Pricing Sustainability Failures

Market Reactions to ESG Controversies through the Lens of Ownership Structure

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Abstract

This thesis examines whether shareholders react to the announcement of ESG controversies and explores whether firms' ownership structures shape these market reactions. Specifically, we conduct an event study around the announcement of ESG controversies for firms included in the S&P Europe 350 index from 2016 to 2024. In keeping with the view that negative ESG news conveys value-relevant information, we document a significant and immediate decline in stock prices following ESG controversy news. Extending this view, we further posit that a higher relative proportion of retail ownership would amplify, and a higher proportion of institutional ownership would attenuate these negative price reactions. Contrary to expectations, our findings indicate that retail ownership dampens, rather than amplifies, the short-term negative price impact following ESG controversies, while institutional ownership does not exert a significant moderating effect over the short-term. Complementary cross-sectional analysis, however, shows that institutional investors gradually reduce their holdings in firms with heightened ESG risk exposure over longer horizons, but only in firms with initially lower institutional ownership. Overall, these findings highlight the central role of investor heterogeneity in shaping how sustainability-related risks are incorporated into stock prices, challenging the notion of uniform investor reactions to ESG controversy announcements.

Keywords: ESG controversies, investor heterogeneity, retail ownership, institutional investors

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Table of Contents

Introduction ***5***

Literature Review ***8***

Shareholder sensitivity to ESG controversies 8

Inconclusive evidence and ESG measurement challenges 9

Event-based identification and the role of asymmetric market responses 10

Theoretical implications and baseline argument 10

Heterogeneity in shareholders' reactions to ESG controversy news 11

Institutional investors: Monitoring advantages versus sustainability constraints 11

Retail investors: attention-driven trading and vulnerability to firm-specific shocks 12

Methodology ***13***

Data and Research Design 13

Event Study 15

Regression Specification 17

Results ***21***

The Impact of ownership structure on shareholders' reaction to negative ESG news 21

Cross-Sectional Analysis ***24***

Changes in institutional ownership over time 24

Discussion ***30***

Shareholders' negative reactions to ESG controversy news 31

Retail Ownership 31

Institutional Ownership 33

Investor Heterogeneity and Broader Implications 34

Limitations ***34***

Suggestion for future research ***35***

Conclusion ***35***

Reference list ***38***

Appendix A ***45***

Appendix B ***46***

Appendix C ***46***

Appendix D ***49***

Introduction

The growing prevalence of sustainability reporting frameworks and the growth of ESG-oriented investment strategies suggest that sustainability considerations are increasingly embedded within global financial markets. ESG factors are now an integral part of corporate decision-making and require significant allocation of resources. Further, investors are increasingly incorporating climate and sustainability information into their decision processes when evaluating the performance of a firm, reflecting a growing demand for transparency and sustainability disclosures in investment decisions (Krueger, Sautner & Starks, 2020). Consistent with this development, Flammer (2021) finds that investors respond more strongly when sustainability information is externally verified. The drivers for engaging in sustainability initiatives are believed to stem from regulatory developments, reputational concerns, and evolving stakeholder expectations. However, despite the growing attention to ESG, the empirical relationship between ESG practices and firm valuation remains inconclusive, although older meta-analytic evidence indicates a small but positive link between ESG and financial outcomes (Margolis, Elfenbein & Walsh, 2007). More recent evidence emphasizes instead that the financial impact of ESG initiatives also depends on its financial materiality, suggesting that investors may benefit from focusing on sustainability factors that are truly material (Khan, Serafeim & Yoon, 2016).

A substantial challenge in assessing the ESG-performance link and a potential explanation for previous inconclusive results in the literature lies in measurement. ESG ratings, often used as proxies for sustainability performance, tend to vary considerably across providers due to reliance on different data sources, rating methodologies, ways of weighting, and the scope of indicators employed. This inconsistency often results in major ESG rating agencies forming different ESG scores, leading to diverging assessments of firms' ESG characteristics, and complicating interpretation by market participants (Berg, Kölbel and Rigobon 2022). Consequently, prior research relying on ESG ratings to measure firms' sustainability performance may mask meaningful investor reactions to the ESG events that matter most.

To address these challenges, a stream of research emphasizes event-based identification, focusing on discrete ESG announcements as high-information shocks that reveal new, publicly observable details regarding firms' sustainability-related initiatives or corporate ESG-harmful conduct

(Krüger, 2015). A consistent finding is that investor reactions to ESG news are highly asymmetric, with negative news carrying stronger market reactions than positive announcements (Klassen & McLaughlin, 1996; Krüger, 2015; Capelle-Blancard & Petit, 2019), revealing concealed weaknesses and hypocrisy behind firms' sustainability efforts (Kotchen and Moon, 2012). Negative ESG announcements have also been linked to severe supply chain disruptions (Bisetti, She & Zaldokas, 2024), higher CEO turnover risk (Colak, Korkeamäki & Meyer, 2024), and intensifying investor reactions over time (Flammer, 2013), highlighting their economic relevance. Nevertheless, despite these advances, most prior work implicitly treats investors as one homogeneous group. This assumption conflicts with prior evidence that institutional and retail investors differ markedly in terms of their objectives, constraints, information-processing capabilities, monitoring abilities, and investment horizons (Barber & Odean, 2008); Bushee, 1998, 2001; Boehmer & Kelly, 2009; Cohen, Frazzini & Malloy, 2010; McCahery, Sautner & Straks, 2016). Institutional investors often face legal responsibilities, ESG mandates, and reputational pressures (Hong & Kasperczyk, 2009; Nofsinger et al., 2019; Hartzmark & Sussman, 2019) but also possess monitoring capabilities and engagement channels (Dimson, Karakaş & Li, 2015; Ilhan et al., 2019; Krueger et al., 2020). Consequently, they may prefer long-term engagement over short-term divestments following ESG controversy announcements. Retail investors, by contrast, tend to react strongly to salient and attention-grabbing information (Barber & Odean, 2008; Tetlock, 2007) and often hold under-diversified portfolios (Calvet, Campbell & Sodini, 2007; Goetzmann & Kumar, 2008). Therefore, they are expected to be more vulnerable to firm-specific shocks stemming from ESG controversy announcements.

These distinctions suggest that firms' ownership structures may critically shape how ESG controversies are incorporated into stock prices. Yet, prior evidence on how ownership composition within the firm moderates how investors react to ESG controversies remains limited, particularly within a European context, where ESG regulation and investor integration are comparatively advanced (Morningstar, 2022).

The present study addresses this gap by examining whether shareholders are sensitive to the public announcement of ESG controversies, and whether the magnitude of this reaction varies

systematically with firms' ownership structures. Specifically, we formulate the following research question:

To what extent do shareholders react to the public announcement of ESG controversies, and how does the magnitude of this reaction vary across firms with differing ownership structures, particularly those with higher institutional versus retail ownership?

To answer this research question, we rely on a sample of 2326 controversy events across 305 firms included in the S&P Europe 350 index between 2016 and 2024. We further employ an event-study methodology to assess short-term market responses to ESG controversies and investigate whether the proportion of institutional versus retail ownership moderates this relationship. To complement the short-term analysis, we further conduct a cross-sectional examination to analyze whether institutional investors adjust their holdings gradually following years with high ESG controversy intensity.

Our findings contribute to existing literature in several ways. First, reinforcing existing evidence that negative ESG events are material information events, we show that investors react negatively and immediately to ESG controversy announcements, and document that previous findings on the U.S. market also extend to the European market. Second, contrary to expectations derived from the existing literature on retail investors, we find that higher retail ownership attenuates the short-term negative price impact following ESG controversies. Third, we show that institutional ownership does not significantly moderate short-term market reactions but is associated with a gradual long-horizon ownership adjustment following intensifying ESG controversy risk, however, only for firms with initially low institutional ownership. These results highlight investor heterogeneity as a crucial aspect to consider in understanding how ESG information is incorporated into stock prices and challenge the notion of a uniform investor response to ESG controversy announcements. By integrating insights derived from the ESG-finance literature as well as previous evidence on investor characteristics, the present study provides a more nuanced understanding of how markets process and price sustainability-related risk.

Structure of the thesis

The remainder of this thesis is structured as follows. Section 2 provides a comprehensive review of related literature and develops the hypotheses of this thesis. This section first introduces the main ideas and theories behind the ESG-financial performance link and then synthesizes prior research on market reactions to ESG-related announcements, with particular focus on negative ESG controversy news and their informational content. Lastly, this section examines investor heterogeneity, focusing on retail and institutional investors to understand and motivate why these investor-groups may react differently to such announcements. Section 3 outlines the empirical setting, including data sources, sample construction, event-study methodology, and the regression framework used to test ownership structure as a moderator in stock market reactions to ESG controversies. Section 4 reports the empirical results from the event-study and regression analyses, documenting market responses to ESG events, and thereafter the extent to which these responses vary with different ownership structures. Section 5 introduces the cross-sectional analysis focusing on institutional ownership and analyzing the longer-horizon ownership adjustment following years of heightened ESG controversy exposure. Section 6 lays out a discussion of the findings in relation to previous research and theoretical expectations. Section 7 shreds light on potential limitations of this research, and section 8 provides avenues for future research. Lastly, section 9 concludes this thesis by summarizing the central contributions and implications of our findings.

