Corporate Emissions Target Announcements: Credibility and Market Reaction*

Xiaoyan Jiang†, Shawn Kim‡, and Shirley Lu§

September 2025

Abstract

We study stock market reactions to corporate announcements of emissions reduction targets. Using generative AI, we identify 2,417 announcements and document three findings. First, target announcements are associated with negative stock price reactions. Second, firms with more credible disclosures receive more negative reactions. Third, firms with more negative market reactions subsequently reduce their emissions more. We identify two reasons firms set targets and follow through despite negative market reactions: (i) benefits are realized later when climate regulation materializes; and (ii) ESG-linked pay incentivizes target announcement and subsequent decarbonization. Our findings shed light on how market values voluntary climate commitments.

Keywords: emissions reduction target, decarbonization, climate change, accountability, event study

JEL classification: Q54, M14, M41, G14

*We thank Krishna Palepu, George Serafeim, Lakshmanan Shivakumar, Michael Toffel, Peter Tufano, and seminar participants at NYU Stern School of Business, MIT ACP Seminar, LMU Munich, London Business School and Harvard Business School for helpful comments and insights. We thank Carissa Hanjani and Ling Lin for excellent research assistance. All errors are our own.

†Stern School of Business, New York University (xj2379@stern.nyu.edu)

‡Haas School of Business, University of California, Berkeley (shawn_kim@haas.berkeley.edu)

§Harvard Business School (slu@hbs.edu)

1 Introduction

This paper studies the market reaction to firms' announcements of emissions reduction targets, and examines how the market reaction relates to the firms' subsequent decarbonization. Companies are central to the net-zero transition, and a growing number of companies are announcing emissions targets. If these targets are credible, they could make a meaningful contribution to global decarbonization efforts and the achievement of the Paris Agreement goals (Rogelj et al., 2016, 2023). However, academic research on corporate emissions targets remains in its early stages and has largely focused on firm-level determinants of target setting (Freiberg et al., 2021; Bolton and Kacperczyk, 2025). Understanding how the equity market perceives the announcements of these targets is important for two reasons. First, as these targets are some of the most prominent forward-looking climate disclosures, understanding how the stock market responds to these targets speaks to the value-relevance and credibility of corporate climate disclosure. Second, by examining the relationship between the market reaction to target announcements and subsequent decarbonization, we shed light on whether the market, on average, sets accurate expectations about the future outcomes conveyed by these disclosures.

Ex-ante, a market reaction to these announcements could be positive, negative, or nonexistent, each carrying distinct implications. A positive reaction would suggest that the targeted emissions reductions are perceived as value-enhancing, such as from improved public perception or a mitigation of transition risks. Bolton and Kacperczyk (2021) find that firms with higher carbon emissions tend to have higher expected returns, consistent with investors requiring compensation for greater exposure to transition risk. A credible disclosure about future emissions reductions could mitigate these risks and, in turn, generate a positive market reaction. Moreover, if stakeholders—including customers, employees, and long-term investors—reward firms for credible climate commitments,

such disclosures could also enhance firm value through reputational benefits or increased demand, further contributing to a positive market response (Lins et al., 2017; Dyck et al., 2019).

On the other hand, a negative market reaction would suggest that investors perceive emissions reduction efforts to be net costly for firms. Because greenhouse gas emissions are a negative externality, decarbonizing firms typically bear the costs of abatement without fully capturing the societal benefits. Meeting emissions targets often requires significant capital expenditures, operational restructuring, and supply chain transformation (Gillingham and Stock, 2018). Estimates from McKinsey suggest that achieving a global net-zero transition would require approximately $9.2 trillion in annual investment through 2050 (McKinsey & Company, 2022). Especially when the potential benefits are long-term and uncertain—such as avoided carbon pricing regulations—investors may perceive these commitments as costly in the present, leading to negative market reactions to target announcements.

Another possibility is that the market does not react to emissions target announcements. This can occur if investors view the targets as lacking credibility, as immaterial to firm value, or if they are simply unaware of the disclosures. For example, Jiang et al. (2025) do not find significant stock price response to either the initial announcements or the final outcomes of emissions targets expired in 2020, based on a sample of 90 firms. Similarly, Desai et al. (2023) report no significant reaction to emissions target announcements in the oil and gas sector for 32 firms. One concern about the lack of significant findings in prior studies is the small sample size, which limits the statistical power of their analysis. Additionally, market reactions may be muted if investors are unaware of emissions target announcements.

In this paper, we address these challenges by constructing the largest and most comprehensive dataset of corporate emissions target announcement events. Leveraging GPT-based natural lan-

guage processing (NLP), we identify 2,417 corporate emissions target announcements from 2006 to 2023 using news headlines from RavenPack, a widely used financial news analytics database covering over 55,000 global firms. We require the headline to contain a target year, a word relating to environmental issues (e.g., emissions, climate), and a word relating to target setting (e.g., announce, target, aim). We exclude events within five days of an earnings event, where it will be difficult to isolate the market reaction to the emissions target announcement alone. Among the 2,417 events, 800 (33%) mention net-zero targets, 759 (31%) have a target year of 2030, and 630 (26%) have a target year of 2050, based on the headlines. 1,326 (55%) announcement events come from firms covered by the CDP, suggesting that our sample has substantially higher coverage than the CDP (Jiang et al., 2025; Bolton and Kacperczyk, 2025).

On average, our event study reveals a negative stock price reaction following firms' emissions target announcements. The 5-day cumulative abnormal return (CAR) around days [-1,3] using the Fama-French 3-factor model is -0.235%, and this result is robust to using the market model, capital asset pricing model (CAPM), Fama-French 5-factor model, and a matched controls approach. Plotting out in event time, Figure 1 Panel A shows that CAR is flat around zero between days -10 to 0, and becomes negative starting from the announcement event, reaching an average of -0.09% in day five and -0.27% in day ten.[1] Overall, this result is consistent with investors viewing emissions targets as net costly to firm value on average. At the same time, we observe a significant amount of heterogeneity in the market response. For example, the negative market response is more pronounced for targets that are more ambitious (based on the committed rate of decarbonization from CDP targets data), consistent with these targets being perceived as more costly.[2]

[1] This pattern suggests that investors gradually incorporate the implications of emissions targets into firm valuation rather than reacting instantaneously. Overall, we do not find statistically significant abnormal trading volume around these events, but the abnormal volume is significantly higher for target announcements with more media coverage.

[2] The more negative response for more ambitious targets is less consistent with an alternative explanation that the negative market reaction stems from firms announcing targets that are less ambitious than market expectations.

One concern in interpreting our results is the potential for selection bias, as firms self-select into announcing emissions targets. To address this, we first estimate a determinants model to identify firm characteristics associated with the likelihood of target announcements among all firms in our RavenPack sample. The results show that larger firms, firms with higher environmental scores, and firms with higher emissions are more likely to announce targets, while high-growth firms are less likely to do so. We then separate target announcements based on the predicted value from this determinants model, and find that the average 5-day CAR is –0.331% and statistically significantly for targets with below-median announcement propensity, and -0.078% and not statistically significant for those with above-median announcement propensity. This more pronounced negative reaction for low propensity sample is consistent with two possibilities: first, firms may self-select into announcing targets when the expected benefits outweigh the costs; and second, these announcements may be less anticipated by the market, thereby containing more new information, both resulting in a more negative market reaction. In subsequent analysis, we focus on the heterogeneity in market reactions, and control for these variables related to target announcements.

Next, we examine whether market reactions depend on the credibility of emissions targets. If investors believe targets are merely symbolic, they should exhibit little to no reaction. However, if they view credible targets as costly to implement, we expect a more negative stock price reaction for stronger commitments. We find that market reactions are significantly more negative for firms with external assurance on their Scope 1 or 2 emissions, a commonly used measure of credibility in the accounting literature (Simnett et al., 2009; Gipper et al., 2024). Similarly, firms with a longer track records of disclosing annual emissions data experience a more negative reaction, consistent with the idea that regular disclosure of backward-looking information serves a disciplining role and enhances the credibility of forward-looking commitments (Ball et al., 2012). Furthermore, we use environmental scores as a proxy for overall environmental credibility and find that firms with

higher environmental scores experience a significantly more negative reaction. We also take the first principal component of these three proxies for credibility, and the results remain robust.

Next, we examine how the market reaction to emissions target announcements relates to the firm's subsequent decarbonization. We consider two competing hypotheses. First, the confirmation hypothesis posits that the market correctly anticipates which firms will follow through with meaningful and costly emissions reductions, such that firms with more negative market reactions are expected to decarbonize more. Second, the learning hypothesis suggests that managers interpret the stock price response as a signal of how investors perceive the value of their climate commitments (Chen et al., 2007; Cao et al., 2024). Under this view, firms receiving negative reactions may scale back their climate strategies, resulting in lower decarbonization. To test these hypotheses, we conduct a staggered difference-in-differences analysis based on the timing of each firm's first emissions target announcement. We also implement a stacked difference-in-differences specification, in which each treated firm is matched with three control firms based on pre-announcement characteristics used in the determinants model. Across both approaches, we find that firms with more negative market reactions subsequently achieve greater reductions in emissions intensity, consistent with the confirmation hypothesis.

Overall, we find that emissions target announcements are associated with negative short-term market reactions, and firms receiving negative reactions decarbonize more after emissions target announcements. This raises a central question: why do firms voluntarily announce and pursue emissions targets when the market, on average, reacts negatively?

We hypothesize and find support for two potential explanations. First, the benefits of target setting may not be realized at the time of the announcement, but instead accrue later when transition risks, such as through climate regulations, materialize. Specifically, we find that firms with pre-

existing emissions targets experience less negative market reactions around major events related to the SEC's proposed climate disclosure mandate, for which the overall market reaction is negative (Amiraslani et al., 2024). This findings suggest that emissions targets may serve as a hedge or insurance against future regulatory costs, and that the benefits of such commitments are realized only when transition risks become salient. Survey evidence from Stroebel and Wurgler (2021) supports this view, showing that respondents identify regulatory risk (e.g., carbon pricing) as a primary motivation for addressing emissions and believe that climate risks are systematically underpriced by financial markets.

