# Does Sustainable Investing Weaken Stock Reactions to Cash Flow News?*

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**Abstract**

A central yet underexplored implication of models with sustainability preferences is that sustainable investing weakens stock-price responses to cash-flow news. We test this implication using earnings announcements and find that stocks with greater sustainable ownership respond only half as much to the same earnings surprise. A present-value decomposition shows that earnings news predicts future payouts identically across ownership groups, so the attenuated response reflects lower discount rates, not different cash-flow dynamics. Our estimates imply a negative sustainability discount-rate wedge of 1–3 percentage points, accounting for the weaker response without appealing to information-processing frictions.

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# 1 Introduction

Theories of sustainable investing predict that when investors value sustainability, they are willing to accept lower expected returns on the stocks they prefer, pushing prices up and creating a negative discount-rate wedge. A central empirical question is whether such a wedge exists and, if so, how large it is. Estimating the wedge has proven difficult: approaches using long-horizon return spreads, valuation ratios, and implied costs of capital may capture differences in future cash flows, risk, and expected-return model specification alongside the wedge itself.[1]

We address this question by focusing on a simple but underexploited implication of the present-value relation: a sustainability wedge should weaken the price response to cash-flow news. A stock's return around a news event depends on both the revision in expected cash flows and the price level at which that revision is capitalized. Write the return as

$$\text{return around news} \;\approx\; \frac{\text{change in the value of future cash flows}}{\text{price before the news}},$$

where

$$\text{price before the news} \;=\; \underbrace{\text{risk-adjusted value of cash flows}}_{\text{financial component}} + \underbrace{\text{sustainability price premium}}_{\text{preference-driven component}}.$$

If a negative sustainability wedge creates a price premium, pushing the price above the value justified by the financial component alone, then the same cash-flow news represents a smaller fraction of firm value and produces a smaller price response. This prediction arises naturally in many models with preferences for sustainability, yet it has received little empirical attention. It also provides a direct route to quantifying the wedge: cross-sectional variation in how strongly prices respond to identified cash-flow news disciplines the discount-rate difference without requiring long-horizon return comparisons or intricate expected-return modeling.

[1] Theoretical papers with preferences for sustainability include Fama and French (2007), Pástor et al. (2021), Pedersen et al. (2021), and Baker et al. (2022). Related empirical evidence includes Naughton et al. (2019), Pástor et al. (2022), Eskildsen et al. (2024), and Lindsey et al. (2025).

Guided by this logic, we pursue two objectives. First, we test whether stocks with a higher share of sustainable investors exhibit weaker return responses to cash-flow news. Second, we use this attenuation to recover the magnitude of the underlying sustainability wedge through a present-value decomposition.

We use earnings announcements as our empirical setting. Earnings news generates large, precisely timed shocks to expected future cash flows, making announcements a clean setting to measure how strongly prices respond when fundamentals change. As Fama (1991) emphasizes, abnormal returns over narrow windows around major information releases provide a sharp measure of price adjustment to information, largely free of expected-return modeling assumptions. Earnings announcements are therefore well suited to both objectives: testing whether stocks with a larger sustainable investor base respond less to the same cash-flow news, and recovering the discount-rate wedge from the magnitude of that attenuation.

To classify stocks by their share of sustainable investors, we use quarterly 13F filings matched to firm-level sustainability data from multiple ESG datasets. These data allow us to identify institutions whose portfolios systematically allocate more capital to more sustainable firms and to compute the fraction of shares they hold, for each stock-quarter. We refer to this object as sustainable ownership. We then examine whether stocks with greater sustainable ownership respond less to the same earnings-news shock.

Our results show that when sustainable ownership is high, the announcement-day price response to earnings news is about half as large. The attenuation is symmetric: prices rise less on good news and fall less on bad news. This pattern remains after controlling for firm characteristics, market conditions, and ownership structure—specifically, passive ownership and ownership concentration—and it is robust to alternative definitions of sustainability-oriented investors, sustainable ownership, and earnings-surprise measures. It also holds in a Bartik shift-share instrumental-variables design based on capital flows into sustainability-oriented investors and stocks' lagged exposure to those flows. Taken together, the evidence is hard to dismiss as selection or omitted heterogeneity: a more sustainability-oriented shareholder base is associated with a materially weaker market response to the same earnings news.

The post-announcement dynamics sharpen the interpretation. If the weaker announcement response reflected distraction, delayed attention, or a temporary demand imbalance, prices should subsequently catch up. They do not. In the weeks after the announcement, stocks with high and low sustainable ownership move in parallel, so the initial gap persists rather than reverses. Trading volume tells the same story. Large earnings surprises generate the usual spike in trading volume, but that spike is markedly smaller when sustainable ownership is high. Smaller price moves, lower trading volume, and the absence of subsequent catch-up point to a persistent valuation effect: sustainable demand lowers the required return, so the same earnings news becomes a smaller fraction of the stock price.

The second part of the paper uses a dynamic present-value framework to recover the discount-rate wedge from the gap in earnings responses. For this exercise to be informative, we must first address an alternative interpretation: the weaker announcement return could reflect not a lower discount rate but a cash-flow channel, whereby earnings news leads to smaller revisions in future payouts for firms with high sustainable ownership. We therefore examine the cash-flow side directly, estimating how current earnings surprises predict future payout growth and whether this relation differs across ownership groups.

The evidence does not support this alternative. Earnings surprises predict future payouts in an economically meaningful and persistent way, but the strength of that relation is essentially the same for firms with high and low sustainable ownership. Once this common cash-flow response is accounted for, the remaining attenuation in announcement returns naturally reflects a different required return for firms with high sustainable ownership.

We then take the present-value restriction to the data in a GMM system that jointly matches announcement returns and multi-year payout responses. The estimated sustainability wedge is negative and economically meaningful—roughly 1–3 percentage points in the more conservative specifications. The reduced-form and structural results align closely: the wedge implied by the present-value model matches the reduced-form attenuation, confirming that a sustainability-driven discount-rate difference can fully account for the muted response to earnings news.

These results speak directly to central questions in the sustainable-finance literature. Existing theory shows that preferences for sustainability can raise prices and lower expected returns for favored stocks, thereby generating a sustainability-driven discount-rate wedge (Fama and French, 2007; Pástor et al., 2021; Pedersen et al., 2021; Baker et al., 2022). Empirical work has examined this force mainly through return patterns, portfolio demand,

and cost-of-capital estimates (Pástor et al., 2022; Eskildsen et al., 2024; Lindsey et al., 2025).[2] Flow-based evidence points in the same direction: ESG-directed capital flows create sizable buying pressure and raise the prices of stocks overweighted by ESG funds (van der Beck, 2026). Rather than inferring the sustainability wedge from slow-moving valuations or long-horizon returns, we show that it can be identified from how prices respond to clean cash-flow news. This approach follows directly from the paper's present-value logic and, importantly, helps separate discount-rate effects from differences in cash-flow dynamics.

Our paper also speaks to the large literature on how markets process earnings news. Foundational studies show that earnings announcements generate large immediate returns and predictable post-announcement drift (Ball and Brown, 1968; Bernard and Thomas, 1989, 1990). Subsequent work explains cross-sectional variation in these responses through limited attention, distraction, sentiment, and other behavioral frictions (DellaVigna and Pollet, 2009; Mian and Sankaraguruswamy, 2012; Hartzmark and Shue, 2018). Ownership composition has also been shown to matter: Hotchkiss and Strickland (2003) study momentum- and growth-oriented shareholders, while Sammon (2024) shows that passive ownership affects price informativeness. We add sustainable ownership as a distinct ownership margin and highlight a different mechanism. In our setting, a weaker response to earnings news reflects valuation rather than frictions in information processing: the same news is priced at a lower required return.

Our results also complement recent work on other channels through which sustainability-oriented investors affect prices. Goldstein et al. (2024) show theoretically that ESG demand can reduce the informativeness of prices about financial payoffs. Cao et al. (2023) document distinctive post-earnings return predictability for stocks favored by socially responsible investors, while Starks et al. (2026) emphasize the longer horizons of sustainability-oriented investors. We add a different perspective by focusing on the immediate pricing of identified cash-flow news. This design isolates the valuation channel from subsequent return patterns. Moreover, the weaker response survives direct controls for investor horizon and is symmetric for good and bad earnings surprises, which is difficult to reconcile with patience or delayed trading as the main force behind our results.

[2] Berk and van Binsbergen (2025) utilize the reconstitution of ESG-focused indices to quantify the return impact of ESG investing.

More broadly, we emphasize that a canonical earnings-response statistic is an equilibrium object shaped not only by news but also by discount rates. Announcement returns depend on how cash-flow news is capitalized, and therefore vary with investor demand through its effect on required returns. This broadens the interpretation of announcement returns and related measures of price informativeness. The implication extends naturally to corporate finance: when investor demand affects discount rates, the sensitivity of financing and investment decisions to stock prices all depend, in part, on the valuation benchmark set by the market.

# 2 Conceptual Framework: Sustainable Ownership and Earnings-Day Returns

We present a simple model of stock-price responses to cash-flow news in the presence of sustainability preferences. The framework is intentionally parsimonious. Our goal is not to develop a new theory of ESG demand, but rather to show that a broad class of standard models with ESG preferences and sustainability premia (Pedersen et al., 2021; Pástor et al., 2022; Goldstein et al., 2024) implies a sharp but largely overlooked prediction: stock prices should respond less to cash-flow news when sustainability-driven demand is stronger. All proofs are in Appendix Section A.

## 2.1 Environment

There are two dates, $t = 0, 1$. At $t = 0$, $N$ risky stocks trade in unit net supply (one share each) along with a risk-free asset whose price and payoff are normalized to one. Let $P \in \mathbb{R}^N$ denote the vector of stock prices at $t = 0$, and let $D \in \mathbb{R}^N$ denote payoffs at $t = 1$. Payoffs are normally distributed, $D \sim \mathcal{N}(\bar{D}, \Sigma)$, with positive definite $\Sigma$.

Each stock $n$ has a sustainability characteristic $z_n$, stacked in $z \in \mathbb{R}^N$. We interpret $z$ as a market-adjusted sustainability attribute, such that only relative sustainability matters in the cross-section.[3]

Investors are competitive price-takers with CARA utility and risk aversion $\gamma > 0$. The total investor mass is normalized to one. A fraction $f \in (0, 1)$ are sustainable investors, who enjoy an extra (non-pecuniary) benefit from holding high-$z$ stocks, captured by a taste

[3]Formally, $z_n$ is value-weighted demeaned, so that $\sum_n \omega_n z_n = 0$ for value weights $\omega_n$.

parameter $\alpha > 0$; the remaining fraction $1-f$ are regular investors with $\alpha = 0$. Formally, both regular and sustainable investors ($i = R, S$) maximize

$$\mathbb{E}[W_i + \alpha\, q_i^\top z] - \frac{\gamma}{2}\mathrm{Var}[W_i] \tag{1}$$

by choosing optimal portfolios $q_R, q_S \in \mathbb{R}^N$, subject to their wealth dynamics $W_i = q_i^T(D - P) + \bar{W}$. We make standard frictionless-market assumptions: no portfolio constraints and competitive trading.

## 2.2 Demand, Equilibrium Prices, and Sustainability Premium

Given stock prices $P$, the mean-variance demand of regular and sustainable investors is:

$$q_R \;=\; \frac{1}{\gamma}\Sigma^{-1}(\bar{D} - P), \qquad q_S \;=\; \frac{1}{\gamma}\Sigma^{-1}(\bar{D} + \alpha z - P). \tag{2}$$

Market clearing requires

$$(1-f)q_R + f q_S = \mathbf{1},$$

where $\mathbf{1} \in \mathbb{R}^N$ is the vector of ones. Solving the model yields the equilibrium price vector

$$P \;=\; \bar{D} \;+\; \underbrace{f\alpha\, z}_{\text{sustainability price premium}} \;-\; \underbrace{\gamma\,\Sigma\,\mathbf{1}}_{\text{risk adjustment}}\;. \tag{3}$$

Accordingly, the demand of sustainable investors gives rise to a sustainability price premium, which reduces the effective discount rate and leads to higher stock prices relative to the risk-adjusted benchmark.

As we show below, this has a direct empirical implication for stock-price reactions to earnings announcements, which provide clean and precisely timed updates to firms' cash flows. When part of a stock's price reflects a non-cash-flow sustainability component, the same earnings surprise generates a smaller return response. The larger the sustainability-related wedge, the weaker the price reaction to cash-flow news. We can therefore use cross-sectional variation in announcement-day earnings responses to infer the sustainability wedge.

## 2.3 Sustainable Ownership and Earnings-Day Returns

**Sustainable ownership** We define *sustainable ownership* as the number of shares held by sustainable investors in equilibrium:

$$\Lambda^{eq} \;\equiv\; f q_S \;=\; f\,\mathbf{1} \;+\; \xi\,\Sigma^{-1} z, \qquad \xi \equiv \frac{f(1-f)\alpha}{\gamma} > 0. \tag{4}$$

With unit net supply, $\Lambda_n^{eq}$ coincides with the sustainable investors' ownership share in stock $n$ whenever shorting is ruled out; with shorting, $\Lambda_n^{eq}$ should be read as the sustainable investors' *net* position.

Combining (3) and (4) eliminates $(\alpha, z)$ and gives an *ownership representation* of prices:

$$P \;=\; \bar{D} \;+\; \Psi\big(\Lambda^{eq} - \mathbf{1}\big), \qquad \Psi \equiv \frac{\gamma}{1-f}\,\Sigma. \tag{5}$$

**Announcement-day returns** We consider equation (5) on earnings announcement days or, in general, when cash-flow news is released. Such news for stock $n$ delivers a level innovation $\Delta_n$ to its expected payoff, $\bar{D}_n \mapsto \bar{D}_n + \Delta_n$.[4] Accordingly, the stock price moves one-for-one with the cash-flow update:

$$P_n^+ - P_n^- = \Delta_n.$$

The announcement-day return is therefore

$$R_n(\Delta_n) \;\equiv\; \frac{P_n^+ - P_n^-}{P_n^-} \;=\; \frac{\Delta_n}{P_n^-} \;=\; \frac{\Delta_n}{\bar{D}_n^- \;+\; [\Psi\big(\Lambda^{eq} - \mathbf{1}\big)]_n}. \tag{6}$$

**Proposition 1 (Sustainable ownership and earnings-day returns)** *For a given cash-flow innovation $\Delta_n$, the absolute magnitude of the announcement-day return decreases in the stock's sustainable ownership $\Lambda_n^{eq}$ and the associated sustainability price premium. The effect holds symmetrically for positive and negative cash-flow news $\Delta_n$.*

[4] Empirically, we use market-adjusted returns, so it is natural to interpret $\Delta_n$ as the firm-specific component of the announcement-day cash-flow update, with any common component removed by the market-model adjustment.

Higher sustainable ownership reflects stronger sustainability-driven demand, which is capitalized into a higher pre-announcement price (equivalently, a lower discount rate). As a result, the same dollar cash-flow innovation $\Delta_n$ implies a smaller relative price change in (6). Earnings-announcement returns are therefore dampened for stocks with high sustainable ownership. The empirical analysis tests this prediction in Section 4, and uses the cross-sectional relation between sustainable ownership and earnings-day returns to infer the sustainability wedge in Section 5.[5]

Although Proposition 1 can be stated in terms of a firm's sustainability score $z_n$, we focus on sustainable ownership $\Lambda_n^{eq}$ as the more informative empirical object. The equilibrium sustainability wedge is generated by investor demand and holdings, not by the score itself, so ownership maps more directly to the underlying mechanism. Ownership also naturally incorporates the role of risk in shaping which stocks attract sustainable capital. Moreover, because sustainable ownership is constructed from portfolio holdings rather than individual stock scores, it is less sensitive to idiosyncratic noise in provider-level sustainability measures. Appendix C discusses these advantages in more detail.

# 3 Data and Methodology

We combine ESG ratings, institutional holdings, earnings announcements, daily returns, and firm characteristics to build a quarterly panel of sustainable ownership matched to announcement-day returns. Firm-level sustainability comes from three different providers—MSCI ESG, MSCI KLD, and Refinitiv ESG—which we link to Thomson Reuters 13F filings to measure, for each stock-quarter, the fraction of shares held by sustainability-tilted institutions. Earnings-announcement dates and earnings data are from IBES, daily returns are from CRSP, and firm characteristics are from Compustat. Appendix Section B describes the construction and merges in detail. Summary statistics for all variables across the three ESG datasets appear in Appendix Tables IA.1–IA.3.

[5] This comparative static is conditional on firms' expected payoffs $\bar{D}_n$. Empirically, we hold the cash-flow scale fixed using standardized earnings surprises, within-firm variation in sustainable ownership, and firm-level controls, so cross-sectional differences in announcement-day return sensitivities isolate the discount-rate channel.

**ESG data** We proxy firm sustainability using MSCI ESG (monthly snapshots; broad coverage 2012–2022), MSCI KLD (annual; 1991–2019 legacy series), and Refinitiv ESG (annual; 2001–2021). Pairwise correlations across the three measures never exceed 0.49, so the providers capture related but distinct notions of sustainability. MSCI ESG reports a 0–10 total score; we construct sustainability scores (ESG/E) following Pástor et al. (2022), and the resulting scores range from -10 to 0. KLD reports binary strengths and concerns; we follow Starks et al. (2026) and aggregate these by summing all positive and negative indicators. Refinitiv reports a 0–100 total rating. To avoid look-ahead, for KLD and Refinitiv we assign to each earnings announcement the ESG rating from the fiscal year ending before the announcement. For MSCI ESG, we use the most recent score available before the event, following Pástor et al. (2022). Using three providers limits single-vendor bias and lets us test whether the results survive alternative ESG definitions.

**Sustainable ownership** We construct sustainable ownership (SO) in four steps, guided by the framework in Section 2. First, we demean each firm $n$'s ESG score by the value-weighted cross-sectional mean to obtain a measure of sustainability relative to the market,

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

which removes aggregate shifts in ESG levels. Second, for each 13F institution $i$ we compute a portfolio-level ESG score,

$$ESG_{i,t} = \sum_n w_{i,t}(n)\, ESG_{n,t}, \qquad w_{i,t}(n) = \frac{P_{n,t}\,\text{Shares}_{n,i,t}}{\sum_m P_{m,t}\,\text{Shares}_{m,i,t}},$$

where $w_{i,t}(n)$ is the quarter-end value weight based on 13F holdings. Third, we classify an institution $i$ as sustainable ($i \in \mathcal{S}_t$) if its score is in the top 30% of the investor distribution, using either (i) a time-invariant ranking based on the investor's full-sample average tilt (capturing slow-moving preferences) or (ii) a time-varying quarterly ranking (allowing mandates to evolve over time). Finally, for each stock $n$ in quarter $t$, sustainable ownership is the fraction of shares outstanding held by the sustainable institutions (within the 13F universe),

$$\text{SO}_{n,t} \;\equiv\; \frac{\sum_{i\in\mathcal{S}_t}\text{Shares}_{n,i,t}}{\text{SharesOut}_{n,t}}.$$

Across all three ESG datasets, sustainable investors control roughly 5–15% of 13F assets, while stock-level SO averages 1–5% of shares and rises gradually over time; Appendix Section B.2 reports the full time-series evidence.

This construction is directly motivated by the model. Portfolio sustainability scores are themselves equilibrium objects: investors with stronger sustainability tastes optimally load more on the sustainability characteristic vector $z$ subject to portfolio risk. With two investor types, subtracting the two demand equations in (2) implies that the sustainable group has a strictly higher portfolio loading on $z$ than the regular group,

$$q_S^\top z \;=\; q_R^\top z \;+\; \frac{\alpha}{\gamma}\, z^\top \Sigma^{-1} z \;>\; q_R^\top z,$$

since $\Sigma \succ 0$ implies $z^\top \Sigma^{-1} z > 0$ for $z \neq 0$. Our empirical investor-level score $ESG_{i,t}$ is the value-weighted analogue of this model loading, constructed from reported portfolio weights. More generally, if investor $i$ has taste parameter $\alpha_i$, her optimal sustainability loading is proportional to $\Sigma^{-1} z$, so $q_i^\top z$ is strictly increasing in $\alpha_i$ whenever $z^\top \Sigma^{-1} z > 0$. This monotonicity justifies ranking investors by their realized portfolio-level ESG score and using a top-tail cutoff (e.g., top 30%) to isolate high-$\alpha$ investors.

**Earnings announcements and surprise measure** We obtain earnings announcements from the IBES Detail Unadjusted file and define the event date as the first trading session when the news can be traded on: the same day if the release is before 4 p.m. ET and the next trading day otherwise. We measure earnings news with standardized unexpected earnings (SUE) following Foster et al. (1984), Hou et al. (2015), and Chen and Zimmermann (2022): the year-over-year change in IBES "street" EPS scaled by its rolling volatility,

$$SUE_{n,t} = \frac{EPS_{n,t} - EPS_{n,t-4}}{\sigma_{n,t-1:t-8}(EPS_{n,\cdot} - EPS_{n,\cdot-4})},$$

where the denominator is the standard deviation of year-over-year EPS changes over the prior eight quarters.

Following DellaVigna and Pollet (2009), we sort earnings announcements within each quarter into eleven quantiles based on the sign and magnitude of standardized unexpected earnings, $SUE_{n,t}$. Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. We recompute the cutoffs each quarter to ensure balanced counts within the negative and positive halves of the distribution. This binning traces the sustainable-ownership effect across the full range of news and facilitates comparisons of responses to equally-sized positive and negative shocks. Merging IBES with CRSP for U.S. common shares (share codes 10/11) yields 406,625 announcements from 12,062 firms over the period 1992Q3–2022Q3.

**Announcement-day and post-announcement price response** We measure price responses using abnormal buy-and-hold returns around the earnings announcement, following DellaVigna and Pollet (2009). Let $R_{n,d}$ denote the return of stock $n$ on day $d$ and let $R_{m,d}$ denote the market return. We obtain $R_{n,d}$ from the CRSP daily stock file and $R_{m,d}$ from Kenneth French's data library. For each stock-announcement in quarter $t$, we estimate the stock's market beta from the daily market model

$$R_{n,d} = \alpha_{n,t} + \beta_{n,t} R_{m,d} + \epsilon_{n,d}, \tag{7}$$

using daily observations in the estimation window $d \in [\tau - 300,\ \tau - 46]$, where $\tau$ is the announcement date. This window starts 300 trading days before the announcement and ends 46 trading days (about two trading months) before the announcement to avoid contamination from announcement-related trading.

Using the estimated beta $\widehat{\beta}_{n,t}$, we define the abnormal buy-and-hold return over window $(\tau + h, \tau + H)$ as

$$R_{n,t}^{(h,H)} \ = \ \left[\prod_{d=\tau+h}^{\tau+H} (1 + R_{n,d})\right] - 1 \ - \ \widehat{\beta}_{n,t} \left(\left[\prod_{d=\tau+h}^{\tau+H} (1 + R_{m,d})\right] - 1\right). \tag{8}$$

We use $R_{n,t}^{(0,0)}$ as the announcement-day abnormal return, and we measure the post-announcement return as $R_{n,t}^{(1,22)}$, the cumulative abnormal return from day +1 through day +22. Finally, we winsorize abnormal returns at the top and bottom 1% of the within-quarter distribution.

# 4 Sustainable Ownership Weakens Stock Reactions

We test the core implication of our framework from Section 2—that sustainable ownership attenuates the price response to cash-flow news—by examining how sustainable ownership shapes stock-price reactions to earnings announcements.

## 4.1 Visual Comparison of Returns Across Earnings News

Figure 1 provides graphical evidence. In each quarter, we classify stocks into high and low sustainable-ownership groups based on whether sustainable ownership lies in the top or bottom 30% of the cross-sectional distribution. Within each group, we then compute the average announcement-day abnormal return in each SUE quantile.

Across all three ESG datasets, announcement-day price responses are weaker for high-sustainable-ownership stocks than for low-sustainable-ownership stocks. This pattern holds across nearly the full range of positive and negative SUE quantiles: high-sustainable-ownership stocks exhibit smaller abnormal returns, and the 95% confidence intervals indicate that these differences are statistically significant. The only exception are the middle quantiles, where earnings surprises are small and announcement-day returns are close to zero for both groups.

## 4.2 OLS Regressions

### 4.2.1 Econometric Specification

We formally analyze the patterns in Figure 1 using regression analysis. The figure indicates that the gap in announcement-day responses between high- and low-sustainable-ownership stocks is most pronounced for large earnings surprises. Motivated by this pattern, our baseline specification focuses on the tails of the $SUE$ distribution and retains only quantile 1 (large negative surprises) and quantile 11 (large positive surprises). We further restrict the sample to stocks in the top or bottom 30% of the sustainable-ownership distribution, matching the figure and delivering a clean, interpretable high-versus-low comparison.

Formally, for stock $n$ in quarter $t$, we estimate

$$R_{n,t}^{(0,0)} = \phi_1 \,\mathrm{TopSUE}_{n,t} + \phi_2 \,\mathrm{HighSO}_{n,t} + \phi_3 \left(\mathrm{TopSUE}_{n,t} \times \mathrm{HighSO}_{n,t}\right) + \Gamma X_{n,t} + \psi_n + \psi_t + \varepsilon_{n,t}, \quad (9)$$

where $R^{(0,0)}_{n,t}$ is the announcement-day abnormal return. The indicator $\text{TopSUE}_{n,t}$ equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). The indicator $\text{HighSO}_{n,t}$ equals one if sustainable ownership is in the top 30% of the cross section. The coefficient $\phi_1$ captures the difference in outcomes between positive and negative news among low-sustainable-ownership stocks. The coefficient of interest, $\phi_3$, measures how high sustainable ownership changes the response to positive versus negative earnings news. Under the null of no differential reaction, $\phi_3 = 0$.

