}^{TopSUE} \times \mathbb{1}_{n,t}^{HighSustOwn}$, in Panel B of Table 7. These results clearly show that passive ownership does not confound the main finding of this paper: the dampened response of high-sustainable-ownership stocks to earnings news.

Fourth, we investigate to what extent earnings news predict future dividends differently for high- compared to low-sustainable-ownership firms, repeating our main regression (8) for relative changes in dividends at different horizons. Across various specifications, we find that earnings surprises positively predict 1- and 2-year-ahead dividend changes for both high- and low-sustainable-ownership stocks, as summarized by Panel (a) of Figure 9. Quantitatively, 2-year-ahead dividends increase by around 8% for the most positive earnings surprises, with this result being strongly significant and consistent across different measures of high sustainable ownership based on various ESG score providers. In Panel (b), we test whether the

magnitude of this effect differs between high- and low-sustainable-ownership stocks and find no significant difference.

The results in this section clearly demonstrate, from multiple angles, that the subdued price reaction to earnings news in high-sustainable-ownership stocks, compared to low-sustainable-ownership stocks, cannot be ascribed to a differential informational content of earnings between these two types of firms. However, it is still possible for earnings news to affect future cash flows differently for firms with high and low sustainable ownership, particularly if cash flows exhibit different levels of persistence across the two groups. We explore this possibility in the following section.

4.2 Sustainable Ownership and the Persistence of Cash Flows

Following Kormendi and Lipe (1987) and Chaudhry (2023), we estimate an AR(8) process for cash flow changes

$$\Delta CF_{n,t} = a_0 + \sum_{l=1}^{8} a_l \Delta CF_{n,t-l} + \sum_{l=1}^{8} b_l \Delta CF_{n,t-l} \mathbb{1}_{n,t}^{HighSustOwn} + \sum_{l=1}^{8} c_l \Delta CF_{n,t-l} \mathbb{1}_{n,t}^{MediumSustOwn} + \nu_{n,t}, \quad (10)$$

in which we interact the lagged cash flow changes with indicator variables for high and medium sustainable ownership.[9] Given the AR(8) process, the numerator of (9) is deter-

[9]Due to the autoregressive nature of the process and the fact that firms can switch between different sustainable ownership categories, we also include stocks with medium sustainable ownership from our regression sample.

mined by the update in the current cash flow as

$$(E[CF_{n,t} \mid \mathcal{F}_{n,t}] - E[CF_{n,t} \mid \mathcal{F}_{n,t-}]) * (1 + PVR_n), \tag{11}$$

where PVR_n is firm n's present value of cash flow revisions, computed as $1 + PVR_n = \frac{1+r_n}{r_n}\left(1 - \sum_{l=1}^{8}(1+r_n)^{-l}\gamma_l\right)^{-1}$, with $\gamma_l = a_l + b_l$ for high-sustainable-ownership firms and $\gamma_l = a_l$ for low-sustainable-ownership firms.

We estimate (10) using firms' earnings data and present the coefficients in Panel A of Table 8. The baseline lag coefficients a_l are negative, in line with Kormendi and Lipe (1987) and Chaudhry (2023), indicating the low persistence of cash flow growth. Furthermore, the coefficients for high-sustainable-ownership firms, $a_l + b_l$, are more negative, suggesting a quicker reversal of cash flow growth and a less persistent effect of earnings surprises. In Panel B, we report the resulting values of $1+PVR_n$ for low- and high-sustainable-ownership firms, along with their ratio, under various discount rate scenarios r_n. Across these scenarios, the ratio of $1+PVR_n$ between high- and low-sustainable-ownership firms falls within a narrow range of 0.59–0.60.

Since $1 + PVR_n$ directly translates to the stock price response to earnings according to (9) and (11), this implies that the response to earnings surprises is 40% weaker for high-sustainable-ownership firms, relative to low-sustainable-ownership firms, due to their lower cash flow persistence. However, this accounts for only a portion of the documented 45%–58% weaker response. In the next section, we show that a moderate yet economically significant disparity in discount rates between these firms bridges this gap.

4.3 Sustainable Ownership and Discount Rates

The AR(8) process estimated in the previous section fully characterizes the effect of earnings news on future cash flows expectations, that is, the numerator of (9) and its ratio between stocks with high and low sustainable ownership. Thus, the remaining unexplained part in the dampened magnitude of earnings responses for high-sustainable-ownership firms can only be attributed to differences in the denominator of (9), the overall value of the stock, which is strongly influenced by discount rates.

We denote the average cash flow growth rate of firm n as g_n, such that $E[CF_{n,t+k} \mid \mathcal{F}_{n,t^-}] = (1+g_n)^k \cdot CF_{n,t}$, and obtain

$$IR_{n,t} = \frac{(E[CF_{n,t} \mid \mathcal{F}_{n,t}] - E[CF_{n,t} \mid \mathcal{F}_{n,t-}]) \cdot (1+PVR_n)}{CF_{n,t}(1+r_n)/(r_n - g_n)} \tag{12}$$

when inserting this into (9). When discount rates r_n and average cash flow growth rates g_n are the same for firms with high- and low-sustainable-ownership, the ratio of earnings responses between them reduces to the ratio of $1+PVR$, falling into a range of 0.59–0.60, as discussed in the previous section.

We now quantify the difference in discount rates between the two types of firms which is required to further reduce the ratio in earnings responses, $IR_t^{HighSustOwn}/IR_t^{LowSustOwn}$, to values between 0.42 and 0.55 as observed in the data, corresponding to a 45%–58% dampened response. We denote the difference in average discount rates between low-sustainable-ownership and high-sustainable ownership firms by s^*, which can be interpreted as a sustainability premium. Contingent on the discount rate of low-sustainable-ownership firms, we then determine the value of s^* needed to produce a given ratio of earnings responses,

provided the cash flow expectations implied by our results in Section 4.2 and assuming equal dividend growth rates g_n on average. Figure 10 illustrates the resulting s^* that is needed to produce a given impulse response ratio $IR_t^{HighSustOwn}/IR_t^{LowSustOwn}$. As discussed, a response ratio of 0.59–0.60 is achieved through differences in cash flows when the sustainability premium is zero. Hence, a positive sustainability premium generates ratios smaller than that. Specifically, for a baseline cost of capital of 10%, a sustainability premium of less than 1% is sufficient to yield a ratio of 0.55, corresponding to a stock price response to earnings news that is dampened by 45%. To achieve a ratio of 0.42, indicating a response dampened by 58%, a greater sustainability premium of around 3% is needed.

In summary, our analysis demonstrates that while the properties of cash flows alone cannot fully account for the subdued reaction of high-sustainable-ownership stocks to earnings news, a moderate sustainability premium can bridge this gap and explain our primary empirical finding. Specifically, sustainability premiums ranging from 1% to 3% align with the observed empirical estimates of a 45% to 58% dampened response to earnings news across various specifications. This evidence contributes to the ongoing debate in the recent literature (e.g. Gormsen et al., 2023; Berk and van Binsbergen, 2024) regarding the difference in discount rates and cost of capital, or its absence, for sustainable firms. As a final remark, it is important to reiterate that this paper differentiates between firms based on their levels of sustainable ownership, whereas much of the literature concentrates on firms with high and low ESG scores, which turns out to be a crucial distinction.

5 Conclusions

This paper delves into the impact of sustainable ownership on the relationship between expected cash flows and stock prices. Utilizing data from three distinct datasets to measure preferences for sustainability, our findings reveal a significant reduction in the responsiveness of stock prices to changes in expected cash flows in the presence of sustainable ownership. Furthermore, this effect is not transitory and persists in the trading days following the arrival of cash flow news, indicating that sustainable ownership induces a lasting shift in stock prices rather than causing a fleeting mispricing.

Our study yields two key conclusions. Firstly, our results shed light on how sustainable investing can alter one of the foundational principles of traditional finance: the link between stock prices and future cash flows. This effect suggests that sustainable investing transforms the fundamental process of price formation by diminishing the significance of cash flow news, potentially in favor of other types of news that are closely tied to sustainability.

Secondly, it is essential to emphasize that our findings do not imply that sustainable investing makes stock markets less efficient. Market efficiency pertains to the speed at which prices adjust to new information, but it does not dictate which information is deemed relevant by investors. Our study highlights that investor preferences for specific stock characteristics can fundamentally reshape how information about other characteristics influences stock prices. Thus, any future assessments of market efficiency must take into account the evolving landscape of investor preferences for sustainability and its potential impact on the efficiency of price formation.

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Tables and Figures

Figure 1: The Effect of Sustainable Ownership on the Immediate Price Response to Earnings. This figure displays the announcement-day abnormal returns for stocks with different levels of ownership by sustainable investors. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The stocks are grouped into 11 quantiles by the level of earnings surprises, measured by the standardized unexpected earnings (SUE). Quantiles 1–5 contain earnings announcements with negative SUE and quantiles 7–11 contain earnings surprises with positive SUE. Quantile 6 contains announcements with zero SUE. Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The plots depict 95% confidence intervals based on standard errors double-clustered by stock and quarter.

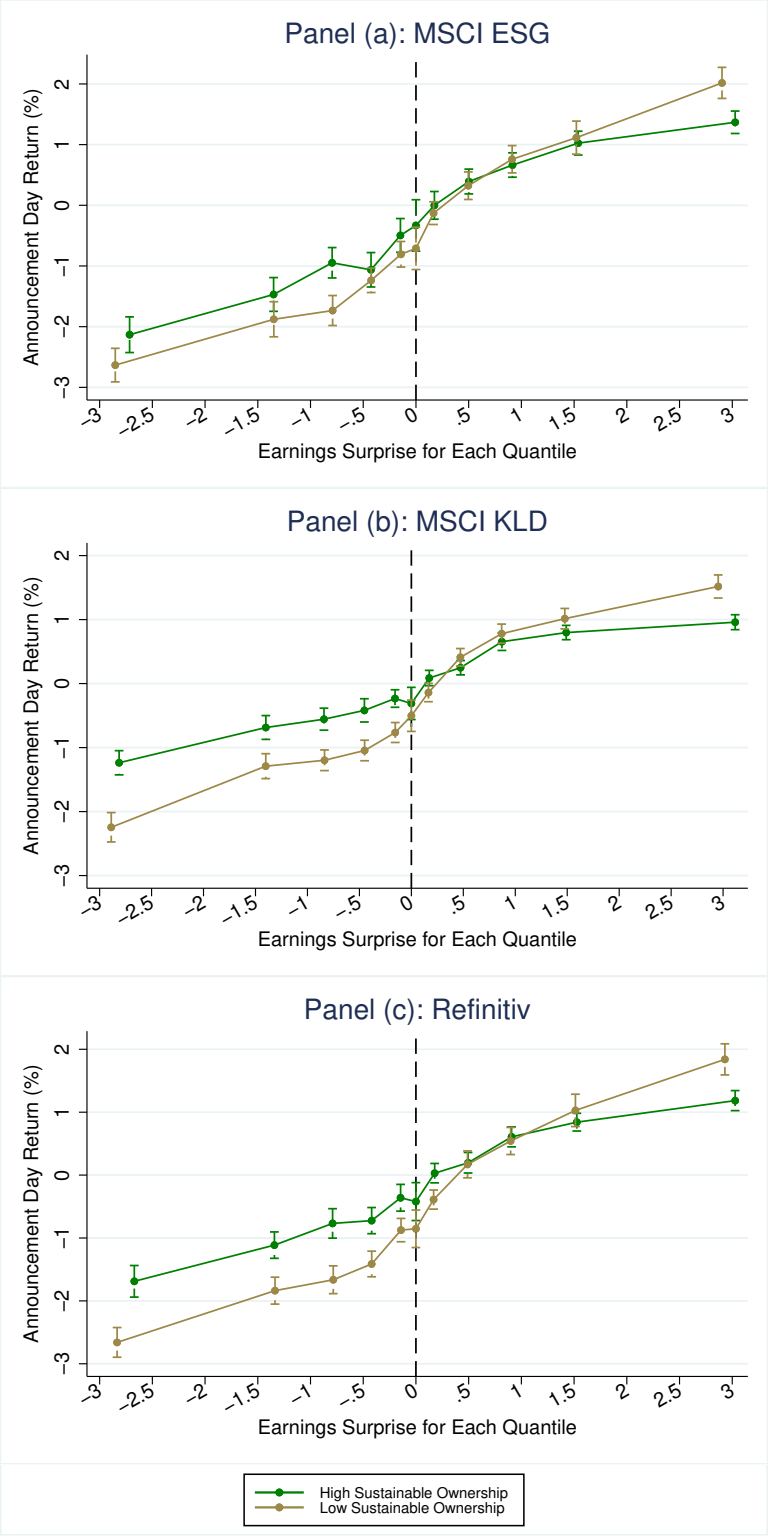


Figure 2: ESG Scores Across Datasets and Investors.
This figure displays the value-weighted ESG scores over time. The scores are calculated using three different datasets: MSCI ESG, MSCI KLD, and Refinitiv. We present scores separately for all investors and for sustainable investors. We define investors as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across investors.

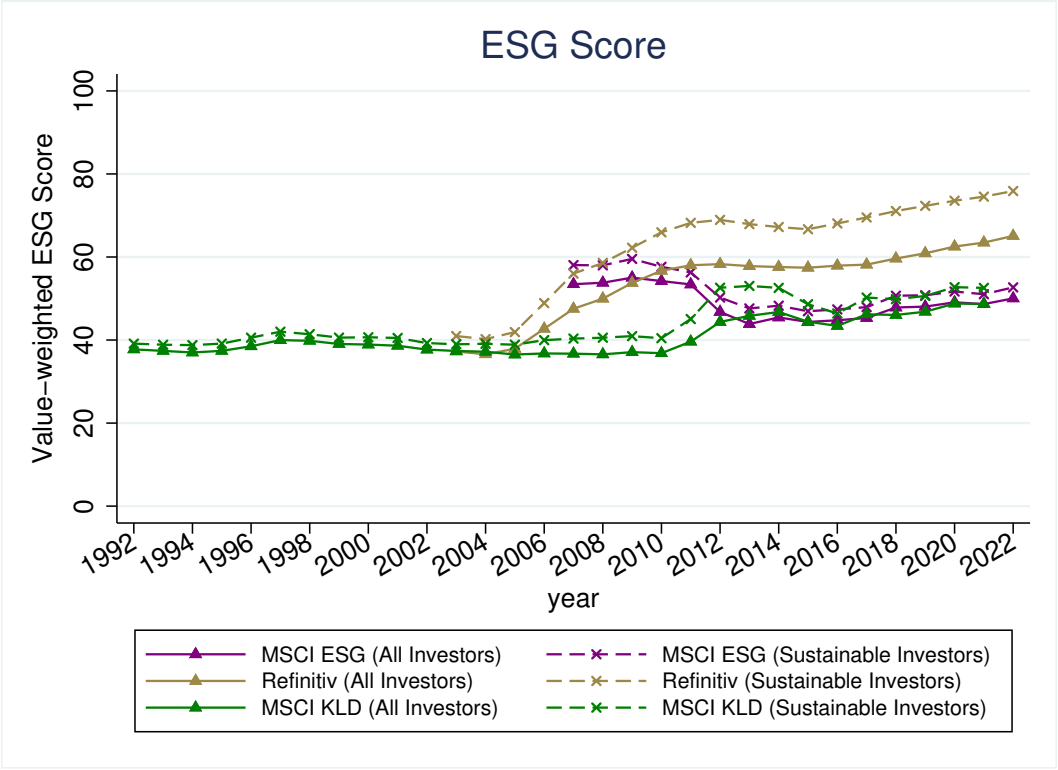


Figure 3: Sustainable AUM and Sustainable Ownership.
Panel (a) displays the amount of sustainable AUM, defined as the fraction of total institutional assets managed by sustainable investors. Panel (b) displays the amount of sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. We define investors as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across investors. The scores are calculated using three different datasets: MSCI ESG, MSCI KLD, and Refinitiv.

Figure 4: The Effect of Sustainable Ownership on Post-Announcement Cumulative Returns.
This figure presents the post-announcement cumulative returns for four groups of stocks. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter. The cumulative abnormal return is the buy-and-hold return adjusted using the market model. Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The plots depict 95% confidence intervals based on standard errors double-clustered by stock and quarter.