Second, there is a rise in ESG-linked executive compensation structures, where executive compensation is linked to performance on ESG metrics, such as greenhouse gas emissions. While such components are generally smaller than stock-based incentives, they can serve to shape managerial focus on ESG priorities and facilitate alignment with long-term sustainability objectives and stakeholder interests (Cohen et al., 2023; Flammer, 2021). We find that firms with ESG-linked pay are more likely to announce targets and are more likely to decarbonize after doing so. Notably, among firms that experience negative market reactions at the time of the announcement, only those with ESG-linked incentives are associated with significant reduction in emissions intensity. This pattern suggests that compensation structures tied to ESG performance incentivize managers to pursue decarbonization, offering one explanation for why firms commit to costly climate targets even when such efforts are not immediately rewarded by the market.

This paper contributes to three key literature. First, we contribute to research on voluntary environmental disclosure by providing new evidence on how markets process forward-looking climate information. While most prior work focuses on the voluntary disclosure of backward-looking metrics such as greenhouse gas emissions (e.g., Matsumura et al., 2014; Cohen et al., 2023), we add to the emerging literature examining forward-looking emissions reduction targets (e.g., Ioannou

et al., 2016; Freiberg et al., 2021; Bolton and Kacperczyk, 2025). Distinct from prior studies that examine the firm-level determinants of target adoption (e.g., Freiberg et al., 2021; Bolton and Kacperczyk, 2025) or target progress and outcomes (Aldy et al., 2025, 2023; Jiang et al., 2025), our analysis centers on the announcement event itself, allowing us to isolate the informational content of the disclosure and assess its perceived value to investors. By leveraging RavenPack data to identify target announcements across a large sample of firms, we mitigate the small-sample and power limitations that constrain earlier studies of market reactions to emissions target announcements (Desai et al., 2023; Jiang et al., 2025).

Second, we contribute to the literature on the market pricing of climate-related risks and disclosures. Prior research shows that financial markets respond to ESG-related information, particularly when it is financially material or exposes firms to transition risk (Flammer, 2013; Grewal et al., 2019; Krueger et al., 2020; Bolton and Kacperczyk, 2023). However, little is known about how investors interpret these forward-looking climate commitments. We provide the first large-sample evidence on short-term stock price reactions to such announcements and find that, on average, the market responds negatively to these announcements, but with significant heterogeneity. These findings suggest that investors differentiate across emissions targets based on expected costs and credibility, consistent with theories that carbon risk is priced, but also potentially mispriced due to information frictions about future potential benefits (Stroebel and Wurgler, 2021).[3]

Third, we contribute to the literature on the credibility of voluntary disclosure. The market reaction is more negative for firms with characteristics that enhance disclosure credibility, consistent with the notion that investors perceive credible commitments as more binding, and thus costlier to implement. For example, we find stronger negative reactions for firms that obtain reasonable

[3]This interpretation contrasts with evidence from green bond announcements, which tend to elicit positive market reactions (Tang and Zhang, 2020; Flammer, 2021). Unlike green bonds, which are tied to specific financing mechanisms and may signal access to climate solutions (Lu et al., 2024), emissions targets involve longer-term operational commitments and uncertain costs, which may explain the divergent investor responses.

assurance on GHG emissions, a practice shown to enhance the reliability of carbon reporting (Gipper et al., 2024), and for firms with a longer track record of emissions disclosure, which increases the confirmatory power of forward-looking commitments (Ball et al., 2003). Together, these results highlight how the credibility of emissions targets influences their pricing and provide new evidence on how markets distinguish between symbolic and substantive climate disclosures.

2 Data and Methodology

2.1 Emissions Targets Announcement Events

To identify emissions target announcement events, we use data from RavenPack. RavenPack collects and structures real-time news content from thousands of global sources, including major newswires, press release services, and financial publications. Their entity-level analytics cover over 55,000 business entities worldwide, allowing us to capture a wide range of firm-level announcements as they appear in the media.

We begin with three criteria to identify headlines that potentially correspond to emissions target announcement events. First, we require the article to have a relevance score of 90 or higher, which indicates that the article is highly relevant to the specific firm mentioned. Articles with lower relevance scores often refer to broader economic developments or industry news rather than firm-level actions (e.g., a country setting an emissions reduction target). Second, we require that the headline contains two sets of keywords: one related to environmental topics and another related to target-setting language.[4] Third, we require the headline to contain a valid target year, and apply two additional filters. (1) The year must fall between 2006 and 2023; this range excludes invalid or misclassified numbers (e.g., "1005" or "3020") and reflects the period covered by our media

[4]Environmental keywords: environment, environmental, green, renewable, emission, emissions, carbon, climate, pollution, electricity, co2, ghg, greenhouse gas, net zero, cdp, net-zero, sbti, science-based, science based, sasb, sustainable, sustainability, warming, recycle, circularity, clean energy, energy efficiency, energy transition. Target-related keywords: target, goal, commit, aim, objective, quota, pledge, ambitio, resolution, mission, milestone, benchmark, sbt, science-based, science based, net-zero, net zero, carbon neutral, carbon-neutral, climate neutral, climate-neutral.

data. (2) The year mentioned in the headline must be later than the article's publication year, since earlier or same-year references are more likely to reflect existing or past targets rather than forward-looking commitments. To implement this, we use regular expressions to extract the most recent year mentioned in the headline and compare it to the article's publication year.

The first three steps yield approximately 12,000 unique media headlines that broadly relate to a firm's environmental targets.[5] We then use artificial intelligence to refine this sample by classifying whether each headline specifically refers to an emissions-related target. This step helps filter out headlines referring to broader sustainability goals or industry-wide announcements that mention multiple firms. To train and refine the GPT prompt, we manually labeled 300 headlines and iteratively improved the classification process, achieving a 96% accuracy rate on this training sample. Applying the finalized prompt to the full dataset results in roughly 8,000 headlines being classified as emissions-related. To validate accuracy out-of-sample, we randomly selected an additional 100 headlines not used in the original training set and found a 95% accuracy rate. Details on the GPT classification process, including sample sentences and the prompt used, are provided in Online Appendix 1.

Table 1 summarizes the sample selection process. Among the 55,196 firms covered by RavenPack, the first three steps yield 1,868 firms with headlines related to environmental targets. After applying the GPT classification to identify emissions-related targets, the sample is refined to 1,454 firms. Because many headlines refer to the same underlying event, we aggregate observations into a single event if they occur within a 30-day window. We assign the event date as the day with the highest number of media articles, which in most cases corresponds to the first day in the window [6]. This aggregation reduces 4,613 firm-day observations with target headlines to 2,941 distinct target

[5]The number of unique media headlines is larger than the number of firm-date target events of 7,071, as shown in Table 1, because there could be multiple unique media headlines for each target announcement event.

[6]In 95.1% of target announcement event windows, the event date is the first day of the window.

announcement events. We exclude 524 events that occur within five days of an earnings announcement, where the market reaction could be driven by earnings news rather than the emissions target disclosure. Our final sample includes 2,417 emissions target announcements.

Table 2 shows the sample distribution of the target announcement events. Among the 2,417 target announcement events, 1,326 (55%) are from firms that are covered by the CDP, indicating that our sample offers broader coverage than studies relying on CDP data (Jiang et al., 2025; Bolton and Kacperczyk, 2025). Based on headline content, 800 events (33%) mention net-zero targets, 759 (31%) specify a target year of 2030, and 630 (26%) reference a 2050 target year. Panel B shows that the most amount of target announcements are concentrated in recent years, with the highest amount in 2021 with 780 announcement events. At the same time, the dates of announcements are spread out, where the median number of firms announcing on the same date is 2. The highest is on Earth Day, April 22, 2021, where 15 firms announced targets on that date. The dispersion of dates mitigates concerns that the observed effects are driven by confounding events, such as around policy announcement shocks.

2.2 Other Data

Following Ioannou et al. (2016) and Bolton and Kacperczyk (2025), we include several financial and environmental variables as determinants of emission-reduction target announcements, as well as control variables in the market reaction tests and post-announcement tests. Specifically, we incorporate financial data from Datastream, environmental scores from MSCI, emissions data from Refinitiv, and the assurance status of reported emissions from CDP reports. Summary statistics for the firm-event-window level panel data and the firm-year level data are presented in Panels A and B of Table 3, respectively.

2.3 Event Study Methodology

We apply the standard event study methodology to examine market reactions around emissions target announcement events (Krüger, 2015; Tang and Zhang, 2020). Our main analysis uses the abnormal returns based on the Fama-French 3-factor model, and we also show results using the market model, CAPM, Fama-French 5-factor model, and the daily returns of matched control firms (Fama and French, 1993, 2015). For each emissions target announcement, we estimate the cumulative abnormal returns (CAR) over various windows around the event date (e.g., [-1 day, 3 days] windows, [-10 days, 30 days] windows). The daily abnormal returns calculated using the Fama-French 3-factor model is: $AbnRet_{i,t} = Ret_{i,t} - RF_t - \alpha_i - \beta_i(M_t - RF_t) - \gamma_i SMB_t - \delta_i HML_t$. $Ret_{i,t}$ is the daily return of the firm i on date t, where $t = 0$ is the target announcement date. M_t is the market return of the date and RF_t is the risk-free rate. SMB_t is the size factor (Small Minus Big) and HML_t is the value factor (High Minus Low). To estimate α_i, β_i, γ_i, and δ_i, we use the daily returns data during [-130 days, -30 days) window—the estimation window—for each announcement. Abnormal returns are in log percentages. For robustness, we report abnormal returns around emissions target announcements using alternative asset pricing models (the market model, CAPM, and Fama-French 5-factor model). We also report abnormal returns constructed using matched control firms. For this approach, we identify matched control firms for each target announcing firm based on pre-announcement firm characteristics used in the determinants model, and use the average daily returns of the matched controls to calculate abnormal returns.