The control vector $X_{n,t}$ includes firm and market characteristics that prior work links to earnings-announcement behavior: market capitalization, book-to-market, analyst coverage, and announcement congestion (the number of other firms announcing earnings on the same day). Although Figure 1 shows that average surprise magnitudes are similar across ownership groups, we also control for raw SUE to absorb any residual differences in shock size. To account for macro shocks, we include the "top-10% market return" flag for days with unusually high CRSP value-weighted market returns (Hirshleifer and Sheng, 2022).

Our fixed-effects structure follows standard event-study practice. Quarter fixed effects $\psi_t$ absorb aggregate shifts in sentiment and macro conditions, while stock fixed effects $\psi_n$ absorb time-invariant firm attributes such as industry exposure and governance. We also include day-of-week fixed effects to capture the "Friday effect" documented by DellaVigna and Pollet (2009) and calendar-month fixed effects to absorb earnings-season seasonality. Standard errors are double-clustered by firm and calendar quarter, allowing for both cross-sectional return correlation and within-firm serial correlation across announcements. Finally, we replicate all specifications using the continuous sustainable-ownership share ($SO$) in place of the $HighSO$ indicator.

#### 4.2.2 OLS Results

Table 1 translates Figure 1 into regression estimates. When sustainable ownership is low, we recover the familiar result that prices react strongly to large earnings surprises. In the fully controlled specifications (columns (2), (5), and (8)), low-sustainable-ownership stocks earn announcement-day abnormal returns that are 5.04% (MSCI ESG), 4.65% (MSCI KLD), and 3.88% (Refinitiv) higher after extreme positive surprises than after extreme negative surprises. These magnitudes confirm that earnings news moves prices sharply in the low-sustainable-ownership segment.

Our main result is that high sustainable ownership substantially attenuates the stock-price response to earnings news. The interaction term $TopSUE \times HighSO$ is negative and precisely estimated across all three datasets—$-2.47\%$ (MSCI ESG), $-2.32\%$ (MSCI KLD), and $-1.76\%$ (Refinitiv) in columns (2), (5), and (8)—with $t$-statistics above 5 in absolute value. Economically, these estimates imply that high sustainable ownership reduces the announcement-day response by about one-half: the positive-minus-negative return gap falls from 5.04% to 2.57% in MSCI ESG, from 4.65% to 2.33% in MSCI KLD, and from 3.88% to 2.12% in Refinitiv. The attenuation is symmetric: high-sustainable-ownership stocks fall less on extreme negative news (the positive $HighSO$ coefficient) and rise less on extreme positive news (the sum $HighSO + TopSUE \times HighSO$ is negative).

Columns (3), (6), and (9) replace the high/low split with the continuous sustainable-ownership share $SO$. The interaction $TopSUE \times SO$ remains negative and statistically significant in all three datasets, showing that the attenuation is not driven by the discrete $HighSO$ cutoff. The magnitudes are economically meaningful: a 5 percentage-point increase in $SO$—roughly one standard deviation—reduces the announcement-day response to earnings news by about 0.58% (MSCI ESG), 0.56% (MSCI KLD), and 0.88% (Refinitiv).

Overall, the results are stable across ESG datasets and across a rich set of controls and fixed effects. The message is clear: as sustainable ownership rises, announcement-day prices react less to earnings news, consistent with the model's central prediction that sustainable demand dampens price responses to earnings announcements.

## 4.3 Robustness and Additional Evidence

We conduct a battery of additional tests to verify that the muted price response to earnings news for stocks with high sustainable ownership is not driven by specific choices in the definition of sustainability, the construction of $TopSUE$, or the control structure. The results are summarized in Table 2 and reported in detail in Appendix D. Throughout, we maintain the same control specification to ensure direct comparability with columns (2), (5), and (8) of Table 1 for the discrete $HighSO$ measure and with columns (3), (6), and (9) for the continuous $SO$ measure.

**Alternative ways to classify "sustainable" investors** We consider several alternative definitions of sustainable investors. Appendix Table IA.5 tightens the screen by focusing exclusively on environmental (E) scores.[6] Tables IA.6 and IA.7 use a time-varying quarterly ranking, classifying institutions as *sustainable* if their ESG or E score falls in the top 30% of the investor distribution in a given quarter, which allows for changes in mandates over time.

Panels A–C of Table 2 summarize these exercises by reporting the interaction terms $TopSUE \times HighSO$ and $TopSUE \times SO$. Across all specifications, these interactions are negative on the announcement day and robust to the choice of the sustainability definition. The attenuation in the price response is economically stronger when sustainability is measured using ESG rather than E scores alone, and when institutions are classified using a time-invariant ranking. These patterns suggest that sustainability extends beyond environmental considerations and that investor preferences are slow-moving and better captured by long-sample averages.

**Additional institutional-ownership controls** Panels D–G report the same estimates after augmenting the baseline specification with richer controls: industry-by-quarter fixed effects (Panel D), passive-ownership shares (Panel E), "Big 3" concentration measures (Panel F),[7] and investment-horizon controls (Panel G; construction details are provided in Appendix Section D.1). Across all specifications, both the sign and magnitude of the estimates remain essentially unchanged relative to the baseline results in Table 1.

Appendix Tables IA.9–IA.11 further show that interactions between $TopSUE$ and alternative ownership measures—such as passive ownership or Big 3 concentration—are, if anything, positive rather than negative, while coefficients on horizon-related interactions are often imprecisely estimated. Taken together, these findings indicate that neither benchmark indexing nor investor-horizon heterogeneity can account for the attenuated price response, reinforcing the interpretation that the effect operates through a taste-premium channel.

**Alternative construction of TopSUE** In the baseline specification reported in Table 1, we define $TopSUE$ using events in quantile 1, which captures large negative surprises, and quantile 11, which captures large positive surprises. We repeat the analysis using a broader

[6] We consider stand-alone environmental (E) scores for MSCI ESG and MSCI KLD, where they are available with consistent coverage. For Refinitiv, these "pillar" scores are less consistently available than composite (ESG) scores.

[7] To capture the concentration among big investors, we compute the fraction of total shares outstanding for each stock that are held by the three largest institutional investors in the given quarter.

definition: quantiles 1 and 2 for negative surprises, and quantiles 10 and 11 for positive surprises.[8] Panel H shows that the coefficient on the interaction term remains negative and statistically significant.

Panel I replaces the baseline $TopSUE$ indicator with a ranked measure of earnings news. Specifically, announcements are assigned to 11 bins based on the sign and magnitude of SUE: quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. This specification therefore uses the full distribution of earnings news rather than focusing only on the most extreme observations. The coefficient on the interaction term remains negative and statistically significant under this alternative specification.[9]

**Alternative construction of SO and HighSO** In the baseline specification reported in Table 1, an investor is classified as sustainable if the value-weighted ESG score of her portfolio falls in the top 30% of the cross-investor distribution. In Panel J of Table 2, we adopt a broader definition and classify as sustainable those investors whose portfolio-level ESG score falls in the top 50% of the distribution. The results remain similar under this alternative classification: the coefficient on the interaction term continues to be statistically significant, and sustainable ownership still dampens the immediate price response to earnings news.

**Additional evidence: post-announcement returns and volume** While our framework is designed to characterize the announcement-date price response, it also points to two natural additional implications. First, if sustainable ownership dampens the immediate response of prices to earnings news through a persistent valuation wedge, there should be no systematic tendency for this attenuation to reverse in the absence of further news. Second, if prices respond less on the announcement date, trading activity should also be

[8] This choice involves a trade-off between effect size and precision. Expanding the set of included quantiles increases the sample size and thus the precision of the estimates, but it may also attenuate the estimated effect by including observations associated with generally weaker price responses to earnings news.

[9] The smaller coefficients in Panel I are mechanical. In the baseline specification, $TopSUE$ is a 0/1 indicator that directly compares the most positive and most negative bins. In Panel I, $RankSUE$ moves one bin at a time from 1 to 11, so the same extreme-to-extreme comparison corresponds to a 10-unit change. The roughly ten-fold smaller coefficients are therefore expected and consistent with the $TopSUE$ coefficients reported in the other specifications.

more muted. In Appendix D.2 and D.3, we confirm both patterns: the initial attenuation in announcement-day returns does not converge in the weeks that follow, and announcement-day trading volume is also weaker for stocks with higher sustainable ownership. These additional results reinforce our interpretation that sustainable ownership is associated with a persistent demand-driven valuation wedge rather than a temporary misreaction.

## 4.4 Instrumental Variables Approach

Sustainable ownership is not randomly assigned across stocks, so OLS estimates may confound the causal effect of sustainable ownership with selection. Stocks that become HighSO may simultaneously experience changes in fundamentals, the information environment, investor attention, or risks that also affect earnings-announcement returns. In addition, sustainable ownership may respond to expected performance, creating reverse causality. In our setting, the key regressor is an ownership indicator ($HighSO$) and its interaction with earnings news ($TopSUE$); therefore, any omitted time-varying stock characteristic correlated with both ownership and announcement-day prices could bias the estimated interaction effect.

To isolate plausibly exogenous variation in sustainable ownership, we use a Bartik (shift–share) instrumental-variables design based on capital flows to sustainable investors. The instrument exploits two predetermined objects: (i) each stock's lagged exposure to sustainable investors through their holdings, and (ii) quarter-to-quarter net flows to those institutional investors. Because institutional managers typically scale positions proportionally to existing holdings in response to flows (Lou, 2012), and because ESG-directed flows create buying pressure in the stocks that ESG investors overweight (van der Beck, 2026), stocks with greater prior exposure mechanically absorb more sustainable capital and are therefore more likely to become HighSO. We combine these elements into a stock-level exposure-to-flows measure and use it, along with its interaction with $TopSUE$, as external instruments.

#### 4.4.1 Empirical Design

Let $\mathcal{S}$ denote the set of sustainable investors, and let $AUM_{i,t}$ be investor $i$'s total 13F market value in quarter $t$. We measure investor-quarter net flows as

$$f_{i,t-1} \equiv \frac{AUM_{i,t-1} - AUM_{i,t-2}\left(1 + r^{\mathrm{LO}}_{i,t-1}\right)}{AUM_{i,t-2}}, \tag{10}$$

where $r^{\mathrm{LO}}_{i,t-1}$ is the investor's leave-one-out portfolio return between $t-2$ and $t-1$, computed using lag weights and excluding stock $n$ when constructing instruments for stock $n$. The leave-one-out adjustment removes the mechanical link between the focal stock's return and measured flows.

Let $s_{n,i,t-1}$ denote the fraction of shares outstanding of stock $n$ that are held by investor $i$ measured at the end of quarter $t-1$. We then construct a stock-level exposure to sustainable flows using a standard Bartik shift–share approach:

$$Z_{n,t} \equiv \sum_{i\in\mathcal{S}} s_{n,i,t-1}\, f_{i,t-1}. \tag{11}$$

The *shares* are the predetermined lagged holdings $s_{n,i,t-1}$ which capture stock $n$'s exposure to sustainable investors. The *shifts* are the investor-level net flows $f_{i,t-1}$ representing portfolio-level capital reallocation shocks. Under proportional scaling of positions, inflows to sustainable investors increase demand disproportionately for stocks with larger $s_{n,i,t-1}$, so $Z_{n,t}$ shifts the probability that a stock is classified as $HighSO$ in quarter $t$.

We instrument the two endogenous regressors $\left(\mathrm{HighSO}_{n,t},\ \mathrm{TopSUE}_{n,t}\times\mathrm{HighSO}_{n,t}\right)$ with the instrument pair $\left(Z_{n,t},\ \mathrm{TopSUE}_{n,t}\times Z_{n,t}\right)$. The interaction instrument $\mathrm{TopSUE}_{n,t}\times Z_{n,t}$ provides differential relevance for the interaction regressor, while maintaining the same Bartik variation that moves sustainable ownership status through lagged exposure to flow shocks.

With stock and quarter fixed effects $(\psi_n, \psi_t)$ and controls $X_{n,t}$, the first-stage system is

$$\begin{aligned}\mathrm{HighSO}_{n,t} &= \alpha_1 Z_{n,t} + \alpha_2\left(\mathrm{TopSUE}_{n,t}\times Z_{n,t}\right)\\ &\quad + \alpha_3 \mathrm{TopSUE}_{n,t} + X_{n,t}^{\top}\alpha + \psi_n + \psi_t + u_{n,t}, \end{aligned}\tag{12a}$$

$$\begin{aligned}\mathrm{TopSUE}_{n,t}\times\mathrm{HighSO}_{n,t} &= \delta_1 Z_{n,t} + \delta_2\left(\mathrm{TopSUE}_{n,t}\times Z_{n,t}\right)\\ &\quad + \delta_3 \mathrm{TopSUE}_{n,t} + X_{n,t}^{\top}\delta + \psi_n + \psi_t + v_{n,t}. \end{aligned}\tag{12b}$$

All exogenous regressors $\left(\mathrm{TopSUE}_{n,t}, X_{n,t}, \psi_n, \psi_t\right)$ serve as their own instruments.

The second-stage equation replaces the endogenous regressors with their fitted values:

$$R_{n,t}^{(0,0)} = \phi_1 \, \mathrm{TopSUE}_{n,t} + \beta_2 \, \widehat{\mathrm{HighSO}}_{n,t} + \beta_3 \left( \widehat{\mathrm{TopSUE}_{n,t} \times \mathrm{HighSO}_{n,t}} \right) + \Gamma' X_{n,t} + \psi_n + \psi_t + \varepsilon_{n,t}. \tag{13}$$

The exclusion restriction requires that, conditional on stock and quarter fixed effects and the full set of controls, variation in $Z_{n,t}$ affects $R_{n,t}^{(0,0)}$ only through sustainable ownership in quarter $t$—and hence through $HighSO_{n,t}$ and its interaction with earnings news, $TopSUE_{n,t} \times HighSO_{n,t}$. Under this assumption, flow-driven reallocations do not directly affect the earnings-news response of two otherwise identical stocks $A$ and $B$, except to the extent that they alter sustainable ownership.

This restriction is plausible in our setting because the shift component, $f_{i,t-1}$, reflects portfolio-level capital reallocation shocks to sustainable investors—such as mandate changes, rebalancing, marketing flows, or cross-fund transfers—that are not firm-specific and are realized before the quarter-$t$ earnings announcement. Quarter fixed effects absorb any aggregate ESG-related waves that might directly affect announcement returns. Identification therefore comes from cross-stock differences in predetermined exposure $s_{n,i,t-1}$: stocks that happened to be more heavily held by sustainable investors prior to the flow shock are more likely to be pushed into HighSO, without requiring that those stocks differ in unobserved earnings-related fundamentals in quarter $t$.

#### 4.4.2 IV Results

Table 3 reports the IV estimates. In the MSCI ESG sample, the first stage confirms that the shift-share exposure moves sustainable ownership in the expected direction: stocks with greater exposure to sustainable-investor flows are more likely to be classified as $HighSO$, and the interaction instrument $TopSUE \times Z$ predicts the endogenous interaction $TopSUE \times HighSO$. The first-stage coefficients are precisely estimated, with $t$-statistics comfortably in double digits, indicating that the instrument pair has substantial explanatory power for both endogenous regressors.

Standard diagnostics point to a strongly identified design. The Kleibergen-Paap rk LM test rejects underidentification with $p < 0.0001$, and the Kleibergen-Paap rk Wald $F$ statistics are large (about 140 in MSCI ESG and around 190–200 in the other two samples). The

Sanderson-Windmeijer conditional $F$ statistics—which assess instrument strength for each endogenous regressor after partialling out the other—are also far above conventional weak-instrument thresholds in all three datasets, exceeding 100 for $HighSO$ and several hundred for $TopSUE \times HighSO$. Taken together, these diagnostics rule out weak instruments as a practical concern.

The second stage delivers the same economic message as OLS: sustainable ownership attenuates the price response to earnings news. In the MSCI ESG sample, the interaction coefficient is negative and statistically significant ($\widehat{\beta}_3 = -0.0208$). The baseline announcement-day response for low-sustainable-ownership stocks is about 4.5% (the $TopSUE$ coefficient), while the response for high-sustainable-ownership stocks is smaller by roughly two percentage points—close to a halving of the reaction.

The MSCI KLD and Refinitiv samples reinforce this conclusion with somewhat larger interaction magnitudes: $\widehat{\beta}_3 = -0.0289$ in MSCI KLD and $-0.0315$ in Refinitiv, both highly significant. Thus, across all three providers, exogenous variation in sustainable ownership consistently translates into a materially weaker price response to earnings surprises.

Relative to the corresponding OLS estimates in Table 1, the IV magnitudes are similar in the MSCI ESG sample and more negative in the MSCI KLD and Refinitiv samples. In MSCI ESG, the OLS and IV estimates are close ($-0.0247$ versus $-0.0208$), suggesting that selection is not driving the baseline result. In MSCI KLD and Refinitiv, the IV estimates are more negative than OLS ($-0.0289$ versus $-0.0232$ and $-0.0315$ versus $-0.0176$), consistent with moderate attenuation toward zero in OLS. Overall, the IV results strengthen the interpretation that sustainable ownership causally dampens how stock prices respond to earnings news.[10]

# 5 Estimating the Sustainability Wedge from Earnings-Day Returns

We next utilize the dampened stock price reaction for high-sustainable-ownership stocks to estimate the sustainability-related discount-rate wedge. For that, we first estimate the

[10] Appendix Table IA.17 shows that these results also hold when we use E scores to define sustainable investors.

payout response to earnings news, and then ask what discount-rate wedge is needed to reconcile those cash-flow dynamics with the stock price responses. The estimated discount-rate wedge captures the difference in required returns associated with sustainable ownership.

### 5.1 A Present-Value Decomposition of Announcement Returns

We start by mapping announcement-day returns into a present-value representation that links the stock-price response to two objects: how earnings news revises expected future payouts, and the discount rate used to capitalize those revisions. This decomposition provides the basis for estimating the sustainability discount-rate wedge $r_{\text{sust}}$, which captures how different the required return is for $HighSO$ stocks.

Let $t$ denote the earnings-announcement date and $t^-$ the last trading day before the release. Define the announcement-day return for firm $n$ as in Section 4:

$$R_{n,t}^{(0,0)} = \frac{P_{n,t} - P_{n,t^-}}{P_{n,t^-}}. \tag{14}$$

Let $D_{n,t}$ denote the firm payout level at date $t$. The pre-announcement price is the discounted value of expected future payouts,

$$P_{n,t^-} = \sum_{h=0}^{\infty} (1 + r_n)^{-h} \, \mathbb{E}_{t^-}[D_{n,t+h}] \, , \tag{15}$$

where $r_n$ is the required return for firm $n$. As in the model in Section 2, when the earnings report arrives, investors update beliefs about future payouts from $\mathbb{E}_{t^-}[\cdot]$ to $\mathbb{E}_t[\cdot]$, while $r_n$ remains unchanged on the announcement day.[11] Therefore, the price change equals the present value of payout revisions,

$$P_{n,t} - P_{n,t^-} = \sum_{h=1}^{\infty} (1 + r_n)^{-h} \, \Delta\mathbb{E}_t[D_{n,t+h}] \, , \qquad \Delta\mathbb{E}_t[D_{n,t+h}] \equiv \mathbb{E}_t[D_{n,t+h}] - \mathbb{E}_{t^-}[D_{n,t+h}] \, . \tag{16}$$

Announcement-day returns are thus proportional to the discounted revision in expected future payouts.

[11] Fama (1991) emphasizes that abnormal returns measured over narrow windows around major information releases are far less sensitive to expected-return modeling.

We next express the announcement-day return in terms of two interpretable economic objects: the discounted payout-revision term and the baseline valuation term. Suppose that, absent the announcement, expected payouts grow at a constant long-run rate $g$ so that $\mathbb{E}_{t^-}[D_{n,t+h}] = (1+g)^h D_{n,t}$ for $h \geq 0$. In Appendix A we show that, under this standard Gordon-growth benchmark, combining (16) with the return definition in (14) yields the following present-value representation of announcement-day returns:

$$R_{n,t}^{(0,0)} = \underbrace{\frac{r_n - g}{1+r_n}}_{\text{baseline valuation term}} \cdot \underbrace{\sum_{h=1}^{\infty}(1+r_n)^{-h}\,\frac{\Delta\mathbb{E}_t[D_{n,t+h}]}{D_{n,t}}}_{\text{discounted payout-revision term}}. \tag{17}$$

Equation (17) links announcement-day returns to the discounted present value of payout revisions and to the rate at which those revisions translate into announcement-day returns. The second term summarizes how the announcement changes the present value of future payouts relative to current payouts. The first term maps a given present-value payout revision into an announcement-day return. When the discount rate is lower, this term is smaller, and so is the announcement-day return: the same dollar change in value represents a smaller fraction of a higher pre-announcement price. In our application,

$$r_n \equiv r + HighSO_{n,t}\, r_{\text{sust}}, \tag{18}$$

such that $r_{\text{sust}}$ captures the sustainability-related discount-rate wedge. Equation (17) therefore sharpens the empirical question: does the muted response of HighSO stocks reflect a different payout-revision process following earnings news, or a different capitalization of a given payout-revision process through required returns?

The remainder of this section implements (17). Section 5.2 estimates how earnings news maps into future payouts, and Section 5.3 combines these payout moments with the present-value representation and the return restriction in (18) to estimate $r$ and $r_{\text{sust}}$. Because the required return affects both the discounted payout-revisions term and the baseline valuation term, the sustainability wedge is pinned down jointly by these two objects.

## 5.2 Estimating Payout-Growth Responses

We begin by estimating the payout-revision process in (17). For each horizon $h$, we test whether earnings surprises predict subsequent payout growth and whether this relation differs for HighSO firms. The object of interest is $\{\Delta\mathbb{E}_t[D_{n,t+h}]/D_{n,t}\}_{h\geq 1}$, the path of payout revisions induced by the announcement and scaled by current payouts. Concretely, we project realized cumulative payout growth over $h$ years on $\text{SUE}_{n,t}$ and its interaction with $HighSO_{n,t}$. The resulting coefficients trace the magnitude and persistence of payout responses to earnings news and show whether the response varies with sustainable ownership.

**Methodology** Let $\Delta D_{n,t\to t+h}$ denote the cumulative change in payouts from year $t$ to year $t+h$, expressed relative to the payout level at $t$:

$$\Delta D_{n,t\to t+h} \equiv \frac{D_{n,t+h} - D_{n,t}}{D_{n,t}}, \qquad h = 1, 2, \ldots$$

Here we measure payouts $D_{n,t}$ using annual cash dividends from the Compustat Annual file.[12]

For horizons $h = 1, \ldots, H$ (in years), we estimate horizon-specific responses of payout growth to the earnings surprise. Operationally, we implement a stacked regression by reshaping the data into a long panel indexed by $(n, t, h)$ and interacting the regressors with horizon indicators:

$$\begin{aligned}\Delta D_{n,t\to t+h} = \sum_{k=1}^{H} \Big[\beta_{1,k}\left(\text{SUE}_{n,t}\cdot \mathbb{1}\{h=k\}\right) + \beta_{2,k}\left(\text{SUE}_{n,t}\times HighSO_{n,t}\right)\cdot \mathbb{1}\{h=k\}\Big] \\ +\ \delta\, HighSO_{n,t}\ +\ \Gamma' X_{n,t}\ +\ \mu_n\ +\ \lambda_t\ +\ \eta_h\ +\ \varepsilon_{n,t}(h),\end{aligned} \tag{19}$$

where $\mu_n$ are firm fixed effects, $\lambda_t$ are calendar-month fixed effects, and $\eta_h$ are horizon fixed effects. The control vector $X_{n,t}$ and the fixed effects match those in the return regressions in Section 4.2, and standard errors use the same double-clustering scheme as elsewhere in the paper.[13]

[12] We follow a standard Compustat-based construction that adjusts dividends per share for share splits using the appropriate adjustment factors.

[13] Appendix Table IA.13 shows that the baseline results in Table 1 are unchanged when we replace the $TopSUE$ indicator with ranked SUE. In specification (19), and throughout the GMM analysis, we use the

The coefficients $\{\beta_{1,h}\}_{h=1}^{H}$ trace the average payout response to a one-unit earnings surprise, capturing the cash-flow channel common to HighSO and LowSO firms. The interaction coefficients $\{\beta_{2,h}\}_{h=1}^{H}$ measure any incremental payout predictability for HighSO firms; if they are zero, then earnings news forecasts future payouts similarly for HighSO and LowSO stocks, and differential cash-flow revisions cannot account for the muted price response.

We summarize inference with two joint Wald F-tests across horizons. First, we test whether earnings surprises predict payout growth at all:

$$H_0: \ \beta_{1,1} = \cdots = \beta_{1,H} = 0.$$

Second, and most important for the mechanism, we test whether payout predictability differs by sustainable ownership:

$$H_0: \ \beta_{2,1} = \cdots = \beta_{2,H} = 0.$$

These tests determine what enters the structural step: if we fail to reject the second null, we impose a common cash-flow response in (17) and attribute remaining cross-group differences in announcement returns to the difference in discount rates (i.e., $r_{\text{sust}}$). If instead HighSO materially alters payout predictability, we carry this heterogeneity into the payout-revision term of (17) to avoid mechanically attributing cash-flow differences to the estimated discount-rate wedge.

