ESG as Credibility Capital: Earnings Announcements and Market Reactions

Axel Södergren* & Robin Jörgensen†

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Abstract

This thesis tests whether ESG performance influences stock market reactions to earnings announcements among Swedish listed firms from 2016 to 2025. The analysis distinguishes a mispricing channel, under which ESG captures underappreciated firm quality revealed through earnings surprises, from a credibility channel, under which high ESG firms produce more reliable earnings signals. The earnings response coefficient (ERC) rises significantly with ESG scores, with a one-standard-deviation increase raising the implied ERC by approximately 38 percent. The effect survives controls for analysts in the immediate window, strengthens after excluding the COVID-19 years, and disappears in a pre-announcement placebo window. The mispricing channel finds no support: high ESG firms do not earn higher abnormal returns, and analysts do not systematically underestimate their earnings. In a market with high institutional ESG integration, ESG functions as credibility capital rather than as underappreciated firm quality.

Keywords: ESG, earnings announcements, earnings response coefficient, credibility

Supervisor: Anders Anderson, Associate Professor, Department of Finance

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*42884@student.hhs.se

†25391@student.hhs.se

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1 Introduction

In recent years, Environmental, Social, and Governance (ESG) considerations have become increasingly important in financial markets. Investors, regulators, and firms themselves increasingly emphasize sustainability-related performance and disclosure. ESG scores are commonly used as summary measures of firms' management of long-term risks, stakeholder relationships, and governance quality. Despite their growing prominence, the mechanisms through which financial markets incorporate ESG-related information into stock prices, particularly when new firm-specific information arrives, remain actively debated. This thesis examines whether ESG scores influence stock market reactions to earnings announcements in the Swedish equity market.

A central challenge in assessing ESG performance is that it reflects organizational qualities, including corporate culture, stakeholder trust, governance quality, and long-term risk management, that are not captured in standard accounting statements. ESG is not itself an intangible asset in the formal accounting sense; it does not appear on the balance sheet as R&D or advertising capital does. But it shares the central economic feature of intangible firm quality: it is informative about future cash flows, yet difficult for outside investors to quantify from financial reports alone. Financial markets have long struggled with such characteristics. Edmans (2011) provides the most directly relevant evidence, documenting that firms with high employee satisfaction, another firm attribute that is informative but not recognized on the balance sheet, subsequently experience more positive earnings surprises and stronger stock price reactions around earnings announcements. The broader interpretation is that firm-quality characteristics outside the accounting statements generate real economic benefits that are only gradually incorporated into prices as new information becomes available.

Applied to ESG, the Edmans (2011) mechanism predicts that if ESG performance reflects firm quality that analysts fail to fully appreciate, high ESG firms should generate systematically more positive earnings surprises and earn higher abnormal returns around announcements. A distinct and equally plausible alternative is the credibility channel. Under this view, high ESG firms are not systematically mispriced; rather, their stronger governance and disclosure practices make their earnings signals more reliable, causing the market to react more strongly to a given earnings surprise. Distinguishing these two channels empirically is the central contribution of this thesis.

The Swedish setting is informative for this distinction. Swedish listed firms operate under mandatory sustainability reporting requirements, and domestic institutional investors, including the national pension funds AP1 through AP4, have long integrated ESG criteria into portfolio construction (Council on Ethics of the AP Funds, 2026). This stands in contrast to the US market during the period studied by Edmans (2011), when employee satisfaction was an obscure and non-standardized measure that institutional investors were not routinely tracking. In a market where ESG is structurally embedded in investment practice, sophisticated analysts are less likely to systematically underestimate the earnings potential of high ESG firms, weakening the prior on the mispricing channel and shifting probability toward credibility as the operative mechanism.

Using ESG scores from the LSEG database together with earnings announcement data, analyst forecasts, and daily stock returns, the analysis employs a standard event study methodology to measure Cumulative Abnormal Returns (CAR) around earnings announcements. Cross-sectional regressions then test whether ESG scores influence the relationship between earnings surprises and market reactions through three complementary tests: whether high ESG firms earn higher CARs (H1), whether they generate more positive earnings surprises (H2), and whether ESG amplifies the market's reaction to a given unit of earnings news (H3).

The main finding is strong and robust evidence for the credibility channel (H3): the Earnings Response Coefficient (ERC) increases significantly with ESG scores, an effect that strengthens after controls are included, survives exclusion of the COVID-19 years, and disappears in a pre-announcement placebo window. A one-standard-deviation increase in ESG raises the implied ERC by approximately 38 percent over the $[-1, +1]$ window, and a non-parametric quartile split shows the ERC rising from 0.67 in the lowest ESG quartile to 2.25 in the highest. Heterogeneity analyses confirm that the effect operates across the size distribution. By contrast, neither H1 nor H2 receives empirical support: high ESG firms do not earn unconditionally higher announcement returns, and analysts do not systematically underestimate their earnings. Although ESG and earnings surprises appear positively correlated in the raw data, this association disappears once firm size is controlled for; the apparent ESG effect runs entirely through the correlation between ESG and market capitalization. Taken together, these findings indicate that ESG functions as credibility capital in the Swedish market: it does not generate systematic mispricing but it does amplify how investors respond to earnings news.

By focusing on short-horizon announcement effects rather than long-term returns, this thesis contributes to the literature on ESG and market efficiency in three ways. First, the analysis provides a direct test of the Edmans (2011) mispricing framework in a non-US market with high institutional integration of ESG and documents its failure: the channel does not generalize to a setting in which ESG is already systematically analyzed and priced. This suggests that the mechanism is conditional on informational conditions rather than universal. Second, this thesis documents a robust credibility channel through which ESG amplifies ERC. The channel is theoretically grounded in the perceived-quality framework of Teoh and Wong (1993), which establishes that investors place greater weight on earnings signals that they perceive as more credible, and supported by the disclosure evidence in Dhaliwal et al. (2011), which shows that ESG reporting reduces information asymmetry and analyst forecast errors; Collins and Kothari (1989) provide the broader evidence that ERCs vary systematically across firm characteristics. Third, the event study design, with a pre-announcement placebo window and analyst-coverage controls, provides a sharper identification test than the panel approach used in prior ESG-ERC work, and a three-test structure that allows clean decomposition of ESG effects at earnings announcements into mispricing and credibility components.

2 Literature Review and Theoretical Framework

This section develops the theoretical foundations of the thesis through two parallel channels. Section 2.1 establishes that ESG scores capture economically relevant firm characteristics. Section 2.2 introduces the Edmans (2011) framework and develops the mispricing channel: intangible firm quality may not be immediately capitalized by the market and only becomes visible through earnings news. Section 2.3 reviews the event study and the ERC literature that motivates the credibility channel, under which ESG affects how the market processes a given earnings signal rather than what is reported. Section 2.4 connects ESG to this credibility mechanism through the disclosure and governance literature. Section 2.5 then derives the three hypotheses that empirically distinguish between the two channels.

2.1 ESG Scores and Firm Value

The concept of ESG performance has its roots in the stakeholder theory of the firm introduced by Freeman (1984), which challenges the traditional shareholder-centric view articulated by Friedman (1970). Where Friedman argued that a corporation's sole responsibility is to maximize profits for its shareholders, Freeman contends that firms bear responsibility toward all parties affected by their operations: employees, customers, communities, and the environment. This theoretical tension forms the context in which the financial implications of ESG performance have been debated.

From a valuation perspective, two competing views exist on whether ESG investment benefits shareholders. The first, rooted in the Friedman tradition, holds that expenditure on ESG activities represents a misallocation of capital, resources that could be returned to investors are instead directed toward social or environmental objectives, reducing firm value. The second view, consistent with stakeholder theory, argues that strong ESG practices generate tangible economic benefits including reduced regulatory and reputational risk, stronger stakeholder relationships, lower cost of capital, and greater organizational resilience during periods of market stress.

Lins et al. (2017) provide compelling evidence that firms with high corporate social responsibility scores outperformed their peers by four to seven percentage points during the 2008 to 2009 financial crisis, consistent with ESG functioning as a form of social capital that generates stakeholder trust precisely when it is most valuable. Eccles et al. (2014) examine a sample of 180 US companies and find that corporations that voluntarily adopted sustainability policies exhibit fundamentally different organizational processes and by 2009, significantly better long-term stock market performance than matched low-sustainability counterparts. Their analysis provides evidence that ESG practices are associated with better financial outcomes rather than being merely a proxy for other firm characteristics.

The large-scale meta-analysis by Friede et al. (2015), synthesizing findings from over 2,000 empirical studies, concludes that approximately 90 percent report a non-negative relationship between ESG performance and corporate financial outcomes. More recently, Pedersen et al. (2021) develop an equilibrium asset pricing model in which ESG scores serve a dual role. They capture fundamental information about firm quality and reflect investor preferences for responsible investment. Their model predicts that ESG-aware investors earn higher risk-adjusted returns than uninformed investors, not because ESG carries a risk premium per se, but because high ESG scores proxy for underlying firm characteristics that the market has not yet fully priced.

A key challenge in this literature concerns the measurement of ESG performance. Berg et al. (2022) document substantial disagreement across major ESG rating providers, with pairwise correlations between agencies ranging from 0.38 to 0.71, a stark contrast to the near-perfect agreement observed among credit rating agencies. This divergence stems primarily from differences in measurement methodology rather than from the choice of ESG categories and has important implications for empirical work: results may be sensitive to the rating provider used. This paper relies on ESG scores from LSEG, one of the most widely used providers in academic literature, and acknowledges that measurement noise inherent in any single-provider score may attenuate estimated effects toward zero.

2.2 Intangibles, Mispricing, and Market Efficiency

The efficient market hypothesis, formalized by Fama (1970), posits that in a semi-strong efficient market, prices reflect all publicly available information. Under this view, any publicly observable firm characteristic, including ESG performance, should be immediately and fully capitalized into stock valuations, leaving no room for systematic excess returns based on observable signals.

However, evidence documents systematic underpricing of a specific category of firm value, intangible assets. Chan et al. (2001) and Lev and Sougiannis (1996) show that firms with high R&D expenditures earn excess long-run returns, consistent with the market failing to fully incorporate the future economic benefits of innovation. Analogous patterns have been documented for advertising expenditures, patent citations, and software development costs. The common explanation offered across these studies is that intangibles are inherently difficult to value using traditional accounting-based methodologies. Because intangible investments are typically expensed rather than capitalized on the balance sheet, they are invisible to investors relying on standard financial statements, a structural feature that creates scope for systematic mispricing.

The most directly relevant study for this paper is Edmans (2011), who examines whether employee satisfaction is fully priced by the equity market. Using the Fortune Magazine list of the 100 Best Companies to Work For in America as an output-based measure of employee satisfaction, Edmans constructs a value-weighted portfolio and documents an annual four-factor alpha of 3.5 percent over the period 1984 to 2009, and 2.1 percent above industry-matched benchmarks. This outperformance persists even after 1998, when the list was widely publicized in Fortune, directly challenging the lack-of-information hypothesis, the conventional explanation that intangibles are mispriced simply because investors are unaware of them. Edmans concludes that even salient, publicly available information about intangible firm quality is not immediately capitalized by the market.

The mechanism through which mispricing is eventually corrected is central to the Edmans (2011) framework. He documents that firms with high employee satisfaction generate significantly more positive earnings surprises than matched firms and earn 0.36 percent higher abnormal returns at earnings announcements than firms of similar size and book-to-market, implying approximately 1.4 percent per year across four quarterly announcements. His interpretation is that intangible firm quality does not directly affect the stock price when it is first observed; instead, it only becomes visible to the market when it subsequently manifests in tangible financial outcomes, such as stronger-than-expected earnings. Earnings announcements serve as the mechanism through which the market updates its beliefs about the value of underlying intangibles.

Applied to ESG, this framework yields a sharp prediction. If ESG captures genuine but underappreciated firm quality, high ESG firms should generate systematically more positive earnings surprises, as analysts anchored to financial history fail to incorporate the value of strong ESG practices, and should earn higher announcement returns when this quality manifests in reported earnings. Whether these conditions hold outside the US setting that Edmans studied is an open empirical question. Swedish listed firms operate under mandatory sustainability reporting requirements, and institutional investors, including the national pension funds AP1 through AP4, have long integrated ESG criteria into portfolio construction (Council on Ethics of the AP Funds, 2026). In such an environment, the informational conditions that allowed employee satisfaction to be systematically mispriced are substantially weaker for ESG, motivating a direct test of whether the Edmans mispricing prediction extends to the Swedish market.