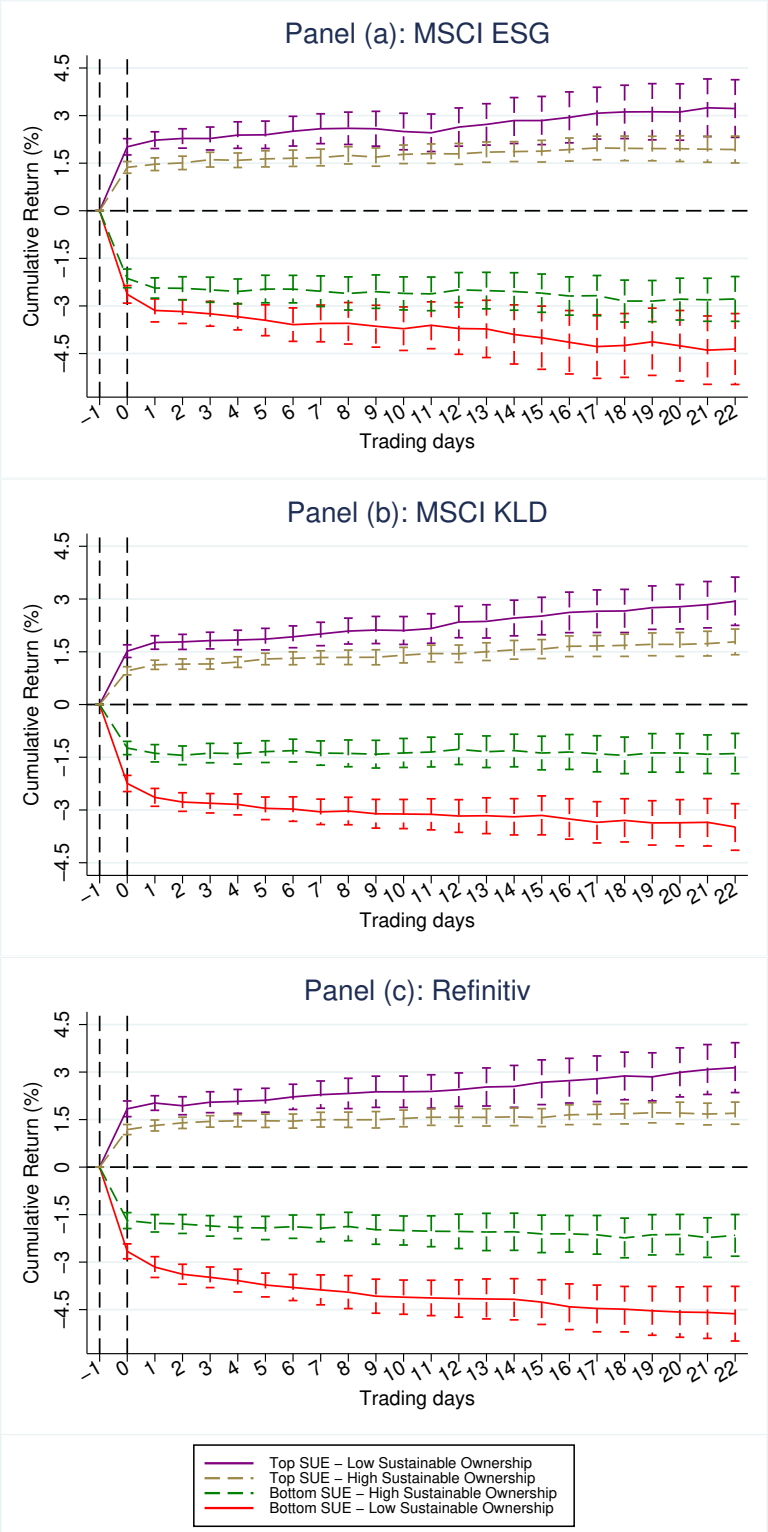


Figure 5: Day-by-Day Estimates of the Effect on Post-Announcement Cumulative Returns.
This figure presents the estimates of ϕ_3 from the following specification:

$$R_{n,t}^{(0,H)} = \psi_n + \psi_t + \phi_1 \mathbb{1}_{n,t}^{TopSUE} + \phi_2 \mathbb{1}_{n,t}^{HighSustOwn} + \phi_3 \left(\mathbb{1}_{n,t}^{TopSUE} \times \mathbb{1}_{n,t}^{HighSustOwn} \right) + \Gamma X_{n,t} + \varepsilon_{n,t}.$$

ϕ_3 captures the marginal effect of high sustainable ownership on the difference in returns between *Top SUE* and *Bottom SUE* stocks. The outcome variables are the post-announcement cumulative returns up to day H, $R_{n,t}^{(0,H)}$. We estimate specifications for each of the 22 trading days after the announcement ($H = 0, 1, \ldots, 22$) on the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. See the details in Section 3.6. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter. Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD and Refinitiv. The plots depict 95% confidence intervals based on standard errors double-clustered by stock and quarter.

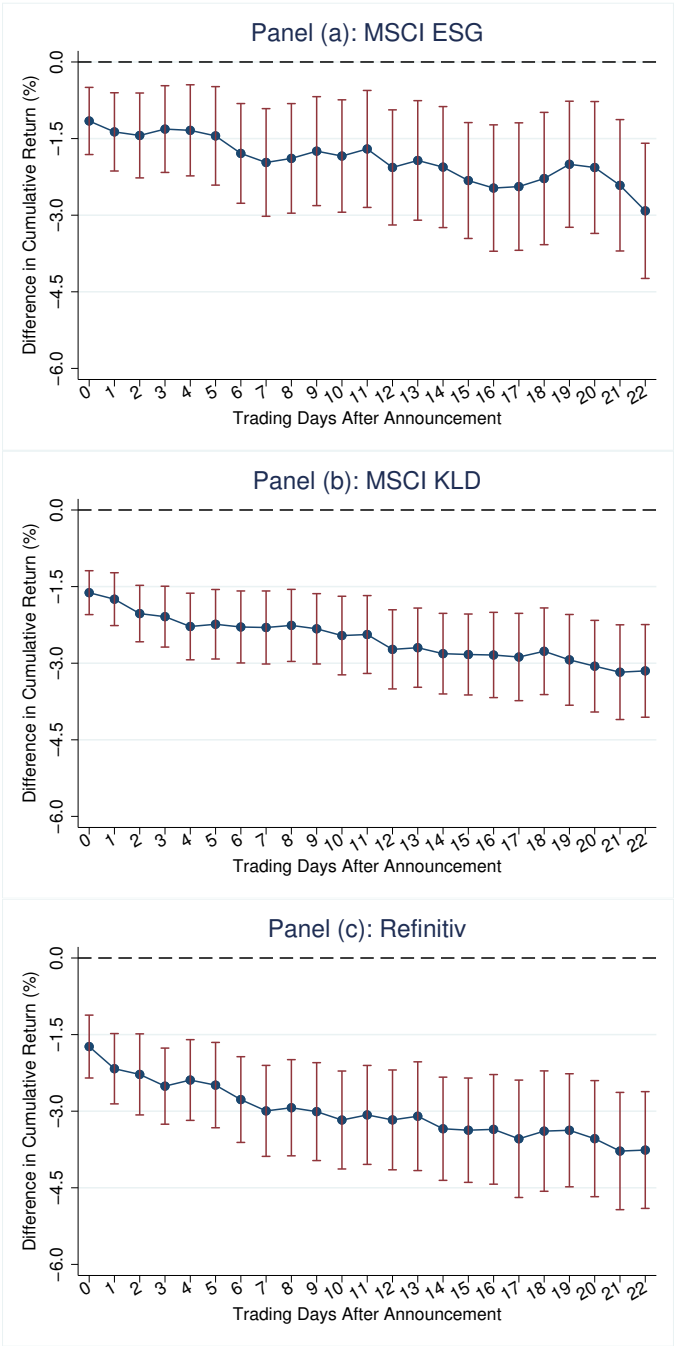


Figure 6: Correlations between Sustainable Ownership and ESG Score.
This figure plots the relation between stock-level sustainable ownership and stocks' ESG scores. *Sustainable Ownership* is defined as the fraction of total shares outstanding held by sustainable investors. We define investors as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across investors. The scores are calculated using three different datasets: MSCI ESG, MSCI KLD, and Refinitiv. The results for MSCI ESG and Refinitiv are presented for September 2020, and the results for MSCI KLD are presented for September 2019 (the last year available) to allow for the closest comparison.

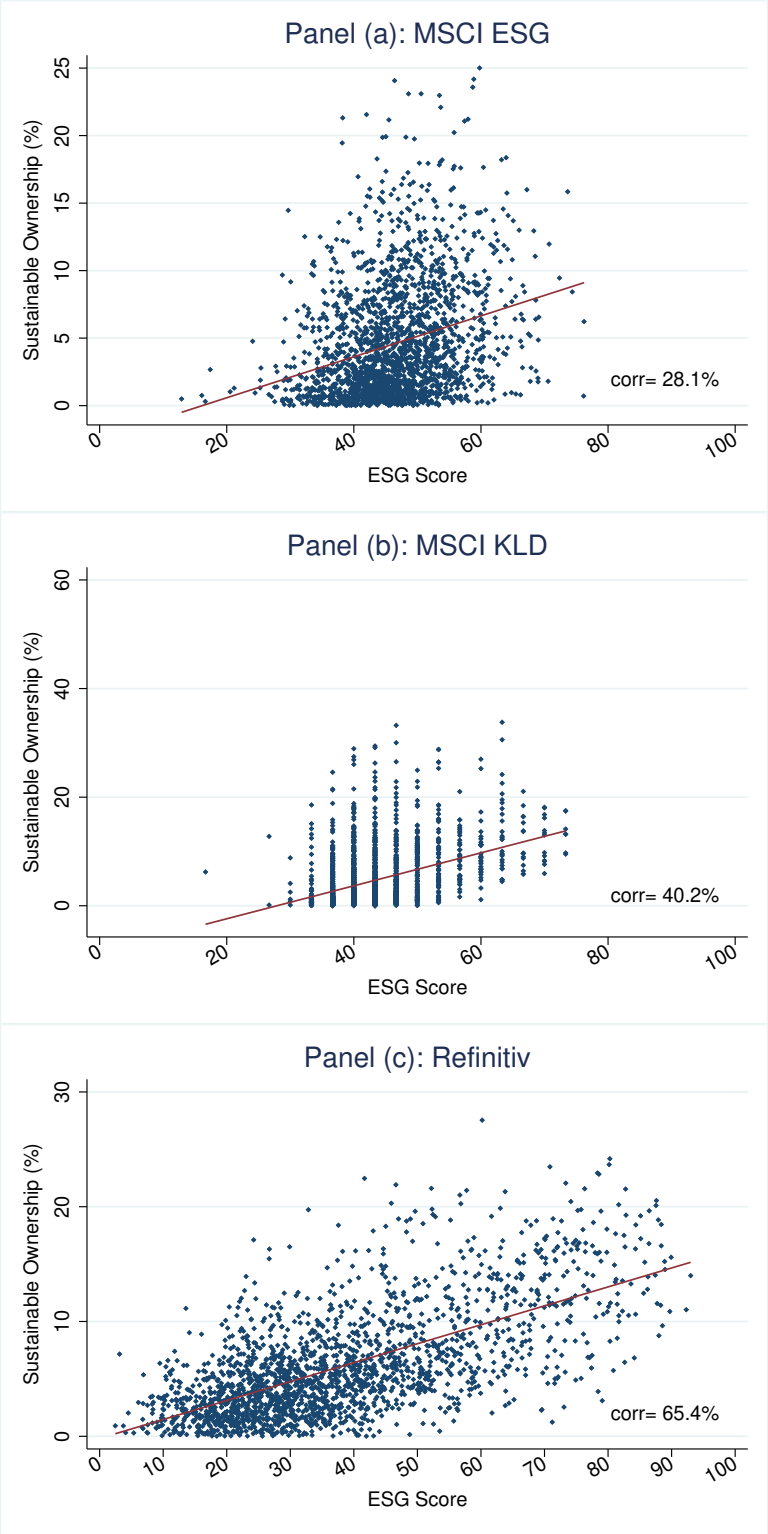


Figure 7: The Effect of ESG Scores on the Immediate Price Response to Earnings.
This figure displays the announcement-day abnormal returns for stocks with different ESG scores. *High ESG Score* (*Low ESG Score*) stocks exhibit the ESG score at the top 30% (bottom 30%) of its distribution within the announcement quarter. The abnormal return is adjusted using the market model. The stocks are grouped into 11 quantiles by the level of earnings surprises, measured by the standardized unexpected earnings (SUE). Quantiles 1–5 contain earnings announcements with negative SUE and quantiles 7–11 contain earnings surprises with positive SUE. Quantile 6 contains announcements with zero SUE. Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The plots depict 95% confidence intervals based on standard errors double-clustered by stock and quarter.

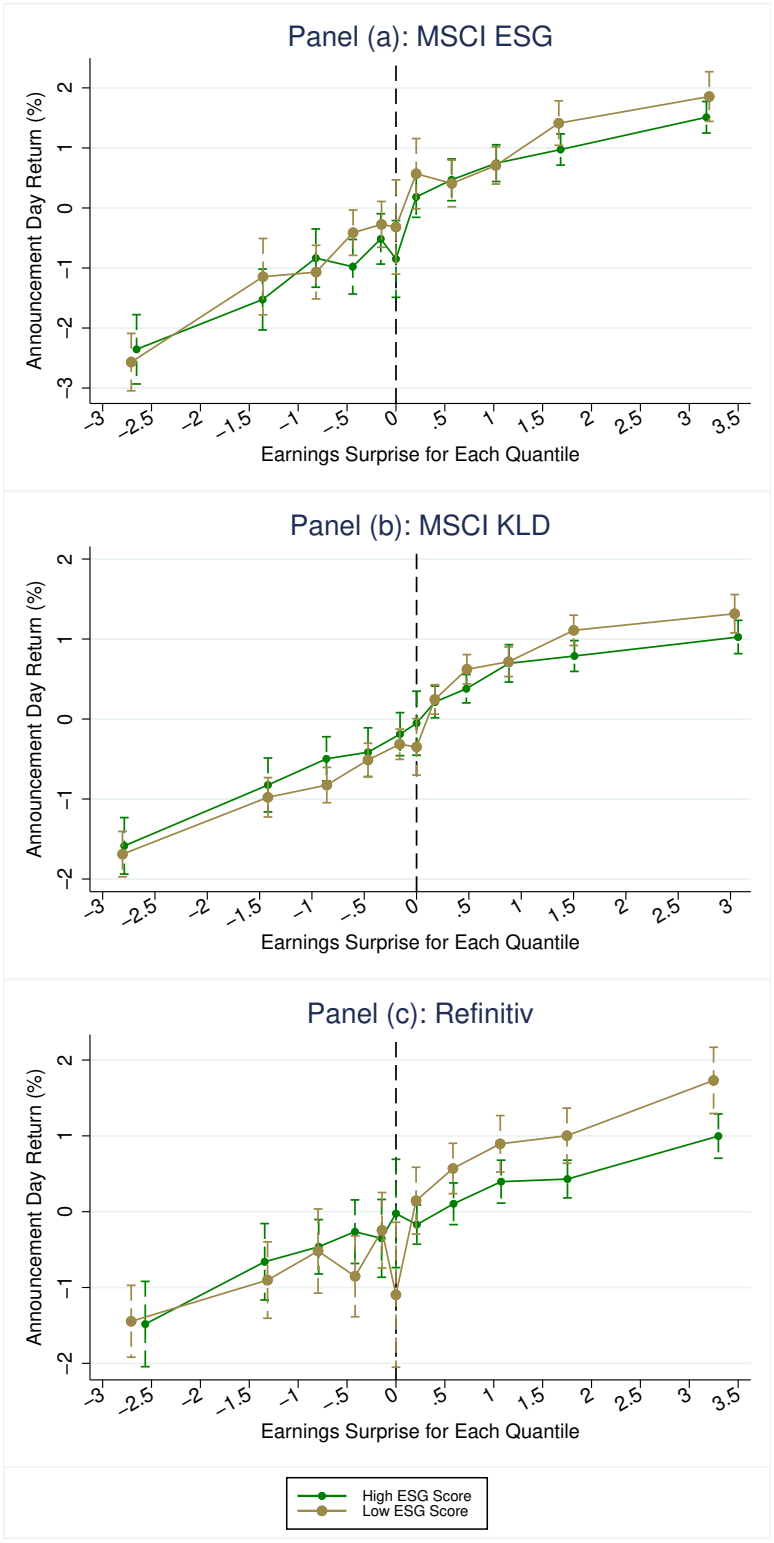


Figure 8: The Effect of Sustainable Ownership on Pre-Announcement Cumulative Returns.
This figure presents the pre-announcement cumulative returns for four groups of stocks. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter. The cumulative abnormal return is the buy-and-hold return adjusted using the market model. Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The plots depict 95% confidence intervals based on standard errors double-clustered by stock and quarter.