**Choice of horizons and datasets** We estimate (19) for maximum horizons $H \in \{5, 6, 7\}$ years, which balance a key tradeoff in our mechanism analysis. Shorter horizons risk missing slow-moving payout adjustments—since earnings news may take several years to pass through to realized payouts—and would mechanically understate the cash-flow channel in (17). Longer horizons, by contrast, reduce the sample and add noise. Horizons between five

rank of SUE rather than its raw value because the GMM estimation relies on matching moments across a broad cross-section of firms and over time, and raw SUE is sensitive to outliers and scale differences that can give a small number of observations undue influence. Ranked SUE, instead, preserves the ordering of earnings news while placing observations on a common scale, making the moments more comparable and the estimation more stable. In the baseline announcement-return regressions, we prefer the $TopSUE$ indicator because it isolates the tails of the earnings-surprise distribution, thereby sharpening the contrast between strongly positive and strongly negative news, and because this design is standard in the earnings-response literature (DellaVigna and Pollet, 2009).

and seven years capture medium-run payout dynamics while preserving sufficient observations for precise inference.

We restrict this analysis to datasets with sufficiently long time coverage. In particular, we exclude the MSCI ESG sustainable-ownership measure, which spans only eleven years (from 2012 to 2022); with quarterly earnings announcements and horizons up to $H = 7$ years, requiring realized payout outcomes through $t + H$ quickly exhausts the sample. We therefore focus on the two longer-coverage datasets—MSCI KLD and Refinitiv—for which the stacked regressions can be estimated reliably at these horizons. For MSCI KLD, we report results using two sustainable-ownership definitions: one based on the overall ESG score and one based on the environmental (E-only) score.

**Earnings surprises predict payouts, with no HighSO differential** Panel A of Table 4 shows that earnings surprises have clear and persistent cash-flow content. Across datasets and for all $H$, we reject the hypothesis that payout growth is unrelated to $\text{SUE}_{n,t}$. Economically, this means that an earnings surprise is not just a one-quarter accounting shock: it forecasts higher future payouts for several years. This finding matters for our mechanism because it validates the cash-flow channel in (17) as a quantitatively relevant component of announcement returns.

At the same time, Panel A shows little evidence that this cash-flow predictability differs between HighSO and LowSO stocks. The joint tests for the interaction term are consistently weak, with small $F$-statistics and large $p$-values across horizons and datasets, indicating that payout growth responds to earnings news in essentially the same way for both ownership groups. Figure 2 reports the underlying coefficient paths: the common response to $\text{SUE}_{n,t}$ is positive and persistent, whereas the incremental HighSO component fluctuates around zero and is imprecisely estimated at individual horizons.

Taken together, the payout evidence points to a clear conclusion: earnings news moves expected payouts, but it does not do so differently for HighSO firms, so the muted return response must primarily reflect the difference in discount rates.

**Implication for the present-value identity** These estimates allow us to simplify the payout-revision term in (17). Because payout growth responds to earnings news in essentially the same way for HighSO and LowSO firms, we impose that the announcement-induced payout revision is proportional to the earnings surprise but does not depend on $HighSO_{n,t}$:

$$\frac{\Delta \mathbb{E}_t[D_{n,t+h}]}{D_{n,t}} \;=\; \phi_h \, \mathrm{SUE}_{n,t}, \qquad h = 1, 2, \ldots,$$

where $\phi_h$ denotes the horizon-$h$ payout-response coefficient (the analog of the payout-growth sensitivities estimated in (19)). Substituting this restriction into (17) and using $r_n \equiv r + \mathrm{HighSO}_{n,t} r_{\mathrm{sust}}$ yields the restricted present-value (PV) relation

$$R^{(0,0)}_{n,t} \;=\; \frac{r + \mathrm{HighSO}_{n,t} r_{\mathrm{sust}} - g}{1 + r + \mathrm{HighSO}_{n,t} r_{\mathrm{sust}}} \cdot \mathrm{SUE}_{n,t} \sum_{h=1}^{\infty} \Big(1 + r + \mathrm{HighSO}_{n,t} r_{\mathrm{sust}}\Big)^{-h} \phi_h. \tag{20}$$

With a common cash-flow mapping $\{\phi_h\}$, any difference in announcement-day sensitivities between HighSO and LowSO stocks must come from the discount-rate wedge $r_{\mathrm{sust}}$. The next subsection quantifies this discount-rate wedge.

### 5.3 GMM Estimation of the Sustainability Discount-Rate Wedge

We take (20) to the data by estimating a finite-horizon version for a fixed $H \in \{5, 6, 7\}$ years, replacing the infinite sum with the first $H$ years of payout responses. This yields an $(H+1)$-equation system: one moment condition that matches announcement returns to the PV-implied return response, and $H$ additional moments that discipline the payout-response coefficients $\{\phi_h\}_{h=1}^{H}$.

Formally, we estimate the parameter vector $\theta = (r,\ r_{\mathrm{sust}},\ \phi_1, \ldots, \phi_H)$ from the moment conditions

$$\mathbb{E}\left[ R^{(0,0)}_{n,t} - \frac{r + \mathrm{HighSO}_{n,t} r_{\mathrm{sust}} - g}{1 + r + \mathrm{HighSO}_{n,t} r_{\mathrm{sust}}} \cdot \mathrm{SUE}_{n,t} \sum_{h=1}^{H} \Big(1 + r + \mathrm{HighSO}_{n,t} r_{\mathrm{sust}}\Big)^{-h} \phi_h \right] = 0, \tag{21}$$

$$\mathbb{E}\left[\Delta D_{n,t\to t+1} - (\phi_1 \, \mathrm{SUE}_{n,t} + \Gamma^{(1)} X_{n,t} + \mu_n + \lambda_t)\right] = 0, \tag{22}$$

$$\vdots$$

$$\mathbb{E}\left[\Delta D_{n,t\to t+H} - (\phi_H \, \mathrm{SUE}_{n,t} + \Gamma^{(H)} X_{n,t} + \mu_n + \lambda_t)\right] = 0. \tag{23}$$

The first moment is the valuation restriction: it requires that the observed announcement return equals the return implied by the estimated payout-revision response to $\mathrm{SUE}_{n,t}$, discounted using a required return that differs by ownership group through $r_{\text{sust}}$. The remaining moments pin down the cash-flow side by linking the same $\text{SUE}_{n,t}$ to subsequent payout growth at horizons $1, \ldots, H$, without allowing these responses to differ by sustainable ownership (consistent with Section 5.2). Horizons are expressed in years. In the baseline, we set the long-run nominal growth rate to $g = 4\%$ and later show that the estimates are robust over the 3%–5% range.[14]

To keep the parameter vector focused on $(r, r_{\text{sust}}, \phi_1, \ldots, \phi_H)$, we partial out controls and fixed effects from the variables entering (21)–(23). This residualization removes variation associated with observables and high-dimensional fixed effects, allowing the GMM step to focus on the nonlinear parameters of interest. We then estimate the system by GMM using $\text{SUE}_{n,t}$ and $\text{SUE}_{n,t} \times HighSO_{n,t}$ as instruments and the optimal weighting matrix.

Panel B of Table 4 reports the GMM estimates for $H \in \{5, 6, 7\}$. Two patterns are immediate. First, the estimated payout-response coefficients $\{\phi_h\}$ are positive and precisely estimated at all horizons, confirming that earnings surprises translate into higher subsequent payouts even when the PV restriction is imposed jointly with the return equation.

Second, the discount-rate decomposition is economically sensible. The estimated baseline required return $r$ ranges from about 7% to 16% across datasets and horizons, and it declines as $H$ increases because longer horizons allow the model to attribute a larger share of the announcement-day response to measured medium-run payout predictability. Our most conservative specification therefore uses the longest horizon, $H = 7$: in that case, the baseline cost of capital lies between 7.4% (Refinitiv) and 11.7% (MSCI KLD), comfortably within the range implied by standard dividend-discount benchmarks.

The central object is the sustainability wedge. Across all specifications, $r_{\text{sust}}$ is negative and statistically different from zero, implying that HighSO firms are priced off a lower required return. At the most conservative horizon $H = 7$, the estimated wedge ranges from about $-0.9$ percentage points (Refinitiv) to $-3.7$ percentage points (MSCI KLD, ESG Score), with intermediate horizons delivering larger magnitudes. The overidentification diagnostics

[14] A 4% nominal benchmark lies near the center of standard long-run calibrations. Chen et al. (2008) report an expected aggregate real dividend growth rate of 1.35% and note that the corresponding estimate in Fama and French (2002) is 1.05%. Bansal and Yaron (2004) calibrate monthly real dividend growth at $\mu_d = 0.0015$, or about 1.8% annually. Using the Federal Reserve's 2% long-run inflation goal implies nominal growth rates of roughly 3.35%, 3.05%, and 3.8%, respectively. We therefore take 4% as a natural benchmark and use 3%–5% as a conservative robustness range.

support the specification: Hansen $J$ $p$-values are generally well above conventional rejection thresholds. Figure 3 summarizes the estimated values of $r_{\text{sust}}$ across datasets and horizons and Appendix Table IA.18 shows that, for the most conservative case with $H = 7$ years, the estimated discount-rate wedge is robust to alternative assumptions about the long-run dividend growth rate.

## 5.4 Connecting Reduced-Form Earnings Sensitivities to the Estimated Sustainability Wedge

A convenient way to link our reduced-form evidence from Section 4 to the present value estimates is to express both in terms of the *ratio* of announcement-day earnings-response slopes for HighSO versus LowSO firms. In the reduced-form return specification used throughout the paper,

$$R_{n,t}^{(0,0)} = \cdots + \phi_1 \,\text{TopSUE}_{n,t} + \phi_3 \left(\text{TopSUE}_{n,t} \times \text{HighSO}_{n,t}\right) + \cdots \,, \tag{24}$$

the implied coefficient on $\text{TopSUE}_{n,t}$ in $R_{n,t}^{(0,0)}$ is $\phi_1$ for firms with $\text{HighSO}_{n,t} = 0$ and $\phi_1 + \phi_3$ for firms with $\text{HighSO}_{n,t} = 1$. Hence, the empirical reduced-form (RF) attenuation can be summarized by

$$\mathcal{A}^{\text{RF}} \equiv \frac{\text{slope(HighSO)}^{\text{RF}}}{\text{slope(LowSO)}^{\text{RF}}} = \frac{\phi_1 + \phi_3}{\phi_1}. \tag{25}$$

Under the present-value relation in (17), the model-implied slope of announcement returns with respect to $\text{SUE}_{n,t}$ for an ownership type with required return $r_s$ is given by the product of the baseline valuation term and the discounted payout-revision term. To keep the notation compact, write these terms as

$$PV_H(r_s) \equiv \sum_{h=1}^{H} (1 + r_s)^{-h} \phi_h, \qquad \kappa(r_s, g) \equiv \frac{r_s - g}{1 + r_s}.$$

With $r_s = r$ for LowSO and $r_s = r + r_{\text{sust}}$ for HighSO, the present value (PV) model implies the attenuation ratio

$$\mathcal{A}^{PV}(H; r_{\text{sust}}) \equiv \frac{\text{slope(HighSO)}^{\text{PV}}}{\text{slope(LowSO)}^{\text{PV}}} = \frac{\kappa(r + r_{\text{sust}}, g)\, PV_H(r + r_{\text{sust}})}{\kappa(r, g)\, PV_H(r)}. \tag{26}$$

Equations (25)–(26) provide a direct diagnostic linking the reduced-form evidence to the structural present-value decomposition: the attenuation implied by the present-value framework, $\mathcal{A}^{\mathrm{PV}}(H)$ in (26), should align with the reduced-form attenuation $\mathcal{A}^{\mathrm{RF}}$ estimated from the return regressions in Section 4.

We use this consistency condition to reconcile the two approaches. Specifically, we ask what discount-rate wedge the present value model must generate to match the reduced-form HighSO-versus-LowSO earnings-response gap, and whether this implied wedge is consistent with the GMM estimate. As shown in (25), in the HighSO-dummy return regressions, the reduced-form attenuation ratio is the $TopSUE$ slope for HighSO firms divided by the corresponding slope for LowSO firms. Using the controlled specifications in Table 1 (column (5) for MSCI KLD and column (8) for Refinitiv) and in Table IA.5 (column (5) for MSCI KLD based on the E score), the implied reduced-form ratios are

$$\mathcal{A}^{RF}_{KLD} = \frac{0.0465 - 0.0232}{0.0465} = 0.501, \qquad \mathcal{A}^{RF}_{Ref} = \frac{0.0388 - 0.0176}{0.0388} = 0.546,$$

and

$$\mathcal{A}^{RF}_{KLD,E} = \frac{0.0422 - 0.0184}{0.0422} = 0.564.$$

Across all three reduced-form specifications, high-sustainable-ownership stocks respond to large earnings news by about half as much as low-sustainable-ownership stocks.

We then invert the present-value mapping in (26). Specifically, for a given $H \in \{5, 6, 7\}$, we hold $(r, \phi_1, \ldots, \phi_H)$ fixed at their GMM point estimates and use the same benchmark $g = 4\%$ as in Table 4. We define the implied wedge $r^{\mathrm{imp}}_{\mathrm{sust}}(H)$ as the numerical solution to

$$\mathcal{A}^{\mathrm{PV}}\Big(H;\, r^{\mathrm{imp}}_{\mathrm{sust}}(H)\Big) = \mathcal{A}^{\mathrm{RF}}.$$

Figure 3 overlays these implied wedges with the GMM point estimates and confidence intervals for all three datasets and for $H = 5, 6, 7$. The implied wedges are economically sensible and follow the expected pattern across horizons. As the payout horizon lengthens, the implied wedge becomes less negative, because a larger share of the announcement response is attributed to medium-run payout news rather than to discount rates.

The key result is that the implied wedges line up closely with the direct GMM estimates. Figure 3 shows that, for each dataset and at each horizon $H = 5, 6, 7$, the implied wedge

$r^{\text{imp}}_{\text{sust}}(H)$ lies within the confidence interval of the corresponding GMM estimate $\widehat{r}_{\text{sust}}(H)$. Thus, the discount-rate differential needed to reconcile the present-value model with the reduced-form response gap is similar in magnitude to the wedge recovered from the structural system and well within sampling uncertainty.[15] Across all three datasets and both estimation approaches, the sustainability wedge is negative and on the order of 1 to 3 percentage points in the more conservative specifications.

# 6 Conclusions

This paper studies whether sustainable investor demand changes how stock prices respond to cash-flow news. We show that it does. Stocks with greater sustainable ownership react about half as much to the same earnings news, and this weaker response is accompanied by lower trading volume and no post-announcement catch-up. A dynamic present-value analysis shows that the mechanism operates through discount rates rather than through different cash-flow dynamics: earnings surprises have similar implications for future payouts across ownership groups, but they are capitalized at lower required returns when sustainable ownership is high. The implied sustainability discount-rate wedge is negative and economically meaningful, on the order of 1–3 percentage points in our more conservative specifications.

A broader implication is that announcement returns are not pure measures of information processing. Cross-sectional differences in earnings responses need not reflect only attention, sentiment, or signal quality; they may also arise from differences in discount rates driven by investor demand. This matters for industry practice and policy. For asset managers and firms, a muted market reaction to fundamentals need not indicate weaker news or poorer disclosure; it may reflect a lower required return created by investor demand. More broadly, as preference-based investing grows, it can affect not only valuation levels and expected

[15] A natural question is whether the structural parameters could instead be estimated by directly matching the reduced-form HighSO-versus-LowSO attenuation ratio, $\mathcal{A}^{RF}$, rather than by imposing the return moment in (21). Conceptually, however, $\mathcal{A}^{RF}$ is a composite statistic—a ratio of two group-specific slopes—whereas the present-value restriction is formulated in levels at the firm-announcement level. Moreover, even conditional on the payout-response profile $\{\phi_h\}$ and $g$, the model-implied attenuation $\mathcal{A}^{PV}(H; r_{\text{sust}})$ depends on both the baseline required return $r$ and the wedge $r_{\text{sust}}$. As a result, targeting $\mathcal{A}^{RF}$ alone would not separately identify $(r, r_{\text{sust}})$ without an additional level restriction, such as the LowSO slope or the average return response. Doing so would therefore require returning to essentially the same information already embedded in (21).

returns, but also the strength of the equity market's feedback to firms, with implications for market discipline, corporate financing, and the real effects of asset prices.

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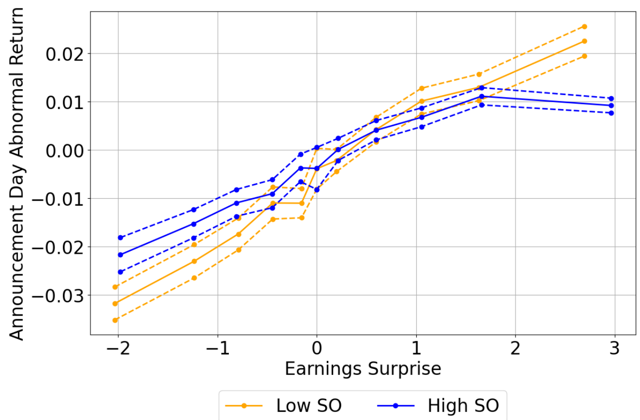
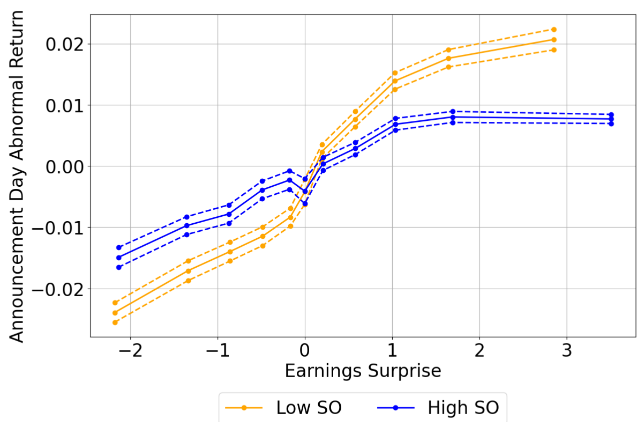
# Tables and Figures

# Figure 1: Announcement-Day Price Response

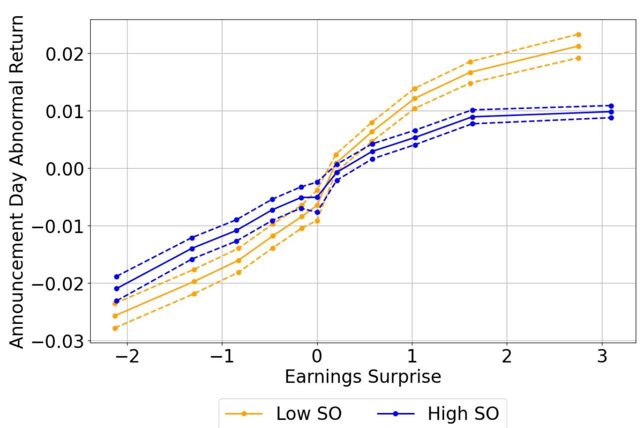
This figure displays abnormal earnings-announcement-day returns for stocks with different levels of sustainable ownership. A stock's *sustainable ownership* (SO) is defined as the fraction of total shares outstanding that are held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. The plots depict the abnormal announcement-day returns for stocks with *high sustainable ownership (High SO)* and *low sustainable ownership (Low SO)*, with *high (low) SO* stocks defined as those in the top (bottom) 30% of the SO distribution across all stocks in a given quarter. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. Panels (a)–(c), from top to bottom, depict the results using ESG scores from three different datasets: (a) MSCI ESG, (b) MSCI KLD, and (c) Refinitiv. The dashed lines indicate 95% confidence intervals based on standard errors double-clustered by stock and quarter.




**(a)** MSCI ESG



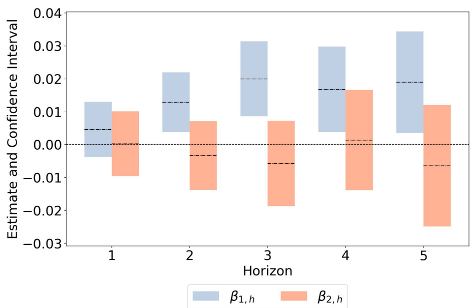

**(b)** MSCI KLD



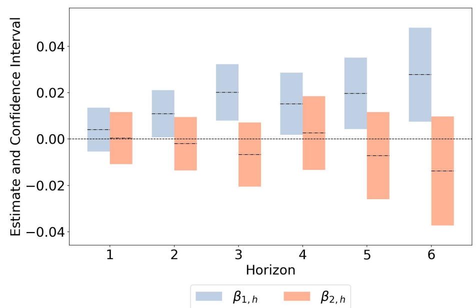

**(c)** Refinitiv

## Figure 2: Earnings Surprises and Future Payouts

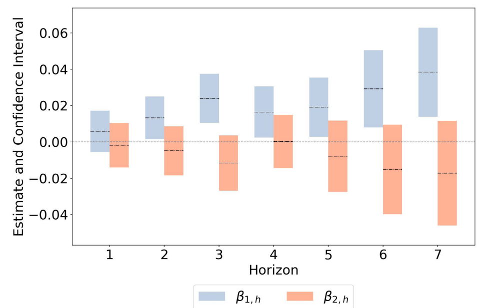
This figure reports the estimated coefficients on $Rank(SUE)$, $\beta_{1,h}$, and on $Rank(SUE) \times HighSO$, $\beta_{2,h}$, from payout-predictive regressions (19), together with 95% confidence intervals, at horizons $h = 1, \ldots, H$. The maximum horizon is $H = 5$ for the panels in column 1, $H = 6$ for the panels in column 2, and $H = 7$ for the panels in column 3. Panels (a)–(c), (d)–(f), and (g)–(i) report results using MSCI KLD ESG scores, MSCI KLD E scores, and Refinitiv ESG scores, respectively.



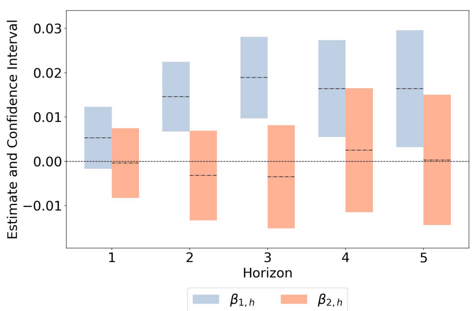

(a) MSCI KLD, ESG Scores, $H = 5$



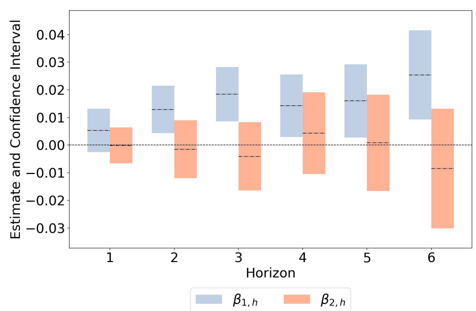

(b) MSCI KLD, ESG Scores, $H = 6$



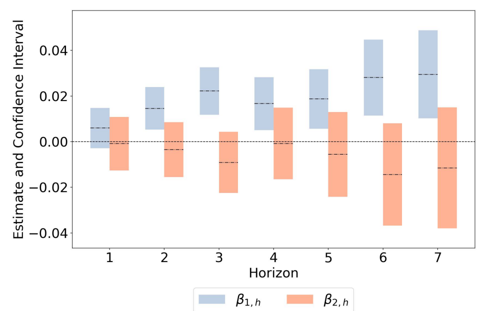

(c) MSCI KLD, ESG Scores, $H = 7$



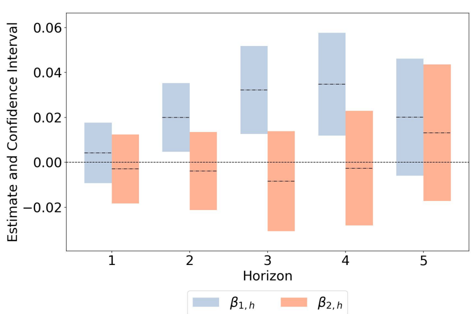

(d) MSCI KLD, E Scores, $H = 5$



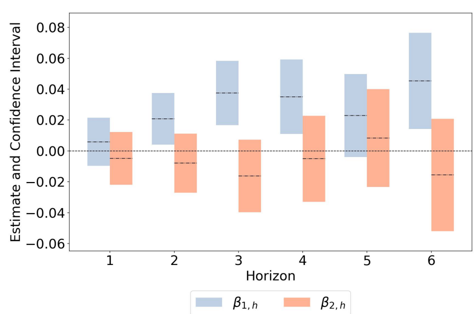

(e) MSCI KLD, E Scores, $H = 6$



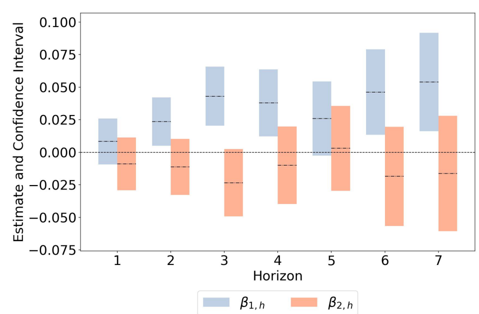

(f) MSCI KLD, E Scores, $H = 7$




(g) Refinitiv, ESG Scores, $H = 5$



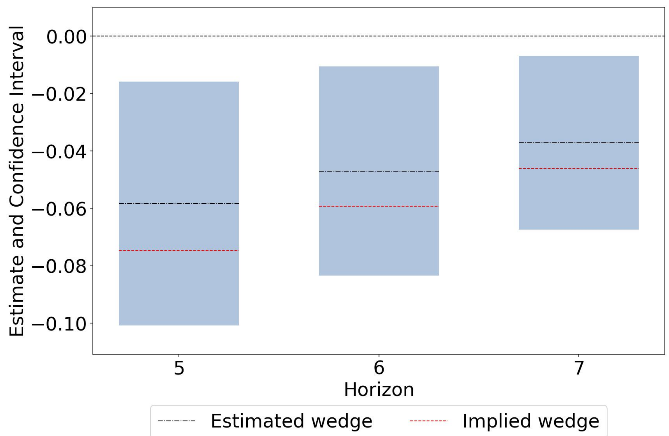

(h) Refinitiv, ESG Scores, $H = 6$



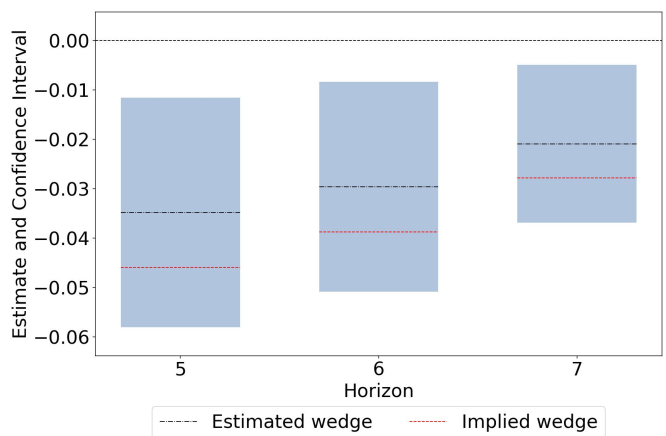

(i) Refinitiv, ESG Scores, $H = 7$

## Figure 3: Discount-Rate Wedge Associated with Preferences for Sustainability

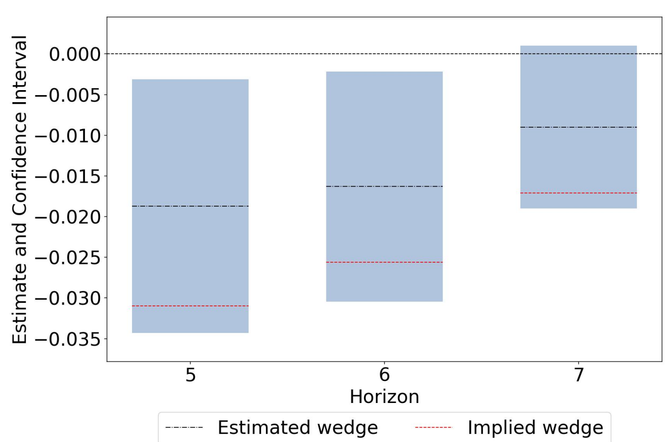
This figure reports GMM estimates of the sustainability discount-rate wedge, $r_{sust}$, based on the moment conditions in (21)–(23), together with 95% confidence intervals. Each panel shows estimates for alternative horizons, $H = 5, 6, 7$. Panel (a) reports results using MSCI KLD ESG scores, Panel (b) uses MSCI KLD E scores, and Panel (c) uses Refinitiv ESG scores. In each panel, the bars also report the implied wedge, $r_{\text{sust}}^{\text{imp}}(H)$, obtained by inverting the present-value mapping in (26).