2.3 Earnings Announcements and Market Reactions

The information content of earnings announcements has been a central topic in financial economics since Ball and Brown (1968), who were among the first to demonstrate that accounting earnings carry value-relevant information. Using a sample of US firms, they showed that stock prices adjust systematically in the direction of earnings news in the months surrounding the announcement. This finding established earnings announcements as significant informational events. Beaver (1968) complements this by documenting a sharp increase in both trading volume and return variability in the week of earnings releases, consistent with the arrival of new information that prompts investors to revise their valuations.

The standard methodology for measuring market reactions to earnings announcements is the event study, formalized by Brown and Warner (1985) for daily return applications and reviewed by MacKinlay (1997). The approach involves estimating a model of expected returns over a pre-event estimation window and then measuring cumulative deviations from these expected returns around the announcement date. This methodology has become the dominant approach in literature due to its transparency, replicability, and relatively weak assumptions about market structure.

A persistent anomaly in this literature is Post-Earnings Announcement Drift (PEAD), first documented by Ball and Brown (1968) and examined in depth by Bernard and Thomas (1989) and Bernard and Thomas (1990). PEAD refers to the tendency of stock prices to continue drifting in the direction of the earnings surprise for weeks or months following the announcement, consistent with investors underreacting to earnings news. Fama (1998) acknowledges PEAD as among the most robust challenges to market efficiency. Livnat and Mendenhall (2006) confirm that the PEAD phenomenon remains economically significant in more recent data, with drift magnitudes comparable to those documented in the original studies.

The magnitude of the market's reaction to a given earnings surprise is commonly captured through the ERC, which measures the sensitivity of announcement returns to unexpected earnings. Collins and Kothari (1989) establish that ERCs vary systematically with firm size, growth opportunities, and systematic risk, demonstrating that the market's sensitivity to earnings news is a function of underlying firm characteristics rather than a uniform constant. Building on this foundation, Teoh and Wong (1993) provide the evidence that ERCs also vary with perceived earnings quality: firms audited by higher-quality auditors exhibit larger ERCs, consistent with investors placing greater weight on more credible earnings signals. These two contributions together provide the conceptual foundation for the credibility hypothesis tested in this thesis: if ESG performance is a firm-level attribute that affects perceived earnings credibility, it should be reflected in cross-sectional variation in ERCs.

2.4 ESG Performance, Information Asymmetry, and Earnings Credibility

The credibility channel operates through a specific mechanism. When investors revise their valuation of a firm following an earnings announcement, the size of that revision depends not only on the magnitude of the earnings surprise but also on how reliable the announcement is perceived to be. Earnings reports from firms with credible reporting are treated as a more informative indicator of underlying firm value, and the market therefore responds more strongly to a given unit of unexpected earnings. This is conceptually distinct from the Edmans (2011) mispricing channel: mispricing operates on what is reported (the market is surprised because it underestimated firm quality), whereas credibility operates on how a given report is processed (holding the surprise constant, more credible reporters generate larger price responses). The two channels can coexist but produce empirically distinguishable predictions.

The disclosure literature establishes that ESG performance plausibly improves credibility. Healy and Palepu (2001) document that voluntary corporate disclosure reduces information asymmetry between managers and outside investors and lowers the cost of capital, building on the framework of Myers and Majluf (1984). Lang and Lundholm (1996) show that firms with more informative disclosure policies attract greater analyst following and produce more accurate forecasts. Applied to ESG specifically, Dhaliwal et al. (2011) find that the initiation of standalone CSR reporting reduces analyst forecast errors and the cost of equity capital, and Kim et al. (2012) show that CSR performance is positively associated with earnings quality. Ball et al. (2012) document that audited financial reporting and voluntary disclosure act as complements: firms with higher reporting quality also produce more credible voluntary disclosures, suggesting that ESG reporting from firms with stronger reporting infrastructure carries greater informational weight.

The governance dimension of ESG operates through a parallel channel. As reviewed in Dechow et al. (2010), weak governance is associated with greater earnings management and lower reporting quality, and Byard et al. (2006) document that strong governance improves analyst forecast accuracy. Spence (1973) provides the theoretical lens: high ESG ratings, assessed by independent agencies and requiring sustained organizational investment, function as costly signals of governance and reporting quality that the market can use to calibrate the credibility of subsequent earnings reports.

Direct empirical evidence supports the prediction that credibility amplifies ERCs. Pevzner et al. (2015) show that the ERC is larger in countries with stronger investor protection and more developed institutional environments, and Wei and Zhang (2023) document the firm-level analog: firms in regions with lower societal trust experience weaker price reactions to earnings news. The most recent ESG-specific evidence comes from Wang et al. (2024), who document in a panel of US firms that higher ESG scores are associated with more pronounced announcement returns per unit of earnings surprise. Together with the disclosure and governance evidence above, these studies support the prediction that ESG performance, by signaling credibility, amplifies the market response to earnings news.

2.5 Hypothesis Development

The theoretical framework developed in the preceding sections gives rise to three testable hypotheses. The first concerns the market's immediate reaction to earnings announcements, the second the systematic pattern of earnings surprises across firms with different ESG profiles, and the third the differential market response per unit of surprise that distinguishes the credibility channel from the mispricing channel.

Both the Edmans (2011) mispricing channel and the credibility channel predict that high ESG firms earn higher abnormal returns around earnings announcements. Under the mispricing view, ESG captures genuine but underappreciated firm quality that only becomes visible to the market when financial results are released, generating positive announcement return as the market updates its beliefs. Under the credibility view, high ESG firms produce more informative earnings signals that the market reacts to more strongly. Irrespective of which mechanism dominates, both predict:

H1: *Firms with higher ESG scores earn higher cumulative abnormal returns around* *earnings announcements than firms with lower ESG scores.*

The second hypothesis follows directly from the Edmans (2011) framework and is the critical test that distinguishes the mispricing channel from the credibility channel. If ESG captures genuine but systematically underappreciated firm quality, the market should consistently underestimate the future earnings of high ESG firms. This would manifest as systematically more positive earnings surprises for high ESG firms relative to low ESG firms, as analysts anchored to historical performance fail to fully account for the value of strong ESG practices. Edmans documents this pattern for employee satisfaction: Best Companies firms generate significantly more positive earnings surprises than matched firms. The analog in this study is:

H2: *Firms with higher ESG scores generate more positive earnings surprises than firms with lower ESG scores.*

The third hypothesis follows from the credibility channel and constitutes the primary contribution of this paper. The evidence reviewed in Section 2.4 establishes that ESG performance is associated with stronger governance, more reliable financial reporting, and reduced information asymmetry. If investors recognize these characteristics, they should place greater weight on earnings announcements from high ESG firms, reacting more strongly to a given unit of surprise. Holding the surprise constant, the market reaction should be larger for firms with stronger ESG performance.

H3: *Firms with higher ESG scores exhibit a larger earnings response coefficient, reflecting amplification of earnings credibility through ESG-related governance quality and trust signals.*

Jointly, the three hypotheses identify which channel operates. Support for H2 is the discriminating signature of mispricing: only the mispricing channel predicts that analysts systematically underestimate the earnings of high ESG firms. Support for H3 in the absence of H2 is the signature of credibility: the market reacts more strongly to a given earnings surprise from high ESG firms without those surprises being systematically positive, consistent with investors weighing earnings news from credible reporters more heavily rather than being surprised by the level of earnings itself. H1 is consistent with either channel and is therefore not diagnostic in isolation; it serves as a joint test of whether ESG affects announcement returns through any pathway.

3 Data and Methodology

This section describes the data and empirical methodology used to test the three hypotheses developed in Section 2.5. Section 3.1 introduces the data sources and the construction of the main variables. Section 3.2 outlines the sample selection criteria, and Section 3.3 reports descriptive statistics for the final sample. Section 3.4 describes the ESG data in detail. Section 3.5 presents the empirical methodology. Section 3.6 details the control variables included in all specifications, Section 3.7 the robustness tests, and Section 3.8 the heterogeneity analyses.

3.1 Data

The dataset covers quarterly earnings announcements by Swedish-listed firms from 2016 to 2025. ESG scores are obtained from LSEG. All other data are obtained from Capital IQ, including consensus analyst earnings forecasts, realized earnings per share, the number of analyst estimates, daily stock prices, daily values of the OMX Stockholm All-Share Index (OMXSPI), and firm-level fundamentals (market capitalization, total debt, total assets, return on assets, and sector classification). OMXSPI serves as the market benchmark in the event study. All monetary values are denominated in Swedish kronor (SEK).

Daily stock prices and OMXSPI values are collected from January 1, 2015, through December 31, 2025, with the additional year of data preceding the study period used as input to the pre-event estimation window of the market model.

The Excel formulas used to retrieve each variable are reported in Table A.1. Values retrieved through formulas were converted to static numerical values before import to keep the dataset stable in Python, where panel construction, the event study, and all regression analyses were performed. Sources are merged on firm identifiers (ticker, ISIN) and announcement dates. Two cleaning concerns common in firm-level studies, duplicate observations and multiple share classes, are addressed at the data-retrieval stage rather than through filters in the code. The Capital IQ primary-listing ISIN is used as the firm identifier which returns the primary share class for each firm and avoids double-counting firms with multiple listings. Quarterly fundamentals and daily prices are retrieved at one observation per firm-quarter and firm-day respectively, so the dataset contains no duplicate observations to drop. Announcement dates are aligned with the trading calendar.

3.2 Sample Selection

Even though the analysis is constructed for observations between 2016 and 2025, the sample funnel begins with the 955 firms listed on the Swedish stock market at any point between January 1, 2015, and December 31, 2025. This is to make sure stock price data for the estimation window was retrievable. Firms are required to have at least one fiscal quarter with both a reported ESG score from LSEG and an earnings announcement date from Capital IQ, reducing the set to 323 companies. For these 323 firms, the remaining variables listed in Section 3.1 are then retrieved from Capital IQ. Financial firms are excluded at this stage because differences in accounting structure and regulation affect both ESG measurement and earnings dynamics, which results in a drop of seven firms.

The 316 remaining firms generate 9,304 firm-quarter earnings announcement events. Several observation-level filters are then applied. Each announcement is mapped to its first trading day, and fiscal quarters outside the 2016–2025 study period are dropped, leaving 8,625 events. Following Edmans (2011), the earnings surprise is defined as the actual EPS minus the consensus forecast, scaled by the closing price on the day before the announcement. Observations for which the absolute price-scaled surprise exceeds 10 percent are excluded as outliers. This drops 1,750 observations, leaving 6,875 events. A further 2,200 events are dropped due to missing values on the control variables or insufficient observations in the pre-event estimation window required for the market model.

The resulting regression sample contains 4,675 firm-quarter observations across 261 firms, used in all specifications. Because ESG scores vary systematically across industries, sector fixed effects are included in every specification. Multiple earnings announcements per firm are retained, as each represents a distinct information event, and standard errors are clustered at the firm level throughout to account for within-firm correlation across events.

3.3 Descriptive Statistics

Table 1 presents summary statistics for the main variables used in the analysis. The final sample consists of 4,675 earnings announcement observations drawn from Swedish listed firms over the period 2016 to 2025. Earnings surprises are on average slightly negative (mean of -0.001). The standard deviation of 0.011 indicates meaningful variation in surprise magnitudes across observations. Cumulative abnormal returns at the primary

$[-1, +1]$ window have a mean of 0.001 and a standard deviation of 0.078, reflecting the cross-sectional dispersion in market reactions around announcement events. ESG scores are standardized to mean zero and unit variance as described in Section 3.4.

Table 1: Descriptive statistics

	N	Mean	Std	Min	p25	p50	p75	Max
Earnings surprise	4,675	−0.001	0.011	−0.047	−0.002	0.000	0.002	0.040
ESG score (std)	4,675	0.000	1.000	−2.587	−0.725	0.063	0.745	2.070
CAR $[-1, +1]$	4,675	0.001	0.078	−0.208	−0.045	0.000	0.046	0.222
CAR $[-3, +3]$	4,675	0.001	0.092	−0.255	−0.054	0.000	0.053	0.271
CAR $[-5, +5]$	4,675	0.002	0.103	−0.271	−0.058	0.000	0.061	0.307
CAR $[-10, +10]$	4,675	0.001	0.124	−0.342	−0.072	0.000	0.074	0.361
ROA	4,675	0.043	0.090	−0.429	0.022	0.045	0.077	0.297
Leverage (D/A)	4,675	0.255	0.173	0.000	0.129	0.239	0.349	0.857
ln(MCap)	4,675	9.514	1.670	5.483	8.372	9.638	10.692	12.901
Book-to-market	4,675	0.469	0.429	−0.060	0.166	0.350	0.649	2.273
Volatility	4,675	0.024	0.010	0.010	0.017	0.021	0.028	0.062

Note: The sample consists of 4,675 earnings announcement observations by Swedish listed firms over 2016 to 2025. Earnings surprise is the price-scaled surprise (actual minus consensus EPS, divided by the closing price on the day before the announcement). ESG score is standardized to mean zero and unit variance within the sample. CARs are cumulative abnormal returns over the indicated event window. All continuous variables are winsorized at the 1st and 99th percentiles.