3 Market Reaction to Emissions Target Announcements

Table 2 shows the average 5-day CAR around days [-1,3] of emissions target announcement events for different sample groups using the Fama-French 3-factor model. Panel A reports an average CAR of –0.235% for the full sample, with a t-statistic of –2.860, indicating that the mean

CAR is significantly different from zero under the assumption of normally distributed returns. To complement this, we also report results from the nonparametric Wilcoxon signed-rank test, which evaluates whether the median CAR differs from zero without relying on distributional assumptions, and is less sensitive to outliers. The Wilcoxon test yields a p-value of 0.001, reinforcing the finding of a statistically significant negative market reaction. This result remains similar when we use the market model, CAPM, Fama-French 5-factor model, and the matched control approach. The magnitude is comparable to prior studies, where Krüger (2015) finds an 11-day CAR around days [-5,5] of -1.54% for negative environmental events. We focus on a shorter event window to reduce noise, but also show results for longer time periods after the initial announcement event. Figure 1 plots CAR for a longer time period from days -10 to 10. Panel A shows results using Fama-French 3-factor model, CAR remains flat around zero -10 to 0, and becomes negative starting from the announcement event, reaching an average of -0.09% in day five, and -0.27% in day ten. This pattern suggests that investors gradually incorporate the implications of emissions targets into firm valuation rather than reacting instantaneously. Overall, our result is consistent with the market viewing emissions targets as costly to firm value.[7]

While the overall market reaction is negative, we observe significant heterogeneity across different target characteristics. While the average market reaction is negative, only 53.5% of target announcements receive negative market reactions. Figure 2 plots the distribution of 5-day CAR and it resembles a normal distribution, with a slight tilt to the negative side. As such, in the remainder of the paper, we focus on understanding the heterogeneity in market responses. One observation is that the negative market response is more pronounced for targets that are more ambitious, which is consistent with a larger reduction in emissions being more costly. To proxy for

[7]Our results differ from papers that find a positive reaction to green bond issuance, such as Flammer (2021) and Tang and Zhang (2020), likely because green bond issuance signals the availability of climate solutions, where Lu et al. (2024) find that firms with climate solutions have higher valuation.

target ambition, we bring in the average emissions target reduction rate from CDP, and firm-years with more ambitious targets have more negative 5-day CARs.

Table 2 Panel B shows the distribution of emissions target events by year of announcement. The majority of target announcements concentrate in 2021 and 2022, and the average 5-day CAR are -0.383 and -0.245, respectively. When separated by target end years, we find similar negative market reactions to those ending in or before 2030, and those after 2030.

Table 2 Panel C shows the cross-sectional variation by GICS industry groups, which reveals several descriptive patterns. First, industry groups with high decarbonization costs, such as transportation, energy, and materials, show more negative 5-day CARs, consistent with investor concerns about future implementation costs. Second, industry groups with more climate solutions experience less negative reactions, such as utilities (driven by the renewable energy industry) and capital goods (driven by battery producers in the electrical equipment industry). Third, the market reaction is less negative for retails with lower scope 1 emissions, such as hotels and restaurants in consumer services, and apparel firms in commercial and professional services. Notably, media and entertainment receive a large negative reaction, which is driven by firms with ambitious targets, such as Facebook and Google, in the interactive media and services industry.

3.1 Selection concern of emissions target announcements

One concern in interpreting our results is the potential for selection bias, as firms self-select to announce emissions targets. Firms that believe the benefits of target setting outweigh the costs may be more likely to make such announcements.[8] To address this concern, we estimate a determinants model using all firms covered in the RavenPack dataset, and control for the propensity to announce targets in the subsequent analysis. We construct a panel of firm-year observations and define the

[8]The self-selection suggests that the negative market reaction to emissions target announcements shown in previous subsection is a lower bound.

outcome variable as equal to one in the year a firm first announces an emissions target. We include year fixed effects to control for aggregate trends in target adoption, industry fixed effects to account for differences in industry-level climate risks and opportunities, and country fixed effects to capture variation in regulatory environments.

Table 4 presents the results of the determinants analysis. In column (1), we include all firm-year observations and define the outcome as an indicator equal to one only in the year the firm announces an emissions target (*Announcement Year*). In column (2), the outcome is an indicator equal to one in the announcement year and all subsequent years (*Post Announcement*). In column (3), we define *Post Announcement* as an indicator equal to one only in the three years following the announcement. In column (4), we replicate the regression from column (1) but exclude non-target-announcing years after the firm's first announcement [9].

Across all specifications, we observe consistent patterns. Firms are more likely to announce emissions targets if they are larger, have higher leverage, exhibit greater return volatility, and have lower sales growth. These results are consistent with prior findings that high-growth firms may be more hesitant to commit to emissions reduction due to the perceived trade-off with expansion and flexibility (Bolton and Kacperczyk, 2025). We also find that firms with higher environmental scores and higher greenhouse gas emissions intensity are more likely to set targets, suggesting that firms facing greater climate risks and opportunities have more to benefit from setting targets.[10]

Next, we use the predicted values from column (4) of Table 4, the determinants model, to proxy for each firm's propensity to announce an emissions target. We separately show the 5-day CAR

[9] For example, if a firm announces targets in 2015 and 2020, we drop all years from 2016 to 2019, as well as all years after 2020.

[10] Bolton and Kacperczyk (2025) find that firms with lower emissions are more likely to set emissions targets. This difference is potentially due to sample differences, where they cover firms with CDP targets and SBTi targets from 2005 to 2019, whereas we cover firms with target announcement events from 2005 to 2023. We find that the majority of target announcements occur in 2021 and 2022, and that approximately half of the firms announcing targets in our sample do not appear in CDP disclosures.

for target announcements with below- and above-median announcement propensities in Table 2 Panel A. We find that CAR is more negative for the subsample with below-median announcement propensity, where the average 5-day CAR is –0.331% and statistically significantly. For the subsample with above-median announcement propensity, average 5-day CAR is -0.078% and not statistically significant. This more pronounced negative reaction for firms with low announcement propensity may reflect two possibilities. One is that firms self-select into announcing emissions targets if they think they are more likely to benefit from the event. Another is that announcements of firms with lower propensity may be less anticipated by the market, resulting in more pronounced, and hence more negative, market reactions.

3.2 Credibility of corporate emissions targets

We examine whether the market reacts more negatively to emissions target announcements that are perceived as more credible. Having established that the average market reaction is negative, we hypothesize that this effect is more pronounced for firms whose targets are likely to be viewed by investors as binding and enforceable. If emissions reductions are seen as costly, then credible commitments—such as those backed by verification, a history of emissions disclosure, or stronger environmental performance—should generate a larger negative price response than symbolic or low-commitment announcements.

To test this, we regress the 5-day CAR on three credibility proxies: whether the firm receives third-party assurance on emissions, environmental scores, and the number of years it has disclosed GHG emissions. We include the same control variables used in the determinants model, along with year, industry, and country fixed effects.

We consider three proxies for credibility. First, we use reasonable assurance on greenhouse gas (GHG) emissions as a measure of target credibility. Firms that subject their Scope 1 and Scope 2

emissions to external assurance provide more verifiable and auditable emissions data, making their targets more credible to investors. Prior literature in accounting suggests that assurance enhances the reliability of non-financial disclosures, reinforcing investor expectations that the firm will follow through on its commitments (Simnett et al., 2009; Gipper et al., 2024). In Table 5 columns (1) and (2), we find that firms with reasonable assurance receive significantly more negative market reactions. Column (1) finds that firms with reasonable assurance on scope 1 or 2 receive 0.617% more negative CAR.

Second, we use a firm's environmental score, as firms with higher environmental scores tend to have more established environmental policies, stronger emissions reduction programs, and more transparent sustainability practices. Columns (3) and (4) show that the coefficients on MSCI environmental scores and climate change subscore are negative and statistically significant. Column (4) means that a one standard deviation increase in MSCI climate change subscore is associated with a 0.361% (0.141*2.56) more negative market reaction.[11]

Third, we use the number of years a firm has been disclosing annual GHG emissions, based on the idea that firms with a longer track record of emissions disclosure face greater external discipline. Consistent disclosure history enhances the confirmatory role of backward-looking information, reinforcing the credibility of forward-looking statements such as emissions targets (Ball et al., 2003). Firms with a history of emissions reporting are more likely to be held accountable for their climate commitments, increasing the perceived costs of compliance and leading to a stronger negative market reaction. Column (5) shows that firms with above-median years of emissions disclosure are associated with 0.479% more negative market reaction, and this result is statistically significant.

[11] We use MSCI climate change subscore as it is a more direct proxy for the perceived credibility of emissions targets, where this subscore takes into consideration a firm's performance on carbon emissions, energy efficiency, product carbon footprint, climate risk management, and environmental impact financing.

As an additional measure, we construct a credibility measure using the first principal component of three variables: whether the firm has reasonable assurance on Scope 1 or 2 emissions, the MSCI Climate Change subscore, and the number of years the firm has disclosed emissions data. To expand data coverage, we treat firms with missing assurance data as not having received assurance. In column (6), we find that this *Credibility PC* is negative and statistically significant. Overall, the findings are consistent with the interpretation that more credible emissions targets are associated with stronger decarbonization commitments and they generate more negative market reactions.

4 Market Reaction and Emissions Change after Target Announcement

Next, we examine emissions changes after firms announce emissions reduction targets, and how the amount of subsequent decarbonization relates to the market reaction to the initial target announcement event. We test two competing hypotheses. The confirmation hypothesis posits that more negative market reaction to target announcement is associated with greater subsequent decarbonization, indicating that the market correctly anticipates the firms' intention to engage in costly decarbonization. In contrast, the learning hypothesis suggests that managers learn from the market reaction, and firms receiving negative market reactions may interpret the signal as investor concern about the cost or feasibility of decarbonization, and therefore scale back or delay implementation, resulting in weaker emissions reductions.

To test these hypotheses, we conduct a generalized difference-in-differences (DiD) analysis using firm-year panel data and the following two specifications:

$$\textit{CO2 Intensity}_{i,t} = \beta_0 + \beta_1 \textit{Post Announcement}_{i,t} + \sum \textit{Controls} + \sum \textit{Fixed effects} + \epsilon \quad (1)$$

$$\textit{CO2 Intensity}_{i,t} = \beta_0 + \beta_1 \textit{Post Positive Reaction}_{i,t} + \beta_2 \textit{Post Negative Reaction}_{i,t} + \sum \textit{Controls} + \sum \textit{Fixed effects} + \epsilon \quad (2)$$

The dependent variable is CO2 intensity, defined as scopes 1 and 2 emissions per unit of revenue. We use this intensity measure because it controls for changes in firm size and likely reflects firm efforts to decarbonize (Aswani et al., 2024; Zhang, 2025). We include the determinants of target announcement from Table 4 as control variables, excluding CO2 Intensity and MSCI E Score[12]. We include firm fixed effects to control for time-invariant firm characteristics, and year fixed effects to control for time trends in emissions. We cluster standard errors using firms.