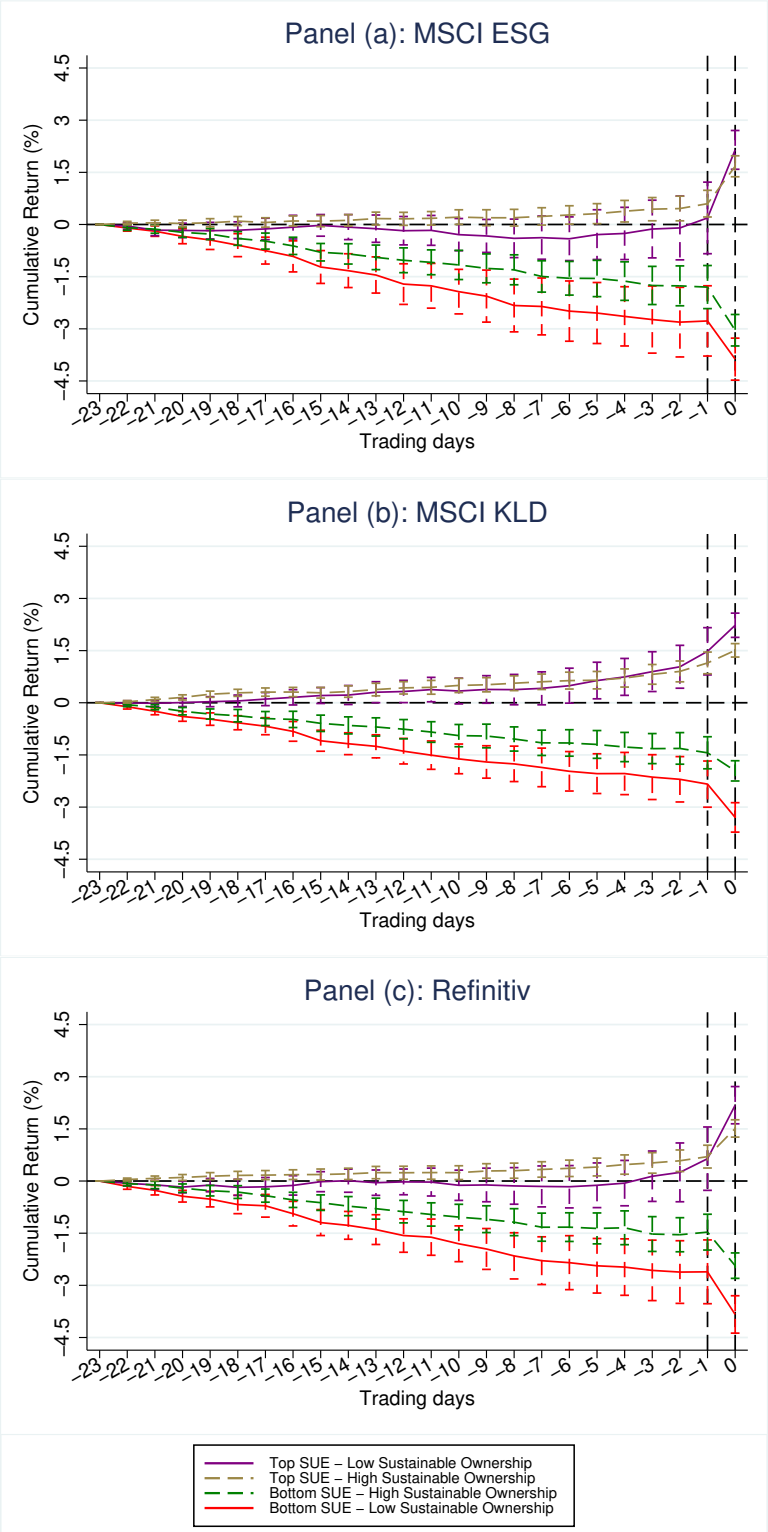
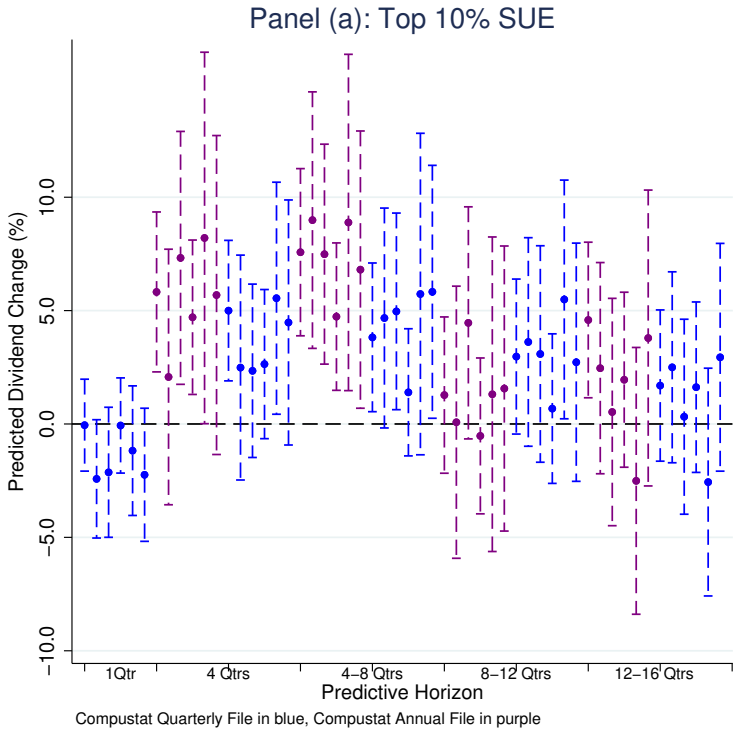


Figure 9: The Effect of Sustainable Ownership on Changes in Dividends.
This figure presents the results from regressing the percentage change in firms' dividends on the measures of sustainable ownership and earning surprises. In Panel (a), we plot the coefficients on *Top SUE*, representing the top 10% in terms of earnings surprises during the announcement quarter. In Panel (b), we plot the coefficients on the interaction of *Top SUE* with *High Sustainable Ownership*, representing the top 30% firms in terms of sustainable ownership. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. Results for dividend changes computed based on the Compustat Quarterly file are depicted in blue, results using the Compustat Annual file in purple. The six different estimates for each frequency and color result from the six different measures of sustainable ownership, employing three different ESG datasets (MSCI ESG, MSCI KLD, and Refinitiv) and for each of them the time-invariant and time-varying definition of sustainable investors. We include the set of control variables and fixed effects as in our baseline regressions. The plots depict 95% confidence intervals based on standard errors double-clustered by stock and quarter.



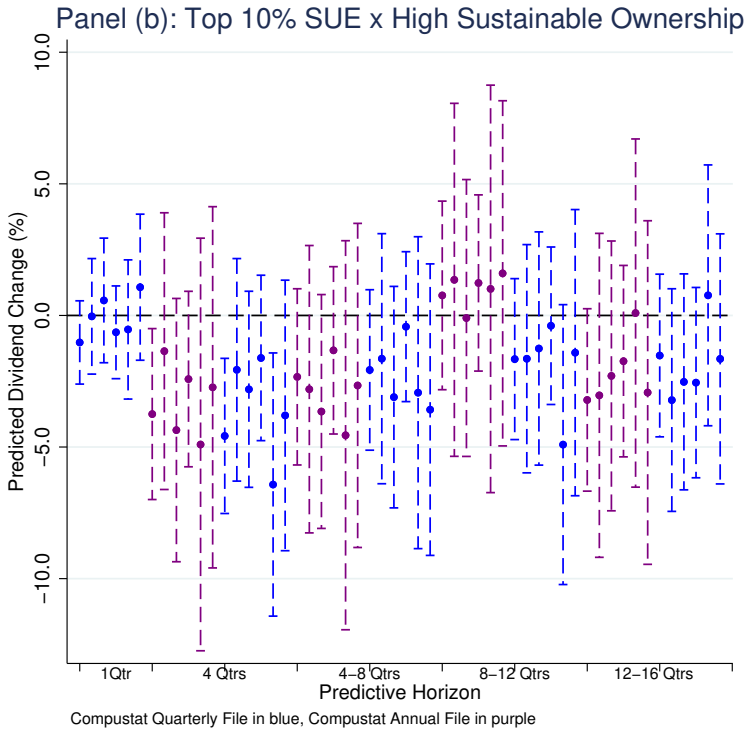


Figure 10: Implied Sustainability Premium for Different Earnings Response Ratios.
This figure depicts the sustainability premium s^*, the difference between discount rates of low-sustainable-ownership and high-sustainable-ownership firms, that generates a given ratio of the price response to earnings for high-sustainable-ownership firms relative to low-sustainable-ownership firms. We evaluate the earnings response according to (12) for firms with high and low sustainable ownership, based on the estimated autoregressive process for earnings and assuming an average cash flow growth rate of $g_n = 4\%$ annually for both types of firms. The discount rate difference s^* is then determined such that it produces a given earnings response ratio, dependent on the discount rate of firms with low sustainable ownership, $r_{LowSustOwn}$. An earnings response ratio of 0.59 is obtained without any difference in discount rates, as it is produced by the differential earnings persistence of both types of firms. An earnings response ratio of 0.55 stands for a 45% dampened earnings response (the lower estimate in our empirical analysis), a ratio of 0.42 stands for a 58% dampened earnings response (the higher estimate in our empirical analysis).

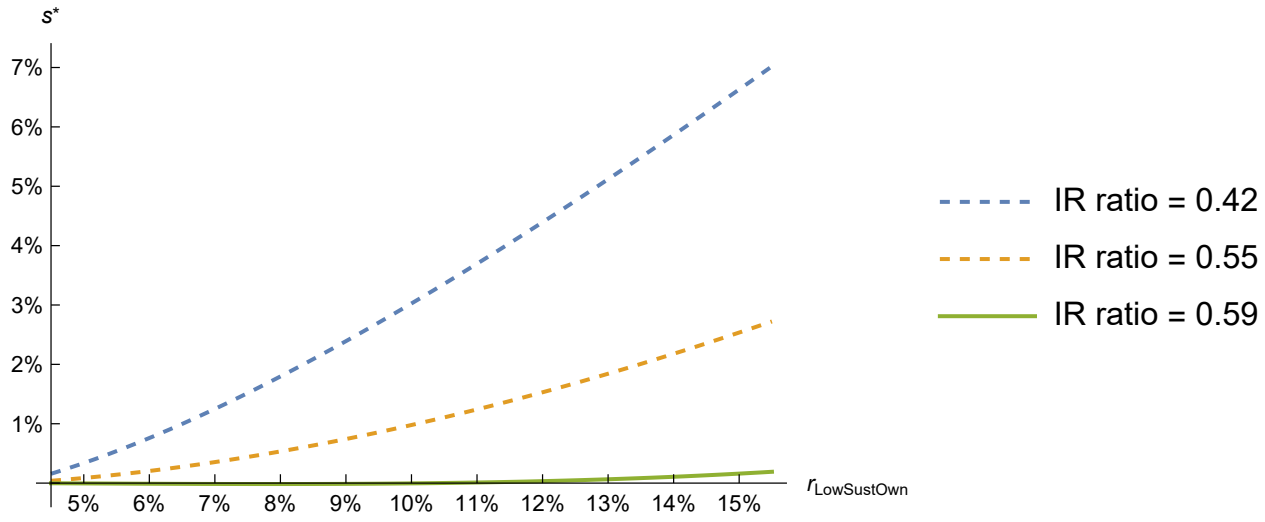


Table 1: The Effect of Sustainable Ownership on the Immediate Price Response to Earnings.
The table shows the results from regressing the announcement-day abnormal returns on the measures of sustainable ownership and earnings surprises, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (3), and (5) (Quantiles 11 and 1). In columns (4) and (6), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Panel A: MSCI ESG						
y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.005***	-0.002	-0.005	-0.001		
	(0.002)	(0.003)	(0.004)	(0.003)		
Sustainable Ownership					-0.042**	-0.014
					(0.021)	(0.018)
Top SUE	0.046***	0.044***	0.027***	0.022***	0.025***	0.022***
	(0.002)	(0.003)	(0.004)	(0.002)	(0.003)	(0.002)
*High Sustainable Ownership * Top SUE*	-0.012***	-0.012***	-0.012***	-0.010***		
	(0.003)	(0.003)	(0.003)	(0.003)		
*Sustainable Ownership * Top SUE*					-0.038	-0.049***
					(0.023)	(0.018)
Observations	18611	17250	15184	31628	27129	55315
R-squared	0.070	0.125	0.124	0.085	0.102	0.071

Panel B: MSCI KLD						
y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.011***	0.008***	0.008***	0.006***		
	(0.001)	(0.002)	(0.002)	(0.001)		
Sustainable Ownership					0.026**	0.021**
					(0.012)	(0.008)
Top SUE	0.037***	0.037***	0.030***	0.022***	0.023***	0.017***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)
*High Sustainable Ownership * Top SUE*	-0.016***	-0.016***	-0.016***	-0.013***		
	(0.001)	(0.002)	(0.002)	(0.001)		
*High Sustainable Ownership * Top SUE*					-0.115***	-0.085***
					(0.013)	(0.010)
Observations	37550	35361	29177	59937	51411	104396
R-squared	0.052	0.089	0.087	0.059	0.076	0.054

Panel C: Refinitiv						
y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.010***	0.007*	0.005	0.002		
	(0.002)	(0.003)	(0.004)	(0.002)		
Sustainable Ownership Ownership					0.038***	0.025**
					(0.012)	(0.010)
Top SUE	0.045***	0.043***	0.029***	0.024***	0.032***	0.025***
	(0.002)	(0.002)	(0.004)	(0.002)	(0.003)	(0.001)
*High Sustainable Ownership * Top SUE*	-0.017***	-0.017***	-0.017***	-0.014***		
	(0.002)	(0.003)	(0.003)	(0.002)		
*Sustainable Ownership * Top SUE*					-0.135***	-0.110***
					(0.015)	(0.011)
Observations	24667	23190	19640	40512	34971	71104
R-squared	0.066	0.115	0.120	0.082	0.097	0.069

Controls	No	No	Yes	Yes	Yes	Yes
Day of week FE	No	No	Yes	Yes	Yes	Yes
Calendar month FE	No	No	Yes	Yes	Yes	Yes
Stock FE	No	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	Yes	Yes	Yes	Yes

Table 2: The Effect of Sustainable Ownership on the Delayed Price Response to Earnings.
The table shows the results from regressing the cumulative post-announcement abnormal returns on the measures of sustainable ownership and earnings surprises, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. *Cumulative Post-Announcement Return* is the cumulative abnormal return over the 22 days starting on the first day after the day of the announcement, adjusted using the market model. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (3), and (5) (Quantiles 11 and 1). In columns (4) and (6), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Panel A: MSCI ESG						
y =	*Cumulative Post-Annoucement Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.014**	-0.003	0.002	-0.001		
	(0.005)	(0.006)	(0.006)	(0.003)		
Sustainable Ownership					-0.012	0.002
					(0.034)	(0.027)
Top SUE	0.027***	0.015***	0.010	0.007	0.005	0.005
	(0.005)	(0.004)	(0.010)	(0.005)	(0.007)	(0.004)
*High Sustainable Ownership * Top SUE*	-0.015***	-0.007	-0.012**	-0.009***		
	(0.005)	(0.005)	(0.005)	(0.003)		
*Sustainable Ownership * Top SUE*					-0.029	-0.039
					(0.036)	(0.029)
Observations	18567	17196	15151	31600	27139	55358
R-squared	0.008	0.286	0.291	0.199	0.225	0.151

Panel B: MSCI KLD						
y =	*Cumulative Post-Annoucement Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.012***	0.008*	0.009**	0.006**		
	(0.003)	(0.004)	(0.004)	(0.003)		
Sustainable Ownership					0.009	0.019
					(0.023)	(0.017)
Top SUE	0.023***	0.021***	0.013**	0.009***	0.006	0.006**
	(0.003)	(0.003)	(0.006)	(0.003)	(0.005)	(0.003)
*High Sustainable Ownership * Top SUE*	-0.015***	-0.013***	-0.012***	-0.007***		
	(0.003)	(0.004)	(0.004)	(0.003)		
*Sustainable Ownership * Top SUE*					-0.053**	-0.041**
					(0.022)	(0.017)
Observations	37464	35248	29119	59897	51453	104522
R-squared	0.005	0.248	0.245	0.177	0.196	0.136

Panel C: Refinitiv						
y =	*Cumulative Post-Annoucement Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.015***	0.001	0.007	0.003		
	(0.004)	(0.005)	(0.006)	(0.004)		
Sustainable Ownership					-0.005	-0.016
					(0.026)	(0.018)
Top SUE	0.029***	0.023***	0.016**	0.011***	0.009	0.006*
	(0.004)	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)
*High Sustainable Ownership * Top SUE*	-0.020***	-0.016***	-0.017***	-0.013***		
	(0.004)	(0.005)	(0.005)	(0.004)		
*Sustainable Ownership * Top SUE*					-0.031	-0.035*
					(0.028)	(0.020)
Observations	24587	23109	19597	40426	35011	71218
R-squared	0.009	0.262	0.258	0.181	0.199	0.135

Controls	No	No	Yes	Yes	Yes	Yes
Day of week FE	No	No	Yes	Yes	Yes	Yes
Calendar month FE	No	No	Yes	Yes	Yes	Yes
Stock FE	No	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	Yes	Yes	Yes	Yes