The correlation matrix in Table 2 reveals several features of note for the empirical analysis. ESG scores are strongly correlated with firm size ($r = 0.65$), confirming the well-known tendency for larger firms to receive higher ESG ratings. ESG is also positively correlated with ROA ($r = 0.16$) and leverage ($r = 0.12$), and negatively correlated with volatility ($r = -0.39$). These correlations underscore the importance of including controls in all specifications, as the raw association between ESG and outcomes of interest may partly reflect these firm characteristics rather than ESG per se. The correlation between earnings surprise and CAR at $[-1, +1]$ is 0.19, confirming the expected positive relationship between unexpected earnings and market reactions.

Table 2: Pairwise correlations among regression variables

	ESG	**Surprise**	**CAR**$[-1, +1]$	**ROA**	**Lev**	$\ln$**(MCap)**	**B/M**	**Vol**
ESG	1	0.042	0.014	0.156	0.121	0.645	0.107	−0.390
Surprise	0.042	1	0.192	0.053	0.000	0.107	−0.052	−0.060
CAR$[-1, +1]$	0.014	0.192	1	0.027	0.029	0.016	0.012	−0.017
ROA	0.156	0.053	0.027	1	−0.039	0.334	−0.179	−0.351
Leverage (D/A)	0.121	0.000	0.029	−0.039	1	0.078	0.136	−0.100
ln(MCap)	0.645	0.107	0.016	0.334	0.078	1	−0.133	−0.495
B/M	0.107	−0.052	0.012	−0.179	0.136	−0.133	1	0.074
Volatility	−0.390	−0.060	−0.017	−0.351	−0.100	−0.495	0.074	1

Note: Pearson correlations across the main regression variables. ESG = standardized ESG score; Surprise = price-scaled earnings surprise; Leverage = debt-to-assets; ln(MCap) = log market capitalization; B/M = book-to-market; Volatility = pre-event return volatility. Sample: 4,675 firm-quarter observations.

3.4 ESG Data Description

The ESG data used in this study are obtained from the LSEG ESG database, which aggregates publicly available information on firms' environmental, social, and governance practices. The ESG score is a composite measure reflecting a firm's relative performance in managing sustainability-related risks and opportunities. These scores are widely used in academic research and by institutional investors, and serve as the primary measure of intangible organizational quality in this study, analogously to the employee satisfaction measure used by Edmans (2011).

To avoid look-ahead bias, ESG scores from the fiscal quarter preceding each earnings announcement are used. This ensures that ESG performance reflects only information available to investors at the time of the earnings release. ESG scores are treated as a continuous variable in the empirical analysis and standardized to have mean zero and unit variance within the sample period. This normalization allows regression coefficients to be interpreted in terms of changes associated with a one-standard-deviation difference in ESG performance, facilitating comparisons across specifications.

As LSEG is the sole rating provider, the measurement concerns raised by Berg et al.

(2022) translate into a study-specific limitation: provider-specific noise in the score is likely to attenuate the estimated ESG coefficients.

3.5 Empirical Methodology

The empirical strategy is structured around three complementary tests, each motivated directly by the theoretical framework developed in Section 2. The first two tests follow the Edmans (2011) framework by examining whether ESG performance is associated with higher cumulative abnormal returns around earnings announcements and with more positive earnings surprises, the two conditions that together constitute evidence of intangible mispricing. The third test examines whether ESG amplifies the market's reaction to a given unit of earnings surprise, consistent with the credibility channel identified by Teoh and Wong (1993) and supported by the disclosure evidence in Dhaliwal et al. (2011). All three tests share a common event study foundation, described below.

3.5.1 Event Study Specification

Abnormal stock returns around earnings announcements are estimated using the standard market model. For each firm i, parameters are estimated over an estimation window of $[-120, -11]$ trading days relative to the earnings announcement date:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \tag{1}$$

where $R_{i,t}$ is the return of firm i on day t, and $R_{m,t}$ is the return on the OMXSPI market index. The estimation window ends eleven days before the announcement to prevent contamination from pre-announcement information leakage. The minimum number of trading days required for estimation is 80.

The abnormal return (AR) for each firm on each event day is defined as the difference between the realized return and the return predicted by the estimated market model:

$$AR_{i,t} = R_{i,t} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{m,t}\right) \tag{2}$$

CAR are calculated by summing abnormal returns over the event window. The primary event window is $[-1, +1]$ trading days relative to the announcement date, capturing the immediate market reaction while minimizing contamination from other information releases:

$$CAR_i = \sum_{t=-1}^{+1} AR_{i,t} \tag{3}$$

In addition to the primary $[-1, +1]$ window, longer windows of $[-3, +3]$, $[-5, +5]$ and $[-10, +10]$ are used to examine post-earnings announcement drift, consistent with Bernard and Thomas (1989) and Bernard and Thomas (1990). The broader windows allow us to assess whether any initial underreaction to earnings news persists in the days following the announcement.

3.5.2 Earnings Surprise Measure

Earnings surprises are computed using analyst consensus forecasts from Capital IQ. The earnings surprise for firm i at announcement t is defined as the difference between actual and forecast EPS, scaled by the lagged stock price to ensure comparability across firms:

$$\text{Surprise}_{i,t} = \frac{EPS_{i,t}^{\text{actual}} - EPS_{i,t}^{\text{forecast}}}{Price_{i,t-1}} \tag{4}$$

The consensus forecast is the average analyst forecast for the relevant fiscal quarter as reported by Capital IQ, which aggregates the most recent forecasts available prior to the earnings release. To mitigate the influence of extreme outliers, and following Edmans (2011), observations for which the absolute price-scaled earnings surprise exceeds 10 percent of the lagged stock price are excluded.

3.5.3 Test 1: ESG and Cumulative Abnormal Returns (H1)

The first test examines whether firms with higher ESG scores earn higher CAR around earnings announcements, directly testing H1. The following cross-sectional regression is estimated:

$$CAR_{i,t} = \alpha + \beta_1 ESG_{i,t-1} + \gamma \text{Controls}_{i,t} + \delta_{\text{industry}} + \eta_{\text{year}} + \varepsilon_{i,t} \tag{5}$$

The coefficient of interest is β_1, which captures the average difference in CARs between firms with higher and lower ESG scores, controlling for observable firm characteristics. A positive and statistically significant β_1 is consistent with H1 and parallels the announcement-return result of Edmans (2011). Under the mispricing channel, $\beta_1 > 0$ reflects the market updating its valuation when ESG-related firm quality becomes visible through earnings news.

3.5.4 Test 2: ESG and Earnings Surprises (H2)

The second test examines whether firms with higher ESG scores systematically generate more positive earnings surprises, which would be consistent with intangible mispricing. If the market consistently underestimates the earnings potential of high ESG firms, this should manifest as positive earnings surprises concentrated among firms with high ESG scores. The regression is:

$$\text{Surprise}_{i,t} = \alpha + \beta_1 ESG_{i,t-1} + \gamma\text{Controls}_{i,t} + \delta_{\text{industry}} + \eta_{\text{year}} + \varepsilon_{i,t} \tag{6}$$

A positive and statistically significant β_1 would indicate that analysts systematically underestimate the future earnings of high ESG firms, precisely the pattern documented by Edmans (2011) for employee satisfaction. This result would be consistent with the mispricing channel: ESG captures genuine but underappreciated firm quality that translates into superior future earnings, which the market learns about only gradually through earnings announcements. This test distinguishes the mispricing channel from the credibility channel: the credibility channel does not predict more positive surprises per se, only stronger reactions to a given surprise.

3.5.5 Test 3: ESG–Surprise Interaction and the Earnings Credibility Channel (H3)

The third test examines whether ESG moderates the market's reaction to a given earnings surprise, the earnings credibility channel identified by Teoh and Wong (1993) and supported by the disclosure literature of Dhaliwal et al. (2011). An interaction term between ESG and earnings surprise is added to the baseline CAR regression:

$$\begin{aligned} CAR_{i,t} = \alpha &+ \beta_1 ESG_{i,t-1} + \beta_2\,\text{Surprise}_{i,t} \\ &+ \beta_3\left(ESG_{i,t-1} \times \text{Surprise}_{i,t}\right) + \gamma\text{Controls}_{i,t} + \delta_{\text{industry}} + \eta_{\text{year}} + \varepsilon_{i,t} \end{aligned} \tag{7}$$

The focal coefficient is β_3, which captures the differential market reaction to a given earnings surprise for high versus low ESG firms. A positive and significant β_3 is consistent with the credibility hypothesis: the market responds more strongly to earnings news from firms with strong ESG performance, consistent with investors treating their reported earnings as more credible and informative. In combination with the results from Tests 1 and 2, this specification allows us to decompose any observed CAR differential into a component attributable to earnings surprise magnitude and a component attributable to differential market reactions per unit of surprise.

3.6 Control Variables

All three regression specifications include a common set of control variables, selected following Edmans (2011), Collins and Kothari (1989), and Fama and French (1993). The controls and their motivations are described in Table 3 below.

Table 3: Control variable definitions and motivations

Variable	**Measure**	**Motivation**
Size	Log market capitalization	Larger firms are more covered by analysts, leading to smaller surprises and more muted reactions.
Book-to-market	Book equity divided by market equity	Value versus growth differences in information environment and expected returns.
Leverage	Total debt divided by total assets	Financial risk affects earnings volatility and market reactions.
ROA	Net income divided by total assets	Controls for underlying profitability so ESG does not proxy for firm quality via earnings level.
Volatility	Std. dev. of daily returns over $[-120, -11]$	Higher pre-event volatility implies larger expected price swings and noisier reactions to earnings news.
Sector FE	Capital IQ primary industry sector dummies	ESG scores vary systematically by industry.
Year FE	Calendar year dummies	Controls for macroeconomic conditions common across firms.

Note: Controls are lagged by one fiscal quarter. Accounting variables (ROA, leverage, book equity) are measured at the prior fiscal quarter-end. Market capitalization is measured at the prior quarter's earnings announcement date. Pre-event volatility is the standard deviation of daily returns over $[-120, -11]$ trading days. Standard errors are clustered at the firm level.

3.7 Robustness Tests

This section presents three tests designed to address alternative explanations for the credibility result documented in Test 3.

3.7.1 Analyst Coverage Controls

A natural concern with the credibility interpretation is that high ESG firms tend to be larger and more widely followed by sell-side analysts. If analyst following sharpens the price response to earnings news, the ESG × Surprise coefficient could reflect richer information environments rather than the credibility of the disclosure itself. To separate the two channels, analyst coverage is added to Test 3 as both a direct control and an interaction with the surprise.

Coverage is measured as the number of EPS estimates outstanding for the firm in the quarter preceding the announcement, sourced from Capital IQ. The variable is lagged by one quarter to mirror the treatment of ESG scores and is transformed as ln(1 + number of estimates) to reduce skewness. Firm-quarter observations without coverage data are dropped. The augmented specification is:

$$\begin{aligned} CAR_{i,t} = \alpha \; &+ \; \beta_1 ESG_{i,t-1} + \beta_2 \, \text{Surprise}_{i,t} + \beta_3 \Big(ESG_{i,t-1} \times \text{Surprise}_{i,t} \Big) \\ &+ \; \beta_4 \ln(1 + \text{Coverage}_{i,t-1}) + \beta_5 \Big(\text{Coverage}_{i,t-1} \times \text{Surprise}_{i,t} \Big) \\ &+ \; \gamma \text{Controls}_{i,t-1} + \delta_{\text{industry}} + \eta_{\text{year}} + \varepsilon_{i,t} \end{aligned} \tag{8}$$

The coefficient of interest remains β_3. If the credibility channel is genuinely about ESG and not about information environment, β_3 should retain its sign, magnitude, and significance after the coverage interaction is included. The specification is estimated across all four CAR windows ($[-1,+1]$, $[-3,+3]$, $[-5,+5]$, $[-10,+10]$) with standard errors clustered at the firm level.

3.7.2 Excluding COVID-19 Years

The sample period spans an unusual macroeconomic episode. During 2020 and 2021, earnings volatility increased, analyst forecast errors widened, and ESG-themed funds attracted record inflows. Any of these features could distort the relation between ESG scores and announcement returns and create a spurious interaction effect.