In model (1), the main independent variable of interest, *Post Announcement*, is an indicator that switches to one after the year a firm announces an emissions target and remains one thereafter. β_1 captures the average change in emissions outcomes for firms after announcing a target, relative to firms that have not yet announced one and relative to the firm's own pre-announcement baseline. In model (2), we separately include indicators for *Post Announcement* for firms with positive and negative market reactions. Under the confirmation hypothesis, *Post Negative Reaction* would be associated with greater subsequent emissions reductions than *Post Positive Reaction*, consistent with the market correctly anticipating those that will engage in costly decarbonization. In contrast, the learning hypothesis predicts that *Post Negative Reaction* would be associated with less emissions reduction than *Post Positive Reaction*, as firms with negative reactions interpret the signal as investor concern and adjust their decarbonization efforts accordingly.

Table 6 presents the results. Column (1) shows that a firm's CO_2 intensity declines significantly by 0.091 following a target announcement, representing 8.4% of the sample standard deviation of CO_2 intensity (1.082). Column (2) shows the results for firms with positive versus negative market reactions, and the coefficients are similar and the difference between the two is not statistically significant. In column (3), we further distinguish between firms with more negative and more

[12]We exclude CO2 Intensity as a control variable because it is the outcome of this test. We exclude MSCI E Score as a control variable because it has limited sample coverage and absorbs the variation in the outcome, CO2 intensity, which is a component of the E score.

positive market reactions, defined as those in the bottom and top terciles of the market reaction distribution, respectively. In this specification, only the coefficient for firms with more negative reactions is statistically significant. However, similar to column (2), the difference between the more positive and more negative groups is not statistically significant.

To mitigate concerns that firms announcing targets may differ systematically from non-announcing firms, and to address limitations of generalized difference-in-differences designs (e.g., Callaway and Sant'Anna, 2021; Baker et al., 2022), in columns (4) to (6) of Table 6, we repeat the analysis using a stacked difference-in-differences approach with a matched sample. Specifically, for each treated firm, we use nearest neighbor matching to identify the three closest control firms within the same industry, based on pre-treatment average values of the control variables. We then construct a stacked dataset, aligning each treated firm with its matched controls in event time relative to the target announcement year and keeping -3 to +3 years relative to the announcement year of each cohort. In this specification, we include cohort-year and cohort-firm fixed effects, where cohorts are defined by the year of the emissions target announcement.

In this more stringent specification, in columns (4) - (6) of Table 6, the coefficients of interest are negative but not statistically significant for all targets except those with more negative market reactions. In column (6), the coefficient on *More Negative* targets is significantly different from that of *More Positive* targets. Overall, these results are more consistent with the confirmation hypothesis, where firms with larger decarbonization receive more negative market reaction at the announcement of emissions targets.

Next, we examine how the relationship between market reaction and subsequent decarbonization varies with the credibility of the emissions target. In Table 7, we repeat the generalized difference-in-differences analysis, separating the sample based on the *Credibility PC* measure con-

structed in Section 3.2. We find that significant reductions in CO2 intensity concentrate within the high-credibility subsample, and that the reduction is significantly larger than that in the low-credibility subsample. These results are again consistent with the confirmation hypothesis: firms with more credible targets experience more negative market reactions, and these firms subsequently decarbonize more.

5 Why firms announce targets despite negative market reaction

Firms that announce emissions targets tend to experience negative market reactions, and consistent with the market anticipating implementation costs, firms with more negative market responses subsequently decarbonize more. This suggests that some managers follow through with climate commitments even when the initial investor response is negative. Consistent with this observation, some firms have faced pressure from shareholders to scale back their climate initiatives. For example, BP and Shell have both faced shareholder scrutiny and pushback to pull back on emissions targets (Reuters, 2024). Similarly, Tractor Supply Co. eliminated its previously announced emissions target following public pressure (Pucker, 2024). When the firm initially announced the emissions target in 2021, the market responded with a 3-day CAR of –0.765%. In this section, we explore why managers may continue pursuing decarbonization despite negative market reactions and external pressures, and find support for two potential reasons.

The first potential explanation is the misalignment between short-term costs and long-term benefits of emissions target announcements. Emissions reductions often require substantial upfront investments in cleaner technology, operational restructuring, and regulatory compliance (Gillingham and Stock, 2018; McKinsey & Company, 2022). These investments can strain near-term profitability, but the benefits are often long term and with high uncertainty. For example, Table 8 shows that market reactions are significantly more positive for firms already subject to carbon pricing reg-

ulation, though such regulation remains a future consideration for many other firms. Moreover, many of the long-term benefits associated with decarbonization are difficult to incorporate into standard valuation frameworks, contributing to potential underpricing. Prior research suggests that climate risks may be systematically underpriced in financial markets. Stroebel and Wurgler (2021) find that among 861 survey respondents, participants were 20 times more likely to believe that climate risk is currently underestimated by asset markets than overestimated. Similarly, Hong et al. (2019) find that food company stock prices underreact to droughts, adding to evidence of market underreaction to environmental risks. This underpricing may arise from long horizons, uncertainty around regulatory timing, or difficulties in modeling the financial impact of physical and transition risks.

To further investigate this hypothesis, we examine whether firms that have already announced emissions targets experience more favorable (or less negative) market reactions when climate-related regulations are introduced. Prior research finds that investor responses to events surrounding the proposed SEC climate disclosure mandate are generally negative, with stronger adverse reactions for events that increase the likelihood of regulatory implementation (Amiraslani et al., 2024). We examine if this negative reaction is mitigated for firms that have already announced emissions targets. In Table 8, we replicate the event study framework of Amiraslani et al. (2024), analyzing market reactions to 29 regulatory events related to the SEC climate disclosure mandate for U.S. firms. Following (Amiraslani et al., 2024), we collect returns data for 2,858 U.S. firms across 29 events in which the SEC proposed rules to enhance climate-related disclosures between 2019 and 2022. The events are classified as SEC pronouncements (REG), SEC commissioner statements (CMN), executive orders (EXC), and other events (OTR), as well as events directly or indirectly related to the proposed rules. In Panel A of Table 8, we find that, consistent with (Amiraslani et al., 2024), firms receive a negative market response across all events. More importantly, firms

with emissions targets exhibit significantly less negative abnormal returns. The abnormal return to the SEC's proposed rules is on average –0.129 for target-announcing firms, compared to –0.620 for firms without announced targets. This mitigating effect is particularly pronounced for regulatory and direct events. Panel B shows that this effect remains statistically significant in regressions controlling for firm fixed effects, event fixed effects, and financial variables. In columns (3) and (4), we employ a matched sample in which each target-announcing firm is matched to three firms without targets for each event, based on the financial variables. The *Post Announcement* indicator remains significant in this matched sample. Overall, this result suggests that the economic benefits of target announcements may not be immediately reflected in firm value but can materialize later, as transition risks become more imminent. This is consistent with firms' voluntary emissions targets functioning as hedge or insurance against future regulatory and transition risks.

The second potential explanation is the rise of ESG-linked executive compensation, which incentivizes managers to pursue ESG objectives. A growing number of firms now incorporate ESG metrics—such as emissions reductions—into compensation packages as a way to align executive incentives with long-term sustainability goals (Cohen et al., 2023). Prior work also suggests that tying executive compensation to ESG metrics can help firms commit to long-term value creation, particularly in settings where environmental investments may take time to be recognized by markets or realized financially (Flammer, 2021).

Indeed, in Table 9 Panel A, we find that *ESG Pay*, an indicator for whether a firm has ESG-linked executive compensation from Refinitiv, is significantly positively associated with the likelihood of announcing an emissions target. This suggests that incentive structures play an important role in shaping firms' climate commitments. In Panel B, we examine whether ESG-linked compensation also influences follow-through by analyzing subsequent decarbonization, partitioning the sample based on the presence of ESG Pay. We find that significant emissions reductions occur only among

firms with ESG-linked compensation. Moreover, when focusing on firms that experienced negative market reactions to their target announcements, we observe that decarbonization is statistically significant only for those with ESG Pay. These results indicate that ESG-linked incentives may not only motivate the announcement of climate targets but also sustain managerial commitment to decarbonization even when such efforts are not immediately rewarded by investors.

6 Conclusion

This paper examines how capital markets respond to corporate announcements of emissions reduction targets and whether these responses relate to firms' subsequent decarbonization behavior. Using a novel dataset of over 2,000 emissions target announcements identified from media headlines via RavenPack and refined using large language models, we document three main findings. First, we find that, on average, the stock market reacts negatively to emissions target announcements. Second, the negative reaction is more pronounced for firms with more credible targets—those with third-party assurance, a longer history of GHG disclosure, or higher environmental scores. Third, despite the negative market response, firms with more negative reactions are more likely to follow through with emissions reductions in subsequent years, suggesting that the market correctly anticipates commitments that are more substantive.

Our main finding—that credible emissions targets are associated with negative market reactions—suggests that investors view these commitments as net costly in the short term. Nonetheless, firms appear to pursue these targets, potentially motivated by long-term strategic and reputational considerations. We find some evidence of these longer-term benefits: firms that announce targets subsequently experience less negative market reactions to climate regulation shocks. We also suggest that ESG-linked pay help explain this pattern. Future research can build on this work by exploring other long-term benefits of target-setting, such as access to ESG capital, improved em-

ployee or customer loyalty, or differential responses to regulatory shocks. As firms continue to face pressure to decarbonize, understanding how markets interpret and respond to these commitments remains an important area for both researchers and policymakers.

References

Aldy, J. E., Bolton, P., Halem, Z. M., and Kacperczyk, M. T. (2025). Show & tell: An analysis of corporate climate messaging and its financial impacts. *Financial Analysts Journal*, pages 1–20.

Aldy, J. E., Bolton, P., Kacperczyk, M., and Halem, Z. M. (2023). Behind schedule: The corporate effort to fulfill climate obligations. *Journal of Applied Corporate Finance*, 35(2):26–34.

Amiraslani, H., Chen, X., Ormazabal, G., and Pope, P. F. (2024). Climate disclosure regulation and investor wealth. *Available at SSRN 4749596*.

Aswani, J., Raghunandan, A., and Rajgopal, S. (2024). Are carbon emissions associated with stock returns? *Review of Finance*, 28(1):75–106.

Baker, A. C., Larcker, D. F., and Wang, C. C. (2022). How much should we trust staggered difference-in-differences estimates? *Journal of Financial Economics*, 144(2):370–395.

Ball, R., Jayaraman, S., and Shivakumar, L. (2012). Audited financial reporting and voluntary disclosure as complements: A test of the confirmation hypothesis. *Journal of accounting and economics*, 53(1-2):136–166.

