The Bright Side of Climate Change Exposure: Strategic Gains for M&A Acquirers

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Abstract

While research highlights the detrimental effects of climate change on corporate policies, this study reveals the value-enhancing role of climate change exposure in the mergers and acquisitions (M&A) context. We find that acquirers with greater pre-announcement climate change exposure experience significantly higher cumulative abnormal returns around M&A announcements, suggesting that markets reward firms for proactively managing climate-related physical risks and opportunities. The positive effect is robust to multiple tests and two identification strategies that address endogeneity. The value-enhancing effect is more pronounced when acquirers target firms with lower climate change uncertainty, indicating a risk diversification strategy adopted by acquirers. Furthermore, higher climate change exposure is correlated with lower takeover premiums and shared auditors with targets, suggesting enhanced managerial prudence in deal negotiations. Our findings highlight that climate change exposure is a core strategic consideration in M&A transactions and, when strategically managed, can serve as a significant driver of shareholder value.

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I. Introduction

Firms exposed to climate change face significant uncertainty, stemming from divergent views on the pace and severity of global warming and the regulatory measures required to mitigate its effects (Sautner et al., 2023b). This uncertainty is further amplified by the evolving and often inconsistent regulatory frameworks across jurisdictions. Recent studies and regulatory reports emphasize that climate change exposure can act as a double-edged sword (Elijido-Ten and Clarkson, 2019).[1] On the downside, the increasing frequency and severity of extreme weather events lead to substantial costs related to business interruptions (Mills, 2005) and supply-chain disruption (Ghadge et al., 2020). On the upside, firms that adapt to climate change by transitioning to low-emission energy sources and improving production efficiency can achieve significant cost savings (Financial Stability Board, 2017; Nidumolu et al., 2009). Moreover, firms that innovate and develop new low-emission products can gain a competitive advantage, capturing emerging market opportunities (Porter and Linde, 1995; Pinkse et al., 2014).

Despite this dual nature, prior research has primarily focused on the adverse effects of climate change, portraying it as a risk to firms. For example, carbon emissions, often used as a proxy for climate risk, have been linked to significant value destruction, with firms losing approximately $0.2 million for every additional thousand metric tons of emissions (Matsumura et al., 2014). Investors penalize firms with high greenhouse gas (GHG) emissions, irrespective of voluntary disclosures (Griffin et al., 2017). Similarly, lenders perceive firms with higher carbon emissions as riskier and charge higher loan spreads as a precaution against plausible regulatory actions (Herbohn et al., 2019). However, little is known about how firms' climate

[1] Climate economics literature has addressed the cost-benefit analysis of climate change uncertainty since the 1990s (e.g., Johansson, 1993; Maddison, 1995).

change exposure might create value, leaving a critical gap in the literature in understanding how capital markets price climate change uncertainty.

This study addresses this gap by examining whether and how acquirer firms' *ex-ante* exposure to climate change influences shareholder wealth in the mergers and acquisitions (M&A) context. M&A transactions provide an ideal setting to explore this question, as it involves large scale investment decisions that are particularly sensitive to risk and uncertainty. Importantly, M&A transactions also offer firms a strategic mechanism to diversify risks and capture new growth opportunities. Our central research question is whether acquirers' pre-announcement climate change exposure affects cumulative abnormal returns (CARs) around M&A announcements, and if so, through what mechanisms.

Acquirers' *ex-ante* climate change exposure is expected to trigger two opposing effects: a *value-destroying effect* or a *value-adding effect*. Several mechanisms may explain how climate change exposure may lead to value destruction. First, prior research indicates that uncertainty generally has a negative impact on M&A activities and outcomes (e.g., Bonaime et al., 2018; Chen et al., 2023). For example, the market may perceive uncertainty arising from climate change exposure as amplifying the risks of large-scale investments such as M&A transactions. Consequently, the market may question the deal's synergy potential and penalize acquirers for taking on excessive risk. Second, firms facing climate change uncertainty may see their managers overburdened with a growing array of tasks and responsibilities that demand attention (e.g., Nekrasov et al., 2023). This limited managerial attention may impair decision-making during the M&A process, resulting in value-destroying outcomes. Third, the over-investment hypothesis posits that managers may pursue excessive investment in corporate social responsibility (CSR) to enhance their personal reputation, often at the expense of shareholder value (Friedman, 1997). Similarly, acquirers' M&A activities may be deemed as

excessive investments that do not align with shareholders' interests, leading to unfavorable outcomes around M&A announcements.

Conversely, *ex-ante* climate change uncertainty may positively impact acquirer shareholder wealth around the announcement for several reasons. First, when firms are exposed to climate change managers may use M&As as a risk management tool to mitigate uncertainty (e.g., Garfinkel and Hankins, 2011). The market may therefore perceive M&A transactions as opportunities to reduce acquirers' exposure to climate change risks, thereby rewarding firms with favorable announcement CARs. Second, high uncertainty may prompt managers to exercise greater prudence in handling large and risky investments (e.g., Gulen and Ion, 2016). For example, acquirers facing high policy uncertainty often pursue M&A deals with stronger expected outcomes, leading to higher announcement returns (Nguyen and Phan, 2017). Similarly, climate change uncertainty may incentivize managers to act more cautiously during M&A decision-making. They might abandon high-risk M&A projects in favor of those with a higher likelihood of creating value. Additionally, managers may devote more effort to negotiating deal terms that maximize shareholder value. As a result, acquirers with greater climate change exposure can achieve higher announcement CARs.

To investigate these competing hypotheses, we employ the novel climate change exposure measure (*CCExposure*) developed by Sautner et al. (2023a), which captures firm-specific and time-varying climate change exposure based on the frequency of climate-related bigrams in conference call transcripts. Compared to other event-based climate risk metrics, such as those derived from 10-K filings (Berkman et al., 2024) or aggregate climate news indices (Engle et al., 2020), this measure has several advantages. First, it reflects real-time discussions of climate-related issues, offering insights into firms' dynamic exposure to climate risks and opportunities (Frankel et al., 1999; Garcia et al., 2023). Second, it mitigates concerns about greenwashing, as conference call content is less subject to managerial manipulation

(Bingler et al., 2022). Third, unlike traditional measures that focus on single dimensions of climate risk (e.g., sea-level rise), it captures both opportunities and risks associated with climate change, aligning with our research objective.

Using a sample of U.S. M&A transactions, we find robust evidence that acquirers with higher pre-announcement *ex-ante* climate change exposure achieve significantly higher CARs, supporting the value-adding hypothesis. In particular, a one standard deviation increase in climate change exposure corresponds to a 6.05% increase in three-day acquirer announcement CARs. These results are robust to Oster (2019)'s tests addressing the omitted variable problem, alternative event windows and using combined target and bidding firm announcement CARs. We also analyze the wealth effect of Sautner et al. (2023a)'s topic-based components of climate change exposure, namely opportunities (*CCExposure Opp*), physical climate shocks (*CCExposure Phy*), and regulatory risks (*CCExposure Reg*). We find that the positive wealth effects of climate change exposure are concentrated in acquirers with higher *CCExposure Opp* and *CCExposure Phy*, suggesting that proactive strategies such as green innovation and physical risk mitigation drive value creation in M&As.

We employ two identification strategies to address potential endogeneity. First, we use the 2010 BP Deepwater Horizon oil spill as a plausible exogenous shock. Since the market's awareness of climate change significantly increased following this major environmental disaster (Bryan, 2023), firms are subject to a higher degree of climate change exposure. Specifically, the frequency of climate-related topics in firms' conference calls increased in the post-disaster period. As expected, we find that the value-adding effect of acquirers' *ex-ante* climate change exposure is more pronounced after the oil spill disaster. Second, we adopt Lewbel (2012)'s instrumental variable (IV) approach as an additional identification strategy. We create an internal IV based on heteroskedasticity in the data and find that acquirers with greater exposure to climate change continue to achieve higher announcement CARs.

Finally, we explore the mechanisms through which acquirers' climate change exposure impacts shareholder wealth around M&A announcements. The first mechanism we examine is the diversification strategy adopted by acquirers. The market may perceive M&A transactions as effective tools for mitigating the uncertainty faced by acquirers during the pre-announcement period, thereby rewarding them with higher announcement CARs. Consistent with this expectation, we observe that a greater disparity in climate change exposure between the acquirer and its target is associated with higher acquirer announcement CARs. In other words, acquirers targeting acquirees with lower climate change exposure are perceived as diversifying climate-related uncertainty, which enhances their announcement CARs.

The second mechanism we investigate is managerial prudence. Specifically, we analyze the premiums paid by acquirers and find that firms with higher climate change exposure tend to pay lower takeover premiums, which provides a plausible explanation for the higher announcement CARs of these acquirers. This suggests that such managers are more prudent during the M&A process by negotiating more favorable terms, thereby reducing overall transaction costs. Further analysis suggests that the positive wealth effect of climate change exposure is more pronounced when the acquirer and target share a common auditor, implying that the reduced information asymmetry facilitated by shared auditors (e.g., Dhaliwal et al. 2016) enhances shareholder value. However, the value-adding effect diminishes in the presence of tender offers.

This study makes several contributions. First, it extends the literature on uncertainty and M&A outcomes by introducing climate change exposure as a critical yet underexplored dimension of risk. Prior studies have shown that uncertainty—whether economic, political, or financial—negatively impacts M&A activity and outcome (Bloom, 2009; Bonaime et al., 2018;

Baker et al., 2016).[2] Our findings challenge this conventional wisdom by providing novel evidence that climate change uncertainty can have a value-enhancing effect in specific strategic contexts. Our results suggest that market participants may view M&A transactions as a mechanism to mitigate climate change uncertainty, thereby rewarding acquirers with higher announcement returns.