To test whether the credibility result is driven by this period, Tests 1, 2, and 3 are re-estimated on the sample with all event dates in 2020 and 2021 removed. The specifications are identical to the full-controls versions in Section 3.5, including the same set of firm-level controls, sector fixed effects, year fixed effects, and firm-clustered standard errors. Coefficients on ESG (Test 1), the ESG → Surprise link (Test 2), and the ESG × Surprise interaction (Test 3) are compared with the full-sample estimates side by side across the four event windows. If the patterns documented in the main results survive the exclusion, the findings are not an artefact of the pandemic period.

3.7.3 Pre-Event Placebo Test

The credibility interpretation implies that the ESG × Surprise interaction operates through the market response to information released at the announcement. It does not predict any relation between ESG and abnormal returns in the days before the announcement, when the earnings signal has not yet been disclosed. A non-zero interaction in a pre-event window would therefore suggest that the main result reflects pre-announcement drift, leakage, or unmodelled risk premia rather than a response to the disclosure itself.

To test this, cumulative abnormal returns are recomputed over the pre-event window $[-10, -2]$, which ends two trading days before the announcement and excludes the event window used in the main tests. The pre-event CAR is then winsorized at the 1st and 99th percentiles in line with the treatment of the main CAR variables. Two specifications are estimated on this dependent variable: the Test 1 placebo regresses pre-event CAR on ESG and controls, and the Test 3 placebo regresses pre-event CAR on ESG, Surprise, their interaction, and controls. Both specifications include sector and year fixed effects and firm-clustered standard errors. Coefficients close to zero and statistically insignificant on ESG and on ESG × Surprise are consistent with the credibility interpretation. The ESG × Surprise coefficient from the placebo window is reported alongside the event-window estimate for direct comparison.

3.8 Heterogeneity Tests

This section examines whether the patterns documented in the main tests are uniform across the sample or concentrated in identifiable subgroups. Three splits are considered: firm size, the sign of the earnings surprise, and the level of the ESG score itself.

3.8.1 Size Quartile Splits

Firm size correlates with ESG scores, analyst following, institutional ownership, and the speed at which information is impounded into prices. If the credibility effect documented in Test 3 is driven entirely by large firms, the result is consistent with information environment differences rather than a genuine ESG channel. If the effect holds across size groups, it is more robust to this concern.

The sample is split into four quartiles based on the lagged value of ln(MCap). Test 3 is re-estimated within each quartile across the four CAR windows. ln(MCap) is dropped from the control set inside the quartile regressions because it has limited within-quartile variation, and sector fixed effects are dropped because some quartile-sector cells are sparse. The remaining controls (ROA, leverage, book-to-market, volatility) and year fixed effects are retained, with standard errors clustered at the firm level. The ESG × Surprise coefficient is then compared across quartiles.

3.8.2 Good-News versus Bad-News Asymmetry

The credibility interpretation does not specify whether high ESG should amplify the price response to positive surprises, negative surprises, or both. Two related questions arise. First, does the interaction effect hold in both subsamples? Second, is the effect statistically different between good news and bad news?

These questions are addressed in two steps. The first is a sample split: Test 3 is estimated separately on the positive-surprise subsample (Surprise > 0) and the negative-surprise subsample (Surprise < 0) across all four CAR windows. Observations with zero surprise are excluded. The specifications include the full set of controls, sector fixed effects, year fixed effects, and firm-clustered standard errors.

The second step is a formal test of the asymmetry using a triple interaction estimated on the full sample. A dummy variable Negative is defined as one when Surprise is below zero and zero otherwise. The specification is:

$$\begin{aligned} CAR_{i,t} = \alpha \;+\; & \beta_1 ESG_{i,t-1} + \beta_2\,\text{Surprise}_{i,t} + \beta_3\,\text{Negative}_{i,t} \\ +\; & \beta_4\Big(ESG_{i,t-1} \times \text{Surprise}_{i,t}\Big) + \beta_5\Big(\text{Negative}_{i,t} \times \text{Surprise}_{i,t}\Big) \\ +\; & \beta_6\Big(ESG_{i,t-1} \times \text{Negative}_{i,t}\Big) + \beta_7\Big(ESG_{i,t-1} \times \text{Surprise}_{i,t} \times \text{Negative}_{i,t}\Big) \\ +\; & \gamma\text{Controls}_{i,t-1} + \delta_{\text{industry}} + \eta_{\text{year}} + \varepsilon_{i,t} \end{aligned} \tag{9}$$

In this specification, β_4 is the ESG × Surprise effect for non-negative surprises and $\beta_4 + \beta_7$ is the implied effect for negative surprises. The triple-interaction coefficient β_7 is the formal asymmetry test: a non-zero value indicates that the credibility effect differs between good news and bad news, and its sign indicates the direction. The linear combination $\beta_4 + \beta_7$ is recovered through a t-test on the estimated parameters.

3.8.3 ESG Quartile Splits

The main credibility result rests on the interaction term in a pooled regression. A complementary view is to estimate the ERC separately at different levels of ESG and compare them. If credibility increases with ESG, the ERC should rise monotonically across ESG quartiles.

The sample is split into four quartiles based on the standardized lagged ESG score. Within each quartile, CAR is regressed on Surprise alongside the full set of firm-level controls and year fixed effects, with standard errors clustered at the firm level. Sector fixed effects are dropped to avoid sparse cells within quartiles, and the ESG variable itself is removed from the specification because it has little remaining variation within a quartile. The coefficient on Surprise in each quartile regression is the ERC for that ESG level. The ERCs are then compared across quartiles at each of the four CAR windows, with the $[-1, +1]$ window serving as the primary case for the main table.

4 Results

This section presents the empirical results in four parts. Section 4.1 reports the baseline estimates for all three tests without control variables or fixed effects, establishing the raw relationships in the data. Section 4.2 introduces the full specification with controls, sector fixed effects, and year fixed effects. Sections 4.3 and 4.4 then report robustness tests and heterogeneity analyses.

4.1 Baseline Results Without Controls

The baseline specifications estimate each of the three tests in their simplest form, with no controls or fixed effects, to document the raw relationships before introducing additional structure. Results for Tests 1, 2 and 3 appear in Tables 4, 5 and 6 respectively in Section 4.2. Key coefficients across all tests in the base case and full case can be found in Table A.2.

Test 1 (H1): ESG and cumulative abnormal returns. The coefficient on the standardized ESG score is positive but statistically insignificant across all four event windows. The point estimate at $[-1, +1]$ is 0.0011 (SE 0.0010), and at $[-10, +10]$ it is 0.0021 (SE 0.0015). The R-squared values range from 0.01 to 0.03 percent, indicating that ESG alone explains almost none of the variation in announcement returns. There is no support for H1 in the baseline.

Test 2 (H2): ESG and earnings surprises. The baseline regression of price-scaled earnings surprises on lagged ESG produces a positive coefficient of 0.0004, significant at the 5 percent level (SE 0.0002). On its face this is consistent with an Edmans-style mispricing pattern, where firms with high ESG generate systematically more positive earnings surprises. The R-squared is 0.18 percent. As shown in Section 4.2, this result does not survive the addition of controls.

Test 3 (H3): ESG–surprise interaction. The interaction between ESG and earnings surprise is strongly significant at the $[-1, +1]$ window. The coefficient is 0.5812 (SE 0.1444, $p < 0.01$). The standalone earnings surprise coefficient at the same window is 1.6546, so the baseline estimate implies that a one-standard-deviation increase in ESG raises the earnings response coefficient from 1.65 to 2.24, an increase of approximately 35 percent. At longer horizons the interaction is weaker: 0.2904 ($p < 0.10$) at $[-3, +3]$, and statistically insignificant at $[-5, +5]$ and $[-10, +10]$. The standalone ESG coefficient remains near zero across all windows. The R-squared rises to 4.35 percent at the $[-1, +1]$ window, substantially above the level in Tests 1 and 2, driven entirely by the surprise and the interaction.

4.2 Full Specification with Controls and Fixed Effects

The full specification adds firm-level controls (ROA, leverage, log market capitalization, book-to-market, pre-event return volatility) along with sector and year fixed effects. This specification absorbs cross-sectional differences in firm characteristics and time-varying macroeconomic conditions, providing a more demanding test of the three hypotheses. Results for Tests 1, 2 and 3 appear in Tables 4, 5 and 6 respectively. Key coefficients across all tests in the base case and full case can be found in Table A.2.

Test 1 (H1): ESG and cumulative abnormal returns. After controls and fixed effects are added, the ESG coefficient remains statistically insignificant at the three shorter windows. The point estimate at $[-1, +1]$ is 0.0008 (SE 0.0018), and at $[-3, +3]$ it is 0.0004 (SE 0.0021). At the $[-10, +10]$ window the coefficient reaches marginal significance, with an estimate of 0.0047 (SE 0.0028, $p < 0.10$). The R-squared rises from near zero in the baseline to roughly 2.5 percent, which shows that the controls and fixed effects capture meaningful variation in announcement returns but that ESG itself adds little explanatory power. **H1 is not supported.**

Table 4: Test 1: baseline versus full specification across event windows

	[−1, +1]		[−3, +3]		[−5, +5]		[−10, +10]	
	Base	Full	Base	Full	Base	Full	Base	Full
ESG score (std)	0.0011	0.0008	0.0015	0.0004	0.0011	0.0012	0.0021	0.0047*
	(0.0010)	(0.0018)	(0.0011)	(0.0021)	(0.0013)	(0.0024)	(0.0015)	(0.0028)
ROA		0.0049		−0.0006		−0.0099		0.0014
		(0.0196)		(0.0204)		(0.0268)		(0.0331)
Leverage (D/A)		0.0157		0.0084		0.0019		0.0044
		(0.0105)		(0.0124)		(0.0133)		(0.0179)
ln(MCap)		0.0001		−0.0002		−0.0012		−0.0035**
		(0.0011)		(0.0012)		(0.0013)		(0.0017)
Book-to-market		0.0084*		0.0128**		0.0144***		0.0216***
		(0.0047)		(0.0050)		(0.0055)		(0.0064)
Volatility		−0.0183		−0.1064		0.0762		−0.0842
		(0.1813)		(0.2420)		(0.2791)		(0.3388)
N	4,675	4,675	4,675	4,675	4,675	4,675	4,675	4,675
R-squared	0.0002	0.0252	0.0003	0.0244	0.0001	0.0223	0.0003	0.0224
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Sector + Year FE	No	Yes	No	Yes	No	Yes	No	Yes

Note: OLS regression of CAR on the standardized ESG score. Base = no controls or fixed effects. Full = controls (ROA, leverage, ln(MCap), book-to-market, volatility) plus sector and year fixed effects. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Test 2 (H2): ESG and earnings surprises. The significant ESG coefficient observed in the baseline disappears in the full specification. The coefficient falls to −0.0004 (SE 0.0005), insignificant at conventional levels, while the R-squared rises from 0.18 percent to 6.81 percent as the controls and fixed effects absorb substantial variation in earnings surprises. Two controls are informative for interpretation. Log market capitalization enters positively and significantly (0.0005, $p < 0.05$), and book-to-market enters negatively (−0.0019, $p < 0.10$). The correlation between ESG and ln(MCap) in the sample is 0.65. Once observable characteristics are controlled for, the baseline positive association between ESG and earnings surprises is fully absorbed, and the residual ESG effect is statistically zero and economically negligible. **H2 is not supported.**

Table 5: Test 2: baseline versus full specification

	Baseline	Full
ESG score (std)	0.0004**	−0.0004
	(0.0002)	(0.0005)
ROA		0.0035
		(0.0034)
Leverage (D/A)		0.0000
		(0.0017)
ln(MCap)		0.0005**
		(0.0002)
Book-to-market		−0.0019*
		(0.0011)
Volatility		0.0098
		(0.0336)
N	4,675	4,675
R-squared	0.0018	0.0681
Controls	No	Yes
Sector + Year FE	No	Yes

Note: OLS regression of the price-scaled earnings surprise on the standardized ESG score. Base = no controls or fixed effects. Full = controls plus sector and year fixed effects. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Test 3 (H3): ESG–surprise interaction (credibility channel). The interaction between ESG and earnings surprise remains strongly significant in the full specification, and the point estimate increases relative to the baseline. At $[-1, +1]$ the coefficient rises from 0.5812 to 0.6549 (SE 0.1605, $p < 0.01$). The interaction is significant at every event window once controls and fixed effects are added: 0.3727 at $[-3, +3]$ ($p < 0.10$), 0.4298 at $[-5, +5]$ ($p < 0.10$), and 0.4416 at $[-10, +10]$ ($p < 0.10$). The fact that controls strengthen rather than attenuate the estimate suggests that the channel does not run through firm characteristics correlated with ESG.