Ball, R., Robin, A., and Wu, J. S. (2003). Incentives versus standards: properties of accounting income in four east asian countries. *Journal of Accounting and Economics*, 36(1-3):235–270.

Bolton, P. and Kacperczyk, M. (2021). Do investors care about carbon risk? *Journal of financial economics*, 142(2):517–549.

Bolton, P. and Kacperczyk, M. (2023). Global pricing of carbon-transition risk. *The Journal of Finance*, 78(6):3677–3754.

Bolton, P. and Kacperczyk, M. (2025). Firm commitments. *Available at SSRN 3840813*.

Callaway, B. and Sant'Anna, P. H. (2021). Difference-in-differences with multiple time periods. *Journal of econometrics*, 225(2):200–230.

Cao, S., Goldstein, I., He, J., and Zhao, Y. (2024). Feedback on emerging corporate policies.

Chen, Q., Goldstein, I., and Jiang, W. (2007). Price informativeness and investment sensitivity to stock price. *Review of Financial Studies*, 20(3):619–650.

Cohen, S., Kadach, I., and Ormazabal, G. (2023). Institutional investors, climate disclosure, and carbon emissions. *Journal of Accounting and Economics*, 76(2-3):101640.

Desai, H., Lam, P., Li, B., and Rajgopal, S. (2023). An analysis of carbon-reduction pledges of us oil and gas companies. *Management Science*, 69(6):3748–3758.

Dyck, A., Lins, K. V., Roth, L., and Wagner, H. F. (2019). Do institutional investors drive corporate social responsibility? international evidence. *Journal of financial economics*, 131(3):693–714.

Fama, E. F. and French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1):3–56.

Fama, E. F. and French, K. R. (2015). A five-factor asset pricing model. *Journal of Financial Economics*, 116(1):1–22.

Flammer, C. (2013). Corporate social responsibility and shareholder reaction: The environmental awareness of investors. *Academy of Management journal*, 56(3):758–781.

Flammer, C. (2021). Corporate green bonds. *Journal of Financial Economics*, 142(2):499–516.

Freiberg, D., Grewal, J., and Serafeim, G. (2021). Science-based carbon emissions targets. *Available at SSRN 3804530*.

Gillingham, K. and Stock, J. H. (2018). The cost of reducing greenhouse gas emissions. *Journal of Economic Perspectives*, 32(4):53–72.

Gipper, B., Sequeira, F., and Shi, S. X. (2024). Carbon accounting quality: Measurement and the role of assurance.

Grewal, J., Riedl, E. J., and Serafeim, G. (2019). Market reaction to mandatory nonfinancial disclosure. *Management Science*, 65(7):3061–3084.

Hong, H., Li, F. W., and Xu, J. (2019). Climate risks and market efficiency. *Journal of econometrics*, 208(1):265–281.

Ioannou, I., Li, S. X., and Serafeim, G. (2016). The effect of target difficulty on target completion: The case of reducing carbon emissions. *The Accounting Review*, 91(5):1467–1492.

Jiang, X., Kim, S., and Lu, S. (2025). Limited accountability and awareness of corporate emissions target outcomes. *Nature Climate Change*, pages 1–8.

Krueger, P., Sautner, Z., and Starks, L. T. (2020). The importance of climate risks for institutional investors. *The Review of Financial Studies*, 33(3):1067–1111.

Krüger, P. (2015). Corporate goodness and shareholder wealth. *Journal of financial economics*, 115(2):304–329.

Lins, K. V., Servaes, H., and Tamayo, A. (2017). Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *the Journal of Finance*, 72(4):1785–1824.

Lu, S., Riedl, E., Serafeim, G., and Xu, S. (2024). Climate solutions, transition risk, and stock returns. *Available at SSRN 5018767*.

Matsumura, E. M., Prakash, R., and Vera-Munoz, S. C. (2014). Firm-value effects of carbon emissions and carbon disclosures. *The accounting review*, 89(2):695–724.

McKinsey & Company (2022). The net-zero transition: What it would cost, what it could bring.

Pucker, K. P. (2024). Companies are scaling back sustainability pledges. here's what they should do instead. *Harvard Business Review*.

Reuters (2024). Shell loosens 2030 carbon emissions target.

Rogelj, J., Den Elzen, M., Höhne, N., Fransen, T., Fekete, H., Winkler, H., Schaeffer, R., Sha, F., Riahi, K., and Meinshausen, M. (2016). Paris agreement climate proposals need a boost to keep warming well below 2 c. *Nature*, 534(7609):631–639.

Rogelj, J., Fransen, T., den Elzen, M. G., Lamboll, R. D., Schumer, C., Kuramochi, T., Hans, F., Mooldijk, S., and Portugal-Pereira, J. (2023). Credibility gap in net-zero climate targets leaves world at high risk. *Science*, 380(6649):1014–1016.

Simnett, R., Vanstraelen, A., and Chua, W. F. (2009). Assurance on sustainability reports: An international comparison. *The accounting review*, 84(3):937–967.

Stroebel, J. and Wurgler, J. (2021). What do you think about climate finance?

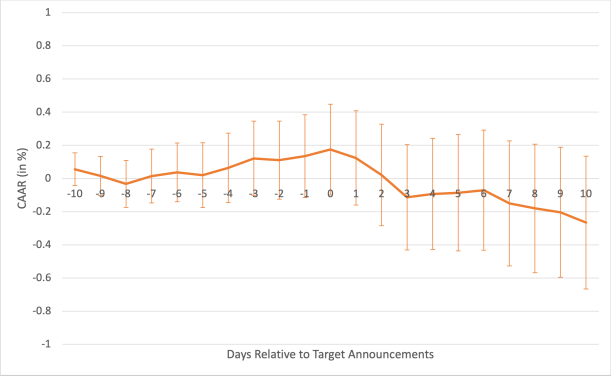
Tang, D. Y. and Zhang, Y. (2020). Do shareholders benefit from green bonds? *Journal of Corporate Finance*, 61:101427.

Webersinke, N., Kraus, M., Bingler, J. A., and Leippold, M. (2022). Climatebert: A pretrained language model for climate-related text.

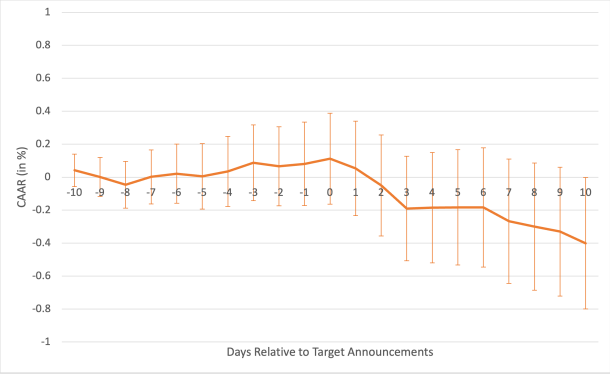
Zhang, S. (2025). Carbon returns across the globe. *The Journal of Finance*, 80(1):615–645.

Figure 1: CAR around emissions target announcement events

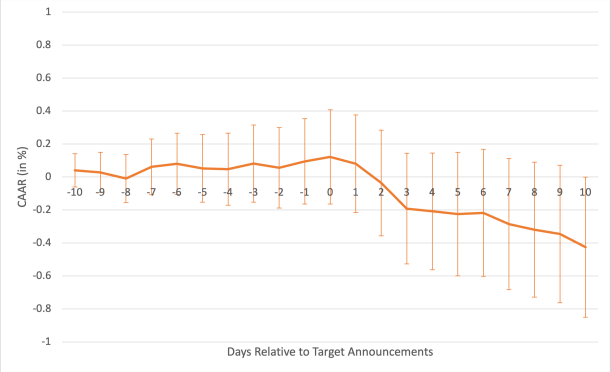
Panel A: Fama-French 3-factor



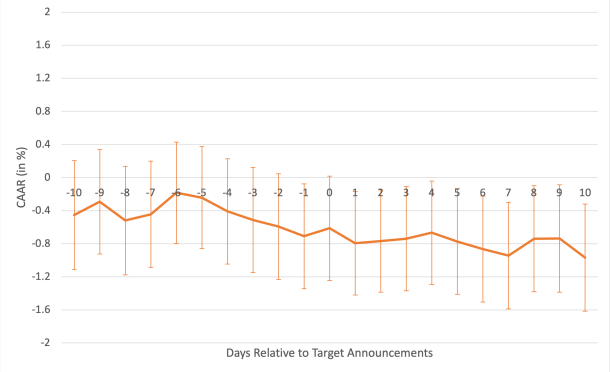
Panel B: Fama-French 5-factor



Panel C: CAPM

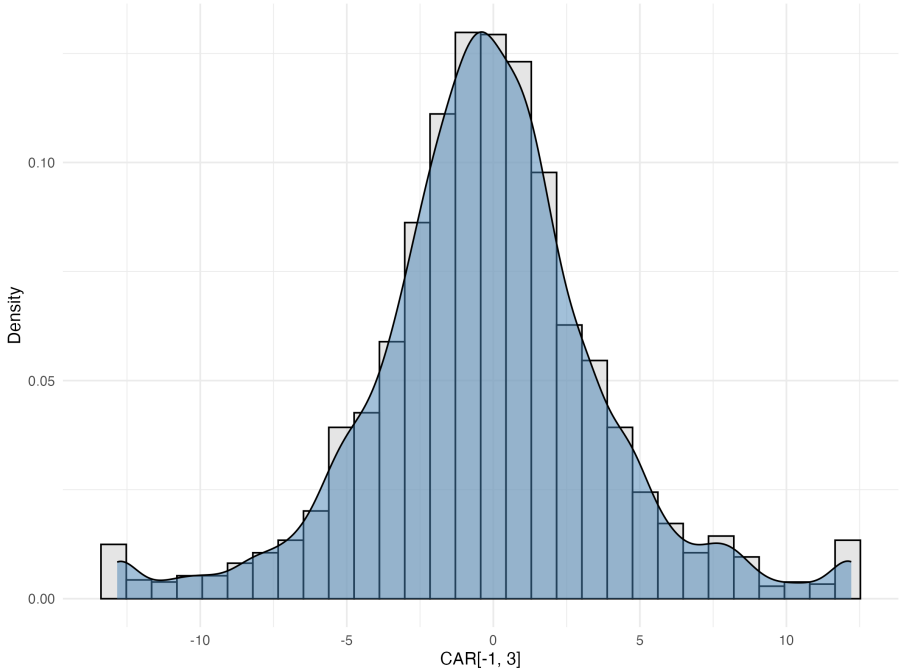


Panel D: Matched Control



This figure plots the cumulative abnormal return around corporate emissions target announcement events from -10 to 10 days using different models to calculate abnormal returns.

