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Change Exposures of Indian Firms**

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# Stock Market Reactions to COP26 and Climate Change Exposures of Indian Firms

Saumitra N Bhaduri, Ekta Selarka and Alankrti Aggrwal

## Abstract

*The paper examines the market reaction to the climate policy announcement (COP26) for the Indian listed firms using a novel measure of firm-specific exposure to climate-change developed by Sautner et al. (2023). The findings suggest that, while the overall market reaction is negative, firms with higher climate change exposure experience a significantly muted negative response. In contrast to the prevailing assumption that investors in emerging markets predominantly price exposure to risk, the findings indicate that firms engaging in proactive climate risk management receive favorable response.*

**Keywords:** *Event study, Stock market, Climate change, Climate exposure, COP26*

**JEL Codes:** *G14 G28 Q58*

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## INTRODUCTION

Recent literature on sustainability predominantly focuses on climate change and its long-term effects on temperature and weather patterns (e.g., Feng et al., 2024; Sautner et al., 2023). The Intergovernmental Panel on Climate Change (IPCC) has underscored the urgent need for regulatory measures to avert catastrophic climate impacts, leading to international accords such as the Paris Agreement, Kyoto Protocol, and Glasgow Climate Pact, which collectively aim to unite nations in limiting global warming and advancing carbon neutrality commitments. The existing literature identifies two primary channels through which climate change risks impact the economy: physical risks, involving extreme weather events that can damage infrastructure and disrupt operations, and transition risks, arising as firms adjust to a low-carbon economy, often influencing their market valuation (Hsu et al., 2023; Bolton and Kacperczyk 2021; Semieniuk et al., 2021; De Souza Cunha et al. 2021; Venturini, 2021; Kim et al., 2015; Fernandez-Cuesta et al., 2019; Jung et al., 2018; Palea & Santhià, 2022; Ilhan et al., 2021; Batae et al., 2021; Daniel et al., 2016). Against this backdrop, our study specifically focuses on the second channel by examining the impact of India's zero-carbon commitment announced during the COP26 Conference held in Glasgow from November 1st to 12th, 2021.

Recently, Birindelli et al. (2023) and Chatjuthamard et al. (2024) provide empirical evidence showing that stock markets respond to national commitments to carbon neutrality; however, firm-level factors and transition preparedness vary within countries. Incorporating firm-specific climate change exposure into pricing, therefore, allows stock market reactions to reflect the broader impact of country-specific policies while accounting for heterogeneous firm responses. The empirical literature on the impact of climate change on capital market valuations remains focused on the developed markets (e.g., Chatjuthamard et al., 2024; Engle et al., 2019; Diaz-Rainey et al., 2021), evidence pertaining to emerging markets, particularly India—the third largest CO<sub>2</sub> emitter

globally, accounting for nearly 7% of global emissions in 2020 (IEA, 2020)—remains limited. Moreover, India's net-zero target announced at COP26 was unexpected for markets, providing a unique context for analysis. The Glasgow Climate Pact marked the first explicit global focus on coal, oil, gas, and fossil fuels as central climate change drivers, directly impacting businesses heavily reliant on conventional fuels. Aligning with this global momentum, India announced ambitious targets: achieving net-zero emissions by 2070, expanding non-fossil fuel capacity to 500 GW, sourcing 50% of energy from renewables by 2030, and reducing carbon dioxide emissions by 1 billion tonnes. Such regulatory commitments are expected to exert significant valuation pressure on firms dependent on fossil fuels, while firms better equipped to adapt to the transition are likely to experience higher valuation and attract greater investment.

The extant literature postulated two competing hypotheses concerning capital market response to the climate policy announcements namely favorable reaction hypothesis and adverse reaction hypothesis (see Chajuthamard et al., 2024). The favorable reaction hypothesis posits that firms more exposed to climate change could benefit, adoption of climate policy signals a strong international commitment to mitigating climate risks. Such a commitment may enhance long-term business prospects, reduce policy uncertainty, and open new avenues for innovation and adaptation. In addition, government initiatives aimed at reducing physical climate threats can safeguard these firms from weather-related damages, encouraging investors to reassess their valuations upward. Conversely, the adverse reaction hypothesis suggests that firms with greater climate exposure may face negative market reactions. Meeting emission reduction targets or complying with adaptation measures may entail significant expenditures, including investments in cleaner technologies or infrastructure upgrades, which investors could perceive as financially burdensome. Moreover, declining demand for carbon-intensive products,

stricter environmental regulations, and heightened investor sensitivity to climate-related risks may erode profitability and shareholder returns.