Literature Review

Shareholder sensitivity to ESG controversies

The debate between shareholder primacy and stakeholder theory has long shaped the view of corporate purpose. Under the shareholder view, firms are viewed as a set of contracts aimed at maximizing shareholder value (Friedman, 1970; Jensen, 2001), and CSR spending should only be supported when it corresponds to increases in profits, long-term cash flows, or reduces risk. Stakeholder theory, in contrast, emphasizes that long-term value is created by managing relationships across the broader stakeholder spectrum, and not solely by creating value for shareholders (Freeman, 1984; Allen, Carletti & Marquez, 2015) as an excessive shareholder focus may lead to an underinvestment in protecting stakeholders (Magill, Quinzii & Rochet, 2015). According to Jensen (2001), a combination of the two perspectives is suggested where stakeholder

considerations can complement long-term firm value maximization when used to guide managerial decisions.

From an agency perspective, CSR may work as an agency motivated outcome, rather than value-enhancing behavior, particularly in firms with weaker governance (Tirole, 2001; Bénabou & Tirole, 2010) as previous research shows that firms less monitored often engage in CSR for private benefits rather than to increase performance (Cheng, Hong & Shue, 2013; Barnea & Rubin, 2010; Kacperczyk, 2009). Under this view, positive CSR announcements may therefore signal resource misallocation rather than profitability for shareholders. Conversely, from the resource-based perspective, ESG capabilities can enhance operational efficiency and help build firm-specific long-term competitive advantage (Hart, 1996; Russo & Fouts, 1997; Hart & Dowell, 2011). Prior literature has observed that ESG can improve financial performance, when practices are material and effectively implemented, yielding higher risk-adjusted returns and lower overall risk (Derwall et al., 2005; Edmans, 2011; Dimson, Karakaş & Li, 2013). As such, these streams of literature provide competing views regarding the shareholder's valuation of ESG-related activities.

Inconclusive evidence and ESG measurement challenges

Despite extensive research, previous findings on the ESG-financial performance relationship remain inconclusive, ranging from negative (Geczy et al., 2021; Renneboog et al., 2008; Hong & Kacperczyk, 2009), to neutral (Hamilton, Jo & Statman, 1993; Kurtz & Di Bartolomeo, 1996; Guerard, 1997; Bauer, Koedijk & Otten, 2005; Schröder, 2007) or mildly positive (Margolis, Elfenbein & Walsh, 2007). Budling on the various factors that could drive the inconclusive results in prior literature, two main challenges are identified. The first challenge relates to measurement limitations. ESG ratings are often highly dependent on its providers, and differences in definitions, weighting methods, and subjective judgements often lead to divergence in ratings across providers (Cao et al). The second problem relates to disclosure bias, indicating that there are huge incentives for firms to disclose positive actions while under disclose or withhold negative actions or risks (Flammer, 2021). Together, these limitations may distort the relationship between reported ESG and the performance of the firm, likely contributing to the inconsistent results in prior literature.

Event-based identification and the role of asymmetric market responses

To address these measurement challenges, recent studies suggest instead to rely on public events, that contributes new information at a specific point in time. This approach reduces the risk of measurement errors and better reflects how investors update their beliefs about a firm's stakeholder relations, future cash flows, and increased risk exposures in line with new information received (Krüger, 2015). In line with this reasoning, previous research demonstrates asymmetric market reactions to ESG corporate news, with investors reactions to negative ESG announcements appearing more pronounced, compared to positive news (Klassen and McLaughlin, 1996; Krüger, 2015; Capelle-Blancard and Petit, 2019). Negative events often expose underlying irresponsibility or hypocrisy behind firms' CSR efforts (Kotchen and Moon, 2012), leading to stronger adverse market reactions. Other related studies reinforce this asymmetry, showing increasingly negative market reactions to ESG failures over time (Flammer, 2013; Mendiratta et al., 2023), elevated CEO turnover risk (Colak, Korkeamäki, and Meyer, 2024), and supply chain disruptions worsening the overall valuation impact (Bisetti, She, and Zaldokas, 2024).

Theoretical implications and baseline argument

Within the natural resource-based view (NRBV) of the firm, ESG capabilities were initially emphasized to serve as a source of long-term competitive advantage. Firms that pursue positive environmental initiatives can create valuable resources, whereas ESG harmful behavior could erode these resources (Hart, 1995; Hart & Dowell, 2011). However, as ESG practices have started to become more normalized, their value has shifted to become more of a risk mitigating tool rather than differentiating (Fombrun, Gardberg & Barnett, 2000; Godfrey, 2005; Peloza, 2006). Hence, in normal periods, positive ESG news may lead to mildly positive market reactions, whereas ESG failures often trigger stronger adverse market reactions as it may signal elevated risk, especially when the information includes quantitative or economic details (Krüger, 2015; Capelle-Blancard and Petit, 2019). Furthermore, firms are often more willing to disclose positive actions, whereas negative risk exposure tends to be revealed only through public news (Flammer, 2021). As such, negative ESG announcements often function as high-information events, allowing investors to update their expectations regarding future cash flows, risk exposure, and cost of capital accordingly. Taken together, this body of research delineates a potential explanation for previous inconclusive results, as well as an observed asymmetry in market responses to ESG

announcements. This provides the theoretical justification for focusing exclusively on negative ESG controversy news and analyzing whether shareholders react negatively to such events by relying on an event study approach.

Heterogeneity in shareholders' reactions to ESG controversy news

Previous research on market reactions to negative ESG announcements has largely treated investors as one homogeneous group (e.g., Krüger, 2015; Flammer, 2013). However, investors differ substantially in terms of their objectives, preferences, time horizons, constraints, monitoring capabilities, and information-processing capabilities. Such variations are likely to have important implications for how they respond to negative ESG announcements. Accordingly, the present study aims to contribute to the understanding of the relationship between negative ESG announcements and stock market reactions by considering the heterogeneity in shareholders' characteristics. That is, we examine whether price reactions differ depending on firms' ownership structures, with particular focus on the relative proportions of institutional versus retail ownership. These investor groups typically constitute the majority of the firm's shareholder base and exhibit distinct behavioral and strategic characteristics that make their responses especially meaningful to compare.

Institutional investors: Monitoring advantages versus sustainability constraints

Institutional investors, including insurance companies, pension funds, hedge funds, and mutual funds, handle investor capital under the surveillance of fiduciary obligations and reputational constraints, often guided by investment mandates that increasingly incorporate ESG considerations. Negative ESG events may therefore undermine the perceived legitimacy of their portfolio firms and create pressure to exit. Hong and Kacperczyk (2009) show that norm-driven institutions often shy away from "sin" stocks, and Nofsinger et al. (2019) find that institutions tend to underweight firms with social and environmental weaknesses. On a similar note, Hartzmark and Sussman (2019) demonstrate that changes in sustainability ratings tend to trigger notable capital reallocations.

At the same time, institutional investors possess characteristics that could be expected to mitigate immediate price reactions following ESG controversy announcements. Institutions frequently hold larger stakes and exhibit superior monitoring and engagement capabilities (Bethel and Liebeskind, 1993; Gillan and Starks, 2000; Dimson, Karakas, and Li, 2015; Ilhan et al., 2019; Krueger et al., 2020). Such advantages may temper immediate price responses following negative ESG announcements. Evidence suggests institutions with stronger ESG preferences often adjust their holdings even before public announcements, indicating proactive monitoring (Hoang, 2023). Long-term focused institutions (Bushee, 1998, 2001) may therefore be less likely to divest on the basis of short-term negative events and instead aim for engagement strategies when managing sustainability-related risk (Neubaum and Zahra, 2006; Dimson, Karakas, and Li, 2015; Krueger et al., 2020), favoring value preservation over short-term trading (McCahery, Sautner, and Starks, 2016).

Taken together, while institutional investors may be particularly sensitive to ESG controversy news because of reputational constraints, formal ESG mandates, and public pressure associated with holding firms linked to ESG-harmful corporate behavior, their monitoring capabilities, longer investment horizons, and preference for engagement over short-term trading suggest they are less likely to engage in short-term selling in response to ESG controversies. These arguments lead to the following hypothesis:

Hypothesis 1: Shareholders of companies with a higher proportion of institutional ownership react less negatively to the public announcement of ESG controversies.

Retail investors: attention-driven trading and vulnerability to firm-specific shocks

Retail investors, on the other hand, exhibit trading patterns largely driven by attention and sentiment, and often reacts strongly to salient or negative news (Barber and Odean, 2008; Tetlock, 2007). These attention spikes often lead to immediate retail trading, which in turn affects prices (Da, Engelberg, and Gao, 2011). This pattern appears even more pronounced in the ESG arena, particularly when the information is financially material (Li, Watts, and Zhu, 2024). In addition, portfolio characteristics may heighten retail investors' sensitivity. Households tend to hold poorly diversified portfolios (Calvet, Campbell, and Sodini, 2007) and face greater idiosyncratic risk

(Goetzmann and Kumar, 2008), making retail investors more vulnerable to firm specific shocks resulting from ESG controversies. Further, lacking institutional investors' capabilities for monitoring and engagement (McCahery, Sautner, and Starks, 2016; Boehmer and Kelley, 2009; Cohen, Frazzini, and Malloy, 2010), they primarily rely on immediate trading as a response to adverse events.

Overall, retail investors' attention-driven trading dynamics, exposure to firm-specific risk, and their limited ability to engage with firms all point toward them reacting more aggressively to ESG controversies. Hence, it is expected that firms with a relatively higher proportion of retail ownership will experience stronger short-term price reactions to ESG controversy news. Accordingly, we propose the following hypothesis:

Hypothesis 2: Shareholders of companies with a higher proportion of retail ownership react more negatively to the public announcement of ESG controversies.