Second, our study contributes to the emerging field of climate finance by highlighting the dual nature of climate change exposure. Prior research has documented the negative impact of carbon emissions on firm value (Bose et al., 2021), and that acquirers with lower CSR scores experience poorer M&A announcement returns (Deng et al., 2013) and post-merger performance (Zheng et al., 2023). Leveraging Sautner et al. (2023a)'s measures capturing both the upside and downside aspects of acquirers' exposure to climate change, our study provides consistent evidence that climate exposure, when strategically managed, can serve as a source of value creation. This responds to recent calls for more nuanced research on the financial implications of climate change (Hong et al., 2020).

Finally, our findings contribute to the broader M&A literature by identifying climate change exposure as an important and previously overlooked factor that is incorporated into market pricing at the time of M&A announcements. Previous studies have explored a wide range of factors that influence M&A outcomes, including the relative size of acquirer and target (Fuller et al., 2002), industry relatedness (Matsusaka, 1993), takeover hostility (Schewet, 2000), payment methods (Chemmanur et al., 2009), private targets (Betton et al., 2009), and the reputation of financial advisors (Golubov et al., 2012). Our results highlight that climate change

[2] For example, economic policy uncertainty suppresses M&A activity (Bloom, 2009) and is negatively priced around M&A announcements (Bonaime et al., 2018). In addition, political uncertainty prompts firms to advance merger announcements to avoid periods overlapping with elections (Chen et al., 2023). Unpredictable changes arising from financial uncertainty can significantly increase the costs of M&A transactions, thereby reducing transaction gains (Baker et al., 2016).

is not just an externality but a core strategic consideration in managerial decision-making that shapes the financial success of M&A transactions.

II. Related literature and hypothesis development

2.1 Related literature

Research on CSR, environmental, social, and governance (ESG), and climate risks has been explored in the context of M&A, with a key debate centering on whether firms' CSR performance is valued in M&A transactions. Deng et al. (2013) show that high CSR acquirers in the US achieve higher merger announcement returns and superior long-term post-merger operating performance, supporting the notion that a firm's commitment to the interests of various stakeholders enhances shareholder wealth. Aktas et al. (2011) find that the acquisition of a high CSR target is positively associated with acquirer announcement returns, indicating that the acquirer learns from the target's socially responsible activities and experiences. Similarly, Chen et al. (2022) report that when target firms outperform acquirers in CSR performance, both acquirer and synergy gains are higher. Additionally, Gomes (2019) documents that a firm's CSR performance increases its likelihood of becoming an M&A target. Recent studies have also examined the impact of climate risk on M&A outcomes. For example, acquirers with higher carbon risk—proxied by carbon emissions—experience lower announcement returns (Bose et al., 2021). Firms exposed to climate risk, as measured by national climate regulations, are less likely to engage in cross-border M&As, suggesting that country-level climate policies significantly influence international takeovers (Li et al., 2022).

It is important to distinguish between CSR, ESG, and climate risk, and the concept of climate change exposure examined in our study. In particular, CSR involves specific actions by firms to address social and environmental issues, either voluntarily or under pressure from various stakeholders (Deng et al., 2013). ESG reflects a broader movement for businesses to

operate transparently and responsibly across environmental, social, and governance dimensions (Kim and Yoon, 2023). Climate risk refers to the potential adverse effects of climate-related events on businesses or economies (Bose et al., 2021). In contrast, the measures of climate change exposure developed by Sautner et al. (2023a) capture firms' exposure to both risks and opportunities related to climate change based on conference call transcripts, which highlight not only potential losses but also opportunities that firms may capitalize on. Thus, we expect that an acquirer's climate change exposure in the pre-announcement period represents a degree of uncertainty, where the impacts of climate change could yield either costs or benefits around the M&A announcement.

2.2 Hypothesis development

2.2.1 The value-adding effect of acquirers' ex-ante exposure to climate change

An acquirer firm's *ex-ante* exposure to climate change may have a *value-adding effect*, leading to higher shareholder wealth around the announcement. First, M&As can enable firms to diversify their business portfolio (Markowitz, 1952), thereby reducing firm-specific risks and potentially stabilizing firm value (Lewellen, 1971). Diversification through M&As may grant firms access to new capital markets, allowing them to better manage their capital structures and optimize their cost of capital. Additionally, acquirers with significant expose to climate change can leverage M&As as a risk management tool (Garfinkel and Hankins, 2011), shielding firms from climate change uncertainty and serving as a buffer against potential catastrophic losses. For example, firms can spread climate-related uncertainty across different product markets, industries, and geographies. For a more direct approach, an acquirer may dilute its climate change exposure by pursuing a deal with a target firm subject to lower climate change uncertainty. Such strategic diversification could lead the market to perceive M&As as an effective means for mitigating uncertainty associated with adverse climate change events, which results in higher shareholder value around M&A announcements.

Second, under conditions of high uncertainty, managers may exhibit greater prudence in dealing with large and risky investments, resulting in better M&A outcomes (Gulen and Ion, 2016; Nguyen et al., 2017). Firms operating in volatile environments often face heightened scrutiny from regulators, shareholders, and the public, which compels managers to prudently evaluate the potential outcomes of their decisions (Graham et al., 2013) to avoid potential legal and regulatory repercussions (Shleifer and Vishny, 1997). Moreover, poor decision-making under high uncertainty may negatively affect managers' career prospects, incentivizing them to adopt a more cautious approach. Therefore, managers of firms with high climate change exposure are expected to act more cautiously, dedicating time to thoroughly assess the implications of their M&A decisions. Specifically, they may opt to forego risky projects and focus on safer investments with more predictable and stable outcomes (Baker et al., 2016). They may also allocate more resources towards risk identification (Panousi and Papanikolaou, 2012) and negotiate more favorable M&A transaction terms with the target. Based on the above discussion, we hypothesize that M&A transactions conducted by acquirers with high *ex-ante* climate change exposure are more likely to be value-adding:

H1a. *Acquirers' exposure to climate change in the pre-announcement period increases acquirer shareholder wealth around M&A announcements.*

2.2.2 The value-destroying effect of acquirers' ex-ante exposure to climate change

However, acquirers' *ex-ante* exposure to climate change may also have a *value-destroying effect*, potentially decreasing acquirer announcement CARs for several reasons. First, uncertainty is widely shown to negatively affect M&A outcomes. Economic and inflation uncertainty discourages corporate investment (Bloom, 2009), partly because uncertainty increases the cost of M&A projects and reduces their expected benefits (Baker et al., 2016). Policy uncertainty also significantly lowers firm acquisitiveness (Nguyen et al., 2017) and M&A deal value (Bonaime et al., 2018). By extension, climate change uncertainty may signal

substantial costs stemming from climate-related adverse events. Accordingly, market participants could perceive a firm's exposure to climate change as amplifying investment risks and thus be skeptical of the potential for synergies from the M&A deal. This skepticism may ultimately give rise to a decline in acquirer shareholder wealth around the announcement.

Second, economic agents, including managers, operate under limited attention constraints. Nekrasov et al. (2023) and Lu et al. (2016) show that even sophisticated agents (e.g., financial analysts and institutional investors) suffer from limited attention and perform worse when distracted.[3] Managers of firms facing heightened climate uncertainty are likely no exceptions. Specifically, they may focus excessively on addressing climate-related events, such as regulatory requirements, lawsuits, or public relations issues, which may divert their attention away from critical decision-making in the M&A process.[4] In this way, acquirers' *ex-ante* exposure to climate change could exacerbate the issue of limited managerial attention, which result in suboptimal decisions, such as misjudging risks, underinvest in profitable projects, or missing profitable opportunities, thereby undermining M&A deal value.

Third, the over-investment hypothesis suggests that managers may prioritize personal agendas through and pursue CSR investment that falls outside core business objectives, which creates agency problems (Friedman, 1997) and reduce shareholder value especially in firms with weak governance (Harjoto and Jo, 2011).[5] In our context, agency problems may manifest when acquirers face higher climate change uncertainty. These acquirers may find their internal resources stretched thin as they address climate-related events in the pre-announcement period. Accordingly, their M&A transactions may be viewed as overly costly and misaligned with

[3] See prior research such as Hirshleifer et al., (2009) and Barber and Odean (2008) for more evidence on investors' limited attention. For example, Lu et al. (2016) find that fund managers capture significantly lower fund alpha when experiencing personal distractions, such as marital events.
[4] See, for example, Pérez-González and Yun (2013) for the evidence on how managerial efforts to mitigate firms' climate risk exposure affects firms' valuations.
[5] Similarly, Masulis and Reza (2015) find that CSR activities can insulate managers from shareholder oversight, exacerbating managerial entrenchment resulting in value destruction.

shareholders' interests, prompting negative market reactions around announcements. Taken together, these arguments lead to the following hypothesis:

H1b. *Acquirers' exposure to climate change in the pre-announcement period decreases acquirer shareholder wealth around M&A announcements.*

III. Data and sample

3.1 Data and sample selection

We collect information about M&A deals from the Thomson Reuters' Securities Data Company (SDC) Platinum database and obtain firm-level climate change exposure data from Sautner et al. (2023a). The initial sample includes 2,855 M&A deals announced between 2001 and 2020, where both the acquirer and the target are US public firms. We apply the following selection criteria. First, we exclude 237 deals that are labeled as neither completed nor withdrawn. Second, we remove eight deals where the deal value is less than or equal to $1 million. Third, we exclude 252 deals where the acquirer's ownership of the target's shares 6 months prior to the announcement is 50% or more, but the post-transaction ownership is less than 100%. Additionally, 52 deals are removed due to missing financial data required for estimating the regression models. These criteria yield a final sample of 2,306 deals. Table 1 outlines the sample construction.

[Insert Table 1 Here]

Panel A of Table 2 demonstrates the frequency of deals partitioned by year. The percentage of merger deals varies substantially across years, decreasing from a peak of 8.89% in 2001 to a low of 2.17% in 2020. Panel B of Table 2 presents the industry distribution of acquirers, classified by two-digit Standard Industrial Classification (SIC) codes. Approximately 22.98% of the deals occur in the Depository Institutions industry, while 12.97% are in the Business Services sector.