Figure 2: Distribution of CAR[-1, 3]



This figure plots the histogram showing the density of the cumulative abnormal return (Fama-French 3-factor) around corporate emissions target announcement events from -1 to 3 days.

Table 1: Sample Selection

Sample Selection Criteria	#Firms	#Observations
All news data from Ravenpack with ISIN	55,196	
Keep news regarding emissions target announcements from Ravenpack using keywords	1,868	7,071 firm-date
Keep news regarding emissions target announcements from Ravenpack using ChatGPT	1,454	4,613 firm-date
Aggregating news events regarding emissions target announcement to the event-window level of maximum 30 days	1,454	2,941 firm-event-window
Drop event dates overlapping with earnings announcement dates and event dates without market returns data and firms without industry data	1,260	2,417 firm-event-window

This table shows the sample selection procedure and the number of unique firms as well as the number of observations in the sample.

Table 2: Cumulative Abnormal Return around Emissions Target Announcement Events

Panel A: CAR[-1, 3]						
	N	Mean	T-statistics	Median	P(Sign-test)	% Negative
Fama-French 3-factor						
Full sample	2,417	-0.235***	-2.860	-0.266	0.001	53.50%
CDP sample	1,326	-0.307***	-2.988	-0.321	0.002	54.22%
Net-zero targets	800	-0.211	-1.499	-0.227	0.095	52.63%
Science-based targets	89	-0.063	-0.179	0.238	0.805	49.44%
Ambitious targets (CDP)	572	-0.356**	-2.451	-0.210	0.029	52.80%
Unambitious targets (CDP)	589	-0.200	-1.260	0.208	0.102	55.35%
Target Year $\leq$ 2030	1,303	-0.202*	-1.762	-0.204	0.022	52.72%
Target Year $>$ 2030	1,114	-0.274**	-2.325	-0.354	0.013	54.40%
High Announcement Propensity	765	-0.078	-0.611	-0.201	0.291	52.42%
Low Announcement Propensity	729	-0.331**	-2.137	-0.204	0.049	52.13%
Market Model	2,417	-0.224***	-2.732	-0.238	0.000	53.41%
CAPM	2,417	-0.229***	-2.671	-0.272	0.000	53.70%
Fama–French 5-factor	2,417	-0.272***	-3.325	-0.217	0.000	52.79%
Matched Control	2,417	-0.281**	-2.512	-0.201	0.016	33.72%

Panel B: Cumulative Abnormal Return by Year					
Year	# Targets	# Firms with Targets	Total # Firms	Ratio	CAR [-1, 3]
2006	1	1	38,674	0.00%	1.136
2007	6	5	38,674	0.01%	1.508
2008	16	15	38,674	0.04%	-1.578
2009	14	14	38,674	0.04%	-0.024
2010	8	8	38,674	0.02%	-1.617
2011	17	16	38,674	0.04%	-1.803
2012	16	16	38,674	0.04%	0.041
2013	9	9	38,674	0.02%	-1.337
2014	15	15	38,674	0.04%	0.545
2015	30	29	38,674	0.07%	0.895
2016	18	18	38,674	0.05%	-0.465
2017	38	34	38,674	0.09%	-0.481
2018	58	53	38,674	0.14%	-0.375
2019	146	125	38,674	0.32%	0.147
2020	314	258	38,674	0.67%	-0.453
2021	780	616	38,674	1.59%	-0.383
2022	557	454	38,674	1.17%	-0.245
2023	374	328	38,674	0.85%	0.192
Overall	2,417	1,260	38,674	3.26%	-0.235

Continued on following page

Table 2 (continued)

Panel C: Cumulative Abnormal Return by Industry

Industry Group	# Targets	# Firms with Targets	Total # Firms	Ratio	CAR [-1, 3]
Automobiles & Components	196	48	881	5.45%	-0.403
Banks	85	46	1,294	3.55%	-0.522
Capital Goods	206	126	4,947	2.55%	-0.031
Commercial & Professional Services	36	31	1,259	2.46%	1.181
Consumer Discretionary Distribution & Retail	62	33	1,210	2.73%	-0.753
Consumer Durables & Apparel	67	35	1,819	1.92%	0.098
Consumer Services	60	33	1,327	2.49%	0.875
Consumer Staples Distribution & Retail	60	29	418	6.94%	-0.483
Energy	187	91	1,354	6.72%	-0.328
Equity Real Estate Investment Trusts (REITs)	42	34	623	5.46%	0.064
Financial Services	50	38	2,265	1.68%	-0.855
Food, Beverage & Tobacco	138	65	1,722	3.77%	0.216
Health Care Equipment & Services	25	21	1,431	1.47%	-0.885
Household & Personal Products	31	13	371	3.50%	-0.358
Insurance	47	29	471	6.16%	-0.852
Materials	315	179	4,965	3.61%	-0.670
Media & Entertainment	40	23	1,475	1.56%	-0.835
Pharmaceuticals, Biotechnology & Life Sciences	45	32	2,256	1.42%	-0.821
Real Estate Management & Development	29	24	1,649	1.46%	-0.819
Semiconductors & Semiconductor Equipment	38	26	758	3.43%	-0.182
Software & Services	82	46	1,987	2.32%	0.197
Technology Hardware & Equipment	95	47	2,038	2.31%	-0.113
Telecommunication Services	65	32	348	9.20%	0.633
Transportation	147	66	971	6.80%	-0.356
Utilities	269	113	835	13.53%	-0.006
Overall	2,417	1,260	38,674	3.26%	-0.235

This table reports summary statistics for cumulative abnormal returns (CARs) around emissions target announcement events. Panel A presents the number of events, the mean CAR[-1, 3] and corresponding t-statistic, the median CAR[-1, 3] and p-value from the Wilcoxon signed-rank test, and the percentage of negative returns across different samples and different event study methodologies. In the matched control approach, each target-announcing firm is matched to three firms that have not yet announced emissions targets using nearest-neighbor matching based on the average of the determinants of target announcements from Table 4 in the pre-announcement period, excluding MSCI E Score due to sample coverage. Panels B and C show the number of target announcement events, the number of firms announcing targets, the total number of firms, the ratio of target-announcing firms, and the average CAR[-1, 3], reported by year and by GICS industry group, respectively. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. A detailed description of the variables is in Appendix A.

Table 3: Summary Statistics

Panel A: Target Level Variables

	Count	Mean	SD	P25	P50	P75
CAR[-1, 3]	1494	-0.201	3.868	-2.285	-0.203	1.883
Size	1494	64.169	158.910	5.349	14.978	44.318
ROA	1494	5.767	7.213	2.740	4.980	8.400
Volatility	1494	23.833	7.734	18.170	23.110	28.150
Sales Growth	1494	4.456	11.638	-1.170	3.460	9.470
Price-to-Book	1494	3.509	6.997	1.140	1.920	3.750
Capital Intensity	1494	11.290	13.944	3.020	5.370	13.840
Leverage	1494	115.442	185.411	43.940	86.620	147.390
CO2 Intensity	1494	0.641	1.398	0.020	0.061	0.472
Reasonable Assurance Scope 1 or 2	1093	0.188	0.391	0.000	0.000	0.000
Reasonable Assurance Scope 1	1093	0.185	0.388	0.000	0.000	0.000
MSCI E Score	1494	5.679	2.072	4.200	5.400	7.000
MSCI Climate Change Score	1494	7.392	2.561	5.400	8.000	10.000
Years of Emissions Disclosure	1494	10.719	4.877	7.000	12.000	15.000
Credibility PC	1494	0.138	1.103	-0.628	0.195	0.912

Panel B: Firm-Year Level Variables

	Count	Mean	SD	P25	P50	P75
CO2 Intensity	37825	0.407	1.080	0.015	0.050	0.255
MV	37825	9.507	11.662	1.655	4.388	12.045
Capital Intensity	37825	0.118	0.289	0.024	0.047	0.108
Leverage	37825	0.984	1.527	0.257	0.605	1.188
ROA	37825	0.060	0.078	0.026	0.053	0.091
Price-to-Book	37825	0.029	0.038	0.011	0.018	0.033
Volatility	37825	0.265	0.086	0.202	0.252	0.315
Sales Growth	37825	0.068	0.160	-0.004	0.049	0.116
Post Announcement	37825	0.056	0.229	0.000	0.000	0.000
Post Positive Reaction	37825	0.027	0.164	0.000	0.000	0.000
Post Negative Reaction	37825	0.028	0.165	0.000	0.000	0.000
Post Very Positive Reaction	37825	0.019	0.137	0.000	0.000	0.000
Post Mid Reaction	37825	0.020	0.139	0.000	0.000	0.000
Post Very Negative Reaction	37825	0.017	0.128	0.000	0.000	0.000
Post Announcement High Credibility	37825	0.017	0.127	0.000	0.000	0.000
Post Announcement Low Credibility	37825	0.039	0.194	0.000	0.000	0.000

This table shows the summary statistics of the firm-event-window level variables (Panel A) used in the market reaction test and the summary statistics of the firm-year level variables (Panel B) used in the decarbonization after announcement test. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. A detailed description of the variables is in Appendix A.