Methodology

Data and Research Design

This study examined the stock market reaction to the announcement of negative ESG controversy news and assessed how this reaction is moderated by firms' ownership structures, particularly by the extent of institutional ownership versus a higher proportion of retail investors. For this purpose, we considered 2326 ESG controversy events associated with 305 firms listed in the S&P Europe 350 index over the 2016-2024 period. We considered controversies to be public news stories related to questionable ESG conduct. The controversy data was obtained via LSEG Workspace, which incorporates the former Asset4-Thomson Reuters ESG database. These ESG events are sourced from a wide range of global media outlets, including hundreds of major English-speaking news sources, NGOs such as Amnesty International, Human Rights Watch, Greenpeace or Transparency International, as well as trade unions. An illustrative example of an ESG controversy event is provided in Appendix A.

In LSEG Workspace, ESG controversies are initially identified at the event level and if the event is deemed sufficiently important in terms of its ESG impact, it is recoded and classified into one of

31 different categories. These event types are then recorded into the traditional ESG pillar classification. For example, environmental controversies include biodiversity, pollution incidents, and the environmental impact of products and production processes. Social controversies relate to health and safety issues, diversity, working conditions (including child labor), and problems with customers concerning product quality. Governance controversies are concerned with executive remuneration concerns, non-transparent and aggressive accounting issues, or insider dealings.

We began the ESG controversy search by collecting the company ticker and ISIN codes for all companies included within the S&P Europe 350 index, which defined the study's firm universe. Based on this sample of firms, we extracted all controversy events recorded in the ESG controversy database available via LSEG Workspace. For each event, we retrieved the event date (i.e., the date the event occurred or, more specifically, the date on which the information became publicly available) and retained only those events with reference dates falling between 2016 and 2024. For each retained event, we also collected the corresponding ESG pillar classification and the specific environmental issue area assigned to the recorded event (e.g., pollution incident).

Further, daily stock prices and returns were matched with corresponding daily prices and returns of the S&P Europe 350 index, which served as the proxy for market performance. All events for which daily firm-level closing price data were missing during the estimation window were dropped. Both stock price and market index data were obtained from LSEG Workspace, facilitating efficient alignment between return data and the identified controversy events.

To assess whether stock market reactions to ESG controversy events vary according to firms' relative ownership structure and to distinguish between firms predominantly held by institutional investors from those with greater retail investor exposure, we obtained ownership data from LSEG Workspace for all firms in the sample. We retrieved monthly institutional ownership, defined as the percentage of total shares outstanding held by institutional investors over the period 2016-2024. Following established practice in prior literature (e.g., Giannetti & Wang, 2016; Dyer & Kim, 2021; Kryzanowski & Rouhghalandari, 2024), we approximated retail ownership as the residual share of free float not attributed to institutional investors. More specifically, we approximated retail ownership as follows:

Retail Ownership % = Free float % - Institutional Ownership %

Hence, to proxy the percentage of retail ownership we also retrieved monthly free float percentages, representing the proportion of shares deemed freely available for trading. In line with LSEG's methodology, free float is calculated using publicly available ownership information. It excludes holdings considered strategically constrained or non-tradeable, such as those held by corporations, governments, foundations, employee share plans, or individuals subject to disclosure requirements (FTSE Russel, 2025).

Event Study

The event study methodology examines the stock market reaction to the announcement of negative ESG-related news or events. This reaction is captured through the average cumulative abnormal return (CAR) calculated over a predefined "event window". CAR is a measure of the extent to which a firm's actual stock price deviates from its expected value during an event window. For each firm *i,* abnormal returns were estimated using the market model. The coefficients, α_i and β_i of the market model were estimated via ordinary least squares (OLS) regression based on 200 trading days, corresponding to the interval (-240, -41), using daily return data of the S&P Europe 350 index sourced from LSEG Workspace. Formally, we estimated:

$$R_{it} = \alpha_i + \beta_i \times R_{mt} + e_{it}$$

Where R_{it} is the return on the stock of company *i* on day *t*, α_i is the intercept, β_i is the systematic risk of stock *i* relative to the market, R_{mt} is the daily return of the S&P Europe 350 index, used as a proxy for daily market returns, and e_{it} is the daily risk-adjusted residual term for firm *i* on day *t.* The corresponding expected return for firm *i* on day *t* is given by:

$$\hat{R}_{it} = \alpha_i + \beta_i \times R_{mt}$$

We then calculated the abnormal daily return (AR) of company *i* on day *t* as follows:

$$AR_{it} = R_{it} - \hat{R}_{it}$$

Finally, we computed the cumulative abnormal returns (CARs) for each time interval by summing up the abnormal returns within the specific time window (e.g., [-1, 0]).

An extensive body of research employs event study methodology to quantify the market reaction to the announcement of corporate news, including events such as stock splits, equity issues, credit rating downgrades, among others (e.g., for a methodological overview, see Kothari and Warner [2007]). The common practice in this literature is to define the event date (i.e., day 0) as the day of the article's publication. However, one limitation of this approach is that of timing uncertainty. That is, it may be that the publication date is not necessarily the date of the actual event, as it may have happened on the previous day (before the closing of the stock exchange). To address the issue of event-time uncertainty, we follow a similar approach to Flammer (2013) and expand the event window to two days (day -1 and day 0) as our main specification capturing both the day prior to and the day of publication. Another common approach is to consider the three-day interval (-1, 1). However, in the present paper we only consider the three-day interval as a robustness check. Furthermore, to account for the possibility that it might take time to establish the characteristics of certain events (e.g., emission incidents) and that the market could still receive information in the few days following the event, we also analyze extended windows (-1, 2) and (-1, 3). Extending the window further may be considered problematic since longer event windows would be more likely to overlap with confounding events, thereby weakening the reliability of statistical inference (McWilliams and Siegel (1997).

To examine whether negative ESG news are perceived differently by the market depending on whether the firm has a higher proportion of institutional ownership or if the ownership is dominated by retail investors, we divided the sample into high institutional ownership, low institutional ownership, high retail ownership, and low retail ownership. We divided the sample into four ownership categories by calculating the median retail and institutional ownership level. Those firms with ownership levels above the median level were classified as *high* and below as *low*. Accordingly, we computed the two-day event window (-1, 0) CARs separately for each of the four ownership categories.

Regression Specification

To empirically examine whether the stock market reaction to the announcement of negative ESG news is stronger for firms with a higher proportion of retail owners and weaker for firms with a higher proportion of institutional ownership, we report the average CAR for each of the four ownership categories covered by our sample. To refine this analysis and to rule out alternative stories, we also used a regression-based approach. Specifically, we estimated the following regression (separately for retail and - institutional ownership):

$$CAR_{ij} = \alpha_j + \alpha_s + \beta \times Retail_Own_i + \gamma' X_{ij} + \varepsilon_{ij}$$

where *i* indexes' firms, and *j* indexes events. Event and industry fixed effects are denoted by α_j and α_s respectively; CAR is the individual cumulative abnormal return in the two-day event window (-1, 0); Retail_Own measures the proportion of outstanding shares held by retail investors lagged one month prior to the time of the event; X is a vector of control variables; and Ɛ is the error term. Heteroscedasticity-robust standard errors were applied. The coefficient of interest is β, which identifies whether and to what extent the proportion of retail ownership moderates investors' reaction to negative ESG controversy events. A negative and statistically significant β would suggest that firms with higher retail investor presence experience stronger negative abnormal returns following ESG controversies, suggestive of hypothesis 2.

To empirically test our first hypothesis, we also estimated the following regression for institutional ownership:

$$CAR_{ij} = \alpha_j + \alpha_s + \beta \times Inst_Own_i + \gamma' X_{ij} + \varepsilon_{ij}$$

Where all else equal, Inst_Own measures the proportion of outstanding shares held by institutional investors lagged one month prior to the time of the event. A positive and statistically significant β would suggest that firms with relatively higher institutional ownership experience less negative stock market reaction following ESG controversy events, suggestive of hypothesis 1.

In line with prior research, the control variables in X include size, profitability, the market-to-book ratio, and the number of analysts following a company. These variables were obtained from the

LSEG Workspace. *Size* is the logarithm of total assets; *profitability* is the return on assets (ROA), defined as the ratio of operating income to total assets; *market-to-book* ratio is the ratio of the market value of equity to the book value of equity; *analysts following* is the logarithm of the number of analysts following the company. All control variables are computed at the end of the year prior to the event date. Below follows a motivation for the inclusion of the above-mentioned control variables.

We include firm size as a control, as larger firms tend to attract wider media and analyst coverage (El Ghoul, et al., 2011), while smaller firms often are better able to avoid public scrutiny (Salancik and Pfeffer, 1978; Meznar and Nigh, 1995). Thus, firm size may affect the likelihood that ESG controversies become salient to the market. We also control profitability, since more profitable firms generally command higher expected returns (Novy-Marx, 2013). The market-to-book ratio is included to capture value-growth differences and growth opportunities, as these are strongly related to expected returns (Griffin & Lemmon, 2002; Fama & French, 1995). Finally, we control for the number of analysts following the firm, as it is often used as a proxy for the information efficiency and visibility of the firm (Lang & Lundholm, 1996) and may therefore be closely linked to the speed with which new information is incorporated into prices.

Industry classification was conducted using the Refinitiv TRBC (Thomson Reuters Business Classification) industry taxonomy. Lastly, we incorporated event fixed effects defined at the environmental issue level (see Appendix B). The inclusion of these fixed effects helps mitigate concerns that unobserved heterogeneity at the environmental issue or industry level may influence the results. Such fixed effects account for systematic differences in the size of ESG controversy events across environmental issue categories and industries.