[Insert Table 2 Here]

3.2 Summary statistics

Table 3 presents descriptive statistics for acquirer firm-level and M&A deal-level characteristics in the pre-announcement period. Panel A shows that the average value for our variable of interest, acquirers' *CCExposure*, is 0.045.[6] Panel B reports that the mean values of acquirer announcement CARs, which are -0.005 and -0.006 for the (−1, +1) and (−3, +3) event windows, respectively. Panels C and D report summary statistics for acquirer firm-level characteristics and M&A transaction characteristics, respectively. The mean value for acquirer size is 8.259.[7] On average, acquirers have a market-to-book ratio of 3.194, a return-on-assets ratio of 0.02, and a leverage ratio of 0.613. In terms of deal characteristics, more than 36% of the transactions are paid entirely with cash (*Cash Payment*), while approximately 13.8% are classified as tender offers (*Tender Offer*). These figures are broadly consistent with the summary statistics of M&A deals reported in recent studies (e.g., Liu, 2020).

[Insert Table 3 Here]

IV. Main results

4.1 The wealth effect of climate change exposure

To examine the effect of acquirers' climate change exposure on acquirer announcement CARs, we estimate the following OLS regression model at the M&A deal level:

$$ACAR_i = \beta_0 + \beta_1 CCExposure + \sum \beta_m Controls + \sum \beta_n Acquirer\ Industry + \sum \beta_k Year + \varepsilon$$

[6] Sautner et al. (2023a) define this holistic *CCExposure* measure as the number of climate change related bigrams divided by the total number of bigrams in the transcripts, i.e., how frequently the specified bigrams appear in a transcript, and multiply it by 1000 for purposes of exposition. This is an annual measure for each firm by averaging the quarterly measures. Therefore, on average, 0.0045% of bigrams in a conference call transcript are related to climate change in our sample. In an additional test presented in section 5.2, we compare *CCExposure* of acquirers with that of non-acquirer firms.

[7] This is equivalent to $26,789.7 million.

(1)

where *ACAR* represents the acquirer's cumulative abnormal return for the (−1, +1) and (−3, +3) windows around the M&A announcement. Our variable of interest is *CCExposure*, which measures the degree of the acquirer's exposure to climate change in the fiscal year prior to the M&A announcement.[8] The focus of our analysis is on the coefficient β_1, which captures the effect of acquirers' climate change exposure.

We include a variety of control variables in the model. First, we control for acquirer firms' financial attributes for the fiscal year-end prior to the announcement date, including firm size (*Size*, the natural logarithm of the market value of equity), the ratio of market to book value (*Market-to-Book*, the market value of equity divided by the book value of equity), return on assets (*Return-on-Assets*, net income divided by total assets), and the debt-to-assets ratio (*Leverage*, total liabilities divided by total assets). Second, we control for deal-specific characteristics, including *Tender Offer* (an indicator variable equal to one if the deal is a tender offer, and zero otherwise), *Hostile Deal* (an indicator variable equal to one if the deal is hostile, and zero otherwise), *Equal Deal* (an indicator variable equal to one if the merger involves a stock swap with approximately the same market capitalization for acquirer and target, and zero otherwise), *Diversify Deal* (an indicator variable equal to one if the acquirer and target operate in different industries based on two-digit SIC codes, and zero otherwise), *Toehold* (an indicator variable equal to one if the acquirer holds a non-zero percentage of the target's shares prior to the announcement, and zero otherwise), *Multiple Bidders* (an indicator variable equal to one if there are competing bidders, and zero otherwise), *Cash Payment* (an indicator variable equal to one if the deal is financed entirely in cash, and zero otherwise). We also include acquirer

[8] We also examine the wealth effect of topic-based measures, i.e., *CCExposure Opp*, *CCExposure Phy*, and *CCExposure Reg*, as additional analyses in section 4.4.

industry fixed effects to control for time-invariant industry characteristics and year fixed effects to account for macroeconomic factors that affect all firms.

The estimation results of model (1) are presented in Table 4. The dependent variable in columns (1) and (2) is acquirer CARs for the (−1, +1) and (−3, +3) window, respectively, around the M&A announcement. The coefficient on *CCExposure* is 0.030 and 0.041, supporting the *value-creating effect* that acquirers' exposure to climate change in the pre-announcement period has a positive impact on shareholder wealth. We also observe non-trivial economic effects. A one standard deviation increase in acquirer firm-level climate change exposure is associated with approximately a 6.05% increase in three-day acquirer announcement CARs.[9]

[Insert Table 4 Here]

4.2 Identification strategy: A quasi-natural experiment

Our main results point to a value-creating effect of acquirers' exposure to climate change. However, this effect could be influenced by unobservable factors that correlate with acquirer announcement CARs. To alleviate thus endogeneity concern, we exploit a plausibly exogenous shock, the BP Deepwater Horizon oil spill in 2010. The Deepwater Horizon oil rig, situated approximately 40 miles from Louisiana's coast in the Gulf of Mexico, exploded on April 20th, 2010. The incident, the largest maritime disaster in history (Kujawinski et al., 2020), resulted in the death of 11 workers, severe damage to marine and wildlife (Camilli et al., 2010), and ultimate costs exceeding $144 billion (Gyo Lee et al., 2018). The disaster disrupted critical climate and energy policy discussions in the U.S. Congress (Hultman, 2010), had far-reaching externalities beyond ecological and economic damages (Bishop et al., 2017; Huang et al., 2022), and brought global attention to firms' environmental performance and shifted sustainability

[9] Among the control variables, the coefficient on *Leverage* is significantly positive, suggesting that acquirers with higher financial risk achieve better announcement CARs. Additionally, deal-level analysis indicates acquirers financing their M&A with cash (*Cash Payment*) obtain higher shareholder wealth around announcements.

ratings from a niche focus to a widely discussed domain (Bryan, 2023). Following this environmental disaster, firms tended to increase their disclosure of CSR practices to mitigate shareholder wealth declines (Heflin and Wallace, 2017). Additionally, capital market participants become more cautious about firms that exposed them to heightened risks in the wake of such incidents (Christensen et al., 2021).

Accordingly, we expect that the oil spill disaster heightened market awareness of climate change, leading to a rise in the frequency of climate-related bigrams in a firm's conference call transcripts. This essentially amplifies the firm's exposure to climate change, as measured by Sautner et al. (2023a). Consistent with the value-adding effect of climate change exposure, we predict that acquirers with higher climate change exposure achieve higher announcement CARs following the oil spill event.

To test this prediction, we include an indicator variable *High CCExposure* (coded as one if an acquirer's exposure to climate change in our sample is above the median, and zero otherwise) and its interaction term with *BP Oil Spill* in our regression model (1). The results in Panel A of Table 5 show that the coefficient on the interaction term is significantly positive in columns (1) and (2), consistent with our prediction that acquirers with higher climate change exposure experience greater announcement CARs following the oil spill disaster.

4.3 Identification strategy: A Lewbel (2012) IV approach

To further address endogeneity concerns, we employ Lewbel (2012)'s IV approach. This method is widely adopted in empirical research, especially when external instrumental variables are unavailable and when errors for regression models may be correlated due to unobservable common shocks.[10] Specifically, we generate an internal IV by exploiting heteroskedasticity in the data. In the first-stage regression, we regress *CCExposure* on all other

[10] See, for example, Hasan et al. (2022).

control variables in Model (1). In the second stage, we regress acquirer announcement returns on the fitted value of *CCExposure* from the first-stage regression.

The results from the second-stage regression using Lewbel (2012)'s approach are reported in Panel B of Table 5. The coefficient on *CCExposure* is 0.037 in column (1) and 0.048 in column (2), both statistically significant at the 1% level. This evidence reinforces the finding that acquirers with higher climate change exposure experience greater shareholder wealth gains during M&A announcements. In other words, our main results remain robust when employing a heteroskedasticity-based instrument to address endogeneity concerns.

In summary, the results from both identification strategies—a quasi-natural experiment and the heteroskedasticity-based IV approach—consistently indicate a positive causal effect of acquirers' exposure to climate change on announcement returns around M&A events. This is consistent with the *value-adding* effect of climate change exposure in the M&A context.

[Insert Table 5 Here]

4.4 The wealth effect of climate change exposure: Evidence from topic-based measures

To provide further insights into the value-adding effect of acquirers' exposure to climate change, we analyze the topic-based *CCExposure* measures developed by Sautner et al. (2023a), i.e., *CCExposure Opp* (opportunities), *CCExposure Phy* (physical climate risks), and *CCExposure Reg* (regulatory risks). *CCExposure Opp* captures discussions related to green technologies, such as "wind power" and "solar energy". *CCExposure Phy* focuses on physical climate risks, including terms like "sea level", "natural hazard." *CCExposure Reg* reflects firms' activities aimed at complying with regulations, including terms such as "carbon tax".

We replace the holistic *CCExposure* measure with these three topic-based measures and re-estimate model (1). Table 6 shows that the coefficients on *CCExposure Opp* and *CCExposure Phy* are significant and positive, while the coefficients on *CCExposure Reg* are statistically insignificant. These findings suggest that the market rewards acquirers for

proactive efforts to create value-adding opportunities (e.g., through advancements in green technologies) or to mitigate potential losses from physical climate hazards. In contrast, reactive efforts to comply with regulatory mandates do not yield significant market rewards in terms of higher announcement CARs.

[Insert Table 6 Here]

V. Further analyses

5.1 Mechanism tests

5.1.1 Diversification strategy

In this section, we explore potential mechanisms through which an acquirer's *ex-ante* exposure to climate change affects shareholder wealth around M&A announcements. One such mechanism is a diversification strategy, where an acquirer may seek to reduce climate change uncertainty by acquiring a target with lower exposure to climate change. We expect that this diversification strategy via M&A transactions may result in higher CARs as the market rewards the acquirer for mitigating climate-related risks.