Further, owing to the prevalence of poor disclosure practices, entrenched ownership structures, weak corporate governance mechanisms, and inadequate protection of minority shareholders, investors in emerging markets might exhibit heightened concern regarding firm valuation under increased uncertainty. In such an institutional environment, risk-averse investors may perceive the commitments embodied in climate policy as potential sources of regulatory or compliance risk, rather than as opportunities for long-term value creation. Consequently, the adverse market reaction hypothesis is expected to dominate the favorable reaction hypothesis.

Therefore, it remains an empirical question that following the climate policy announcements, whether climate-exposed firms in emerging markets experience favorable or adverse valuation effects. This study seeks to address this empirical puzzle in two ways. First, employing a quasi-natural experimental design, it examines market reactions to India's unanticipated net-zero commitment announced at COP26. Second, it extends the climate finance literature by assessing the heterogeneous impact of this policy announcement across firms, utilizing a novel text-based measure of climate change exposure derived from corporate earnings calls (Sautner et al., 2023a).

The paper proceeds as follows: Section 2 describes the data, and outlines the research methodology, Section 3 presents the findings, and Section 4 concludes.

## **DATA, SAMPLE SELECTION AND RESEARCH METHODOLOGY**

As our analysis relies on the climate change exposure attributes from the database developed by Sautner et al. (2023a), our sample is limited to Indian firms covered in that database. Focusing on the listed firms,

our sample consists of a set of 243 firms accounting for nearly 47.34% of the total market capitalisation of NSE-listed firms in FY2021. The COP26 conference commenced from 1 November 2021 and ended on 12 November 2021. The net-zero announcement was made by India on the first day of the conference and therefore we assign 1 November 2021 as the event day in our analysis. We obtain the daily stock prices for each of these 243 firms for 300 trading days covering the period between 8 February 2021 through 30 November 2021. In addition, we obtain the information on stock prices, financial statements and economic activity from CMIE Prowess IQ. The sample covers a wide range of industries based on their primary economic activity from mining to manufacturing sectors. We further classify these firms across pollution categories – Red, Yellow, Green and White - based on the classification provided by the Pollution Control Board of India. Table 1 shows the distribution of sample firms by pollution class.

**Table 1: Distribution of Sample Firms by Pollution class**

<b>Pollution class</b>	<b>Number of Firms</b>
Red	109
Yellow	24
Green	17
White	93
Total No. of Firms	243

**Notes:** The Pollution Control Board (PCB) of India computes Pollution Index for each economic activity and classify them into five categories Red, Yellow, Green, White and Blue indicating most polluting to least polluting industries. Based on their primary economic activity we categorise sample firms into each of the PCB pollution class.

**RESEARCH METHODOLOGY**

The empirical methodology of the paper proceeds in two steps. Following the literature, we first employ an event study to examine the market response to policy announcements. As a second step, we assess the impact of firm-specific factors on the market response, using a multivariate framework.

## Event Study Analysis

Following Ball and Brown (1968) and Kothari & Warner (2007), we begin the event study by estimating the market model given to predict the expected return  $\hat{R}_{it}$  for firm  $i$  on day  $t$  as given in equation (1) below:

$$\widehat{R}_{it} = \widehat{\alpha}_i + \widehat{\beta}_i R_{mt} \quad (1)$$

where  $R_{mt}$  is the market return. The market model is estimated over the estimation window 300 days to 45 days prior to the event day. In line with prior research (Roll, 1977; Stambaugh, 1982), we use the NIFTY50 index for market ( $R_{mt}$ ) in the market model.

Next, following Fama et al. (1969) the stock price reacts to the new information which is estimated as abnormal return  $AR_{it}$  for each firm  $i$  on each trading day  $t$  is using equation (2)

$$AR_{it} = R_{it} - \widehat{R}_{it} \quad (2)$$

Abnormal returns are then summed over the event window  $(-k, +k)$  to compute cumulative abnormal return (CAR) for each firm  $i$  to measure total impact of the event as given by equation (3):

$$CAR_i(-k, +k) = \sum_{-k}^{+k} AR_{it} \quad (3)$$

To compare the stock market response across sub-samples of firms average abnormal returns (AAR) are calculated using Equation (4), where we compute the arithmetic average of ARs for all the firms on each day in the event window.  $N$  represents the number of firms.

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{it} \quad (4)$$

Finally, to investigate the accumulated impact of the event during a specified time period, cumulative average abnormal returns (CAARs) are obtained. CAAR refers to the aggregate of daily AARs for the pre-defined event window  $(-k, k)$ . CAAR for the pre-specified event window is calculated using Equation (5):

$$CAAR(-k, +k) = \sum_{-k}^{+k} AAR_t \quad (5)$$

## Multivariate analysis

Next, we examine how the stock market responded to firms' preparedness for the transition to a low-emission economy, conditional on their climate exposure. To investigate this, we estimate the following regression:

$$CAR_i = \alpha + \beta High\ CCE_{i,t-1} + \gamma Controls_{i,t-1} + \varepsilon_i \quad (6)$$

Here,  $CAR_i$  is the dependent variable, and  $High\ CCE_{i,t-1}$  is our primary variable of interest constructed as a dummy variable that takes a value of 1 if the firm's climate change exposure is higher than average. Firm-level climate change exposure is obtained from Sautner et al. (2023a) who derive the measures of corporate exposure to climate change (CCE) using textual analysis of earnings call transcripts. The measure captures firm's awareness or pre-existing exposure to the climate-change risks. While the overall CCE reflects general awareness of climate-related transitions, it can be differentiated across three dimensions of climate exposure —opportunity (OPE), physical (PHE) and regulatory (RGE). These specifically highlight attention to climate-linked opportunities (e.g. green technologies, patents), physical risks (e.g. floods, droughts) and regulatory risks arising from government policies (e.g. carbon taxes, emissions regulations). As forward-looking indicators, the measures capture the market perceptions of firm's climate exposure and therefore are priced in the equity markets, shown to predict outcomes such as green job creation, green patenting, and changes in financial metrics like cash holdings and risk premiums. The measure is widely used in the climate finance literature related to asset pricing, corporate cash holdings, financing decisions, credit risk and cost of equity (Sautner et al. 2023b, Ahmed and Karpuz 2024, Choi 2024, Kilincharsalan et al. 2025, Cepni et al 2024). To capture the differential effect of high and low exposures, we construct our primary variable of interest as a dummy variable that takes a value of 1 if firm's CCE score is above the sample average (High CCE). Similarly, we construct dummy variables for higher climate linked opportunities (High OPE), physical (High PHE) and regulatory risk (High RGE) exposures respectively.

In addition, a set of financial and stock market control variables (Controls<sub>i,t-1</sub>) is added in equation 6 that influence the stock returns in general. In line with existing literature, we have incorporated the following control variables: Return on Equity (ROE); Debt to Equity ratio (LEVERAGE), Natural logarithm of market value LN(MV) and book-to-market ratio LN(BM) (Birindelli et al 2025; Birindelli & Chiappini, 2021; Broadstock, Chan, Cheng, & Wang, 2021; Corwin, 2003). Concerning the issue of endogeneity, we use one year lagged values of CCE and control variables to ensure that the independent variables are pre-determined with respect to the COP26 event. Finally, we also include stock volatility (STOCK VOL), which is computed as the standard deviation of stock returns over the estimation period. Robust standard errors are obtained by clustering the standard errors at two-digit industry levels. Equation (6) is estimated separately for each event window. Table 2 presents the summary statistics of the variables.

**Table 2: Summary Statistics**

<b>Variable</b>	<b>No of Obs</b>	<b>Mean</b>	<b>St. Dev</b>	<b>Min</b>	<b>Max</b>
CCE	243	0.0014	0.002	0	0.015
OPE	243	0.0004	0.001	0	0.006
PHE	243	0.00002	0.00006	0	0.00076
RGE	243	0.00004	0.0001	0	0.0010
High CCE	243	0.2677	0.443	0	1
High OPE	243	0.2426	0.429	0	1
High PHE	243	0.1024	0.304	0	1
High RGE	243	0.2385	0.427	0	1
ROE	243	12.084	15.05	-114.57	64.83
Leverage	243	0.491	1.20	0	15.8
Ln(MV)	243	10.96	1.69	7.30	15.74
Ln(BM)	243	-0.559	1.08	-3.28	3.37
Stock Vol	243	0.022	0.009	0.006	0.071

## EMPIRICAL RESULTS AND DISCUSSION

This section presents the findings from the event study analysis and multivariate regression analysis to examine the market reaction and its relationship with the firm specific climate change exposure.

### Event Study Analysis

Table 3 presents the overall market reaction to India's net-zero announcement on the opening day of COP26. The cumulative abnormal returns (CARs) are initially insignificant, indicating that markets did not react immediately to the pledge. However, this reaction quickly turns negative and significant as the details of the net-zero pathways are disclosed. In particular, the swift revision of India's Nationally Determined Contributions (NDCs)<sup>1</sup>—shifting emphasis from broad, nature-based macro solutions toward stricter industry-oriented emission commitments—appears to have triggered the adverse market response. Specifically, India's subsequent announcement of five-point pledge for climate action led to the adjustments of strategies by market participants and investors.<sup>2</sup>

**Table 3: Stock Market Reactions of COP26 – Full Sample**

Event window	CAR(%)	z-statistics
(-1,1)	0.455	1.423
(-5,5)	-1.704***	-4.900
(-10,10)	-10.617***	-11.18

**Notes:** \*\*\*, \*\*, \* represent significance levels at  $p < 0.01$ ,  $p < 0.05$  and  $p < 0.10$ , respectively. A one-sample Wilcoxon Signed Rank test is performed to compute the z-statistic.

<sup>1</sup> The revised NDCs included commitments such as increasing the share of non-fossil energy capacity to 50% by 2030, reducing emissions intensity of GDP by 45% from 2005 levels, and cutting projected carbon emissions by one billion tons by 2030.

<sup>2</sup> At UNFCCC COP 26, India's PM announced five Panchamrit targets as follows (i) reach its non-fossil energy capacity to 500 GW by 2030, (ii) meet 50 percent of its energy requirements from renewable energy by 2030, (iii) reduce the total projected carbon emissions by one billion tonnes, (iv) reduce carbon intensity of economy by 45% by 2030 and (v) achieve net zero carbon emissions by year 2070

In order to draw further insight, we examine if the market responses differ across the pollution class of sample firms. Table 4 shows that the market reaction around India's announcement of carbon neutrality significantly vary across the pollution class of the sample firms. Specifically, the firms falling into the highest polluting sectors (Red) face the highest decline in the investor wealth around the net-zero announcement by the country.

**Table 4: Stock Market Responses Across Firms in Different Pollution Classes**

<b>Pollution Class</b>	<b>CAAR[-1,+1]</b>	<b>CAAR[-5,+5]</b>	<b>CAAR[-10,+10]</b>
Red	-0.254**	-2.799*	-12.462**
Yellow	3.168***	1.250***	-11.617
Green	1.222	-1.302	-6.034
White	0.428	-1.256	-9.032*

**Note:** \*\*\*, \*\*, \* represent significance levels at  $p < 0.01$ ,  $p < 0.05$  and  $p < 0.10$ , respectively. Two-Sample Wilcoxon Signed rank-sum (Mann-Whitney) is performed.

### **Multivariate Regression Analysis**

This section investigates the heterogeneous effects of the policy announcement using climate change exposure measures derived from corporate earnings calls, following Sautner et al. (2023). The central hypothesis posits that market responses vary with firms' exposure to climate-related issues. Firms with high climate change exposure either face greater climate-related risks or more actively discuss such issues in their earnings calls, relative to low-exposure firms that are less affected or less transparent about climate concerns. The extent to which a firm's climate exposure moderates market reaction to climate-related events depends on investors' perception of that exposure. According to the adverse reaction hypothesis, high exposure leads to negative market

reactions, whereas the favorable reaction hypothesis predicts positive responses for such firms. Table 5 presents the results from estimating Equation (5), where Columns 1, 4, and 7 report the baseline regressions across different event windows.<sup>3</sup>

While table 5 reports the results for all the CAR windows, we specifically focus on the longer window [-10,10] that covers the most of the COP period allowing the market to absorb the information over a longer period of time. During this time the goals were announced by the countries to chalk out their action plan towards achieving the carbon neutrality commitment. Focusing on the (-10, 10) event window, findings reveal that firms with higher climate change exposure experience significantly positive cumulative abnormal returns relative to lower-exposure firms. The positive and statistically significant coefficients for High CCE, High OPE, and High RGE indicate that investors systematically reward transparency and proactive climate strategies, particularly among firms perceived as well positioned to capitalize on regulatory adaptation and green opportunities. These results depart from prevailing narratives in emerging markets, where climate change exposure is often viewed primarily as a valuation risk. Importantly, the favorable market response for firms with higher regulatory exposure suggests that shareholder value increases with transparent disclosure and active management of climate-related regulatory risks.

Disaggregating the components of climate exposure provides additional insight. Opportunity and regulatory exposures tend to elicit less negative market reactions, whereas physical exposure—reflecting direct climate risk—generates more adverse responses however statistically insignificant among high exposure firms, as expected. However, the attenuated negative responses associated with opportunity and regulatory exposure moderate the overall market reaction, resulting

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<sup>3</sup> We also estimated the regression using continuous variables CCE, OPE, PHE and RGE respectively. The coefficients are found to be insignificant.

in a less severe impact for firms with higher aggregate climate change exposure. These findings are consistent with recent studies on positive market response for climate policies (e.g. Chatjuthamard et al. (2024) Ramelli, Ossola, & Rancan, 2021; Ramiah et al., 2014; Ilhan et al., 2020), who report that firm-specific climate change exposure is positively associated with higher shareholder wealth.

**Table 5: Multivariate Regression Analysis**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	CAR	CAR	CAR	CAR	CAR	CAR	CAR	CAR	CAR	CAR	CAR	CAR
	(-1,1)	(-5,5)	(-10,10)	(-1,1)	(-5,5)	(-10,10)	(-1,1)	(-5,5)	(-10,10)	(-1,1)	(-5,5)	(-10,10)
High CCE	0.695 (0.699)	2.029 (1.291)	3.805** (1.789)									
High OPE				0.846 (0.822)	1.912 (1.433)	4.087** (1.800)						
High PHE							-0.405 (1.401)	-1.051 (1.938)	-0.440 (3.018)			
High RGE										2.016*** (0.713)	4.220*** (1.191)	3.857*** (1.310)
Dividend	-0.000 (0.000)	-0.000 (0.000)	-0.000* (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000** (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000* (0.000)	-0.000** (0.000)
ROE	1.047 (2.628)	-6.683* (3.371)	-1.419 (10.150)	1.130 (2.664)	-6.550* (3.384)	-1.072 (10.132)	0.918 (2.683)	-	-1.917 (3.385)	1.095 (10.241)	-6.651* (2.496)	-1.618 (3.567)
LEVERAGE	0.870 (0.518)	0.662 (0.713)	1.664 (1.062)	0.896* (0.517)	0.727 (0.737)	1.796 (1.069)	0.879* (0.511)	0.690 (0.727)	1.707 (1.059)	0.833 (0.497)	0.592 (0.659)	1.621 (1.014)
LN(BM)	0.532 (0.592)	-0.885 (0.633)	-0.553 (1.093)	0.509 (0.596)	-0.872 (0.647)	-0.600 (1.128)	0.643 (0.566)	-0.566 (0.594)	-0.000 (1.024)	0.458 (0.578)	-0.958 (0.589)	-0.343 (1.072)
LN(MV)	-0.077 (0.236)	-	-0.851 (0.637)	-0.063 (0.251)	-1.025* (0.512)	-0.750 (0.663)	-0.020 (0.260)	-0.926* (0.514)	-0.563 (0.669)	-0.122 (0.246)	-1.143** (0.497)	-0.755 (0.676)
Stock Vol	0.058 (0.710)	-1.483 (0.899)	-3.271** (1.283)	0.116 (0.737)	-1.332 (0.970)	-2.970** (1.322)	0.091 (0.726)	-1.387 (0.966)	-3.120** (1.322)	-0.087 (0.718)	-1.764* (0.918)	-3.455** (1.376)
Constant	1.244 (4.031)	13.782* (7.820)	6.315 (10.141)	0.858 (4.277)	12.646 (8.383)	4.194 (10.477)	0.797 (4.366)	12.493 (8.397)	4.067 (10.486)	1.864 (4.169)	14.749* (8.094)	6.072 (10.765)
Pollution class dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	202	202	202	202	202	202	202	202	202	202	202	202
R-squared	0.107	0.096	0.100	0.108	0.094	0.102	0.104	0.085	0.077	0.136	0.138	0.101

**Note:** \*\*\*, \*\*, \* represent significance levels at  $p < 0.01$ ,  $p < 0.05$  and  $p < 0.10$ , respectively. Robust standard errors in parentheses

## Robustness checks

We run a battery of alternative specifications using a wider event window and stability of regression coefficients. In particular, we use CAR (-20,20) that covers the period after the COP26 and therefore accounts for the information to be fully absorbed by the market. The positive effect of firm specific climate related regulatory risk is consistent with the wider event window. Furthermore, using Oster (2019) we verify that our regression results are not affected by the omitted variable bias.

## CONCLUSION

The paper examines the market reaction to the climate policy announcement (COP26) for the Indian listed firms and role of firm-specific exposures to climate-change (Sautner et al 2023) in determination of shareholders' wealth around the event. In contrast to the conventional wisdom that investors in emerging markets predominantly price exposure to risk, the findings indicate that firms engaging in proactive climate risk management receive favorable response. The results indicate that firms with higher climate change exposure receive positive market responses, primarily due to investor rewards for transparency and proactive strategies, with opportunity and regulatory exposures moderating the negative impact of physical risk.

## REFERENCES

- Ball, R., & Brown, P. (1968). An Empirical evaluation of accounting income numbers. *Journal of Accounting Research*, 6(2), 159. <https://doi.org/10.2307/2490232>
- Birindelli, G., & Chiappini, H. (2020). Climate change policies: Good news or bad news for firms in the European Union? *Corporate Social Responsibility and Environmental Management*, 28(2), 831–848. <https://doi.org/10.1002/csr.2093>
- Birindelli, G., Miazza, A., Paimanova, V., & Palea, V. (2023). Just “blah blah blah”? Stock market expectations and reactions to COP26. *International Review of Financial Analysis*, 88, 102699. <https://doi.org/10.1016/j.irfa.2023.102699>
- Bolton and Kacperczyk (2021). Do investors care about carbon risk? *Journal of Financial Economics*, 142(2), 517–549. <https://doi.org/10.1016/j.jfineco.2021.05.008>
- Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X. (2020). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters*, 38, 101716. <https://doi.org/10.1016/j.frl.2020.101716>

- Corwin, S. A. (2003). The determinants of underpricing for seasoned equity offers. *The Journal of Finance*, 58(5), 2249–2279. <https://doi.org/10.1111/1540-6261.00604>
- Daniel, K. D., Litterman, R. B., & Wagner, G. (2016). Applying asset pricing theory to calibrate the price of climate risk (No. w22795). National Bureau of Economic Research.
- De Souza Cunha, F. a. F., Meira, E., Orsato, R. J., Klotzle, M. C., & Lucena, A. F. (2021). Do low-carbon investments in emerging economies pay off? Evidence from the Brazilian stock market. *International Review of Financial Analysis*, 74, 101700. <https://doi.org/10.1016/j.irfa.2021.101700>
- Diaz-Rainey, I., Gehricke, S. A., Roberts, H., & Zhang, R. (2021). Trump vs. Paris: The impact of climate policy on U.S. listed oil and gas firm returns and volatility. *International Review of Financial Analysis*, 76, 101746. <https://doi.org/10.1016/j.irfa.2021.101746>
- Engle, R. F., Giglio, S., Kelly, B., Lee, H., & Stroebel, J. (2019). Hedging climate change news. *Review of Financial Studies*, 33(3), 1184–1216. <https://doi.org/10.1093/rfs/hhz072>
- Fama, E. F., Fisher, L., Jensen, M. C., & Roll, R. (1969). The adjustment of stock prices to new information. *International Economic Review*, 10(1), 1. <https://doi.org/10.2307/2525569>
- Feng, F., Han, L., Jin, J., & Li, Y. (2024). Climate change exposure and bankruptcy risk. *British Journal of Management*, 0, 1–24. <https://doi.org/10.1111/1467-8551.1279>
- Hsu, P., Li, K., & Tsou, C. (2023). The pollution premium. *The Journal of Finance*, 78(3), 1343–1392. <https://doi.org/10.1111/jofi.13217>
- Ilhan, E., Sautner, Z., & Vilkov, G. (2020). Carbon Tail risk. *Review of Financial Studies*, 34(3), 1540–1571. <https://doi.org/10.1093/rfs/hhaa071>
- Jung, J., Herbohn, K. & Clarkson, P. Carbon Risk, Carbon Risk Awareness and the Cost of Debt Financing. *J Bus Ethics* 150,

- 1151–1171 (2018). <https://doi.org/10.1007/s10551-016-3207-6>
- Kim, Y., An, H. T., & Kim, J. D. (2015). The effect of carbon risk on the cost of equity capital. *Journal of Cleaner Production*, 93, 279–287. <https://doi.org/10.1016/j.jclepro.2015.01.006>
- Kothari, S., & Warner, J. B. (2007b). *Econometrics of Event Studies*. In Elsevier eBooks (pp. 3–36). <https://doi.org/10.1016/b978-0-444-53265-7.50015-9>
- Palea, V., & Santhià, C. (2022). The financial impact of carbon risk and mitigation strategies: Insights from the automotive industry. *Journal of Cleaner Production*, 344, 131001. <https://doi.org/10.1016/j.jclepro.2022.131001>
- Ramiah, V., Martin, B., & Moosa, I. (2013). How does the stock market react to the announcement of green policies? *Journal of Banking & Finance*, 37(5), 1747–1758. <https://doi.org/10.1016/j.jbankfin.2013.01.012>
- Ramelli, S., Ossola, E., & Rancan, M. (2021). Stock price effects of climate activism: Evidence from the first Global Climate Strike. *Journal of Corporate Finance*, 69, 102018. <https://doi.org/10.1016/j.jcorpfin.2021.102018>
- Roll, R. (1977). A critique of the asset pricing theory's tests Part I: On past and potential testability of the theory. *Journal of Financial Economics*, 4(2), 129–176. [https://doi.org/10.1016/0304-405x\(77\)90009-5](https://doi.org/10.1016/0304-405x(77)90009-5)
- Sautner, Z., Lent, L. V., Vilkov, G., & Zhang, R. (2023a). Firm-level climate change exposure. *The Journal of Finance*, 78(3), 1449–1498. <https://doi.org/10.1111/jofi.13219>
- Sautner, Z., Lent, L. V., Vilkov, G., & Zhang, R. (2023b). Pricing climate change exposure. *Management Science*, Forthcoming.. <https://doi.org/10.1287/mnsc.2023.4686>
- Semieniuk, G., Campiglio, E., Mercure, J., Volz, U., & Edwards, N. R. (2020). Low-carbon transition risks for finance. *Wiley Interdisciplinary Reviews Climate Change*, 12(1). <https://doi.org/10.1002/wcc.678>

- Stambaugh, R. F. (1982). On the exclusion of assets from tests of the two-parameter model. *Journal of Financial Economics*, 10(3), 237–268. [https://doi.org/10.1016/0304-405x\(82\)90002-2](https://doi.org/10.1016/0304-405x(82)90002-2)
- Venturini, A. (2021). Climate change, risk factors and stock returns: A review of the literature. *International Review of Financial Analysis*, 79, 101934. <https://doi.org/10.1016/j.irfa.2021.101934>

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