**(a)** MSCI KLD, ESG Scores




**(b)** MSCI KLD, E Scores




**(c)** Refinitiv, ESG Scores

## Table 1: Sustainable Ownership and Announcement-Day Returns

This table presents the results from OLS regressions of announcement-day abnormal returns, $R_{n,t}^{(0,0)}$, on $TopSUE$, $HighSO$ ($SO$), and their interaction $TopSUE \times HighSO$ ($TopSUE \times SO$), along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. TopSUE is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $R_{n,t}^{(0,0)}$ (1) | $R_{n,t}^{(0,0)}$ (2) | $R_{n,t}^{(0,0)}$ (3) | $R_{n,t}^{(0,0)}$ (4) | $R_{n,t}^{(0,0)}$ (5) | $R_{n,t}^{(0,0)}$ (6) | $R_{n,t}^{(0,0)}$ (7) | $R_{n,t}^{(0,0)}$ (8) | $R_{n,t}^{(0,0)}$ (9) |
| $HighSO$ | 0.0102*** | 0.0122* | | 0.0092*** | 0.0090*** | | 0.0047*** | 0.0053* | |
| | (4.12) | (1.93) | | (8.00) | (4.26) | | (3.08) | (1.92) | |
| SO | | | -0.0017 | | | 0.0571*** | | | 0.0796*** |
| | | | (-0.06) | | | (4.50) | | | (2.73) |
| $TopSUE$ | 0.0540*** | 0.0504*** | 0.0408*** | 0.0441*** | 0.0465*** | 0.0360*** | 0.0465*** | 0.0388*** | 0.0333*** |
| | (23.08) | (7.64) | (8.19) | (37.35) | (18.10) | (20.06) | (30.95) | (10.13) | (12.20) |
| $TopSUE \times HighSO$ | -0.0234*** | -0.0247*** | | -0.0219*** | -0.0232*** | | -0.0160*** | -0.0176*** | |
| | (-7.68) | (-5.18) | | (-14.71) | (-10.98) | | (-8.30) | (-6.58) | |
| $TopSUE \times SO$ | | | -0.1152*** | | | -0.1120*** | | | -0.1754*** |
| | | | (-3.99) | | | (-8.64) | | | (-5.87) |
| Controls | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-Week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-Year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Adj. $R^2$ | 0.075 | 0.135 | 0.115 | 0.056 | 0.099 | 0.085 | 0.065 | 0.118 | 0.103 |
| Obs. | 12,073 | 10,500 | 18,107 | 42,263 | 37,489 | 62,615 | 26,599 | 23,759 | 40,244 |

## Table 2: Robustness Checks for Announcement-Day Returns

This table reports the coefficients for the interaction terms ($TopSUE \times HighSO$ and $TopSUE \times SO$) under various robustness tests, in the OLS regressions of announcement-day abnormal returns, $R^{(0,0)}_{n,t}$, on $TopSUE$, $HighSO$ ($SO$), and their interaction $TopSUE \times HighSO$ ($TopSUE \times SO$), along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11 in Panels A–G and J. In Panel H, SUE quantiles 1, 2, 10, and 11 are used, and Panel I uses all SUE quantiles. TopSUE is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). Column (1) reports the coefficient on $TopSUE \times HighSO$, and column (2) reports the coefficient on $TopSUE \times SO$. Column (3) refers to the Internet Appendix table in which the full results are reported. $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panels A–C present the results for alternative definitions of sustainable investors. Specifically, sustainable investors are defined as investors with a portfolio-level *Environmental* score (averaged over the time-series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors in Panel A. In Panel B, sustainable investors are defined as investors with a portfolio-level ESG score in the top 30% of its distribution across all investors in a given quarter (*time-varying* definition). In Panel C, sustainable investors are defined as investors with a portfolio-level *Environmental* score in the top 30% of its distribution across all investors in a given quarter (*time-varying* definition).

| | $TopSUE \times HighSO$ | $TopSUE \times SO$ | Full Results |
|---|---|---|---|
| Dep. Var. | $R^{(0,0)}_{n,t}$ (1) | $R^{(0,0)}_{n,t}$ (2) | $R^{(0,0)}_{n,t}$ (3) |
| **Panel A: Time-invariant E** | | | |
| MSCI ESG | -0.0134*** | -0.0286 | Table IA.5 |
| | (-2.72) | (-1.60) | |
| MSCI KLD | -0.0184*** | -0.1245*** | Table IA.5 |
| | (-8.71) | (-8.97) | |
| **Panel B: Time-varying ESG** | | | |
| MSCI ESG | -0.0184*** | -0.0599*** | Table IA.6 |
| | (-4.03) | (-2.59) | |
| MSCI KLD | -0.0181*** | -0.0655*** | Table IA.6 |
| | (-8.82) | (-6.36) | |
| Refinitiv | -0.0087*** | -0.0832*** | Table IA.6 |
| | (-3.30) | (-4.52) | |
| **Panel C: Time-varying E** | | | |
| MSCI ESG | -0.0171*** | -0.0431** | Table IA.7 |
| | (-3.60) | (-2.44) | |
| MSCI KLD | -0.0096*** | -0.0356*** | Table IA.7 |
| | (-4.79) | (-4.56) | |

## Table 2: Robustness Checks for Announcement-Day Returns (continued)

Panel D presents the results when we include stock and industry×quarter fixed effects, instead of stock and quarter fixed effects. Panel E presents the results when we include $PsvOwnShip$ and its interaction with $TopSUE$, i.e., $TopSUE \times PsvOwnShp$, where $PsvOwnShip$ is the fraction of total shares outstanding held by passive investors as classified by the CRSP Mutual Fund Database (i.e., with an index fund flag of "B", "D", or "E"). Panel F presents the results when we include $Big3OwnShp$ and its interaction with $TopSUE$, i.e., $TopSUE \times Big3OwnShp$, where $Big3OwnShp$ is the fraction of total shares outstanding held by the top 3 largest institutional investors. Panel G presents the results when we include the adjusted churn ratio $ADJCR$ and its interaction with $TopSUE$, i.e., $TopSUE \times ADJCR$, where $ADJCR$ is the minimum of the churn ratio of stock purchases and stock sales, following the approach of Starks et al. (2026).

| | $TopSUE \times HighSO$ | $TopSUE \times SO$ | Full Results |
|---|---|---|---|
| Dep. Var. | $R_{n,t}^{(0,0)}$ (1) | $R_{n,t}^{(0,0)}$ (2) | $R_{n,t}^{(0,0)}$ (3) |
| **Panel D: Industry×Quarter FE** | | | |
| MSCI ESG | -0.0235*** | -0.1070*** | Table IA.8 |
| | (-4.78) | (-3.64) | |
| MSCI KLD | -0.0229*** | -0.1096*** | Table IA.8 |
| | (-10.61) | (-8.27) | |
| Refinitiv | -0.0165*** | -0.1703*** | Table IA.8 |
| | (-6.05) | (-5.61) | |
| **Panel E: Passive Ownership** | | | |
| MSCI ESG | -0.0194*** | -0.0941*** | Table IA.9 |
| | (-2.62) | (-2.87) | |
| MSCI KLD | -0.0209** | -0.1109*** | Table IA.9 |
| | (-2.37) | (-2.92) | |
| Refinitiv | -0.0256*** | -0.2426*** | Table IA.9 |
| | (-4.00) | (-3.79) | |
| **Panel F: "Big 3" Investors** | | | |
| MSCI ESG | -0.0245*** | -0.1312*** | Table IA.10 |
| | (-4.46) | (-4.21) | |
| MSCI KLD | -0.0252*** | -0.1262*** | Table IA.10 |
| | (-3.68) | (-3.48) | |
| Refinitiv | -0.0266*** | -0.2552*** | Table IA.10 |
| | (-5.07) | (-4.05) | |
| **Panel G: Investor Horizon** | | | |
| MSCI ESG | -0.0255*** | -0.1237*** | Table IA.11 |
| | (-4.43) | (-3.88) | |
| MSCI KLD | -0.0290*** | -0.1162*** | Table IA.11 |
| | (-4.01) | (-3.13) | |
| Refinitiv | -0.0272*** | -0.2401*** | Table IA.11 |
| | (-5.04) | (-3.79) | |

## Table 2: Robustness Checks for Announcement-Day Returns (continued)

Panel H presents the results for an alternative definition of $TopSUE$. Specifically, $TopSUE$ is a dummy variable that equals one for announcements grouped in SUE quantiles 10 and 11, and it equals zero for announcements grouped in quantiles 1 and 2. Panel I presents the results when $TopSUE$ is replaced with $RankSUE$ in the regression specification, and observations with all possible ranks of $SUE$ are included. Panel J presents the results for an alternative definition of sustainable ownership ($SO$). Specifically, $SO$ is defined as the fraction of total shares outstanding held by sustainable investors, which we define as investors with a portfolio-level ESG score in the top 50% of its distribution across all investors.

| | $TopSUE \times HighSO$ | $TopSUE \times SO$ | Full Results |
|---|---|---|---|
| Dep. Var. | $R^{(0,0)}_{n,t}$ | $R^{(0,0)}_{n,t}$ | $R^{(0,0)}_{n,t}$ |
| | (1) | (2) | (3) |
| **Panel H: Alternative** $TopSUE$ | | | |
| MSCI ESG | -0.0156*** | -0.1029*** | Table IA.12 |
| | (-5.84) | (-6.00) | |
| MSCI KLD | -0.0202*** | -0.0983*** | Table IA.12 |
| | (-16.37) | (-11.78) | |
| Refinitiv | -0.0152*** | -0.1495*** | Table IA.12 |
| | (-9.47) | (-7.41) | |
| **Panel I: Using** $RankSUE$ | | | |
| MSCI ESG | -0.0014*** | -0.0088*** | Table IA.13 |
| | (-6.45) | (-5.95) | |
| MSCI KLD | -0.0023*** | -0.0116*** | Table IA.13 |
| | (-21.44) | (-15.94) | |
| Refinitiv | -0.0017*** | -0.0160*** | Table IA.13 |
| | (-12.53) | (-8.83) | |
| **Panel J: Alternative** $SO$ | | | |
| MSCI ESG | -0.0206*** | -0.0332*** | Table IA.14 |
| | (-4.24) | (-4.17) | |
| MSCI KLD | -0.0181*** | -0.0328*** | Table IA.14 |
| | (-8.40) | (-8.66) | |
| Refinitiv | -0.0122*** | -0.0216*** | Table IA.14 |
| | (-4.48) | (-4.00) | |

## Table 3: IV Regressions

This table presents the results from the first and second stages of the IV regressions. We define a stock's shift-share Bartik exposure as $Z_{n,t} = \sum_{i \in \mathcal{S}} s_{n,i,t-1} f_{i,t-1}$, where $f_{i,t-1}$ represents investor $i$'s net capital flow between quarter $t-2$ and $t-1$, and $s_{n,i,t-1}$ denotes the fraction of shares outstanding of stock $n$ held by investor $i$. We instrument the two endogenous regressors $\left(\text{HighSO}_{n,t}, \text{TopSUE}_{n,t} \times \text{HighSO}_{n,t}\right)$ with the pair $\left(Z_{n,t},\ \text{TopSUE}_{n,t} \times Z_{n,t}\right)$. The first-stage regressions are: $\text{HighSO}_{n,t} = \alpha_1 Z_{n,t} + \alpha_2 \left(\text{TopSUE}_{n,t} \times Z_{n,t}\right) + \alpha_3 \text{TopSUE}_{n,t} + X_{n,t}^{\top} \alpha + \psi_n + \psi_t + u_{n,t}$, and $\text{TopSUE}_{n,t} \times \text{HighSO}_{n,t} = \delta_1 Z_{n,t} + \delta_2 \left(\text{TopSUE}_{n,t} \times Z_{n,t}\right) + \delta_3 \text{TopSUE}_{n,t} + X_{n,t}^{\top} \delta + \psi_n + \psi_t + v_{n,t}$. The second-stage regression is: $R_{n,t}^{(0,0)} = \phi_1 \text{ TopSUE}_{n,t} + \beta_2 \text{ HighSO}_{n,t} + \beta_3 \left(\text{TopSUE}_{n,t} \times \text{HighSO}_{n,t}\right) + \Gamma' X_{n,t} + \psi_n + \psi_t + \varepsilon_{n,t}$, where $\psi_n$ and $\psi_t$ are stock and quarter fixed effects. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. TopSUE is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). *SO* is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. *HighSO* is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the *SO* distribution across all stocks in a given quarter, and regressions with *HighSO* are estimated using only these top and bottom quantiles. Control variables, $X_{n,t}$, include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1st Stage | | 2nd Stage | 1st Stage | | 2nd Stage | 1st Stage | | 2nd Stage |
| Dep. Var. | *HighSO* | $TopSUE \times HighSO$ | $R_{n,t}^{(0,0)}$ | *HighSO* | $TopSUE \times HighSO$ | $R_{n,t}^{(0,0)}$ | *HighSO* | $TopSUE \times HighSO$ | $R_{n,t}^{(0,0)}$ |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| $Z$ | 2.4040*** | -2.2498*** | | 0.6971*** | -0.7808*** | | 3.1680*** | -2.7615*** | |
| | (15.22) | (-16.71) | | (14.46) | (-17.23) | | (17.18) | (-16.88) | |
| $TopSUE \times Z$ | -0.3636*** | 5.0260*** | | -0.4165*** | 1.2258*** | | -1.0590*** | 5.4309*** | |
| | (-3.46) | (40.52) | | (-8.86) | (26.05) | | (-6.26) | (31.61) | |
| *HighSO* | | | 0.0101 | | | 0.0123 | | | 0.0037 |
| | | | (0.69) | | | (1.16) | | | (0.37) |
| $TopSUE \times HighSO$ | | | -0.0208*** | | | -0.0289*** | | | -0.0315*** |
| | | | (-3.04) | | | (-4.15) | | | (-4.72) |
| *TopSUE* | -0.0241 | 0.2164*** | 0.0447*** | 0.0269*** | 0.5545*** | 0.0491*** | 0.0062 | 0.5147*** | 0.0463*** |
| | (-1.50) | (12.57) | (6.24) | (3.05) | (61.43) | (9.56) | (0.48) | (40.01) | (8.05) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 10,148 | 10,148 | 10,148 | 32,172 | 32,172 | 32,172 | 20,875 | 20,875 | 20,875 |
| KP rk F | | | 138.114 | | | 202.878 | | | 191.871 |
| KP rk LM | | | 350.849 | | | 631.035 | | | 619.667 |
| KP rk LM $p$-val | | | (0.000) | | | (0.000) | | | (0.000) |
| SW F (*HighSO*) | | | 138.44 | | | 198.45 | | | 210.58 |
| SW F ($TopSUE \times HighSO$) | | | 822.78 | | | 459.13 | | | 533.45 |

## Table 4: Payout-Predictive Regressions and GMM Estimation Results

This table presents the pre-estimation payout-growth predictive regression tests (Panel A) and the GMM estimation results (Panel B). In Panel A, we report the results for two joint Wald F-tests from payout-growth predictive regressions, for which Section 5.2 provides more details. Specifically, we implement the stacked regressions as in (19) for alternative horizons $H \in \{5, 6, 7\}$. The first test is to examine whether earnings surprises predict payout growth at all ($H_0: \beta_{1,1} = \cdots = \beta_{1,H} = 0$), while the second test is to examine whether payout predictability differs by sustainable ownership ($H_0: \beta_{2,1} = \cdots = \beta_{2,H} = 0$). In Panel B, we present the GMM results based on the moment conditions detailed in (21)–(23) for alternative horizons $H \in \{5, 6, 7\}$, with the long-run nominal growth rate calibrated to $g = 4\%$. $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI KLD, ESG Scores | | | MSCI KLD, E Scores | | | Refinitiv, ESG Scores | | |
|---|---|---|---|---|---|---|---|---|---|
| | H=5 | H=6 | H=7 | H=5 | H=6 | H=7 | H=5 | H=6 | H=7 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **Panel A: Joint tests from payout-growth predictive regressions** | | | | | | | | | |
| $H_0: \beta_{1,1} = \cdots = \beta_{1,H} = 0$ *(no payout predictability from* SUE*)* | | | | | | | | | |
| $F$-statistics | 2.91 | 2.46 | 2.90 | 3.94 | 3.29 | 3.69 | 2.93 | 3.43 | 3.16 |
| $p$-value | 0.0124 | 0.0223 | 0.0050 | 0.0014 | 0.0031 | 0.0005 | 0.0119 | 0.0022 | 0.0024 |
| $H_0: \beta_{2,1} = \cdots = \beta_{2,H} = 0$ *(no incremental effect of* SUE $\times$ *HighSO)* | | | | | | | | | |
| $F$-statistics | 0.64 | 0.91 | 1.06 | 0.38 | 0.72 | 0.84 | 0.56 | 1.21 | 1.09 |
| $p$-value | 0.6696 | 0.4879 | 0.3885 | 0.8622 | 0.6312 | 0.5505 | 0.7283 | 0.2996 | 0.3691 |
| **Panel B: GMM estimation** | | | | | | | | | |
| $r$ | 0.1606*** | 0.1372*** | 0.1168*** | 0.1275*** | 0.1142*** | 0.0948*** | 0.0999*** | 0.0899*** | 0.0743*** |
| | (4.03) | (3.97) | (4.06) | (5.46) | (5.18) | (5.68) | (6.57) | (6.37) | (7.52) |
| $r_{\text{sust}}$ | -0.0583*** | -0.0470** | -0.0372** | -0.0348*** | -0.0296*** | -0.0209** | -0.0187** | -0.0163** | -0.0090* |
| | (-2.69) | (-2.53) | (-2.41) | (-2.94) | (-2.73) | (-2.56) | (-2.35) | (-2.26) | (-1.76) |
| $\phi_1$ | 0.0042*** | 0.0040*** | 0.0038*** | 0.0052*** | 0.0049*** | 0.0048*** | 0.0054*** | 0.0051*** | 0.0051*** |
| | (3.79) | (3.55) | (3.22) | (4.28) | (3.96) | (3.70) | (3.02) | (2.77) | (2.59) |
| $\phi_2$ | 0.0074*** | 0.0070*** | 0.0068*** | 0.0095*** | 0.0091*** | 0.0094*** | 0.0147*** | 0.0133*** | 0.0135*** |
| | (4.26) | (3.97) | (3.73) | (5.30) | (5.01) | (4.98) | (5.10) | (4.57) | (4.45) |
| $\phi_3$ | 0.0095*** | 0.0095*** | 0.0090*** | 0.0107*** | 0.0099*** | 0.0104*** | 0.0185*** | 0.0168*** | 0.0171*** |
| | (4.07) | (4.00) | (3.72) | (4.54) | (4.17) | (4.26) | (4.82) | (4.31) | (4.22) |
| $\phi_4$ | 0.0125*** | 0.0121*** | 0.0113*** | 0.0130*** | 0.0123*** | 0.0115*** | 0.0230*** | 0.0218*** | 0.0207*** |
| | (4.33) | (4.10) | (3.75) | (4.33) | (4.00) | (3.69) | (4.79) | (4.35) | (4.00) |
| $\phi_5$ | 0.0086** | 0.0082** | 0.0078** | 0.0105*** | 0.0096** | 0.0096** | 0.0180*** | 0.0170*** | 0.0180*** |
| | (2.42) | (2.25) | (2.08) | (2.82) | (2.52) | (2.49) | (3.19) | (2.87) | (2.92) |
| $\phi_6$ | | 0.0120*** | 0.0121*** | | 0.0132*** | 0.0137*** | | 0.0235*** | 0.0246*** |
| | | (2.75) | (2.70) | | (2.93) | (2.94) | | (3.46) | (3.47) |
| $\phi_7$ | | | 0.0156*** | | | 0.0147*** | | | 0.0281*** |
| | | | (2.97) | | | (2.69) | | | (3.51) |
| Hansen J (Chi2) | 7.4557 | 8.9942 | 9.1983 | 8.3153 | 8.5735 | 10.7704 | 6.5291 | 10.9544 | 11.5568 |
| Hansen J p-value | 0.1889 | 0.1739 | 0.2387 | 0.1397 | 0.1990 | 0.1490 | 0.2581 | 0.0898 | 0.1161 |
| Obs. | 83,095 | 95,472 | 103,481 | 78,430 | 89,748 | 96,425 | 55,920 | 61,716 | 65,849 |

# Internet Appendix

## A Proofs

**Proposition 1.** A level shock $\Delta_j$ to $\bar{D}_j$ shifts $P_j$ by $\Delta_j$ in (3), holding other objects fixed. Hence, $R_j = \Delta_j / P_j^-$ and $\partial R_j / \partial \Delta_j = 1/P_j^-$. From (5), $P_j^-$ is strictly increasing in $\Lambda_j^{eq}$ because $\Psi_{jj} > 0$, so the sensitivity $1/P_j^-$ is strictly decreasing in $\Lambda_j^{eq}$.

**Proof of Equation (17).** Fix a firm $n$ and suppress subscripts for readability. Let $\mathbb{E}^-[\cdot] \equiv \mathbb{E}_{t^-}[\cdot]$ and $\mathbb{E}[\cdot] \equiv \mathbb{E}_t[\cdot]$. The pre-announcement price satisfies

$$P^- = \sum_{h=0}^{\infty} (1+r)^{-h} \mathbb{E}^-[D_{t+h}],$$

and the post-announcement price satisfies

$$P = \sum_{h=0}^{\infty} (1+r)^{-h} \mathbb{E}[D_{t+h}],$$

where $r$ is the discount rate. Taking differences yields

$$P - P^- = \sum_{h=0}^{\infty} (1+r)^{-h} \Big( \mathbb{E}[D_{t+h}] - \mathbb{E}^-[D_{t+h}] \Big).$$

Because the announcement at $t$ does not change the already-realized payout at $t$, $\mathbb{E}[D_t] = \mathbb{E}^-[D_t] = D_t$, so the $h = 0$ term is zero. Hence,

$$P - P^- = \sum_{h=1}^{\infty} (1+r)^{-h} \Delta\mathbb{E}[D_{t+h}], \qquad \Delta\mathbb{E}[D_{t+h}] \equiv \mathbb{E}[D_{t+h}] - \mathbb{E}^-[D_{t+h}].$$

Dividing by $P^-$ and using the return definition $R^{(0,0)} = (P - P^-)/P^-$ gives

$$R^{(0,0)} = \frac{1}{P^-} \sum_{h=1}^{\infty} (1+r)^{-h} \Delta\mathbb{E}[D_{t+h}].$$

Under the Gordon-growth benchmark $\mathbb{E}^-[D_{t+h}] = (1+g)^h D_t$ for $h \geq 0$,

$$P^- = \sum_{h=0}^{\infty}(1+r)^{-h}(1+g)^h D_t = D_t \sum_{h=0}^{\infty}\left(\frac{1+g}{1+r}\right)^h = D_t \frac{1+r}{r-g},$$

so $1/P^- = (r-g)/((1+r)D_t)$. Substituting into the expression for $R^{(0,0)}$ and dividing inside the sum by $D_t$ yields

$$R^{(0,0)} = \frac{r-g}{1+r}\sum_{h=1}^{\infty}(1+r)^{-h}\frac{\Delta\mathbb{E}[D_{t+h}]}{D_t},$$

which is (17).