Table 1 presents descriptive statistics (means and standard deviations) and pairwise correlations for all variables described in this section. Consistent with the view that shareholders punish companies for engaging in ESG harmful practices, we find that the mean CAR is negative for negative ESG controversy news. This is suggestive of our baseline argument and aligns with prior evidence on market reactions to negative ESG corporate news (see for example [Flammer, 2013] and [Krüger, 2015]). Moreover, the correlation between retail ownership and CAR is positive,

whereas the correlation between institutional ownership and CAR is negative. These associations suggest that firms with a greater proportion of institutional investors experience more pronounced negative market reactions following ESG controversies, while firms with higher levels of retail ownership appear to experience weaker negative responses. At face value, this pattern is indicative of the opposite relation compared to what was hypothesized. We also want to draw attention to the two ownership structure variables, with institutional investors holding on average 38.4% of total shares outstanding and retail ownership averaging 46.8%. The strong negative correlation between these two variables ($\rho = -0.345$) reflects an underlying non-linear relationship, as retail ownership is defined as *free float minus institutional ownership,* and free float itself excludes a range of restricted or strategic holdings. Under FTSE Russell's methodology, it removes holdings by corporations, governments, foundations, insiders, employee share plans, treasury accounts, and concentrated portfolio holdings (>30%). Institutional ownership largely reflects professional investor categories such as asset managers, pension funds, insurance companies, banks, hedge funds, and sovereign wealth funds, most of which are treated as part of free float, unless their holdings exceed a strategic threshold of (>30%). Retail ownership, therefore, does not represent a direct measure of household participation, but rather a residual portion of freely tradable shares not attributed to institutional investors or strategic shareholders.

Table 1

Descriptive Statistics and Correlations[b]

Variable	Mean	s.d.	(1)	(2)	(3)	(4)	(5)	(6)
1. CAR (-1, 0)[a]	-0.0017	0.0269						
2. ROA	0.0385	0.0546	0.0263					
3. Size[c]	4.9109	1.5157	0.0231	-0.3077***				
4. Market-to-Book	1.8714	2.7828	-0.0023	0.2901***	-0.3606***			
5. Analyst Following[c]	3.1587	0.2296	0.0025	-0.0655***	0.3431***	-0.0374*		
6. Institutional Ownership	0.3842	0.1474	-0.0161	0.0155	-0.2013***	0.1349***	-0.3566***	
7. Retail Ownership	0.4684	0.1730	0.0627***	-0.0102	0.3939***	-0.1280***	0.3471***	-0.3447***

[a] "CAR" is cumulative abnormal return
[b] n = 2326
[c] Natural logarithms
* $p < 0.1$
** $p < 0.05$
*** $p < 0.001$
Two-tailed tests.

Given the non-linear relationship observed between institutional ownership and retail ownership, firms in our sample cannot be classified into two ownership groups based on a linear transformation (retail ownership = 1 – institutional ownership). Instead, firms and events are classified into four mutually exclusive ownership categories, formed by crossing high/low institutional ownership with high/low retail ownership, where *high* and *low* is determined relative to the sample median. Table 2 presents how firms and events are distributed across the four ownership categories. Most controversy events arise in firms characterized by high institutional and low retail ownership (701 events across 123 firms) and low institutional and high retail ownership (697 events across 55 firms), while the remaining categories account for substantially fewer events. Notably, the low-institutional high-retail group contains the smallest number of firms, but the second-highest number of events, suggesting that firms within this classification are involved in disproportionately frequent ESG controversy events over the sample period.

Table 2
Distribution of firms and events across ownership categories[a]

Ownership Group	N.of Firms	N.of Events
Low institutional & High retail ownership	55	697
Low institutional & Low retail ownership	65	466
High institutional & Low retail ownership	123	701
High institutional & High retail ownership	62	462
Total	305	2326

[a] All groups are mutually exclusive, i.e., a firm and event can only be classified as belonging to one of the four ownership groups

In the next section, we provide more rigorous empirical analysis to formally test our hypotheses relying on the event-study and regression-based methodologies outlined above.

Results

Our event study analysis starts with a test of our baseline argument, concerning whether shareholders react negatively to the announcement of ESG-harmful corporate behavior. The results are presented in Table 3. For each event window, we report the average CAR as a percentage (with the corresponding z-statistics in parentheses). In support of our baseline argument, the average CAR in the two-day event window is -0.174% and significant at the 1 percent level (z = -3.209). All other intervals before the two-day event window yielded CARs that are small and insignificant, which confirms that the results are not driven by unrelated trends before the event dates. In our main specification, we have relied on a two-day event window, following common practice in the literature (e.g., see Flammer, 2013). Nevertheless, we show that our results are still robust if instead we use the three-day window (-1, 1). The four-day and five-day event windows, however, yield CARs that are insignificant, suggesting that the market reaction to negative ESG news is short-term and immediate.

Table 3
CARs around the Announcement of ESG-Harmful Corporate Behavior[a]

Event Time	CAR	
(-20, -11)	-0.069	(-0.670)
(-10, -6)	-0.045	(-0.637)
(-5, -2)	-0.087	(-1.346)
(-1, 0)	-0.174***	(-3.209)
(-1, 1)	-0.165***	(-2.625)
(-1, 2)	-0.111	(-1.537)
(-1, 3)	-0.040	(-0.508)

[a] "CAR" is "cumulative abnormal return" and is expressed as a percentage, n = 2326, Event time is expressed in days
* $p < 0.1$
** $p < 0.05$
*** $p < 0.001$
Two-tailed tests.

The Impact of ownership structure on shareholders' reaction to negative ESG news

To study whether shareholders' reaction to negative ESG announcements is stronger among firms with high retail ownership and weaker among firms with high institutional ownership, we repeat the analysis in Table 3 separately for events related to firms with higher retail ownership, lower

retail ownership, higher institutional ownership and lower institutional ownership. The results are presented in Table 4. For firms with higher retail ownership, we found that the average CAR in the two-day event window was -0.042 percent, which is insignificant (z = -0.640). For firms with lower retail ownership, on the other hand, the average CAR was -0.225 percent and significant at the 5 percent level (z = -2.519). A similar pattern was found for institutional ownership for which the average CAR for firms with higher institutional ownership was -0.095 percent and insignificant (z = -1.132). For firms with lower institutional ownership, the average CAR was -0.173 percent and significant at the 5 percent level (z = 2.368). The pattern observed for institutional ownership is supportive of hypothesis 1, which predicts that firms with relatively higher institutional ownership experience less negative stock price reactions following ESG controversy announcements. While we can observe a negative and statistically significant CAR for firms with lower institutional ownership, the CAR for firms with higher institutional ownership is negative
but insignificant. In contrast, the results for retail ownership are suggestive of the opposite relationship compared to hypothesis 2, which predicted a more negative market reaction for firms with higher retail ownership. While the CAR observed for firms with relatively lower retail ownership is negative and statistically significant, the CAR for firms with higher retail ownership is negative but insignificant.

Table 4
CAR (-1, 0) across different ownership structures[a]

Ownership Group	CAR	
High Retail Ownership	-0.042	(-0.640)
Low Retail Ownership	-0.225**	(-2.519)
High Institutional Ownership	-0.095	(-1.132)
Low Institutional Ownership	-0.173**	(-2.368)

[a] "CAR" is "cumulative abnormal return" and is expressed as a percentage, n = 2326
* $p < 0.1$
** $p < 0.05$
*** $p < 0.001$
Two-tailed tests.

To assess the robustness of these findings, and to rule out alternative explanations to these results, we used the regression-based approach described under methodology. Hence, we regressed the two-day CAR on the proportion of (1) institutional ownership or (2) the proportion of retail ownership and controls. The results of this regression are presented in Table 5 for three variations

of the regression specification introduced above. In model 1, we include only firm-level controls. In model 2, we also include industry fixed effects. Finally, in model 3, we further include event fixed effects. Including firm level controls mitigates concerns that the results are the outcome of underlying structural differences in firms, rather than being driven by ownership structure itself. Including industry and event fixed effects address the issue of unobserved heterogeneity at the industry and event level, respectively.

The results for retail ownership are reported in the left-hand panel of Table 5. As is shown in model 1, the coefficient on the proportion of retail owners is 1.02% and highly significant (t = 2.76). To assess the economic magnitude, we look at one standard-deviation increase in retail ownership (17.30 percentage points). Such an increase in retail ownership is associated with a 0.1765% (0.0102 x 0.1730) increase in the two-day CAR surrounding ESG controversy announcements. Given that the average two-day CAR is -0.174%, this corresponds to a reduction of approximately 101% of the typical negative market reaction. This result suggests that firms with higher retail ownership experience a significantly less negative short-term market response following ESG controversies. The coefficient on the proportion of retail owners is very similar in model 2 and 3 when including industry and event fixed effects.

In the right-hand panel of Table 5, we repeat the same analysis with the proportion of institutional investors. While the results from the event study in Table 4 suggest that firms with low institutional ownership experience statistically significant negative abnormal returns around ESG controversy announcements, the regression analysis indicates that institutional ownership is negative but statistically insignificant across all specifications when controlling for firm characteristics and fixed effects. As is shown, in model 1, the coefficient is -0.26% and insignificant (t = -0.64) and remains similar in magnitude in Model 2 (-0.04%, t = -0.09) and Model 3 (-0.05%, t = -0.11) after including industry and event fixed effect. These results suggest that, unlike retail ownership, which consistently shows a statistically and economically significant moderating effect on the market reaction to ESG controversy announcements, institutional ownership does not explain any variation in short term stock price reactions in a statistically meaningful way.