To test this prediction, we define *CCExposure Diff* as the difference between the acquirer's and target's climate change exposure in the fiscal year prior to the M&A announcement. A positive *CCExposure Diff* indicates that the acquirer has a higher degree of climate change exposure than the target. We re-estimate model (1) by replacing the independent variable with *CCExposure Diff*. Panel A of Table 7 shows that the coefficient on *CCExposure Diff* is 0.026 and 0.051, respectively, in columns (1) and (2), both significant at the 5% level. These findings suggest that acquirers create higher shareholder value when they target firms with lower *ex-ante* climate change exposure, supporting the notion that diversification from climate change exposure is a value-adding strategy.

5.1.2 Takeover premiums

Next, we consider the extent to which managerial prudence impacts the value-adding effect of acquirers' *ex-ante* exposure to climate change. Managers play a critical role in M&A decisions, particularly when they approach transactions with heightened caution. Prudent management can result in favorable deal terms, such as well-negotiated termination fees and lower transaction costs, ultimately leading to reduced takeover premiums (Officer, 2003). In addition, climate change uncertainty may increase the unpredictability of a firm's financial situation and future market conditions, thereby encouraging managers to adopt more conservative financial strategies and investment decisions (Bloom, 2009; Huizinga, 1993). In this context, we expect that acquirers exposed to higher climate change uncertainty are more likely to offer lower premiums to guard against uncertainty (Moeller et al., 2004).[11]

To examine this prediction, we replace the dependent variable with *Premiums* and re-estimate model (1). In particular, we measure *Premiums1* (*Premiums2*) as the offer price minus the stock price of an acquirer 1 trading day (5 trading days) prior to the announcement, divided by that stock price. The results in Panel B of Table 7 show that the coefficient on *CCExposure* is -0.276 and -0.261, in columns (1) and (2), respectively, both statistically significant. This suggests that acquirers with higher exposure to climate change pay takeover premiums that are up to 27.6% lower.

In an untabulated robustness test, we re-estimate takeover premiums using longer windows, measuring the offer price relative to the acquirer's stock price 20, 42, and 105 trading days before the announcement. The coefficients on *CCExposure* remain negative and

[11] Alternatively, perceiving a high degree of climate change uncertainty as a threat to their value (Matsumura et al., 2014), acquirers may be willing to offer higher premiums as a pre-emptive move to quickly finalize the deal (Eckbo, 2009). By doing so, they may reduce their overall risk exposure (Markowitz, 1952). Acquirers may also deem paying a higher premium as worthwhile, particularly if an M&A transaction helps them gain access to new markets or industries and decrease their exposure to industry-specific or geographic-specific uncertainty. In addition, they may bid at a high price if they anticipate substantial synergies in terms of cost savings and revenue enhancements or growth opportunities following M&As (Andrade et al., 2001; Becher, 2009).

statistically significant, reinforcing the robustness of the link between higher acquirers' climate change exposure and lower takeover premiums. Taken together, our results suggest that acquirers with high climate change exposure negotiate lower premiums, which may explain the favorable market reactions observed during M&A announcement, as presented in Table 4.

5.1.3 Common auditors

We next examine the role of common auditors in our setting. Cai et al. (2016) suggest that auditors shared by the acquirer and target, acting as information intermediaries, possess an in-depth understanding of both firms. This gives rise to more comparable financial statements and reduces the likelihood of misreporting that disproportionately benefits one party. In a similar vein, Dhaliwal et al. (2016) find that bidder firms benefit from sharing an auditor with the target as they tend to offer lower takeover premiums and obtain higher acquisition returns.

Building on this literature, we hypothesize that the value-adding effect of climate change exposure on acquirer CARs is more pronounced when the acquirer and target share a common auditor. To test this, we include *Common Auditor* (an indicator variable coded as one if the acquirer and the target share an auditor in the fiscal year prior to the M&A announcement, and zero otherwise) and interact it with *CCExposure* in model (1). The results in Panel C of Table 7 show that the coefficient on the interaction term is significant and positive. This indicates that when an acquirer and target share a common auditor, information asymmetry between the two firms is reduced, thereby lowering the uncertainty associated with the M&A process and enhancing acquirer shareholder wealth around the announcement.

5.1.4 Tender offer

Finally, we investigate whether tender offers affect the impact of climate change exposure on acquirer announcement CARs. A tender offer involves the direct purchase of target shares from shareholders (Betton et al., 2009). As acquirer managers may aim to swiftly gain control of the target by extending a tender offer, they may act more assertively by negotiating

special benefits or terms with the target. Moreover, mandatory disclosure rules (e.g., the 1968 Williams Act) require that tender offers to be disclosed through SEC filings, potentially increasing competition among bidders (Eckbo, 2009). To deter competitors, acquirers might raise the purchase price, which could result in a premium over the target's current stock price, which leads to a value loss for acquirer firm shareholders around the announcement.

To test this prediction, we include an interaction term between acquirer firms' climate change exposure (*CCExposure*) and *Tender Offer* as an explanatory variable in model (1). Panel D of Table 7 shows that the coefficients on the interaction term are negative in columns (1) to (2). This points to a negative effect of tender offers on announcement CARs for acquirers with higher climate change exposure. We interpret this evidence as the positive market reaction being muted when an acquirer aims for a quick M&A process through a tender offer, in that they plausibly overpay (Roll, 1986) or offer benefits to target shareholders.

[Insert Table 7 Here]

5.2 Additional tests

5.2.1 Acquirers' exposure to climate change

In this section, we conduct several additional tests to yield further insights into acquirers' exposure to climate change in our setting. First, a potential concern is that acquirer firms in our sample may have an abnormally high exposure to climate change compared to their industry peers. To address this, we use firm-specific variables (i.e., *Size*, *Market-to-Book*, *Return-on-Assets*, and *Leverage*) and estimate a group of propensity score matching (PSM) matched non-acquirer firms. In particular, we apply a one-to-one PSM method without replacement to match acquirers and non-acquirer firms using the nearest neighbor method.[12] From our sample of 2,306 acquirers, the PSM process identifies 2,073 matched same-industry non-acquirer firms.

[12] This method ensures that each acquirer observation is matched to one control observation, and each control observation is used only once.

Panel A of Table 8 shows that acquirers have a similar degree of *CCExposure*, *CCExposure Opp*, and *CCExposure Reg* compared to their PSM matched non-acquirer peers. However, acquirers demonstrate higher exposure to climate hazards, as proxied by *CCExposure Phy*, which provides a plausible explanation for their motivation to adopt a diversification strategy aimed at mitigating physical climate change uncertainty.

[Insert Table 8 Here]

5.2.2 Subsample analysis of targets' characteristics

We also conduct a subsample analysis based on the financial characteristics of target firms. Results shown in Panel B of Table 8 suggest that targets acquired by acquirers with higher *CCExposure* tend to be larger, exhibit higher ROA, and have lower leverage ratios. In addition, *CCExposure Diff* is higher for acquirers with higher *CCExposure*, indicating that acquirers with higher climate change exposure are more likely to pursue deals with targets that exbibit lower climate change exposure.

5.2.3 Payment method

Finally, we examine whether acquirers' climate change exposure is associated with all-cash payment deals. Acquirers with high climate change exposure may prefer cash offers to minimize resistance from target shareholders who may be reluctant to accept acquirer shares (Eckbo et al., 1990) when there is a higher degree of valuation uncertainty (Martin, 1996). In addition, a transaction settled with all-cash may send a strong signal of confidence in the deal's profitability (Myers and Majluf, 1984) and help maintain the acquirer's existing ownership structure. This will grant acquirers full control over the merged entity (Boone and Mulherin, 2007) and more flexibility for post-merger restructuring.[13]

[13] However, firms faced with significant uncertainty may be financially constrained with limited internal resources. Accordingly, they may opt to conserve their cash reserves (Boone and Mulherin, 2007) and avoid all-cash payments. In addition, acquirers may have higher perceived risks associated with climate change uncertainty and as a resultlenders may thus be reluctant to provide financing or offer a higher cost of debt (Fazzari et al., 1987). Climate change uncertainty may also result in additional complexity in acquirers' business operations

We replace the dependent variable in model (1) with *Cash Payment* and estimate a Logit regression model at the M&A deal level. Table 9 shows that the coefficient on *CCExposure* is 0.09 and insignificant in column (1). This suggests that acquirers experiencing high *ex-ante* climate change uncertainty, as proxied by the holistic *CCExposure* measure, are not significantly more likely to finance their M&A deals with all-cash.

In further analysis, we re-estimate the Logit model using the three topic-based climate change exposure measures as independent variables. The coefficient on *CCExposure Phy* is positive and statistically significant at the 5% level in column (3). This indicates that firms subject to severe physical climate hazards—such as rising sea levels, heatwaves, and storms—may have a more urgent need to diversify their physical climate-related risks and thus opt for all-cash offers to provide certainty to target shareholders (Martin, 1996). However, this pattern does not hold for acquirers with high exposure to climate-related opportunities (*CCExposure Opp*) or regulations (*CCExposure Reg*). We interpret this as evidence that firms engaged in green innovation or regulatory compliance may possess a strategic advantage, reducing the need to entice target shareholders with all-cash offers.