Table 3: The Effect of Sustainable Ownership on the Normalized Delayed Price Response.
The table shows the results from regressing the normalized delayed response to earnings on the measures of sustainable ownership and earning surprises, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. *Normalized Delayed Response* is the ratio of the cumulative abnormal return over the 22 days after the announcement (starting on the first day after the day of the announcement) to the total cumulative return on the earnings day and the 22 days after the announcement. See the details in Section 2.3.2. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (3), and (5) (Quantiles 11 and 1). In columns (4) and (6), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Panel A: MSCI ESG						
y =	*Normalized Delayed Response*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	-0.023	0.140	0.206	0.068		
	(0.058)	(0.127)	(0.140)	(0.074)		
Sustainable Ownership					1.451	0.938**
					(0.882)	(0.405)
Top SUE	-0.316***	-0.269***	-0.158	-0.268***	-0.397***	-0.399***
	(0.062)	(0.077)	(0.157)	(0.083)	(0.128)	(0.057)
*High Sustainable Ownership * Top SUE*	-0.067	-0.106	-0.096	-0.100		
	(0.088)	(0.125)	(0.133)	(0.075)		
*Sustainable Ownership * Top SUE*					-0.620	-0.145
					(0.954)	(0.482)
Observations	18638	17257	15155	31584	27065	55211
R-squared	0.004	0.204	0.200	0.130	0.151	0.091

Panel B: MSCI KLD						
y =	*Normalized Delayed Response*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.004	0.031	0.126	0.114**		
	(0.035)	(0.061)	(0.078)	(0.047)		
Sustainable Ownership					1.019*	0.851**
					(0.520)	(0.365)
Top SUE	-0.282***	-0.250***	-0.215**	-0.245***	-0.308***	-0.304***
	(0.036)	(0.049)	(0.098)	(0.052)	(0.067)	(0.034)
*High Sustainable Ownership * Top SUE*	-0.059	-0.098	-0.154**	-0.127**		
	(0.047)	(0.065)	(0.077)	(0.050)		
*Sustainable Ownership * Top SUE*					-0.606	-0.703*
					(0.518)	(0.373)
Observations	37545	35336	29050	59805	51272	104190
R-squared	0.004	0.161	0.157	0.109	0.124	0.076

Panel C: Refinitiv						
y =	*Normalized Delayed Response*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.074	0.090	0.227	0.015		
	(0.058)	(0.129)	(0.155)	(0.091)		
Sustainable Ownership					1.190*	1.059**
					(0.627)	(0.424)
Top SUE	-0.301***	-0.295***	-0.225*	-0.313***	-0.339***	-0.342***
	(0.053)	(0.072)	(0.124)	(0.064)	(0.093)	(0.047)
*High Sustainable Ownership * Top SUE*	-0.201***	-0.185*	-0.270**	-0.167**		
	(0.072)	(0.097)	(0.121)	(0.069)		
*Sustainable Ownership * Top SUE*					-1.272**	-0.874**
					(0.557)	(0.390)
Observations	24658	23187	19545	40346	34870	70942
R-squared	0.006	0.172	0.168	0.118	0.133	0.084

Controls	No	No	Yes	Yes	Yes	Yes
Day of week FE	No	No	Yes	Yes	Yes	Yes
Calendar month FE	No	No	Yes	Yes	Yes	Yes
Stock FE	No	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	Yes	Yes	Yes	Yes

Table 4: The Effects of the Stock's ESG Score on the Immediate Price Response to Earnings.
The table shows the results from regressing the announcement-day abnormal returns on the stock's *ESG Score* and the measure of earning surprises, for the sample of *High ESG Score* and *Low ESG Score* stocks. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *High ESG Score* (*Low ESG Score*) stocks represent the top 30% (bottom 30%) in terms of the ESG score distribution in the given quarter. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter (Quantiles 11 and 1). We present the results using ESG scores from three different datasets: MSCI ESG, MSCI KLD, and Refinitiv. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

y =	*Announcement Day Return*								
Dataset	MSCI ESG			MSCI KLD			Refinitiv		
	(1)	(2)	(3)	(4)	(5)	(6)	(4)	(5)	(6)
High ESG Score	0.001	0.001	0.001	0.001	0.002	0.001	-0.003	0.004	0.000
	(0.004)	(0.005)	(0.005)	(0.002)	(0.003)	(0.003)	(0.004)	(0.006)	(0.005)
Top SUE	0.043***	0.043***	0.022***	0.038***	0.035***	0.018***	0.035***	0.036***	0.014**
	(0.003)	(0.004)	(0.006)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)	(0.006)
*High ESG Score * Top SUE*	-0.002	-0.003	-0.001	-0.005*	-0.003	-0.004	-0.004	-0.007	-0.007
	(0.005)	(0.005)	(0.006)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)
Observations	10456	9914	9043	23570	22771	21563	7213	6851	6202
R-squared	0.061	0.269	0.281	0.052	0.239	0.250	0.045	0.289	0.293
Controls	No	No	Yes	No	No	Yes	No	No	Yes
Day of week FE	No	No	Yes	No	No	Yes	No	No	Yes
Calendar month FE	No	No	Yes	No	No	Yes	No	No	Yes
Stock FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Quarter FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes

Table 5: The Mean Earning Surprise for Stocks with Different Levels of Sustainable Ownership.
The table presents the mean earnings surprise across stocks with different levels of sustainable ownership. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter (Quantiles 11 and 1) in Panel A, and the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2) in Panel B. We present the results using ESG scores from three different datasets: MSCI ESG, MSCI KLD, and Refinitiv. The unit of observation is the cross-sectional mean of SUE within each quarter.

Panel A: Quantiles 11 vs. 1

MSCI ESG

	Low Sustainable Ownership	High Sustainable Ownership	Low − High	p-value
High SUE	2.903	3.027	-0.124	0.105
Low SUE	-2.852	-2.716	-0.136	0.474

MSCI KLD

	Low Sustainable Ownership	High Sustainable Ownership	Low − High	p-value
High SUE	2.953	3.116	-0.163	0.001
Low SUE	-2.888	-2.813	-0.076	0.469

Refinitiv

	Low Sustainable Ownership	High Sustainable Ownership	Low − High	p-value
High SUE	2.930	3.027	-0.098	0.142
Low SUE	-2.835	-2.671	-0.164	0.309

Panel B: Quantiles 11 and 10 vs. 1 and 2

MSCI ESG

	Low Sustainable Ownership	High Sustainable Ownership	Low − High	p-value
High SUE	2.150	2.319	-0.169	0.731
Low SUE	-2.137	-2.020	-0.117	0.753

MSCI KLD

	Low Sustainable Ownership	High Sustainable Ownership	Low − High	p-value
High SUE	2.146	2.365	-0.220	0.000
Low SUE	-2.165	-2.098	-0.068	0.341

Refinitiv

	Low Sustainable Ownership	High Sustainable Ownership	Low − High	p-value
High SUE	2.163	2.323	-0.161	0.002
Low SUE	-2.124	-1.982	-0.143	0.183

Table 6: The Effect of Sustainable Ownership on the Price Response to Earnings Including Pre-Announcement Effects.

The table shows the results from regressing the cumulative abnormal returns from 22 days before the earnings announcement up to and including the announcement day on the measures of sustainable ownership and earning surprises, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. *Cumulative Pre-Announcement and Announcement Day Return* is the cumulative abnormal return over the 23 days starting 22 days before the day of the announcement up to and including the earnings day, adjusted using the market model. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (3), and (5) (Quantiles 11 and 1). In columns (4) and (6), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Panel A: MSCI ESG						
y =	*Cumulative Pre-Announcement and Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.017***	-0.009	-0.009	-0.009**		
	(0.004)	(0.007)	(0.008)	(0.005)		
Sustainable Ownership					-0.044	-0.037
					(0.041)	(0.032)
Top SUE	0.084***	0.078***	0.043***	0.035***	0.041***	0.033***
	(0.004)	(0.005)	(0.007)	(0.005)	(0.007)	(0.004)
*High Sustainable Ownership * Top SUE*	-0.026***	-0.025***	-0.027***	-0.019***		
	(0.005)	(0.005)	(0.006)	(0.004)		
*Sustainable Ownership * Top SUE*					-0.133***	-0.101***
					(0.039)	(0.031)
Observations	18586	17229	15175	31601	27143	55374
R-squared	0.064	0.171	0.187	0.139	0.157	0.124

Panel B: MSCI KLD						
y =	*Cumulative Pre-Announcement and Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.019***	0.015***	0.015***	0.014***		
	(0.003)	(0.004)	(0.005)	(0.003)		
Sustainable Ownership					0.061***	0.064***
					(0.023)	(0.019)
Top SUE	0.081***	0.077***	0.048***	0.039***	0.041***	0.031***
	(0.003)	(0.003)	(0.006)	(0.003)	(0.004)	(0.002)
*High Sustainable Ownership * Top SUE*	-0.032***	-0.030***	-0.030***	-0.026***		
	(0.003)	(0.004)	(0.004)	(0.003)		
*Sustainable Ownership * Top SUE*					-0.206***	-0.170***
					(0.026)	(0.021)
Observations	37480	35284	29142	59925	51431	104500
R-squared	0.054	0.134	0.149	0.114	0.132	0.106

Panel C: Refinitiv						
y =	*Cumulative Pre-Announcement and Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.022***	0.002	-0.000	-0.005		
	(0.004)	(0.006)	(0.007)	(0.005)		
Sustainable Ownership					0.007	-0.024
					(0.027)	(0.020)
Top SUE	0.084***	0.080***	0.048***	0.046***	0.048***	0.041***
	(0.004)	(0.005)	(0.008)	(0.005)	(0.006)	(0.003)
*High Sustainable Ownership * Top SUE*	-0.035***	-0.031***	-0.033***	-0.029***		
	(0.005)	(0.006)	(0.006)	(0.004)		
*Sustainable Ownership * Top SUE*					-0.205***	-0.174***
					(0.028)	(0.021)
Observations	24600	23118	19591	40430	34948	71144
R-squared	0.062	0.163	0.170	0.137	0.149	0.120

Controls	No	No	Yes	Yes	Yes	Yes
Day of week FE	No	No	Yes	Yes	Yes	Yes
Calendar month FE	No	No	Yes	Yes	Yes	Yes
Stock FE	No	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	Yes	Yes	Yes	Yes

Table 7: The Effect of Sustainable Ownership on the Immediate Price Response to Earnings Controlling for Passive Ownership.

The table shows the mean passive ownership across stocks with different levels of sustainable ownership (Panel A) and the results from regressing different outcome variables on the measures of sustainable ownership and earnings surprises, controlling for the effects of passive ownership (Panel B), for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. In Panel B, we only report the main coefficient on the interaction between the measure of sustainable ownership and the earnings surprise, based on the specifications and outcome variables in columns (3) of Tables 1, 2, 3, and Appendix Table B.10. *Passive Ownership* is the fraction of total shares outstanding held by passive investors as classified by the CRSP Mutual Fund Database. *Big 3 Ownership* (*Big 10 Ownership*) is the fraction of total shares outstanding held by the largest three (ten) institutional investors. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. The scores are calculated using three different datasets: MSCI ESG, MSCI KLD, and Refinitiv. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Panel A: Mean of Passive Ownership Measures across Stocks with High and Low Sustainable Ownership

Quantile 11 vs. 1

	MSCI ESG			
	Low Sustainable Ownership	High Sustainable Ownership	Low − High	p-value
Passive Ownership	0.089	0.151	-0.061	0.000
Big 3 Ownership	0.144	0.255	-0.112	0.000
Big 10 Ownership	0.047	0.07	-0.023	0.000
	MSCI KLD			
	Low Sustainable Ownership	High Sustainable Ownership	Low − High	p-value
Passive Ownership	0.062	0.105	-0.043	0.000
Big 3 Ownership	0.107	0.196	-0.088	0.000
Big 10 Ownership	0.026	0.038	-0.012	0.000
	Refinitiv			
	Low Sustainable Ownership	High Sustainable Ownership	Low − High	p-value
Passive Ownership	0.057	0.146	-0.090	0.000
Big 3 Ownership	0.096	0.257	-0.161	0.000
Big 10 Ownership	0.025	0.063	-0.038	0.000

Panel B: Coefficient on High Sustainable Ownership * Top SUE

y=	*Announcement Day Return*	*Cumulative Post-Announcement Return*	*Normalized Delayed Response*	*Announcement Day Volume*
	(1)	(2)	(3)	(4)
MSCI ESG	-0.014***	-0.011***	-0.011***	-0.008*
	(0.003)	(0.004)	(0.004)	(0.004)
MSCI KLD	-0.018***	-0.019***	-0.018***	-0.016***
	(0.002)	(0.003)	(0.002)	(0.003)
Refinitiv	-0.021***	-0.020***	-0.016***	-0.016***
	(0.003)	(0.004)	(0.004)	(0.004)
Passive Ownership	Yes	No	No	Yes
Passive Ownership * Top SUE	Yes	No	No	Yes
Big 3 Ownership	No	Yes	No	Yes
Big 3 Ownership * Top SUE	No	Yes	No	Yes
Big 10 Ownership	No	No	Yes	Yes
Big 10 Ownership * Top SUE	No	No	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Day of week FE	Yes	Yes	Yes	Yes
Calendar month FE	Yes	Yes	Yes	Yes
Stock FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes

Table 8: Persistence of Cash Flow Changes for Stocks with Different Levels of Sustainable Ownership.

The table shows the estimated AR(8) coefficients from regression (10) in Panel A and the resulting estimates of $1 + PVR$ in Panel B, where PVR is the present value of cash flow revisions. We define quarterly cash flow changes as $\Delta EPS = EPS_t - EPS_{t-1}$, using earnings data from IBES. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors, based on the MSCI ESG dataset. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership, *Medium Sustainable Ownership* stocks represent the middle 40%. $HighSustOwn$ ($MediumSustOwn$) is a dummy for High (Medium) Sustainable Ownership stocks. We report the baseline coefficients for low-sustainable-ownership stocks and the incremental coefficients for high sustainable ownership, while coefficients for medium sustainable ownership are omitted for brevity. The computation of PVR estimates based on the AR(8) coefficients is performed under different values of the discount rate r_n.

Panel A: Estimated AR(8) Coefficients

y=	ΔEPS (1)	ΔEPS (2)	ΔEPS (3)	ΔEPS (4)	ΔEPS (5)
$HighSustOwn$	-0.029**	0.011	0.013	-0.029	-0.012
	(0.013)	(0.020)	(0.020)	(0.028)	(0.021)
ΔEPS_{t-1}	-0.598***	-0.560***	-0.566***	-0.598***	-0.603***
	(0.008)	(0.039)	(0.038)	(0.062)	(0.061)
ΔEPS_{t-2}	-0.169***	-0.110**	-0.118***	-0.169**	-0.175**
	(0.009)	(0.044)	(0.044)	(0.083)	(0.083)
ΔEPS_{t-3}	-0.081***	-0.026	-0.034	-0.081	-0.088
	(0.010)	(0.056)	(0.057)	(0.077)	(0.077)
ΔEPS_{t-4}	0.480***	0.514***	0.513***	0.480***	0.479***
	(0.006)	(0.063)	(0.064)	(0.090)	(0.091)
ΔEPS_{t-5}	-0.116***	-0.125***	-0.122***	-0.116***	-0.114***
	(0.005)	(0.021)	(0.021)	(0.028)	(0.028)
ΔEPS_{t-6}	-0.133***	-0.145***	-0.143***	-0.133***	-0.132***
	(0.004)	(0.040)	(0.040)	(0.037)	(0.037)
ΔEPS_{t-7}	-0.150***	-0.174***	-0.177***	-0.150**	-0.153**
	(0.005)	(0.020)	(0.020)	(0.058)	(0.058)
ΔEPS_{t-8}	-0.120***	-0.127***	-0.129***	-0.120***	-0.122***
	(0.003)	(0.014)	(0.014)	(0.027)	(0.027)
$HighSustOwn * \Delta EPS_{t-1}$	-0.104***	-0.130	-0.131	-0.104	-0.107
	(0.010)	(0.093)	(0.092)	(0.106)	(0.105)
$HighSustOwn * \Delta EPS_{t-2}$	-0.338***	-0.374***	-0.376***	-0.338***	-0.342***
	(0.011)	(0.097)	(0.097)	(0.118)	(0.118)
$HighSustOwn * \Delta EPS_{t-3}$	-0.419***	-0.461***	-0.466***	-0.419***	-0.427***
	(0.014)	(0.123)	(0.121)	(0.146)	(0.144)
$HighSustOwn * \Delta EPS_{t-4}$	-0.672***	-0.684***	-0.692***	-0.672***	-0.682***
	(0.012)	(0.150)	(0.150)	(0.165)	(0.164)
$HighSustOwn * \Delta EPS_{t-5}$	0.206***	0.236**	0.229**	0.206*	0.198*
	(0.012)	(0.106)	(0.103)	(0.108)	(0.105)
$HighSustOwn * \Delta EPS_{t-6}$	-0.029***	0.001	-0.004	-0.029	-0.034
	(0.011)	(0.124)	(0.122)	(0.122)	(0.119)
$HighSustOwn * \Delta EPS_{t-7}$	0.067***	0.107	0.108	0.067	0.068
	(0.011)	(0.102)	(0.100)	(0.130)	(0.127)
$HighSustOwn * \Delta EPS_{t-8}$	0.250***	0.271***	0.275***	0.250***	0.254***
	(0.009)	(0.061)	(0.059)	(0.080)	(0.079)
Constant	0.037***	0.017	0.016	0.037***	0.027*
	(0.009)	(0.016)	(0.017)	(0.012)	(0.016)
Observations	134419	134632	134632	134419	134419
R-squared	0.920	0.921	0.921	0.920	0.921
Stock FE	Yes	No	No	Yes	Yes
Quarter FE	No	No	Yes	No	Yes
SE Clustered by Stock	No	Yes	Yes	Yes	Yes
SE Clustered by Quarter	No	Yes	Yes	Yes	Yes

Panel B: PVR Estimates

r_n (annual) =	5%	10%	15%
$1+PVR_{HighSustOwn}$	31.69	16.17	11.00
$1+PVR_{LowSustOwn}$	53.59	27.23	18.45
Ratio	0.59	0.59	0.60
Stock FE	No	No	No
Quarter FE	Yes	Yes	Yes
Observations	134632	134632	134632

Online Appendix

A Simple Model of Sustainable Investing

We present a simple model of sustainable investing to support our hypothesis development. Our setup builds on and is similar to Pástor et al. (2021) and Goldstein et al. (2024). Consider a two-period economy (times 0 and 1) with one stock and a risk-free asset. The stock trades at price P at time 0 and it delivers, in period 1, a risky financial payoff of $D \sim N(\bar{D}, \sigma^2)$ as well as a "non-pecuniary" (sustainability-related) payoff of Z. The risk-free asset pays off one in period 1, and its price at time 0 is also normalized to one. The stock is in unit supply and the risk-free asset is in unlimited supply.