Table 5

Regression Analysis of Cumulative Abnormal Return (-1, 0)

	Retail Ownership						Institutional Ownership					
Variable	**Model 1**		**Model 2**		**Model 3**		**Model 1**		**Model 2**		**Model 3**	
Retail Ownership	.0102***	(2.76)	.0123***	(2.86)	.0128***	(2.88)						
Institutional Ownership							-.0026	(-0.64)	-.0004	(-0.09)	-.0005	(-0.11)
Size	.0003	(0.56)	.0003	(0.34)	.0001	(0.15)	.0006	(1.41)	.0013	(1.11)	.0012	(1.38)
ROA	.0145	(1.21)	.0065	(0.54)	.0067	(0.56)	.0179	(1.48	.0097	(0.81)	.0102	(0.85)
Market-to-book	.0000	(0.12)	.0000	(-0.02)	.0000	(-0.15)	.0000	(0.10)	-.0000	(-0.10	-.0000	(-0.21)
Analysts following	-.0027	(-1.01)	-.0043	(-1.41)	-.0039	(-1.25)	-.0015	(-0.51)	-.0031	(-0.98)	-.0026	(-0.81)
Industry fixed effects	No		Yes		Yes		No		Yes		Yes	
Event-type fixed effects	No		No		Yes		No		No		Yes	
Observations	2326		2326		2311		2326		2326		2311	
R^2	0.005		0.028		0.031		0.002		0.024		0.028	

* $p < 0.1$
** $p < 0.05$
*** $p < 0.001$
Two-tailed tests.

Cross-Sectional Analysis

Changes in institutional ownership over time

Our main event-study analysis examined the short-term stock market reactions to negative ESG controversy announcements and evaluated how these reactions vary with the firm's ownership structure. While this approach effectively captures the immediate price adjustments to ESG-related negative news, it may not fully reflect how investors, especially institutional investors, respond over longer horizons. A stream of literature characterizes institutional investors, particularly those with longer investment horizons and more concentrated portfolios, as patient monitors rather than short-term traders. For example, dedicated or long-horizon institutions typically hold sizeable stakes, exhibit low portfolio turnover, and tend to favor engagement with portfolio companies over reactive trading based on short-term information (Bushee, 1998, 2001). More recent evidence also suggests that institutional investors incorporate ESG-related information asymmetrically and with a long-term perspective. Nofsinger et al. (2019) show that institutions, especially those with longer horizons, tend to underweight firms with poor environmental or social performance indicators, reflecting concerns about downside risk, potential litigation or reputational damage that may

materialize over extended periods rather than in the short-term following negative announcements. At the same time, other studies have documented a trend of active ESG engagement, where large and socially responsible institutional investors target firms with weak ESG performance, engage with them over multiple years, and through successful engagement are able to improve both ESG outcomes and firm value (Dimson et al., 2015). Taken together, this literature characterizes institutional investors as actors that can respond to ESG controversies both through strategic divestments and sustained engagement aimed at improving ESG corporate practices. Consequently, certain aspects of how institutional investors react to ESG controversy news may not be fully reflected in short-term price reactions around negative ESG announcements.

This background suggests that our finding that institutional ownership exerts limited influence on the short-term stock price reaction to ESG controversy announcements should not necessarily be interpreted as indicating indifference by institutional investors towards sustainability-related information. Rather, the result may reflect a preference among institutional investors for a more gradual adjustment process. If institutional investors are primarily concerned with long-term ESG related risk, it is reasonable to expect that they revise their holdings in firms with repeated ESG controversies over an extended period rather than reacting solely to individual short-term announcements. Such adjustments may materialize either through a reduction in ownership or, alternatively, through continued investment with intensified engagement efforts.

In this subsection, we analyze whether firms that experience high ESG controversy intensity within a given year subsequently exhibit a decline in institutional ownership, consistent with a gradual reallocation of capital away from firms perceived to have elevated ESG-related risk. In doing so, we aggregate ESG controversies to the firm-year level and classify "high-controversy years" based on the number of incidents within each calendar year. We then examine how institutional ownership evolved in the quarters following such high-controversy years.

We begin the analysis by computing quarterly observations of institutional ownership and estimate changes in ownership over multiple future horizons. We define the dependent variable as the change in institutional ownership between quarter $t + h$ and the latest quarter prior to the change horizon, expressed as:

$$\Delta \text{InstOwn}_{i,t+h} = \text{InstOwn}_{i,t+h} - \text{InstOwn}_{i,t}$$

Where h = 1,2,3,…,10 denotes the number of quarters ahead (ranging from one to ten), allowing us to capture ownership adjustments up to two and a half years following a high controversy year. A positive (negative) value of $\Delta \text{InstOwn}_{i,t+h}$ indicates an increase (decrease) in the proportion of institutional ownership over the respective horizon.

Testing the notion that institutional investors gradually divest from firms involved in repeated ESG controversies, we begin regressing the change in institutional ownership from one to ten quarters ahead on a measure of ESG controversy intensity, and controls. Formally we estimate the following model:

$$\Delta \text{InstOwn}_{i,t+h} = \alpha_h + \beta \times \text{HighCont}_{i,t} + \gamma' X_{i,t} + \varepsilon_{i,t+h}$$

where, i indexes firms and t indexes years. $\text{HighCont}_{i,t}$ is a binary indicator capturing controversy intensity at the firm-year level. It takes the value of 1 if the total number of controversy events for firm i in year t exceeds the 75th percentile of the sample distribution, and 0 otherwise. This threshold is selected to isolate cases of unusually high controversy exposure, reflecting periods during which the underlying ESG-risk is likely to be most salient to investors. X is a vector of control variables consistent with those employed in the main regression specification outlined in the methodology section. Standard errors are clustered at the firm level to correct for serial correlation in ownership dynamics over time. The coefficient of interest is β, which captures the long-term ownership response to high ESG controversy intensity. A negative and statistically significant β would indicate that institutional investors gradually reduce their equity holdings in firms experiencing controversy-intensive years.

Although institutional investors are frequently characterized as long-term monitors, their willingness to respond to ESG controversies through either engagement or gradual divestment may depend on the firm's existing level of institutional ownership. When the proportion of institutional ownership is relatively low prior to a high-controversy year, the collective influence of institutional

investors within the firm may be limited, which in turn would reduce the effectiveness of engagement making institutional investors more inclined to divest their holdings in response to increased ESG risk. By contrast, when the proportion of institutional ownership is initially high, institutions tend to be more embedded in the firm's governance and may therefore favor engagement over gradual exit due to greater monitoring capability and access to management. Consequently, it may be that the gradual decline in institutional ownership following high-controversy years will be more pronounced among firms with lower institutional ownership prior to the controversy period. To test this notion, we further split the sample at the median pre-event institutional ownership level and estimate the regression model stated above separately for firms with low and high initial institutional ownership.

Table 6 reports the results of the cross-sectional regression analysis examining how institutional ownership evolved over ten quarters following high controversy years, considering the level of institutional ownership prior to the high controversy period.[1] We report the results separately for firms with high institutional ownership prior to the high ESG controversy year (upper panel of the table) and those firms with lower institutional ownership (lower panel). Consistent with our expectation that divestment behavior of institutions is shaped by initial ownership levels, the analysis shows a clear divergence between firms with relatively high and low institutional ownership prior to the high-controversy year. For firms characterized by high institutional ownership prior to a controversy-intensive year, we found the coefficient on ESG controversy intensity to be statistically insignificant across all horizons, with estimated effects remaining small in magnitude (close to 0 percent), with no evidence of a significant decline in institutional ownership over time. This suggests that when the proportion of institutional ownership in the firm is already high, institutional investors are unlikely to divest in response to repeated controversy exposure. Instead, these investors may choose to remain invested, potentially due to stronger monitoring capabilities, and better access to management. As such, these findings support the view that institutional investors with a significant ownership presence tend to favor engagement over exit.

[1] In Table 6 we do not include additional models including fixed effects. However, we have verified that we obtain similar results if also including industry and time fixed effects.

As for firms with comparatively low initial institutional ownership, we observed a negative coefficient on high ESG controversy intensity in both the first and second quarter following controversy intensive years of -0.0016% and -0.0027% respectively, though statistically insignificant (t = -1.59 for quarter one and t = -1.54 for quarter two). From quarter t + 3 onwards, however, the coefficients estimated for high ESG controversy intensity become increasingly negative and reach statistical significance at the 10% level. For quarter t + 3, the coefficient for high ESG controversy-count was -0.0042 percent and significant at the 10 percent level (t = -1.71) and in quarter t + 10 the coefficient reaches -0.01 percent and are still significant at the 10 percent level (t = -1.81). These results indicate that institutional investors in firms with relatively lower institutional ownership prior to the high controversy years progressively reduce their holdings following increasing ESG controversy exposure. This finding is consistent with the notion that when institutions have a more limited ownership position, their influence is weaker and accordingly their incentives to engage are reduced. Instead, they are more likely to gradually divest holdings following heightened ESG controversy exposure.

The progressive strengthening of the ownership response over longer horizons also supports the expectation that institutional investors adjust to ESG controversy risk gradually and progressively rather than immediately following ESG controversy events. This finding complements our primary event-study findings, which indicate that institutional ownership does not significantly moderate short-term stock-price reactions to ESG controversy announcements. Instead, the cross-sectional regression analysis suggests that institutional investors adjust their positions over extended periods, consistent with a long-term orientation.