[Insert Table 9 Here]

5.3 Robustness tests

5.3.1 Omitted variable analysis based on Oster (2019)

We conduct several robustness tests in this sub-section. First, we apply Oster (2019)'s methodology to address concerns regarding omitted variable bias. The results in Panel A of Table 10 indicate that the "true" β_1 is likely bounded at [0.019, 0.030] and [0.024, 0.041], respectively, which falls within the 95% confidence interval for the coefficient on *CCExposure* and does not include zero. This suggests that the estimated β_1 coefficient in Table 4 is unlikely

(Kaplan and Zingales, 1997), which further increases information asymmetry between acquirers and lenders and hinders the acquirer's ability to raise cash (Myers and Majluf, 1984).

to be driven by unobservable factors that are at least as important as the observable control variables in our analysis. Moreover, the absolute value of δ in column (2) is greater than 23, indicating that unobservable factors would need to be more than twenty-three times as important as the observable controls to negate our documented effect of *CCExposure* on acquirer announcement CARs. Overall, the results of the Oster (2019) tests suggest that our results are unlikely to be driven by unobservable confounding factors.

5.3.2 Combined firms' announcement CARs

Second, we re-estimate model (1) by using the announcement CARs for the combined firm (i.e., the acquirer and target) as the dependent variable. The number of observations drops to 1,672, as the analysis requires non-missing combined announcement CARs. As shown in Panel B of Table 10, the coefficients on *CCExposure* remain positive and significant. This finding suggests that the market perceives that acquirers with higher climate change exposure can achieve greater synergies and manage consolidated assets more efficiently, consistent with the notion of prudent M&A decision-making.

5.3.3 Sample of completed M&A transactions

To address potential biases stemming from systematic differences between successful and withdrawn M&A transactions, we restrict the sample to completed M&A deals (2,034 observations) and re-estimate model (1). The results, reported in Panel C of Table 10, show that the coefficients on *CCExposure* remain positive and significant, indicating that the positive wealth effect of climate change exposure persists for completed transactions.

5.3.4 Alternative windows to measure acquirer announcement CARs

We further test the robustness of our results by using alternative event windows to measure acquirer announcement CARs. Specifically, we use (–2, +2) and (–5, +5) windows, as the latter captures potential pre-announcement price run-ups (Schwert, 1996). The coefficients on *CCExposure* range from 0.037 to 0.055, as reported in Panel D of Table 10,

confirming that our results are not sensitive to the choice of event windows to estimate acquirer announcement CARs.

5.3.5 Additional corporate governance attributes as controls

We also re-estimate model (1) by including additional control variables to mitigate the concern that our results may be driven by other firm-level governance characteristics that are not controlled for. The results in Panel E of Table 10 suggest that our main findings are robust when acquirers' governance characteristics, i.e., female CEO, CEO duality, and institutional ownership, are included as controls in model (1).

5.3.6 Additional target firms' characteristics as controls

Panel B of Table 8 suggests that acquirers with higher *CCExposure* are more likely to acquire larger targets with higher ROA and lower leverage. As a robustness check, we add target firm characteristics (*Size*, *Market-to-Book*, *Return-on-Assets*, and *Leverage*) as additional controls in model (1). As shown in Panel F of Table 10, the coefficients on *CCExposure* remain positive and significant, reinforcing the robustness of our findings.

5.3.7 Berkman et al. (2024)'s climate risk measure as an alternative independent variable

Berkman et al. (2024) develop a firm-specific climate risk measure based on firms' climate-related 10-K disclosures. They highlight that the advantages of their measure include accounting for unchanging firm characteristics and ensuring consistent coverage across all firms, even those without earnings call data. We replace the Sautner et al. (2023a)'s *CCExposure* measure with Berkman et al. (2024)'s climate risk measure (*Climate Risk*) and re-estimate our model (1). The results presented in Panel G of Table 10 are consistent with our main findings. For example, the coefficient on *CCExposure* is 0.007 and statistically significant at the 5% level in column (3), suggesting that the *value-adding effect* of climate change uncertainty remains when the Berkman et al. (2024) 10-K-based climate risk measure is used as an alternative independent variable.

5.3.8 Controlling for economic policy uncertainty

It is possible that our findings are affected by other types of uncertainty examined in prior studies. In the final set of robustness checks, we focus on economic policy uncertainty (EPU), one of the most common forms of uncertainty examined in existing literature. EPU may be associated with firms' exposure to climate change and impact their M&A performance (Baker et al., 2016). To address this potential omitted variable issue, we include Baker et al. (2016)'s *EPU* measure as an additional control variable and re-estimate our model (1). The coefficients on *CCExposure* continue to be positive and statistically significant in Panel H of Table 10, suggesting that EPU does not impact our results.[Insert Table 10 Here]

VI. Conclusion

Climate change has garnered significant attention from both researchers and practitioners. Yet, the question of how capital markets price climate change uncertainty in the M&A context remains unanswered. Two opposite effects, namely the *value-destroying effect* and *value-adding effect*, could explain the relationship between acquirers' *ex-ante* climate change exposure and announcement CARs. In this study, we employ Sautner et al. (2023a)'s firm-level climate change exposure to examine this relationship. Our findings provide robust evidence supporting the *value-adding effect* of acquirers' exposure to climate change. Specifically, acquirers obtain higher announcement CARs when they have higher climate change exposure prior to the M&A announcement. Further analyses using topic-based climate change exposure measures reveal that the market rewards acquirers for proactive efforts to create value-adding opportunities or to mitigate potential losses from physical climate hazards.

The results from two identification strategies—a quasi-natural experiment based on the 2010 BP oil spill and the heteroskedasticity-based IV approach—consistently indicate a

positive causal effect of acquirers' exposure to climate change on announcement returns around M&A events. In exploring the mechanisms through which acquirers' climate change exposure affects shareholder wealth, we find that the value-adding effect of climate change exposure is stronger when acquirers target firms with lower climate change exposure. In other words, the market reaction is more positive when the acquirer attempts to diversify from climate change uncertainty. Moreover, the positive wealth effect is more pronounced when acquirers pay lower premiums and share a common auditor with the target, highlighting the market's preference for cautious and well-informed M&A decision-making. In contrast, the presence of tender offers attenuates the positive effect of climate change exposure on the acquirer announcement CARs.

Overall, our findings highlight the potential bright side of firms' exposure to climate change. This novel perspective sheds light on the strategies that firms may adopt to manage the uncertainty arising from both the upside and downside of climate change. Importantly, our results demonstrate that firms' exposure to climate risks and opportunities plays a critical role in shaping shareholder value in the M&A context. By highlighting the strategic importance of climate change in corporate finance, this study provides new insights into how firms can navigate uncertainty and adopt appropriate strategies to achieve superior financial outcomes.

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Appendix A. Variable definition

Variable name	Description	Source
Acquirer climate change exposure		
CCExposure	The degree of the acquirer's exposure to climate change in the fiscal year prior to the M&A announcement.	Sautner et al. (2023a)
Acquirer firm shareholder wealth around the announcement		
ACAR	The cumulative abnormal percentage return for the target over the event window (−1 +1) and (−3, +3). Expected returns are calculated using a Carhart four-factor model. The CRSP equally weighted return is used as the market return.	CRSP
Target and acquirer firm characteristics		
Size	The log of the market value of equity at the end of the fiscal year prior to the announcement date.	Compustat
Market-to-Book	The market value of equity divided by the book value of equity at the end of the fiscal year prior to the announcement date.	Compustat
Return-on-Assets	Net income divided by total assets at the end of the fiscal year prior to the announcement date.	Compustat
Leverage	The ratio of debt to total assets at the end of the fiscal year prior to the announcement date.	Compustat
M&A deal characteristics		SDC
Tender Offer	An indicator variable coded as one if the deal is a tender offer, and zero otherwise.	SDC
Hostile Deal	An indicator variable coded as one if the deal is hostile, and zero otherwise.	SDC
Equal Deal	An indicator variable coded as one if the deal is a merger of equals, and zero otherwise.	SDC
Diversify Deal	An indicator variable coded as one if the acquirer and target have different two-digit SIC codes, and zero otherwise.	SDC
Toehold	An indicator variable coded as one if the acquirer holds a non-zero percentage of the target's stock prior to the announcement date, and zero otherwise.	SDC
Multiple Bidders	An indicator variable coded as one if there are competing bidders, and zero otherwise.	SDC
Cash Payment	An indicator variable coded as one if the deal is paid entirely with cash, and zero otherwise.	SDC
Variables for identification strategy and further analyses		
BP Oil Spill	An indicator variable coded as one if the M&A was announced after the BP Deepwater Horizon oil spill (April 20th, 2010), and zero otherwise.	
High CCExpsoure	An indicator variable coded as one if an acquirer's exposure to climate change in our sample is above the median, and zero otherwise.	Sautner et al. (2023a)
CCExposure Opp	The degree of the acquirer's topic-based (opportunities) exposure to climate change in the fiscal year prior to the M&A announcement.	Sautner et al. (2023a)
CCExposure Phy	The degree of the acquirer's topic-based (physical climate shocks) exposure to climate change in the fiscal year prior to the M&A announcement.	Sautner et al. (2023a)

Variable name	Description	Source
CCExposure Reg	The degree of the acquirer's topic-based (regulatory risks) exposure to climate change in the fiscal year prior to the M&A announcement.	Sautner et al. (2023a)
CCExposure Diff	The difference between the acquirer's and target's exposure to climate change in the fiscal year prior to the M&A announcement.	Sautner et al. (2023a)
Premiums	Premiums1 (Premiums2) is the offer price minus the acquirer's stock price 1 trading day (5 trading days) prior to the M&A announcement, divided by that stock price.	SDC, CRSP
Common Auditors	An indicator variable coded as one if the acquirer and target have the same audit firm in the fiscal year prior to the M&A announcement, and zero otherwise.	Audit Analytics
CCAR	The cumulative abnormal percentage return for the combined firm (acquirer and target) over the event window (−1 +1) and (−3, +3). Expected returns are calculated using a Carhart four-factor model.. The CRSP equally weighted return is used as the market return.	CRSP
Female CEO	An indicator variable coded as one if the CEO is female, and zero otherwise.	BoardEx, ExecuComp
CEO Duality	An indicator variable coded as one if the CEO also serves as the chairperson of the board, and zero otherwise.	BoardEx, ExecuComp
Institutional Ownership	The number of shares held by institutional shareholders divided by the total number of target firm shares outstanding.	Thomson Financial Institutional (13f) Holdings database
Climate Risk	A 10-K-based climate risk measure.	Berkman et al. (2024)
EPU	Policy-related economic uncertainty.	Baker et al. (2016)

Table 1 Sample construction

Selection Criteria	Number of deals
M&A deals announced between 2001 and 2020 involving US public acquirers and targets	2,855
Less: Deals with status neither complete nor withdrawal	(237)
Less: Deals with a value less than or equal to $1 million	(8)
Less: Deals where the acquirer held 50% or more of target shares 6 months prior to the announcement but sought <100% ownership post-transaction	(252)
Less: Observations with missing values	(52)
Final sample	2,306

This table outlines the sample construction process. The initial sample consists of 2,855 M&A deals announced between 2001 and 2020, drawn from the SDC database, where both the acquirer and target are US public firms. Deals are excluded if their status is neither complete nor withdrawal, the deal value is less than or equal to $1 million, or if the acquirer held 50% or more of target shares 6 months prior to the announcement but sought <100% ownership post-transaction. After merging with accounting data from Compustat and stock price data from CRSP, 52 deals with missing values are excluded, resulting in a final sample of 2,306 deals.