# B Data Description

Our dataset combines eight sources to track quarterly sustainable ownership and daily price responses around earnings announcements. We start with three widely used firm-level sustainability datasets—MSCI ESG, MSCI KLD, and Refinitiv ESG—which provide independent measures of a firm's ESG profile. We merge these firm-level scores with Thomson Reuters 13F institutional holdings to map each institution's portfolio to the ESG characteristics of the stocks it holds. This step lets us compute portfolio-level ESG scores for each institution and classify institutions with sustainability preferences. Because 13F holdings are reported quarterly, the resulting sustainable-ownership measure is available at the stock-quarter level.

We then obtain earnings announcement dates and analyst forecast information from IBES, following standard matching and filtering procedures used in the announcement-return literature (see, e.g., Sammon, 2024). We quantify earnings news using standardized unexpected earnings (SUE), which scales the earnings surprise by a firm-specific measure of historical earnings volatility. We merge the IBES announcement panel with the stock-quarter sustainable-ownership panel by aligning each announcement to the sustainable-ownership reading from the same calendar quarter. Finally, we add daily stock returns from CRSP to compute announcement-window abnormal returns and merge in firm characteristics from Compustat for controls and sample filters.

## B.1 ESG Data

We incorporate firm-level ESG scores from three established rating providers: MSCI ESG, MSCI KLD, and Refinitiv ESG (formerly Thomson Reuters Asset4).[16] The three vendors differ in coverage, update frequency, and scoring methodology. Using multiple providers mitigates concerns that ESG ratings vary substantially across data sources (Berg et al., 2022). In our data, the pairwise correlations among the three ratings never exceed 0.55, so the providers capture related but distinct notions of sustainability. A key goal of our design is therefore to document whether our results are stable across alternative ESG definitions rather than being specific to a single vendor.

**Coverage and vendor-specific features.** MSCI ESG is MSCI's current flagship product and is widely used by both researchers and practitioners. Its coverage is concentrated in 2007–2022, with a sharp expansion in the number of covered firms around 2012 (Pástor et al., 2022). MSCI KLD is an older legacy dataset compiled by MSCI with long historical coverage (1991–2019). This dataset has two practical advantages in our setting: (i) its historical depth allows us to measure sustainability and investor preferences in earlier decades, and (ii) its widespread use in prior work (e.g., Cao et al. 2023; Starks et al. 2026) facilitates comparisons with the existing literature. Refinitiv ESG covers 2002–2021 and provides an independent alternative perspective to MSCI-based measures, which is useful given the documented disagreement across ESG vendors.

**Score definitions and harmonization across datasets.** The providers use different scoring systems:

1. **MSCI ESG** reports a total ESG score on a 0–10 scale. We follow Pástor et al. (2022) and construct sustainability scores based on both ESG and E (environment pillar).

2. **Refinitiv ESG** reports a total rating on a 0–100 scale.

3. **MSCI KLD** does not report a single total score. Instead, it provides binary indicators for ESG *strengths* and *concerns* that reflect a firm's performance across Environment,

[16] These datasets are widely used in financial economics and accounting research. For example, Refinitiv is used by Serafeim and Yoon (2022). MSCI KLD is used by Cao et al. (2023) and Starks et al. (2026). MSCI ESG is used by Pástor et al. (2022), Serafeim and Yoon (2022), and Pástor et al. (2025).

Social (community, diversity, employee relations, human rights), and Governance dimensions. Strength indicators take values in $\{0, 1\}$ and concern indicators take values in $\{0, -1\}$. To obtain a unified KLD measure, we aggregate strengths and concerns following Starks et al. (2026).

**Score timing and alignment to events.** Score availability also differs by frequency. MSCI KLD and Refinitiv ESG report scores annually, so we treat the ESG rating as predetermined relative to the announcement by using the score from the year preceding the calendar year of the announcement. MSCI ESG is distributed as monthly snapshots, but the underlying ESG score updates less frequently than monthly. Following Pástor et al. (2022), we assign to each announcement the most recent MSCI ESG score available prior to the announcement date.

## B.2 Sustainable Ownership

We construct sustainable ownership, $SO_{n,t}$, for stock $n$ in quarter $t$ in four steps using firm-level ESG scores and quarterly 13F holdings.

**Step 1: Market-adjusted firm ESG.** Let $esg_{n,t}$ denote the ESG score of firm $n$ assigned for quarter $t$ (based on the provider-specific timing rules in Section B.1). Following Pástor et al. (2022), we remove aggregate shifts in ESG levels by demeaning the firm score by the value-weighted cross-sectional mean:

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

where $\overline{esg}_t$ is the value-weighted average of $esg_{n,t}$ across firms in quarter $t$. This transformation ensures that an investor tilt reflects relative sustainability (overweighting high-ESG firms versus the market) rather than marketwide movements in ESG scores.

**Step 2: Investor-level ESG tilt from 13F holdings.** Using quarter-end 13F portfolios, we compute each institution's portfolio-level ESG tilt as the value-weighted average of the market-adjusted ESG scores of the stocks it holds:

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

The portfolio weights are value weights based on 13F positions,

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

where $P_{n,t}$ is the end-of-quarter price of stock $n$, and $Shares_{n,i,t}$ is the number of shares of stock $n$ held by investor $i$ at quarter-end. When a firm does not have an ESG score in quarter $t$, it is excluded from the ESG-tilt aggregation for that quarter.

**Step 3: Classifying sustainable investors.** We label institutions as *sustainable* using two complementary definitions designed to capture different dimensions of investor preferences.

- **Time-invariant definition.** For each investor $i$, we compute the full-sample average of $ESG_{i,t}$, denoted $ESG_i$. Investor $i$ is classified as sustainable if $ESG_i$ falls in the top 30% of the investor distribution. This definition is stable over time and less sensitive to short-run portfolio changes driven by returns or transitory rebalancing.

- **Time-varying definition.** In each quarter $t$, investor $i$ is classified as sustainable if $ESG_{i,t}$ ranks in the top 30% of the cross-sectional distribution of investors in that quarter. This definition allows sustainability tilts to evolve over time with mandates and portfolio policies.

Both definitions rank investors relative to other investors and are therefore robust to broad shifts toward sustainable investing or secular changes in firm ESG scores (Starks, 2023).

**Step 4: Stock-level sustainable ownership.** Given the set of sustainable investors in quarter $t$, denoted $\mathcal{S}_t$, we define sustainable ownership as the fraction of shares outstanding held by these investors:

$$SO_{n,t} = \frac{\sum_{i \in \mathcal{S}_t} Shares_{n,i,t}}{SharesOut_{n,t}}, \tag{B.4}$$

where $SharesOut_{n,t}$ is the total number of shares outstanding for stock $n$ in quarter $t$. In the empirical analysis, we report results using both investor-classification schemes and separately for each ESG provider; the conclusions are highly consistent across these choices.

**Descriptive Statistics on ESG Scores and Ownership.** Figures IA.1–IA.3 summarize the key objects produced by our construction: investor-level ESG scores, ESG coverage, and the aggregate footprint of sustainable investors in assets and ownership. The figures aggregate our institution-level measures over time to provide a transparent view of how sustainability preferences and sustainable ownership evolve in the data.

Figure IA.1 shows that the classification separates investors cleanly by sustainability preferences in all three datasets. Throughout the sample, sustainable investors hold portfolios with systematically higher ESG scores than the average institution. At the same time, the value-weighted ESG score of the full 13F investor universe trends upward within each provider, consistent with a broad shift in institutional portfolios toward higher-ESG firms. Taken together, the figure indicates that sustainable investing intensifies over time through stronger relative ESG preference and greater cross-sectional dispersion in portfolio ESG scores, rather than through a mechanical relabeling driven by marketwide increases in ESG levels.

Figure IA.2 documents ESG coverage for each provider along two dimensions that matter for our panel: the number of rated firms (CRSP PERMNOs) and the number of institutions (13F managers) for which we can compute a portfolio ESG score. MSCI KLD provides the longest historical coverage, beginning in the early 1990s. Refinitiv coverage begins in the early 2000s and expands steadily. MSCI ESG enters later but grows rapidly, with a pronounced expansion around 2012 that substantially increases both firm and institutional coverage (Pástor et al., 2022).

The coverage patterns clarify why we treat the three vendors as complementary inputs rather than substitutes. Differences in firm universes and update schedules mechanically affect which institutions have non-missing portfolio ESG scores and, in turn, the sustainable-ownership panel. Importantly, in the overlapping years all three datasets provide broad institutional coverage, so the analysis is not driven by a small subset of managers. These patterns motivate our main empirical design choice: we run the analysis separately within each provider and interpret consistency across datasets as evidence that the results are not an artifact of a particular ESG universe or scoring methodology.

Figure IA.3 summarizes the aggregate footprint of sustainable investors implied by our classification. Panel (a) plots the fraction of total 13F assets managed by sustainable investors. Across providers, sustainable investors manage a meaningful but minority share of institutional assets, typically around 5-15% over the last decade, with differences across vendors reflecting their ESG universes and coverage.

Panel (b) translates the investor classification into stock-level ownership by plotting the marketwide average fraction of shares held by sustainable investors. Average sustainable ownership is economically non-trivial but modest in level, typically in the 1–5% range, with the highest estimates in MSCI ESG and the lowest in Refinitiv. Overall, the series are all increasing over time, indicating that sustainable investors do not retreat in aggregate even as the definition remains distributional (top-30% relative to other institutions). Combined with Figure IA.1, the evidence implies that the aggregate capital share of sustainable investors changes only gradually, while the intensity of sustainable investing rises through more pronounced ESG preference in active portfolio choice, consistent with Pástor et al. (2025). This motivates our focus on within-quarter cross-sectional variation in sustainable ownership (HighSO versus LowSO) as the relevant margin for identifying price effects around earnings announcements.

## B.3 Earnings Announcement Data

### B.3.1 Measuring Earnings 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):

$$SUE_{n,t} = \frac{EPS_{n,t} - EPS_{n,t-4}}{\sigma_{t-1,t-8}\left(EPS_{n,t} - EPS_{n,t-4}\right)}, \tag{B.5}$$

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.[17]

# C Sustainable Ownership vs. Scores

There are two main ways of bringing our conceptual framework (Section 2) to the data. The sustainability *scores* approach (e.g., equation (3)) requires a classification of stocks by their sustainability, $z_n$ (as perceived by investors), controlling for the risk adjustment $\gamma(\Sigma\mathbf{1})_n$. The sustainable *ownership* approach (e.g., equations (5), and (6)) requires a classification of investors by their sustainable preferences, and ownership data to estimate $\Lambda^{eq} = fq_S$.

Sustainable ownership has at least two key advantages over raw sustainability scores. First, the measurement is more robust when stocks' sustainability scores are noisy proxies for investors' actually perceived sustainability (Section C.1). Second, sustainable ownership

[17] 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.

incorporates the risk adjustment that determines where sustainable capital flows in equilibrium (Section C.2).

## C.1 Ownership Reduces Measurement Noise

Observed sustainability scores $z^{obs}$ are only noisy measures of the latent characteristic $z$ used by investors, $z_n^{obs} = z_n + \varepsilon_n$. This noise affects the ordering of stocks by observed sustainability scores and biases the estimated relation between scores and announcement returns (i.e., a standard attenuation bias).

The sustainable ownership approach is not directly affected by this issue as it relies on ownership $fq_S$ instead of scores $z$. However, indirectly, scores are still used to classify investors as sustainable based on their portfolio sustainability scores. Let us assume that $\varepsilon_n$ is independent and identically distributed across stocks, and we abstract from heterogeneity across investors for simplicity. Then, when computing investors' portfolio sustainability based on observed scores $z^{obs}$, the noise term averages out by a law-of-large-numbers effect, such that

$$q^\top z^{obs} = q^\top z + q^\top \varepsilon \quad \rightarrow \quad q^\top z \tag{C.1}$$

when portfolios are sufficiently diversified (i.e., $q$ is not granular). Investor-level classifications based on portfolio sustainability are thus substantially less sensitive to measurement error than stock-level classifications based on $z_n^{obs}$. Intuitively, while individual stock scores may be noisy, diversified portfolios recover the latent sustainability signal.

A simple example illustrates the mechanism. Suppose three stocks have sustainability scores (from the perspective of investors)

$$z_A = 0.70, \quad z_B = 0.55, \quad z_C = 0.40, \tag{C.2}$$

but the observed scores are

$$z_A^{obs} = 0.60, \quad z_B^{obs} = 0.63, \quad z_C^{obs} = 0.45. \tag{C.3}$$

The ranking of individual stocks is distorted, with stock $B$ appearing more sustainable than stock $A$.

Now assume that there are three investors with portfolio weights

$$S = (0.5, 0.4, 0.1), \quad R_1 = (0.3, 0.4, 0.3), \quad R_2 = (0.2, 0.2, 0.6). \tag{C.4}$$

Importantly, the sustainable investor $S$ allocates the greatest share of the portfolio to the most sustainable stock ($A$) under the scores perceived by the investors. Based on these portfolio allocations, the portfolio sustainability scores are 0.61 ($S$), 0.55 ($R_1$), and 0.49 ($R_2$) when computed using the investor-perspective scores (which are not observed empirically). Using the observed scores, the portfolio sustainability scores are 0.597 ($S$), 0.567 ($R_1$), and 0.516 ($R_2$). Despite noise at the stock level, the portfolio ranking is preserved, and the sustainable investor $S$ is correctly identified.

Finally, sustainable ownership corresponds to investor $S$'s portfolio weights in this simple example, $(0.5, 0.4, 0.1)$. Therefore, the ordering of stocks by sustainable ownership exactly aligns with the ordering by investor-perspective scores $z$. In sum, sustainable ownership provides a more reliable empirical proxy for the latent sustainability characteristic that enters prices and announcement returns.

## C.2 Ownership Provides a Risk-Adjusted Measure

Sustainable ownership has another important advantage over raw scores: it incorporates the risk adjustment that determines where sustainable capital flows in equilibrium. To see this, consider the knife-edge case in which $\Sigma = \sigma^2 I$. The risk-adjustment term in equation (3) is then the same across stocks and $\Sigma^{-1} z \propto z$, so our prediction can be stated in score form: higher $z_j$ raises the pre-announcement price and mechanically lowers the earnings-response elasticity $1/P_j^-$. In the multi-asset equilibrium we study, however, the object that governs sustainable investors' stock-by-stock holdings is not the raw characteristic $z$, but the *risk-adjusted* characteristic $\Sigma^{-1} z$, as equation (4) makes clear. In the general case $\Sigma \neq \sigma^2 I$, stocks differ in idiosyncratic risk and have non-zero covariances, so $\Sigma^{-1} z$ can reorder stocks relative to $z$: a high-$z$ stock that is strongly correlated with other high-$z$ names contributes little incremental sustainability exposure per unit of portfolio risk, while a moderate-$z$ stock with favorable hedging properties can attract substantial sustainable demand.

This reordering matters because the earnings-announcement test is ultimately about cross-sectional variation in the pre-announcement price level $P_n^-$. Equation (3) implies that a score-based prediction is sharp only if $z_n$ is a good proxy for cross-sectional variation in $P_n^-$, which requires that differences in the risk-adjustment term $\gamma(\Sigma\mathbf{1})_n$ do not swamp or reorder the effect of $f\alpha z_n$. This requirement is fragile: two firms with similar scores can have very different risk adjustments, through covariance and idiosyncratic variance, and hence very different pre-announcement prices.

A simple example illustrates the point. Suppose two stocks have the same expected payoff $\bar{D} = 100$ and the same $f\alpha = \gamma = 1$, but differ in risk. Let stock A have $z_A = 2$ and variance 9, and stock B have $z_B = 1.5$ and variance 1 (diagonal $\Sigma$). Then the equilibrium pre-announcement prices satisfy $P_A = 100 + 2 - 9 = 93$ and $P_B = 100 + 1.5 - 1 = 100.5$. Despite $z_A > z_B$, stock A has the *lower* price and therefore the *higher* earnings-response sensitivity, $1/P_A > 1/P_B$. Sustainable ownership resolves this ranking problem because it tracks the equilibrium risk-adjusted exposure to $z$: $\Lambda^{eq} \propto \Sigma^{-1}z$, so the relevant ordering is $z_A/9 < z_B/1$, implying higher sustainable ownership for B—exactly the stock with the higher price and the more muted earnings response.

## C.3 Empirical Evidence

Although firms with higher ESG scores tend to have more sustainable investors, the relation is far from tight: the correlation between ESG scores and sustainable ownership is only 26% in MSCI ESG, 23% in KLD, and 45% in Refinitiv. There is therefore substantial room for scores and ownership to capture different objects in the data.

To test whether raw ESG scores subsume our results, we re-estimate (9) after adding a high-score indicator and its interaction with $TopSUE$. Appendix Table IA.4 shows that the coefficient on $TopSUE \times HighSO$ remains largely unchanged relative to Table 1 and stays statistically significant, with the only exception being the coefficient in the Refinitiv sample. Appendix Table IA.4 further shows that the interaction $TopSUE \times HighScore$ is economically small and statistically insignificant in all three datasets.

Taken together, the evidence shows that the attenuated earnings response is tied to sustainable ownership, not to raw ESG scores. What matters for prices is not simply whether a firm scores high on sustainability, but whether sustainability-oriented investors actually hold the stock.

# D Additional Empirical Results

## D.1 Effects of Investor Horizon

Starks et al. (2026) show that long-horizon investors are more patient with sustainable firms and are less likely to sell after negative earnings news. This raises a natural alternative explanation for our results: perhaps the muted earnings response reflects investor patience rather than sustainability preferences.

Conceptually, however, the two channels make different predictions. Our main result is symmetric: sustainable ownership weakens the response to both positive and negative earnings news. A patience channel is harder to reconcile with this pattern. By construction, patience can explain a weaker response to negative news, because patient investors are less willing to sell after bad earnings. It does not explain why prices would also respond less to positive news. This symmetry is more naturally consistent with a demand-driven preference channel.

We nevertheless test this alternative directly by controlling for investor horizon. Following Starks et al. (2026) and Gaspar et al. (2005), we measure investor horizon using churn ratios constructed from investor portfolio holdings. We then aggregate these investor-level churn ratios to the stock level and denote the resulting measure by $ADJCR_{n,t}$, which is also the label used in the tables. The stock-level measure is a weighted average of investor churn ratios, where the weights are based on the number of shares each investor holds. Higher values of $ADJCR_{n,t}$ correspond to shorter investor horizons.

We extend the main specification in (9) by adding $ADJCR_{n,t}$ and its interaction with $TopSUE$. This allows investor horizon to affect both the level of announcement-day returns and the return differential between positive and negative news. If our sustainable-ownership effect simply proxies for investor horizon, then controlling for $ADJCR_{n,t}$ and $ADJCR_{n,t} \times TopSUE$ should materially weaken the coefficient on the sustainable-ownership interaction term.

Appendix Table IA.11 shows that this does not happen. In columns (1), (2), (4), (5), (7), and (8), the interaction between sustainable ownership and earnings news remains negative, statistically significant, and close in magnitude to the main estimates. In columns (3), (6), and (9), we use continuous measures of both sustainable ownership and investor horizon, proxied by $ADJCR_{n,t}$. The results are again largely unchanged, with the main effect preserved in all three datasets. Overall, the evidence shows that investor horizon does not account for our findings. The attenuation in earnings responses is tied to sustainable ownership itself, not to the fact that sustainable investors may also have longer horizons.

## D.2 No Post-Announcement Catch-Up

Our framework implies an equilibrium repricing at the announcement: sustainable demand lowers the discount rate and thereby changes the price level at which the market clears. A level shift of this kind should not generate gradual convergence. Absent new information, the announcement-day gap should persist rather than unwind through post-announcement drift. By contrast, if high-sustainable-ownership stocks were merely slower to incorporate earnings news, we would expect a positive interaction in post-announcement returns as prices catch up.

Figure IA.5 plots cumulative abnormal returns from two days before to 22 trading days after the earnings announcement, separately for strong positive (Top SUE) and strong negative (Bottom SUE) surprises and for stocks in the top versus bottom 30% of sustainable ownership (SO). Day 0 reproduces the announcement-day attenuation: low-sustainable-ownership stocks exhibit a large good-minus-bad jump, while high-sustainable-ownership stocks exhibit a noticeably smaller jump, consistent with Table 1.

The key result is that this difference does not revert. Over the subsequent month, the four cumulative-return paths move in parallel, so the high-ownership good-minus-bad gap remains essentially flat throughout the post-announcement window. There is no post-announcement catch-up for high-sustainable-ownership stocks after good news, and no delayed selloff after bad news. The dampened response is therefore persistent, consistent with a durable taste-based premium rather than delayed adjustment.

Table IA.15 further quantifies the result. First, low-sustainable-ownership stocks display economically meaningful post-announcement drift. In the full specifications with stock and calendar fixed effects and controls (columns (2), (5), and (8)), the good-minus-bad cumulative abnormal return from $t+1$ to $t+22$ is 3.17% (MSCI ESG), 3.70% (MSCI KLD), and 2.60% (Refinitiv).

Second, high sustainable ownership continues to attenuate this post-announcement response. The interaction $TopSUE \times HighSO$ is negative in all three datasets and statistically significant in MSCI KLD and Refinitiv: $-1.99\%$ (column (5)) and $-1.22\%$ (column (8)). In MSCI ESG, the point estimate is also negative ($-1.07\%$ in column (2)) but less precisely estimated. Economically, these estimates imply that the good-minus-bad drift is much smaller for high-sustainable-ownership stocks: 2.10% (MSCI ESG), 1.71% (MSCI KLD), and 1.38% (Refinitiv) in columns (2), (5), and (8). This is the opposite of "catch-up": high-sustainable-ownership stocks drift *less* after good news and *less* after bad news, preserving the announcement-day attenuation.

Replacing the indicator $HighSO$ with the continuous sustainable-ownership share $SO$ (columns (3), (6), and (9)) delivers the same conclusion. The interaction $TopSUE \times SO$ is negative in all three datasets, and statistically significant in MSCI KLD, indicating that higher sustainable ownership continues to dampen post-announcement drift. Although these estimates are less precise, they never turn positive: there is no evidence that high-sustainable-ownership stocks "catch up" to low-sustainable-ownership stocks after the announcement.

Overall, the post-announcement evidence reinforces the central interpretation of our results. Sustainable ownership attenuates the earnings-response elasticity on the announcement date, and this attenuation is not reversed in the weeks that follow. If anything, the consistently negative interactions point to modest additional divergence rather than convergence. The persistence fits an equilibrium discount-rate wedge driven by investor demand, not delayed information processing or a transitory mispricing that arbitrage can quickly eliminate.

## D.3 Reduced Volume Spikes

We conclude by analyzing changes in trading volume around earnings announcements. This exercise serves two goals. First, it provides a quantity-side counterpart to the return evidence. If sustainable ownership compresses price reactions because the marginal investor responds less to earnings news, then the announcement-day volume spike should also be smaller for HighSO stocks. Second, volume helps distinguish our mechanism from an alternative beliefs-based explanation. If weaker price responses reflect greater dispersion of cash-flow expectations between investors, standard models predict *higher* trading volume when opinions diverge more sharply (Harris and Raviv, 1993). Under this view, stocks with high sustainable ownership should exhibit larger announcement-day volume, not smaller.

We measure abnormal trading volume following DellaVigna and Pollet (2009). Let $V_n^u$ denote the dollar value of shares traded for stock $n$ on day $u$, and let $\tau$ be the earnings announcement date in quarter $t$. For any event window $(h, H)$, we define the change in log volume relative to a pre-announcement baseline as

$$\Delta v_{n,t}^{(h,H)} = \frac{1}{H-h+1} \sum_{u=\tau+h}^{\tau+H} \log(V_n^u) - \frac{1}{10} \sum_{u=\tau-20}^{\tau-11} \log(V_n^u) \,. \tag{D.1}$$

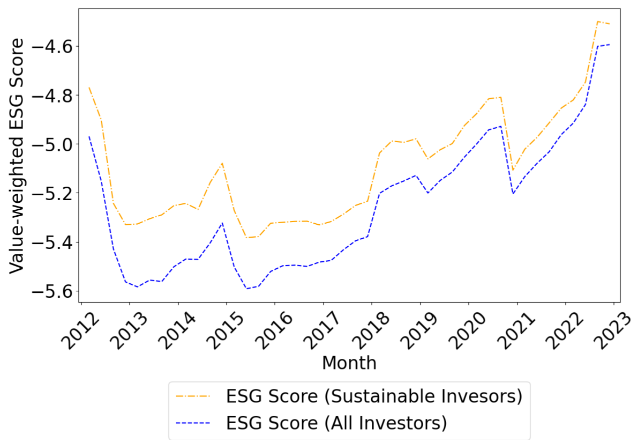
This measure captures the percentage change in trading activity around the announcement relative to normal volume in the window from 20 to 11 trading days before the event. Our main analysis focuses on $\Delta v_{n,t}^{(0,0)}$, the abnormal trading-volume spike on the announcement day. For volume, we focus on the absolute magnitude of earnings surprises. The indicator $TopAbsSUE$ equals one for large positive or negative surprises and zero for small surprises. While positive and negative earnings news generate returns of opposite sign, both types of large surprises are associated with elevated trading volume relative to small surprises, regardless of direction.