The economic magnitude is substantial. The standalone Surprise coefficient at $[-1, +1]$ is 1.7035, so a one-standard-deviation increase in lagged ESG raises the implied earnings response coefficient from 1.70 to 2.36, an increase of approximately 38 percent. The Surprise coefficient also rises monotonically across event windows, from 1.70 at $[-1, +1]$ to 2.09 at $[-10, +10]$. The standalone ESG coefficient is near zero at the three shorter windows and reaches only marginal significance at $[-10, +10]$ (0.0055, $p < 0.10$), confirming that ESG does not generate abnormal returns unconditionally; it operates by amplifying the market's reaction to earnings news. **H3 is strongly supported.**

Among the control variables, book-to-market enters positively and significantly at every window in the H3 specification, with coefficients between 0.0124 and 0.0261. Log market capitalization is negative and significant at the $[-10, +10]$ window (-0.0044, $p < 0.01$). Leverage is marginally significant at $[-1, +1]$ (0.0192, $p < 0.10$) but not otherwise. ROA and volatility are insignificant throughout.

Table 6: Test 3: ESG × Surprise interaction, baseline versus full specification (credibility channel)

	[−1, +1]		[−3, +3]		[−5, +5]		[−10, +10]	
	Base	Full	Base	Full	Base	Full	Base	Full
ESG score (std)	0.0009	0.0015	0.0010	0.0011	0.0006	0.0019	0.0016	0.0055*
	(0.0010)	(0.0017)	(0.0011)	(0.0021)	(0.0013)	(0.0024)	(0.0016)	(0.0028)
Earnings surprise	1.6546***	1.7035***	1.7622***	1.8461***	1.8355***	1.9603***	1.9223***	2.0910***
	(0.1710)	(0.1828)	(0.1896)	(0.2042)	(0.2074)	(0.2241)	(0.2144)	(0.2343)
ESG × Surprise	0.5812***	0.6549***	0.2904*	0.3727*	0.3310	0.4298*	0.3469	0.4416*
	(0.1444)	(0.1605)	(0.1763)	(0.1915)	(0.2114)	(0.2268)	(0.2262)	(0.2455)
ROA		0.0042		−0.0041		−0.0133		−0.0024
		(0.0200)		(0.0204)		(0.0273)		(0.0337)
Leverage (D/A)		0.0192*		0.0103		0.0042		0.0067
		(0.0102)		(0.0123)		(0.0133)		(0.0181)
ln(MCap)		−0.0006		−0.0010		−0.0021		−0.0044***
		(0.0011)		(0.0011)		(0.0013)		(0.0017)
Book-to-market		0.0124**		0.0167***		0.0187***		0.0261***
		(0.0049)		(0.0051)		(0.0055)		(0.0067)
Volatility		−0.0342		−0.1241		0.0575		−0.1042
		(0.1795)		(0.2482)		(0.2820)		(0.3401)
N	4,675	4,675	4,675	4,675	4,675	4,675	4,675	4,675
R-squared	0.0435	0.0681	0.0367	0.0611	0.0317	0.0554	0.0241	0.0484
Controls	No	Yes	No	Yes	No	Yes	No	Yes
Sector + Year FE	No	Yes	No	Yes	No	Yes	No	Yes

Note: OLS regression of CAR on ESG, earnings surprise, and their interaction. Base = no controls or fixed effects. Full = controls plus sector and year fixed effects. The interaction ESG × Surprise is the credibility channel coefficient. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Joint interpretation of H1, H2, and H3. The pattern across the three tests yields an internally consistent conclusion. The Edmans (2011) mispricing channel does not appear to operate in the Swedish ESG context: firms with high ESG do not exhibit systematically more positive earnings surprises (H2 fails), and they do not earn unconditionally higher announcement returns (H1 fails). The credibility channel, in contrast, is strongly supported. For a given unit of earnings surprise, the market reacts significantly more strongly to earnings news from firms with high ESG (H3). This is consistent with investors treating firms with high ESG as more transparent and credible reporters, placing greater weight on their earnings signals when revising valuations. A null result on H1 and H2 combined with a significant interaction in H3 is precisely the empirical signature predicted by the credibility channel operating in isolation, without mispricing.

4.3 Robustness Tests

This section presents three robustness tests examining whether the credibility result documented in Test 3 is sensitive to specific features of the sample or specification. The tests address, in order: the possibility that ESG proxies for the information environment rather than firm credibility, the influence of the COVID-19 period, and the possibility that the interaction effect arises from pre-announcement drift rather than from the announcement itself. Full regression results for each test are reported in the Appendix.

4.3.1 Controlling for Analyst Coverage

The H3 specification augmented with $\ln(1 + \text{number of analysts})$ and its interaction with earnings surprise is reported in Table A.3, with the side-by-side comparison of the ESG × Surprise coefficient in Table A.4.

The analyst-coverage interaction is highly significant at $[-1, +1]$ (1.0007, SE 0.3117, $p < 0.01$), confirming that analyst following independently amplifies the earnings response coefficient. The ESG × Surprise interaction remains significant at the same window (0.5014, SE 0.1627, $p < 0.01$), with the point estimate falling by approximately 23 percent relative to the main specification (from 0.6549 to 0.5014). At the three longer windows the ESG interaction loses significance once coverage is included, in contrast to the main specification where it was marginally significant at every window.

The interpretation is that the ESG credibility channel and the analyst-coverage channel are partially overlapping but not identical. ESG carries credibility information beyond what analyst following captures at the immediate announcement window, but at longer horizons the two channels are not separately identifiable. The core result, that high-ESG firms generate stronger market reactions to earnings news at the announcement, survives the inclusion of coverage controls.

4.3.2 Excluding COVID-19 Years

All three tests are re-estimated on the subsample that excludes event dates in 2020 and 2021, reducing the sample from 4,675 to 3,535 observations. Results are reported in Table A.5, with the side-by-side comparison of the ESG $\times$ Surprise coefficient in Table A.6.

The credibility result holds in the reduced sample. The ESG $\times$ Surprise interaction at $[-1, +1]$ is 0.7132 (SE 0.1686, $p < 0.01$), slightly larger than the full-sample estimate of 0.6549. At $[-3, +3]$ the coefficient is 0.4027 ($p < 0.05$), an improvement in significance relative to the full-sample marginal estimate of 0.3727. At the two longer windows the coefficients are essentially unchanged (0.4261 vs. 0.4298 at $[-5, +5]$; 0.4212 vs. 0.4416 at $[-10, +10]$), with significance dropping at the longest window owing to the smaller sample. Tests 1 and 2 remain null.

The credibility channel holds in both samples, with a modestly larger point estimate at the short windows when COVID years are excluded. The main finding does not depend on the inclusion of COVID-era observations.

4.3.3 Pre-Event Placebo Tests

The same specifications are re-estimated using cumulative abnormal returns over the pre-event window $[-10, -2]$ trading days. Results are reported in Table A.7, with the side-by-side comparison of the event-window and pre-event ESG $\times$ Surprise coefficients in Table A.8.

The placebo interaction is statistically indistinguishable from zero: -0.1061 (SE 0.1275, $p = 0.41$), against an event-window estimate of 0.6549 ($p < 0.01$). The standalone Surprise coefficient in the pre-event window is positive and highly significant at 0.4059 ($p < 0.01$). The relevant placebo prediction, however, concerns the interaction, not the level. Some earnings-relevant information reaches prices before the formal announcement, but the ESG-conditional amplification does not. The additional weight placed on earnings signals from high-ESG firms materializes specifically at the announcement, not in the pre-event window.

This rules out the alternative interpretation that the credibility result is mechanically driven by pre-announcement drift correlated with ESG. The standalone ESG coefficient in the pre-event window is 0.0024 (SE 0.0015), insignificant, which is also consistent with the credibility interpretation.

4.4 Heterogeneity Analyses

This section presents three heterogeneity analyses examining whether the credibility result documented in Test 3 is uniform across the sample or concentrated in identifiable subgroups. The analyses split the sample by, in order: firm size, the sign of the earnings surprise, and the level of the ESG score. Full regression results for each test are reported in the Appendix.

4.4.1 Size Quartile Split

The sample is split into four quartiles based on the lagged value of ln(MCap), and the H3 specification is re-estimated within each quartile. Results are reported in Table A.9, with the full regression in Table A.10.

The pattern across size quartiles is not monotonic. At $[-1, +1]$, the ESG $\times$ Surprise interaction is positive and significant in Q1 (0.6225, $p < 0.01$), Q3 (1.2180, $p < 0.01$), and Q4 (1.3716, $p < 0.01$), but negative and insignificant in Q2 (-0.4791, SE 0.4920). The same pattern holds at longer windows, where Q3 and Q4 produce the largest interaction coefficients and Q2 remains anomalous. The standalone Surprise coefficient is highest in Q3 (2.2046) and lowest in Q4 (0.9006).

The credibility effect is not confined to large firms: Q1 produces a significant interaction coefficient, which would not be the case if the result were driven entirely by the information environment of large firms. The Q2 anomaly is harder to interpret. The point estimate is negative and the standard error is the largest of any quartile, suggesting limited precision rather than a genuine reversal of the credibility effect. The credibility effect is present in three of four size quartiles, with the smallest and the two largest groups producing significant positive interactions.

4.4.2 Good-News versus Bad-News Asymmetry

The H3 specification is in this test estimated separately on the positive-surprise subsample (Surprise > 0, $N = 2{,}215$) and the negative-surprise subsample (Surprise < 0, $N = 2{,}414$). A triple-interaction specification is then estimated on the full sample to test the asymmetry formally. The triple-interaction model includes ESG, Surprise, a Negative dummy, all pairwise interactions, and the three-way interaction ESG $\times$ Surprise $\times$ Negative. The three-way coefficient is the formal test: a non-zero value indicates that the credibility effect differs between good news and bad news. The implied ESG $\times$ Surprise effect for positive surprises is the ESG × Surprise coefficient (β_4); the implied effect for negative surprises is $\beta_4 + \beta_7$, where β_7 is the three-way coefficient. Results are reported in Table A.11, with the asymmetry summary in Table A.12.

The subsample regressions show that at the $[-1, +1]$ window the ESG × Surprise interaction is significant in both subsamples: 0.6754 ($p < 0.01$) for positive surprises and 0.5004 ($p < 0.05$) for negative surprises. The positive-surprise effect is also significant at $[-5, +5]$ (0.8233, $p < 0.05$) while the negative-surprise effect loses significance at all longer windows. Full results are reported in Tables A.13 and A.14.

The formal asymmetry test is the triple-interaction coefficient ESG × Surprise × Negative. This coefficient is statistically insignificant at every window: -0.2777 ($p > 0.10$) at $[-1, +1]$, -0.2140 ($p > 0.10$) at $[-3, +3]$, -0.6050 ($p > 0.10$) at $[-5, +5]$, and -0.5928 ($p > 0.10$) at $[-10, +10]$. The implied effect for positive surprises at $[-1, +1]$ is 0.6860 ($p < 0.01$), and the implied effect for negative surprises is 0.4083 ($p < 0.05$). While the point estimates suggest a stronger reaction to good news from high-ESG firms, the formal test cannot reject the null of symmetry at any window. The non-significant β_7 therefore reflects limited statistical power rather than positive evidence for symmetric credibility.

At the announcement window, the credibility channel operates in both directions: investors place greater weight on earnings signals from high-ESG firms whether the news is positive or negative. The point estimates lean toward a stronger effect for good news, but the triple-interaction test cannot distinguish among several patterns the data are consistent with: moderately stronger credibility on good news, near-symmetric credibility, or a smaller effect in the opposite direction. The two-sided pattern is, however, consistent with the credibility interpretation, which predicts that more credible reporters elicit stronger market reactions in both directions, and inconsistent with explanations relying on selective attention to positive ESG-aligned news.

4.4.3 ESG Quartile Splits

The sample is split into four quartiles based on the standardized lagged ESG score, and CAR is regressed on Surprise within each quartile, with the same firm-level controls and year fixed effects as the main specification. Results are reported in Table 7, with the full regression in Table A.15.

The pattern at the $[-1, +1]$ window is strictly monotonic. The ERC rises from 0.6731 in Q1 (low ESG) to 1.7908 in Q2, 2.0067 in Q3, and 2.2542 in Q4 (high ESG), with each estimate significant at the 1 percent level. The amplification is substantial: firms in the top ESG quartile generate an earnings response approximately 3.3 times that of firms in the bottom quartile. The progression across quartiles is smooth, with no single discontinuity driving the result, and every step from Q1 through Q4 produces a higher ERC than the one before. This is the cleanest statement of the credibility channel that the data provide: the more credible the reporter, the stronger the market reaction to a unit of earnings news.

At longer windows the strict monotonicity weakens. The Q1 ERC remains around 1.15 to 1.22, while Q2 through Q4 converge to a similar range of 1.79 to 2.37 with no clear ordering between them. The Q1 to Q4 ranking is preserved at every window, high-ESG firms always produce a larger ERC than low-ESG firms, but the intermediate quartiles become statistically indistinguishable. The bulk of the credibility-conditional response therefore materializes in the immediate announcement window, with subsequent price adjustment similar across firms above the lowest ESG level.