Table 2 Sample distribution

Panel A: Frequency of M&A deals by announcement year

Year	N	%
2001	205	8.890%
2002	137	5.941%
2003	143	6.201%
2004	139	6.028%
2005	145	6.288%
2006	154	6.678%
2007	159	6.895%
2008	116	5.030%
2009	93	4.033%
2010	102	4.423%
2011	72	3.122%
2012	93	4.033%
2013	85	3.686%
2014	109	4.727%
2015	115	4.987%
2016	111	4.814%
2017	90	3.903%
2018	109	4.727%
2019	79	3.426%
2020	50	2.168%

Panel B: Frequency of M&A deals by acquirer industry

Two-digit SIC codes	N	%
Depository Institutions	530	22.984%
Business Services	299	12.966%
Chemical & Allied Products	191	8.283%
Instruments & Related Products	166	7.199%
Electronic & Other Electric Equipment	156	6.765%
Industrial Machinery & Equipment	127	5.507%
Other industries combined	837	36.297%

This table presents the distribution of M&A deals for the sample period of 2001 to 2020. Panel A reports the frequency of deals by announcement year, while Panel B provides the frequency of deals by acquirer industry, classified based on two-digit SIC codes.

Table 3 Summary statistics

Variable	Mean	Std. Dev.	P25	P50	P75
Panel A: Climate change exposure measures					
CCExposure	0.045	0.111	0.000	0.015	0.040
Panel B: Acquirer CARs					
ACAR (−1, +1)	-0.005	0.055	-0.028	-0.003	0.018
ACAR (−3, +3)	-0.006	0.070	-0.035	-0.005	0.026
Panel C: Acquirer firm characteristics					
Size	8.259	2.025	6.973	8.283	9.635
Market-to-Book	3.194	4.029	1.479	2.208	3.676
Return-on-Assets	0.020	0.127	0.009	0.029	0.076
Leverage	0.613	0.254	0.423	0.620	0.869
Panel D: Deal characteristics					
Tender Offer	0.138	0.345	0.000	0.000	0.000
Hostile Deal	0.012	0.108	0.000	0.000	0.000
Equal Deal	0.024	0.153	0.000	0.000	0.000
Diversifying Deal	0.711	0.453	0.000	1.000	1.000
Toehold	0.036	0.187	0.000	0.000	0.000
Multiple Bidders	0.067	0.250	0.000	0.000	0.000
Cash Payment	0.364	0.481	0.000	0.000	1.000

This table provides summary statistics of key variables for the sample period. Panel A reports the variable of interest, the acquirer's firm-level climate change exposure. Panel B presents acquirer CARs for the event windows (−1, +1) and (−3, +3) around the takeover announcement. Panel C provides firm-level characteristics of the acquirers, and Panel D reports M&A deal-level characteristics. Variable definitions are provided in Appendix A.

Table 4 The wealth effect of the acquirer climate change exposure

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
CCExposure	0.030***	0.041**
	(2.981)	(2.432)
Size	-0.001	-0.003***
	(-1.398)	(-3.154)
Market-to-Book	-0.000	-0.001*
	(-0.399)	(-1.734)
Return-on-Assets	-0.010	0.024
	(-0.692)	(1.195)
Leverage	0.023***	0.025**
	(2.794)	(2.365)
Tender Offer	0.006*	0.007
	(1.646)	(1.620)
Hostile Deal	-0.010	-0.011
	(-1.002)	(-0.654)
Equal Deal	0.014	0.023**
	(1.352)	(2.093)
Diversifying Deal	0.001	0.005
	(0.488)	(1.255)
Toehold	0.004	0.004
	(0.573)	(0.444)
Multiple Bidders	0.005	0.004
	(1.056)	(0.711)
Cash Payment	0.014***	0.015***
	(5.119)	(4.227)
N	2,306	2,306
Adjusted R-squared	0.038	0.036
Industry FE	Yes	Yes
Year FE	Yes	Yes

This table presents the results of the regression analysis examining the effect of acquirers' climate change exposure on acquirer announcement CARs. The dependent variable is the acquirer CARs for a three-day window in column (1) and a seven-day window in column (2). Heteroscedasticity-robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-sided), respectively. Definitions of the variables are provided in Appendix A.

Table 5 Identification strategies

Panel A: A quasi-natural experiment

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
High CCExposure × BP Oil Spill	0.011**	0.013**
	(2.314)	(2.214)
High CCExposure	-0.002	-0.004
	(-0.555)	(-0.943)
BP Oil Spill	0.006	0.018
	(0.522)	(1.253)
Size	-0.001	-0.003***
	(-1.360)	(-3.100)
Market-to-Book	-0.000	-0.001*
	(-0.415)	(-1.801)
Return-on-Assets	-0.010	0.024
	(-0.676)	(1.214)
Leverage	0.023***	0.025**
	(2.781)	(2.369)
Tender Offer	0.006	0.008*
	(1.623)	(1.649)
Hostile Deal	-0.008	-0.008
	(-0.858)	(-0.521)
Equal Deal	0.014	0.023**
	(1.357)	(2.094)
Diversifying Deal	0.001	0.004
	(0.477)	(1.230)
Toehold	0.003	0.003
	(0.476)	(0.305)
Multiple Bidders	0.004	0.004
	(0.938)	(0.609)
Cash Payment	0.013***	0.014***
	(5.087)	(4.205)
N	2,306	2,306
Adjusted R-squared	0.038	0.035
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel B: A Lewbel (2012) IV approach

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
CCExposure	0.037***	0.048***
	(-3.527)	-2.725
Size	-0.001	-0.003***
	(-1.342)	(-3.130)
Market-to-Book	0	-0.001*
	(-0.391)	(-1.741)
Return-on-Assets	-0.01	0.024
	(-0.702)	-1.237
Leverage	0.023***	0.025**
	(-2.81)	(-2.38)
Tender Offer	0.006*	0.008*
	(-1.75)	(-1.688)
Hostile Deal	-0.01	-0.011
	(-1.054)	(-0.690)
Equal Deal	0.014	0.023**
	(-1.369)	(-2.111)
Diversifying Deal	0.002	0.005
	(-0.54)	(-1.336)
Toehold	0.004	0.004
	(-0.618)	(-0.476)
Multiple Bidders	0.005	0.004
	(-1.062)	(-0.709)
Cash Payment	0.013***	0.014***
	(-5.095)	(-4.166)
N	2,297	2,297
Adjusted R-squared	0.037	0.035
Industry FE	Yes	Yes
Year FE	Yes	Yes

This table presents the results of two identification strategies used to address potential endogeneity concerns. Panel A reports the regression analysis of acquirer CARs on the acquirer's climate change exposure interacted with *BP Oil Spill*. Panel B reports the results of the Lewbel (2012) instrumental variable approach, where singleton observations are excluded, reducing the sample size to 2,297. Heteroscedasticity-robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-sided), respectively. Definitions of the variables are provided in Appendix A.

Table 6 The wealth effect of the acquirer's exposure to climate change – evidence from topic-based measures

	ACAR (−1,+1)	*ACAR (−3,+3)*	*ACAR (−1,+1)*	*ACAR (−3,+3)*	*ACAR (−1,+1)*	*ACAR (−3,+3)*
	(1)	(2)	(3)	(4)	(5)	(6)
CCExposure (Opp)	0.080***	0.126***				
	(2.844)	(2.905)				
CCExposure (Phy)			1.107**	1.451***		
			(2.399)	(2.715)		
CCExposure (Reg)					0.180	0.218
					(1.147)	(0.751)
Size	-0.001	-0.003***	-0.001	-0.003***	-0.001	-0.003***
	(-1.432)	(-3.194)	(-1.427)	(-3.176)	(-1.400)	(-3.156)
Market-to-Book	-0.000	-0.001*	-0.000	-0.001*	-0.000	-0.001*
	(-0.424)	(-1.755)	(-0.347)	(-1.694)	(-0.456)	(-1.808)
Return-on-Assets	-0.010	0.024	-0.010	0.024	-0.010	0.024
	(-0.666)	(1.219)	(-0.667)	(1.222)	(-0.665)	(1.223)
Leverage	0.023***	0.025**	0.023***	0.025**	0.023***	0.025**
	(2.791)	(2.360)	(2.771)	(2.344)	(2.796)	(2.370)
Tender Offer	0.006*	0.008*	0.006*	0.008*	0.006*	0.008*
	(1.681)	(1.656)	(1.681)	(1.658)	(1.691)	(1.667)
Hostile Deal	-0.010	-0.011	-0.011	-0.012	-0.010	-0.010
	(-0.979)	(-0.640)	(-1.110)	(-0.745)	(-0.978)	(-0.636)
Equal Deal	0.014	0.023**	0.014	0.022**	0.014	0.023**
	(1.363)	(2.116)	(1.291)	(2.016)	(1.317)	(2.049)
Diversifying Deal	0.001	0.005	0.001	0.004	0.001	0.004
	(0.518)	(1.290)	(0.380)	(1.141)	(0.461)	(1.230)
Toehold	0.004	0.004	0.003	0.003	0.003	0.002
	(0.542)	(0.432)	(0.479)	(0.332)	(0.449)	(0.296)
Multiple Bidders	0.005	0.004	0.005	0.004	0.005	0.004
	(1.045)	(0.701)	(1.043)	(0.696)	(1.038)	(0.690)
Cash Payment	0.014***	0.015***	0.013***	0.014***	0.014***	0.015***
	(5.110)	(4.213)	(4.972)	(4.073)	(5.116)	(4.228)
N	2,306	2,306	2,306	2,306	2,306	2,306
Adjusted R-squared	0.038	0.036	0.038	0.036	0.036	0.033
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