Table IA.16 reports results for announcement-day changes in trading volume and echoes the return evidence: volume spikes are markedly smaller for stocks with high sustainable ownership. In the full specifications with stock and calendar fixed effects and controls (columns (2), (5), and (8)), $TopAbsSUE$ increases announcement-day volume by 3.61 percentage points (MSCI ESG), 9.14 percentage points (MSCI KLD), and 7.02 percentage points (Refinitiv). High sustainable ownership sharply attenuates this response. The interaction $TopAbsSUE \times HighSO$ is negative and statistically significant in all three datasets: $-2.14$ percentage points (column (2)), $-9.72$ percentage points (column (5)), and $-5.99$ percentage points (column (8)). And Columns (3), (6), and (9) confirm the result using continuous $SO$. Specifically, the interaction $TopAbsSUE \times SO$ is negative and statistically significant in MSCI KLD and Refinitiv, suggesting that high-sustainable-ownership stocks experience reduced announcement-day volume spikes. While the estimate is less precise for MSCI ESG, it remains negative, indicating a similar pattern of reduced volume change on the announcement day for high-sustainable-ownership stocks.

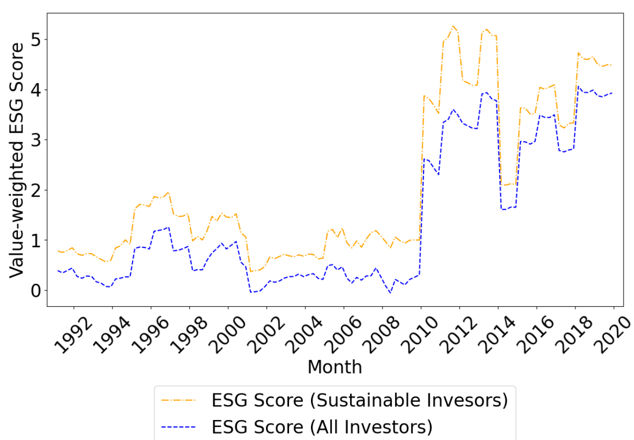
Taken together, the price and volume evidence point in the same direction. When sustainable investors represent a larger share of the shareholder base, earnings news triggers both a smaller price reaction and a smaller trading response, consistent with a demand-driven equilibrium in which sustainable ownership compresses the market's sensitivity to cash-flow information. The volume results also cut against an expectations-dispersion story: we observe lower, not higher, announcement-day volume spikes when news is large.

## Figure IA.1: Investor-Level ESG Scores

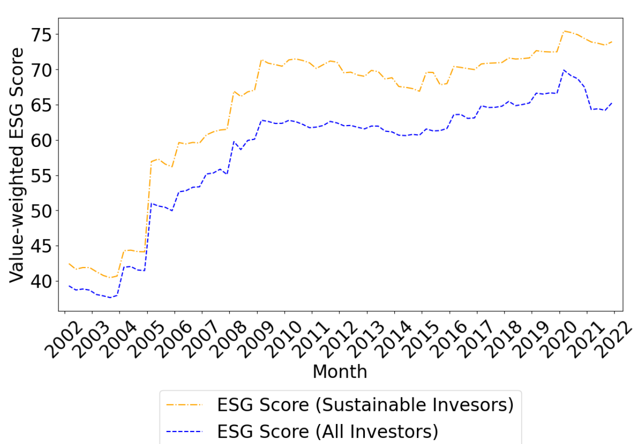
This figure displays the value-weighted average investor-level ESG scores. The investor-level ESG score is the average portfolio-level ESG score of the underlying stocks held by the investor. Investors are classified as sustainable investors if the portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) is in the top 30% of its distribution across all investors. The value-weighted average ESG scores of both sustainable investors and all investors are displayed. Panels (a)–(c), from top to bottom, depict time series of investor-level ESG scores for three different datasets: (a) MSCI ESG, (b) MSCI KLD, and (c) Refinitiv.




**(a)** MSCI ESG



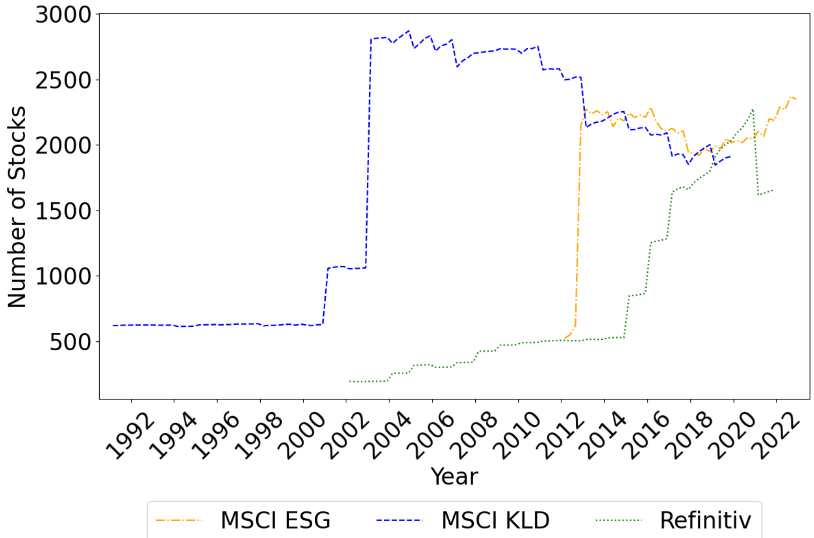

**(b)** MSCI KLD



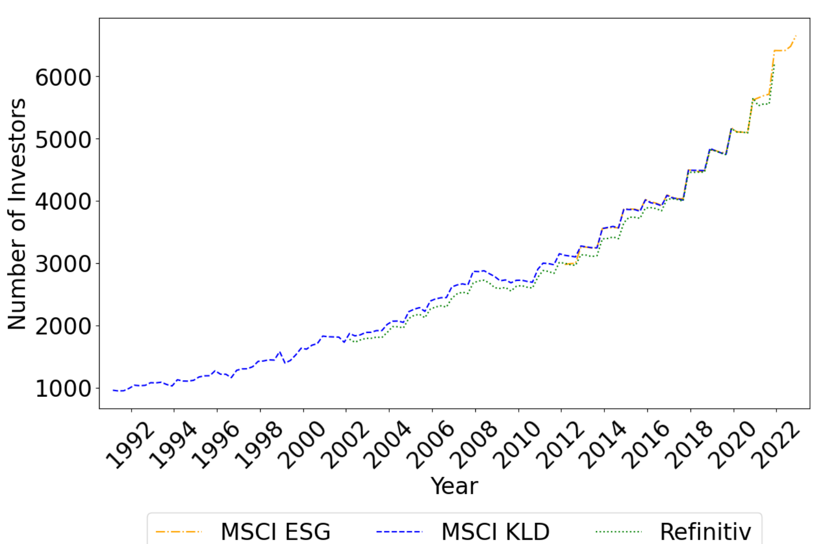

**(c)** Refinitiv

## Figure IA.2: Number of Stocks and Investors with Non-Missing ESG Score

This figure displays the number of stocks and investors with non-missing ESG score based on three different datasets: MSCI ESG, MSCI KLD, and Refinitiv. Panel (a) presents the number of stocks over time. Panel (b) presents the number of investors over time.



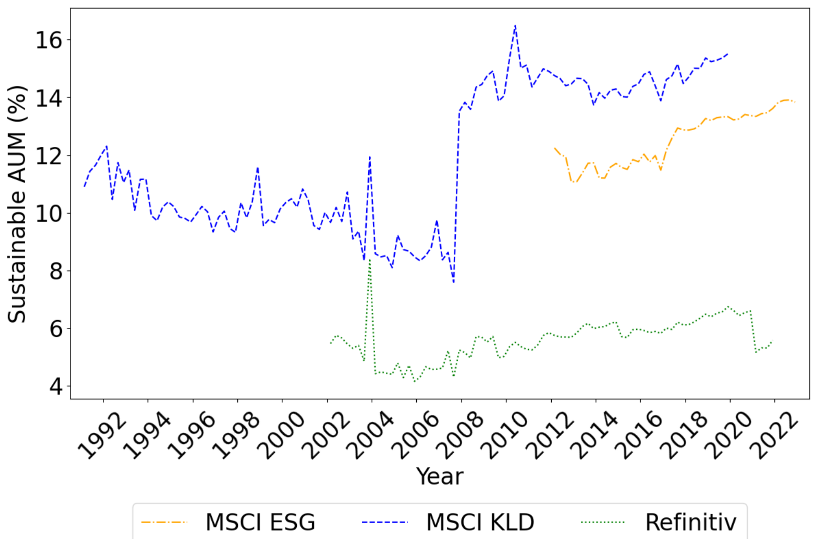

**(a)** Number of Stocks with Non-Missing ESG Score



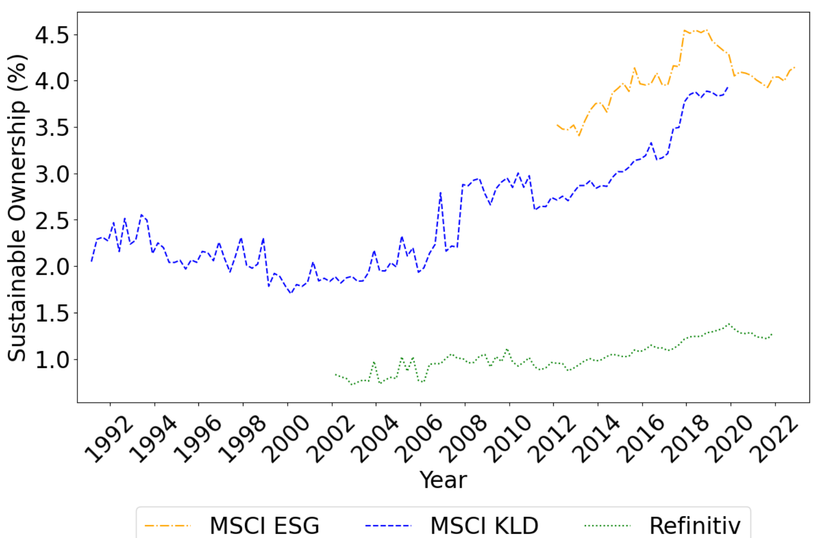

**(b)** Number of Investors with Non-Missing ESG Score

## Figure IA.3: Sustainable AUM and Sustainable Ownership

This figure displays sustainable AUM and sustainable ownership for three different datasets: MSCI ESG, MSCI KLD, and Refinitiv. Panel (a) presents the sustainable AUM, defined as the fraction of total institutional assets managed by sustainable investors. Panel (b) presents the market-wide average stock-level sustainable ownership, where sustainable ownership is the fraction of total shares outstanding held by sustainable investors. Investors are classified as sustainable investors if the portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) is in the top 30% of its distribution across all investors.



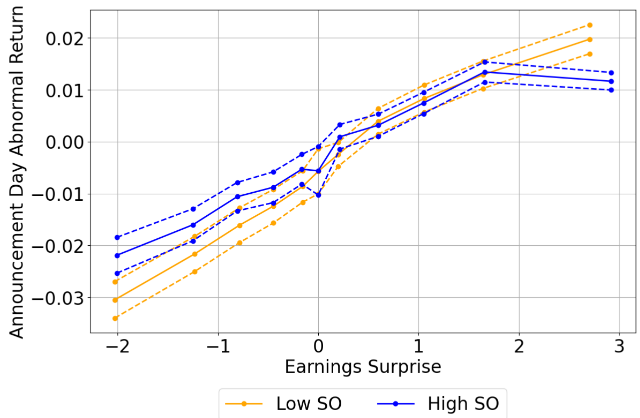

**(a)** Sustainable AUM



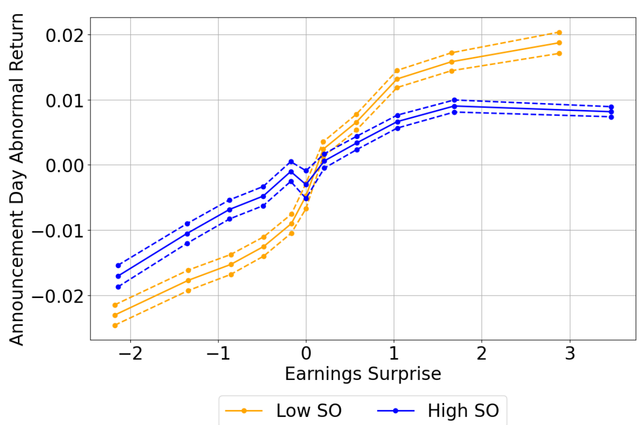

**(b)** Sustainable Ownership

## Figure IA.4: Announcement-Day Price Response: Time-Varying Sustainable Investors

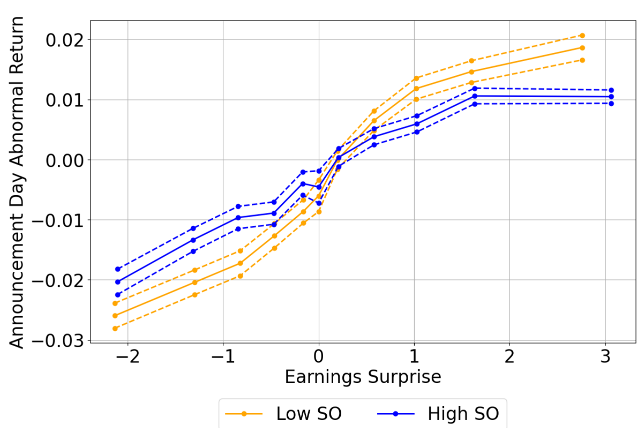
This figure displays abnormal earnings-announcement-day returns for stocks with different levels of sustainable ownership. A stock's *sustainable ownership* (SO) is defined as the fraction of total shares outstanding that are held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score in the top 30% of its distribution across all investors in a given quarter (*time-varying* definition, in contrast to the time-invariant classification of sustainable investors in Figure 1). The plots depict the abnormal announcement-day returns for stocks with *high sustainable ownership (High SO)* and *low sustainable ownership (Low SO)*, with *high (low) SO* stocks defined as those in the top (bottom) 30% of the SO distribution across all stocks in a given quarter. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. Panels (a)–(c), from top to bottom, depict the results using ESG scores from three different datasets: (a) MSCI ESG, (b) MSCI KLD, and (c) Refinitiv. The dashed lines indicate 95% confidence intervals based on standard errors double-clustered by stock and quarter.




**(a)** MSCI ESG



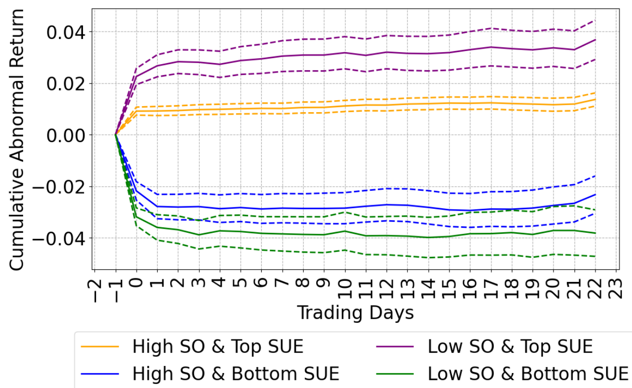

**(b)** MSCI KLD



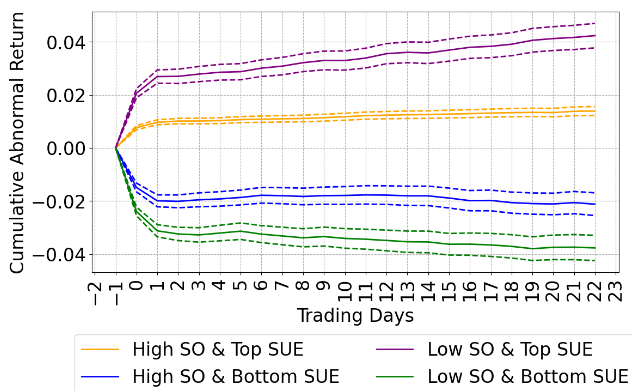

**(c)** Refinitiv

## Figure IA.5: Post-Announcement Price Response: Time-Invariant Sustainable Investors

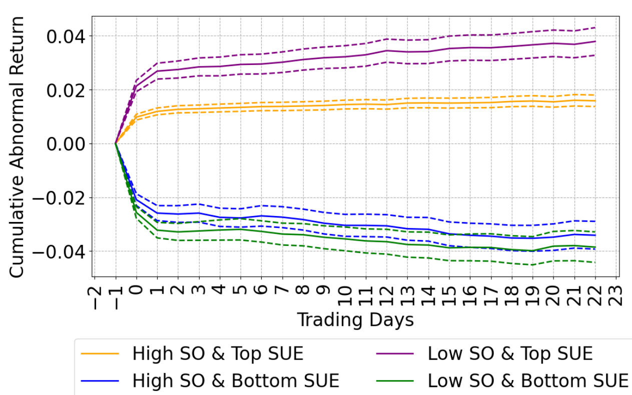
This figure displays the post-announcement cumulative returns for four groups of announcements based on their associated stock's sustainable ownership and the earnings surprise (SUE). A stock's *sustainable ownership* (SO) is defined as the fraction of total shares outstanding that are held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. The plots depict the post-announcement cumulative returns for stocks with *high sustainable ownership (High SO)* and *low sustainable ownership (Low SO)*, with *high (low) SO* stocks defined as those in the top (bottom) 30% of the SO distribution across all stocks in a given quarter. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. *Top SUE* represents the announcements with SUE in quantile 11, while *Bottom SUE* contains announcements with SUE in quantile 1. Panels (a)–(c), from top to bottom, depict the results using ESG scores from three different datasets: (a) MSCI ESG, (b) MSCI KLD, and (c) Refinitiv. The dashed lines indicate 95% confidence intervals based on standard errors double-clustered by stock and quarter.




**(a)** MSCI ESG



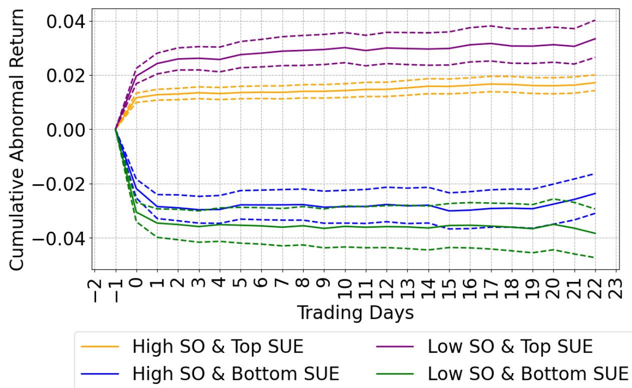

**(b)** MSCI KLD



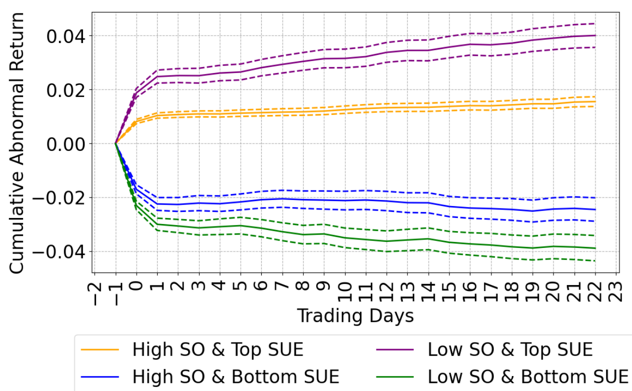

**(c)** Refinitiv

## Figure IA.6: Post-Announcement Price Response: Time-Varying Sustainable Investors

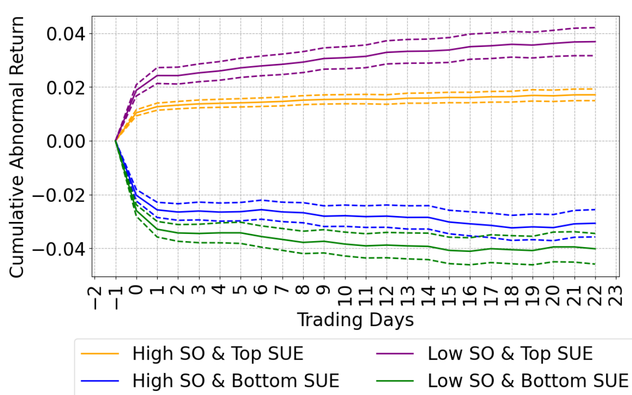
This figure displays the post-announcement cumulative returns for four groups of announcements based on their associated stock's sustainable ownership and the earnings surprise (SUE). A stocks' *sustainable ownership* is defined as the fraction of total shares outstanding that are held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score in the top 30% of its distribution across all investors in a given quarter (*time-varying* definition, in contrast to the time-invariant classification of sustainable investors in Figure IA.5). The plots depict the post-announcement cumulative returns for stocks with *high sustainable ownership (High SO)* and *low sustainable ownership (Low SO)*, with *high (low) SO* stocks defined as those in the top (bottom) 30% of the SO distribution across all stocks in a given quarter. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. *Top SUE* represents the announcements with SUE in quantile 11, while *Bottom SUE* contains announcements with SUE in quantile 1. Panels (a)–(c), from top to bottom, depict the results using ESG scores from three different datasets: (a) MSCI ESG, (b) MSCI KLD, and (c) Refinitiv. The dashed lines indicate 95% confidence intervals based on standard errors double-clustered by stock and quarter.