The number of unique firms in each quartile is uneven: 139 in Q1, 132 in Q2, 106 in Q3, and 57 in Q4, while the number of firm-quarter observations is roughly balanced (between 1,167 and 1,170). The top quartile is therefore drawn from a smaller pool of firms with longer panels, reflecting the concentration of high ESG ratings among large, established Swedish firms with continuous LSEG coverage. The Q4 estimate is identified off a narrower cross-section than the lower quartiles, and the result should be read as how the market responds to earnings news from a comparatively small group of high-ESG firms rather than from a representative sample of all listed firms.

The quartile-split result reinforces the main credibility finding through a direct and easily interpretable comparison. The 3.3-fold spread in the ERC between Q1 and Q4 at the announcement window is consistent with the magnitude implied by the pooled interaction coefficient, and the monotonic progression across the four quartiles shows that the credibility effect is not driven by an outlying group at either tail.

Table 7: Earnings response coefficient by ESG quartile across event windows

ESG Quartile	$[-1, +1]$	$[-3, +3]$	$[-5, +5]$	$[-10, +10]$
Q1 (Low ESG)	0.6731***	1.2209***	1.1664***	1.1481***
	(0.2240)	(0.2906)	(0.3809)	(0.4408)
Q2	1.7908***	1.7901***	2.0234***	2.2986***
	(0.2744)	(0.3104)	(0.3214)	(0.3415)
Q3	2.0067***	2.2761***	2.2626***	2.3712***
	(0.3219)	(0.3208)	(0.4026)	(0.4572)
Q4 (High ESG)	2.2542***	2.0296***	2.2047***	2.2773***
	(0.5127)	(0.5691)	(0.6410)	(0.5816)

Note: ERC (the Surprise coefficient) within each ESG quartile across four event windows. Controls and year fixed effects included. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

5 Discussion

This section interprets the empirical findings considering the theoretical framework developed in Section 2 and situates them within the broader literature. The discussion proceeds in three steps. First, the failure of the Edmans mispricing channel is examined and explained in light of the characteristics of the Swedish market. Second, the credibility channel finding is interpreted and situated within the prior literature, with implications for how ESG information is processed at earnings announcements. Third, the limitations of the analysis are acknowledged and directions for future research are discussed.

5.1 Why the Mispricing Channel Does Not Replicate

The null results for H1 and H2 are not merely negative findings. They are theoretically meaningful and upon reflection, expected given the context in which the study was performed. Edmans (2011) documented mispricing in the US equity market during 1984 to 2009, a period in which systematic integration of non-financial firm characteristics into equity valuations was limited, and in which employee satisfaction was an obscure and non-standardized measure that institutional investors were not routinely tracking.

The conditions for his mispricing finding were, in essence, informational: a valuable firm characteristic existed that the market had not yet learned to price.

ESG performance in the contemporary Swedish market presents a fundamentally different picture. Swedish listed firms are subject to mandatory sustainability reporting requirements, producing high and relatively uniform ESG disclosure across the market. The national pension funds AP1 through AP4, which collectively manage assets representing a substantial fraction of Swedish listed equity, have already integrated ESG criteria into their investment processes. ESG scores from providers such as LSEG are standard inputs in the portfolio construction and valuation models of domestic and international institutional investors active in the Swedish market. In this environment, the informational conditions for systematic ESG mispricing are substantially weaker than in Edmans' setting. Analysts covering Swedish firms are exposed to ESG data as a matter of course, and their earnings forecasts are likely to already incorporate the earnings implications of high ESG performance. The failure of H2 is consistent with this interpretation: the baseline positive association between ESG and earnings surprises dissolves entirely once size and other firm characteristics are controlled for, suggesting that it was the characteristics of high ESG firms, not their ESG performance per se, that drove the raw correlation.

This interpretation is consistent with the broader literature on the evolution of market efficiency with respect to non-financial information. Edmans (2011) himself notes that the employee satisfaction premium persisted even after the list became widely publicized in 1998, suggesting that awareness alone is insufficient to eliminate mispricing when the valuation implications of an intangible are genuinely uncertain. ESG, by contrast, is not merely known but actively analyzed and modeled by the very institutions that set prices in the Swedish market. The failure of the mispricing channel therefore reflects the maturity and integration of ESG in the Swedish investment ecosystem, rather than a failure of ESG to generate economic value. Ioannou and Serafeim (2015) provide direct evidence of this integration, documenting that financial analysts progressively upgraded their recommendations for high-sustainability firms over time as ESG became embedded in mainstream investment analysis.

It is worth noting that the marginal significance of the ESG coefficient at the longest event window $[-10, +10]$ in the full Test 1 specification (0.0047, $p < 0.10$) should be interpreted with caution. This is the only window at which the coefficient approaches significance, and it is not robust across the pre-event placebo test or the COVID-excluded subsample. The result is not treated as evidence of the mispricing channel but noted as a potential indication of a very weak and diffuse post-announcement drift for high ESG firms that does not survive more demanding tests.

5.2 Interpreting the Credibility Channel

The strong and robust finding for H3, that the earnings response coefficient increases with ESG scores, is the central result of this study. The economic magnitude is substantial: at the $[-1, +1]$ event window, a one-standard-deviation increase in ESG score raises the implied earnings response coefficient by approximately 38 percent (from 1.70 at the sample mean to 2.36 at one standard deviation above). The ESG quartile split confirms this pattern non-parametrically, with the ERC increasing from 0.67 in the lowest ESG quartile to 2.25 in the highest, a difference of more than 3.3 times. These magnitudes are economically meaningful and robust across multiple specifications.

The credibility interpretation is theoretically grounded in Teoh and Wong (1993), who established that investors calibrate their response to earnings news based on their assessment of earnings reliability. Firms with higher-quality auditors exhibit larger ERCs, precisely because investors place greater weight on earnings signals they trust. Our finding extends this logic to ESG performance: firms with stronger governance, greater transparency, and more comprehensive sustainability disclosure are treated as more credible reporters, causing the market to react more strongly to a given unit of earnings news.

The Dhaliwal et al. (2011) mechanism provides a complementary explanation. They document that the initiation of voluntary sustainability disclosure reduces analyst forecast errors and the cost of equity capital, consistent with ESG reporting reducing information asymmetry between the firm and outside investors. When investors have lower uncertainty about a firm's true economic state, earnings announcements carry more information per unit of surprise: the same reported number conveys a more precise signal about the firm's prospects. This is reflected in a larger ERC.

An important finding from the robustness analysis is that the ESG credibility effect survives controls for analyst coverage, though at reduced magnitude (from 0.6549 to 0.5014). The analyst coverage interaction is itself significant and large, confirming that the information environment matters for ERC. The fact that ESG retains explanatory power beyond analyst coverage suggests that ESG captures something distinct from the mere quantity of analyst attention: it reflects the quality and credibility of the information being reported, not just the number of people following the firm. This distinction is important for the interpretation of the channel. High ESG is not simply a proxy for being well-covered; it is associated with more transparent and credible disclosure practices that independently amplify the market's response to earnings news.

The pre-event placebo test provides perhaps the most compelling evidence for the identification of the credibility channel. The ESG $\times$ Surprise interaction is 0.6549 at the event window and -0.1061 at the pre-event window $[-10, -2]$. This sharp contrast rules out the most obvious alternative explanations: the effect is not driven by a general correlation between high ESG firms and above-average pre-announcement return patterns, nor by information leakage or misaligned event dates. The credibility effect is specific to the moment at which earnings information arrives.

The size heterogeneity analysis adds an important qualification. The credibility effect is significant in Q1 (small firms), Q3, and Q4 (large firms), but not in Q2. The strongest effects are in Q3 and Q4, which is consistent with the positive ESG-size correlation: larger firms tend to have higher ESG scores and more liquid markets where credibility-driven price revisions are faster and larger. However, the presence of a significant effect in the smallest size quartile is reassuring. It implies that the credibility channel is not an artifact of the large-firm characteristics that dominate the high-ESG part of the sample. The anomalous Q2 result, where the interaction is not significant, is harder to interpret. The point estimate is negative and the standard error is the largest of any quartile, suggesting limited precision rather than a genuine reversal of the credibility effect. This is a limitation of the size-quartile design discussed further in Section 5.3.

Two alternative explanations for H3 are worth considering. First, Giese et al. (2019) identify that high ESG firms tend to carry lower idiosyncratic risk and return volatility, which could mechanically concentrate price discovery in the announcement window and produce a larger measured ERC without any genuine credibility mechanism. This is partially addressed through the inclusion of pre-event return volatility as a control variable. Second, the H3 specification assumes a symmetric credibility effect across positive and negative earnings surprises. In practice, investors may treat disappointing results from high

ESG firms differently than encouraging ones: they may give credible firms more benefit of the doubt on negative surprises or may react particularly strongly to unexpected losses from apparently well-governed companies. This asymmetry is tested directly in Section 4.4.2 through both a sample split and a triple-interaction specification. The triple-interaction coefficient is statistically insignificant at every window, but the confidence interval is wide enough to accommodate both a substantially stronger reaction to good news and near-symmetric credibility; the non-significance therefore reflects limited statistical power rather than evidence of symmetry. Sharper identification of the sign asymmetry would require samples with more event observations. The governance pillar of ESG, which the theoretical literature most directly connects to reporting credibility, is not isolated in our analysis, which relies on LSEG's aggregate ESG score. Future work with pillar-level data could test whether the effect is concentrated in the governance dimension as the theory predicts.

Taken together, these findings speak directly to the literature reviewed in Section 2.4. The credibility channel documented is the firm-level analog of the regional-trust mechanism in Wei and Zhang (2023) and the cross-country investor-protection results in Pevzner et al. (2015): in each case, an external feature of the information environment scales the weight investors place on a given unit of earnings news. Our results are also consistent with the governance and disclosure literature (Dechow et al., 2010; Byard et al., 2006) which links stronger governance and broader voluntary disclosure to more informative earnings, and with Lang and Lundholm (1996) and Healy and Palepu (2001) on disclosure quality reducing information asymmetry. Relative to the prior ESG–ERC literature, which has relied on panel approaches and US samples, our event-study design with a pre-announcement placebo window and analyst-coverage controls provides a sharper identification of the credibility channel in a market where ESG is already systematically priced; the null results for H1 and H2 indicate that in this setting it is the credibility channel alone, rather than the mispricing channel of Edmans (2011), that operates. In that sense our results corroborate the broader pattern recently documented by Wang et al. (2024) in a US sample, while showing that the channel survives in a mature ESG market in which the mispricing alternative does not.

5.3 Limitations and Directions for Future Research

First, the reliance on a single ESG rating provider introduces potential measurement error. Berg et al. (2022) document that pairwise correlations between ESG rating agencies range from 0.38 to 0.71, implying that LSEG scores may not fully capture the ESG-related firm characteristics that investors actually respond to. To the extent that measurement noise attenuates the estimated effects toward zero, the true magnitude of the credibility channel may be larger or smaller than reported. Future work could test whether the findings are robust to alternative providers or to composite scores that average across multiple agencies.

Second, the sample period of 2016 to 2025 includes a rapid expansion in ESG integration by institutional investors, particularly after the Paris Agreement in 2015 and the introduction of the EU Sustainable Finance Disclosure Regulation. It is possible that the credibility channel has strengthened over time as ESG has become more central to investor analysis. Testing for time-variation in the ESG $\times$ Surprise interaction, for example by splitting the sample into pre- and post-2020 periods, would provide additional insight into the dynamics of ESG pricing.

Third, while the empirical design allows a distinction between the mispricing and credibility channels at the level of the earnings announcement, the mechanism through which ESG affects investors' perception of earnings credibility cannot be directly observed. Identifying whether the effect operates through governance quality, disclosure practices, auditor quality, or some combination of these would require more granular data on the components of ESG scores and their relationship to earnings quality measures.

Fourth, the study focuses exclusively on the Swedish equity market, which limits the generalizability of the findings. Sweden is an outlier in terms of ESG integration, and the mispricing channel may well operate in markets with less developed ESG ecosystems. A cross-country comparison that exploits variation in institutional ESG integration across markets would be a natural extension of this work and could provide causal identification of the conditions under which each channel dominates.

Fifth, the size-quartile design has limited statistical power in the intermediate quartiles. The non-significant Q2 interaction noted in Section 5.2 should be read in this light rather than as evidence against the credibility channel. A continuous interaction with size, or a finer partition that controls for within-bin ESG variation, would provide a sharper test of how the credibility effect varies along the size distribution.