This table presents the results of additional tests examining the wealth effect of the acquirer's exposure to climate change using topic-based measures: *CCExposure Opp* (opportunities), *CCExposure Phy* (physical climate risks), and *CCExposure Reg* (regulatory risks). Heteroscedasticity-robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-sided), respectively. Variable definitions are provided in Appendix A.

Table 7 Mechanism tests

Panel A: Risk management

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
CCExposure Diff	0.026**	0.051**
	(1.965)	(2.495)
Size	-0.001	-0.003***
	(-1.377)	(-3.116)
Market-to-Book	-0.000	-0.001*
	(-0.461)	(-1.801)
Return-on-Assets	-0.010	0.024
	(-0.664)	(1.215)
Leverage	0.023***	0.026**
	(2.831)	(2.423)
Tender Offer	0.006*	0.007
	(1.662)	(1.628)
Hostile Deal	-0.009	-0.009
	(-0.893)	(-0.545)
Equal Deal	0.014	0.023**
	(1.356)	(2.113)
Diversifying Deal	0.001	0.004
	(0.456)	(1.201)
Toehold	0.003	0.003
	(0.471)	(0.360)
Multiple Bidders	0.005	0.004
	(1.040)	(0.695)
Cash Payment	0.014***	0.015***
	(5.115)	(4.220)
N	2,306	2,306
Adjusted R-squared	0.037	0.036
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel B: Takeover premiums

	Premiums1	*Premiums2*
	(1)	(2)
CCExposure	-0.276**	-0.261**
	(-2.224)	(-2.264)
Size	-0.011	-0.008
	(-1.198)	(-0.878)
Market-to-Book	-0.002	-0.003
	(-0.483)	(-0.681)
Return-on-Assets	-0.009	0.050
	(-0.058)	(0.307)
Leverage	0.089	0.065
	(0.962)	(0.690)
Tender Offer	0.169***	0.190***
	(3.238)	(3.480)
Hostile Deal	0.093	0.062
	(0.967)	(0.669)
Equal Deal	-0.317***	-0.318***
	(-4.941)	(-4.688)
Diversifying Deal	-0.002	0.008
	(-0.069)	(0.230)
Toehold	-0.436***	-0.453***
	(-5.913)	(-6.212)
Multiple Bidders	0.025	0.026
	(0.418)	(0.427)
Cash Payment	-0.050	-0.046
	(-1.423)	(-1.243)
N	1,673	1,673
Adjusted R-squared	0.136	0.149
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel C: Common auditors

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
CCExposure × Common Auditors	0.033**	0.073***
	(2.066)	(3.172)
CCExposure	0.023**	0.027
	(2.175)	(1.467)
Common Auditors	-0.006*	-0.007*
	(-1.756)	(-1.685)
Size	-0.001	-0.003***
	(-1.326)	(-3.098)
Market-to-Book	-0.000	-0.001*
	(-0.379)	(-1.729)
Return-on-Assets	-0.010	0.024
	(-0.698)	(1.200)
Leverage	0.023***	0.025**
	(2.768)	(2.336)
Tender Offer	0.006*	0.008*
	(1.706)	(1.685)
Hostile Deal	-0.010	-0.010
	(-0.981)	(-0.640)
Equal Deal	0.015	0.024**
	(1.394)	(2.155)
Diversifying Deal	0.001	0.005
	(0.508)	(1.272)
Toehold	0.004	0.005
	(0.652)	(0.542)
Multiple Bidders	0.005	0.005
	(1.021)	(0.717)
Cash Payment	0.014***	0.015***
	(5.089)	(4.237)
N	2,306	2,306
Adjusted R-squared	0.039	0.038
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel D: Tender offers

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
CCExposure × Tender Offer	-0.051**	-0.094**
	(-2.028)	(-2.146)
CCExposure	0.035***	0.051***
	(3.411)	(2.882)
Tender Offer	0.008**	0.012**
	(2.092)	(2.361)
Size	-0.001	-0.003***
	(-1.445)	(-3.222)
Market-to-Book	-0.000	-0.001*
	(-0.402)	(-1.738)
Return-on-Assets	-0.010	0.024
	(-0.685)	(1.205)
Leverage	0.023***	0.025**
	(2.802)	(2.379)
Hostile Deal	-0.009	-0.008
	(-0.858)	(-0.510)
Equal Deal	0.014	0.023**
	(1.349)	(2.092)
Diversifying Deal	0.001	0.005
	(0.504)	(1.277)
Toehold	0.004	0.004
	(0.575)	(0.450)
Multiple Bidders	0.005	0.004
	(0.997)	(0.631)
Cash Payment	0.014***	0.015***
	(5.125)	(4.241)
N	2,306	2,306
Adjusted R-squared	0.038	0.037
Industry FE	Yes	Yes
Year FE	Yes	Yes

This table presents the results of four mechanism tests. Panel A examines the acquirer's diversification strategy. Panel B presents the results of takeover premiums, where *Premiums1* (*Premiums2*) is calculated as the offer price minus the acquirer's stock price 1 trading day (5 trading days) before the announcement, divided by that stock price. Panel C presents the results of the role of common auditors shared by the acquirer and target. Panel D presents the results of the impact of tender offers on acquirer announcement CARs. Heteroscedasticity-robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-sided), respectively. Variable definitions are provided in Appendix A.

Table 8 Additional tests

Panel A: Acquirers' climate change exposure

	PSM matched non-acquirers	Acquirers	
Variable	**Mean**	**Mean**	**Diff_Mean**
CCExposure	0.047	0.047	0.000
CCExposure Opp	0.012	0.011	0.001
CCExposure Phy	0.000	0.001	-0.000***
CCExposure Reg	0.002	0.001	0.000

Panel B: Difference of target firms attributes

	Acquirers with lower *CCExposure*	Acquirers with higher *CCExposure*	
Variable	**Mean**	**Mean**	**Diff_Mean**
Target Size	6.153	6.494	-0.341***
Target Market-to-Book	2.313	2.526	-0.213
Target Return-on-Assets	-0.087	-0.047	-0.039***
Target Leverage	0.604	0.544	0.060***
CCExposure Diff	-0.002	0.054	-0.055***

This table presents the results of two additional tests. Panel A compares the degree of climate change exposure (*CCExposure*) of acquirer firms with that of PSM matched non-acquirer firms. Panel B provides a subsample analysis based on target firms' financial characteristics. Heteroscedasticity-robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-sided), respectively. Variable definitions are provided in Appendix A.

Table 9 Payment method

	Cash Payment			
	(1)	(2)	(3)	(4)
CCExposure	0.090			
	(0.177)			
CCExposure Opp		0.597		
		(0.411)		
CCExposure Phy			44.531**	
			(2.322)	
CCExposure Reg				1.120
				(0.133)
Size	0.244***	0.244***	0.244***	0.244***
	(4.188)	(4.168)	(4.105)	(4.189)
Market-to-Book	-0.006	-0.006	-0.004	-0.006
	(-0.465)	(-0.465)	(-0.324)	(-0.466)
Return-on-Assets	1.853***	1.854***	1.822***	1.851***
	(3.690)	(3.689)	(3.632)	(3.742)
Leverage	-0.206	-0.206	-0.220	-0.207
	(-0.503)	(-0.504)	(-0.522)	(-0.503)
Tender Offer	1.633***	1.634***	1.628***	1.634***
	(12.041)	(12.057)	(11.785)	(11.968)
Hostile Deal	-0.151	-0.152	-0.219	-0.151
	(-0.393)	(-0.397)	(-0.616)	(-0.391)
Equal Deal	-3.049***	-3.045***	-3.049***	-3.051***
	(-2.898)	(-2.901)	(-2.941)	(-2.919)
Diversifying Deal	-0.317**	-0.317*	-0.333**	-0.318**
	(-1.961)	(-1.950)	(-2.120)	(-1.969)
Toehold	0.093	0.098	0.110	0.092
	(0.311)	(0.323)	(0.362)	(0.303)
Multiple Bidders	0.186	0.185	0.193	0.185
	(0.827)	(0.820)	(0.870)	(0.822)
N	2,292	2,292	2,292	2,292
Pseudo R-squared	0.148	0.148	0.150	0.148
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

This table presents the effect of acquirers' climate change exposure on their M&A transaction payment methods. Heteroscedasticity-robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-sided), respectively. Variable definitions are provided in Appendix A.