**(a)** MSCI ESG




**(b)** MSCI KLD




**(c)** Refinitiv

## Table IA.1: Summary Statistics: MSCI ESG

This table presents the summary statistics of the dataset where we classify investors as sustainable using the ESG score from the MSCI ESG data. $R_{n,t}^{(0,0)}$ is the abnormal return on the day of the earnings announcement, adjusted using the market model. $R_{n,t}^{(1,22)}$ 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. $SUE$ is the standardized unexpected earnings as defined in Section 3. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. Only announcements grouped in quantiles 1 and 11 are kept in our main analysis. $SO_{n,t}$ is the continuous variable standing for a stock's sustainable ownership. It is defined as the fraction of total shares outstanding that are held by sustainable investors, which we define as investors with a portfolio-level sustainability score in the top 30% of its distribution across all investors. $SO^{inv,esg}$, $SO^{var,esg}$, $SO^{inv,e}$, and $SO^{var,e}$ represent the sustainable ownership of stocks constructed using ESG/E scores based on the time-invariant/time-varying classification of sustainable investors, respectively. Specifically, the *time-invariant* classification identifies investors as sustainable if the time-series average portfolio-level sustainability score is in the top 30% of its distribution across all investors, while the *time-varying* classification identifies investors as sustainable if the portfolio-level sustainability score in a given quarter is in the top 30% of its distribution across all investors. $MKTCAP$, $SUE$, $BM$, $NUMEST$, $NUMANN$, $TOPMKT$ are control variables: market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period).

| | Obs. | Mean | Std | 10% | 25% | 50% | 75% | 90% |
|---|---|---|---|---|---|---|---|---|
| $R_{n,t}^{(0,0)}$ | 19,860 | -0.000 | 0.076 | -0.089 | -0.035 | 0.001 | 0.037 | 0.085 |
| $R_{n,t}^{(1,22)}$ | 19,787 | 0.002 | 0.120 | -0.121 | -0.052 | -0.001 | 0.051 | 0.122 |
| $SO_{n,t}^{inv,esg}$ | 19,879 | 0.054 | 0.054 | 0.003 | 0.013 | 0.039 | 0.081 | 0.128 |
| $SO_{n,t}^{inv,e}$ | 19,879 | 0.100 | 0.101 | 0.004 | 0.025 | 0.075 | 0.144 | 0.224 |
| $SO_{n,t}^{var,esg}$ | 19,879 | 0.060 | 0.066 | 0.003 | 0.013 | 0.039 | 0.084 | 0.145 |
| $SO_{n,t}^{var,e}$ | 19,879 | 0.090 | 0.099 | 0.004 | 0.020 | 0.060 | 0.128 | 0.214 |
| $SUE$ | 19,879 | 0.990 | 2.453 | -2.332 | -1.787 | 2.183 | 2.835 | 3.572 |
| $MKTCAP$ | 19,513 | 7.637 | 1.987 | 5.063 | 6.239 | 7.621 | 8.958 | 10.218 |
| $BM$ | 18,742 | 0.528 | 0.605 | 0.097 | 0.198 | 0.385 | 0.690 | 1.053 |
| $NUMEST$ | 19,879 | 2.023 | 0.755 | 1.099 | 1.609 | 2.079 | 2.639 | 2.996 |
| $NUMANN$ | 19,879 | 4.467 | 0.987 | 2.890 | 4.007 | 4.754 | 5.159 | 5.497 |
| $TOPMKT$ | 19,879 | 0.119 | 0.324 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |

## Table IA.2: Summary Statistics: MSCI KLD

This table presents the summary statistics of the dataset where we classify investors as sustainable using the ESG score from the MSCI KLD data. $R_{n,t}^{(0,0)}$ is the abnormal return on the day of the earnings announcement, adjusted using the market model. $R_{n,t}^{(1,22)}$ 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. $SUE$ is the standardized unexpected earnings as defined in Section 3. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. Only announcements grouped in quantiles 1 and 11 are kept in our main analysis. $SO_{n,t}$ is the continuous variable standing for a stock's sustainable ownership. It is defined as the fraction of total shares outstanding that are held by sustainable investors, which we define as investors with a portfolio-level sustainability score in the top 30% of its distribution across all investors. $SO^{inv,esg}$, $SO^{var,esg}$, $SO^{inv,e}$, and $SO^{var,e}$ represent the sustainable ownership of stocks constructed using ESG/E scores based on the time-invariant/time-varying classification of sustainable investors, respectively. Specifically, the *time-invariant* classification identifies investors as sustainable if the time-series average portfolio-level sustainability score is in the top 30% of its distribution across all investors, while the *time-varying* classification identifies investors as sustainable if the portfolio-level sustainability score in a given quarter is in the top 30% of its distribution across all investors. $MKTCAP$, $SUE$, $BM$, $NUMEST$, $NUMANN$, $TOPMKT$ are control variables: market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period).

| | Obs. | Mean | Std | 10% | 25% | 50% | 75% | 90% |
|---|---|---|---|---|---|---|---|---|
| $R_{n,t}^{(0,0)}$ | 68,651 | -0.000 | 0.067 | -0.073 | -0.027 | 0.000 | 0.029 | 0.072 |
| $R_{n,t}^{(1,22)}$ | 68,368 | 0.002 | 0.133 | -0.139 | -0.061 | -0.001 | 0.058 | 0.136 |
| $SO_{n,t}^{inv,esg}$ | 68,861 | 0.036 | 0.049 | 0.000 | 0.003 | 0.017 | 0.050 | 0.099 |
| $SO_{n,t}^{inv,e}$ | 68,861 | 0.041 | 0.056 | 0.000 | 0.003 | 0.019 | 0.058 | 0.112 |
| $SO_{n,t}^{var,esg}$ | 68,861 | 0.066 | 0.077 | 0.001 | 0.011 | 0.044 | 0.097 | 0.159 |
| $SO_{n,t}^{var,e}$ | 68,861 | 0.088 | 0.095 | 0.002 | 0.015 | 0.059 | 0.133 | 0.219 |
| $SUE$ | 68,861 | 1.213 | 2.807 | -2.451 | -1.926 | 2.331 | 3.204 | 4.394 |
| $MKTCAP$ | 66,040 | 6.547 | 2.108 | 3.841 | 5.039 | 6.496 | 7.963 | 9.336 |
| $BM$ | 64,224 | 8.554 | 1423.526 | 0.139 | 0.250 | 0.442 | 0.741 | 1.137 |
| $NUMEST$ | 68,861 | 1.525 | 0.938 | 0.000 | 0.693 | 1.609 | 2.197 | 2.708 |
| $NUMANN$ | 68,861 | 4.598 | 0.913 | 3.219 | 4.143 | 4.812 | 5.257 | 5.583 |
| $TOPMKT$ | 68,861 | 0.119 | 0.324 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |

## Table IA.3: Summary Statistics: Refinitiv

This table presents the summary statistics of the dataset where we classify investors as sustainable using the ESG score from the Refinitiv data. $R_{n,t}^{(0,0)}$ is the abnormal return on the day of the earnings announcement, adjusted using the market model. $R_{n,t}^{(1,22)}$ 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. $SUE$ is the standardized unexpected earnings as defined in Section 3. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. Only announcements grouped in quantiles 1 and 11 are kept in our main analysis. $SO_{n,t}$ is the continuous variable standing for a stock's sustainable ownership. It is defined as the fraction of total shares outstanding that are held by sustainable investors, which we define as investors with a portfolio-level sustainability score in the top 30% of its distribution across all investors. $SO^{inv,esg}$, $SO^{var,esg}$, $SO^{inv,e}$, and $SO^{var,e}$ represent the sustainable ownership of stocks constructed using ESG/E scores based on the time-invariant/time-varying classification of sustainable investors, respectively. Specifically, the *time-invariant* classification identifies investors as sustainable if the time-series average portfolio-level sustainability score is in the top 30% of its distribution across all investors, while the *time-varying* classification identifies investors as sustainable if the portfolio-level sustainability score in a given quarter is in the top 30% of its distribution across all investors. $MKTCAP$, $SUE$, $BM$, $NUMEST$, $NUMANN$, $TOPMKT$ are control variables: market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period).

| | Obs. | Mean | Std | 10% | 25% | 50% | 75% | 90% |
|---|---|---|---|---|---|---|---|---|
| $R_{n,t}^{(0,0)}$ | 43,765 | 0.000 | 0.074 | -0.083 | -0.032 | 0.000 | 0.034 | 0.083 |
| $R_{n,t}^{(1,22)}$ | 43,571 | 0.001 | 0.127 | -0.130 | -0.056 | -0.001 | 0.053 | 0.125 |
| $SO_{n,t}^{inv,esg}$ | 43,893 | 0.012 | 0.023 | 0.000 | 0.001 | 0.005 | 0.014 | 0.032 |
| $SO_{n,t}^{var,esg}$ | 43,893 | 0.034 | 0.045 | 0.001 | 0.004 | 0.018 | 0.050 | 0.090 |
| $SUE$ | 43,893 | 1.007 | 2.584 | -2.436 | -1.877 | 2.183 | 2.926 | 3.869 |
| $MKTCAP$ | 42,627 | 6.982 | 2.111 | 4.258 | 5.494 | 6.978 | 8.401 | 9.735 |
| $BM$ | 41,330 | 0.617 | 3.881 | 0.130 | 0.242 | 0.438 | 0.745 | 1.146 |
| $NUMEST$ | 43,893 | 1.754 | 0.907 | 0.000 | 1.099 | 1.792 | 2.485 | 2.890 |
| $NUMANN$ | 43,893 | 4.566 | 0.939 | 3.135 | 4.127 | 4.828 | 5.209 | 5.549 |
| $TOPMKT$ | 43,893 | 0.127 | 0.333 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 |

## Table IA.4: No Effect of ESG Scores

This table presents the results from OLS regressions of announcement-day abnormal returns, $R^{(0,0)}_{n,t}$, on $TopSUE$, $HighSO$ ($SO$), $HighScore$ ($Score$), and their interactions $TopSUE \times HighSO$ ($TopSUE \times SO$) and $TopSUE \times HighScore$ ($TopSUE \times Score$), along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. $TopSUE$ is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. $Score$ is the continuous ESG score of stocks available from each dataset. $HighScore$ is a dummy variable that equals 1 (or 0) if the score for a stock is among the top (bottom) 30% of its distribution across all stocks in a given quarter. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $R^{(0,0)}_{n,t}$ (1) | $R^{(0,0)}_{n,t}$ (2) | $R^{(0,0)}_{n,t}$ (3) | $R^{(0,0)}_{n,t}$ (4) | $R^{(0,0)}_{n,t}$ (5) | $R^{(0,0)}_{n,t}$ (6) | $R^{(0,0)}_{n,t}$ (7) | $R^{(0,0)}_{n,t}$ (8) | $R^{(0,0)}_{n,t}$ (9) |
| $HighScore$ | 0.0033 | -0.0048 | | -0.0015 | 0.0004 | | -0.0002 | 0.0013 | |
| | (0.83) | (-0.57) | | (-0.58) | (0.10) | | (-0.05) | (0.19) | |
| $TopSUE$ | 0.0533*** | 0.0328*** | 0.0346*** | 0.0425*** | 0.0317*** | 0.0301*** | 0.0431*** | 0.0186 | 0.0254*** |
| | (12.11) | (2.91) | (6.18) | (11.33) | (5.00) | (11.95) | (8.23) | (1.57) | (4.63) |
| $TopSUE * HighScore$ | 0.0026 | 0.0089 | | 0.0012 | -0.0012 | | -0.0033 | -0.0009 | |
| | (0.57) | (1.16) | | (0.42) | (-0.33) | | (-0.66) | (-0.14) | |
| $HighSO$ | 0.0057 | 0.0065 | | 0.0075*** | 0.0066 | | 0.0082 | 0.0126 | |
| | (1.38) | (0.51) | | (2.87) | (1.19) | | (1.62) | (1.28) | |
| $TopSUE * HighSO$ | -0.0263*** | -0.0262*** | | -0.0219*** | -0.0158*** | | -0.0194*** | -0.0120 | |
| | (-5.02) | (-2.66) | | (-6.48) | (-3.13) | | (-3.03) | (-1.23) | |
| $SO$ | | | -0.0216 | | | 0.0555*** | | | 0.1988*** |
| | | | (-0.64) | | | (3.31) | | | (2.85) |
| $TopSUE * SO$ | | | -0.0849*** | | | -0.0921*** | | | -0.1876*** |
| | | | (-2.60) | | | (-5.66) | | | (-2.67) |
| $Score$ | | | 0.0002 | | | 0.0008** | | | 0.0003*** |
| | | | (0.12) | | | (2.37) | | | (2.60) |
| $TopSUE * Score$ | | | 0.0026 | | | -0.0014*** | | | -0.0002** |
| | | | (1.39) | | | (-3.91) | | | (-2.24) |
| Controls | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Obs. | 5751 | 4846 | 14340 | 14074 | 12662 | 32822 | 4864 | 4320 | 10818 |
| Adj. $R^2$ | 0.062 | 0.118 | 0.112 | 0.039 | 0.099 | 0.087 | 0.041 | 0.145 | 0.116 |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-Week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-Year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |

## Table IA.5: Sustainable Ownership and Announcement-Day Returns: Sustainable Ownership Based on E Scores

This table presents the results from OLS regressions of announcement-day abnormal returns, $R^{(0,0)}_{n,t}$, on $TopSUE$, $HighSO$ ($SO$), and their interaction $TopSUE \times HighSO$ ($TopSUE \times SO$), along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. $TopSUE$ is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level E (Environmental) score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | |
|---|---|---|---|---|---|---|
| Dep. Var. | $R^{(0,0)}_{n,t}$ (1) | $R^{(0,0)}_{n,t}$ (2) | $R^{(0,0)}_{n,t}$ (3) | $R^{(0,0)}_{n,t}$ (4) | $R^{(0,0)}_{n,t}$ (5) | $R^{(0,0)}_{n,t}$ (6) |
| $HighSO$ | 0.0115*** | 0.0162*** | | 0.0072*** | 0.0096*** | |
| | (4.69) | (2.79) | | (6.25) | (4.93) | |
| $SO$ | | | 0.0199 | | | 0.0722*** |
| | | | (1.13) | | | (5.57) |
| $TopSUE$ | 0.0534*** | 0.0441*** | 0.0381*** | 0.0407*** | 0.0422*** | 0.0354*** |
| | (23.12) | (6.04) | (7.57) | (36.88) | (16.13) | (19.95) |
| $TopSUE \times HighSO$ | -0.0211*** | -0.0134*** | | -0.0170*** | -0.0184*** | |
| | (-7.00) | (-2.72) | | (-11.68) | (-8.71) | |
| $TopSUE \times SO$ | | | -0.0286 | | | -0.1245*** |
| | | | (-1.60) | | | (-8.97) |
| Controls | No | Yes | Yes | No | Yes | Yes |
| Obs. | 11,812 | 10,209 | 18,107 | 42,793 | 38,058 | 62,615 |
| Adj. $R^2$ | 0.072 | 0.131 | 0.114 | 0.051 | 0.088 | 0.085 |
| Stock FE | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes |
| Day-of-week FE | No | Yes | Yes | No | Yes | Yes |
| Month-of-year FE | No | Yes | Yes | No | Yes | Yes |

## Table IA.6: Sustainable Ownership and Announcement-Day Returns: Time-Varying Sustainable Ownership

This table presents the results from OLS regressions of announcement-day abnormal returns, $R_{n,t}^{(0,0)}$, on $TopSUE$, $HighSO$ ($SO$), and their interaction $TopSUE \times HighSO$ ($TopSUE \times SO$), along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. $TopSUE$ is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score in the top 30% of its distribution across all investors in a given quarter (*time-varying* definition, in contrast to the time-invariant classification of sustainable investors in Table 1). $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $R_{n,t}^{(0,0)}$ (1) | $R_{n,t}^{(0,0)}$ (2) | $R_{n,t}^{(0,0)}$ (3) | $R_{n,t}^{(0,0)}$ (4) | $R_{n,t}^{(0,0)}$ (5) | $R_{n,t}^{(0,0)}$ (6) | $R_{n,t}^{(0,0)}$ (7) | $R_{n,t}^{(0,0)}$ (8) | $R_{n,t}^{(0,0)}$ (9) |
| $HighSO$ | 0.0086*** | 0.0065 | | 0.0061*** | 0.0076*** | | 0.0059*** | 0.0033 | |
| | (3.45) | (1.48) | | (5.29) | (4.08) | | (3.91) | (1.35) | |
| $SO$ | | | 0.0547*** | | | 0.0393*** | | | 0.0483*** |
| | | | (2.60) | | | (4.73) | | | (3.06) |
| $TopSUE$ | 0.0496*** | 0.0505*** | 0.0396*** | 0.0413*** | 0.0413*** | 0.0358*** | 0.0443*** | 0.0397*** | 0.0334*** |
| | (21.78) | (7.36) | (7.89) | (35.97) | (15.98) | (19.64) | (29.77) | (10.11) | (12.14) |
| $TopSUE \times HighSO$ | -0.0165*** | -0.0184*** | | -0.0165*** | -0.0181*** | | -0.0139*** | -0.0087*** | |
| | (-5.49) | (-4.03) | | (-11.17) | (-8.82) | | (-7.25) | (-3.30) | |
| $TopSUE \times SO$ | | | -0.0599*** | | | -0.0655*** | | | -0.0832*** |
| | | | (-2.59) | | | (-6.36) | | | (-4.52) |
| Controls | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Obs. | 11905 | 10344 | 18107 | 41853 | 37034 | 62615 | 26075 | 23101 | 40244 |
| Adj. $R^2$ | 0.071 | 0.142 | 0.115 | 0.055 | 0.100 | 0.085 | 0.063 | 0.119 | 0.102 |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-Year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |

## Table IA.7: Sustainable Ownership and Announcement-Day Returns: Time-Varying Sustainable Ownership Based on E Scores

This table presents the results from OLS regressions of announcement-day abnormal returns, $R^{(0,0)}_{n,t}$, on $TopSUE$, $HighSO$ ($SO$), and their interaction $TopSUE \times HighSO$ ($TopSUE \times SO$), along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. $TopSUE$ is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level E (Environmental) score in the top 30% of its distribution across all investors in a given quarter (*time-varying* definition, in contrast to the time-invariant classification of sustainable investors in Table IA.5). $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | |
|---|---|---|---|---|---|---|
| Dep. Var. | $R^{(0,0)}_{n,t}$ (1) | $R^{(0,0)}_{n,t}$ (2) | $R^{(0,0)}_{n,t}$ (3) | $R^{(0,0)}_{n,t}$ (4) | $R^{(0,0)}_{n,t}$ (5) | $R^{(0,0)}_{n,t}$ (6) |
| $HighSO$ | 0.0101*** | 0.0120*** | | 0.0048*** | 0.0032* | |
| | (4.13) | (2.60) | | (4.15) | (1.75) | |
| $SO$ | | | 0.0247 | | | 0.0172** |
| | | | (1.53) | | | (2.43) |
| $TopSUE$ | 0.0520*** | 0.0442*** | 0.0391*** | 0.0378*** | 0.0364*** | 0.0349*** |
| | (23.20) | (6.22) | (7.84) | (36.10) | (13.88) | (19.13) |
| $TopSUE \times HighSO$ | -0.0209*** | -0.0171*** | | -0.0112*** | -0.0096*** | |
| | (-7.02) | (-3.60) | | (-7.85) | (-4.79) | |
| $TopSUE \times SO$ | | | -0.0431** | | | -0.0356*** |
| | | | (-2.44) | | | (-4.56) |
| Controls | Yes | Yes | Yes | Yes | Yes | YEs |
| Obs. | 11,749 | 10,181 | 18,107 | 41,668 | 36,888 | 62,615 |
| Adj. $R^2$ | 0.069 | 0.122 | 0.114 | 0.052 | 0.086 | 0.084 |
| Stock FE | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes |
| Day-of-week FE | No | Yes | Yes | No | Yes | Yes |
| Month-of-year FE | No | Yes | Yes | No | Yes | Yes |

## Table IA.8: Sustainable Ownership and Announcement-Day Returns: Industry-Quarter Fixed Effects

This table presents the results from OLS regressions of announcement-day abnormal returns, $R_{n,t}^{(0,0)}$, on $TopSUE$, $HighSO$ ($SO$), and their interaction $TopSUE \times HighSO$ ($TopSUE \times SO$), along with control variables. We include stock and industry×quarter fixed effects, instead of stock and quarter fixed effects in Table 1. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. $TopSUE$ is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | MSCI KLD | | Refinitiv | |
|---|---|---|---|---|---|---|
| Dep. Var. | $R_{n,t}^{(0,0)}$ (1) | $R_{n,t}^{(0,0)}$ (2) | $R_{n,t}^{(0,0)}$ (3) | $R_{n,t}^{(0,0)}$ (4) | $R_{n,t}^{(0,0)}$ (5) | $R_{n,t}^{(0,0)}$ (6) |
| $HighSO$ | 0.0097 | | 0.0092*** | | 0.0048* | |
| | (1.53) | | (4.30) | | (1.71) | |
| $SO$ | | -0.0099 | | 0.0551*** | | 0.0754** |
| | | (-0.32) | | (4.24) | | (2.53) |
| $TopSUE$ | 0.0488*** | 0.0415*** | 0.0465*** | 0.0363*** | 0.0389*** | 0.0343*** |
| | (7.17) | (8.13) | (17.59) | (19.76) | (9.88) | (12.29) |
| $TopSUE \times HighSO$ | -0.0235*** | | -0.0229*** | | -0.0165*** | |
| | (-4.78) | | (-10.61) | | (-6.05) | |
| $TopSUE \times SO$ | | -0.1070*** | | -0.1096*** | | -0.1703*** |
| | | (-3.64) | | (-8.27) | | (-5.61) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 10,490 | 18,105 | 37,454 | 62,612 | 23,742 | 40,242 |
| Adj. $R^2$ | 0.132 | 0.118 | 0.100 | 0.088 | 0.123 | 0.106 |
| Stock FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry×Quarter FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Day-of-week FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Month-of-year FE | Yes | Yes | Yes | Yes | Yes | Yes |

## Table IA.9: Sustainable Ownership and Announcement-Day Returns: Passive Ownership

This table presents the results from OLS regressions of announcement-day abnormal returns, $R_{n,t}^{(0,0)}$, on $TopSUE$, $HighSO$ ($SO$), $PsvOwnShp$, and their interactions $TopSUE \times HighSO$ ($TopSUE \times SO$) and $TopSUE \times PsvOwnShp$, along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. $TopSUE$ is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Passive ownership, $PsvOwnShp$, is the fraction of total shares outstanding held by passive investors as classified by the CRSP Mutual Fund Database, i.e., with an index fund flag of "B", "D", or "E". The results remain virtually unchanged when restricting only to funds with an index fund flag of "D". Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| $HighSO$ | 0.0085** | 0.0091 | | 0.0099*** | 0.0094 | | 0.0095*** | 0.0128 | |
| | (2.51) | (1.03) | | (2.61) | (1.00) | | (3.00) | (1.61) | |
| $SO$ | | | -0.0109 | | | 0.0958** | | | 0.1343* |
| | | | (-0.31) | | | (2.31) | | | (1.80) |
| $TopSUE$ | 0.0528*** | 0.0335*** | 0.0287*** | 0.0519*** | 0.0278** | 0.0154** | 0.0541*** | 0.0514*** | 0.0277*** |
| | (12.60) | (3.45) | (4.35) | (11.49) | (2.48) | (2.08) | (13.99) | (5.49) | (4.32) |
| $TopSUE \times HighSO$ | -0.0254*** | -0.0194*** | | -0.0266*** | -0.0209** | | -0.0281*** | -0.0256*** | |
| | (-6.05) | (-2.62) | | (-5.79) | (-2.37) | | (-7.25) | (-4.00) | |
| $TopSUE \times SO$ | | | -0.0941*** | | | -0.1109*** | | | -0.2426*** |
| | | | (-2.87) | | | (-2.92) | | | (-3.79) |
| $TopSUE \times PsvOwnShp$ | 0.0253 | 0.0877*** | 0.0544** | 0.0426 | 0.0768* | 0.0826*** | 0.0121 | 0.0067 | 0.0505** |
| | (1.19) | (2.79) | (2.54) | (1.60) | (1.86) | (2.95) | (0.59) | (0.24) | (2.36) |
| $PsvOwnShp$ | -0.0169 | -0.0053 | -0.0007 | -0.0205 | -0.0136 | -0.0232 | -0.0076 | 0.0264 | 0.0054 |
| | (-0.89) | (-0.14) | (-0.03) | (-0.84) | (-0.26) | (-0.63) | (-0.42) | (0.74) | (0.21) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 7,500 | 6,759 | 12,169 | 6,046 | 5,346 | 9,359 | 7,668 | 6,881 | 12,169 |
| Adj. $R^2$ | 0.071 | 0.149 | 0.121 | 0.076 | 0.160 | 0.130 | 0.075 | 0.152 | 0.121 |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |

# Table IA.10: Sustainable Ownership and Announcement-Day Returns: Big Investors

This table presents the results from OLS regressions of announcement-day abnormal returns, $R^{(0,0)}_{n,t}$, on $TopSUE$, $HighSO$ ($SO$), $Big3OwnShp$, and their interactions $TopSUE \times HighSO$ ($TopSUE \times SO$) and $TopSUE \times Big3OwnShp$, along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. $TopSUE$ is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. $Big3OwnShp$ is the fraction of total shares outstanding held by the top 3 largest institutional investors. The results remain virtually unchanged when restricting to the top 5 or 10 largest institutional investors. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $R^{(0,0)}_{n,t}$ (1) | $R^{(0,0)}_{n,t}$ (2) | $R^{(0,0)}_{n,t}$ (3) | $R^{(0,0)}_{n,t}$ (4) | $R^{(0,0)}_{n,t}$ (5) | $R^{(0,0)}_{n,t}$ (6) | $R^{(0,0)}_{n,t}$ (7) | $R^{(0,0)}_{n,t}$ (8) | $R^{(0,0)}_{n,t}$ (9) |
| $HighSO$ | 0.0101*** | 0.0088 | | 0.0102*** | 0.0131 | | 0.0086*** | 0.0138** | |
| | (3.62) | (1.23) | | (3.21) | (1.56) | | (3.19) | (2.25) | |
| $SO$ | | | 0.0103 | | | 0.0919** | | | 0.1425** |
| | | | (0.32) | | | (2.31) | | | (1.97) |
| $TopSUE$ | 0.0501*** | 0.0367*** | 0.0320*** | 0.0489*** | 0.0328*** | 0.0233*** | 0.0501*** | 0.0513*** | 0.0302*** |
| | (17.77) | (4.89) | (5.54) | (15.83) | (3.67) | (3.54) | (17.47) | (6.49) | (5.22) |
| $TopSUE \times HighSO$ | -0.0240*** | -0.0245*** | | -0.0235*** | -0.0252*** | | -0.0250*** | -0.0266*** | |
| | (-7.11) | (-4.46) | | (-6.16) | (-3.68) | | (-7.62) | (-5.07) | |
| $TopSUE \times SO$ | | | -0.1312*** | | | -0.1262*** | | | -0.2552*** |
| | | | (-4.21) | | | (-3.48) | | | (-4.05) |
| $TopSUE \times Big3OwnShp$ | 0.0702** | 0.1740*** | 0.1128*** | 0.0823** | 0.1031** | 0.0914*** | 0.0567** | 0.0338 | 0.1033*** |
| | (2.50) | (4.40) | (4.23) | (2.50) | (2.37) | (2.86) | (2.05) | (0.91) | (3.86) |
| $Big3OwnShp$ | -0.0489** | -0.1320*** | -0.1011*** | -0.0490* | -0.0452 | -0.0725* | -0.0248 | -0.0106 | -0.0919*** |
| | (-1.96) | (-2.61) | (-2.91) | (-1.65) | (-0.78) | (-1.73) | (-1.02) | (-0.21) | (-2.63) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 10,165 | 8,750 | 1,5235 | 7,774 | ,6521 | 11,311 | 9,999 | 8,558 | 14,889 |
| Adj. $R^2$ | 0.077 | 0.154 | 0.126 | 0.078 | 0.161 | 0.131 | 0.076 | 0.151 | 0.124 |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |

## Table IA.11: Sustainable Ownership and Announcement-Day Returns: Investor Horizon

This table presents the results from OLS regressions of announcement-day abnormal returns, $R^{(0,0)}_{n,t}$, on $TopSUE$, $HighSO$ ($SO$), $ADJCR$, and their interactions $TopSUE \times HighSO$ ($TopSUE \times SO$) and $TopSUE \times ADJCR$, along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. $TopSUE$ is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. $ADJCR$ is the adjusted churn ratio, which is the minimum of the churn ratio of stock purchases and stock sales, following the approach of Starks et al. (2026). Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $R^{(0,0)}_{n,t}$ (1) | $R^{(0,0)}_{n,t}$ (2) | $R^{(0,0)}_{n,t}$ (3) | $R^{(0,0)}_{n,t}$ (4) | $R^{(0,0)}_{n,t}$ (5) | $R^{(0,0)}_{n,t}$ (6) | $R^{(0,0)}_{n,t}$ (7) | $R^{(0,0)}_{n,t}$ (8) | $R^{(0,0)}_{n,t}$ (9) |
| $HighSO$ | 0.0090*** | 0.0088 | | 0.0088*** | 0.0122 | | 0.0077*** | 0.0120* | |
| | (3.10) | (1.19) | | (2.63) | (1.40) | | (2.83) | (1.93) | |
| $SO$ | | | 0.0140 | | | 0.0972** | | | 0.1521** |
| | | | (0.41) | | | (2.37) | | | (2.09) |
| $TopSUE$ | 0.0463*** | 0.0431*** | 0.0398*** | 0.0441*** | 0.0320*** | 0.0301*** | 0.0489*** | 0.0493*** | 0.0399*** |
| | (12.56) | (5.26) | (6.03) | (10.58) | (3.14) | (3.81) | (11.93) | (5.52) | (5.94) |
| $TopSUE \times HighSO$ | -0.0264*** | -0.0255*** | | -0.0248*** | -0.0290*** | | -0.0245*** | -0.0272*** | |
| | (-7.43) | (-4.43) | | (-6.13) | (-4.01) | | (-7.38) | (-5.04) | |
| $TopSUE \times SO$ | | | -0.1237*** | | | -0.1162*** | | | -0.2401*** |
| | | | (-3.88) | | | (-3.13) | | | (-3.79) |
| $TopSUE \times ADJCR$ | 0.2341*** | 0.2485** | 0.0509 | 0.2361*** | 0.1999 | -0.0100 | 0.1108 | 0.1043 | -0.0083 |
| | (2.76) | (2.02) | (0.56) | (2.58) | (1.36) | (-0.09) | (1.34) | (0.83) | (-0.09) |
| $ADJCR$ | 0.0447 | 0.0103 | 0.0884 | 0.0533 | 0.1569 | 0.0712 | 0.0869 | 0.0843 | 0.1075 |
| | (0.67) | (0.11) | (1.11) | (0.73) | (1.40) | (0.73) | (1.32) | (0.87) | (1.34) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 9,924 | 8,527 | 14,874 | 7,535 | 6,298 | 10,938 | 9,764 | 8,350 | 14,528 |
| Adj. $R^2$ | 0.080 | 0.156 | 0.126 | 0.080 | 0.166 | 0.133 | 0.077 | 0.153 | 0.125 |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |

## Table IA.12: Sustainable Ownership and Announcement-Day Returns: Alternative TopSUE

This table presents the results from OLS regressions of announcement-day abnormal returns, $R_{n,t}^{(0,0)}$, on $TopSUE$, $HighSO$ ($SO$), and their interaction $TopSUE \times HighSO$ ($TopSUE \times SO$), along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1, 2, 10, and 11. $TopSUE$ is a dummy variable that equals one for announcements grouped in quantiles 10 and 11, and it equals zero for announcements grouped in quantiles 1 and 2. $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $R_{n,t}^{(0,0)}$ (1) | $R_{n,t}^{(0,0)}$ (2) | $R_{n,t}^{(0,0)}$ (3) | $R_{n,t}^{(0,0)}$ (4) | $R_{n,t}^{(0,0)}$ (5) | $R_{n,t}^{(0,0)}$ (6) | $R_{n,t}^{(0,0)}$ (7) | $R_{n,t}^{(0,0)}$ (8) | $R_{n,t}^{(0,0)}$ (9) |
| $HighSO$ | 0.0095*** | 0.0105*** | | 0.0086*** | 0.0084*** | | 0.0055*** | 0.0053*** | |
| | (5.65) | (2.85) | | (10.81) | (6.34) | | (5.29) | (3.07) | |
| $SO$ | | | 0.0380** | | | 0.0565*** | | | 0.0801*** |
| | | | (2.01) | | | (6.70) | | | (4.03) |
| $TopSUE$ | 0.0442*** | 0.0337*** | 0.0289*** | 0.0390*** | 0.0360*** | 0.0277*** | 0.0410*** | 0.0321*** | 0.0250*** |
| | (27.32) | (10.18) | (11.71) | (48.80) | (26.32) | (29.32) | (39.55) | (16.17) | (17.91) |
| $TopSUE \times HighSO$ | -0.0162*** | -0.0156*** | | -0.0193*** | -0.0202*** | | -0.0146*** | -0.0152*** | |
| | (-7.83) | (-5.84) | | (-18.99) | (-16.37) | | (-10.97) | (-9.47) | |
| $TopSUE \times SO$ | | | -0.1029*** | | | -0.0983*** | | | -0.1495*** |
| | | | (-6.00) | | | (-11.78) | | | (-7.41) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 24,122 | 22,041 | 37,086 | 82,766 | 75,588 | 127,095 | 52,779 | 48,583 | 81,716 |
| Adj. $R^2$ | 0.056 | 0.102 | 0.092 | 0.046 | 0.081 | 0.068 | 0.052 | 0.090 | 0.080 |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |

## Table IA.13: Sustainable Ownership and Announcement-Day Returns: Using $RankSUE$

This table presents the results from OLS regressions of announcement-day abnormal returns, $R^{(0,0)}_{n,t}$, on $RankSUE$, $HighSO$ ($SO$), and their interaction $RankSUE \times HighSO$ ($RankSUE \times SO$), along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 ($RankSUE = 1, 2, 3, 4, 5$) correspond to negative surprises, quantile 6 ($RankSUE = 6$) to zero surprises, and quantiles 7 to 11 ($RankSUE = 7, 8, 9, 10, 11$) to positive surprises. $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $R^{(0,0)}_{n,t}$ | $R^{(0,0)}_{n,t}$ | $R^{(0,0)}_{n,t}$ | $R^{(0,0)}_{n,t}$ | $R^{(0,0)}_{n,t}$ | $R^{(0,0)}_{n,t}$ | $R^{(0,0)}_{n,t}$ | $R^{(0,0)}_{n,t}$ | $R^{(0,0)}_{n,t}$ |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| $HighSO$ | 0.0020*** | 0.0043** | | 0.0001 | 0.0006 | | -0.0005 | -0.0008 | |
| | (3.26) | (2.33) | | (0.20) | (1.00) | | (-1.33) | (-0.99) | |
| $SO$ | | | 0.0227** | | | 0.0096*** | | | 0.0160 |
| | | | (2.54) | | | (2.61) | | | (1.61) |
| $RankSUE$ | 0.0048*** | 0.0039*** | 0.0036*** | 0.0045*** | 0.0046*** | 0.0038*** | 0.0046*** | 0.0042*** | 0.0034*** |
| | (31.81) | (13.40) | (15.69) | (59.90) | (38.02) | (42.85) | (47.27) | (23.38) | (25.67) |
| $RankSUE \times HighSO$ | -0.0018*** | -0.0014*** | | -0.0023*** | -0.0023*** | | -0.0018*** | -0.0017*** | |
| | (-9.59) | (-6.45) | | (-24.92) | (-21.44) | | (-14.35) | (-12.53) | |
| $RankSUE \times SO$ | | | -0.0088*** | | | -0.0116*** | | | -0.0160*** |
| | | | (-5.95) | | | (-15.94) | | | (-8.83) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 62543 | 57907 | 95866 | 213360 | 195139 | 327538 | 136959 | 126929 | 211267 |
| Adj. $R^2$ | 0.029 | 0.054 | 0.051 | 0.026 | 0.050 | 0.044 | 0.028 | 0.056 | 0.050 |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-Year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |

# Table IA.14: Sustainable Ownership and Announcement-Day Returns: Alternative SO

This table presents the results from OLS regressions of announcement-day abnormal returns, $R_{n,t}^{(0,0)}$, on $TopSUE$, $HighSO$ ($SO$), and their interaction $TopSUE \times HighSO$ ($TopSUE \times SO$), along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. $TopSUE$ is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 50% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ | $R_{n,t}^{(0,0)}$ |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| $HighSO$ | 0.0071*** | 0.0139 | | 0.0094*** | 0.0104*** | | 0.0070*** | 0.0026 | |
| | (2.85) | (1.54) | | (8.11) | (3.34) | | (4.60) | (0.63) | |
| $SO$ | | | 0.0130 | | | 0.0185*** | | | 0.0042 |
| | | | (1.29) | | | (4.32) | | | (0.65) |
| $TopSUE$ | 0.0501*** | 0.0393*** | 0.0507*** | 0.0399*** | 0.0397*** | 0.0422*** | 0.0431*** | 0.0326*** | 0.0377*** |
| | (21.48) | (5.98) | (8.36) | (34.89) | (15.53) | (20.27) | (28.42) | (8.57) | (11.84) |
| $TopSUE \times HighSO$ | -0.0159*** | -0.0206*** | | -0.0181*** | -0.0181*** | | -0.0126*** | -0.0122*** | |
| | (-5.23) | (-4.24) | | (-12.30) | (-8.40) | | (-6.45) | (-4.48) | |
| $TopSUE \times SO$ | | | -0.0332*** | | | -0.0328*** | | | -0.0216*** |
| | | | (-4.17) | | | (-8.66) | | | (-4.00) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 12,202 | 10,685 | 18,107 | 43,167 | 38,336 | 62,615 | 26,627 | 23,671 | 40,244 |
| Adj. $R^2$ | 0.073 | 0.136 | 0.115 | 0.050 | 0.086 | 0.085 | 0.062 | 0.119 | 0.102 |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-Year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |

# Table IA.15: Sustainable Ownership and Post-Announcement Returns

This table presents the results from OLS regressions of cumulative post-announcement abnormal returns, $R_{n,t}^{(1,22)}$, on $TopSUE$, $HighSO$ ($SO$), and their interaction $TopSUE \times HighSO$ ($TopSUE \times SO$), along with control variables. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. $TopSUE$ is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $R_{n,t}^{(1,22)}$ | $R_{n,t}^{(1,22)}$ | $R_{n,t}^{(1,22)}$ | $R_{n,t}^{(1,22)}$ | $R_{n,t}^{(1,22)}$ | $R_{n,t}^{(1,22)}$ | $R_{n,t}^{(1,22)}$ | $R_{n,t}^{(1,22)}$ | $R_{n,t}^{(1,22)}$ |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| $HighSO$ | 0.0081* | 0.0083 | | 0.0101*** | 0.0155*** | | 0.0022 | 0.0034 | |
| | (1.83) | (0.87) | | (3.90) | (3.55) | | (0.71) | (0.68) | |
| SO | | | 0.0823** | | | 0.0821*** | | | 0.0727 |
| | | | (1.98) | | | (3.15) | | | (1.36) |
| $TopSUE$ | 0.0197*** | 0.0317*** | 0.0248*** | 0.0329*** | 0.0370*** | 0.0299*** | 0.0272*** | 0.0260*** | 0.0245*** |
| | (4.32) | (3.05) | (3.44) | (12.37) | (7.45) | (8.86) | (8.99) | (4.18) | (5.76) |
| $TopSUE \times HighSO$ | -0.0136** | -0.0107 | | -0.0212*** | -0.0199*** | | -0.0091** | -0.0122*** | |
| | (-2.52) | (-1.39) | | (-6.52) | (-4.72) | | (-2.45) | (-2.61) | |
| $TopSUE \times SO$ | | | -0.0441 | | | -0.0702*** | | | -0.0719 |
| | | | (-1.13) | | | (-2.66) | | | (-1.42) |
| Controls | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Adj. $R^2$ | 0.003 | 0.121 | 0.098 | 0.007 | 0.115 | 0.091 | 0.007 | 0.120 | 0.099 |
| Obs. | 12,042 | 10,476 | 18,035 | 42,098 | 37,347 | 62,377 | 26,473 | 23,653 | 40,082 |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-Week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-Year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |

# Table IA.16: Sustainable Ownership and Volume Changes

This table presents the results from OLS regressions of volume changes, $\Delta v_{n,t}^{(0,0)}$, on $TopAbsSUE$, $HighSO$ ($SO$), and their interaction $TopAbsSUE \times HighSO$ ($TopAbsSUE \times SO$), along with control variables. $\Delta v_{n,t}^{(0,0)}$ is the abnormal trading-volume spike on the earnings announcement day, defined as the percentage change in trading volume on the announcement day relative to the 10-day window from 20 to 11 trading days prior to the announcement day, as defined in (D.1). Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. $TopAbsSUE$ is a dummy variable that equals one for announcements grouped in quantiles 1, 2, 3, 9, 10, and 11, and it equals zero for announcements grouped in quantiles 4, 5, 6, 7, and 8. $SO$ is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level ESG score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. $HighSO$ is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the $SO$ distribution across all stocks in a given quarter, and regressions with $HighSO$ are estimated using only these top and bottom quantiles. Control variables include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | | Refinitiv | | |
|---|---|---|---|---|---|---|---|---|---|
| Dep. Var. | $\Delta v_{n,t}^{(0,0)}$ (1) | $\Delta v_{n,t}^{(0,0)}$ (2) | $\Delta v_{n,t}^{(0,0)}$ (3) | $\Delta v_{n,t}^{(0,0)}$ (4) | $\Delta v_{n,t}^{(0,0)}$ (5) | $\Delta v_{n,t}^{(0,0)}$ (6) | $\Delta v_{n,t}^{(0,0)}$ (7) | $\Delta v_{n,t}^{(0,0)}$ (8) | $\Delta v_{n,t}^{(0,0)}$ (9) |
| $HighSO$ | 0.1202*** | 0.0549*** | | -0.2631*** | 0.0857*** | | -0.1426*** | -0.0071 | |
| | (11.52) | (3.04) | | (-31.73) | (6.73) | | (-17.05) | (-0.62) | |
| $SO$ | | | 0.3420*** | | | 0.7121*** | | | -0.1501 |
| | | | (3.52) | | | (8.34) | | | (-0.97) |
| $TopAbsSUE$ | 0.0694*** | 0.0361*** | 0.0273*** | 0.0773*** | 0.0914*** | 0.0600*** | 0.0859*** | 0.0702*** | 0.0460*** |
| | (6.32) | (3.42) | (3.99) | (7.39) | (8.88) | (11.12) | (9.27) | (7.85) | (10.41) |
| $TopAbsSUE \times HighSO$ | -0.0333** | -0.0214* | | -0.0628*** | -0.0972*** | | -0.0338*** | -0.0599*** | |
| | (-2.42) | (-1.66) | | (-5.14) | (-7.99) | | (-3.05) | (-5.65) | |
| $TopAbsSUE \times SO$ | | | -0.0854 | | | -0.4736*** | | | -0.6467*** |
| | | | (-1.00) | | | (-5.66) | | | (-4.65) |
| Controls | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Adj. $R^2$ | 0.006 | 0.297 | 0.304 | 0.014 | 0.235 | 0.223 | 0.007 | 0.243 | 0.238 |
| Obs. | 56,750 | 52,583 | 87,012 | 169,261 | 154,698 | 260,209 | 136,057 | 126,051 | 210,235 |
| Stock FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Quarter FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Day-of-week FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |
| Month-of-Year FE | No | Yes | Yes | No | Yes | Yes | No | Yes | Yes |

## Table IA.17: IV Regressions: Sustainable Ownership Based on E Scores

This table presents the results from the first and second stages of the IV regressions. We define a stock's shift-share Bartik exposure as $Z_{n,t} = \sum_{i\in\mathcal{S}} s_{n,i,t-1} f_{i,t-1}$, where $f_{i,t-1}$ represents investor $i$'s net capital flow between quarter $t-2$ and $t-1$, and $s_{n,i,t-1}$ denotes the fraction of shares outstanding of stock $n$ held by investor $i$. We instrument the two endogenous regressors $\left(\text{HighSO}_{n,t}, \text{TopSUE}_{n,t} \times \text{HighSO}_{n,t}\right)$ with the pair $\left(Z_{n,t},\ \text{TopSUE}_{n,t} \times Z_{n,t}\right)$. The first-stage regressions are: $\text{HighSO}_{n,t} = \alpha_1 Z_{n,t} + \alpha_2\left(\text{TopSUE}_{n,t} \times Z_{n,t}\right) + \alpha_3 \text{TopSUE}_{n,t} + X_{n,t}^{\top}\alpha + \psi_n + \psi_t + u_{n,t}$, and $\text{TopSUE}_{n,t} \times \text{HighSO}_{n,t} = \delta_1 Z_{n,t} + \delta_2\left(\text{TopSUE}_{n,t} \times Z_{n,t}\right) + \delta_3 \text{TopSUE}_{n,t} + X_{n,t}^{\top}\delta + \psi_n + \psi_t + v_{n,t}$. The second-stage regression is: $R_{n,t}^{(0,0)} = \phi_1\ \text{TopSUE}_{n,t} + \beta_2\ \text{HighSO}_{n,t} + \beta_3\left(\text{TopSUE}_{n,t} \times \text{HighSO}_{n,t}\right) + \Gamma' X_{n,t} + \psi_n + \psi_t + \varepsilon_{n,t}$, where $\psi_n$ and $\psi_t$ are stock and quarter fixed effects. Announcements are grouped into 11 quantiles based on the sign and level of the earnings surprise (SUE). Quantiles 1 to 5 correspond to negative surprises, quantile 6 to zero surprises, and quantiles 7 to 11 to positive surprises. The regressions are estimated using only observations in SUE quantiles 1 and 11. *TopSUE* is a dummy that equals one for positive earnings surprises (top SUE quantile) and zero for negative surprises (bottom SUE quantile). *SO* is a continuous variable standing for a stock's sustainable ownership, defined as the fraction of total shares outstanding held by sustainable investors. Sustainable investors are those with a portfolio-level E (Environmental) score (averaged over the time series, *time-invariant score* for each investor) in the top 30% of its distribution across all investors. *HighSO* is a dummy variable that equals 1 (or 0) if a stock's sustainable ownership is in the top (bottom) 30% of the *SO* distribution across all stocks in a given quarter, and regressions with *HighSO* are estimated using only these top and bottom quantiles. Control variables, $X_{n,t}$, include market capitalization, earnings surprise, book-to-market ratio, number of covering analysts, number of earnings announcements on the same day, and a top market indicator (i.e., when the market return is in the top 10% of its daily return distribution across the sample period). $t$-statistics based on standard errors double-clustered by firm and calendar quarter are reported in parentheses. *,**, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

| | MSCI ESG | | | MSCI KLD | | |
|---|---|---|---|---|---|---|
| | 1st Stage | | 2nd Stage | 1st Stage | | 2nd Stage |
| Dep. Var. | *HighSO* (1) | *TopSUE* × *HighSO* (2) | $R_{n,t}^{(0,0)}$ (3) | *HighSO* (4) | *TopSUE* × *HighSO* (5) | $R_{n,t}^{(0,0)}$ (6) |
| *BARTIK* | 0.5684*** | -0.5666*** | | 0.6477*** | -0.7072*** | |
| | (6.27) | (-5.76) | | (10.57) | (-15.65) | |
| *TopSUE* × *BARTIK* | -0.0711 | 1.2970*** | | -0.3173*** | 1.1872*** | |
| | (-0.89) | (11.02) | | (-5.21) | (24.22) | |
| *HighSO* | | | 0.0117 | | | 0.0026 |
| | | | (0.31) | | | (0.18) |
| *TopSUE* × *HighSO* | | | -0.0474** | | | -0.0385*** |
| | | | (-2.28) | | | (-3.74) |
| *TopSUE* | -0.0344** | 0.4457*** | 0.0607*** | -0.0042 | 0.6118*** | 0.0552*** |
| | (-2.01) | (20.33) | (4.42) | (-0.46) | (66.85) | (7.42) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs. | 9,965 | 9,965 | 9,965 | 31,400 | 31,400 | 31,400 |
| KP rk F | | | 29.544 | | | 135.561 |
| KP rk LM | | | 74.380 | | | 357.290 |
| KP rk LM p | | | 0.000 | | | 0.000 |
| SW F (HighSO) | | | 29.64 | | | 128.35 |
| SW F (TopSUE * HighSO) | | | 64.43 | | | 358.09 |

## Table IA.18: GMM Estimation Results: Alternative Growth Rates

This table presents the pre-estimation payout-growth tests (Panel A) and the GMM estimation results (Panel B) when the horizon is 7 years, with different growth rates (g = 0.03, 0.04, and 0.05). The results with growth rate g=0.04 in columns (2), (5), and (8) correspond to the results in columns (3), (6), and (9) of Table 4, respectively.

| | MSCI KLD, ESG Scores | | | MSCI KLD, E Scores | | | Refinitiv, ESG Scores | | |
|---|---|---|---|---|---|---|---|---|---|
| | g = 0.03 | g = 0.04 | g = 0.05 | g = 0.03 | g = 0.04 | g = 0.05 | g = 0.03 | g = 0.04 | g = 0.05 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| **Panel A: Joint tests from payout-growth predictive regressions** | | | | | | | | | |
| $H_0: \ \beta_{1,1} = \cdots = \beta_{1,H} = 0$ *(no payout predictability from* SUE*)* | | | | | | | | | |
| $F$-statistics | 2.90 | 2.90 | 2.90 | 3.69 | 3.69 | 3.69 | 3.16 | 3.16 | 3.16 |
| $p$-value | 0.0050 | 0.0050 | 0.0050 | 0.0005 | 0.0005 | 0.0005 | 0.0024 | 0.0024 | 0.0024 |
| $H_0: \ \beta_{2,1} = \cdots = \beta_{2,H} = 0$ *(no incremental effect of* SUE $\times$ *HighSO)* | | | | | | | | | |
| $F$-statistics | 1.06 | 1.06 | 1.06 | 0.84 | 0.84 | 0.84 | 1.09 | 1.09 | 1.09 |
| $p$-value | 0.3885 | 0.3885 | 0.3885 | 0.5505 | 0.5505 | 0.5505 | 0.3691 | 0.3691 | 0.3691 |
| **Panel B: GMM estimation** | | | | | | | | | |
| $r$ | 0.1028*** | 0.1168*** | 0.1311*** | 0.0847*** | 0.0948*** | 0.1075*** | 0.0626*** | 0.0743*** | 0.0860*** |
| | (3.80) | (4.06) | (4.28) | (5.05) | (5.68) | (6.13) | (6.68) | (7.52) | (8.27) |
| $r_{\text{sust}}$ | -0.0353** | -0.0372** | -0.0393** | -0.0210*** | -0.0209** | -0.0220** | -0.0085* | -0.0090* | -0.0094* |
| | (-2.43) | (-2.41) | (-2.39) | (-2.59) | (-2.56) | (-2.55) | (-1.76) | (-1.76) | (-1.75) |
| $\phi_1$ | 0.0038*** | 0.0038*** | 0.0038*** | 0.0048*** | 0.0048*** | 0.0048*** | 0.0051*** | 0.0051*** | 0.0051*** |
| | (3.22) | (3.22) | (3.22) | (3.70) | (3.70) | (3.70) | (2.59) | (2.59) | (2.59) |
| $\phi_2$ | 0.0068*** | 0.0068*** | 0.0068*** | 0.0094*** | 0.0094*** | 0.0094*** | 0.0135*** | 0.0135*** | 0.0135*** |
| | (3.73) | (3.73) | (3.73) | (4.98) | (4.98) | (4.98) | (4.45) | (4.45) | (4.45) |
| $\phi_3$ | 0.0090*** | 0.0090*** | 0.0090*** | 0.0104*** | 0.0104*** | 0.0104*** | 0.0171*** | 0.0171*** | 0.0171*** |
| | (3.72) | (3.72) | (3.72) | (4.26) | (4.26) | (4.26) | (4.22) | (4.22) | (4.22) |
| $\phi_4$ | 0.0113*** | 0.0113*** | 0.0113*** | 0.0115*** | 0.0115*** | 0.0115*** | 0.0207*** | 0.0207*** | 0.0207*** |
| | (3.75) | (3.75) | (3.75) | (3.69) | (3.69) | (3.69) | (4.00) | (4.00) | (4.00) |
| $\phi_5$ | 0.0078** | 0.0078** | 0.0078** | 0.0096** | 0.0096** | 0.0096** | 0.0180*** | 0.0180*** | 0.0180*** |
| | (2.08) | (2.08) | (2.08) | (2.49) | (2.49) | (2.49) | (2.92) | (2.92) | (2.92) |
| $\phi_6$ | 0.0121*** | 0.0121*** | 0.0121*** | 0.0137*** | 0.0137*** | 0.0137*** | 0.0246*** | 0.0246*** | 0.0246*** |
| | (2.70) | (2.70) | (2.70) | (2.94) | (2.94) | (2.94) | (3.47) | (3.47) | (3.47) |
| $\phi_7$ | 0.0156*** | 0.0156*** | 0.0156*** | 0.0147*** | 0.0147*** | 0.0147*** | 0.0281*** | 0.0281*** | 0.0281*** |
| | (2.97) | (2.97) | (2.97) | (2.69) | (2.69) | (2.69) | (3.51) | (3.51) | (3.51) |
| Hansen J (Chi2) | 9.1983 | 9.1983 | 9.1983 | 10.3644 | 10.7704 | 10.7660 | 11.5568 | 11.5568 | 11.5568 |
| Hansen J p-value | 0.2387 | 0.2387 | 0.2387 | 0.1688 | 0.1490 | 0.1492 | 0.1161 | 0.1161 | 0.1161 |
| Obs. | 103,481 | 103,481 | 103,481 | 96,425 | 96,425 | 96,425 | 65,849 | 65,849 | 65,849 |