Sixth, while the event-study design strengthens identification by exploiting the precise timing of earnings announcements, the analysis remains observational and cannot fully rule out omitted firm characteristics correlated with both ESG performance and earnings credibility. Future work employing quasi-experimental designs or instrumental variables could address this residual endogeneity concern more directly.

6 Conclusion

This thesis examines whether ESG performance influences stock market reactions to earnings announcements among Swedish listed firms over the period 2016 to 2025. Motivated by Edmans (2011), the analysis tests two competing channels: a mispricing channel, under which ESG captures underappreciated firm quality that becomes visible to the market through earnings surprises, and a credibility channel, under which firms with strong ESG performance produce more reliable earnings signals that investors react to more strongly.

The main findings are clear and internally consistent. The evidence strongly supports the credibility channel (H3 supported). The ERC increases significantly with ESG scores at the primary $[-1, +1]$ event window, with the interaction coefficient of 0.6549 ($p < 0.01$) implying that a one-standard-deviation increase in ESG raises the implied ERC by approximately 38 percent. The ESG quartile analysis shows that the market reacts more than three times as strongly to a given earnings surprise from a firm in the highest ESG quartile compared to the lowest. This effect survives controls for analysts in the immediate window, strengthens after excluding the COVID-19 years, and is entirely absent in a pre-announcement placebo window, confirming that it is specifically tied to the arrival of earnings information.

By contrast, the Edmans mispricing channel does not operate in the Swedish market. Firms with higher ESG scores do not earn unconditionally higher CARs around earnings announcements (H1 not supported), and analysts do not systematically underestimate their earnings potential (H2 not supported). The apparent positive association between ESG and earnings surprises in the raw data is explained entirely by the correlation between ESG and firm size: once controls are introduced, the ESG coefficient on earnings surprises turns negative and insignificant. This result is consistent with the hypothesis that the Swedish market, characterized by mandatory ESG disclosure and active institutional integration of ESG criteria, has already absorbed ESG information into prices.

The coexistence of null mispricing results and a strong credibility effect is precisely the empirical signature expected in a well-functioning, ESG-aware market. ESG is not mispriced in Sweden, but it is informative: investors treat high ESG firms as more credible reporters and adjust the weight they place on earnings news accordingly. In this sense, ESG functions as credibility capital in the Swedish equity market.

These findings contribute to the literature in three ways. First, they provide a direct test of the Edmans (2011) mispricing framework in a non-US, high-ESG-integration market and document its failure, suggesting that the mechanism is conditional on informational conditions that are absent in markets where ESG is already systematically priced. Second, they document a robust credibility channel grounded in the earnings quality literature of Teoh and Wong (1993) and Dhaliwal et al. (2011), with a sharper event study identification than prior ESG-ERC work and consistent with the broader pattern documented in US data by Wang et al. (2024). Third, they offer a methodological contribution in the form of a three-test design that allows clean decomposition of ESG effects at earnings announcements into mispricing and credibility components.

For investors and market practitioners, the findings carry a practical implication. In markets with high ESG integration, ESG does not provide a return premium through the mispricing channel, and investors should not expect to earn excess returns simply by holding high ESG firms around earnings announcements. However, ESG does affect how the market processes earnings news, which has implications for portfolio construction and risk management around announcement events: the earnings of high ESG firms carry more price impact per unit of surprise, making ESG a relevant factor in estimating announcement risk and expected return revisions.

For policymakers and regulators, the results suggest that mandatory ESG disclosure requirements and institutional integration of ESG criteria appear to have been successful in the sense that ESG information is efficiently incorporated into Swedish equity prices. This is a meaningful benchmark for evaluating the effectiveness of ESG disclosure regimes in other jurisdictions.

Future research should examine whether the credibility channel identified here extends to other markets with varying degrees of ESG integration, and whether time variation in the channel reflects the pace of institutional adoption. Testing the mispricing channel in emerging or less ESG-integrated markets, where the informational conditions identified by Edmans (2011) may still hold, would provide further insight into the conditions under which intangible mispricing persists.

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A Appendix

Table A.1: Data sources and Excel formulas

Variable	Source	Frequency	Formula
ESG score	LSEG	Firm-quarter	`TR.TRESGScore`
Earnings announcement date	Capital IQ	Firm-quarter	`SP_EARNINGS_ANNOUNCE_DATE`
Daily stock price	Capital IQ	Firm-day	`SP_PRICE_CLOSE_ADJ`
Return on assets (ROA)	Capital IQ	Firm-quarter	`IQ_ROA`
Actual earnings per share	Capital IQ	Firm-quarter	`SP_EST_ACT_EPS`
Mean analyst EPS estimate	Capital IQ	Firm-quarter	`SP_EPS_EST`
Number of analyst estimates	Capital IQ	Firm-quarter	`SP_EPS_NUM_EST`
Total debt	Capital IQ	Firm-quarter	`IQ_TOTAL_DEBT`
Total assets	Capital IQ	Firm-quarter	`IQ_TOTAL_ASSETS`
Market capitalization	Capital IQ	At announcement	`SP_MARKETCAP`
Sector classification	Capital IQ	Firm-level	`MI_PRIMARY_INDUSTRY`
OMXSPI index value	Capital IQ	Daily	n/a (downloaded directly)

Note: All variables retrieved through Excel formulas were converted to static numerical values before being imported into Python. The OMXSPI series was downloaded directly from the Capital IQ Pro platform rather than retrieved via an Excel formula.

Table A.2: Key coefficients across all specifications

Test	**Window**	**Variable**	**Coef**	**SE**	***p*-value**
T1 Base	$[-1,+1]$	ESG score	0.0011	(0.0010)	0.2902
T1 Full	$[-1,+1]$	ESG score	0.0008	(0.0018)	0.6493
T1 Base	$[-3,+3]$	ESG score	0.0015	(0.0011)	0.1843
T1 Full	$[-3,+3]$	ESG score	0.0004	(0.0021)	0.8411
T1 Base	$[-5,+5]$	ESG score	0.0011	(0.0013)	0.3894
T1 Full	$[-5,+5]$	ESG score	0.0012	(0.0024)	0.6204
T1 Base	$[-10,+10]$	ESG score	0.0021	(0.0015)	0.1690
T1 Full	$[-10,+10]$	ESG score	0.0047*	(0.0028)	0.0917
T2 Base	Surprise	ESG score	0.0004**	(0.0002)	0.0419
T2 Full	Surprise	ESG score	−0.0004	(0.0005)	0.3946
T3 Base	$[-1,+1]$	ESG×Surprise	0.5812***	(0.1444)	0.0001
T3 Full	$[-1,+1]$	ESG×Surprise	0.6549***	(0.1605)	0.0000
T3 Base	$[-3,+3]$	ESG×Surprise	0.2904*	(0.1763)	0.0994
T3 Full	$[-3,+3]$	ESG×Surprise	0.3727*	(0.1915)	0.0516
T3 Base	$[-5,+5]$	ESG×Surprise	0.3310	(0.2114)	0.1175
T3 Full	$[-5,+5]$	ESG×Surprise	0.4298*	(0.2268)	0.0581
T3 Base	$[-10,+10]$	ESG×Surprise	0.3469	(0.2262)	0.1250
T3 Full	$[-10,+10]$	ESG×Surprise	0.4416*	(0.2455)	0.0720

Note: Compact summary of the focal coefficients from Tests 1, 2, and 3, in baseline and full specifications, across all event windows. Base = no controls or fixed effects. Full = controls plus sector and year fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.3: Test 3 with analyst coverage controls

	$[-1,+1]$	$[-3,+3]$	$[-5,+5]$	$[-10,+10]$
ESG score (std)	0.0014	0.0009	0.0019	0.0054*
	(0.0018)	(0.0022)	(0.0026)	(0.0029)
Earnings surprise	0.7862**	1.0755**	1.4315***	1.9180***
	(0.3551)	(0.4207)	(0.4342)	(0.5261)
ESG × Surprise	0.5014***	0.2429	0.3411	0.4122
	(0.1627)	(0.1969)	(0.2306)	(0.2522)
ln(1 + Analysts)	−0.0007	0.0011	0.0001	0.0008
	(0.0033)	(0.0041)	(0.0046)	(0.0051)
Analysts × Surprise	1.0007***	0.8408**	0.5769	0.1889
	(0.3117)	(0.3790)	(0.3761)	(0.4771)
ROA	0.0058	−0.0022	−0.0123	−0.0017
	(0.0201)	(0.0205)	(0.0272)	(0.0336)
Leverage (D/A)	0.0194*	0.0106	0.0043	0.0068
	(0.0102)	(0.0123)	(0.0133)	(0.0181)
ln(MCap)	−0.0004	−0.0011	−0.0021	−0.0045**
	(0.0013)	(0.0013)	(0.0015)	(0.0020)
Book-to-market	0.0125**	0.0167***	0.0187***	0.0261***
	(0.0050)	(0.0051)	(0.0055)	(0.0067)
Volatility	−0.0238	−0.1156	0.0634	−0.1025
	(0.1798)	(0.2488)	(0.2822)	(0.3404)
N	4,675	4,675	4,675	4,675
R-squared	0.0706	0.0624	0.0559	0.0484
Controls	Yes	Yes	Yes	Yes
Sector + Year FE	Yes	Yes	Yes	Yes

Note: OLS regression of CAR on ESG, earnings surprise, their interaction, and the natural log of one plus lagged number of analyst estimates plus its interaction with surprise. Controls and sector and year fixed effects included. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.4: ESG × Surprise: with versus without analyst coverage controls

Window	**Without coverage**	**With coverage**
$[-1,+1]$	0.6549***	0.5014***
$[-3,+3]$	0.3727*	0.2429
$[-5,+5]$	0.4298*	0.3411
$[-10,+10]$	0.4416*	0.4122

Note: Side-by-side ESG × Surprise coefficient from Test 3 with and without controlling for analyst coverage and its interaction with surprise. Standard errors clustered by firm. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.5: Test 3 excluding COVID years (2020–2021)

	$[-1, +1]$	$[-3, +3]$	$[-5, +5]$	$[-10, +10]$
ESG score (std)	0.0002	−0.0015	−0.0012	0.0042
	(0.0020)	(0.0023)	(0.0028)	(0.0031)
Earnings surprise	1.6785***	1.8041***	1.8814***	1.9914***
	(0.2006)	(0.2258)	(0.2617)	(0.2638)
ESG × Surprise	0.7132***	0.4027**	0.4261*	0.4212
	(0.1686)	(0.2009)	(0.2463)	(0.2701)
ROA	0.0001	−0.0203	−0.0306	−0.0129
	(0.0220)	(0.0244)	(0.0334)	(0.0414)
Leverage (D/A)	0.0182	0.0105	0.0024	0.0037
	(0.0117)	(0.0143)	(0.0156)	(0.0204)
ln(MCap)	0.0004	−0.0001	−0.0006	−0.0032*
	(0.0012)	(0.0013)	(0.0015)	(0.0019)
Book-to-market	0.0129**	0.0178***	0.0191***	0.0255***
	(0.0056)	(0.0056)	(0.0060)	(0.0072)
Volatility	−0.1995	−0.3722	−0.1548	−0.2834
	(0.2349)	(0.3096)	(0.3618)	(0.4286)
N	3,535	3,535	3,535	3,535
R-squared	0.0692	0.0674	0.0596	0.0507
Controls	Yes	Yes	Yes	Yes
Sector + Year FE	Yes	Yes	Yes	Yes

Note: Test 3 specification re-estimated after dropping observations from 2020 and 2021 ($N = 3{,}535$). Controls and sector and year fixed effects included. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.6: ESG × Surprise: full sample versus excluding COVID years

Window	**Full sample**	**Excl. COVID**
$[-1, +1]$	0.6549***	0.7132***
$[-3, +3]$	0.3727*	0.4027**
$[-5, +5]$	0.4298*	0.4261*
$[-10, +10]$	0.4416*	0.4212

Note: Side-by-side ESG × Surprise coefficient from Test 3 estimated on the full sample versus the sample excluding 2020–2021. Standard errors clustered by firm. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.7: Pre-event placebo test: CAR $[-10, -2]$

	Test 1 Placebo	**Test 3 Placebo**
ESG score (std)	0.0022	0.0024
	(0.0015)	(0.0015)
Earnings surprise		0.4059***
		(0.1062)
ESG × Surprise		−0.1061
		(0.1275)
ROA	−0.0136	−0.0158
	(0.0162)	(0.0162)
Leverage (D/A)	−0.0008	−0.0014
	(0.0086)	(0.0085)
ln(MCap)	−0.0026***	−0.0029***
	(0.0010)	(0.0010)
Book-to-market	0.0116***	0.0122***
	(0.0031)	(0.0031)
Volatility	0.0963	0.0922
	(0.1691)	(0.1687)
N	4,675	4,675
R-squared	0.0374	0.0428
Controls	Yes	Yes
Sector + Year FE	Yes	Yes