We consider two investors, $i = 1, 2$, with different sustainable preferences α_i. Assume that $\alpha_1 = 0$ and $\alpha_2 = \alpha$ such that only investor 2 exhibits sustainable preferences. Both investors care about the financial payoff. We call investor 1 "regular" investor and investor 2 "sustainable" investor.

The investors choose the stock position λ_i to maximize their utility. λ_i represents the number of shares that investor i seeks to buy. Since we assume that the stock is in unit supply, λ_i is equivalent to the fraction of ownership of the stock by investor i in equilibrium.

The regular investor solves the standard mean-variance problem, such that their demand for shares is given by:

$$\lambda_{reg} = \frac{\bar{D} - P}{\gamma \sigma^2}. \tag{A.1}$$

The sustainable investor chooses the stock position λ_{sust} to maximize their utility, which is composed of monetary wealth in period 1, W_1, and the non-pecuniary payoff:

$$\max_{\lambda_{sust}} E[W_1 + \lambda_{sust} \alpha Z] - \frac{\gamma}{2} Var(W_1), \tag{A.2}$$

$$s.t. \quad W_1 = \lambda_{sust}(\bar{D} - P) + W_0. \tag{A.3}$$

The sustainability-related payoff Z is deterministic in this basic version and does thus not enter the variance term.

We derive the first order condition of the sustainable investor,

$$\bar{D} - P + \alpha Z - \gamma \lambda_{sust} \sigma^2 = 0, \tag{A.4}$$

and the stock demand:

$$\lambda_{sust} = \frac{\bar{D} - P + \alpha Z}{\gamma \sigma^2}. \tag{A.5}$$

Market clearing requires $\lambda_{reg} + \lambda_{sust} = 1$, implying

$$\frac{\bar{D} - P}{\gamma \sigma^2} + \frac{\bar{D} - P + \alpha Z}{\gamma \sigma^2} = 1. \tag{A.6}$$

Solving for P yields

$$P^* = \bar{D} - \frac{1}{2}\gamma \sigma^2 + \frac{1}{2}\alpha Z. \tag{A.7}$$

Observation 1: The effect of sustainable preferences on stock prices depends on both α and Z, which are unobserved. While researchers usually use ESG scores as a proxy for Z, this result points out that this approach could be problematic for two reasons. First, the effect of scores depends on α; if the investor cares very little about Z (that is, α is small), then the effect of scores is minimal. In this sense, the score is not a sufficient statistic to capture the effect of sustainable preferences on prices. Second, it is unclear whether the sustainability-related payoff Z is actually a linear function of ESG scores, that is, whether an ESG score of 10 contributes twice as much to the investor's utility as an ESG score of 5.

Now, let us calculate the amount of sustainable ownership in equilibrium:

$$\lambda^*_{sust} = \frac{\bar{D} - (\bar{D} - \frac{1}{2}\gamma \sigma^2 + \frac{1}{2}\alpha Z) + \alpha Z}{\gamma \sigma^2} = \frac{\alpha Z + \gamma \sigma^2}{2\gamma \sigma^2} \tag{A.8}$$

We can express αZ as a function of λ^*_{sust}:

$$\alpha Z = \lambda^*_{sust} 2\gamma \sigma^2 - \gamma \sigma^2 \tag{A.9}$$

Then, the equilibrium price as a function of sustainable ownership is:

$$P^* = \bar{D} - \frac{1}{2}\gamma\sigma^2 + \frac{1}{2}(\lambda^*_{sust} 2\gamma\sigma^2 - \gamma\sigma^2) = \bar{D} + \lambda^*_{sust}\gamma\sigma^2 - \gamma\sigma^2 \tag{A.10}$$

Observation 2: Sustainable ownership is a sufficient statistic for the effect of sustainable preferences. It captures both α and Z, such that higher equilibrium ownership is associated with higher prices. Ownership is fully observed, and it does not require any proxy variables, as opposed to α and Z.

Finally, assume that cash flow news arrive such that the expected payoff becomes $\tilde{D}$, and the price becomes $P^*_{postann} = \tilde{D} + \lambda^*_{sust}\gamma\sigma^2 - \gamma\sigma^2$. The return on the announcement day is given by:

$$R_{ann} = \frac{P^*_{postann} - P^*}{P^*} = \frac{\tilde{D} - \bar{D}}{\bar{D} + \lambda^*_{sust}\gamma\sigma^2 - \gamma\sigma^2} \tag{A.11}$$

Define $SUE = \tilde{D} - \bar{D}$. We calculate how sustainable ownership affects the relation between SUE and R_{ann}.

The derivative of R_{ann} with respect to SUE is:

$$\frac{\partial R_{ann}}{\partial(SUE)} = \frac{1}{\bar{D} + \lambda^*_{sust}\gamma\sigma^2 - \gamma\sigma^2}$$

We pin down how the first derivative changes in sustainable ownership λ^*_{sust}:

$$\frac{\partial^2 R_{ann}}{\partial(SUE)\partial\lambda^*_{sust}} = -\frac{\gamma\sigma^2}{\left(\bar{D} + \lambda^*_{sust}\gamma\sigma^2 - \gamma\sigma^2\right)^2} < 0$$

We can interpret and summarize this result as follows.

Predictions:

1. *The absolute magnitude of the earnings-day return for a given earnings surprise (SUE) declines in the amount of sustainable ownership λ^*_{sust}.*

2. *Prediction 1 applies for both positive and negative SUEs, that is, a greater amount of*

sustainable ownership translates to less positive responses to a positive SUE, and to less negative responses to a negative SUE.

3. *The equilibrium at time 1 completely reflects the new public information and the agents' preferences. Therefore, equilibrium prices will stay the same if additional periods are added to the model, unless new information arrives.*

B Additional Empirical Results

B.1 Time-Varying Investor Preferences

We conduct robustness and validation tests to assess the stability of our results. First, we examine whether our findings hold when using an alternative definition of sustainable ownership that considers short-term variations in preferences, as discussed in Section 2.2. In all these tests, we employ the discrete definition of sustainable ownership and the two-quantile sampling approach.

Table B.9 summarizes the results, focusing on the main interaction coefficients across three datasets and four outcome variables. In column (1), we find that the effects on the immediate response are consistently negative, statistically significant, and of similar magnitudes to the baseline difference between high and low sustainable ownership stocks (around 1.5%). Columns (2) and (3) present the results on the delayed response, confirming that the initial effect persists in subsequent trading days. Column (4) reveals a 5%–10% absolute decline in trading volume, which is again comparable to the main results.

Overall, our findings remain robust when accounting for time variation in investor preferences. Additionally, in Appendix Figures B.1–B.3 we reproduce the main graphical evidence from Figures 1, 4, and 8 using this alternative definition of sustainable ownership. We confirm that these graphical results align with our baseline findings.

B.2 Sustainable Ownership and Trading Volume

We analyze the change in trading volume on the announcement day. This analysis serves two main purposes. First, it helps validate the effects observed on immediate and delayed stock returns. If the previously documented effects on returns stem from differences in investor preferences, and trading is the mechanism that causes prices to adjust, then we would expect a similar reduction in trading volume. Second, this analysis allows us to address an alternative explanation: that differences in response arise from variations in cash flow expectations (i.e., "dispersion of opinions") between investors rather than differences in preferences for sustainability. Theory predicts that an increase in opinion dispersion would lead to higher trading volume (Harris and Raviv, 1993). If sustainable investors have different cash flow expectations, we would expect greater announcement-day volume for stocks with high sustainable ownership.

We follow DellaVigna and Pollet (2009) and compute the change in trading volume as:

$$\Delta v_{n,t}^{(h,H)} = \sum_{u=\tau+h}^{\tau+H} \log\left(V_{n,t}^{u}\right)/(H-h+1) - \sum_{u=\tau-20}^{\tau-11} \log\left(V_{n,t}^{u}\right)/10, \tag{B.1}$$

where $V_{t,k}^{u}$ is the value of shares traded on day u and τ is the date of the earnings announcement in quarter t for stock n. The measure $\Delta v_{t,k}^{(h,H)}$ is the percentage increase in volume around announcement date at horizon (h, H), relative to the 10-day window from day 20 to day 11 prior to the announcement. We focus on the effect on $\Delta v_{n,t}^{(0,0)}$ which represents the immediate increase in abnormal trading volume on the announcement day.

The results in Table B.10 consistently show a decline in trading volume. The estimated effects of sustainable ownership are negative in all twelve specifications and statistically significant in ten of them. Quantitatively, the absolute decline in volume ranges from 6.8% (column (3) in Panel A) to 11.2% (column (3) in Panel C) when we apply the discrete definition of sustainable ownership. The baseline increase in volume from positive news for stocks with low sustainable ownership stands at 8.9% and goes up to 13.4% in the same specifications. Together, this suggests that sustainable ownership reduces announcement-day trading volume by nearly 76% (6.8%/8.9%) and up to 83% (11.2%/13.4%). The estimates from other specifications deliver comparable economic magnitudes. In all, these results

are consistent with our earlier findings on returns and provide support for the preferences channel.

B.3 Effects of Investor Horizon

We proceed to investigate whether the effects of investor horizon could confound our results. The paper by Starks et al. (2023) finds that investors with long-term horizons tend to exhibit more patience toward the sustainable firms in their portfolios. In particular, long-horizon investors are less likely to sell these stocks even after experiencing negative earnings surprises. This evidence could alter our interpretation, suggesting that it is investor patience rather than their preferences for sustainability that drives the weak response to news.

First, it is essential to clarify the conceptual distinctions between the preference and patience channels. Our findings indicate a comparable underreaction to both positive and negative cash flow news. However, the patience channel predicts underreaction primarily to negative news, whereas it does not explain the underreaction to positive news. Therefore, from a conceptual standpoint, our results align more closely with the preference channel. The underreaction to positive earnings surprises cannot be attributed to investor patience.

To further differentiate between these channels, we perform an analysis controlling for the impact of investor horizon. Following the approach outlined by Starks et al. (2023), we measure investment horizon using churn ratios, constructed from investor portfolio holdings (Gaspar et al., 2005). Subsequently, we compute a stock-level measure for investor patience, denoted as $ChurnRatio_{n,t}$ for stock n at time t. This measure is derived as the weighted average of churn ratios for all investors holding the stock, with weights determined by the number of shares each investor holds.

We next extend the main specification from Equation (8) by incorporating two additional control variables. The first variable, $\mathbb{1}_{n,t}^{HighChurnRatio}$, is an indicator which equals one if $ChurnRatio_{n,t}$ falls into the top 30% of its within-quarter distribution and zero if $ChurnRatio_{n,t}$ is within the bottom 30%. Our second variable is an interaction term between $\mathbb{1}_{n,t}^{HighChurnRatio}$ and $\mathbb{1}_{n,t}^{TopSUE}$, which allows us to assess the influence of investor patience on the return differential between positive and negative news, mirroring our approach for sustainable ownership. If the effects of investor patience overshadow the effects of prefer-

ences for sustainability, we would expect the main coefficients (i.e., the interaction between $\mathbb{1}_{n,t}^{HighSustOwn}$ and $\mathbb{1}_{n,t}^{TopSUE}$) to diminish in size or become statistically insignificant after including these control variables in our specifications.

Table B.11 demonstrates that the baseline results remain robust. The results consistently reveal that the impact of sustainable ownership remains negative, statistically significant, and of the same magnitude as observed in the main tests (columns (1), (3), (4), (6), (7), and (9)). In columns (2), (5), and (8), we use a continuous measure of patience, denoted as $ChurnRatio_{n,t}$, in conjunction with a continuous definition of sustainable ownership. In two out of three datasets, the results remain unchanged. This cumulative evidence continues to support the preference channel, suggesting that the effects of investor patience do not interfere with our results.

B.4 Placebo Tests for 1980s and 1990s

To address the concern that sustainable and non-sustainable investors may differ along unobserved dimensions that could potentially drive our results, we devise a placebo test. In this test, we leverage the same institutional classification as in our primary analysis and examine whether ownership by sustainable investors had an impact on the response to earnings during a period before the widespread introduction of ESG ratings and the broader enthusiasm for sustainable investing.

For this placebo test, we choose the sample period from 1984Q2 to 1992Q2 because none of the three ESG datasets used in our primary analysis were available during this timeframe. During this time span, investors lack the necessary information and incentives to actively incorporate sustainability criteria into their investment decisions. Our hypothesis is straightforward: If the effects we observe in our primary analysis were predominantly driven by contemporary preferences for sustainability, then we should not find significant effects on earnings response during this "pre-sustainability" era.

The results of our placebo test, as presented in Table B.12, consistently show that there is no significant difference in announcement day returns for stocks with high sustainable ownership during the pre-sustainability era. This finding holds across various specifications that encompass all three datasets, both discrete and continuous definitions of stock-level

sustainable ownership, and two different samples of earning announcements. In essence, it demonstrates that stock ownership by investors classified as sustainable *after* the introduction of ESG ratings did not exert a meaningful influence on the response of returns to earnings news *before* these ratings became available. This result strengthens the argument that the observed effects in our main analysis are indeed rooted in sustainable preferences that have become more pronounced in recent years.

Figure B.1: The Effect of Sustainable Ownership on the Immediate Price Response to Earnings: Time-Varying Ownership Definition.

This figure displays the announcement-day abnormal returns for stocks with different levels of ownership by sustainable investors. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors in a given quarter. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The abnormal return is adjusted using the market model. The stocks are grouped into 11 quantiles by the level of earnings surprises, measured by the standardized unexpected earnings (SUE). Quantiles 1–5 contain earnings announcements with negative SUE and quantiles 7–11 contain earnings surprises with positive SUE. Quantile 6 contains announcements with zero SUE. Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The plots depict 95% confidence intervals based on standard errors double-clustered by stock and quarter.