Table 4: Determinants of Target Announcement

	(1) Announcement Year	(2) Post Announcement	(3) Post Announcement (3 years)	(4) Announcement Year (Exclude after announcement)
Log(MV)	0.032***	0.069***	0.043***	0.039***
	(17.97)	(17.72)	(17.46)	(17.47)
Capital Intensity	-0.005	-0.017**	-0.014**	-0.005
	(-1.55)	(-2.18)	(-2.39)	(-1.40)
Leverage	0.003***	0.008***	0.006***	0.004***
	(2.91)	(3.30)	(3.29)	(2.91)
ROA	-0.057***	-0.111***	-0.073**	-0.069***
	(-2.76)	(-3.16)	(-2.42)	(-2.99)
Price-to-Book	-0.244***	-0.535***	-0.289***	-0.288***
	(-4.67)	(-5.28)	(-3.82)	(-4.69)
Volatility	0.043**	0.127***	0.089**	0.053**
	(2.03)	(2.60)	(2.56)	(2.10)
Sales Growth	-0.047***	-0.073***	-0.051***	-0.048***
	(-5.75)	(-4.51)	(-3.96)	(-5.23)
CO2 Intensity	0.007***	0.015***	0.010***	0.009***
	(3.45)	(2.80)	(3.46)	(3.39)
MSCI E Score	0.005***	0.016***	0.009***	0.006***
	(5.38)	(8.16)	(6.54)	(5.70)
N	26263	26263	26263	24573
Adj. R-squared	0.097	0.213	0.119	0.132
Year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Model	OLS	OLS	OLS	OLS
Clusters	Firm	Firm	Firm	Firm

This table presents the regression results on the determinants of firms announcing emissions targets. *Announcement Year* equals 1 if the firm announces an emissions target in a given year. *Post Announcement* equals 1 from the year of the first announcement onward. *Post Announcement* (*3 years*) equals 1 for the three years following the first announcement year. Column (4), where the outcome is *Post Announcement* (*Exclude after announcement*), replicates the regression from Column (1) and excludes non-target-announcing years after a firm's first announcement. For example, if a firm announces targets in 2015 and 2020, we drop all years from 2016 to 2019, as well as all years after 2020. A detailed description of the variables is in Appendix A. Ordinary least squares (OLS) coefficient estimates are reported, with (in parentheses) t-statistics based on robust standard errors clustered by firm. Year, country, and industry fixed effects are included. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Market Reaction to Target Announcements: Credibility

	(1) CAR[-1, 3]	(2) CAR[-1, 3]	(3) CAR[-1, 3]	(4) CAR[-1, 3]	(5) CAR[-1, 3]	(6) CAR[-1, 3]
Missing Reasonable Assurance Scope 1 or 2	0.379					
	(1.40)					
Reasonable Assurance Scope 1 or 2	-0.617**					
	(-2.00)					
Missing Reasonable Assurance Scope 1		0.395				
		(1.46)				
Reasonable Assurance Scope 1		-0.545*				
		(-1.75)				
MSCI E Score			-0.146*			
			(-1.81)			
MSCI Climate Change Score				-0.141**		
				(-2.07)		
High Years of Emissions Disclosure					-0.479**	
					(-2.14)	
Credibility PC						-0.324***
						(-2.62)
Log(MV)	0.094	0.094	0.090	0.106	0.112	0.165
	(0.98)	(0.99)	(0.92)	(1.10)	(1.15)	(1.61)
Capital Intensity	-0.003	-0.004	-0.004	-0.005	-0.004	-0.004
	(-0.28)	(-0.33)	(-0.33)	(-0.42)	(-0.33)	(-0.35)
Leverage	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-1.47)	(-1.48)	(-1.51)	(-1.56)	(-1.48)	(-1.44)
ROA	-0.019	-0.019	-0.020	-0.019	-0.020	-0.019
	(-0.83)	(-0.84)	(-0.88)	(-0.85)	(-0.88)	(-0.84)
Price-to-Book	0.029	0.029	0.030	0.030	0.029	0.027
	(1.25)	(1.26)	(1.29)	(1.30)	(1.28)	(1.18)
Volatility	-0.013	-0.012	-0.018	-0.018	-0.014	-0.017
	(-0.53)	(-0.50)	(-0.73)	(-0.74)	(-0.58)	(-0.68)
Sales Growth	-0.044***	-0.045***	-0.044***	-0.044***	-0.045***	-0.047***
	(-3.54)	(-3.55)	(-3.55)	(-3.57)	(-3.67)	(-3.77)
CO2 Intensity	0.239**	0.236**	0.167	0.142	0.217**	0.195*
	(2.15)	(2.12)	(1.49)	(1.24)	(1.97)	(1.77)
N	1494	1494	1494	1494	1494	1494
Adj. R-squared	0.011	0.011	0.009	0.011	0.010	0.011
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Clusters	Firm	Firm	Firm	Firm	Firm	Firm

This table presents the regression results on the market reaction to target announcement with regard to the credibility of environmental disclosure. A detailed description of the variables is in Appendix A. Ordinary least squares (OLS) coefficient estimates are reported, with (in parentheses) t-statistics based on robust standard errors clustered by firm. Year, country, and industry fixed effects are included. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6: CO2 Intensity after Emissions Target Announcement

	Dependent Variable: CO2 Intensity					
	Generalized DiD			Matched and Stacked DiD		
	(1)	(2)	(3)	(4)	(5)	(6)
Post Announcement	-0.091***			-0.034		
	(-3.86)			(-1.62)		
Post Positive Reaction		-0.092**			-0.027	
		(-2.45)			(-1.20)	
Post Negative Reaction		-0.091***			-0.040	
		(-2.84)			(-1.31)	
Post Tercile 3 Reaction			-0.050			-0.010
(More Positive)			(-1.17)			(-0.42)
Post Tercile 2 Reaction			-0.108**			-0.027
			(-2.49)			(-0.64)
Post Tercile 1 Reaction			-0.114***			-0.065**
(More Negative)			(-2.70)			(-2.12)
Log(MV)	-0.055***	-0.055***	-0.055***	-0.057***	-0.057***	-0.057***
	(-3.74)	(-3.74)	(-3.73)	(-3.17)	(-3.17)	(-3.14)
Capital Intensity	0.131***	0.131***	0.131***	0.079**	0.079**	0.078**
	(3.03)	(3.03)	(3.03)	(2.25)	(2.25)	(2.24)
Leverage	-0.003	-0.003	-0.003	-0.001	-0.001	-0.001
	(-0.99)	(-0.99)	(-1.02)	(-0.27)	(-0.28)	(-0.29)
ROA	-0.279***	-0.279***	-0.278***	-0.406***	-0.406***	-0.403***
	(-4.01)	(-4.01)	(-4.01)	(-5.28)	(-5.29)	(-5.24)
Price-to-Book	0.374**	0.374**	0.379**	-0.023	-0.021	-0.019
	(2.49)	(2.49)	(2.51)	(-0.16)	(-0.14)	(-0.13)
Volatility	-0.282	-0.282	-0.285	-0.364*	-0.366*	-0.369*
	(-1.58)	(-1.58)	(-1.59)	(-1.82)	(-1.83)	(-1.84)
Sales Growth	-0.344***	-0.344***	-0.345***	-0.548***	-0.548***	-0.549***
	(-8.54)	(-8.55)	(-8.56)	(-5.70)	(-5.71)	(-5.71)
N	37825	37825	37825	13188	13188	13188
Adj. R-squared	0.897	0.897	0.897	0.937	0.937	0.937
Year FE	Yes	Yes	Yes	No	No	No
Firm FE	Yes	Yes	Yes	No	No	No
Cohort × Year FE	No	No	No	Yes	Yes	Yes
Cohort × Firm FE	No	No	No	Yes	Yes	Yes
Clusters	Firm	Firm	Firm	Cohort X Firm	Cohort X Firm	Cohort X Firm
P-value (Positive=Negative)		0.496	0.149		0.361	0.060

This table presents the regression results on the post-announcement changes in CO2 intensity. Columns (1)–(3) use a generalized difference-in-differences (DiD) approach, where firms' target announcements are staggered over time. Columns (4)–(6) employ a stacked DiD approach, in which announcement cohorts from -3 to +3 years relative to the announcement year are stacked together. Each target-announcing firm is matched to three firms that have not yet announced emissions targets using nearest-neighbor matching based on the three-year average of the determinants of target announcements from Table 4 in the pre-announcement period, excluding MSCI E Score due to sample coverage. A detailed description of the variables is in Appendix A. Ordinary least squares (OLS) coefficient estimates are reported, with (in parentheses) t-statistics based on robust standard errors clustered by firm. The generalized DiD models include firm and year fixed effects, while the stacked DiD models include cohort × firm and cohort × year fixed effects. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7: CO2 Intensity after Emissions Target Announcement by Credibility PC

	(1) CO2 Intensity	(2) CO2 Intensity
Post Announcement High Credibility	-0.160***	-0.084**
	(-3.22)	(-2.23)
Post Announcement Low Credibility	-0.042**	-0.006
	(-2.01)	(-0.32)
Log(MV)	-0.055***	-0.050***
	(-3.73)	(-3.32)
Capital Intensity	0.132***	0.137***
	(3.06)	(3.05)
Leverage	-0.003	-0.001
	(-0.99)	(-0.29)
ROA	-0.282***	-0.225***
	(-4.07)	(-2.95)
Price-to-Book	0.387**	0.289*
	(2.56)	(1.89)
Volatility	-0.278	-0.096
	(-1.55)	(-0.50)
Sales Growth	-0.343***	-0.304***
	(-8.54)	(-7.53)
N	37825	37745
Adj. R-squared	0.897	0.903
Firm FE	Yes	Yes
Year FE	Yes	No
Year X Industry FE	No	Yes
Clusters	Firm	Firm
P-value (High Credibility = Low Credibility)	0.016	0.036

This table presents cross-sectional results on post-announcement changes in CO_2 intensity based on the *Credibility PC*, using a generalized difference-in-differences (DiD) approach. Firms are split into high- or low-credibility within the target-announcing and control groups respectively, based on the median of the *Credibility PC* for each year. A detailed description of the variables is in Appendix A. Ordinary least squares (OLS) coefficient estimates are reported, with (in parentheses) t-statistics based on robust standard errors clustered by firm. Column (1) includes firm and year fixed effects, while column (2) includes firm fixed effects and year $\times$ GICS industry fixed effects. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8: Market Reaction to Climate Disclosure Regulation

Panel A: Summary Statistics

	Treat		Control		
Event	N	CAR[-1, 3]	N	CAR[-1, 3]	Diff.
REG	1,797	0.105	24,867	-0.969	1.074***
CMN	2,444	-0.130	27,939	-0.314	0.184*
EXC	328	-0.720	4,471	-1.060	0.341
OTR	974	-0.363	9,704	-0.405	0.042
Direct	3,836	0.019	46,285	-0.690	0.709***
Indirect	1,707	-0.462	20,696	-0.464	0.002
All	5,543	-0.129	66,981	-0.620	0.491***