Table 6

Regression analysis of institutional ownership following high ESG controversy years[a]

Variable	*t* + 1	*t* + 2	*t* + 3	*t* + 4	*t* + 5	*t* + 6	*t* + 7	*t* + 8	*t* + 9	*t* + 10
High Pre-Institutional Ownership										
High ESG Count	.0008	-.0003	-.0031	-.0029	-.0022	-.0027	-.0022	-.0018	.0006	.0060
	(0.39)	(-0.09)	(-0.55)	(-0.45)	(-0.29)	(-0.34)	(-0.26)	(-0.20)	(0.062)	(0.62)
ROA	-.0200**	-.0300**	-.0300	-.0400*	-.0600**	-.0800***	-.0110***	-.1400***	-.1600***	-.1800***
	(-2.03)	(-2.03)	(-1.57)	(-1.74)	(-2.35)	(-2.87)	(-3.27)	(-3.72)	(-4.04)	(-4.17)
Size	-.0007	-.0007	-.0007	-.0013	-.0014	-.0017	-.0025	-.0039	-.0063	-.0083**
	(-1.50)	(-0.69)	(-0.55)	(-0.72)	(-0.64)	(-0.72)	(-0.96)	(-1.40)	(-2.13)	(-2.41)
Market-to-Book	.0000	.0000	.0003	.0008	.0009	.0010	.0011	.0010	.0011	.0013
	(0.13)	(0.30)	(0.65)	(0.91)	(0.87)	(0.79)	(0.78)	(0.67)	(0.72)	(0.83)
Analyst Following	-.0073**	-.0100**	-.0200**	-.0200**	-.0400***	-.0400***	-.0400***	-.0400**	-.0400*	-.0500**
	(-2.53)	(-2.38)	(-2.31)	(-2.41)	(-3.18)	(-2.89)	(-2.63)	(-2.54)	(-1.95)	(-2.11)
Observations	136	136	136	133	132	132	130	125	125	124
R^2	0.0074	0.0085	0.0128	0.0213	0.0330	0.0325	0.0348	0.0430	0.0489	0.0659
Low Pre-Institutional Ownership										
High ESG Count	-.0016	-.0027	-.0042*	-.0057*	-.0073*	-.0083*	-.0100*	-.0100*	-.0100*	-.0100*
	(-1.59)	(-1.54)	(-1.71)	(-1.70)	(-1.81)	(-1.73)	(-1.77)	(-1.80)	(-1.72)	(-1.81)
ROA	.0053	.0200	.0300	.0300	.0300	.0400	.0400	.0500	.0600	.0700
	(0.50)	(0.99)	(0.93)	(0.80)	(0.89)	(0.92)	(0.93)	(0.99)	(1.09)	(1.17)
Size	.0004	.0008	.0014	.0022*	.0027*	.0027	.0029	.0031	.0041	.0049
	(1.15)	(1.30)	(1.46)	(1.65)	(1.67)	(1.42)	(1.32)	(1.19)	(1.48)	(1.61)
Market-to-Book	-.0001	-.0004	-.0006	-.0004	-.0002	-.0000	.0000	.0000	.0006	.0009
	(-0.35)	(-1.00)	(-1.11)	(-0.52)	(-0.21)	(-0.05)	(0.03)	(0.08)	(0.46)	(0.70)
Analyst Following	-.0038*	-.0045	-.0075	-.0100	-.0100	-.0100	-.0100	-.0100	-.0100	-.0091
	(-1.72)	(-1.12)	(-1.22)	(-1.23)	(-1.05)	(-0.88)	(-0.69)	(-0.43)	(-0.42)	(-0.31)
Observations	136	134	133	131	131	131	131	129	128	127
R^2	0.0036	0.0045	0.0073	0.0092	0.0102	0.0099	0.0107	0.0112	0.0135	0.0169

[a] All Coefficients are expressed as percentages; R^2 are expressed in decimal form; t-statistics (in parentheses) are based on robust standard errors; *t* +1 is quarter 1 after the high-controversy year etc.

* $p < 0.1$

** $p < 0.05$

*** $p < 0.001$

Two-tailed tests.

Although the findings of the cross-sectional analysis are consistent with a gradual adjustment in institutional holdings following ESG controversy intensive years, particularly for firms with comparatively low initial institutional ownership, several limitations should be acknowledged when interpreting these findings. Most notably, the analysis is subject to endogeneity concerns, where observed ownership patterns may reflect anticipatory institutional trading or prior risk assessment rather than reactions to high ESG controversy intensity. For example, institutional

investors may anticipate increased ESG risk exposure before these high-controversy years occur, and as such, divest their holdings in firms already trending towards weaker ESG performance. Likewise, institutions with relatively higher initial ownership might already have priced in future controversy risk and therefore have limited need to adjust ownership following these controversy intensive years. The second limitation concerns autocorrelation. Institutional ownership may be highly persistent, which is especially relevant considering the multi-horizon design of our regression analysis. A shift in ownership at a single point in time (e.g., in quarter $t + 3$) may carry forward into later quarters, potentially generating statistically significant negative correlation estimates across later horizons even if the underlying response is not distinct at each one. Although firm-level clustered errors mitigate this issue, the strong serial correlation in ownership implies some of the estimated long-run declines may reflect persistence in institutional ownership or routine rebalancing rather than deliberate responses to ESG controversy intensive years. Finally, while the results are consistent with prior literature characterizing institutional investors as long-term monitors who may gradually divest their holdings when faced with elevated ESG risk, other mechanisms such as index rebalancing, fund-level constraints, or firm-specific developments, may also drive long-run ownership changes. Hence, the cross-sectional findings should be interpreted as indicative rather than conclusive, providing a complementary long-horizon perspective to the main event-study results.

Discussion

Are shareholders sensitive to the announcement of ESG controversies? And if so, does the magnitude of this reaction differ depending on firms' ownership structures, in particular the relative proportion of institutional versus retail ownership? Our findings provide a clear answer to the first part of our research question. Following ESG controversy announcements, shareholders react both negatively and immediately in line with similar prior research (e.g., Krüger, 2015; Flammer, 2013). For the two-day event window, we observed a negative and statistically significant CAR, indicating that ESG controversies convey material information that investors incorporate rapidly into prices. Extending this view, we further evaluated whether firms' ownership structure moderates this reaction. For this part of our research question, the findings diverge from the initial hypotheses. Whereas prior literature would predict that retail-dominated firms would experience stronger negative market reaction following ESG controversy news due to heightened sensitivity to salient

information (Barber & Odean, 2008), our results indicate the opposite. That is, a higher proportion of retail ownership is associated with a less negative stock price reaction. By contrast, our findings do not indicate any robust moderating influence of institutional ownership within the short-run event window.

Shareholders' negative reactions to ESG controversy news

The observed negative and statistically significant CARs are consistent with the view that financial markets incorporate negative news related to ESG performance rapidly and with substantial economic impact. Negative events tend to drive stronger reactions than comparable positive news (Krüger, 2015), and negative environmental news has become more salient to investors over time (Flammer, 2013). The result of the present study corroborates these prior findings in both direction and magnitude. Our sample period (2016-2024) represents the modern ESG environment, and the present study's findings further reinforce Flammer's (2013) observation that the landscape today views ESG controversies as credible signals for both operational and reputational risk. The findings are also in line with established evidence on asymmetry in market responses to ESG information, where negative ESG events tend to function as strong information signals that expose underlying weaknesses or inconsistencies in firms' sustainability practices (Kotchen & Moon, 2012; Capelle-Blancard & Petit, 2019). These attributes of negative ESG news, as being attention-grabbing, salient and frequently expose unexpected weaknesses in a firm's ESG practices, acts as valuable information for investors that accelerates the price adjustment process. This could explain why the short-term price reactions following ESG controversies are both rapid and negative in our sample.

Retail Ownership

According to hypothesis 2, firms with a higher proportion of retail ownership were expected to experience sharper short-term price declines following ESG controversy announcements, due to a higher sensitivity to attention-grabbing and salient information. Retail investors have been shown to react strongly to salient news (Barber & Odean, 2008), and often hold undiversified portfolios, increasing their exposure to firm-specific shocks (Calvet, Campbell & Sodini, 2007; Goetzmann & Kumar, 2008). Taken together, this body of literature formed the basis for anticipating a stronger negative response to ESG controversies in firms where retail ownership is relatively higher.

However, our findings indicate the opposite. Firms with greater retail ownership experience less negative abnormal returns following ESG controversies. Rather than amplifying the reaction, retail ownership appears to attenuate the negative short-term price reaction. There are several mechanisms that may explain this unexpected outcome.

First, retail investors typically have less structured access to information and often lack the resources, analytical capabilities, and managerial access available to institutional investors (Boehmer & Kelly, 2009; Cohen, Frazzini & Malloy, 2010; McCahery, Sautner & Starks, 2016) and may therefore be less capable to interpret ESG controversy news in terms of its implication for firm value. In contrast to institutional investors who often have frameworks for integrating ESG risk into decision-making, recent studies show that retail investors tend to respond to ESG information predominantly when there are clear financial consequences (Li, Watts & Zhu, 2024). In the context of large and diversified European firms, it may be that retail investors do not interpret individual negative ESG news as representing a shift in perceived risk or changes in future cash flows.

Second, companies with a higher proportion of retail ownership are often perceived as riskier, due to increased stock price volatility. Consequently, if firms with higher retail ownership are already perceived as risky, the incremental information from an ESG controversy may be considered less informative, particularly when it aligns with pre-existing expectations (Krüger, 2015).

Finally, retail investors may place relatively less emphasis on ESG information in short-term trading decisions, especially compared to institutional investors who are strongly influenced by reputational concerns and social norms and thus tend to stay away from companies engaging in unethical or socially undesirable activities (Hong & Kacperczyk, 2009; Nofsinger et al., 2019). However, the constraints that apply to institutional market participants may not to the same extent apply to retail investors and therefore do not trigger immediate trading following ESG controversies.

Together, our results indicate that retail investors do not prompt immediate repricing of ESG controversies in the same way originally hypothesized. Instead, the results suggest that a larger

proportion of retail shareholders can dampen the short-term market impact of ESG controversies. This nuance contributes to a wider recognition that investor groups differ in how they process and react to sustainability-related information. In this context, retail investors appear to exert a more stabilizing role in the immediate aftermath of an ESG controversy event, than what was previously assumed in prior literature.