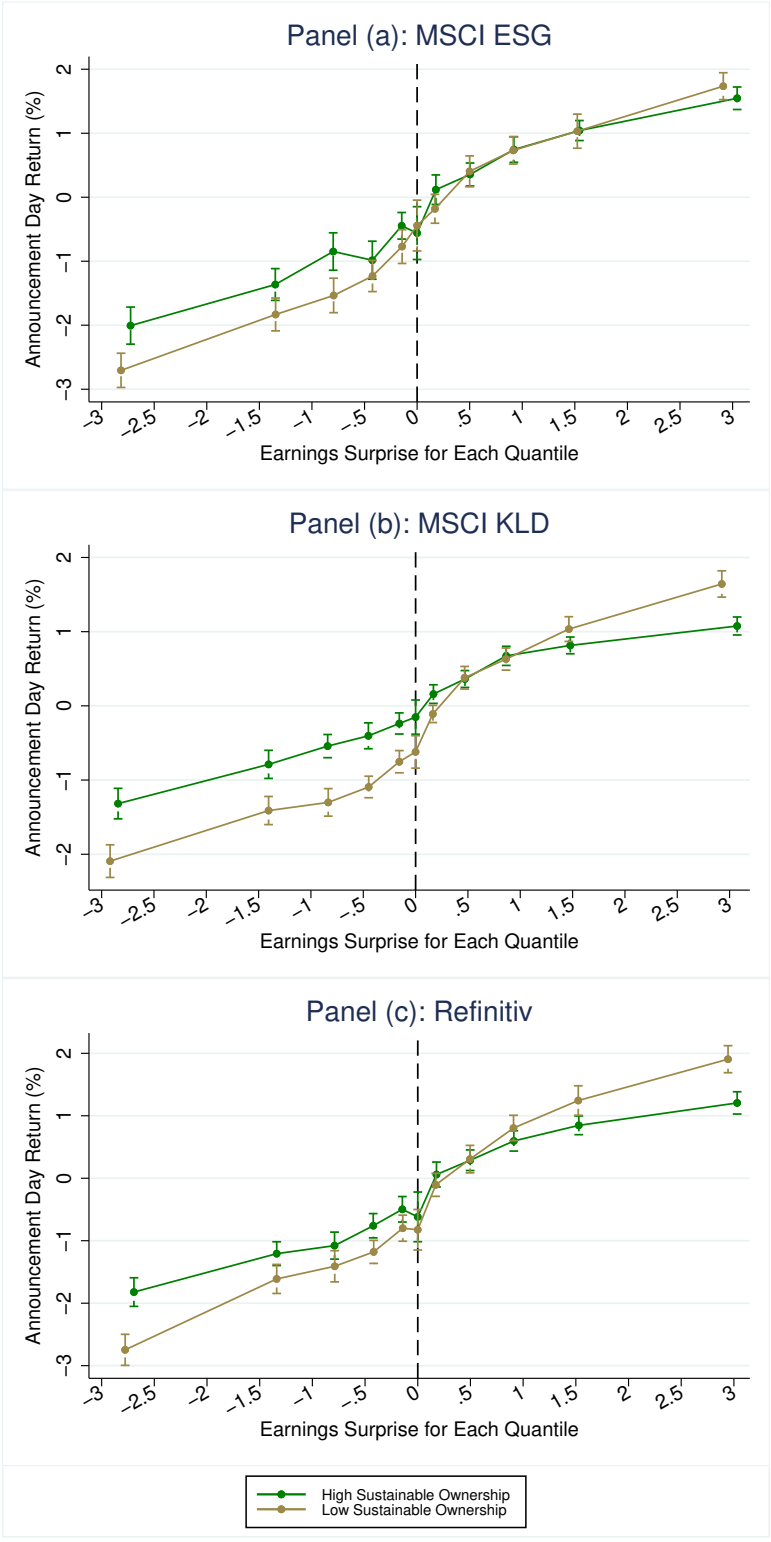


Figure B.2: The Effect of Sustainable Ownership on Post-Announcement Cumulative Returns: Time-Varying Definition of Ownership.

This figure presents the post-announcement cumulative returns for four groups of stocks. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors in a given quarter. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter. The cumulative abnormal return is the buy-and-hold return adjusted using the market model. Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The plots depict 95% confidence intervals based on standard errors double-clustered by stock and quarter.

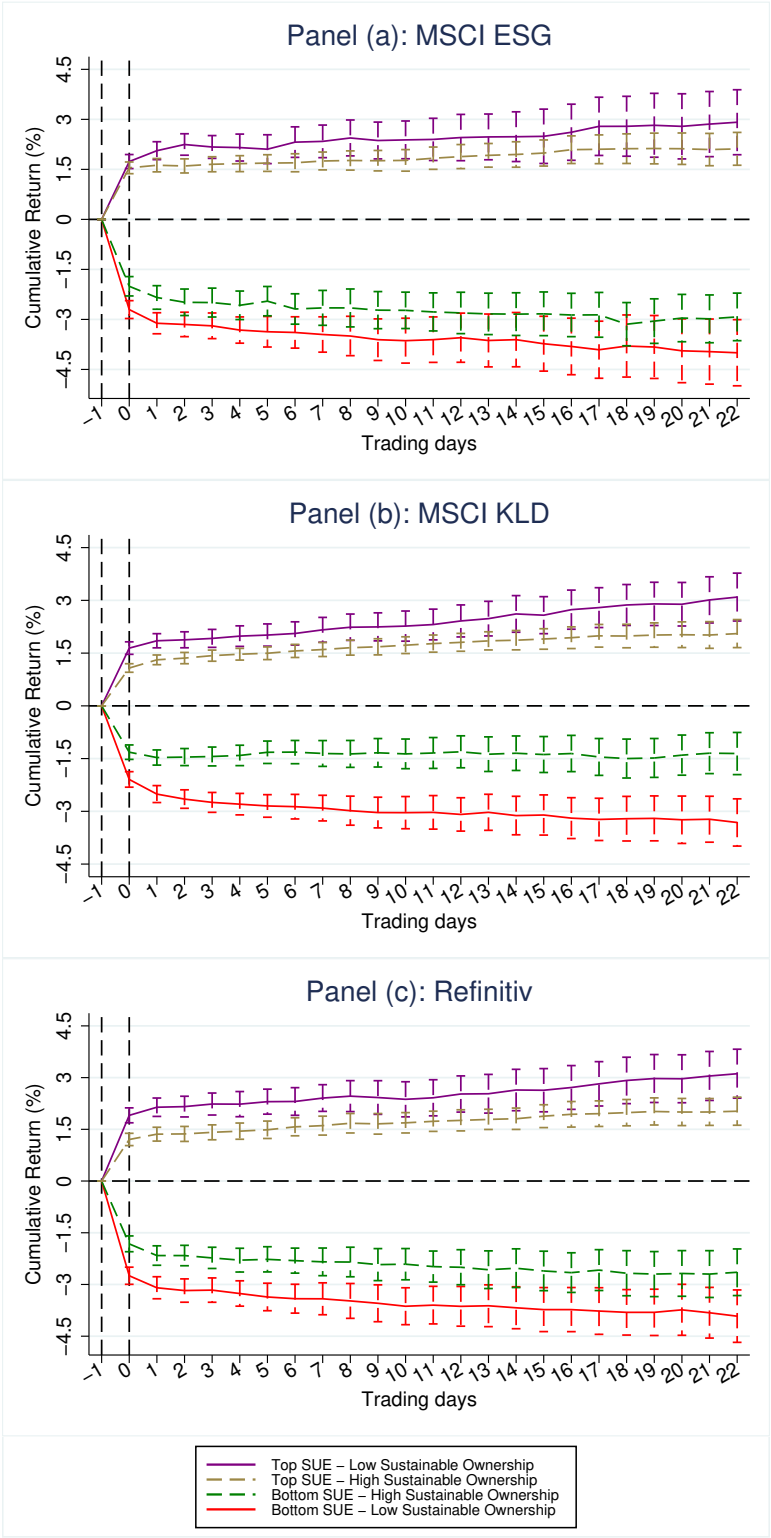


Figure B.3: The Effect of Sustainable Ownership on Pre-Announcement Cumulative Returns: Time-Varying Definition of Ownership.

This figure presents the pre-announcement cumulative returns for four groups of stocks. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors in a given quarter. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter. The cumulative abnormal return is the buy-and-hold return adjusted using the market model. Each panel presents the results using ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The plots depict 95% confidence intervals based on standard errors double-clustered by stock and quarter.

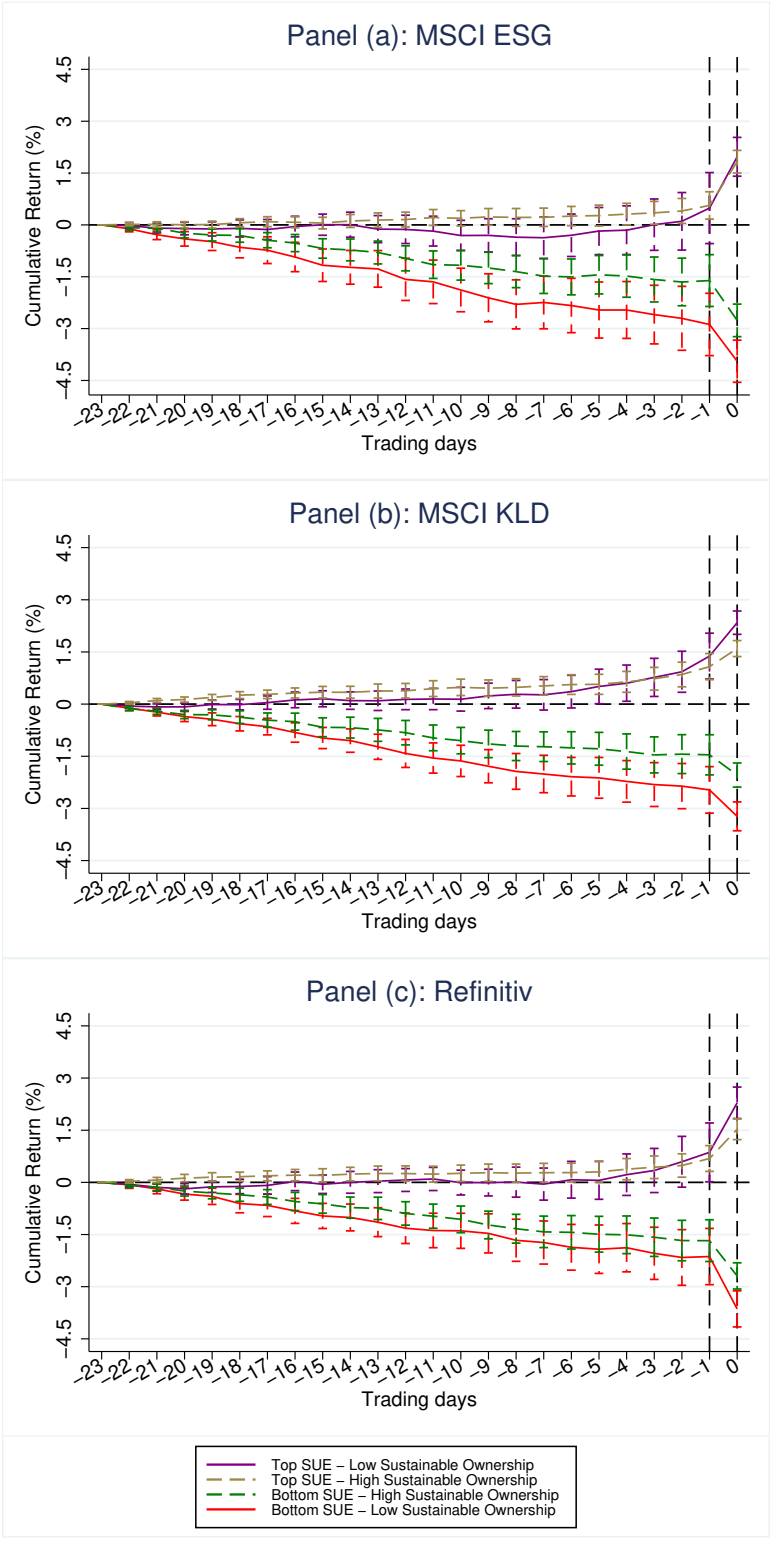
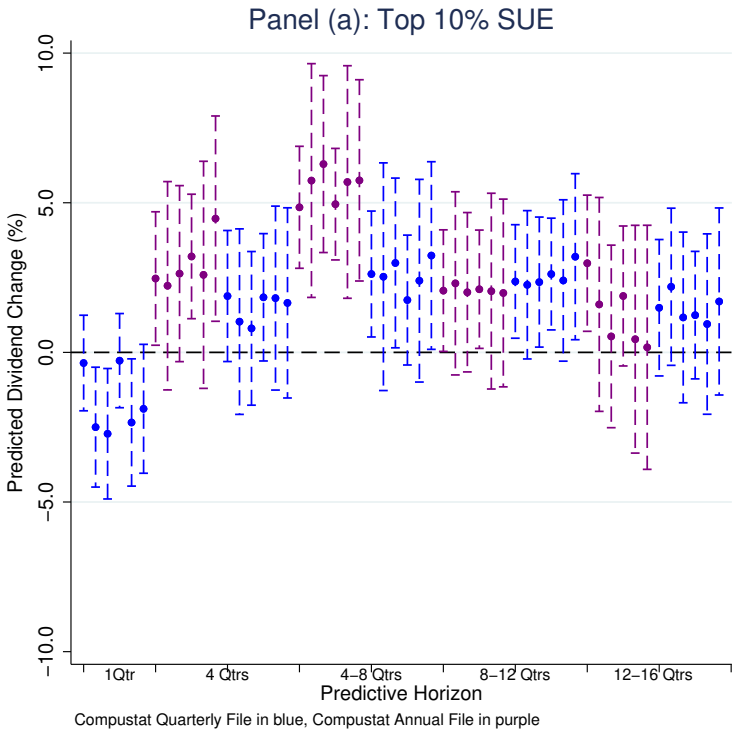


Figure B.4: The Effect of Sustainable Ownership On Changes in Dividends: Continuous Measure of Sustainable Ownership.

This figure presents the results from regressing the percentage change in firms' dividends on the measures of sustainable ownership and earning surprise. In Panel (a), we plot the coefficients on *Top SUE*, representing the top 10% in terms of earnings surprise during the announcement quarter. In Panel (b), we plot the coefficients on the interaction of *Top SUE* with *High Sustainable Ownership*, representing the top 30% firms in terms of sustainable ownership. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. Results for dividend changes computed based on the Compustat Quarterly file are depicted in blue, results using the Compustat Annual file in purple. The six different estimates for each frequency and color result from the six different measures of sustainable ownership, employing three different ESG datasets (MSCI ESG, MSCI KLD, and Refinitiv) and for each of them the time-invariant and time-varying definition of sustainable investors. We include the set of control variables and fixed effects as in our baseline regressions. The plots depict 95% confidence intervals based on standard errors double-clustered by stock and quarter.



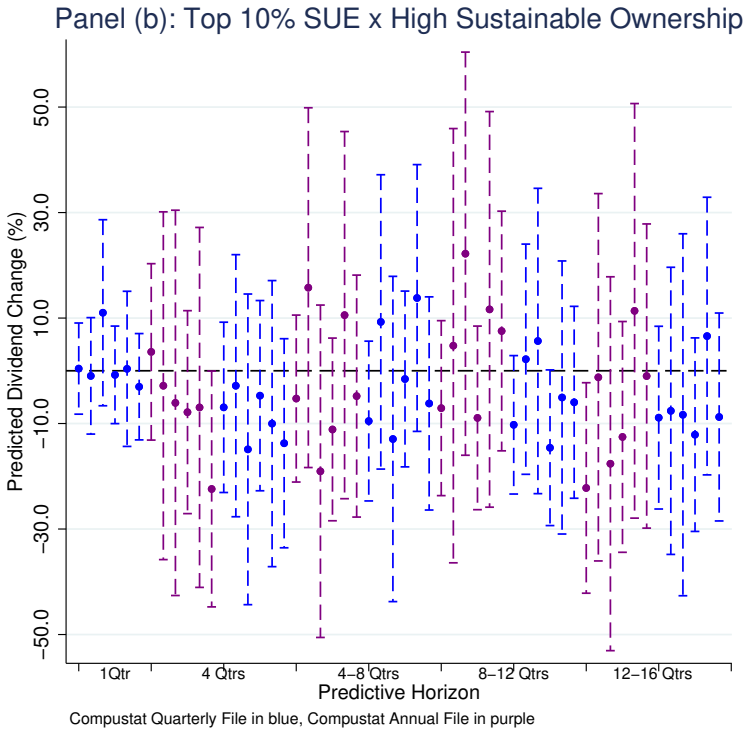


Table B.1: Summary Statistics: MSCI ESG Sample.

This table presents the summary statistics of the dataset where we classify investors as sustainable using the ESG score from the MSCI ESG data. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Cumulative Post-Announcement Return* is the cumulative abnormal return over the 22 days starting on the first day after the day of the announcement, adjusted using the market model. *Normalized Delayed Response* is the ratio of the cumulative abnormal return over the 22 days after the announcement (starting on the first day after the day of the announcement) to the total cumulative return on the earnings day and the 22 days after the announcement. *Announcement Day Volume* is the percentage increase in trading volume around the announcement date, relative to the 10-day window from day 20 to day 11 prior to the announcement. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. The strength of earnings surprises is measured by *SUE*, the standardized unexpected earnings from Foster et al. (1984). *Macro Announcement* indicator equals one when the announcement day features macroeconomic news announcements. *Top Market* indicator equals one when the market return is in the top 10% of its daily return distribution across the sample period. *Log(Market Cap)* is the natural logarithm of the stock's market capitalization. *B/M* is the stock's book-to-market ratio. *Log(# of Announcements)* is the natural logarithm of the number of earnings announcements on the same announcement day. *Log(# of Analysts)* is the natural logarithm of the number of analysts covering the stock. *Churn Ratio* is the measure of the investment horizon of the stock's investors from Gaspar et al. (2005). Panel A presents the results from the sample of the top 10% (bottom 10%) announcement events in terms of earnings surprises during the announcement quarter (Quantiles 11 and 1). Panel B presents the results from the sample of the top 20% (bottom 20%) announcement events in terms of earnings surprises (Quantiles 11,10 and 1,2).