Table 10 Robustness tests

Panel A: Omitted variable analysis – coefficient robustness to unobservable variables, based on Oster (2019)

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
CCExposure	0.030***	0.041**
	(2.981)	(2.432)
Size	-0.001	-0.003***
	(-1.398)	(-3.154)
Market-to-Book	-0.000	-0.001*
	(-0.399)	(-1.734)
Return-on-Assets	-0.010	0.024
	(-0.692)	(1.195)
Leverage	0.023***	0.025**
	(2.794)	(2.365)
Tender Offer	0.006*	0.007
	(1.646)	(1.620)
Hostile Deal	-0.010	-0.011
	(-1.002)	(-0.654)
Equal Deal	0.014	0.023**
	(1.352)	(2.093)
Diversifying Deal	0.001	0.005
	(0.488)	(1.255)
Toehold	0.004	0.004
	(0.573)	(0.444)
Multiple Bidders	0.005	0.004
	(1.056)	(0.711)
Cash Payment	0.014***	0.015***
	(5.119)	(4.227)
Intercept	-0.019**	-0.007
	(-2.504)	(-0.707)
N	2,306	2,306
Adjusted R-squared	0.038	0.036
Industry FE	Yes	Yes
Year FE	Yes	Yes
Beta Bound	[0.019, 0.030]	[0.024, 0.041]
95% CI	[0.010, 0.050]	[0.008, 0.075]
Delta (1.3 × R-squared)	-123.929	-23.193

Panel B: The effect of acquirers' climate change exposure on announcement CARs for the combined firm

	CCAR(−1, +1)	*CCAR(−3, +3)*
	(1)	(2)
CCExposure	0.030***	0.033**
	(2.647)	(2.236)
Size	-0.005***	-0.007***
	(-5.830)	(-6.191)
Market-to-Book	-0.000	-0.000
	(-0.321)	(-0.911)
Return-on-Assets	0.006	0.035
	(0.394)	(1.521)
Leverage	0.020**	0.026**
	(2.333)	(2.293)
Tender Offer	0.006	0.008
	(1.510)	(1.340)
Hostile Deal	0.011	0.002
	(0.996)	(0.152)
Equal Deal	-0.002	0.007
	(-0.189)	(0.622)
Diversifying Deal	0.002	0.006
	(0.739)	(1.523)
Toehold	-0.007	-0.009
	(-0.852)	(-0.926)
Multiple Bidders	0.004	0.005
	(0.717)	(0.766)
Cash Payment	0.006*	0.007*
	(1.838)	(1.661)
N	1,672	1,672
Adjusted R-squared	0.067	0.058
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel C: Completed M&A transactions

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
CCExposure	0.038***	0.054***
	(3.452)	(2.985)
Size	-0.001	-0.003***
	(-1.565)	(-3.413)
Market-to-Book	-0.000	-0.001
	(-0.428)	(-1.617)
Return-on-Assets	-0.015	0.012
	(-0.910)	(0.525)
Leverage	0.024***	0.031***
	(2.685)	(2.739)
Tender Offer	0.004	0.005
	(1.158)	(1.069)
Hostile Deal	0.015	0.013
	(0.663)	(0.501)
Equal Deal	0.018*	0.028**
	(1.651)	(2.474)
Diversifying Deal	0.003	0.005
	(0.914)	(1.300)
Toehold	0.006	0.004
	(0.683)	(0.380)
Multiple Bidders	0.002	0.003
	(0.334)	(0.438)
Cash Payment	0.014***	0.015***
	(5.046)	(4.055)
N	2,034	2,034
Adjusted R-squared	0.038	0.037
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel D: Alternative windows to capture the acquirer announcement CARs

	ACAR (−2,+2)	*ACAR (−5,+5)*
	(1)	(2)
CCExposure	0.037***	0.055**
	(2.660)	(2.417)
Size	-0.003***	-0.003**
	(-3.192)	(-2.422)
Market-to-Book	-0.001*	-0.001**
	(-1.685)	(-2.039)
Return-on-Assets	0.017	-0.001
	(1.057)	(-0.053)
Leverage	0.027***	0.020
	(2.880)	(1.607)
Tender Offer	0.007*	0.007
	(1.651)	(1.367)
Hostile Deal	-0.010	-0.015
	(-0.762)	(-0.812)
Equal Deal	0.021**	0.021
	(2.100)	(1.491)
Diversifying Deal	0.004	0.001
	(1.285)	(0.126)
Toehold	-0.000	-0.000
	(-0.059)	(-0.036)
Multiple Bidders	0.009*	-0.002
	(1.701)	(-0.282)
Cash Payment	0.014***	0.012***
	(4.574)	(3.014)
N	2,306	2,306
Adjusted R-squared	0.043	0.028
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel E: Inclusion of acquirers' corporate governance attributes

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
CCExposure	0.030***	0.041**
	(2.976)	(2.429)
Size	-0.001	-0.003***
	(-1.409)	(-2.987)
Market-to-Book	-0.000	-0.001*
	(-0.403)	(-1.762)
Return-on-Assets	-0.009	0.026
	(-0.603)	(1.340)
Leverage	0.023***	0.025**
	(2.776)	(2.314)
Tender Offer	0.006*	0.008*
	(1.693)	(1.699)
Hostile Deal	-0.010	-0.011
	(-1.000)	(-0.655)
Equal Deal	0.015	0.023**
	(1.373)	(2.126)
Diversifying Deal	0.001	0.005
	(0.498)	(1.275)
Toehold	0.004	0.003
	(0.540)	(0.378)
Multiple Bidders	0.005	0.005
	(1.109)	(0.804)
Cash Payment	0.014***	0.014***
	(5.128)	(4.214)
Female CEO	0.004	0.006
	(0.819)	(1.002)
CEO Duality	0.001	-0.000
	(0.227)	(-0.062)
Institutional Ownership	-0.004	-0.009*
	(-0.955)	(-1.747)
N	2,306	2,306
Adjusted R-squared	0.037	0.036
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel F: Inclusion of targets' financial attributes

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
CCExposure	0.025**	0.028*
	(2.266)	(1.736)
Size	0.000	-0.002
	(0.131)	(-1.406)
Market-to-Book	0.000	-0.000
	(0.297)	(-0.451)
Return-on-Assets	0.000	0.042*
	(0.022)	(1.712)
Leverage	0.022**	0.026*
	(2.208)	(1.920)
Tender Offer	0.006	0.008
	(1.480)	(1.512)
Hostile Deal	-0.010	-0.015
	(-0.922)	(-0.829)
Equal Deal	0.017	0.028**
	(1.591)	(2.474)
Diversifying Deal	0.001	0.005
	(0.339)	(1.041)
Toehold	0.001	0.001
	(0.102)	(0.056)
Multiple Bidders	0.007	0.008
	(1.252)	(1.108)
Cash Payment	0.013***	0.014***
	(3.626)	(3.225)
Target Size	-0.002	-0.002
	(-1.372)	(-1.102)
Target Market-to-Book	-0.001*	-0.001*
	(-1.853)	(-1.707)
Target Return-on-Assets	-0.009	-0.012
	(-1.133)	(-1.137)
Target Leverage	0.004	-0.002
	(0.540)	(-0.212)
N	1,662	1,662
Adjusted R-squared	0.046	0.042
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel G: Alternative climate risk variable

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
Climate Risk	0.004*	0.007**
	(1.675)	(2.104)
Size	−0.001	−0.003*
	(−0.852)	(−1.789)
Market-to-Book	0.000	−0.000
	(0.236)	(−0.661)
Return-on-Assets	0.023	0.055
	(0.778)	(1.196)
Leverage	0.012	0.023
	(0.699)	(1.094)
Tender Offer	0.007	0.019**
	(1.105)	(2.462)
Hostile Deal	−0.056*	−0.102***
	(−1.761)	(−2.969)
Equal Deal	0.022*	0.022**
	(1.680)	(2.000)
Diversifying Deal	−0.002	0.002
	(−0.291)	(0.339)
Toehold	0.010	0.002
	(0.936)	(0.124)
Multiple Bidders	0.018**	0.023**
	(2.456)	(2.293)
Cash Payment	0.007	0.002
	(1.534)	(0.435)
N	715	715
Adj. R-squared	0.068	0.039
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel H: Controlling for economic policy uncertainty

	ACAR (−1,+1)	*ACAR (−3,+3)*
	(1)	(2)
CCExposure	0.030***	0.041**
	(2.992)	(2.475)
Size	−0.001	−0.003***
	(−1.396)	(−3.153)
Market-to-Book	−0.000	−0.001*
	(−0.393)	(−1.726)
Return-on-Assets	−0.010	0.024
	(−0.688)	(1.197)
Leverage	0.023***	0.025**
	(2.783)	(2.344)
Tender Offer	0.006	0.007
	(1.644)	(1.619)
Hostile Deal	−0.010	−0.011
	(−1.003)	(−0.656)
Equal Deal	0.015	0.023**
	(1.371)	(2.120)
Diversifying Deal	0.001	0.004
	(0.470)	(1.229)
Toehold	0.004	0.004
	(0.568)	(0.439)
Multiple Bidders	0.005	0.004
	(1.037)	(0.690)
Cash Payment	0.014***	0.015***
	(5.102)	(4.206)
EPU	0.000	0.000
	(0.508)	(0.666)
N	2,306	2,306
Adj. R-squared	0.038	0.036
Industry FE	Yes	Yes
Year FE	Yes	Yes

This table presents the results of various robustness tests. Panel A presents the results of an omitted variable analysis following Oster (2019). Panel B reports the impact on the combined firm's announcement CARs. Panel C shows results for a sample restricted to completed M&A transactions. Panel D presents the effect of acquirer pre-announcement exposure to climate change on acquirer announcement CARs using alternative event windows. Panel E includes the results in which additional corporate governance attributes of acquirer firms are included as controls. Panel F incorporates target firms' financial attributes as additional controls. Panel G reports the results where Berkman et al. (2024)'s 10-K-based climate risk measure is used as an alternative independent variable. Panel H includes economic policy uncertainty as an additional control. Heteroscedasticity-robust standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels (two-sided), respectively. Definitions of the variables are provided in Appendix A.