Note: Test 1 and Test 3 specifications re-estimated with CAR computed over the pre-event window $[-10, -2]$ instead of the event window. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.8: ESG × Surprise: event window versus pre-event placebo window

Window	**ESG × Surprise**	***p*-value**
Event $[-1, +1]$	0.6549***	0.0000
Pre-event $[-10, -2]$	−0.1061	0.4052

Note: Side-by-side ESG × Surprise coefficient from Test 3 estimated on the event window $[-1, +1]$ versus the pre-event placebo window $[-10, -2]$. The effect appears at the announcement and is absent before it. Standard errors clustered by firm. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.9: ESG × Surprise coefficient by size quartile across event windows

Quartile	$[-1, +1]$	$[-3, +3]$	$[-5, +5]$	$[-10, +10]$
Q1 (Small)	0.6225***	0.3851	0.4878	0.4115
	(0.2045)	(0.2503)	(0.3207)	(0.3726)
Q2	−0.4791	−0.9060	−0.7591	−1.0537
	(0.4920)	(0.5635)	(0.6411)	(0.6863)
Q3	1.2180***	1.1202***	1.1477***	1.4384***
	(0.2866)	(0.3382)	(0.3535)	(0.3618)
Q4 (Large)	1.3716***	1.0963***	0.7073*	0.8690
	(0.3653)	(0.4158)	(0.4107)	(0.5746)

Note: Test 3 estimated within each size quartile. ln(MCap) excluded (collinear within quartile) and sector fixed effects excluded (sparse). Year fixed effects retained. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.10: Full regression results for CAR $[-1, +1]$ by size quartile

	Q1 (Small)	**Q2**	**Q3**	**Q4 (Large)**
ESG score (std)	0.0064*	0.0045	−0.0014	−0.0038*
	(0.0032)	(0.0030)	(0.0027)	(0.0022)
Earnings surprise	1.6257***	2.0969***	2.2046***	0.9006***
	(0.2506)	(0.4112)	(0.3523)	(0.2349)
ESG × Surprise	0.6225***	−0.4791	1.2180***	1.3716***
	(0.2045)	(0.4920)	(0.2866)	(0.3653)
ROA	0.0130	0.0222	0.0146	−0.0347
	(0.0221)	(0.0472)	(0.0526)	(0.0309)
Leverage (D/A)	−0.0053	0.0134	0.0139	0.0279***
	(0.0134)	(0.0137)	(0.0148)	(0.0100)
Book-to-market	0.0031	0.0171**	−0.0018	−0.0002
	(0.0063)	(0.0068)	(0.0056)	(0.0041)
Volatility	−0.2082	0.7241**	0.1299	−0.5106**
	(0.2741)	(0.3681)	(0.3581)	(0.2583)
N	1,169	1,169	1,168	1,169
R-squared	0.0704	0.0646	0.0696	0.0531

Note: Test 3 specification estimated on each size quartile separately, dependent variable CAR $[-1, +1]$. ln(MCap) excluded (collinear), sector FE excluded (sparse), year FE retained. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.11: Triple-interaction regression: formal test of asymmetry

	$[-1,+1]$	$[-3,+3]$	$[-5,+5]$	$[-10,+10]$
ESG score (std)	0.0009	−0.0006	−0.0020	0.0004
	(0.0025)	(0.0028)	(0.0031)	(0.0038)
Earnings surprise	0.5669*	0.2893	0.4337	0.1964
	(0.2932)	(0.3142)	(0.3547)	(0.3724)
Negative dummy	−0.0358***	−0.0413***	−0.0420***	−0.0444***
	(0.0032)	(0.0036)	(0.0039)	(0.0043)
ESG × Surprise	0.6860***	0.4202	0.7535**	0.8128*
	(0.2360)	(0.2733)	(0.3152)	(0.4253)
Negative × Surprise	0.3799	0.9023**	0.8373*	1.4061**
	(0.3854)	(0.4235)	(0.5005)	(0.5655)
ESG × Negative	0.0001	0.0029	0.0050	0.0074*
	(0.0029)	(0.0034)	(0.0039)	(0.0045)
ESG × Surprise × Neg	−0.2777	−0.2140	−0.6050	−0.5928
	(0.2752)	(0.3423)	(0.3949)	(0.5246)
ROA	−0.0036	−0.0156	−0.0284	−0.0220
	(0.0200)	(0.0214)	(0.0275)	(0.0330)
Leverage (D/A)	0.0174*	0.0101	0.0037	0.0084
	(0.0103)	(0.0125)	(0.0136)	(0.0180)
ln(MCap)	−0.0011	−0.0018	−0.0029**	−0.0055***
	(0.0011)	(0.0011)	(0.0013)	(0.0016)
Book-to-market	0.0123**	0.0178***	0.0199***	0.0290***
	(0.0054)	(0.0055)	(0.0060)	(0.0073)
Volatility	−0.0266	−0.1044	0.0813	−0.0652
	(0.1753)	(0.2431)	(0.2760)	(0.3345)
N	4,675	4,675	4,675	4,675
R-squared	0.1041	0.0961	0.0854	0.0725
Controls	Yes	Yes	Yes	Yes
Sector + Year FE	Yes	Yes	Yes	Yes

Note: OLS regression of CAR on ESG, earnings surprise, a Negative dummy (= 1 if Surprise < 0), and all interactions. The coefficient on ESG × Surprise × Negative tests whether the credibility effect differs between good and bad news. Controls and sector and year fixed effects included. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.12: Asymmetry of the credibility effect: implied effect by sign of surprise

Window	**Pos:** $\hat{\beta}_4$	**Neg:** $\hat{\beta}_4 + \hat{\beta}_7$	**Diff** ($\hat{\beta}_7$)	p**(diff)**
$[-1, +1]$	0.6860***	0.4083**	−0.2777	0.3128
$[-3, +3]$	0.4202	0.2062	−0.2140	0.5318
$[-5, +5]$	0.7535**	0.1485	−0.6050	0.1255
$[-10, +10]$	0.8128*	0.2200	−0.5928	0.2585

Note: Implied ESG × Surprise coefficients for positive and negative surprises, derived from the triple-interaction regression. $\hat{\beta}_4$ = ESG × Surprise (good news). $\hat{\beta}_4 + \hat{\beta}_7$ = implied effect for negative surprises (bad news). $\hat{\beta}_7$ = ESG × Surprise × Negative (formal test of asymmetry). Standard errors clustered by firm. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.13: Test 3 on positive-surprise subsample (asymmetry test)

	$[-1, +1]$	$[-3, +3]$	$[-5, +5]$	$[-10, +10]$
ESG score (std)	0.0039	0.0026	0.0001	0.0013
	(0.0029)	(0.0033)	(0.0035)	(0.0047)
Earnings surprise	0.9433***	0.6200*	0.7887**	0.5134
	(0.3115)	(0.3456)	(0.3955)	(0.4574)
ESG × Surprise	0.6754***	0.3851	0.8233**	0.7220
	(0.2569)	(0.3024)	(0.3348)	(0.4657)
ROA	0.0082	0.0151	0.0076	−0.0001
	(0.0273)	(0.0326)	(0.0379)	(0.0508)
Leverage (D/A)	0.0089	0.0188	0.0164	−0.0060
	(0.0147)	(0.0170)	(0.0189)	(0.0261)
ln(MCap)	−0.0027*	−0.0041**	−0.0042**	−0.0060**
	(0.0015)	(0.0016)	(0.0019)	(0.0025)
Book-to-market	0.0054	0.0074	0.0096	0.0164
	(0.0070)	(0.0077)	(0.0086)	(0.0115)
Volatility	−0.1970	−0.1554	0.1755	−0.2749
	(0.2494)	(0.3539)	(0.4044)	(0.4805)
N	2,215	2,215	2,215	2,215
R-squared	0.0701	0.0691	0.0666	0.0544
Controls	Yes	Yes	Yes	Yes
Sector + Year FE	Yes	Yes	Yes	Yes

Note: Test 3 specification estimated on observations with positive earnings surprises only (N = 2,215). Controls and sector and year fixed effects included. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.14: Test 3 on negative-surprise subsample (asymmetry test)

	$[-1,+1]$	$[-3,+3]$	$[-5,+5]$	$[-10,+10]$
ESG score (std)	−0.0007	0.0011	0.0024	0.0063
	(0.0026)	(0.0031)	(0.0036)	(0.0042)
Earnings surprise	1.2815***	1.5350***	1.6101***	1.9093***
	(0.2526)	(0.2803)	(0.3276)	(0.3626)
ESG × Surprise	0.5004**	0.3349	0.3337	0.3033
	(0.2086)	(0.2412)	(0.3064)	(0.3463)
ROA	−0.0228	−0.0546*	−0.0699*	−0.0455
	(0.0273)	(0.0311)	(0.0403)	(0.0419)
Leverage (D/A)	0.0268*	0.0051	−0.0046	0.0117
	(0.0151)	(0.0186)	(0.0197)	(0.0223)
ln(MCap)	−0.0001	−0.0004	−0.0021	−0.0048**
	(0.0017)	(0.0018)	(0.0020)	(0.0023)
Book-to-market	0.0186***	0.0280***	0.0294***	0.0392***
	(0.0071)	(0.0077)	(0.0084)	(0.0092)
Volatility	0.1988	−0.0215	−0.0244	0.1746
	(0.2448)	(0.3171)	(0.3656)	(0.4458)
N	2,414	2,414	2,414	2,414
R-squared	0.0659	0.0647	0.0583	0.0607
Controls	Yes	Yes	Yes	Yes
Sector + Year FE	Yes	Yes	Yes	Yes

Note: Test 3 specification estimated on observations with negative earnings surprises only ($N = 2{,}414$). Controls and sector and year fixed effects included. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.15: Earnings response coefficient by ESG quartile, CAR $[-1,+1]$

Quartile	**N**	**Firms**	**ERC**	***p*-value**
Q1 (Low ESG)	1,170	139	0.6731***	0.0027
Q2	1,168	132	1.7908***	0.0000
Q3	1,170	106	2.0067***	0.0000
Q4 (High ESG)	1,167	57	2.2542***	0.0000

Note: OLS regression of CAR $[-1,+1]$ on earnings surprise within each ESG quartile, with controls and year fixed effects. The Surprise coefficient is the ERC for each group. The monotonic increase in the ERC from Q1 to Q4 supports the credibility channel. Standard errors clustered by firm. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.16: Sanity check: earnings surprise predicts CAR $[-1, +1]$

	CAR $[-1, +1]$
Earnings surprise	1.4433***
	(0.1623)
ROA	−0.0008
	(0.0195)
Leverage (D/A)	0.0163
	(0.0102)
ln(MCap)	−0.0002
	(0.0009)
Book-to-market	0.0117**
	(0.0046)
Volatility	−0.0453
	(0.1799)
N	4,675
R-squared	0.0602
Controls	Yes
Sector + Year FE	Yes

Note: OLS regression of CAR $[-1, +1]$ on the price-scaled earnings surprise and controls, with sector and year fixed effects. Standard errors clustered by firm in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table A.17: Sample composition by year

Year	**Observations**
2015	40
2016	187
2017	210
2018	232
2019	365
2020	486
2021	654
2022	671
2023	645
2024	658
2025	527

Note: Number of firm-quarter observations by year in the final regression sample. Year 2015 refers to fiscal quarters in 2016 with earnings announcement dates in 2015.

Artificial Intelligence Disclosure

Tools used and how. Claude (Anthropic) was used throughout the thesis writing process for three purposes: language refinement, LaTeX formatting, and coding assistance. For writing, Claude was consulted to improve clarity, consistency, and readability of text that had already been drafted by the authors. For formatting, Claude assisted with converting the thesis from Word to LaTeX, including table formatting, equation typesetting, and bibliography setup. For coding, Claude provided technical assistance in reviewing and refining Python code, primarily by identifying potential errors and inefficiencies. No AI tool was used to generate academic arguments, interpret empirical results, or produce substantive content.

Contribution to thesis quality. AI assistance improved the linguistic consistency of the thesis and reduced the time spent on technical LaTeX formatting and code debugging, allowing more time to be devoted to the empirical analysis and academic writing. All methodological decisions and computational procedures were developed and implemented independently.

Potential risks and mitigating measures. The primary risk identified was the possibility of inaccurate or fabricated content. To mitigate this risk, AI was not used for factual statements, references, or the development of academic arguments. All AI-assisted text was carefully reviewed and revised by the authors before inclusion, and all code was independently verified against expected outputs.

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