Institutional Ownership

Our findings related to institutional investors indicate no significant moderating influence on the short-term price reactions to ESG controversy announcements. Although some literature suggests that institutional investors may respond strongly to negative ESG news, due to reputational constraints and formal ESG mandates (Hong and Kacperczyk, 2009; Nofsinger et al., 2019; Hartzmark and Sussman, 2019), the absence of a robust immediate impact is more consistent with the view that institutions tend to pursue longer-term engagement strategies and thus respond to ESG weaknesses through engagement rather than immediate exit (Neubaum and Zahra, 2006; Dimson et al., 2015; Krueger et al, 2020). Our additional analysis of changes in institutional ownership over longer horizons following heightened ESG controversy intensity adds to these streams of literature by showing that institutional investors' preferences for engagement over exit may also depend on the initial level of institutional ownership in the firm. Firms with relatively lower institutional ownership prior to controversy intensive years, experience a gradual decline in institutional ownership over subsequent quarters. In contrast, if institutional ownership is relatively higher prior to the controversy intensive period, we do not observe a significant decline in institutional ownership, suggesting that institutions tend to remain invested rather than divesting their investments.

This asymmetry indicates that institutions are more likely to gradually divest their holdings in firms where the initial institutional ownership proportion is limited, consistent with lower monitoring power, and less access to management. Conversely, when institutional ownership is initially high, institutions behave more in line with the engagement-oriented view (Dimson, et al., 2015; Krueger, et al., 2020; McHahery et al., 2016), where institutions appear more embedded in the firm's governance structures and may favor engagement to address ESG-related weaknesses.

Overall, these findings provide a nuance to previous findings by highlighting that institutional investor responses to ESG controversies are not uniform but also may depend on the initial extent of institutional presence within the firm.

Investor Heterogeneity and Broader Implications

A key contribution of this study lies in demonstrating how investor heterogeneity is shaping how the market reacts in response to ESG controversy announcements. While previous research often treats shareholders as a uniform group, the findings of the present study highlight that ownership structure plays an important role in how ESG-related information is processed and reflected in market prices. Specifically, retail investors appear to attenuate short-term market reactions to negative ESG announcements, whereas institutional investors do not seem to influence immediate price reactions, but rather adjust their positions gradually over time when controversy risk persists or, alternatively, through potentially increased engagement efforts. This emphasizes that different investors will operate differently, through employing various decision-making frameworks, constraints, and horizons which impact how ESG news is reflected in market prices. Accordingly, ownership structure should be viewed as an important aspect when assessing market reactions following ESG controversies. Considering heterogeneity across various investor groups, could help explain why ESG controversies of the same nature can be reflected differently in market prices across companies. Hence, this study contributes to a better understanding of how sustainability information is processed in financial markets and highlights the importance of considering investor characteristics when assessing the overall price reactions to ESG controversies.

Limitations

While the present study provides a nuanced understanding of how ownership structures shape investor's responses to ESG controversy announcements, various limitations should be considered when interpreting the findings. First, the analysis relies on the LSEG workspace (formerly Asset4 Refinitiv) for the identification and selection of ESG controversy news, which captures only publicly visible events, with high media coverage. This may bias the sample of controversy events toward more salient incidents and omit ESG incidents that receive less media coverage. Second, the event study design measures only the short-term market reactions to ESG controversies. While this design effectively captures investors' immediate reactions following these information shocks,

it fails to observe the long-run valuation effects that may unfold over extended horizons. While the complementary cross-sectional analysis of institutional ownership changes partially addresses longer-term reactions, it cannot substitute for more robust long-run performance tests. However, ESG is likely endogenous with respect to firm performance, which makes such analysis difficult. Overcoming this challenge, therefore, provides an interesting avenue for future research. Third, in the absence of transaction-level trading data, our results on investor heterogeneity are derived from pre-event ownership levels, rather than observable trades. As such, the present study cannot directly observe which investor groups actively trade during the event window, which limits the precision with which abnormal returns can be attributed to specific investor groups. Finally, the applicability of the study's findings is shaped by the composition of the sample. The S&P Europe 350 index mainly consists of large, widely held European firms subject to high ESG standards. Consequently, the results may not be applicable to smaller firms, emerging markets, or jurisdictions with different ESG norms and standards.

Suggestion for future research

Several areas of future research could extend the findings of the present study. First, the unexpected attenuating effect of retail ownership presents an interesting avenue for future research. Access to detailed trading data would allow future work to better understand the drivers behind the observed dampening effect of higher retail ownership. Another interesting avenue for research is whether the results presented in this article would apply beyond large European firms. Such analysis could potentially reveal important cross-market heterogeneity and help clarify how regulatory pressure shapes investor reactions to ESG failures. Finally, further disaggregating investor groups such as those with longer-term horizons, passive investors, and funds with ESG-focused objectives could help uncover additional heterogeneity within these ownership groups that the aggregate measures in the present study fail to account for.

Conclusion

This thesis examined whether shareholders react negatively to the announcement of ESG controversies, and whether these reactions vary between firms with different ownership structures, focusing on the relative proportions of institutional and retail ownership. Relying on a large dataset of 2326 ESG controversy events across firms included in the S&P Europe 350 index between 2016

and 2024, an event-study design complemented with a regression analysis was employed to assess how investors incorporate negative ESG information into stock prices within a European context.

The results presented by the thesis show that European markets react both negatively and immediately to negative ESG news, reinforcing previous evidence on asymmetric investor responses to negative ESG news. These findings thus confirm that, even within a European context, with advanced ESG integration, negative ESG news continues to serve as meaningful information signals that investors incorporate into prices.

A central contribution of this thesis is the insight it provides related to investor heterogeneity and how different ownership structures shape these market reactions. Contrary to expectations based on retail investors' sensitivity to salient news and firm-specific risk, our findings show that a higher proportion of retail ownership tends to dampen the short-term negative market reaction to ESG controversies. Institutional ownership, in contrast, does not seem to exert any significant moderating effect on the short-term price reaction. These patterns suggest that retail investors may place relatively less weight on ESG incidents or that lower monitoring and information processing capabilities limit their ability to incorporate this news into prices, whereas institutional investors' long-term orientation and engagement preferences reduce their likelihood to react immediately to ESG controversies. As a complement to the short-term analysis, the thesis also sets out to examine institutional investors' longer-term response to heightened controversy risk. Consistent with expectations, the findings indicate that institutional investors gradually reduce their holdings over time following years with high ESG controversy exposure, but only when the initial institutional ownership in the firm is relatively lower. When the initial institutional ownership is higher, no significant decline in institutional ownership is observed, consistent with engagement preferences and greater governance influence associated with higher institutional ownership.

Together, these findings contribute to the ESG- finance literature by suggesting a more nuanced view of how investors process information about negative ESG events. Instead of assuming that investors are uniform in their beliefs and actions, this study emphasizes that ownership structure is important both to the timing and the magnitude of the market reaction, which is a factor often overlooked in prior research.

Our findings also offer several implications for management, investors, as well as regulators and standard setters. From a managerial perspective, shareholders' negative short-term reactions to negative ESG controversies underline the importance of designing and implementing effective ESG policies, internal controls, and risk management strategies to prevent ESG-harmful corporate incidents. The long-horizon divestment pattern observed among firms with low institutional ownership further reinforces the value of transparent disclosure and proactive engagement with institutional investors. Furthermore, since the ownership structure affects how ESG information is incorporated into prices, investors should benefit from considering both ESG performance and the ownership characteristics of the firms when assessing the persistence of ESG-related risks and expected returns. Finally, and perhaps most importantly from a policy perspective, the weaker short-term response observed in retail-dominated firms may reflect information asymmetry and heterogeneous access to ESG data. This suggests that policies and standards aimed at enhancing comparability and clarity of ESG-related disclosures could strengthen the ability of all investors to better incorporate material sustainability risk into prices and investment decisions. Moreover, the long-run divestment pattern among institutions with initially lower ownership highlights the importance of regulatory frameworks that facilitate engagement. Increased cooperation between institutions and regulators to establish transparency requirements and engagement guidelines may prove effective in supporting monitoring, and promoting more informed capital allocation, particularly in firms where institutional investors currently lack the collective influence to drive improvements in ESG practices.

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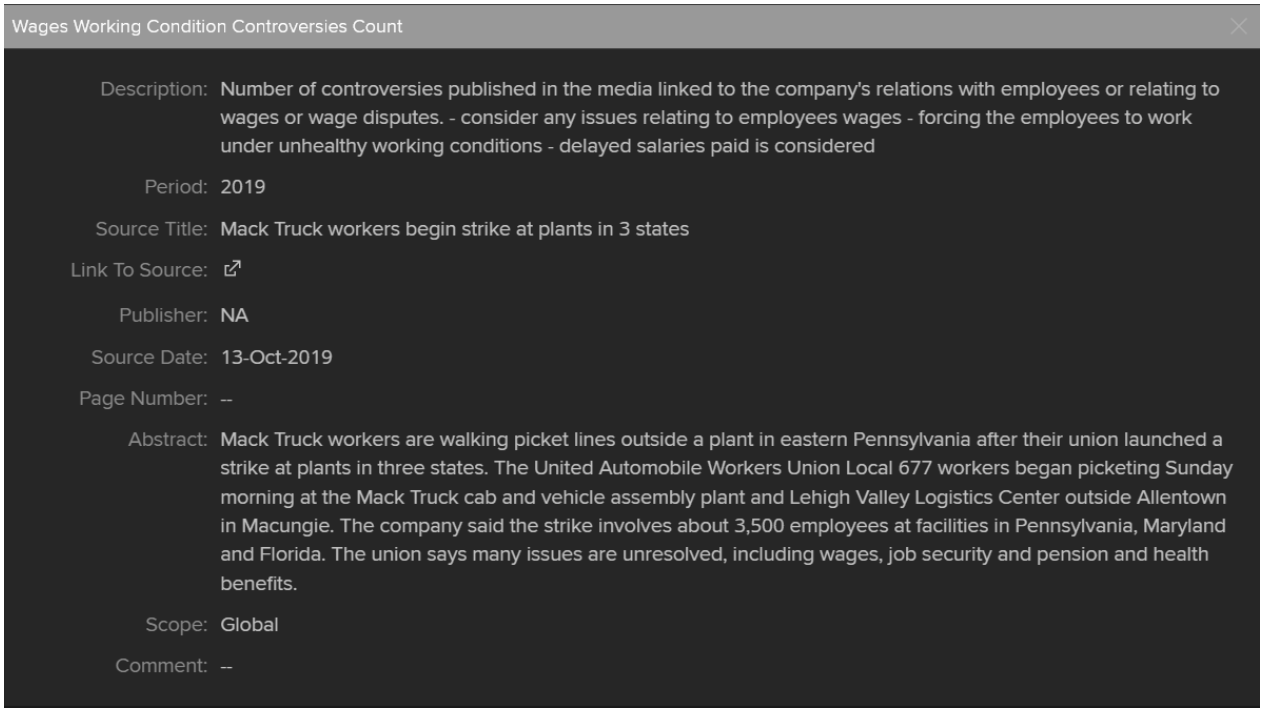
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Appendix A