	Obs.	Mean	Std	10%	25%	50%	75%	90%
	Panel A: Quantiles 11, 1							
Announcement Day Return	31168	0.001	0.08	-0.086	-0.036	0.001	0.040	0.088
Cumulative Post-Announcement Return	31168	-0.000	0.12	-0.128	-0.057	-0.001	0.052	0.120
Normalized Delayed Response	31167	0.744	2.93	-0.734	0.229	0.781	1.270	2.266
Announcement Day Volume	31601	0.971	0.83	0.043	0.473	0.939	1.442	1.955
Sustainable Ownership	31741	0.051	0.05	0.003	0.012	0.036	0.075	0.116
SUE	31741	0.496	3.29	-3.431	-2.262	2.062	2.923	3.871
Macro Announcement	31741	0.232	0.42	0.000	0.000	0.000	0.000	1.000
Top Market	31741	0.132	0.34	0.000	0.000	0.000	0.000	1.000
Log(Market Cap)	31741	0.303	1.97	-2.222	-1.094	0.282	1.611	2.865
B/M	30527	0.635	0.74	0.127	0.247	0.469	0.793	1.206
Log(# of Announcements)	31741	4.989	0.94	3.584	4.533	5.182	5.717	5.935
Log(# of Analysts)	29606	1.724	0.86	0.693	1.099	1.792	2.398	2.773
ChurnRatio	31682	0.164	0.05	0.112	0.131	0.157	0.189	0.222
	Panel B: Quantiles 11, 10 and 1,2							
Announcement Day Return	62258	0.001	0.07	-0.083	-0.035	0.001	0.038	0.086
Cumulative Post-Announcement Return	62258	0.000	0.11	-0.124	-0.057	-0.001	0.052	0.121
Normalized Delayed Response	62257	0.773	2.55	-0.696	0.250	0.795	1.272	2.253
Announcement Day Volume	63236	0.956	0.83	0.030	0.455	0.922	1.426	1.943
Sustainable Ownership	63482	0.050	0.05	0.003	0.012	0.035	0.075	0.115
SUE	63482	0.404	2.56	-2.608	-1.591	1.316	2.166	3.154
Macro Announcement	63482	0.232	0.42	0.000	0.000	0.000	0.000	1.000
Top Market	63481	0.131	0.34	0.000	0.000	0.000	0.000	1.000
Log(Market Cap)	63482	0.232	1.95	-2.243	-1.137	0.192	1.504	2.773
B/M	61100	0.646	0.77	0.135	0.261	0.485	0.804	1.207
Log(# of Announcements)	63482	4.998	0.94	3.611	4.554	5.187	5.720	5.935
Log(# of Analysts)	59112	1.689	0.86	0.693	1.099	1.792	2.303	2.773
ChurnRatio	63365	0.164	0.05	0.112	0.131	0.157	0.189	0.223

Table B.2: Summary Statistics: MSCI KLD Sample.

This table presents the summary statistics of the dataset where we classify investors as sustainable using the ESG score from the MSCI KLD data. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Cumulative Post-Announcement Return* is the cumulative abnormal return over the 22 days starting on the first day after the day of the announcement, adjusted using the market model. *Normalized Delayed Response* is the ratio of the cumulative abnormal return over the 22 days after the announcement (starting on the first day after the day of the announcement) to the total cumulative return on the earnings day and the 22 days after the announcement. *Announcement Day Volume* is the percentage increase in trading volume around the announcement date, relative to the 10-day window from day 20 to day 11 prior to the announcement. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. The strength of earnings surprises is measured by *SUE*, the standardized unexpected earnings from Foster et al. (1984). *Macro Announcement* indicator equals one when the announcement day features macroeconomic news announcements. *Top Market* indicator equals one when the market return is in the top 10% of its daily return distribution across the sample period. *Log(Market Cap)* is the natural logarithm of the stock's market capitalization. *B/M* is the stock's book-to-market ratio. *Log(# of Announcements)* is the natural logarithm of the number of earnings announcements on the same announcement day. *Log(# of Analysts)* is the natural logarithm of the number of analysts covering the stock. *Churn Ratio* is the measure of the investment horizon of the stock's investors from Gaspar et al. (2005). Panel A presents the results from the sample of the top 10% (bottom 10%) announcement events in terms of earnings surprises during the announcement quarter (Quantiles 11 and 1). Panel B presents the results from the sample of the top 20% (bottom 20%) announcement events in terms of earnings surprises (Quantiles 11,10 and 1,2).

	Obs.	Mean	Std	10%	25%	50%	75%	90%
	Panel A: Quantiles 11, 1							
Announcement Day Return	62386	0.001	0.07	-0.072	-0.028	0.001	0.031	0.074
Cumulative Post-Announcement Return	62386	0.004	0.12	-0.127	-0.056	0.002	0.059	0.134
Normalized Delayed Response	62386	0.809	2.45	-0.451	0.378	0.867	1.234	2.063
Announcement Day Volume	63103	0.833	0.96	-0.276	0.267	0.820	1.396	1.977
Sustainable Ownership	63544	0.035	0.05	0.001	0.005	0.016	0.047	0.097
SUE	63544	0.549	3.23	-3.439	-2.339	2.080	2.941	4.013
Macro Announcement	63544	0.151	0.36	0.000	0.000	0.000	0.000	1.000
Top Market	63544	0.120	0.32	0.000	0.000	0.000	0.000	1.000
Log(Market Cap)	63544	0.202	1.86	-2.097	-1.098	0.106	1.396	2.643
B/M	61420	0.614	0.72	0.146	0.267	0.467	0.756	1.135
Log(# of Announcements)	63544	5.027	0.89	3.689	4.615	5.209	5.707	5.964
Log(# of Analysts)	55497	1.529	0.88	0.000	0.693	1.609	2.197	2.639
ChurnRatio	63444	0.168	0.05	0.114	0.136	0.164	0.195	0.227
	Panel B: Quantiles 11, 10 and 1,2							
Announcement Day Return	124639	0.001	0.06	-0.070	-0.027	0.001	0.030	0.074
Cumulative Post-Announcement Return	124639	0.005	0.12	-0.126	-0.057	0.001	0.059	0.134
Normalized Delayed Response	124638	0.826	2.17	-0.431	0.389	0.873	1.237	2.055
Announcement Day Volume	126237	0.822	0.95	-0.283	0.257	0.807	1.383	1.961
Sustainable Ownership	127087	0.034	0.05	0.001	0.004	0.016	0.044	0.094
SUE	127087	0.410	2.52	-2.626	-1.639	1.286	2.131	3.200
Macro Announcement	127087	0.151	0.36	0.000	0.000	0.000	0.000	1.000
Top Market	127087	0.120	0.32	0.000	0.000	0.000	0.000	1.000
Log(Market Cap)	127087	0.153	1.84	-2.123	-1.131	0.059	1.330	2.577
B/M	122927	0.625	0.74	0.150	0.276	0.480	0.770	1.144
Log(# of Announcements)	127087	5.038	0.89	3.714	4.625	5.215	5.710	5.966
Log(# of Analysts)	110536	1.503	0.88	0.000	0.693	1.609	2.197	2.639
ChurnRatio	126891	0.168	0.05	0.113	0.136	0.164	0.195	0.227

Table B.3: Summary Statistics: Refinitiv Sample.

This table presents the summary statistics of the dataset where we classify investors as sustainable using the ESG score from the Refinitiv data. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Cumulative Post-Announcement Return* is the cumulative abnormal return over the 22 days starting on the first day after the day of the announcement, adjusted using the market model. *Normalized Delayed Response* is the ratio of the cumulative abnormal return over the 22 days after the announcement (starting on the first day after the day of the announcement) to the total cumulative return on the earnings day and the 22 days after the announcement. *Announcement Day Volume* is the percentage increase in trading volume around the announcement date, relative to the 10-day window from day 20 to day 11 prior to the announcement. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. The strength of earnings surprises is measured by *SUE*, the standardized unexpected earnings from Foster et al. (1984). *Macro Announcement* indicator equals one when the announcement day features macroeconomic news announcements. *Top Market* indicator equals one when the market return is in the top 10% of its daily return distribution across the sample period. *Log(Market Cap)* is the natural logarithm of the stock's market capitalization. *B/M* is the stock's book-to-market ratio. *Log(# of Announcements)* is the natural logarithm of the number of earnings announcements on the same announcement day. *Log(# of Analysts)* is the natural logarithm of the number of analysts covering the stock. *Churn Ratio* is the measure of the investment horizon of the stock's investors from Gaspar et al. (2005). Panel A presents the results from the sample of the top 10% (bottom 10%) announcement events in terms of earnings surprises during the announcement quarter (Quantiles 11 and 1). Panel B presents the results from the sample of the top 20% (bottom 20%) announcement events in terms of earnings surprises (Quantiles 11,10 and 1,2).

	Obs.	Mean	Std	10%	25%	50%	75%	90%
	Panel A: Quantiles 11, 1							
Announcement Day Return	41122	0.001	0.07	-0.083	-0.034	0.001	0.037	0.085
Cumulative Post-Announcement Return	41122	0.001	0.11	-0.121	-0.054	-0.001	0.052	0.119
Normalized Delayed Response	41121	0.763	2.79	-0.685	0.248	0.792	1.262	2.240
Announcement Day Volume	41662	0.976	0.87	0.004	0.456	0.937	1.467	2.014
Sustainable Ownership	41884	0.072	0.06	0.007	0.027	0.057	0.103	0.154
SUE	41884	0.586	3.20	-3.300	-2.209	2.090	2.931	3.901
Macro Announcement	41884	0.216	0.41	0.000	0.000	0.000	0.000	1.000
Top Market	41884	0.117	0.32	0.000	0.000	0.000	0.000	1.000
Log(Market Cap)	41884	0.302	1.96	-2.193	-1.093	0.269	1.590	2.869
B/M	40350	0.617	0.70	0.134	0.256	0.465	0.764	1.158
Log(# of Announcements)	41884	5.009	0.94	3.611	4.575	5.204	5.727	5.951
Log(# of Analysts)	37843	1.677	0.87	0.000	1.099	1.792	2.303	2.773
ChurnRatio	41797	0.166	0.05	0.113	0.134	0.160	0.191	0.224
	Panel B: Quantiles 11, 10 and 1,2							
Announcement Day Return	82140	0.001	0.07	-0.081	-0.033	0.001	0.036	0.083
Cumulative Post-Announcement Return	82140	0.001	0.11	-0.120	-0.055	-0.001	0.052	0.120
Normalized Delayed Response	82137	0.778	2.48	-0.660	0.269	0.805	1.262	2.221
Announcement Day Volume	83342	0.960	0.87	-0.013	0.435	0.921	1.450	1.996
Sustainable Ownership	83762	0.071	0.06	0.006	0.027	0.056	0.101	0.154
SUE	83762	0.461	2.50	-2.536	-1.542	1.325	2.167	3.173
Macro Announcement	83762	0.217	0.41	0.000	0.000	0.000	0.000	1.000
Top Market	83761	0.117	0.32	0.000	0.000	0.000	0.000	1.000
Log(Market Cap)	83762	0.230	1.93	-2.216	-1.134	0.179	1.484	2.769
B/M	80759	0.626	0.73	0.142	0.267	0.478	0.775	1.160
Log(# of Announcements)	83762	5.019	0.93	3.638	4.595	5.209	5.730	5.964
Log(# of Analysts)	75553	1.642	0.87	0.000	1.099	1.792	2.303	2.708
ChurnRatio	83596	0.166	0.05	0.113	0.133	0.160	0.191	0.224

Table B.4: The Effect of Sustainable Ownership on the Immediate Price Response to Earnings: MSCI ESG.

The table shows the results from regressing the announcement-day abnormal returns on the measures of sustainable ownership and earning surprise, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks, using the MSCI ESG dataset for ESG scores. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (3), and (5) (Quantiles 11 and 1). In columns (4) and (6), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). The control variables are defined in Table B.1. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.005***	-0.002	-0.005	-0.001		
	(0.002)	(0.003)	(0.004)	(0.003)		
Sustainable Ownership					-0.042**	-0.014
					(0.021)	(0.018)
Top SUE	0.046***	0.044***	0.027***	0.022***	0.025***	0.022***
	(0.002)	(0.003)	(0.004)	(0.002)	(0.003)	(0.002)
*High Sustainable Ownership * Top SUE*	-0.012***	-0.012***	-0.012***	-0.010***		
	(0.003)	(0.003)	(0.003)	(0.003)		
*Sustainable Ownership * Top SUE*					-0.038	-0.049***
					(0.023)	(0.018)
log(Market Cap)			0.006***	0.003**	0.006***	0.004***
			(0.002)	(0.001)	(0.002)	(0.001)
SUE			0.028***	0.033***	0.025***	0.030***
			(0.007)	(0.005)	(0.005)	(0.004)
B/M			2.708	2.638***	4.876**	3.660***
			(2.050)	(0.900)	(1.919)	(1.005)
Log(# of Analysts)			-0.005**	-0.004***	-0.005***	-0.005***
			(0.002)	(0.001)	(0.001)	(0.001)
Log(# of Announcements)			0.002	0.002*	0.002**	0.002**
			(0.001)	(0.001)	(0.001)	(0.001)
Top Market			-0.001	0.001	0.002	0.002
			(0.002)	(0.002)	(0.002)	(0.001)
Macro Announcement			-0.001	-0.001	-0.001	-0.001
			(0.002)	(0.001)	(0.001)	(0.001)
Observations	18611	17250	15184	31628	27129	55315
R-squared	0.070	0.125	0.124	0.085	0.102	0.071
Day of week FE	No	No	Yes	Yes	Yes	Yes
Calendar month FE	No	No	Yes	Yes	Yes	Yes
Stock FE	No	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	Yes	Yes	Yes	Yes

Table B.5: The Effect of Sustainable Ownership on the Immediate Price Response to Earnings: MSCI KLD.

The table shows the results from regressing the announcement-day abnormal returns on the measures of sustainable ownership and earning surprise, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks, using the MSCI KLD dataset for ESG scores. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (3), and (5) (Quantiles 11 and 1). In columns (4) and (6), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). The control variables are defined in Table B.2. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.011***	0.008***	0.008***	0.006***		
	(0.001)	(0.002)	(0.002)	(0.001)		
Sustainable Ownership					0.026**	0.021**
					(0.012)	(0.008)
Top SUE	0.037***	0.037***	0.030***	0.022***	0.023***	0.017***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)
*High Sustainable Ownership * Top SUE*	-0.016***	-0.016***	-0.016***	-0.013***		
	(0.001)	(0.002)	(0.002)	(0.001)		
*Sustainable Ownership * Top SUE*					-0.115***	-0.085***
					(0.013)	(0.010)
log(Market Cap)			0.004***	0.005***	0.006***	0.004***
			(0.001)	(0.001)	(0.001)	(0.001)
SUE			0.011***	0.018***	0.015***	0.021***
			(0.004)	(0.003)	(0.003)	(0.002)
B/M			1.937	2.329**	1.862*	2.216***
			(1.515)	(0.935)	(0.979)	(0.663)
Log(# of Analysts)			-0.004***	-0.004***	-0.004***	-0.004***
			(0.001)	(0.001)	(0.001)	(0.001)
Log(# of Announcements)			-0.000	0.000	-0.000	0.000
			(0.001)	(0.001)	(0.001)	(0.000)
Top Market			0.003**	0.002**	0.001	0.002**
			(0.002)	(0.001)	(0.001)	(0.001)
Macro Announcement			-0.000	-0.001	0.000	-0.000
			(0.002)	(0.001)	(0.001)	(0.001)
Observations	37550	35361	29177	59937	51411	104396
R-squared	0.052	0.089	0.087	0.059	0.076	0.054
Day of week FE	No	No	Yes	Yes	Yes	Yes
Calendar month FE	No	No	Yes	Yes	Yes	Yes
Stock FE	No	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	Yes	Yes	Yes	Yes

Table B.6: The Effect of Sustainable Ownership on the Immediate Price Response to Earnings: Refinitiv.