Panel B: Market Reaction around Climate Disclosure Regulation

	Dependent Variable: CAR[-1, 3]			
	All	REG	All	REG
	(1)	(2)	(3)	(4)
Post Announcement	0.293	1.334**	0.499*	1.333*
	(1.41)	(2.85)	(1.80)	(2.02)
Log(MV)	0.379	1.177	-0.560	-1.373
	(0.88)	(1.76)	(-0.59)	(-1.54)
Capital Intensity	-0.363	-0.541	-0.740	-1.876
	(-0.78)	(-1.06)	(-0.33)	(-0.51)
Leverage	-0.032	-0.015	-0.119	-0.430*
	(-1.21)	(-0.46)	(-1.04)	(-1.96)
ROA	1.542	1.642	8.675**	15.199**
	(1.29)	(1.40)	(2.18)	(2.69)
Price-to-Book	0.330	0.332	3.839	15.011**
	(0.31)	(0.25)	(1.04)	(2.40)
Volatility	-1.953	1.067	2.482	-3.721
	(-0.14)	(0.05)	(0.11)	(-0.11)
Sales Growth	0.505	1.391	-1.445	-0.283
	(0.85)	(1.13)	(-0.48)	(-0.06)
N	48595	18160	12449	4322
Adj. R-squared	0.028	0.058	0.028	0.057
Firm FE	Yes	Yes	Yes	Yes
Event FE	Yes	Yes	Yes	Yes
Clusters	Event	Event	Event	Event
Events	All	REG	All	REG
Sample	Full	Full	Matched	Matched

This table presents summary statistics and regression results on the market reaction following the SEC's proposed climate disclosure regulation. Panel A shows how the market responds differently to target-announcing and control firms across events associated with SEC pronouncements (REG), SEC commissioners (CMN), executive orders (EXC), and other events (OTR), as well as events directly or indirectly related to the proposed regulation, following the classification in Amiraslani et al. (2024). Panel B reports regressions of market reaction on *Post Announcement*, an indicator equal to 1 if the firm announced emissions targets prior to the event date, along with control variables. Column (1) uses the full sample, while column (2) restricts the sample to regulatory (REG) events. Columns (3)–(4) replicate columns (1)–(2) using a matched sample, in which each target-announcing firm is matched each year to three firms that had not yet announced emissions targets, using nearest-neighbor matching based on the determinants of target announcements from Table 4, excluding CO2 intensity and MSCI E Score due to sample coverage. A detailed description of the variables is in Appendix A. Ordinary least squares (OLS) coefficient estimates are reported, with (in parentheses) t-statistics based on robust standard errors clustered by event. Firm and event fixed effects are included. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9: CO2 Intensity after Emissions Target Announcement by ESG Pay

Panel A: ESG Pay as a determinant

	(1) Announcement Year	(2) Post Announcement	(3) Post Announcement (3 yrs)
ESG Pay	0.019***	0.047***	0.022***
	(4.97)	(5.82)	(4.09)
N	26252	26252	26252
Adj. R-squared	0.098	0.217	0.120
Year FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Model	OLS	OLS	OLS
Clusters	Firm	Firm	Firm

Panel B: CO2 Intensity after Emissions Target by ESG Pay

	Dependent Variable: CO2 Intensity				
	All	ESG Pay	No ESG Pay	ESG Pay	No ESG Pay
	(1)	(2)	(3)	(4)	(5)
Post Announcement with ESG Pay	-0.104***				
	(-3.65)				
Post Announcement without ESG Pay	-0.045				
	(-1.60)				
Post Positive Reaction		-0.137**	-0.031		
		(-2.46)	(-0.76)		
Post Negative Reaction		-0.109***	-0.043		
		(-2.68)	(-1.06)		
Post Tercile 3 Reaction (More Positive)				-0.084	-0.011
				(-1.27)	(-0.21)
Post Tercile 2 Reaction				-0.145***	-0.021
				(-2.78)	(-0.61)
Post Tercile 1 Reaction (More Negative)				-0.130**	-0.080
				(-2.07)	(-1.30)
N	37825	14958	22177	14958	22177
Adj. R-squared	0.897	0.908	0.910	0.908	0.910
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Clusters	Firm	Firm	Firm	Firm	Firm
P-value (Positive=Negative)	0.066	0.345	0.422	0.313	0.204

This table represent regression results related to ESG Pay. Panel A repeats the determinants specification in Table 4, adding ESG Pay as an independent variable. We include the same set of variables in Table 4 as control variables. We also include year, country, and industry fixed effects. Panel B repeats the specification in Table 6, separating firms into those with and without ESG Pay. We include the same set of control variables as in Table 6. We also include firm and year fixed effects. A detailed description of the variables is in Appendix A. Ordinary least squares (OLS) coefficient estimates are reported, with (in parentheses) t-statistics based on robust standard errors clustered by firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Appendix A: Variable Definitions

Variable	Description	Source
CAR [-1,3]	Cumulative abnormal return over 5 days of the event window from day -1 to day 3.	Datastream
Log(MV)	Log(1 + Market Value).	Datastream
ROA	Return on Assets.	Datastream
Volatility	Annual standard deviation of stock returns.	Datastream
Sales Growth	3-year sales growth.	Datastream
Price-to-Book	Market value of equity over book value of equity at the end of the calendar year.	Datastream
Capital Intensity	Capital expenditures over sales.	Datastream
Leverage	Total debt over common equity.	Datastream
CO2 Intensity	Scope 1 and 2 carbon emissions over revenue.	Refinitiv
Years of Emissions Disclosure	Cumulative number of years in which the firm discloses emissions amount.	Refinitiv
High Years of Emissions Disclosure	An indicator variable equal to 1 if *Years of Emissions Disclosure* variable is above the median within each industry and year.	Refinitiv
ESG Pay	An indicator variable equal to 1 if the firm has ESG-related compensation policy.	Refinitiv
MSCI E Score	Environmental Pillar Score (scale: 0 - 10).	MSCI
MSCI Climate Change Score	Climate Change Theme Score (scale: 0 - 10).	MSCI
Reasonable Assurance Scope 1 or 2	An indicator variable equal to 1 for the firm-year in which the firm obtains reasonable assurance for the scope 1 or 2 emissions.	CDP
Reasonable Assurance Scope 1	An indicator variable equal to 1 for the firm-year in which the firm obtains reasonable assurance for the scope 1 emissions.	CDP
Credibility PC	The first principal component of Reasonable Assurance Scope 1 or 2, MSCI Climate Change Score, and Years of Emissions Disclosure.	
Post Announcement	An indicator variable equal to 1 for the firm-year after the firm announces an emissions reduction target.	Ravenpack
Post Positive Reaction	An indicator variable equal to 1 for the firm-year after the firm announces an emissions reduction target and receives a positive abnormal return.	Ravenpack
Post Negative Reaction	An indicator variable equal to 1 for the firm-year after the firm announces an emissions reduction target and receives a negative abnormal return.	Ravenpack
Post Tercile 3 Reaction (More Positive)	An indicator variable equal to 1 for the firm-year after the firm announces an emissions reduction target and receives an abnormal return in the upper tercile.	Ravenpack

Continued on following page

Appendix A, continued

Variable	Description	Source
Post Tercile 2 Reaction	An indicator variable equal to 1 for the firm-year after the firm announces an emissions reduction target and receives an abnormal return in the middle tercile.	Ravenpack
Post Tercile 1 Reaction (More Negative)	An indicator variable equal to 1 for the firm-year after the firm announces an emissions reduction target and receives an abnormal return in the bottom tercile.	Ravenpack
Post Announcement High Credibility	An indicator variable equal to 1 for the firm-year after the firm announces an emissions reduction target and if *Credibility PC* variable is above the median within each year and treatment group.	Ravenpack
Post Announcement Low Credibility	An indicator variable equal to 1 for the firm-year after the firm announces an emissions reduction target and if *Credibility PC* variable is below the median within each year and treatment group.	Ravenpack
Post Announcement with ESG Pay	An indicator variable equal to 1 for the firm-year after the firm announces an emissions reduction target and if the firm has ESG-related compensation policy.	Ravenpack
Post Announcement without ESG Pay	An indicator variable equal to 1 for the firm-year after the firm announces an emissions reduction target and if the firm does not have ESG-related compensation policy.	Ravenpack

This table provides the descriptions and sources of variables used in this paper.

Online Appendix 1: Corporate Emissions Targets Labeling

To evaluate the performance of GPT's labelling of corporate emissions targets, we manually label 300 sentences. For our annotation procedure, we implement the following general rules referencing Webersinke et al., 2022 (Webersinke et al., 2022). The annotators have to determine whether a headline is related to a company's emissions reduction targets. Annotators are asked to apply common sense, e.g., when a given sentence might not provide all the context, but the context might seem obvious. Moreover, annotators are informed that each annotation should be a 0-1 decision. Hence, if an annotator is 70% certain, it is rounded up to 100%. Two researchers annotate the same tasks and in case of a close verdict or a tie between the annotators, the authors of this paper discuss the sentence in depth before reaching an agreement.

We define corporate emissions target for company i as headlines that contain company i's name, an emissions-related target, with a target year. As a general rule, we determine that just discussing sustainability or energy efficiency is not sufficient, the sentence should mention emissions or renewable energy. Below, we provide some examples.

Sentence	**Label**	**Reason**
ANA aims for carbon neutrality by 2050.	1	Yes this is a corporate emissions target.
Lowe's sets goal to reach net-zero emissions across scopes 1, 2 and 3 by 2050.	1	Yes this is a corporate emissions target.
Why Burberry has pledged to be 'climate positive' by 2040	1	Yes this is a corporate emissions target.
Sysco announces sustainability bond framework to advance its 2025 CSR goals.	0	We do not consider CSR or sustainability targets as emissions targets. We also do not consider the issuance of sustainability or green bonds as emissions targets.
Coca-cola aims to collect and recycle all packaging by 2030.	0	We do not consider broad environmental efforts as emissions targets.
China needs to cut 85% of carbon emissions to achieve 2060 goal, ANZ says.	0	This is a country-level target, not a firm-level target.

GPT Prompt

We continuously enhance the GPT prompt until we reach an accuracy rate of above 96%. The final prompt is as follows.

Listing 1: GPT prompt for emissions target identification

```
system_message =     "You are a chatbot trained to classify whether
    a media headline relates to a company's emissions reduction
   target. "
"The headline generally should include the name of the company and
   the target year for emissions reduction. "
"Generic industry targets or a firm's non-climate targets (e.g.,
   social, governance, earnings) should be classified as no."
"Generic sustainability targets should also be classified as no."
"Targets related to the company's renewable energy usage should be
   classified as yes."
"Targets related to low carbon products, such as zero emissions
   vehicles or low carbon steels, should be classified as yes."
```