An Illustrative Example of an ESG Controversy Event from LSEG Workspace



Appendix B

Frequency of Events at the Environmental Issue Level

Table B
Number of Events per Environmental Issue

Environmental Issue	Number of Events
Anti-Competition Controversies	900
Environmental Controversies	416
Consumer Complaints Controversies	396
Wages Working Conditions Controversies	266
Shareholder Rights Controversies	189
Mgt Compensation Controversies	39
Accounting Controversies	29
Insider Dealings Controversies	19
Greenwashing Fines Controversies	15
Emission Controversies	13
Water And Marine Resource Controversies	12
Pollution Controversies	10
Fossil Fuel Debt Finance	7
Biodiversity And Ecosystem Controversies	4
Wastewater Management Controversies	4
Deforestation Controversies	3
Climate Risk Insurance	3
Resource use Controversies	1

Appendix C

LSEG Workspace's list of ESG controversies

At the environmental issue level, LSEG Workspace classifies controversy news according to the following categories:

- *Environmental Controversies*: Number of controversies related to the environmental impact of the company's operations on natural resources or local communities. - consider information on oil spills/leaks occurred from a company's operations - toxic water/waste let out by a company's operations.
- *Wages Working Conditions Controversies:* Number of controversies published in the media linked to the company's relations with employees or relating to wages or wage disputes. - consider any issues relating to employees' wages - forcing the employees to work under unhealthy working conditions - delayed salaries paid is considered.

- *Anti-Competition Controversies:* Number of controversies published in the media linked to anti-competitive behavior (e.g., anti-trust and monopoly), price-fixing or kickbacks.
- *Consumer Complaints Controversies:* Number of controversies published in the media linked to consumer complaints or dissatisfaction directly linked to the company's products or services. - consumers or customers of the company suing the company for a faulty product/service - any complaints raised against the company by their customers.
- *Management Compensation Controversies:* Number of controversies published in the media linked to high executive or board compensation. - lawsuits against company filed by board members - lawsuits filed where compensation is paid unjustifiable - any wrong statements on management compensation by the company.
- *Shareholder Rights Controversies:* Number of controversies linked to shareholder rights infringements published in the media. - shareholders sue the company if they think the company has decieved them - lawsuits against the company for any unlawful acts by the company.
- *Insider Dealings Controversies:* Number of controversies published in the media linked to insider dealings and other share price manipulations. - lawsuits relating to share price manipulations - any dealings in the shares of the company, by the insiders or related thereof, acting upon the news which is private and confidential and not available to the public.
- *Accounting Controversies:* Number of controversies published in the media linked to aggressive or non-transparent accounting issues. - lawsuits/cases where company's books of accounts is being manipulated.
- *Deforestation Controversies:* Number of controversies published in the media linked to Extensive cattle ranching, logging for materials and development displacement or impact of indigenous communities, extensive single crop plantation, Forest Fires etc, occurred from a company's operations.
- *Water and Marine Resource Controversies:* Is the company under the spotlight of the media because of a controversy linked to Marine Engineering and Oil Drilling also spillages, Unsustainable Aquaculture or Overexploitation of Fishing Resources, Dredging, Pollution and Trash causing plastic debris or micro plastic (Tyres, Synthetic Textiles, Marine Coatings, Road Markings, Personal Care Products, Plastic Pellets).

- *Exposure to Supply Risk Controversies:* Is the company under the spotlight of the media because of a controversy linked exposure to (geo-political) supply risk like supply chain geopolitical risk is the possibility that your supply chain is disrupted by global political, cultural, or socioeconomic events. Revolution, war, trade regulation, and tariff conflicts increase costs and reduce supply chain efficiency and also doing business in critical countries.
- *Biodiversity and Ecosystem Controversies:* Is the company under the spotlight of the media because of a controversy linked to companies' action leading to biodiversity and ecosystem degradation and the exploitation of sensitive ecosystems. Action such as rights of indigenous people have allegedly been infringed, negative impact on the forest ecosystem and endangered species.
- *Resource Use Controversies:* Is the company under the spotlight of the media because of a controversy linked to depleting the resource base and degrading the environment. Resource Use linked to mining, oil and gas extraction (shale basins/bituminous sands), hydraulic fracturing, cattle grazing(ranches), use of virgin land for agriculture, unsuitable agricultural practice such as over exploitation (illegal land-clearance for palm plantations) etc.
- *Emission Controversies:* Number of controversies published in the media linked to Hazardous Air Pollutants, vehicle Air Pollutants, industrial facilities Air Pollutants, impact air quality, violation of clean Air Act, Ozone layer protection (Product risk) etc, occurred from a company's operations.
- *Waste Water Management Controversies:* Is the company under the spotlight of the media because of a controversy linked to unregulated Sewage by factories or due to companies' production activities, not meeting effluent standards set by the Regulators and illegal discharge of contaminated water to the nearby communities or natural water ways.
- *Low Carbon Transition Controversies:* Is the company under the spotlight of the media because of a controversy linked to Not Embracing what's known as circularity, the idea that humanity should reuse things – from computer parts to clothes – instead of making them a new in factories or resource extraction or cutting back on the commitment on carbon transition. Risking the capacity of infrastructure such as refineries, processing plants and pipelines.

- *Greenwashing Fines Controversies:* Is the company under the spotlight of the media because of a controversy linked to lobbying activities? Wherein Many individuals or interest groups use lobbying to influence laws, government decisions, and political outcomes leading to ethics and morals involving bribing or influence peddling.
- *Extraction Virgin Natural Resources Controversies:* Is the company under the spotlight of the media because of a controversy linked mass extraction of Virgin Natural Resources like wood for virgin forest effects leading to biodiversity loss and mass mineral or resource extraction leading to climate change, pollution, gas emission and human conflict.
- *Fossil Fuel Debt Finance:* Is the company under the spotlight of the media because of a controversy linked to the Debt finance for fossil fuel and climate risk insurance case like negative impact of climate change, Taking Minimal Action and Implications of making no action.
- *Climate Risk Insurance:* Is the company under the spotlight of the media because of a controversy linked to Insurance for fossil fuel and climate risk insurance case like negative impact of climate change and Under insurance coverage commitment for risky projects.
- *Pollution Controversies:* Is the company under the spotlight of the media because of a controversy linked to Pollution Controversies such as the NGOs or surrounding communities oppose the company's future activities, projects as they believe it will be too harmful for the environment or nearby communities, land pollution, light pollution, plastic pollution, radioactivity, noise pollutions.

Appendix D

Use of AI tools

Throughout the process of writing this thesis, AI tools have been used to support us in less substantive tasks. We have primarily used the tool ChatGPT for the following tasks:

- Brainstorming thesis ideas: used as a ballpark for identifying different research angels.
- Explaining academic articles: used in the early stages as a helping tool to understand complex concepts in different literature streams.
- Proofreading: used to ensure that there are no grammar/spelling mistakes throughout the text to enhance the readability.

- Structuring: used as a ballpark to get feedback on our way of structuring the text.
- General ballbark tool: used as a ballpark for giving us feedback on the readibility and clarity of the text, such as which parts of the text could be improved and clarified in its way of writing.
- Research rabbit: this tool was used to find relevant literature, and to ensure important articles within the research field were not missed.

Despite the use of ChatGPT and other AI tools in the above mentioned way, all the core contributions, analysis and conclusions are made by us.

Contribution to Thesis Quality

Using different AI tools has contributed to our thesis, by enhancing our understanding of different theoretical concepts, finding more relevant literature (Research rabbit) and also in the way parts of the text are structured. Using AI tools in this way has also given us more time to focus on data analysis and developing our arguments, which in itself most likely increased the quality of this thesis.

Risks and mitigation

As there are big inherent risks with trusting AI tools such as hallucination and false information, we have mitigated this by only relying on AI for support tasks, such as summarizing, explaining and giving structuring suggestions. When employed for more complex tasks, i.e Research rabbit and finding literature, this has been cross-checked in reality by reading through the literature and seeing that the information adds up.

Insights Gained From Using AI

Even though AI tools in many ways helped us become more efficient and improved the structure and clarity of our work, we also realize that it can not replace our own analytical judgement. Hence, despite being able to improve productivity this thesis process has reinforced our belief that it really needs to be used in a responsible way and the analytical thinking and contribution needs to come from the writers themselves.