The table shows the results from regressing the announcement-day abnormal returns on the measures of sustainable ownership and earning surprise, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks, using the Refinitiv dataset for ESG scores. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (3), and (5) (Quantiles 11 and 1). In columns (4) and (6), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). The control variables are defined in Table B.3. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.010***	0.007*	0.005	0.002		
	(0.002)	(0.003)	(0.004)	(0.002)		
Sustainable Ownership					0.038***	0.025**
					(0.012)	(0.010)
Top SUE	0.045***	0.043***	0.029***	0.024***	0.032***	0.025***
	(0.002)	(0.002)	(0.004)	(0.002)	(0.003)	(0.001)
*High Sustainable Ownership * Top SUE*	-0.017***	-0.017***	-0.017***	-0.014***		
	(0.002)	(0.003)	(0.003)	(0.002)		
*Sustainable Ownership * Top SUE*					-0.135***	-0.110***
					(0.015)	(0.011)
log(Market Cap)			0.006***	0.004***	0.006***	0.004***
			(0.002)	(0.001)	(0.001)	(0.001)
SUE			0.026***	0.029***	0.026***	0.032***
			(0.005)	(0.004)	(0.004)	(0.003)
B/M			4.734**	3.297***	3.892**	3.411***
			(2.027)	(0.963)	(1.628)	(0.826)
Log(# of Analysts)			-0.003**	-0.003***	-0.005***	-0.004***
			(0.001)	(0.001)	(0.001)	(0.001)
Log(# of Announcements)			0.001	0.001	0.001	0.001*
			(0.001)	(0.001)	(0.001)	(0.001)
Top Market			0.005**	0.004**	0.002	0.002
			(0.002)	(0.001)	(0.002)	(0.001)
Macro Announcement			0.001	-0.000	-0.001	-0.001
			(0.002)	(0.001)	(0.001)	(0.001)
Observations	24667	23190	19640	40512	34971	71104
R-squared	0.066	0.115	0.120	0.082	0.097	0.069
Day of week FE	No	No	Yes	Yes	Yes	Yes
Calendar month FE	No	No	Yes	Yes	Yes	Yes
Stock FE	No	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	Yes	Yes	Yes	Yes

Table B.7: Robustness to Measuring Sustainable Ownership Based on the Total Number of Shares Held by Institutions.

The table shows the results from regressing the announcement-day abnormal returns on the measures of sustainable ownership and earning surprise, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Sustainable Ownership* is the fraction of shares held by all institutional investors outstanding that is held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (3), and (5) (Quantiles 11 and 1). In columns (4) and (6), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). Each panel presents the results which use ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Panel A: MSCI ESG						
y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.001	-0.002	-0.002	-0.002		
	(0.002)	(0.003)	(0.003)	(0.002)		
Sustainable Ownership					-0.012	-0.011
					(0.012)	(0.010)
Top SUE	0.046***	0.044***	0.028***	0.023***	0.026***	0.022***
	(0.002)	(0.003)	(0.004)	(0.003)	(0.003)	(0.002)
*High Sustainable Ownership * Top SUE*	-0.011***	-0.010***	-0.012***	-0.009***		
	(0.002)	(0.003)	(0.003)	(0.002)		
*Sustainable Ownership * Top SUE*					-0.033**	-0.035***
					(0.014)	(0.011)
Observations	18289	16968	14912	31340	27129	55315
R-squared	0.070	0.122	0.126	0.086	0.102	0.071

Panel B: MSCI KLD						
y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.007***	0.006***	0.007***	0.004***		
	(0.001)	(0.002)	(0.002)	(0.001)		
Sustainable Ownership					0.023***	0.019***
					(0.007)	(0.004)
Top SUE	0.037***	0.037***	0.030***	0.022***	0.024***	0.017***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)
*High Sustainable Ownership * Top SUE*	-0.015***	-0.016***	-0.017***	-0.013***		
	(0.002)	(0.002)	(0.002)	(0.001)		
*ESG Ownership * Top SUE*					-0.083***	-0.063***
					(0.009)	(0.006)
Observations	37279	35154	28887	59440	51411	104396
R-squared	0.052	0.089	0.085	0.057	0.076	0.054

Panel C: Refinitiv						
y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.007***	0.004	0.001	0.001		
	(0.002)	(0.003)	(0.003)	(0.002)		
Sustainable Ownership					0.010	0.005
					(0.007)	(0.005)
Top SUE	0.047***	0.046***	0.034***	0.026***	0.028***	0.021***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
*High Sustainable Ownership * Top SUE*	-0.019***	-0.020***	-0.021***	-0.015***		
	(0.002)	(0.003)	(0.003)	(0.002)		
*Sustainable Ownership * Top SUE*					-0.054***	-0.037***
					(0.010)	(0.007)
Observations	24281	22848	19242	39968	34971	71104
R-squared	0.069	0.109	0.119	0.082	0.097	0.067

Controls	No	No	Yes	Yes	Yes	Yes
Day of week FE	No	No	Yes	Yes	Yes	Yes
Calendar month FE	No	No	Yes	Yes	Yes	Yes
Stock FE	No	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	Yes	Yes	Yes	Yes

Table B.8: Robustness to Timing of ESG Scores.

The table shows the results from regressing the announcement-day abnormal returns on the measures of sustainable ownership and earning surprise, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. In these tests, we assign ESG scores to stocks using the calendar year rather than the fiscal year. We conduct this adjustment only for MSCI KLD and Refinitiv because for MSCI ESG we always use the most recent monthly ESG score. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (3), and (5) (Quantiles 11 and 1). In columns (4) and (6), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). Each panel presents the results which use ESG scores from a different dataset: MSCI ESG, MSCI KLD, and Refinitiv. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Panel A: MSCI KLD						
y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.011***	0.008***	0.009***	0.006***		
	(0.001)	(0.002)	(0.002)	(0.001)		
Sustainable Ownership					0.021*	0.012
					(0.011)	(0.008)
Top SUE	0.038***	0.039***	0.031***	0.022***	0.023***	0.016***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)
*High Sustainable Ownership * Top SUE*	-0.017***	-0.018***	-0.019***	-0.014***		
	(0.002)	(0.002)	(0.002)	(0.002)		
*ESG Ownership * Top SUE*					-0.114***	-0.080***
					(0.014)	(0.010)
Observations	37343	35141	28995	59762	51337	104265
R-squared	0.053	0.090	0.090	0.061	0.076	0.054

Panel B: Refinitiv						
y =	*Announcement Day Return*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1			Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.010***	0.006*	0.006*	0.004**		
	(0.002)	(0.003)	(0.003)	(0.002)		
Sustainable Ownership					0.071***	0.046**
					(0.022)	(0.019)
Top SUE	0.046***	0.046***	0.032***	0.024***	0.027***	0.021***
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.001)
*High Sustainable Ownership * Top SUE*	-0.018***	-0.019***	-0.021***	-0.016***		
	(0.002)	(0.003)	(0.003)	(0.002)		
*Sustainable Ownership * Top SUE*					-0.198***	-0.151***
					(0.032)	(0.025)
Observations	24134	22696	19333	40056	34643	70415
R-squared	0.068	0.116	0.121	0.079	0.096	0.067
Controls	No	No	Yes	Yes	Yes	Yes
Day of week FE	No	No	Yes	Yes	Yes	Yes
Calendar month FE	No	No	Yes	Yes	Yes	Yes
Stock FE	No	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	Yes	Yes	Yes	Yes

Table B.9: Robustness Tests for the Time-Varying Definition of Sustainable Investors.
The table shows the results from robustness tests where we allows for time variation in investor preferences for sustainability. We only report the main coefficient on the interaction between the measure of sustainable ownership and the measure of earnings surprises, using the same specifications and outcome variables as in columns (3) of Tables 1, 2, 3, and Appendix Table B.10. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors in the given quarter. The scores are calculated using three different datasets: MSCI ESG, MSCI KLD, and Refinitiv. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

y=	*Announcement Day Return*	*Cumulative Post-Annoucement Return*	*Normalized Delayed Reponse*	*Announcement Day Volume*
	Coefficient on *High Sustainable Ownership * Top SUE*			
Dataset	(1)	(2)	(3)	(4)
MSCI ESG	-0.011***	-0.006	-0.056	-0.101***
	(0.003)	(0.005)	(0.120)	(0.031)
MSCI KLD	-0.016***	-0.010***	-0.037	-0.082***
	(0.002)	(0.003)	(0.083)	(0.025)
Refinitiv	-0.016***	-0.005	-0.062	-0.053*
	(0.003)	(0.004)	(0.112)	(0.031)

Table B.10: The Effect of Sustainable Ownership on Trading Volume.

The table shows the results from regressing the announcement-day changes in trading volume on the measures of sustainable ownership and earning surprise, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. *Announcement Day Volume* is the percentage increase in trading volume around the announcement date, relative to the 10-day window from day 20 to day 11 prior to the announcement. See the details in Appendix B.2. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (3), and (5) (Quantiles 11 and 1). In columns (4) and (6), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). Each panel presents the results which use ESG scores from three different datasets: MSCI ESG, MSCI KLD, and Refinitiv. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Panel A: MSCI ESG						
y =	*Announcement Day Volume*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1		Quantiles 11,10 vs. 1,2		Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.159***	0.004	0.021	0.015		
	(0.025)	(0.034)	(0.033)	(0.022)		
Sustainable Ownership					0.101	0.114
					(0.222)	(0.151)
Top SUE	0.121***	0.102***	0.089**	0.103***	0.045	0.049***
	(0.040)	(0.030)	(0.039)	(0.024)	(0.031)	(0.017)
*High Sustainable Ownership * Top SUE*	-0.088**	-0.081**	-0.068**	-0.083***		
	(0.035)	(0.032)	(0.029)	(0.019)		
*Sustainable Ownership * Top SUE*					-0.201	-0.231
					(0.185)	(0.141)
Observations	18849	17498	15435	32193	27562	56278
R-squared	0.007	0.434	0.454	0.380	0.410	0.355

Panel B: MSCI KLD						
y =	*Announcement Day Volume*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1		Quantiles 11,10 vs. 1,2		Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.072***	0.111***	0.096***	0.089***		
	(0.019)	(0.026)	(0.026)	(0.017)		
Sustainable Ownership					0.418**	0.398***
					(0.165)	(0.115)
Top SUE	0.158***	0.164***	0.105***	0.113***	0.075***	0.073***
	(0.022)	(0.023)	(0.031)	(0.020)	(0.024)	(0.014)
*High Sustainable Ownership * Top SUE*	-0.065**	-0.090***	-0.081***	-0.095***		
	(0.026)	(0.026)	(0.025)	(0.018)		
*Sustainable Ownership * Top SUE*					-0.572***	-0.573***
					(0.164)	(0.125)
Observations	37943	35766	29580	60876	52172	106037
R-squared	0.005	0.352	0.372	0.315	0.342	0.293

Panel C: Refinitiv						
y =	*Announcement Day Volume*					
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1		Quantiles 11,10 vs. 1,2		Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	0.088***	0.013	0.026	0.044		
	(0.024)	(0.043)	(0.043)	(0.028)		
Sustainable Ownership					0.235	0.129
					(0.186)	(0.135)
Top SUE	0.167***	0.172***	0.134***	0.102***	0.093***	0.080***
	(0.031)	(0.031)	(0.040)	(0.027)	(0.030)	(0.019)
*High Sustainable Ownership * Top SUE*	-0.151***	-0.164***	-0.112***	-0.099***		
	(0.027)	(0.032)	(0.033)	(0.022)		
*Sustainable Ownership * Top SUE*					-0.635***	-0.608***
					(0.169)	(0.126)
Observations	24929	23480	19916	41124	35506	72287
R-squared	0.004	0.403	0.420	0.352	0.387	0.333

Controls	No	No	Yes	Yes	Yes	Yes
Day of week FE	No	No	Yes	Yes	Yes	Yes
Calendar month FE	No	No	Yes	Yes	Yes	Yes
Stock FE	No	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	Yes	Yes	Yes	Yes

Table B.11: Robustness to the Effects of Investor Horizon.

The table shows the results from regressing the announcement-day abnormal returns on the measures of sustainable ownership, earnings surprises, and churn ratio (capturing the investor horizon for the stock's investors), for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter in columns (1), (2), (4), (5), (7), and (8) (Quantiles 11 and 1). In columns (3), (6), and (9), *Top SUE* (*Bottom SUE*) stocks represent the top 20% (bottom 20%) in terms of earnings surprises (Quantiles 11,10 and 1,2). The *Churn Ratio* is the measure of investment horizon from Gaspar et al. (2005) and Starks et al. (2023). *High Churn Ratio* (*Low Churn Ratio*) stocks represent the top 30% (bottom 30%) in terms of churn ratio distribution in the given quarter. We present the results using ESG scores from three different datasets: MSCI ESG (columns (1)–(3)), MSCI KLD (columns (4)–(6)), and Refinitiv (columns (7)–(9)). The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

y =	*Announcement Day Return*								
Dataset	MSCI ESG			MSCI KLD			Refinitiv		
Top SUE vs. Bottom SUE =	Quantile 11 vs. 1	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2	Quantile 11 vs. 1	Quantile 11 vs. 1	Quantiles 11,10 vs. 1,2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
High Sustainable Ownership	-0.006		-0.001	0.008**		0.009***	0.001		0.002
	(0.005)		(0.003)	(0.003)		(0.002)	(0.005)		(0.003)
Sustainable Ownership		-0.041*			0.027**			0.039***	
		(0.021)			(0.012)			(0.012)	
Top SUE	0.024***	0.020***	0.021***	0.032***	0.027***	0.024***	0.027***	0.030***	0.022***
	(0.006)	(0.005)	(0.003)	(0.004)	(0.004)	(0.002)	(0.006)	(0.005)	(0.003)
*High Sustainable Ownership * Top SUE*	-0.013***		-0.011***	-0.016***		-0.015***	-0.016***		-0.015***
	(0.004)		(0.003)	(0.003)		(0.002)	(0.004)		(0.002)
*Sustainable Ownership * Top SUE*		-0.036			-0.118***			-0.134***	
		(0.023)			(0.014)			(0.015)	
High Churn Ratio	-0.000		-0.004	0.004*		0.001	-0.007*		-0.003
	(0.004)		(0.003)	(0.002)		(0.001)	(0.004)		(0.002)
Churn Ratio		-0.004			0.012			0.002	
		(0.023)			(0.017)			(0.020)	
*High Churn Ratio * Top SUE*	0.004		0.002	-0.003		-0.002	0.009**		0.003
	(0.005)		(0.003)	(0.003)		(0.002)	(0.004)		(0.003)
*Churn Ratio * Top SUE*		0.033			-0.024			0.013	
		(0.027)			(0.021)			(0.023)	
Observations	8063	27098	17850	15734	51372	33748	10420	34930	22682
R-squared	0.350	0.235	0.253	0.316	0.193	0.224	0.333	0.219	0.235
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day of week FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Calendar month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stock FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table B.12: Placebo Test: The Effects of Sustainable Ownership in the 1980s and 1990s.
The table shows the results from regressing the announcement-day abnormal returns on the measures of sustainable ownership and earning surprise during the sample period when the ESG scores were not available, for the sample of *High Sustainable Ownership* and *Low Sustainable Ownership* stocks. *Announcement Day Return* is the abnormal return on the day of the announcement, adjusted using the market model. *Sustainable Ownership* is the fraction of total shares outstanding held by sustainable investors. We define an investor as *Sustainable* if their portfolio-level ESG score is at the top 30% of its distribution across all the investors. *High Sustainable Ownership* (*Low Sustainable Ownership*) stocks represent the top 30% (bottom 30%) in terms of sustainable ownership. The earnings surprise is measured by the standardized unexpected earnings (SUE). *Top SUE* (*Bottom SUE*) stocks represent the top 10% (bottom 10%) in terms of earnings surprises during the announcement quarter (Quantiles 11 and 1). We present the results using ESG scores from three different datasets: MSCI ESG, MSCI KLD, and Refinitiv. The standard errors are double-clustered by stock and quarter. *,**, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

Dataset	MSCI ESG		MSCI KLD		Refinitiv	
Sample Period	1984q3-1992q2					
y=	*Announcement Day Return*					
	(1)	(2)	(3)	(4)	(5)	(6)
High Sustainable Ownership	-0.002		-0.002		-0.014**	
	(0.004)		(0.003)		(0.006)	
Sustainable Ownership		-0.014		-0.011		-0.019
		(0.022)		(0.018)		(0.018)
Top SUE	0.011***	0.009***	0.011***	0.009***	0.011***	0.011***
	(0.004)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
*High Sustainable Ownership * Top SUE*	-0.004		-0.001		-0.004	
	(0.003)		(0.003)		(0.003)	
*Sustainable Ownership * Top SUE*		-0.009		0.001		-0.022
		(0.017)		(0.012)		(0.015)
Observations	3357	6204	3245	6066	3474	6431
R-squared	0.339	0.292	0.344	0.294	0.344	0.294
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Day of week FE	Yes	Yes	Yes	Yes	Yes	Yes
Calendar month FE	Yes	Yes	Yes	Yes	Yes	Yes
Stock FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes