# The Green Investment Gap: How Political Risk Crowds Out Corporate Decarbonization*

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**Abstract**

Environmental political risk (E-PRisk) leads firms to delay green investment, slowing decarbonization. Using firm-level E-PRisk extracted from earnings conference calls and worldwide data on green capital expenditures and R&D, we show that higher E-PRisk predicts reductions in next-year green investment, along with sharp reversals once E-PRisk resolves the following year. One standard-deviation increase in E-PRisk implies an aggregate withdrawal of roughly $34.8 billion in green capital from our sample. These effects concentrate in capital investment and firms with low-redeployability assets. E-PRisk has no effect overall investment as firms adjust non-green investments to offset changes in green investments and, aside from election cycles delaying E-PRisk resolution, non-environmental political risks do not predict the green-investment share.

**JEL Classifications:** G11, Q54, M14, G3

**Keywords: Green investments, sustainability, uncertainty**

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# 1 Introduction

Environmental externalities pose significant risks to long-term sustainability (e.g., Nordhaus, 2019; Gasparini and Tufano, 2023; Azar, Duro, Kadach, and Ormazabal, 2021). Addressing these challenges will require trillions in annual corporate investments in climate-mitigating projects (United Nations Global Compact, 2023; McKinsey&Company, 2021; Goldman Sachs, 2021).[1] Thus, green innovation and investment are central to the policy debate over how to balance economic growth with environmental protection (Acemoglu, Aghion, Bursztyn, and Hemous, 2012). Yet, firms hesitate to commit to green investment projects. Only 16% of the 11,000 firms pledging net-zero targets are on track to meet them (Accenture, 2024; SBTi, 2025), a pattern linked to environmental policy uncertainty (United Nations DESA, 2024; OECD, 2024; Reuters, 2025).

In this paper, we analyze how environmental political risk (E-PRisk), the unpredictability of government actions on climate regulation, carbon pricing, subsidies, and disclosure mandates, shapes corporate investment policies. E-PRisk has risen since the Paris Agreement and is amplified by elections that reset climate agendas and regulatory priorities, with uneven firm-level exposure (Clark, 2024; Hassan, Hollander, van Lent, and Tahoun, 2019).[2] Classic theory and evidence show that uncertainty can depress firms' investment by raising the option value of waiting (Bernanke, 1983; Abel and Eberly, 1994; Leahy and Whited, 1995), leading to an initial investment decline and subsequent reversal once uncertainty resolves. The manner in which this plays out with respect to E-PRisk, however, is an empirical question because E-PRisk differentially affects green and non-green investment (Bloom, Bond, and van Reenen, 2007). For example, we show how both the total investment impact and the extent to which green and total investment rebound after E-PRisk resolves can depend on how reliant a firm is on green investment, the relative profitability of green and non-green projects, as well as cross-project and firm scale adjustment costs.

We therefore ask the following empirical questions: (i) Does E-PRisk change *how* firms invest—specifically, does

[1] Substantial corporate investments are required to achieve a net-zero carbon emission, ranging from $3.5 trillion (McKinsey&Company, 2021) to $6 trillion (Goldman Sachs, 2021) in annual investments. Other estimates report a total of $50 trillion of investments in World Economic Forum (2022), $2.5 trillion from 2021 to 2030 for U.S. firms in Princeton University (2021), and between 0.5% and 4.5% of global GDP in International Monetary Fund (2021).

[2] Over 5,000 climate-related laws and policies are cataloged in the LSE *Climate Change Laws of the World* database, illustrating how regulatory proliferation fuels uncertainty. See also the *Financial Times*, "Inside Trump's First Strikes at Biden's Climate Legacy" (Jan. 30, 2025), and the *Wall Street Journal*, "The Regulatory State Is In Flux Like Never Before, and Businesses Are Hating It" (Sept. 3, 2024), which discuss how regulatory reversals across administrations create a "whiplash effect" that discourages long-horizon green investment.

it induce delay and reallocation away from green projects (composition) or materially reduce total investment (level)? (ii) Under what conditions are E-PRisk's effects strongest, and through which mechanisms do they operate? To answer these questions, we assemble an international firm-level panel that merges detailed sustainable-investment data with measures of E-PRisk. Our novel sustainable-investment data come from Corporate Knights Inc. (CK), a B-Corp that compiles firm-reported information and engages directly with companies. CK defines sustainable investments as capital, R&D, and acquisition expenditures that advance environmental objectives—for example, renewable energy, energy efficiency, or pollution reduction.[3] The resulting dataset covers over 2,500 firms across 37 countries from 2019–2022 (9,289 firm-years), with U.S. firms comprising about one-third of the sample. In our data, total green investment reaches $562 billion (or10% of total investment) in 2022, a 52% increase relative to 2019. The correlation between our measure of actual green investment and standard ESG scores is essentially zero (0.03), underscoring that our data capture real investment activity rather than measuring perceived ESG performance.

We primarily measure firm-specific E-PRisk with the earnings-conference-call-based measure in Hassan et al. (2019), although we confirm that our findings are robust to using a media-based measure derived from the RavenPack database.[4] Our primary measure is the share of discussion devoted to two-word combinations ("bigrams") common to political text and environmental policy. Hassan et al. (2019) extensively validate this risk measure by showing that it intuitively spikes with political events such as elections, and realized or implied volatility. E-PRisk negatively predicts future E-PRisk at the one- and two-year horizons with similar magnitudes, consistent with the measure primarily capturing elevated E-PRisk that is contained within a single fiscal year. Importantly, E-PRisk is *firm-level* (i.e., it is mostly unexplained by time-varying industry or firm-industry fixed effects) and co-moves with but is distinct from overall political risk, non-political risk, and sentiment, which we control for, along with time-varying climate exposure (Sautner, van Lent, Vilkov, and Zhang, 2023).

Our first main result is that firm-years with higher E-PRisk during their conference calls have lower green investment during the following fiscal year. A one–standard deviation increase in E-PRisk predicts a 0.64 p.p.

[3]CK's ratings serve as inputs for investors representing $15 trillion in AUM, and *CK Magazine*, focused on advancing a sustainable economy, reaches around 400,000 senior business and policy decision-makers.

[4]Relying on managerial speech raises concerns about endogenous communication choices, such as "blame shifting" for investment cuts or "greenhushing" to avoid political scrutiny. To address this, we confirm that our findings are robust to using a third-party media-based measure derived from the RavenPack database, which is free from strategic disclosure incentives.

(or 6.2%) decline in the fraction of investment that is green. Economically, this corresponds to an aggregate withdrawal of roughly $35 billion in green capital from our sample. To put this in perspective, this "uncertainty tax" effectively offsets the annualized climate spending of the U.S. Inflation Reduction Act, suggesting that policy instability can neutralize even the largest fiscal incentives. This relation withstands stringent specifications including firm, country–year, and industry–year fixed effects, as well as time-varying controls for political and non-political risk, sentiment, and climate exposure (Sautner et al., 2023).

Several additional results are consistent with E-PRisk directly affecting green investment, as opposed to the above relation being driven by more general variation in uncertainty or investment opportunities. First, non-environmental political-risk categories (economy, health, taxes, technology, trade) have little effect on the share of green investment or the relation between E-PRisk and green investment. Second, E-PRisk has no effect on total investment, in part because it predicts a rise in non-green investments that absorbs some of the slack as firms reduce green investments. Finally, after controlling for current E-PRisk, placebo tests using future E-PRisks exhibit no significant relation with green, non-green, or total investment.

Sharp reversals upon E-PRisk resolution support E-PRisk impacting green investment via a real-options delay mechanism and non-green investment primarily via within-firm substitution across investment projects. Specifically, dynamic analyses indicate that both the negative contemporaneous relation between E-PRisk and green investment and the positive contemporaneous relation between E-PRisk and non-green investment flip the following year, coinciding with a mean-reverting resolution of E-PRisk. An interesting exception is that the investment reversal does not occur during the year of or immediately prior to national elections. In other words, election-related uncertainty lengthens the effective horizon over which E-PRisk depresses green investment, delaying resolution until after the vote. These patterns are consistent with E-PRisk capturing forward-looking policy risk that resolves within roughly a year and highlight how firms can hedge uncertainty across their investment portfolio.

Finally, heterogeneity analyses provide additional insight into the mechanisms and frictions underlying the relation between E-PRisk and green investment. Again consistent with real options theories, we find that uncertainty depresses irreversible CAPEX, but has no effect on R&D, which is more multi-stage or option-like (Bernanke, 1983; Atanassov, Julio, and Leng, 2024). We also find that the damage is heavily concentrated where

capital is most "stuck." Firms with low asset redeployability cut back by over 11% (implying a $31.5 billion aggregate drop), whereas firms with flexible assets show no significant decline. Finally, we find little evidence that financing frictions contribute to our estimates as the subsample of financially unconstrained firms drives our results.

As a complementary test, we exploit within-country climate disasters as plausibly exogenous shocks that raise the salience of environmental policy and trigger regulatory responses. Natural disasters are largely unanticipated from a market perspective and trigger short-lived spikes in risk and attention (e.g., Cortés and Strahan, 2017; Correa, He, Herpfer, and Lel, 2023). Personal experience shapes political behavior and policy support (e.g., Fiorina, 1981); accordingly, disaster exposure increases pro-environmental policy support and shifts electoral outcomes (e.g., Baccini and Leemann, 2020; Masiero, 2021; Duch and Stevenson, 2006; Bechtel and Hainmueller, 2011; Gasper and Reeves, 2011). Following shift-share logic, firms with higher pre-determined exposure ("beta") to aggregate political risk experience larger post-disaster increases in E-PRisk. We document that disasters are followed by transitory E-PRisk spikes for high-beta firms relative to low-beta peers, and in these windows, green CAPEX falls while non-green rises, leaving total investment flat.

We provide novel empirical evidence on how E-PRisk shapes corporate investment, both in terms of its composition and level. In doing so, we contribute to several strands of research in finance and sustainability.

First, we contribute to the classic literature on uncertainty and investment. Seminal work establishes that uncertainty—whether political, policy, or macroeconomic—delays investment via real-options and financing channels (e.g., Bloom, Bond, and van Reenen, 2007; Pástor and Veronesi, 2012; Julio and Yook, 2012; Gulen and Ion, 2016; Jens, 2017). However, because these studies typically focus on aggregate capital expenditures, they implicitly assume uncertainty affects all investment opportunities largely uniformly. Our study departs from this by isolating a specific source of uncertainty, environmental political risk, and linking it to the specific subset of the firm's portfolio it most directly targets: green investment. We strongly support real-options predictions at the project level, showing that E-PRisk impedes the green transition. However, these project-level distortions are masked in aggregate data, leaving firms' total investment unchanged. This pattern whereby firms shift their investment composition away from policy exposed projects is consistent with policy-induced reallocation of environmental externalities in other contexts (Akey and Appel, 2021; Bartram, Hou, and Kim, 2022; Bisetti, Lewellen,

Sarkar, and Zhao, 2022).

These patterns motivate our second contribution: identifying the distinct role of regulatory *uncertainty* (risk) versus regulatory *stringency* (cash flows) in driving green investment. Prior work emphasizes how firms react to government incentives (e.g., subsidies in China; Wang, Wurgler, and Zhang, 2023) or accelerate investment before known regulatory shifts to preempt stricter rules (the "green-paradox" channel; Albuquerque, Kruttli, Ma, and Watugala, 2024). Our study documents a theoretically distinct mechanism. First, we distinguish the paralysis of uncertainty from the acceleration of anticipation by showing that E-PRisk captures managerial perceptions of ex-ante ambiguity (spanning elections, carbon taxes, and compliance) rather than just the expiration of fiscal support. This uncertainty increases the real option value of waiting, leading to delays rather than run-ups. Second, our granular data allow us to uncover a novel substitution effect: heightened E-PRisk does not merely reduce total investment but actively reallocates capital toward less policy-exposed projects while leaving total investment unchanged. Finally, our decomposition of investment confirms that this mechanism is driven by irreversibility: the E-PRisk effect is concentrated in CAPEX (hard assets) rather than R&D (flexible growth options), and is characterized by sharp post-resolution rebounds that distinguish our evidence from green-paradox patterns. Taken together, we provide *global* evidence that environmental political uncertainty functions as a unique friction—distinct from subsidy removal or strict regulation—that systematically distorts the composition of the capital stock.

Finally, we bridge the gap between climate asset pricing and real corporate outcomes. A rapidly growing literature links climate policy and investor expectations to asset prices, hedging portfolios, and the cost of capital (e.g., Bolton and Kacperczyk, 2023; Ilhan, Sautner, and Vilkov, 2021; Giese, Lee, Melas, Nagy, and Nishikawa, 2019). We extend this work by showing that E-PRisk, which captures the political component of climate transition risk, is associated with firms' willingness to commit to green projects. In the climate finance literature, this political component complements transition-risk measures extracted from climate news indices and hedge portfolios (Engle, Giglio, Kelly, Lee, and Stroebel, 2020), carbon tail-risk measures based on high-emission downside exposure (Ilhan, Sautner, and Vilkov, 2021), and emission-based carbon transition risk premia (Bolton and Kacperczyk, 2021; Pástor, Stambaugh, and Taylor, 2022). Our contribution is to bring a firm-level political transition-risk proxy to the real side and show that it operates through a compositional channel in investment, tilting capital formation

away from long-horizon, policy-exposed green assets. These results provide empirical support for macro-finance models (e.g., Fried, Jacob, and Nimark, 2021) where uncertainty about future climate policy delays abatement and generates real macroeconomic costs.

In sum, we identify policy credibility as a distinct, binding friction in capital formation. While prior work focuses on the level of subsidies or taxes required to make green projects positive NPV (e.g., Acemoglu et al., 2012; Pástor and Veronesi, 2012), we show that the variance of policy is equally critical. Even with generous incentives (such as the U.S. Inflation Reduction Act), high political variance increases the option value of delay, causing firms to substitute capital into policy insensitive assets. This suggests that without stable, credible policy horizons, capital subsidies may simply be waited out by unconstrained firms, permanently delaying the Net Zero trajectory.

## 2 Conceptual Framework

To guide our empirical tests, we outline a simple conceptual framework linking green investment-specific uncertainty to firms' investment timing and composition. A formal stylized model is provided in the Appendix but the economics illustrated hold in any standard investment model embedding depreciation, convex adjustment costs, and fixed costs of initiating investment (Bernanke, 1983; Abel and Eberly, 1994).

Consider a firm allocating investment across green and non-green projects that both accumulate into productive capital and depreciate. The key distinction, motivated by environmental political risk (E-PRisk), is that the returns to green capital are sensitive to a policy parameter (e.g., regulation, subsidies, permitting/enforcement) that is uncertain when investment is chosen and is resolved later. In contrast, non-green profitability is policy neutral and therefore less sensitive to this type of uncertainty.[5] Investment is subject to standard frictions: fixed costs of initiating investment (generating lumpiness/threshold behavior), convex adjustment costs (making delayed catch-up costly), and a per-period investment capacity constraint (reflecting either financing limits or real implementation constraints such as engineering capacity, supply chains, or managerial bandwidth). In our setting, firms also face cross-project substitution costs when switching between green and non-green projects that

[5]In our empirical setting, this policy uncertainty is largely mean-reverting over roughly a one- to two-year horizon, motivating dynamic tests.

reflect difficulties of re-purposing capital. This framework yields two main of testable predictions:

**P1: Short-run Impact on Investment.** The immediate effects of E-PRisk sensitivity features the option value of delaying investment channel, although the manner of this investment impact varies across the investment portfolio.

- *A: Effect on Green Investment:* Increases in E-PRisk reduce short-run green investment. Investing in green projects today triggers fixed and adjustment costs for sure. In contrast, the benefits of early green investment are realized primarily in future favorable policy states; in unfavorable states, avoiding fixed costs incentives the firm to optimally set green investment lower or even to zero. This convex payoff structure results in the option value of delaying green investment.
- *B: Effect on Non-Green Investment*: Increases in E-PRisk can have *opposing* direct and indirect effects on non-green investment. Directly, to the extent it co-moves with economy-wide or firm-level overall uncertainty and volatility, E-PRisk reduces non-green investment under a similar option value of waiting channel. Controlling for these other sources of uncertainty, we can interpret non-green investment as policy-neutral with respect to E-PRisk. Thus, indirectly, E-PRisk *increases* non-green investment if firms reallocate from green to non-green investment subject to if non-green investment is positive NPV. If not, non-green investment remains flat and the firm saves financial slack for future investment.
- *C: Effect on Total Investment*: The effect on total investment is ambiguous because the reallocation between green and non-green investment depends on a constrained profit maximization balancing green and non-green expected revenues, fixed and adjustment costs, and cross-project substitution costs. If the non-green alternative is negative NPV, then total investment does down. If the non-green alternative is positive NPV, then total investment remains the same. Total investment can go up if the non-green positive NPV projects additionally feature scale economies.

**P2: Impact on Investment when Uncertainty Resolves.** Investment behavior after uncertainty resolves is state-dependent based on several competing factors.

- *A: Effect on Green Investment*: Cuts in green investment more easily reverse if 1) the net payoff from

investing in a mix of green and brown projects relative to brown-only projects exceeds the fixed costs of the green investment, 2) the adjustment costs of brown projects are high, and 3) cross-project adjustment costs (i.e., green investment share) is low (high). The opposite is true as well.

- *B:Effect on Non-Green Investment*: Assuming non-green investment is policy-neutral, then there is a mechanical shift for non-green investment opposite to that of the green effect.
- *C:Effect on Total Investment*: The effect on total investment depends the net of the above two effects. If there is binding investment constraint, then the effect on total investment is purely compositional between green and non-green. If the firm accumulated slack during the uncertainty shock, then total investment can rise afterwards.

To summarize, our conceptual framework predicts differential impact of E-PRisk on green and non-green investment projects, with ambiguous effects on total investment. We test these predictions in the baseline panel regressions, dynamic specifications, CAPEX versus R&D decompositions, and heterogeneity analyses based on proxies for irreversibility/redeployability and firm constraints.

# 3 Data and Sample Construction

In this section, we gather the data for investigating how environmental political uncertainty affects a firm's investment portfolio.

**Sustainable Investments** Data on corporate sustainable investments is obtained from Corporate Knights Inc. (CK), a sustainable-economy media and research B-Corp founded in 2002. CK produces global sustainability rankings, research reports and financial product ratings based on corporate sustainability performance. It assesses all publicly-traded companies worldwide with over US$1 billion in revenue across up to 25 key performance indicators, including sustainable investment, revenue, and racial and gender diversity. Its data sources include annual reports, sustainability reports, proxy/management circulars, and direct engagement with companies.

Green investment is defined as total corporate investment directed towards projects and research categorized as "sustainable." CK provides a breakdown of total investment into capital expenditures and R&D and uses its

Sustainable Economy Taxonomy in classifying investments as sustainable. This taxonomy is informed by a synthesis of the sources including Climate Bonds Taxonomy (Climate Bonds Initiative), EU Taxonomy for Sustainable Activities, Sustainability Accounting Standards Board (SASB) reporting standards, and TCFD recommended climate opportunity metrics, and is extensively validated by CK analysts. This worldwide dataset thus expands on existing country-specific data that use a green dictionary-based approach used to identify green corporate investment among Italian firms in Accetturo, Barboni, Cascarano, Garcia-Appendini, and Tomasi (2022) and R&D spending among Chinese firms in Wang, Wurgler, and Zhang (2023).[6]

As reported in Table 1, information on sustainable investments from this dataset is available for 9,289 firm-year observations, representing over 2,500 unique firms from 37 countries spanning 2019 through 2022. The United States comprises about 1/3 of the sample, with Japan, China, Canada, and the United Kingdom rounding out the top 5. The average sustainable investment ratio, defined as the percentage of sustainable to total investment, is 12.89%. Relative to firm size, green investment projects (GIPs) represent about 1.53% of total assets. Appendix Table 7 provides several examples of GIPs made by companies in our sample.

[Table 1 here]

In dollar terms, the total green investment was $562 billion in 2022 up from $370 billion in 2019, with an upward trend in these investments over time for most countries. This trend comports with major policy initiatives such as the U.S. Inflation Reduction Act and the European Green Deal during this period and the backing by influential investors like BlackRock. These GIPs further reflect the growing recognition by firms that long-term business success is increasingly tied to sustainability.[7] For example, in its 2019 annual report, Unilever states that it invested in renewable energy, energy efficiency, sustainable packaging, and sustainable agriculture committed

[6]Other sources include the Environmental Goods and Services Sector (Eurostat), the China Green Bond Endorsed Project Catalogue, the Green Bond Principles, and other private-sector rating agencies with sustainability taxonomies. Additionally, the taxonomy incorporates consultation with industry experts and feedback from government agencies to ensure comprehensive coverage of all relevant sub-sectors and a clear definition of sustainability. The CK Sustainable Economy Taxonomy is available at https://www.corporateknights.com/resources/corporate-knights-sustainable-taxonomy. For non-financial companies, sustainable investments are defined as any investments aligned with the CK Taxonomy. For financial sector companies, sustainable CAPEX includes investments that enhance operational sustainability, such as greening bank branches or purchasing EVs, and sustainable R&D refers to research and development focused on sustainable finance solutions, such as developing new wealth-management platforms to support values-aligned investing.

[7]These investment projects can take many forms in renewable energy, energy efficiency, waste reduction, sustainable agriculture, and responsible sourcing.

to achieving net-zero emissions by 2030.[8]

**Risk and Sentiment Measures: Firm-level Environmental Political Risk** To analyze the relation between investment and firm-level environmental political uncertainty, we merge in firm-level political risk measures derived from earnings conference call data (Hassan et al., 2019). These measures are the term frequency and inverse document frequency (tf–idf) weighted share of discussion devoted to two-word combinations ("bigrams") common to political text as expressed in political science textbooks or speeches by politicians. Hassan et al. (2019) extensively validate these risk measure by showing that it intuitively spikes with political events such as elections, and realized and implied volatility, among other tests. Our primary explanatory variable of interest is the environmental component of these measures, which we denote E-PRisk. Hassan et al. (2019) also provide related measures of non-political risk and political sentiment that we use as controls throughout our tests, and uncertainty related to other topics such as economic policy, health, institutions, security & defense, tax, technology, and trade. We also merge in the climate change exposure sentiment measures of Sautner et al. (2023).

Importantly, E-PRisk is *firm-level* i.e., it is mostly unexplained by time-varying industry or firm-industry fixed effects. We confirm these findings in our sample for both overall and E-PRisk, indicating that environmental policy uncertainty is unevenly assigned to firms in a time-varying way. In Table 2 we study the horizon over which E-PRisk resolves, which is important because it links E-Prisk to theories regarding the investment dynamics surrounding uncertainty shocks. The coefficients in column (1) indicate a significant reversal in E-PRisk within one year that remains persistent over the following year. Given that we obtain E-PRisk from the annual conference call, this suggests that a significant fraction of the E-PRisks discussed are contained within the remainder of the fiscal year. We find little evidence that E-PRisk levels predict other risks at either one or two year horizons, although E-PRisk resolution positively correlates with sentiment at the one-year horizon. These dynamics suggest that if E-PRisk affects investment via uncertainty channels its impact is likely to reverse after one year as E-PRisk resolves.

[Table 2 here]

[8]Firms frequently note in their financial reports that integrating sustainability into their investment strategies helps internalize environmental externalities, capture the growing demand for green products and services, and enhance resilience and competitive positioning.

To validate our primary measure, we also construct an alternative third-party measure of environmental political risk using the RavenPack equity news database. We retain only highly firm-specific stories with a relevance score of 90 or higher and explicitly exclude press releases to limit firm-originated content. We apply a keyword-based classification where an article is coded as E-PRisk-related if it simultaneously contains environmental keywords (e.g., "climate," "emissions"), policy keywords (e.g., "regulation," "legislation"), and uncertainty keywords (e.g., "uncertainty," "delay"). We then aggregate this to the firm-year level using an indicator equal to one if at least one qualifying article appears for the firm in that year.

**Other Data and Summary Statistics** Throughout the paper, we also merge this dataset with Compustat Global, FactSet, and LSEG for financial, institutional investor, and ESG-specific data, respectively, which creates minor fluctuations in the number of firm-year observations as seen in Table 3. Finally, we introduce additional datasets used in specific analyses in subsequent sections when describing the corresponding tests.

[Table 3 here]

Table 3 reports on summary statistics for our baseline sample. Requiring conference calls alongside a set of controls reduces the sample size to 3,966 firm-years, but focuses our analysis the most relevant companies that regularly communicate with investors. This finalized sample includes 1,134 unique firms from 31 countries. The average sustainable investment percentage is 10.30% after our sample restrictions, which is a slight reduction from the unrestricted average. Relative to total assets, green (non-green) investment is about 1.05% (9.41%), of which around four-fifths (two-thirds) are capital expenditures. This difference highlights that GIPs tilt toward capital rather than R&D investment.

The average conference call discussion of environmental political risk (E-PRisk) is 4.75 with standard deviation of 18.65. We observe that the average political and non-political sentiment is 1.39 and 14.02, respectively.

The remainder of our summary statistics report on other control variables that we use throughout such as market capitalization, market-to-book, profitability, climate change exposure and sentiment, and ESG scores, among others.

# 4 Does Environmental Political Uncertainty Affect Green Investments?

Our central objective is to study the consequences of E-PRisk for sustainable corporate investments around the world. On one hand, as highlighted by our conceptual framework, the extensive theoretical literature on investment under uncertainty and investment irreversibility highlights the option value of delay and predicts that uncertainty should lower investment at the firm level (e.g., Bernanke (1983), Dixit and Pindyck (1994), or Bloom, Bond, and van Reenen (2007)). However, several outside factors suggest that the actual effect of E-PRisk on GIPS may deviate from this theoretical benchmark. First, GIPs are relatively small proportions of overall investment. Thus, standard theories that study the timing of *single* projects or *total* investment have unclear implications about project composition when uncertainty differentially hits the opportunity set. The baseline effect on firm investment level and composition, which we aim to use our data to infer, can depend for instance on the relative costs of adjusting firm scale versus their project mix. Second, opposing mechanisms are plausible: first-mover advantages, anticipation of tighter regulation, or green-washing may provide offsetting incentives to the option value of waiting (Dean and Brown, 1995; Aragón-Correa and Sharma, 2003; Hoffmann and Trautmann, 2009; Sinn, 2008; Delmas and Burbano, 2011). Thus, the manner in which E-PRisk change how firms invest, including whether it delays GIPs, triggers reallocation away from GIPs toward other projects, or affects total investment levels are all unanswered empirical questions.

## 4.1 Baseline Regressions

As a first step toward addressing these empirical questions, we estimate panel regressions where the dependent variable reflects measures of investment, including the extent of GIPs, and the explanatory variable of interest measures E-PRisk, extracted from earnings conference calls. Specifically, for investment by firm $i$ in year $t+1$, we estimate the following panel regression,

$$\text{Investment}_{i,t+1} = \gamma_1 \text{E-PRisk}_{i,t} + \gamma_2 \text{PRisk}_{i,t} + \gamma_3 \text{Non-PRisk}_{i,t} + \lambda \mathbf{X_{i,t}} + \text{FEs} + \epsilon_{i,t}, \tag{1}$$

where E-PRisk$_{i,t}$ is the firm's E-PRisk in year $t$, PRisk$_{i,t}$ (Non-PRisk$_{i,t}$) is overall political (non-political) risk, and $\mathbf{X_{i,t}}$ is a possible set of controls. Our primary investment variable is the percentage of total investment devoted to sustainable projects (% green investment). Throughout, we standardize E-PRisk by dividing by its full sample standard deviation for interpretation. Across specifications, we also progressively include tighter controls to Eq. (1) with combinations of firm, country×year, industry×year fixed effects and time-varying firm variables that control for constant firm effects (such as carbon-intensiveness), any time-varying country and industry unobserved effects (such as country or sector-related regulations and shocks), and distinct time-varying firm effects that can independently affect sustainable investment. For inference, we report $t$-statistics based on robust standard errors clustered by firm.

Table 4 reports on our main results. Column (1) reports our baseline specification with a basic set of controls, firm fixed effects, and year fixed effects. The inclusion of overall political and non-political risk as controls means that we interpret the coefficient on E-PRisk as the effect of E-PRisk on next year's investment orthogonal to the effect of overall conference call discussions of uncertainty. We observe that heightened E-PRisk reduces total sustainable investments with significance at the 1% level ($t = -2.86$). In contrast, controlling for E-PRisk, the coefficients on PRisk and Non-PRisk are insignificant, showing that non-environmental political and non-political uncertainty do not affect the fraction of investments that are green. These findings highlight the novelty of our empirical setting as E-PRisk, but not total political risk, affects the subset of projects most directly exposed to environmental policy.

[Table 4 here]

Across the remaining columns of Table 4, we sharpen these interpretations in five important ways, none of which materially affect our interpretation of the baseline result in Column (1). First, news about uncertainty often accompanies news about the level. Thus, following Hassan et al. (2019), we augment the regression with political and non-political sentiment in Column (2). Second, we also add in country-year and industry-year fixed effects in Column (3). Third, although we already include firm fixed effects, other distinct time-varying firm effects may confound the effects of E-PRisk. Therefore, in Column (4) similar to Gad, Nikolaev, Tahoun, and van Lent (2024), to isolate the effect of E-PRisk, we include a battery of firm-level controls in $\mathbf{X_{i,t}}$ that may help explain investment: firm size as measured by the natural log of market capitalization, log market-to-book, profitability

measured by ROA, leverage via , foreign ownership shares, "generic" firm risk as measured by return volatility (Return SD), and ESG scores (see Internet Appendix Table IA.3 for control variable coefficient estimates). We also include the climate change exposure and sentiment measures of Sautner et al. (2023) as E-PRisk may simply proxy for overall environmental and climate exposure and not necessarily the political aspect. Fourth, in Column (5), to account for the disproportionate presence of U.S. firms in our sample, we estimate a weighted least squares regression using the inverse of the number of firms from a given country as weights. Lastly, in Columns (6) and (7), we alternatively scale dollar sustainable investment by total assets and find that the compositional shift away from green is driven by cuts in GIPs, which is substituted (insignificantly) toward non-GIPs.

Our most stringent specification in column (4) indicates a highly statistically significant and economically sizeable sensitivity of GIPs to E-PRisk ($t = -3.85$). A one standard deviation increase in E-PRisk, which is already standardized, is associated with a $-0.64$ percentage point drop in the share of green investment. This is a $0.64/10.30 = 6.2\%$ drop relative to the sample mean. In dollar terms, the estimate in Column (6) indicates that one standard deviation increase in E-PRisk is associated with a $-0.48$ drop in green investment relative to assets, which, evaluated at the average total assets, is around $-0.48/1000 \times \$68.34$ billion $= -\$32$ million.

## 4.2 Controlling for Concurrent Managerial Discussions

We next control for the potential confounding effects of other call topics co-existing with discussion of E-PRisk, which helps to isolate the effect of E-PRisk from correlated managerial discussion of other risks. Likely due to firms' bundling together political uncertainty discussion, Appendix Table IA.1 shows that E-PRisk is not only positively correlated with PRisk and non-PRisk but also to various degrees with other political uncertainty topics such as healthcare and technology. If we omit these topics, the estimated coefficient on E-PRisk will absorb variation due to these co-occurring narratives (e.g., firms that talk more about regulatory or technological risk may also talk more about the environment and simultaneously scale back capex). Despite our prediction that only the environmental component of policy risk withh directly affect the fraction of green investment, it is possible that the omission of these other risk categories produces some attribution error.

In the top panel of Figure 2, we assess whether political risk related to non-environmental categories such as economic policy, health, institutions, security & defense, tax, technology, and trade predicts the percentage

of a firm's investment that is in GIPs. Focusing on our strictest specification in Column (4) of Table 4, we observe that replacing E-PRisk one-by-one with these other topics indeed generates a negative point estimate similar to E-PRisk. But, at the 5% level, only health and technology are statistically significant, consistent with our conjecture that these topics are either incidentally bundled with E-PRisk or that they are multi-dimensional aspects related to the sensitivity of GIPs to E-PRisk.

[Figure 2 here]

To directly highlight the marginal effect of E-PRisk above and beyond other conference-call policy risk measures, the bottom panel of Figure 2, horseraces E-PRisk with the other policy risk topics. Across all of the other seven topics, we consistently observe that the effect of E-PRisk is significant and negative, and drives out the significance of any of the other topics. These conclusions remain when we alternatively examine green investment relative to total assets in Appendix Figure IA.2. This superior performance of E-PRisk in predicting investment in GIPs is consistent with E-PRisk directly impacting the subset of firms' projects that are most directly exposed to the environmental policy risks being measured.

### 4.3 Dynamics: A Reversal upon E-PRisk Resolution

Our finding that GIPs drop in response to E-PRisk supports the predictions of standard models of investment under uncertainty as motivated by the option value of delay. A key supporting and testable implication of these models is that the investment impact of E-PRisk will reverse when uncertainty fades.[9] To examine whether the 1-year subsequent drop in GIPs is permanent or reversible, we examine the empirical impulse response of investment to E-PRisk.

Specifically, we replace E-PRisk as of time $t$ in Eq. (1) with its lead and lag values from time $t-1$ to $t+4$. Figure 3 plots the resulting coefficients, where the x-axis represents the interval between the arrival of E-PRisk and the sustainable investment response by firms, and the y-variable is the one standard deviation effect on percentage green investment. Accordingly, the value plotted at time $t+1$ corresponds to the coefficient in

[9] Waiting reduces the incoming green capital base, which makes ramping up green investment later more expensive because convex adjustment costs are steeper when the installed base is smaller. Even so, reversion can occur when realized green profitability is sufficiently high to justify paying the green fixed cost next period and investing in green despite those higher marginal adjustment costs.

Column (4) of Table 4. As we discuss above, we interpret it as showing a negative relation between E-PRisk and percentage green investment over the coming fiscal year, whereby firms invest less (more) in green projects when E-PRisk is high (low). The absence of pre-trends confirms that there is no relation between E-PRisk and the extent of current and past green investment. The lack of pre-trends highlights the forward looking nature of the uncertainty measure, and that it is an idiosyncratic *shock* consistent with Hassan et al. (2019).

[Figure 3 here]

More importantly, the coefficient at time $t+2$ in Figure 3 supports a key prediction of investment under uncertainty models: it is positive, statistically significant, and *larger* in magnitude than the negative coefficient at time $t+1$. This indicates a complete reversal of the sustainable investment cut two years after the arrival of E-PRisk. Thus, firms do not permanently reduce their long-run green investments, but rather delay their investment until future periods when the uncertainty resolves.

While the subsequent reversal suggests that firms eventually catch up in dollar terms, this "stop-start" dynamic generates significant economic and environmental costs. First, the timing of investment is non-neutral: a one-year delay in deploying green technology locks in a higher trajectory of cumulative emissions, meaning the environmental damage is not fully offset even if capital spending recovers. Second, the volatility itself imposes capital adjustment costs, making the transition slower, lumpier, and more expensive than a smooth trajectory. Third, these delays compound. Because political shocks occur frequently (e.g., elections, regulatory rulings), repeated temporary pauses can permanently depress the exponential growth curve required for Net Zero. Finally, the rapid rebound serves as a powerful identification test: it confirms that the binding friction is neither technology nor financing, but policy credibility. When uncertainty resolves, capital moves quickly, implying that policy instability is the primary bottleneck.

## 4.4 Investment Composition Shifts due to E-PRisk

The results thus far show that E-PRisk affects green investment in a manner consistent with real options theories of investment: Firms delay green investment until uncertainty passes. A unique feature of our empirical setting, that is largely absent from classic real-options models (e.g., Dixit and Pindyck (1994)), is that the impact of the

uncertainties we examine concentrates around a subset of firms' investment portfolios (see e.g., Columns (6) and (7) of Table 4).

Specifically, standard models typically consider economy- or firm-wide uncertainty shocks, enabling the study of "how much and when" to invest. However, the uneven of impact of E-PRisk across a firm's opportunity set that we document creates a portfolio problem inside the firm. Faced with a green-specific uncertainty shock, the firm can (a) contract overall scale, or (b) reoptimize its mix by tilting from high-exposure to low-exposure projects, subject to cross-sectional properties such as adjustment costs, financial constraints, and irreversibilities. This compositional dimensional is important for understanding green investment because sustainable policy uncertainties such as subsidies and compliance costs are project type-specific.

Key to answering our main research question of the E-PRisk effect on how firms invest is understanding the extent that E-PRisk induces compositional shifts in firms' investment portfolios. If adjustment costs are lower between green and non-green investments, but higher in terms of scaling firm size, then we expect firms to substitute toward non-green projects, which buoy total investment even as green investment declines. If instead, the costs to adjusting firm scale is low or it is hard to substitute inputs between green and brown projects, then brown investment may remain flat leading total investment to decline in tandem with green investment.

Figure 4 investigates this tension by reporting the contrasting dynamics of *green* investment relative to total assets with *non-green* investment. In the top panel, we find that green investment scaled by total assets drops for one year, but then fully reverses the following year after the resolution of E-PRisk. This dynamic effect of E-PRisk on firms' green investment scaled by total assets evolves similarly to corresponding effect in Figure 3, where we scale green investment by total investment. In the bottom panel, we observe a mirror image: non-green investment is (insignificantly) higher in year $t+1$, which reverses downwards in $t+2$.

[Figure 4 here]

Comparing the magnitudes across the two panels indicates an almost complete substitution between green and non-green investments in years $t+1$ and $t+2$. In year $t+1$, a one SD increase in E-PRisk leads green investment to fall by just under 0.5% of total assets, while non-green investment rises over 0.3% of total assets. In year $t+2$, both effect switch indicating that green investment rises by 0.8% of total assets and non-green

investment falling by 1.0% of total assets. Notably, in Appendix Figure IA.3, we show how these effects net out leading to a flat pattern in the sum of green and non-green investment that is insignificantly different from zero in all periods. Thus, E-PRisk appears to restructure the green investment pipeline even as overall investment remains unchanged.

## 4.5 Role of Election Uncertainty

We next conduct an event study around country elections to investigate the role of election-induced political uncertainty for investment (Bloom, Bond, and van Reenen, 2007; Julio and Yook, 2012; Jens, 2017). Election uncertainty is especially relevant given the cycles of brinksmanship among political parties around the world. Moreover, Hassan et al. (2019) document that overall political risk indeed spikes around elections, suggesting that elections may contribute to E-PRisk.

To test for the role of elections, we collect data on general election dates, during which voters determine majority party control of the government. Year $t$ for a given country is labeled as an election year if the election date occurs in calendar year Q3 or Q4, and the previous year otherwise. Using a news media search, we further create an "uncertain" election year indicator to identify when the election issues comprised of polarized debate around environmental policy. In our tests, we augment Eq. (1) with an election year interaction with E-PRisk either one-year or two-years prior to the year of the percentage green investment to examine differences in the effect of E-PRisk around elections. Table 5 reports on the results.

[Table 5 here]

The baseline regressions in Column (1) indicate that upcoming elections have little interactive effect with E-PRisk's impact on investment over the remainder of the fiscal year. Thus, the propensity for firms to delay investment in response to E-PRisk is similar whether there is an upcoming election or not, suggesting that firms treat election-induced E-PRisk and other types of E-PRisk similarly in their investment decisions.

Column (2) shows that upcoming elections do, however, significantly affect the extent to which the delayed investments reverse in the upcoming year. The negative and significant interaction ($t = -2.09$) between time $t-2$ E-PRisk and GIPs, summed against the baseline E-PRisk coefficient of similar magnitude, indicates that there is

no immediate reversal when the reversal was set to occur during an election year. Column (3) indicates a similar result measuring future elections over the two subsequent years. Thus, election cycles can have a multi-year impact on the resolution of E-PRisk as it pertains to firms' investment decisions. In Columns (4) through (6), we show that this impact on E-PRisk resolution is most pronounced for uncertain elections, defined as the subset of elections where the media reported significant policy uncertainty on sustainability and the environment. Lastly, as Jens (2017) reports that investment rebounds depend on political positions, we separately examine sub-samples based on if the incumbent party tilted toward sustainable green policies or not. We find significant delays in the investment reversal due to E-PRisk across these sub-samples, however the magnitude of effect is more than twice as large when non-green parties are the incumbents.

# 5 Mechanism Tests of the Option Value of Delay

The evidence presented thus far addresses our central research question of how E-PRisk changes the way firms invest. We find that E-PRisk acts as a distinct, green-specific policy shock that reshapes both the timing and composition of investment rather than simply depressing the level. Heightened E-PRisk robustly and sizably reduces the share of investment allocated to sustainable projects, even after conditioning on other uncertainty topics, sentiment, and a rich set of fixed effects and controls. The combination of subsequent reversal in green investment, the substitution of non-green investment, and the flat response of total investment are consistent with firms temporarily reallocating their investment portfolios in line with real options logic.

We next conduct a series of additional tests to further address our second main research question, regarding the driving forces behind E-PRisk's investment impact. We motivate most of these tests from the predictions of theories of investment under uncertainty.

## 5.1 Decomposing Capital and R&D Investment

In interpreting our results, we importantly note that the option value of delay in models of investment under uncertainty applies much more naturally to traditional capital expenditures than to growth options such as R&D. Capital investments in plants, equipment, or long-lived green assets are typically large, illiquid, and difficult to

reverse, so committing today exposes the firm to substantial downside risk if uncertainty resolves unfavorably, making the option to wait valuable. By contrast, R&D is more flexible and multi-staged: firms can ramp effort up or down, terminate unpromising projects, and often reuse accumulated capital and knowledge stock, which limit the downside of acting early. Moreover, R&D spending itself generates information and capabilities that expand the firm's opportunity set, creating convex payoffs for which uncertainty can increase, rather than decrease, the incentive to invest (Atanassov, Julio, and Leng, 2024). In Table 6, we decompose total investment to empirically study the relative impact of E-PRisk on capital expenditure, R&D, and acquisition activity.

[Table 6 here]

The results indicate that the entirety of E-PRisk's investment impact resides in capital expenditure investment. Column (1) shows that % green capital expenditure significantly drops by $-0.70$ ($t = -1.99$) with a 1 SD increase in E-PRisk, while Columns (2) and (3) detect no effects on R&D and acquisitions. Column (4) shows that E-PRisk's effect on capital spending becomes even more statistically significant when scaling by total assets, while columns (5) and (6) continue to indicate no significant relation with R&D or acquisition spending using the total assets scaler.

At the bottom of Table 6 we present the year after reversal partitioned by investment type. We find that the entirety of the reversal concentrates in the same, capital expenditures, segment of investment as the initial investment sensitivity to E-PRisk. Taken together, the findings in Table 6 support the option value of delay mechanism as opposed to the growth option view.

## 5.2 Investment Irreversibility and the Role of Asset Redeployability

The option value of delay increases when invested assets are less easily disinvested. One way this effect manifests is via the redeployability channel, which highlights that economically specialized assets are more adversely affected by economic uncertainty (Kim and Kung (2017)). In essence, less redeployable assets are those that cannot easily repurpose or liquidate during uncertain times, making firms cautious and leading to reduced investment. In contrast, firms with highly redeployable assets are able to flexibly manage uncertainty. As a result, we expect the effects of E-PRisk to concentrate in firms that hold less redeployable assets.

To test this proposition, we use the asset redeployability score, provided by Kim and Kung (2017), that measures the extent to which assets are deployed and salable across industries. We focus on the industry measure rather than the US-only firm-level measure in order to extend redeployability to an international sample. After merging to our data, the sample average redeployability is 0.39, which matches the average reported for US firms by Kim and Kung (2017). However, the variability measured by standard deviation is higher in our setting at 0.15 vs. 0.06. We then split our sample into more or less redeployable sub-samples based on the sample cross-sectional median of lagged redeployability each year.

[Table 7 here]

Table 7 reports on the results. Comparing Columns (1)–(3) with (4)–(6), we observe positive (but insignificant) coefficients for the former and negative and significant coefficients for the latter, except for R&D. Thus, the sensitivity of sustainable investment to E-PRisk, which concentrates for capital expenditures, is driven by firms in less redeployable industries. At the bottom, we again see a tight sub-sample link with reversal afterwards, supporting the predictions of real options theories.

## 5.3 Investment Irreversibility and the Intensive Margin of Investment

In our next set of tests, we hone on the prediction that the green investment sensitivity to E-PRisk should operate largely within firms that are already conducting green investment, who can defer or resize their existing projects, i.e, on the intensive margin. In a standard setup, the extensive margin (to invest vs. not invest at all) is governed by a NPV threshold and an inaction region: firms enter only once the expected NPV is positive and after accounting for the value of waiting in the inaction region to avoid incurring positive fixed costs (Abel and Eberly, 1994). Because this extensive margin choice is divided in between by the inaction region, only large sharp shifts in uncertainty can flip the binary decision to invest in green projects. In contrast, once a firm has invested in green capital, its incremental capital expenditures can be accelerated, scaled back, or paused at relatively low adjustment cost. Thus, the firm has a strong incentive to stretch out, downsize, or postpone additional irreversible spending rather than fully exiting.

Table 8 investigates these predictions by first replacing our main dependent variable of interest in Eq. (1)

with an indicator for whether a firm has non-zero total GIPs. Column (1) shows no sensitivity between the choice of investing in GIPs and E-PRisk. Columns (2) and (3) further demonstrate that neither positive nor negative E-PRisk shocks affect the extensive margin. In comparison, Columns (4)–(6) examine the sub-sample of firms with pre-existing GIPs. We consistently observe that firms cut % green investment due to E-PRisk once they have green capital in place, with these cuts reversing again after a year. Economically, the point estimates are also larger than in the overall sample, with a one standard deviation increase in E-PRisk decreasing % green investment by $-0.72$ ($t = -3.98$).

[Table 8 here]

These results suggest that firms with no ongoing green projects contribute little to the overall effect of E-PRisk on green investment. It is not the case that E-PRisk is actively preventing firms that would have started to invest in GIPS from doing so. Rather, the E-PRisk to green investment relation resides entirely among firms that are already conducting some amount of green investment. We note that a limitation of our data is that we cannot say for sure whether firms within this GIP-investing subsample are acting on the project-level intensive or extensive margins.

## 5.4 Additional Sub-sample Analysis

### 5.4.1 Role of Financial Constraints

We next examine the role of financial constraints (e.g., Hennessy, Levy, and Whited (2007)), an important friction that contributes to investment irreversibility and the real effects of political uncertainty. How it influences the effect of environmental political uncertainty on GIPs is unclear, as the impact of financial constraints on green investments can result in either reallocation or overall contraction.

On one hand, uncertainty should be more costly for financially constrained firms because they want to avoid risky bets that may worsen their constraints, face higher costs of capital when switching investments, and are more risk averse due to their limited ability to recover from bad economic states, which points to a financing-rationing channel. On the other, Gilchrist, Sim, and Zakrajšek (2014) show that the effect of uncertainty on investment operates through the financial constraint channel: uncertainty increases credit spreads, unless credit spreads are

already high. Thus, one can alternately expect that constrained firms, whose credit spreads are already high, are insensitive to heightened environmental political uncertainty. Less constrained firms are therefore more likely to apply positive NPV reasoning underlying the option value of delay.

To explore this tension, we adopt firm total payout, inclusive of dividends and net share repurchases and scaled by total assets, as a natural proxy for financial constraints. More (less) constrained sub-samples are defined by being less (more) than the median payout by year within our sample. In Panel A of Table 9, we find that less constrained firms drive our documented effect. Among more constrained firms, the sensitivity to E-PRisk is zero or positive. Among less constrained firms, we observe economically large cuts in % green investment, including capital expenditures and even R&D, which is not present in our overall sample. The capital expenditure, but not R&D, cuts reverse in the following year.

[Table 9 here]

These findings suggest that financially constrained firms, which may have distorted investment policies, are not driving the decrease in green investments around E-PRisk spikes. This distinction is crucial for identifying the economic mechanism. If E-PRisk suppressed investment primarily by exacerbating financing frictions—effectively rationing capital—we would expect the sharpest contractions among financially constrained firms. However, the fact that the negative effect is concentrated entirely in unconstrained firms suggests that the decline is not driven by an inability to fund projects. Instead, it indicates that firms with sufficient financial slack and liquidity are strategically exercising their real option to delay irreversible green investments until uncertainty resolves. More broadly, our results support the nuance in the financial constraints channel proposed by Gilchrist, Sim, and Zakrajšek (2014): firms with already-high credit spreads are less sensitive to uncertainty shocks, whereas unconstrained firms with low spreads have the "room" to adjust their portfolios. Thus, unconstrained firms use their flexibility to wait, while constrained firms remain unresponsive.

### 5.4.2 Role of Carbon-intensity

Next, we examine the impact of carbon-intensiveness on the relationship between green investments and environmental political uncertainty. Specifically, there are strong reasons to focus on highly carbon intense firms. First,

such non-green firms have meaningful portfolio margin in the sense that they have both non-green and potential green assets in place. So, these firms can respond to E-PRisk via shifting investment composition as we document overall. Moreover, non-green firms have the highest stakes (Hartzmark and Shue, 2023), as they account for the most emissions, face the sharpest regulatory risk, and are the ones policymakers explicitly want to push toward greener assets. Under environmental political uncertainty, they may delay GIPs until there is more clarity on the direction of future regulations.

Panel B of Table 9 reports on sub-samples tests focusing on non-green firms. In Columns (1)–(3), we examine non-green firms as classifed by the yearly median of CO2 emissions relative to sales (Zhang, 2024). We indeed observe strong negative cuts and subsequent reversal in % green investment due to E-PRisk. In Columns (4)–(6), we alternatively classify non-green firms based on industry, following Choi, Gao, and Jiang (2020), and find similar results. Consequently, non-green firms appear to be the type of firm where E-PRisk matters.

# 6 Additional Robustness Tests

## 6.1 Disaster Driven Variation in E-PRisk

The evidence presented so far strongly supports E-PRisk affecting GIPs through mechanisms predicted by models of investment under uncertainty. Specifically, we show how GIP-targeted uncertainty raises the option value of waiting, resulting in the delay of GIPs. In the current equilibrium, in which GIPs remain a relatively small fraction of total corporate investment, we find this shift has little effect on total investment as firms adjust non-green spending to compensate. The strong mapping between our results and the theoretical predictions of real options theories of investment under uncertainty make alternative mechanisms unlikely drivers of our findings. Nevertheless, we acknowledge the general possibility that investment decisions and environmental political risk may be endogenously determined due to possible omitted variables, reverse causality, or strategic firm actions.

One particular class of endogenous explanations centers on the possibility that managers selectively discuss E-PRisk during their conference call in a manner that correlates with the extent of green investment in the coming periods. If managers are being overly cautious about GIPs, this may lead them to selectively discuss E-PRisk while heavily cutting green investment. Although it remains unclear whether this alternative would manifest in

this direction in practice or how this narrative would explain the subsequent reversal, we still seek variation in E-PRisk that is unrelated to managers' specific conference call disclosure choices.

For this purpose, we propose a shift-share-style (or Bartik (1991)) exogenous exposure measure based on the differential impact of country-level climate disaster shocks for firm-level environmental political risk. Motivated by the fact that firms have heterogeneous exposure to aggregate political risk, we follow Hassan et al. (2019) and construct a firm-level rolling 2-year quarterly environmental "political risk beta" by estimating,

$$\text{E-PRisk}_{i,q} = \alpha + \beta_{\text{E-PRisk},i}\overline{\text{PRisk}}_q + \epsilon_{i,t}, \tag{2}$$

where $\overline{\text{PRisk}}_q$ is the world average in year-quarter $q$ and the 2-year window used in the estimation ends in year-quarter $q$.[10] With these time-varying environmental political risk exposures, our shift-share exposure measure is then defined as,

$$\text{Exposure}_{i,t} = \underbrace{\beta_{\text{E-PRisk},i,t-1}}_{\text{Share}} \times \underbrace{\text{Country Disaster Shock}_{c,t}}_{\text{Shift}}, \tag{3}$$

where $\beta_{\text{E-PRisk},i,t-1}$ is the most recent environmental "political risk beta" in year $t-1$, and $\text{Country Disaster Shock}_{c,t}$ is a climate disaster shock measured by year-to-year changes in the number of climate disasters for country $c$ in year $t$.[11] This measure exploits the interaction of two sources of variation: First, the cross-sectional predetermined (i.e., lagged) variation in heterogeneous exposure to aggregate political risk, and second, the time-series exogenous shock induced by country-specific climate disaster shocks.

Therefore, we identify causal effects on GIPs using the heterogeneous impact of an aggregate exogenous shock as in Borusyak, Hull, and Jaravel (2022) instead of exogeneity in the shares as in Goldsmith-Pinkham, Sorkin, and Swift (2020). Specifically, Borusyak, Hull, and Jaravel (2022) show that shift-share IV moment conditions are satisfied when shock-level orthogonality is satisfied. In our setting, this requires that the exposure-weighted country-level shocks be exogenous. We argue that this assumption is plausible. At the shock level, an extensive line of research documents that natural disasters generate largely unexpected shocks to financial markets (e.g.,

[10] Although we use the world average in our main specifications, we find nearly identical results using betas relative to country-specific political risk averages.

[11] Results are robust to using shocks relative to 3- or 5-year moving averages.

Cortés and Strahan, 2017; Correa et al., 2023), supporting the exogeneity assumption. Moreover, a large literature in political economy shows that personal experience influences political behavior and policy support (e.g., Fiorina, 1981). Consistent with this view, Baccini and Leemann (2020) find that climate-related disasters increase support for pro-environmental policies, and several studies show that firsthand disaster and other personal experience affects electoral outcomes (e.g., Masiero, 2021; Duch and Stevenson, 2006; Bechtel and Hainmueller, 2011; Gasper and Reeves, 2011).

Armed with this measure, we estimate regressions that replace E-PRisk in Eq. (1) with the $\text{Exposure}_{i,t}$ from Eq. (3). Importantly, we also add in the interaction of $\text{Exposure}_{i,t}$ with the number of direct disaster hits to firms' headquarters by city or region. This allows us to interpret the coefficient on the standalone $\text{Exposure}_{i,t}$ when firms are not directly hit by disasters. Economically, this design mitigate concerns that other channels (such as investment opportunities) related to disaster hits affects the firm, and focuses on how aggregate disaster shocks in environmental uncertainty heterogeneously propagate based on lagged $\beta_{\text{E-PRisk},i,t-1}$.

Moreover, our inclusion of country×year fixed effects in all specifications addresses two additional threats to identification. First, it controls for the fact that political risk beta exposures don't sum to 1 at the country-level i.e., $(\sum_{i \in c} \beta_{\text{E-PRisk},i,t-1} \neq 1)$, which resolves the "incomplete shares" concern in Borusyak, Hull, and Jaravel (2022) that bias is introduced by systematically different levels of political risk exposures in each country.[12] Second, it helps to satisfy the exclusion criteria as country×year fixed effects absorb any indirect effect on E-PRisk from aggregate country-level time-varying disasters, and bases the identification solely on the interaction effect of heterogeneous risk exposures and the aggregate shocks for explaining E-PRisk.

[Table 10 here]

Table 10 reports on the results of this shift-share analysis. In Column (1), we first verify that $\text{Exposure}_{i,t}$ indeed is relevant for explaining E-PRisk. We find that among firms that are not hit by disasters, E-PRisk goes up significantly with $\text{Exposure}_{i,t}$ ($t = 3.18$) at the 1% level. Furthermore, controlling for firm direct hits is important as we see the interaction with $\text{Exposure}_{i,t}$ has a negative and significant effect on E-PRisk. Turning to Column (2), we see that % green investment drops with higher exposure to aggregate disaster shocks, consistent with the

[12] Specifically, Borusyak, Hull, and Jaravel (2022) recommend adding the lagged country-level total exposure as a control variable, which is naturally absorbed by country×year fixed effects.

increase in E-PRisk observed in Column (1). This effect survives in Column (3) when we examine green investment relative to total assets, and notably, is substituted into non-green investment as seen in Column (4). Overall, our shift-share-style analysis helps to mitigate endogeneity concerns, and shows that firm-level environmental political uncertainty robustly causes firms to cut GIPs.

## 6.2 A Third-Party News-Based Measure of Environmental Political Risk

This section provides external validation for our baseline E-PRisk measure and further mitigates concerns that our findings reflect measure-specific construction or managers' discretionary framing in earnings calls. Because the Hassan et al. (2019) E-PRisk measure is derived from conference-call transcripts, a natural concern is that it may embed firm communication choices that are correlated with investment plans.

For instance, managers anticipating cuts to green investment may selectively highlight environmental policy uncertainty to attribute the decline to external factors ("blame shifting"), mechanically strengthening the estimated relationship. Conversely, firms actively investing in green projects may strategically downplay environmental topics to avoid political scrutiny ("greenhushing") (e.g., Lipton, 2023). Under this channel, successful green investors would exhibit artificially low E-PRisk simply because they avoid discussing the topic, creating a mechanical negative correlation between E-PRisk and investment. While our timing patterns and shock-based designs are difficult to reconcile with such explanations, we address both concerns directly by constructing an alternative measure using third-party news coverage from RavenPack. Because this measure is produced by independent journalists, it does not rely on managerial disclosure incentives.

Our RavenPack measure is built from the RavenPack equity news database at the article level. We retain only highly firm-specific stories (relevance score $\geq 90$) and exclude press releases to limit firm-originated content. We then apply a keyword-based classification: an article is coded as environmental political risk–related if it contains environmental keywords (e.g., climate, emissions, renewable energy, environmental regulation) and simultaneously contains either policy keywords (e.g., regulation, law, rulemaking, legislation, agencies, elections) or uncertainty keywords (e.g., uncertainty, dispute, delay, litigation, injunction, moratorium). We aggregate to the firm-year level using an indicator equal to one if at least one qualifying article appears for the firm in that year. RavenPack entities are linked to our sample firms through high-confidence firm-name matching based on Jaro–Winkler distance, and

non-matches and firm-years without qualifying articles are set to zero.

The results in Table IA.6 show that the news-based measure behaves in a manner consistent with our baseline evidence. Column (1) shows that News-Based E-PRisk is positively and significantly correlated with our primary conference-call-based E-PRisk measure ($t = 1.91$), confirming that both measures capture a shared underlying economic construct. More importantly, Column (2) shows that this third-party measure independently predicts a significant decline in green investment ($t = -2.03$). Finally, in Column (3), when we include it alongside the conference-call-based E-PRisk measure, the RavenPack-based proxy remains significant and economically meaningful, and the baseline coefficient remains stable. This indicates that the RavenPack proxy captures variation in environmental political uncertainty that is relevant for firms' green investment decisions and that is not subsumed by our baseline measure.

Taken together, these findings strengthen the construct validity of our E-PRisk channel: the central relationship between environmental political risk and reduced green investment emerges using an independent, externally produced information source, and it holds when both proxies are included simultaneously.

# 7 Conclusion

Instead of accelerating the green transition, unpredictable policies may have the unintended consequence of reinforcing short-term decision-making, where firms favor investments with immediate returns and lower regulatory risks. For instance, a firm investing in electric vehicle charging infrastructure has limited flexibility to re-purpose these assets if policies shift, whereas a firm investing in conventional machinery faces fewer constraints in reallocating capital. This hesitation could delay progress toward climate goals, ultimately undermining global sustainability efforts.

Our study provides strong evidence that environmental political uncertainty significantly dampens GIPs, leading firms to reallocate capital away from green initiatives and toward conventional projects. A one standard deviation increase in E-PRisk is followed by a 6.2% drop in the share of investment that is green (relative to the sample mean) and a 4.5% decline in green investment scaled by assets (about $32 million for the average firm–year), with little effect on total investment. The contraction is concentrated in green capital expenditures (not

R&D), among firms with ongoing GIPs and low asset redeployability, and is stronger for financially unconstrained and more carbon–intensive firms. The concentration of these effects among unconstrained firms distinguishes the mechanism from a credit-rationing channel, confirming that firms with ample liquidity are strategically exercising the option to wait. Dynamics point to delay rather than cancellation—green spending rebounds the following year—while elections lengthen the deferral window. Results remain specific to environmental political risk, not to generic political or macro risk.

The broader implication is that *policy credibility is capital formation policy.* When policy signals are unstable, firms do not simply scale back investment, they reallocate it, diverting capital from long-horizon, policy-exposed projects toward short-horizon, low-exposure ones. Stabilizing the rules of the game such as the duration of subsidies, carbon-pricing trajectories, and disclosure regimes can therefore shrink the option value of waiting and keep green dollars in the pipeline. From a broader perspective, credibility functions as an investment friction: uncertainty distorts not only the timing but also the composition of capital formation, with aggregate consequences for innovation, emissions, and long-term growth. In this sense, E-PRisk is a real-side manifestation of climate transition risk, reallocating investment away from policy-exposed green assets even when aggregate CAPEX appears unchanged. Priority avenues for future work include mapping firm-level reallocation to realized emissions paths, tracing valuation and weighted-average cost of capital effects of GIP slowdowns and rebounds, and testing alternative policy architectures (e.g., sunset clauses, automatic stabilizers, or cross-party agreements) that institutionalize credibility without additional fiscal outlays.

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# Figures and Tables

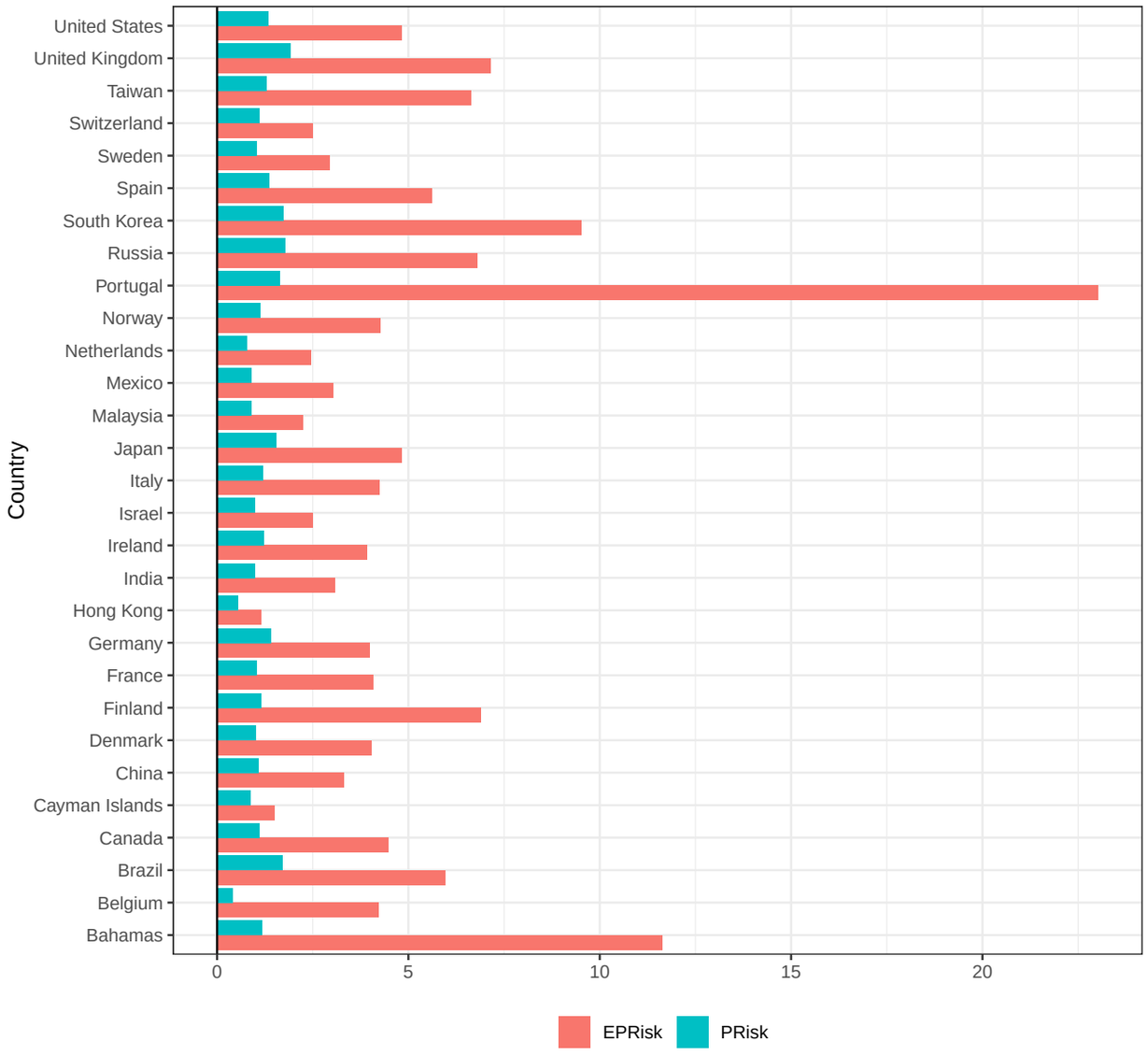



Figure 1: Environmental and Overall Firm-level Political Risk around the World

The top figure plots a bar-chart comparison of environmental (E-PRisk) and overall (PRisk) firm-level political risk across the countries in our sample. Political risk from Hassan et al. (2019) is extracted from earnings conference text.

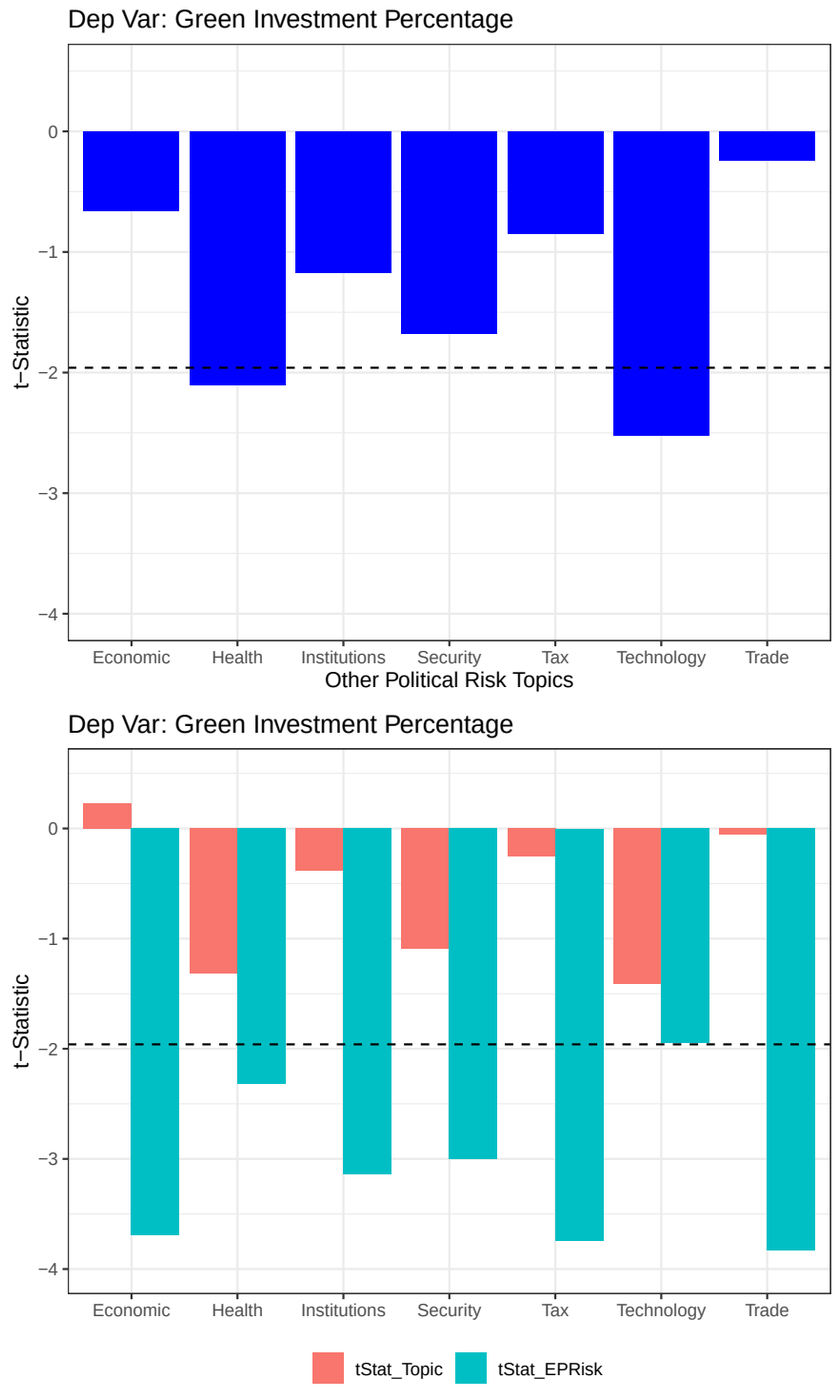



Figure 2: Role of the Other Non-Environmental Political Risk Topics
The top figure plots the t-statistic associated with replacing E-PRisk with the other political risk topics in our baseline regressions with Green Investment % as the dependent variable. The bottom figure plots the t-statistics when the regression focuses on E-PRisk controlling for the other political risk topics. The dashed horizontal line is the 5% level for statistical significance.

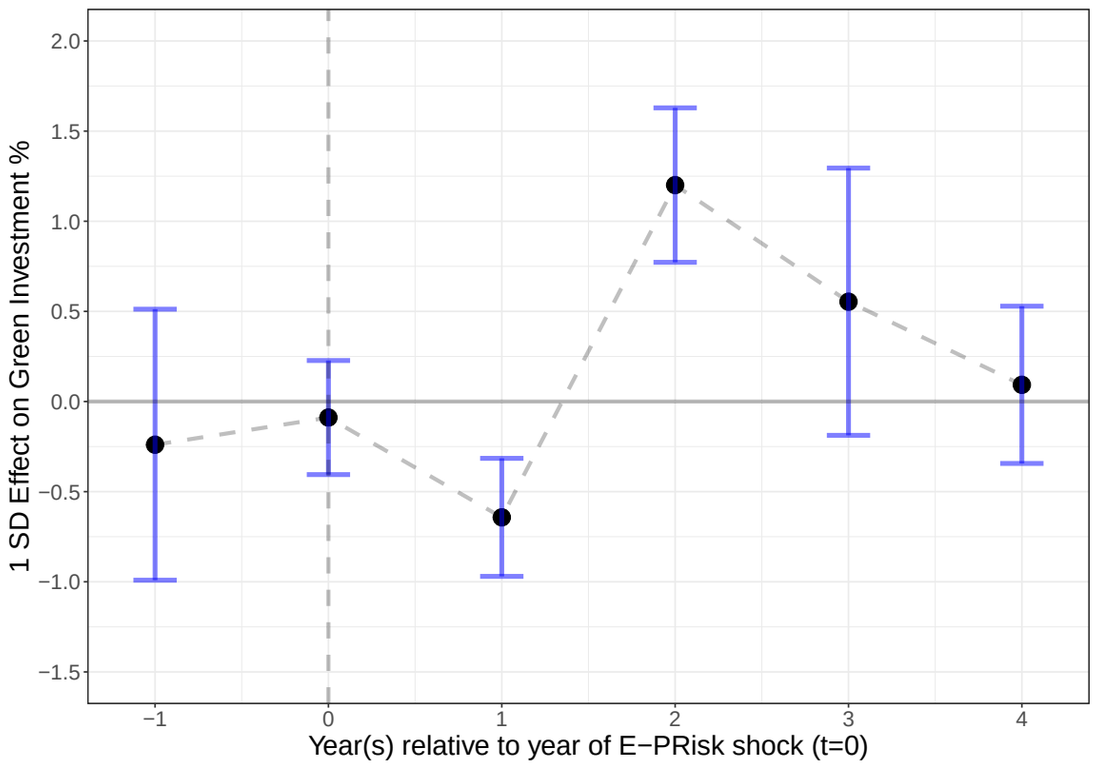



Figure 3: Impulse Response of Green Investment Percentage surrounding E-PRisk Shocks
The top figure plots the impulse response from $t-1$ to $t+4$ surrounding the year of a E-PRisk shock. All E-PRisk effects are standardized by its full-sample standard deviation. The error bars represent 95% confidence intervals.

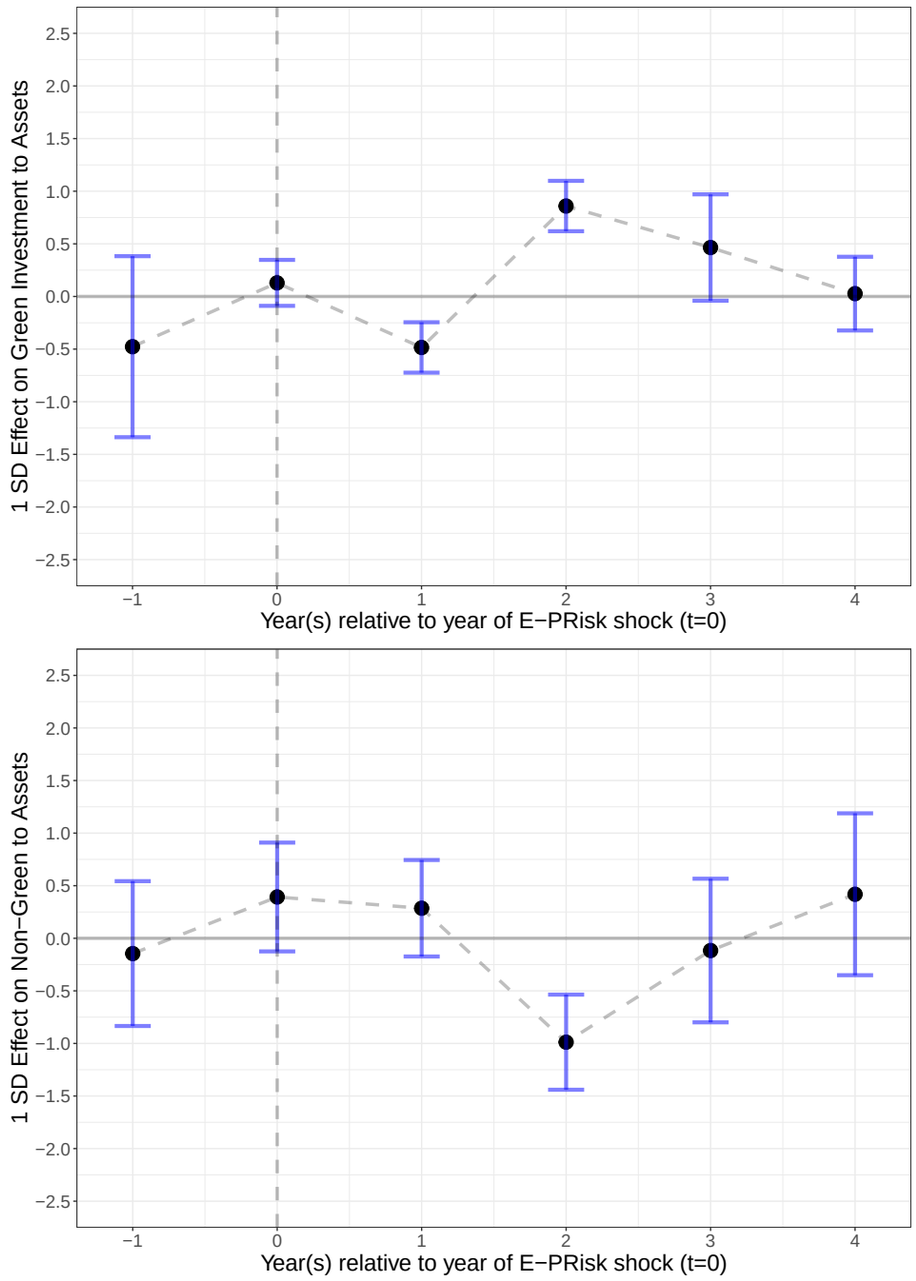



Figure 4: Impulse Responses for Green and non-Green Investment

The top figure plots the impulse response for green investment (top) and non-green investment (bottom) scaled by total assets from $t-1$ to $t+4$ surrounding the year of a E-PRisk shock. All E-PRisk effects are standardized by its full-sample standard deviation. The error bars represent 95% confidence intervals.

Table 1: Firm-level Green Corporate Investment Projects by Country
This table reports the distribution of average firm-level total assets and green investment as a percentage of total investment or relative to total assets across countries from 2019 to 2022. We report the top 20 countries by number of firm-years observations, and group all other countries together. See Appendix Table IA.1 for the estimates based on our final sample that requires firm-level political risk from Hassan et al. (2019).

| Country | Observations | Assets ($Bil) | % Green Invest. | $\frac{\text{Green}}{\text{Assets}}$ ($\times$ 1000) |
|---|---|---|---|---|
| United States | 2,647 | 65.16 | 8.10 | 8.02 |
| Japan | 1,115 | 85.26 | 4.75 | 4.05 |
| China | 963 | 61.60 | 24.37 | 30.09 |
| Canada | 449 | 80.99 | 17.06 | 11.52 |
| United Kingdom | 415 | 139.27 | 12.60 | 9.10 |
| India | 411 | 23.75 | 12.47 | 45.67 |
| South Korea | 374 | 49.40 | 10.73 | 11.27 |
| Taiwan | 369 | 32.08 | 9.62 | 13.47 |
| France | 294 | 139.14 | 16.18 | 14.31 |
| Germany | 286 | 95.09 | 17.00 | 14.08 |
| Brazil | 195 | 36.57 | 27.30 | 35.09 |
| Switzerland | 194 | 68.12 | 10.64 | 7.30 |
| Hong Kong | 170 | 14.95 | 19.44 | 20.87 |
| Sweden | 163 | 34.86 | 18.24 | 15.38 |
| Italy | 140 | 122.05 | 35.28 | 35.64 |
| Saudi Arabia | 136 | 39.53 | 9.31 | 8.78 |
| Netherlands | 134 | 78.17 | 8.55 | 12.40 |
| Malaysia | 123 | 25.35 | 8.65 | 15.86 |
| Spain | 101 | 168.53 | 36.39 | 53.87 |
| Ireland | 92 | 28.49 | 7.75 | 4.58 |
| Other Countries | 518 | 39.82 | 17.92 | 27.15 |
| World | 9,289 | 68.34 | 12.89 | 15.34 |

Table 2: Characterizing Risk and Sentiment after E-PRisk Shocks
This table reports on the future risk and sentiment after environmental political risk (E-PRisk) shocks. In Panel A, we examine the future arrival in one year of various measures of risk and sentiment. In Panel B, we examine the same variables in two years. Columns (1)–(3) report on future risk, (4)–(5) on future sentiment, and (6)–(7) on the effect of country elections in the year of and prior to the year of the future risk arrival. Other controls (e.g., firm size) are omitted for presentation purposes. $t$-statistics in parentheses are computed from the variance-covariance matrix clustered by firm. $^{*}$, $^{**}$, and $^{***}$ indicate statistical significance at the ten-, five-, and one-percent level, respectively.

Panel A: Risk and Sentiment One Year after E-PRisk Shocks

| | Risk | | | Sentiment | | Election Effect | |
|---|---|---|---|---|---|---|---|
| Dep Var. in Year $t+1$: | E-PRisk | PRisk | Non-PRisk | PSent. | Non-PSent. | E-PRisk | PRisk |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| E-PRisk$_{i,t}$ | $-0.48^{***}$ | $-0.01$ | 0.01 | $0.07^{***}$ | 0.14 | $-0.51^{***}$ | $-0.01^{**}$ |
| | $(-7.44)$ | $(-1.25)$ | (0.54) | (3.85) | (0.69) | $(-20.25)$ | $(-2.11)$ |
| E-PRisk$_{i,t}$ × Elections$_{t:t+1}$ | | | | | | $0.45^{***}$ | $0.03^{*}$ |
| | | | | | | (2.93) | (1.69) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 2,831 | 2,831 | 2,831 | 2,831 | 2,831 | 2,831 | 2,831 |
| Adjusted $R^2$ | 0.11 | 0.30 | 0.38 | 0.36 | 0.45 | 0.13 | 0.30 |

Panel B: Risk and Sentiment Two Years after E-PRisk Shocks

| | Risk | | | Sentiment | | Election Effect | |
|---|---|---|---|---|---|---|---|
| Dep Var. in Year $t+1$: | E-PRisk | PRisk | Non-PRisk | PSent. | Non-PSent. | E-PRisk | PRisk |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| E-PRisk$_{i,t-1}$ | $-0.48^{***}$ | $-0.11^{***}$ | $-0.06$ | 0.05 | 0.66 | $-0.66^{***}$ | $-0.12^{***}$ |
| | $(-4.77)$ | $(-5.78)$ | $(-0.95)$ | (0.82) | (0.69) | $(-4.14)$ | $(-5.23)$ |
| E-PRisk$_{i,t-1}$ × Elections$_{t:t+1}$ | | | | | | 0.66 | 0.05 |
| | | | | | | (1.11) | (1.27) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 2,758 | 2,758 | 2,758 | 2,758 | 2,758 | 2,758 | 2,758 |
| Adjusted $R^2$ | $-0.03$ | 0.35 | 0.39 | 0.35 | 0.46 | $-0.02$ | 0.35 |

Table 3: Summary Statistics
This table reports baseline sample summary statistics on firms' investment, political risk and sentiment, and other characteristics from 2019 to 2022. Obs., Mean, SD, Median, Q0.10, Q0.25, Q0.75, and Q0.90 report on the sample observations, average, standard deviation, median, the 10th, 25th, 75th, and 90th percentiles, respectively.

| Variable | Obs. | Mean | SD | Median | Q0.1 | Q0.25 | Q0.75 | Q0.9 |
|---|---|---|---|---|---|---|---|---|
| | | | | Investment Measures | | | | |
| % Green Investment | 3,966 | 10.30 | 24.63 | 0.03 | 0.00 | 0.00 | 2.90 | 43.70 |
| Green Investment to Assets (× 1000) | 3,966 | 10.55 | 58.57 | 0.01 | 0.00 | 0.00 | 1.83 | 27.32 |
| Green CAPEX (× 1000) | 3,966 | 8.16 | 38.34 | 0.00 | 0.00 | 0.00 | 1.09 | 22.36 |
| Green R&D (× 1000) | 3,966 | 2.39 | 43.52 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Non-Green Investment to Assets (× 1000) | 3,966 | 94.11 | 397.95 | 52.18 | 10.48 | 27.23 | 92.24 | 156.74 |
| Non-Green CAPEX (× 1000) | 3,966 | 63.92 | 369.49 | 31.14 | 6.18 | 14.78 | 56.89 | 102.72 |
| Non-Green R&D (× 1000) | 3,966 | 30.19 | 130.51 | 2.61 | 0.00 | 0.00 | 30.19 | 83.98 |
| | | | | Political Risk and Exposure Measures | | | | |
| E-PRisk | 3,966 | 4.75 | 18.65 | 1.87 | 0.09 | 0.60 | 4.31 | 9.78 |
| PRisk | 3,966 | 0.13 | 0.24 | 0.07 | 0.00 | 0.02 | 0.15 | 0.29 |
| Non-PRisk | 3,966 | 0.76 | 1.18 | 0.43 | 0.02 | 0.14 | 0.94 | 1.72 |
| PSentiment | 3,966 | 1.39 | 1.33 | 1.33 | -0.03 | 0.61 | 2.11 | 2.91 |
| Non-PSentiment | 3,966 | 14.02 | 14.81 | 12.66 | -0.82 | 5.64 | 20.90 | 31.48 |
| $\beta_{\text{E-PRisk}}$ | 3,376 | 0.02 | 0.54 | 0.01 | -0.15 | -0.04 | 0.08 | 0.22 |
| | | | | Other Firm- and Country-level Variables | | | | |
| CC Exposure | 3,966 | 2.47 | 4.14 | 0.71 | 0.09 | 0.25 | 2.48 | 7.78 |
| CC Sentiment | 3,966 | 0.53 | 1.11 | 0.15 | -0.12 | 0.00 | 0.56 | 1.70 |
| Market Capitalization ($Bil) | 3,966 | 35.32 | 99.95 | 13.28 | 3.30 | 6.90 | 29.89 | 69.85 |
| Market-to-Book | 3,966 | 2.75 | 9.36 | 1.36 | 0.59 | 0.84 | 2.57 | 4.95 |
| ROA | 3,966 | 0.13 | 0.10 | 0.12 | 0.05 | 0.08 | 0.17 | 0.23 |
| Cash Constrained | 3,966 | 0.50 | 0.50 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| Total Debt Ratio | 3,966 | 0.32 | 0.21 | 0.31 | 0.09 | 0.19 | 0.43 | 0.54 |
| Foreign Ownership | 3,966 | 14.30 | 14.30 | 12.20 | 0.00 | 0.00 | 19.85 | 32.67 |
| Return SD | 3,966 | 0.34 | 0.32 | 0.26 | 0.11 | 0.17 | 0.39 | 0.60 |
| ESG Score | 3,966 | 62.01 | 17.37 | 64.47 | 36.97 | 50.55 | 75.54 | 82.98 |
| CO2 to Sales | 3,316 | 80.30 | 4596.23 | 0.05 | 0.01 | 0.02 | 0.32 | 1.15 |

Table 4: Environmental Political Risk and Green Investment
This table reports on results from regressions of investment on environmental political risk as described in Eq. (1). The key variable of interest is E-PRisk, which is environmental political risk measured from firms' conference calls. In Panel A, the dependent variable at time $t+1$ is firms' % green investment or green investment relative to total assets. Columns (1)–(4) and (6) focus on OLS regressions, while Column (5) reports on weighted least squares (WLS) regressions using the inverse of the number of firm-year observations in each country and year as the weights. Other controls (e.g., firm size) are omitted for presentation purposes. In Panel B, the dependent variable at time $t+1$ is firms' % non-green or total investment relative to total assets. See Appendix Table IA.3 for the full table. $t$-statistics in parentheses are computed from the variance-covariance matrix clustered by firm. $^{*}$, $^{**}$, and $^{***}$ indicate statistical significance at the ten-, five-, and one-percent level, respectively.

Panel A: Effect on Green Investment

| Dep Var. in Year $t+1$ | % Green Investment | | | | | $\frac{\text{Green}}{\text{Assets}}$ |
|---|---|---|---|---|---|---|
| | OLS | | | | WLS | OLS |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| E-PRisk | $-0.54^{***}$ | $-0.56^{***}$ | $-0.64^{***}$ | $-0.64^{***}$ | $-1.59^{**}$ | $-0.48^{***}$ |
| | $(-2.86)$ | $(-2.80)$ | $(-3.63)$ | $(-3.85)$ | $(-2.45)$ | $(-3.97)$ |
| PRisk | 1.52 | 1.57 | 1.79 | 1.85 | $-0.90$ | $1.60^{*}$ |
| | (1.33) | (1.36) | (1.37) | (1.43) | $(-0.38)$ | (1.93) |
| Non-PRisk | 0.26 | 0.26 | 0.21 | 0.20 | 0.05 | 0.26 |
| | (1.17) | (1.20) | (1.12) | (1.07) | (0.18) | (1.35) |
| PSentiment | | 0.13 | 0.08 | 0.10 | $-0.05$ | 0.09 |
| | | (0.73) | (0.46) | (0.54) | $(-0.19)$ | (0.75) |
| Non-PSentiment | | $-0.001$ | $-0.002$ | $-0.002$ | 0.04 | $-0.01$ |
| | | $(-0.09)$ | $(-0.14)$ | $(-0.16)$ | (1.41) | $(-0.75)$ |
| CC Exposure | | | | 0.15 | 0.28 | 0.08 |
| | | | | (0.72) | (0.88) | (0.52) |
| CC Sentiment | | | | $-0.58$ | $-1.20^{**}$ | $-0.31$ |
| | | | | $(-1.37)$ | $(-2.31)$ | $(-1.09)$ |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 3,966 | 3,966 | 3,966 | 3,966 | 3,966 | 3,966 |
| Adjusted $R^2$ | 0.87 | 0.87 | 0.86 | 0.86 | 0.90 | 0.83 |

Panel B: Effect on Non-green and Total Investment

| | $\frac{\text{Non-Green}}{\text{Assets}}$ | $\frac{\text{Total}}{\text{Assets}}$ | $\frac{\text{Non-Green}}{\text{Assets}}$ | $\frac{\text{Total}}{\text{Assets}}$ |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| E-PRisk | 0.31 | −0.16 | 0.29 | −0.20 |
| | (1.28) | (−0.83) | (1.22) | (−1.04) |
| PRisk | −0.93 | 0.64 | −0.74 | 0.87 |
| | (−0.47) | (0.38) | (−0.37) | (0.50) |
| Non-PRisk | 0.34 | 0.62 | 0.32 | 0.58 |
| | (0.77) | (1.60) | (0.73) | (1.54) |
| PSentiment | 0.64* | 0.70** | 0.62* | 0.71** |
| | (1.77) | (1.97) | (1.73) | (2.02) |
| Non-PSentiment | −0.01 | −0.02 | −0.02 | −0.03 |
| | (−0.38) | (−0.72) | (−0.61) | (−0.89) |
| Firm FE | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes |
| Industry× Year FEs | Yes | Yes | Yes | Yes |
| Other Controls | No | No | Yes | Yes |
| $N$ | 3,966 | 3,966 | 3,966 | 3,966 |
| Adjusted $R^2$ | 0.85 | 0.85 | 0.85 | 0.85 |

Table 5: Dynamics Around Elections
This table reports on the differential effect of E-PRisk for % Green investment around country elections. Columns (1)–(3) examine interactions with an election indicator in our 2019 to 2022 sample, while Columns (4)–(6) focus on the subset of elections with high environmental uncertainty, identified via a news media search. Column (5) and (6) are the sub-samples split by if the pre-election government supported or were against green policies, respectively, based on a news media search. $t$-statistics in parentheses are computed from the variance-covariance matrix clustered by firm. $^{*}$, $^{**}$, and $^{***}$ indicate statistical significance at the ten-, five-, and one-percent level, respectively.

| Dep Var. in Year $t$: | % Green Investment | | | | | |
|---|---|---|---|---|---|---|
| | All Elections | | | Uncertain Elections | | |
| | | | | | Green Pre-Election | Non-Green Pre-Election |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| E-PRisk$_{i,t-1}$ | $-0.65^{***}$ | | | | | |
| | $(-3.96)$ | | | | | |
| E-PRisk$_{i,t-2}$ | | $1.23^{***}$ | $1.27^{***}$ | $1.28^{***}$ | $1.22^{***}$ | $3.25^{***}$ |
| | | (6.55) | (7.86) | (8.47) | (6.65) | (2.94) |
| E-PRisk$_{i,t-1}$ × Election Year$_c$ | 0.27 | | | | | |
| | (0.39) | | | | | |
| E-PRisk$_{i,t-2}$ × Election Year$_c$ | | $-1.16^{**}$ | | | | |
| | | $(-2.09)$ | | | | |
| E-PRisk$_{i,t-2}$ × Election and Post-Election Year$_c$ | | | $-1.10^{***}$ | $-1.40^{***}$ | $-1.38^{**}$ | $-3.37^{**}$ |
| | | | $(-2.62)$ | $(-3.08)$ | $(-2.58)$ | $(-2.37)$ |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 3,960 | 3,847 | 3,847 | 3,847 | 2,992 | 855 |
| Adjusted $R^2$ | 0.86 | 0.87 | 0.87 | 0.87 | 0.88 | 0.80 |

Table 6: Decomposition into Component Investments
This table reports on results from regressions of investment decomposed into capital expenditures, R&D, and acqusitions on environmental political risk as described in Eq. (1). The key variable of interest is E-PRisk, which is environmental political risk measured from firms' conference calls. Other controls (e.g., firm size) are omitted for presentation purposes. The bottom panel labeled "Impulse Response in Two Years" reports the impulse response 2-years after the year of the E-PRisk shock. $t$-statistics in parentheses are computed from the variance-covariance matrix clustered by firm. $^{*}$, $^{**}$, and $^{***}$ indicate statistical significance at the ten-, five-, and one-percent level, respectively.

| | % Green Investment | | | Green/Assets | | |
|---|---|---|---|---|---|---|
| Dep Var. in Year $t+1$: | CAPEX | R&D | Acquisitions | CAPEX | R&D | Acquisitions |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| E-PRisk | $-0.70^{**}$ | 0.15 | 0.18 | $-0.46^{***}$ | $-0.01$ | 0.0000 |
| | $(-1.99)$ | (0.22) | (0.21) | $(-3.86)$ | $(-1.06)$ | (0.18) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 3,966 | 3,966 | 3,966 | 3,966 | 3,966 | 3,966 |
| Adjusted $R^2$ | 0.41 | 0.87 | $-0.12$ | 0.53 | $-0.06$ | 0.09 |
| | Impulse Response in Two Years | | | | | |
| E-PRisk | $1.17^{***}$ | 0.01 | $-0.24$ | $0.81^{***}$ | 0.001 | $-0.001$ |
| | (5.65) | (0.04) | $(-0.33)$ | (5.22) | (0.10) | $(-1.51)$ |

Table 7: Role of Asset Re-deployability

This table reports on the results of OLS regressions of % Green investment on E-PRisk for sub-samples split on the industry-level asset re-deployability measure of Kim and Kung (2017). Sub-samples are determined by the median of lagged asset re-deployability by year. Other controls (e.g., PRisk, Non-PRisk, firm size, etc.) consistent with the OLS regression described in Eq. (1) are omitted for presentation purposes. The bottom panel labeled "Impulse Response in Two Years" reports the impulse response 2-years after the year of the E-PRisk shock. $t$-statistics in parentheses are computed from the variance-covariance matrix clustered by firm. $^{*}$, $^{**}$, and $^{***}$ indicate statistical significance at the ten-, five-, and one-percent level, respectively.

| | More Redeployable | | | Less Redeployable | | |
|---|---|---|---|---|---|---|
| Dep Var. in Year $t+1$: | Total | CAPEX | R&D | Total | CAPEX | R&D |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| E-PRisk | 0.29 | 3.16 | 1.55 | $-0.76^{***}$ | $-1.15^{**}$ | 0.19 |
| | (0.30) | (1.28) | (0.69) | ($-4.26$) | ($-2.32$) | (0.25) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 1,928 | 1,928 | 1,928 | 2,038 | 2,038 | 2,038 |
| Adjusted $R^2$ | 0.87 | 0.58 | 0.97 | 0.85 | 0.38 | 0.06 |
| | Impulse Response in Two Years | | | | | |
| E-PRisk | 0.35 | 0.20 | $-1.14$ | $1.34^{***}$ | $1.35^{***}$ | $-0.14$ |
| | (0.52) | (0.21) | ($-0.72$) | (8.43) | (8.56) | ($-0.42$) |

Table 8: Intensive vs. Extensive Margins of Green Investment

This table reports on the results of the OLS regressions along the intensive and extensive margins of green investment. I(Green>0) is an indicator in percentages for if a firm has above zero green investment. Extensive (Intensive) samples are the sub-samples for firms with zero (above zero) green investment. Positive E-PRisk is equal to E-PRisk when (the fixed effects de-meaned) E-PRisk is positive and zero otherwise. Negative E-PRisk is equal to $-1$ times E-PRisk when (the fixed effects de-meaned) E-PRisk is negative and zero otherwise. Other controls (e.g., PRisk, Non-PRisk, firm size, etc.) consistent with the OLS regression described in Eq. (1) are omitted for presentation purposes. The bottom panel labeled "Impulse Response in Two Years" reports the impulse response 2-years after the year of the E-PRisk shock. $t$-statistics in parentheses are computed from the variance-covariance matrix clustered by firm. $^{*}$, $^{**}$, and $^{***}$ indicate statistical significance at the ten-, five-, and one-percent level, respectively.

| | Ext. Margin: I(Green>0) | | | Int. Margin: % Green | | |
|---|---|---|---|---|---|---|
| Dep Var. in Year $t+1$: | % Green Investment | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| E-PRisk | 0.09 | | | $-0.72^{***}$ | | |
| | (0.24) | | | ($-3.98$) | | |
| Positive E-PRisk | | 0.06 | | | $-0.99^{***}$ | |
| | | (0.12) | | | ($-4.38$) | |
| Negative E-PRisk | | | $-0.69$ | | | $2.24^{**}$ |
| | | | ($-0.42$) | | | (2.45) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 3,966 | 3,966 | 3,966 | 2,826 | 2,826 | 2,826 |
| Adjusted $R^2$ | 0.62 | 0.62 | 0.62 | 0.85 | 0.85 | 0.85 |
| | Impulse Response in Two Years | | | | | |
| E-PRisk | 0.14 | | | $1.29^{***}$ | | |
| | (0.43) | | | (7.74) | | |
| Positive E-PRisk | | 0.19 | | | $1.73^{***}$ | |
| | | (0.47) | | | (6.73) | |
| Negative E-PRisk | | | $-0.23$ | | | $-4.36^{***}$ |
| | | | ($-0.15$) | | | ($-5.65$) |

Table 9: Financially Unconstrained and Carbon-Intense Firms
This table reports on the results of OLS regressions of % Green investment (Total, CAPEX, and R&D) on E-PRisk in sub-samples. In Panel A, sub-samples are determined by the median of lagged financial constraints, as proxied by total payout, by year. In Panel B Columns (1)–(3), Non-Green firms are those with above median of lagged carbon emissions intensity (i.e., firms' CO2 emissions scaled by revenues) by year. In Panel B Columns (4)–(6), Non-Green industries defined based on the Inter-governmental Panel on Climate Change (IPCC) classification following Choi, Gao, and Jiang (2020). Other controls (e.g., PRisk, Non-PRisk, firm size, etc.) consistent with the OLS regression described in Eq. (1) are omitted for presentation purposes. The bottom panel labeled "Impulse Response in Two Years" reports the impulse response 2-years after the year of the E-PRisk shock. $t$-statistics in parentheses are computed from the variance-covariance matrix clustered by firm. $^{*}$, $^{**}$, and $^{***}$ indicate statistical significance at the ten-, five-, and one-percent level, respectively.

Panel A: Role of Financial Constraints

| | More Constrained | | | Less Constrained | | |
|---|---|---|---|---|---|---|
| Dep Var. in Year $t+1$: | Total | CAPEX | R&D | Total | CAPEX | R&D |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| E-PRisk | −0.07 | 0.39 | 3.74 | −1.00*** | −1.04*** | −0.47** |
| | (−0.14) | (0.64) | (1.34) | (−6.17) | (−3.08) | (−2.18) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 1,985 | 1,985 | 1,985 | 1,981 | 1,981 | 1,981 |
| Adjusted $R^2$ | 0.91 | 0.71 | −0.07 | 0.83 | 0.20 | 0.97 |
| | Impulse Response in Two Years | | | | | |
| E-PRisk | 0.89* | 1.22* | −0.21 | 1.32*** | 1.22*** | 0.48 |
| | (1.68) | (1.75) | (−0.08) | (7.53) | (6.08) | (1.33) |

Panel B: Non-Green Firms and Industries

| | Non-Green Firms | | | Non-Green Industries | | |
|---|---|---|---|---|---|---|
| Dep Var. in Year $t+1$: | Total | CAPEX | R&D | Total | CAPEX | R&D |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| E-PRisk | $-0.82^{***}$ | $-0.83^{***}$ | $-0.38$ | $-0.70^{***}$ | $-0.65^{***}$ | 0.002 |
| | $(-3.47)$ | $(-2.98)$ | $(-1.10)$ | $(-3.76)$ | $(-2.60)$ | (0.002) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 1,366 | 1,366 | 1,366 | 2,480 | 2,480 | 2,480 |
| Adjusted $R^2$ | 0.81 | 0.80 | 0.14 | 0.87 | 0.77 | 0.88 |
| | Impulse Response in Two Years | | | | | |
| E-PRisk | $1.36^{***}$ | $1.39^{***}$ | $-0.06$ | $1.26^{***}$ | $1.24^{***}$ | 0.22 |
| | (7.31) | (8.26) | $(-0.18)$ | (6.30) | (5.79) | (0.53) |

Table 10: Effects Around Natural Disasters

This table reports on the effects on E-PRisk and future green investment using the differential effect of country disaster shocks for firms with heterogeneous prior exposure to country-level E-PRisk ($\beta_{\text{E-PRisk}}$). Country Disaster Shock in year $t$ is the year-to-year change in the number of natural disasters at the country-level. $\beta_{\text{E-PRisk}}$ in year $t-1$ is the firm-level coefficient from regressing firm-level E-PRisk on the country-level average E-PRisk in 8-quarter moving windows. Firm Direct Hits in year $t$ is the number of natural disasters that directly hit a firm's headquarters. Columns (1)–(2) is the baseline shock effect on E-PRisk in year $t$ and % Green investment in year $t+1$ while Columns (3)–(4) focuses on the effect for green and non-green investment relative to total assets. $t$-statistics in parentheses are computed from the variance-covariance matrix clustered by firm. $^{*}$, $^{**}$, and $^{***}$ indicate statistical significance at the ten-, five-, and one-percent level, respectively.

| Dep Variable: | $\text{E-PRisk}_{i,t}$ | $\%\ \text{Green}_{i,t+1}$ | $\frac{\text{Green}}{\text{Assets}}_{i,t+1}$ | $\frac{\text{Non-Green}}{\text{Assets}}_{i,t+1}$ |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| $\beta_{\text{E-PRisk}} \times$ Country Disaster Shock | $2.53^{***}$ | $-0.62^{***}$ | $-0.41^{***}$ | $0.61^{***}$ |
| | (3.18) | (−4.51) | (−5.16) | (4.17) |
| $\beta_{\text{E-PRisk}} \times$ Country Disaster Shock $\times$ Firm Direct Hits | $-0.74^{***}$ | $0.12^{**}$ | 0.03 | $-0.22^{**}$ |
| | (−2.76) | (2.12) | (1.08) | (−2.19) |
| Country Disaster Shock $\times$ Firm Direct Hits | $-0.07^{*}$ | $-0.05^{**}$ | −0.01 | $0.08^{**}$ |
| | (−1.88) | (−2.54) | (−0.52) | (2.11) |
| Firm Direct Hits | $0.74^{**}$ | 0.10 | −0.06 | −0.43 |
| | (2.04) | (0.54) | (−0.50) | (−1.02) |
| $\beta_{\text{E-PRisk}}$ | $5.29^{*}$ | $-0.99^{**}$ | $-0.57^{**}$ | $1.15^{**}$ |
| | (1.80) | (−2.44) | (−2.58) | (2.32) |
| Firm FE | Yes | Yes | Yes | Yes |
| Country $\times$ Year FE | Yes | Yes | Yes | Yes |
| Industry $\times$ Year FE | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes |
| $N$ | 3,062 | 3,062 | 3,062 | 3,060 |
| Adjusted $R^2$ | 0.30 | 0.88 | 0.84 | 0.87 |

Appendix for
"The Green Investment Gap: How Political Risk Crowds Out Corporate Decarbonization"

# A1. Variable Definitions

| | |
|---|---|
| **Investment Measures** | |
| Green Investment Projects$_{i,t}$ | Firm $i$'s total sustainable investment in year $t$. |
| Green CAPEX$_{i,t}$ | Firm $i$'s sustainable capital expenditure investment in year $t$. |
| Green R&D$_{i,t}$ | Firm $i$'s sustainable research and development investment in year $t$. |
| Non-Green Investment Projects$_{i,t}$ | Firm $i$'s total non-sustainable investment in year $t$. |
| Non-Green CAPEX$_{i,t}$ | Firm $i$'s non-sustainable capital expenditure investment in year $t$. |
| Non-Green R&D$_{i,t}$ | Firm $i$'s non-sustainable research and development investment in year $t$. |
| **Political Risk and Exposure Measures** | |
| E-PRisk$_{i,t}$ | Firm $i$'s environmental political risk level in year $t$. The measure is constructed by Hassan et al. (2019) from firms' conference call transcripts based on a bag-of-words approach. |
| $\beta_{\text{E-PRisk},i,t}$ | Firm $i$'s environmental political risk beta in year $t$, estimated using 2-year rolling window regressions of E-PRisk on aggregate political risk as in Eq. (2). |
| PRisk$_{i,t}$ | Firm $i$'s overall political risk level in year $t$. The measure is constructed by Hassan et al. (2019) from firms' conference call transcripts based on a bag-of-words approach. |
| Non-PRisk$_{i,t}$ | Firm $i$'s overall non-political risk level in year $t$. The measure is constructed by Hassan et al. (2019) from firms' conference call transcripts based on a bag-of-words approach. |
| PSentiment$_{i,t}$ | Firm $i$'s overall political sentiment level in year $t$. The measure is constructed by Hassan et al. (2019) from firms' conference call transcripts based on a bag-of-words approach. |
| Non-PSentiment$_{i,t}$ | Firm $i$'s overall non-political sentiment level in year $t$. The measure is constructed by Hassan et al. (2019) from firms' conference call transcripts based on a bag-of-words approach. |
| **Other Firm- and Country-level Variables** | |
| CC Exposure$_{i,t}$ | Firm $i$'s climate change exposure in year $t$. The measure is constructed by Sautner et al. (2023) from firms' conference call transcripts based on a bag-of-words approach. |
| CC Sentiment$_{i,t}$ | Firm $i$'s climate change sentiment (positive minus negative words) in year $t$. The measure is constructed by Sautner et al. (2023) from firms' conference call transcripts based on a bag-of-words approach. |

| | |
|---|---|
| Market Capitalization$_{i,t}$ | Firm $i$'s market capitalization measured by shares outstanding times price in year $t$. |
| Market-to-Book$_{i,t}$ | Firm $i$'s market capitalization divided by book value of assets in year $t$. |
| ROA$_{i,t}$ | Firm $i$'s return on assets measured as net income divided by total assets in year $t$. |
| Cash Constrained$_{i,t}$ | An indicator for if firm $i$ is cash constrained in year $t$. |
| Total Debt Ratio$_{i,t}$ | Firm $i$'s ratio of total debt to total assets in year $t$. |
| Domestic Ownership$_{i,t}$ | Firm $i$'s institutional ownership from domestic investors in year $t$. |
| Foreign Ownership$_{i,t}$ | Firm $i$'s institutional ownership from foreign investors in year $t$. |
| Return SD$_{i,t}$ | Firm $i$'s return standard deviation in year $t$. |
| ESG Score$_{i,t}$ | Firm $i$'s ESG score in year $t$. |
| Disasters$_{c,t}$ | The number of country-level disasters that hit the headquarter country of domicile for firm $i$ in year $t$. |
| Disaster Damages$_{c,t}$ | The damages of country-level disasters that hit the headquarter country of domicile for firm $i$ in year $t$. |
| ESG Score$_{i,t}$ | Firm $i$'s ESG score in year $t$. |
| Re-deployability$_{i,t}$ | The industry-level asset re-deployability score from Kim and Kung (2017) in year $t$. |
| SA Index$_{i,t}$ | The Size-Age index for financial constraints constructed following Hadlock and Pierce (2010) in year $t$. |
| COS Intensity$_{i,t}$ | Firm $i$'s total CO2 emissions scaled by revenues in year $t$. |
| Big-3 Ownership$_{i,t}$ | Firm $i$'s percentage institutional ownership from BlackRock, Vanguard, and State Street in year $t$. |
| UN PRI Ownership$_{i,t}$ | Firm $i$'s percentage institutional ownership from investors who are signatories on the United Nations Principles of Responsible Investment in year $t$. |
| Control of Corruption Index$_{i,t}$ | Firm $i$'s control of corruption index based on its headquarter country of domicile in year $t$. |
| Political Stability$_{i,t}$ | Firm $i$'s political stability index based on its headquarter country of domicile in year $t$. |
| World Values ES Index$_{i,t}$ | Firm $i$'s World Values ES index based on its headquarter country of domicile in year $t$. |
| Climate Worries Index$_{i,t}$ | Firm $i$'s climate worries index based on its headquarter country of domicile in year $t$. |

# A2. Corporate Statements on Green Investment Projects

Below, we present several examples of corporate statements regarding their green investments, as found in their recent annual reports and news articles.

- **ROCKWOOL Group**: ROCKWOOL's 2022 Annual Report underscores its dedication to decarbonization: "We continue investing in developing new and improved technologies to ensure we meet our ambitious decarbonisation goals."
- **Microsoft Corporation**: "Microsoft is investing in carbon removal technologies to achieve negative emissions by 2030."
- **IKEA**: "IKEA has committed to significant investments aimed at reducing its carbon footprint, achieving a 30.1% reduction in emissions since 2016."
- **Siemens AG**: "Siemens is committed to achieving carbon neutrality by 2030. Our investments in energy-efficient technologies and renewable energy sources are pivotal to this goal."
- **Lockheed Martin Corporations**: "We invested $3.4 billion in Independent Research and Development and capital investments to accelerate the capabilities that our customers need and for our operations to meet those needs."
- **Nordic Investment Bank (NIB)**: "R&D investments (EUR 477 million, 14%), green buildings (EUR 363 million, 10%), and energy generation (EUR 357 million, 10%). This will allow for the integration of more renewables, the mass deployment of sustainable mobility, and the creation of cleaner, more efficient energy systems."
- **Metso Outotec**: "Our investments in sustainable technologies aim to improve energy efficiency and reduce emissions in the minerals processing industry."
- **American Water Works Company**: "Investing in sustainable water management ensures we provide safe, clean, and reliable water services for future generations."
- **AGL Energy**: "AGL has invested significantly in grid-scale batteries, renewables, and enhancing flexibility in their existing thermal units to address the challenges and opportunities of Australia's energy transition."
- **Regenerative Agriculture Principles**: "We are working with farmers to adopt regenerative agriculture practices, which improve soil health, enhance biodiversity, and sequester carbon."
- **H&M**: "H&M has invested in recycled polyester firm Syre, aiming to create scalable, recyclable polyester for H&M and the wider fashion industry.
- **Apple**: "Apple has committed to reducing their greenhouse gas emissions by 2030, investing more into renewable energy and integrating sustainability into their core operations.
- **Intel**: "Intel has been investing in reducing its manufacturing environmental footprint for over two decades. We aim to achieve net-zero greenhouse gas emissions for Scopes 1 and 2 by 2040 and have already achieved 99% renewable electricity usage globally."
- **Walmart**: "Walmart aims to achieve zero emissions by 2040, investing in renewable energy and sustainable practices across our supply chain."
- **Tesla Inc.**: "Tesla's mission is to accelerate the world's transition to sustainable energy through investing in electric vehicles and renewable energy products."

# A3. Additional Appendix Results

# A Stylized Two-Period Green vs. Non-Green Investment Model

To clarify the concepts underlying our empirical analysis, we present a simple stylized two-period firm investment model to highlight the real option channel through which green-specific uncertainty affects green investment projects. Our model incorporates realistic investment costs in the spirit of standard models of investment under uncertainty (Abel and Eberly, 1994).

## Model Setup.

Consider periods, $t = 0, 1$, and 2, and a discount factor normalized to 1. The key state variable is green project revenues $\theta$. At $t = 0$ before $\theta$ is known, the firm chooses investment $(I_{b0}, I_{g0})$ for green $(g)$ and non-green $(b)$ projects. Between $t = 0$ and $t = 1$, $\theta$ is realized, so that at $t = 1$, the firm chooses $(I_{b1}, I_{g1})$ after observing $\theta$. At time 2, the firm liquidates and pays out all profits as dividends. Let $K_{b0}, K_{g0} > 0$ be the initial capital stocks, where capital depreciates at rates $\delta_b, \delta_g \in (0, 1)$ and evolves as

$$K_{it} = (1 - \delta_i)K_{i,t-1} + I_{i,t-1}, \qquad i \in \{b, g\}.$$

We are interested in modeling a green-specific firm-level uncertainty shock, all else equal. Thus, we assume non-green project revenues is policy neutral and constant at $a_b > 0$, while green project revenues $\theta$ is policy sensitive and state-dependent:

$$\theta \sim F(\mu, \sigma^2). \tag{1}$$

An increase in E-PRisk is a "green uncertainty shock" represented by a mean-preserving increase in dispersion, i.e., $\sigma \uparrow$ holding $\mu$ fixed.[13]

We also enrich the substitution between green and non-green investment with a cross-project adjustment cost. Define the green investment share $s_t \equiv \frac{I_{gt}}{I_{bt}+I_{gt}} = \frac{I_{gt}}{I_t}$. At $t = 1$, the firm pays a cross-project adjustment cost for changing the investment mix relative to $t = 0$: $XAC_1 = \frac{\kappa}{2}(s_1 - s_0)^2 I_1$ with $\kappa > 0$. We set $XAC_1 = 0$ when there is no investment.

Lastly, investment is subject to a total capacity constraint, $I_{bt} + I_{gt} \leq M_t$, and for simplicity is irreversible, $I_{it} \geq 0$. Initial resources are $M_0$, with a per-period resource inflow of $B$ so that capacity is determined by a carryover of potentially unspent resources, $M_1 = M_0 - I_{b0} - I_{g0} + B$. Spending $M_1$ means the firm is constrained but we do not take a stance on whether it is financial (e.g., limited outside financing) or real (e.g., implementation, supply chain, or managerial attention bandwidth). We investigate the nature of the constraint in our empirical tests.

[13] The model abstracts from R&D, which we view as a growth option rather than an irreversible capital commitment. Empirically, we show R&D does not respond to E-PRisk.

## The Firm's Problem.

At time $t = 0$, before $\theta$ is known, the firm maximizes subject to expected revenues, fixed costs, and adjustment costs:

$$\max_{\{I_{b0}, I_{g0}\}} \quad \mathbb{E}_\theta\Big[V_1(K_{b,1}, K_{g,1}, M_1; \theta)\Big] - F_b \mathbf{1}\{I_{b0} > 0\} + F_g \mathbf{1}\{I_{g0} > 0\} - \frac{\phi_b}{2}\frac{I_{b0}^2}{K_{b0}} - \frac{\phi_g}{2}\frac{I_{g0}^2}{K_{g0}} \tag{2}$$

where fixed cost $F_i \geq 0$ and $\phi_b, \phi_g > 0$.

At time $t = 1$ when uncertainty resolves and $\theta$ is known, firms maximize profits $V_1(K_{b1}, K_{g1}, M_1; \theta)$ with an additional cross-project adjustment cost for changing its mix of green vs. non-green projects:

$$\max_{\{I_{b1}, I_{g1}\}} \quad a_b K_{b2} + \theta K_{g2} - F_b \mathbf{1}\{I_{b1} > 0\} + F_g \mathbf{1}\{I_{g1} > 0\} - \frac{\phi_b}{2}\frac{I_{b1}^2}{K_{b1}} - \frac{\phi_g}{2}\frac{I_{g1}^2}{K_{g1}} - \frac{\kappa}{2}(s_1 - s_0)^2 I_1. \tag{3}$$

## Model Optimum at time $t = 1$.

We discuss the model via backwards induction. At time $t = 1$, we focus on the realistic investment regime in which the firm fully invests in both green and non-green projects, $I_{b1} > 0$ and $I_{g1} > 0$, so that fixed costs $F_b$ and $F_g$ are incurred and the capacity constraint binds, $I_{b1} + I_{g1} = M_1$. Fix $(K_{b1}, K_{g1}, M_1)$ and the realized green state $\theta$ at $t = 1$. Substitute $I_{b1} = M_1 - I_{g1}$. Define $x \equiv I_{g1} \in (0, M_1)$ so that $s_1 = x/M_1$ and the cross-project adjustment cost reduces to $\frac{\kappa}{2}\left(\frac{x}{M_1} - s_0\right)^2 M_1 = \frac{\kappa}{2M_1}(x - s_0 M_1)^2$. After dropping constants that do not depend on $(I_{b1}, I_{g1})$, the profit maximization objective becomes

$$\max_{x \in (0, M_1)} \quad f(x) \equiv a_b(M_1 - x) + \theta x - \frac{\phi_b}{2}\frac{(M_1 - x)^2}{K_{b1}} - \frac{\phi_g}{2}\frac{x^2}{K_{g1}} - \frac{\kappa}{2M_1}(x - s_0 M_1)^2. \tag{4}$$

The first-order condition with respect to $x$ is

$$f'(x) = (\theta - a_b) + \frac{\phi_b}{K_{b1}}(M_1 - x) - \frac{\phi_g}{K_{g1}}x - \frac{\kappa}{M_1}(x - s_0 M_1) = 0. \tag{5}$$

Solving Eq. (5) yields the optimal investment in green and non-green projects,

$$I_{g1}^*(\theta, M_1, s_0) = \frac{(\theta - a_b) + (\phi_b/K_{b1})M_1 + \kappa s_0}{\frac{\phi_g}{K_{g1}} + \frac{\phi_b}{K_{b1}} + \frac{\kappa}{M_1}}, \tag{6}$$

$$I_{b1}^*(\theta, M_1, s_0) = M_1 - I_{g1}^*(\theta, M_1, s_0). \tag{7}$$

This investment policy is globally optimal at $t = 1$ only if its value exceeds the corner policies (green-only, non-green only, or no-investment), which can be checked by direct comparison with the value function at these corner cases. Importantly, comparing the value function under non-green-only investment to the both-investment regime yields a threshold $\theta^{bg}$ at time $t = 1$ defined by $V_b = V_g(\theta^{bg})$. Notice that the non-green-only investment profits are $V_b = f(0) - F_b$ while the both-investment profits are $V_g(\theta^{bg}) = f(x^*) - F_g - F_b$. Thus, there is a threshold determined by the following intuitive expression:

$$V_g(\theta^{bg}) \geq V_b \text{ if and only if } f(x^*) - f(0) \geq F_g. \tag{8}$$

That is, the gain from investing in a mix of green and non-green projects relative to non-green-only projects exceeds the fixed costs of the green investment. With this threshold, if realized green revenues $\theta < \theta^{bg}$ the firm shifts towards non-green projects at $t = 1$, whereas if $\theta > \theta^{bg}$ it shifts towards green projects, producing state-contingent "pivoting" in the investment flow.

## Model Discussion.

**Green uncertainty at $t = 0$ lowers green investment.** In the model, the firm at $t = 0$ faces the following trade-off: invest in green projects (paying the fixed and adjustment costs) thereby increasing green capital $K_{g1}$ or wait, keeping $K_{g1}$ lower, and decide at $t = 1$ when uncertainty resolves. To isolate the option-value logic, observe that the $t = 1$ policy in Eq. (8) is an *activation decision* for green: for low $\theta$ it is optimal to set $I_{g1} = 0$ and avoid paying $F_g$, while for sufficiently high $\theta$ it is optimal to pay $F_g$ and invest in green.

Therefore, the ex-ante time $t = 0$ benefit of increasing $I_{g0}$ is *state contingent*: it matters primarily in the right tail of $\theta$, where green investment is active at $t = 1$, $\theta > \theta^{bg}$, and the firm wishes to scale up green investment. By contrast, the costs of increasing $I_{g0}$ are paid *for sure* at $t = 0$ through the fixed costs and adjustment costs. Uncertainty at time $t = 0$ therefore raises the value of keeping investment flexibility because the firm can avoid the fixed cost $F_g$ in low-$\theta$ states while exploiting high-$\theta$ states. Intuitively, higher $\sigma$ increases the likelihood of very high $\theta$ states in which green investment is extremely profitable, while the firm can still choose $I_{g1} = 0$ and avoid paying $F_g$ when $\theta$ is low. As a result, paying $F_g$ early at $t = 0$ becomes less attractive relative to deferring green investment to $t = 1$ and paying $F_g$ only when $\theta$ is sufficiently favorable. This shifts the optimal period-0 policy when green uncertainty is high toward less green investment.

**When delayed green investment at $t = 0$ reverts at $t = 1$.** The green uncertainty shock at $t = 0$ lowers $I_{g0}$ because paying the green fixed cost $F_g$ before $\theta$ is known sacrifices the option to wait and activate green only in favorable states. This reduces the incoming green stock $K_{g1}$. At $t = 1$, reversion requires that realized $\theta$ be high enough to justify *activating* green investment via paying $F_g$ at $t = 1$. Moreover, with quadratic adjustment costs, reverting green investment is harder when $K_{g1}$ is smaller because marginal adjustment costs scale with adjustment cost slope $\phi_g/K_{g1}$. Hence, although the $t = 0$ green uncertainty shock reduces $K_{g1}$ and makes reversion more expensive, sufficiently favorable realizations of $\theta$ can still induce a positive and increasing $I_{g1}$. High $\theta$ can result from if green uncertainty $\sigma$ is high or if mean green revenues $\mu$ is meaningfully larger than non-green revenues $a_b$. Lastly, because there is a baseline resource inflow of $B$ into the capital budget, the delayed spending in green investment can accumulate so that the rebound in $t + 1$ can be higher than the initial cut.

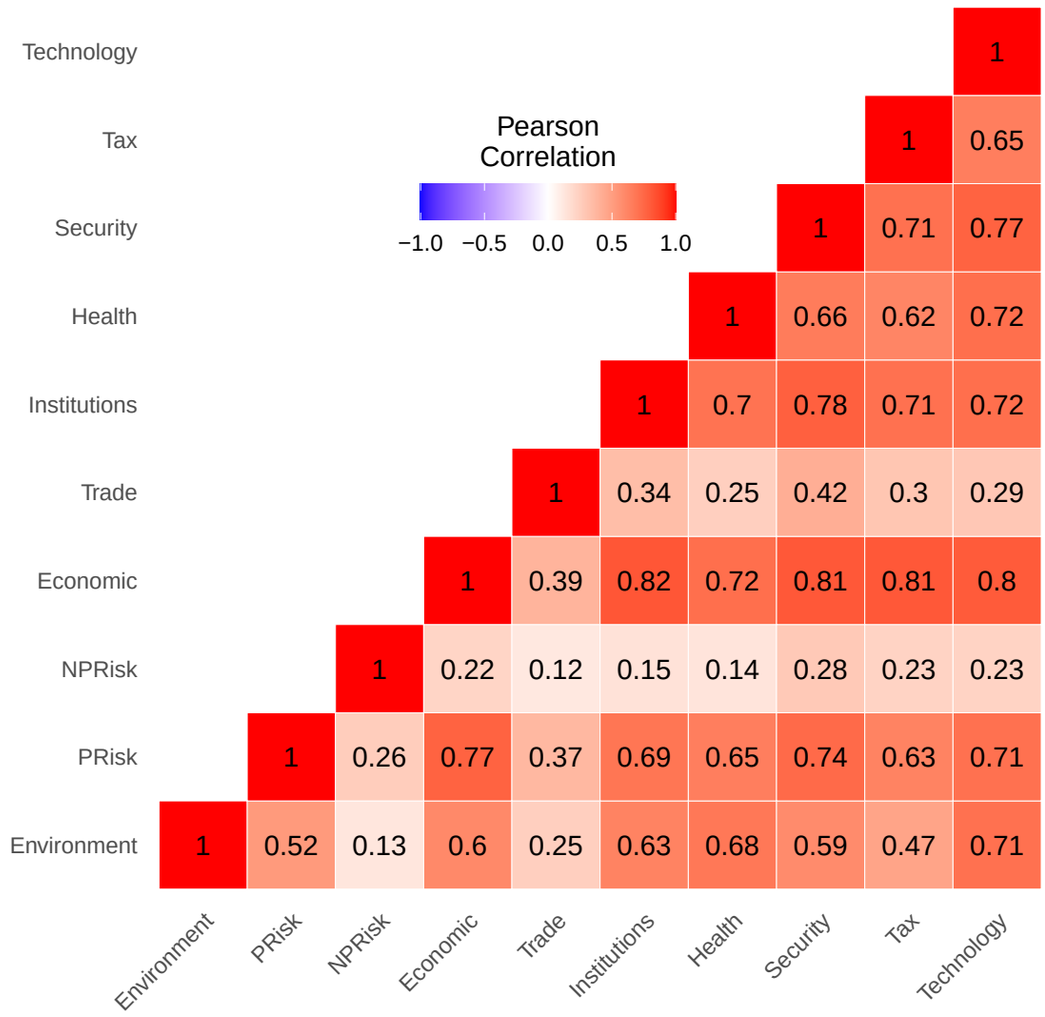



Figure IA.1: Correlation Matrix of Political Risk Topics
The top figure plots a heat map of the Pearson correlation matrix between the eight political risk topics, overall political risk, and overall non-political risk measured from earnings conference calls in our sample.

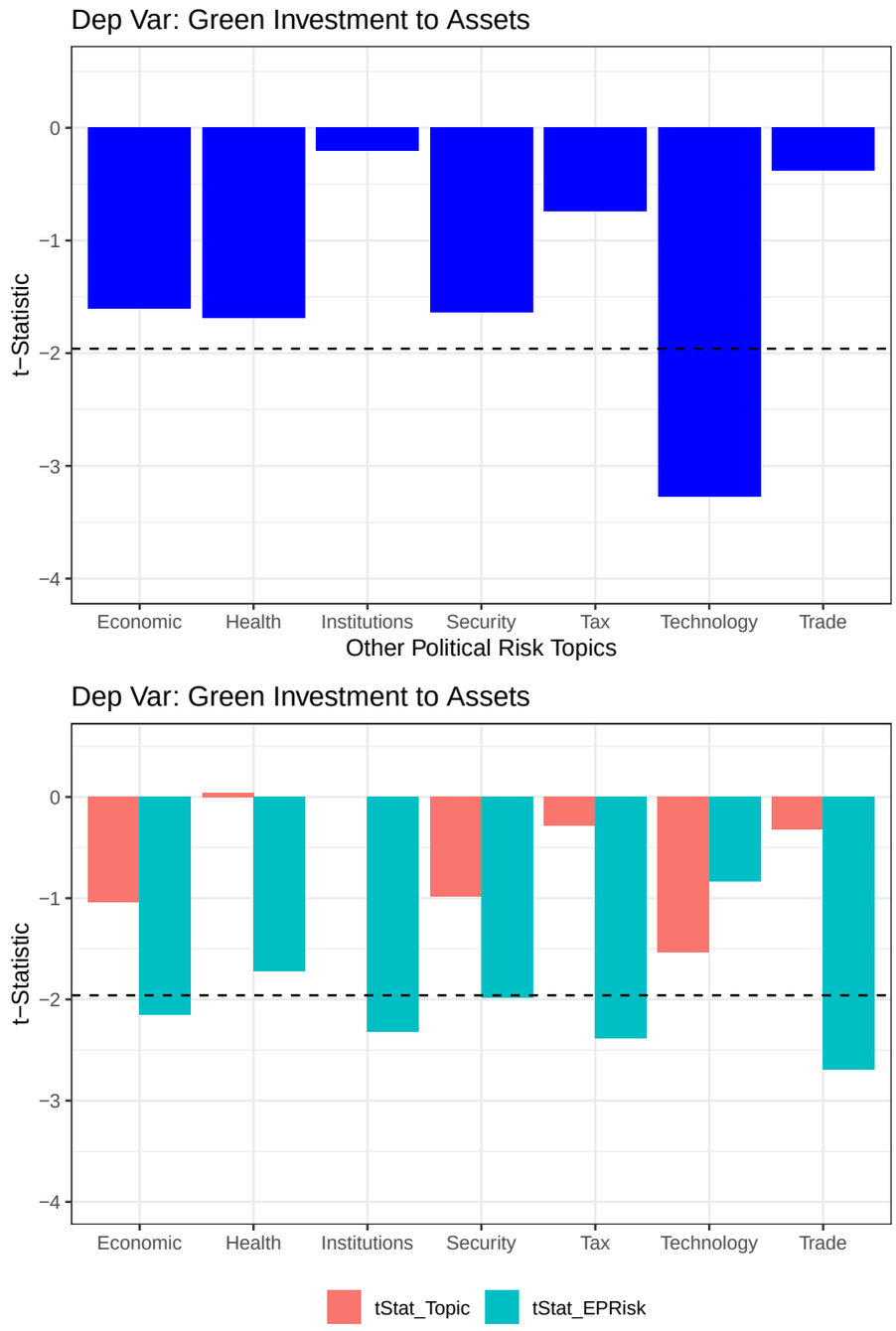



Figure IA.2: Other Political Risk Topics

The top figure plots the $t-$statistic associated with replacing EPR with the other political risk topics in our baseline regressions with Green Investment to Assets as the dependent variable. The bottom figure plots the t-statistics when the regression includes E-PRisk and the control for the other political risk topics. The dashed horizontal line is the 5% level for statistical significance.

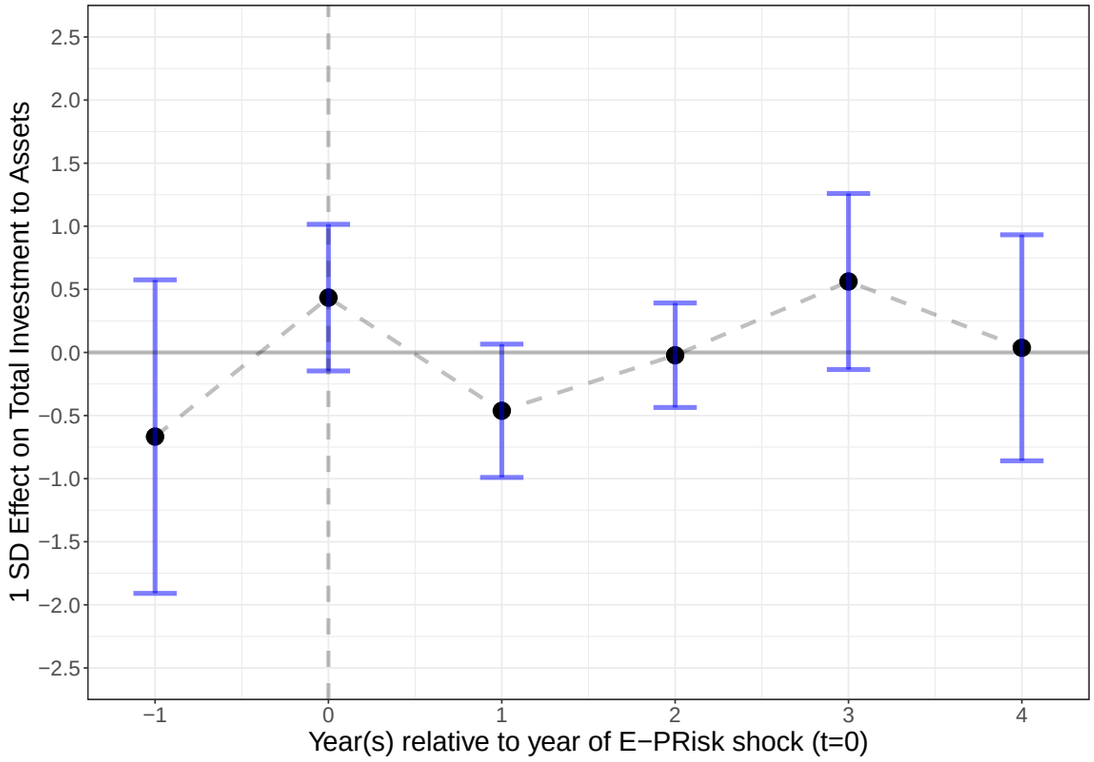



Figure IA.3: Impulse Response for Total Investment to Assets surrounding E-PRisk Shocks
The top figure plots the impulse response for total investment from $t-1$ to $t+4$ surrounding the year of an EPR shock. All EPR effects are standardized by its full-sample standard deviation. The error bars represent 95% confidence intervals.

Table IA.1: Firm-level Green Corporate Investment Projects by Country
This table reports the distribution of average firm-level total assets and sustainable investment across countries from 2019 to 2022. We report the top 20 countries by number of firm-years (Obs.). This is our final sample that requires firm-level political risk from Hassan et al. (2019) and other control variables from our baseline regressions.

| Country | Observations | Assets ($Bil) | % Green Invest. | $\frac{\text{Green}}{\text{Assets}}$ ($\times$ 1000) |
|---|---|---|---|---|
| United States | 1,890 | 34.42 | 8.11 | 7.97 |
| Canada | 304 | 16.86 | 14.99 | 8.80 |
| Japan | 283 | 61.80 | 2.97 | 2.62 |
| India | 175 | 15.38 | 7.62 | 16.69 |
| Germany | 162 | 57.93 | 13.70 | 12.56 |
| United Kingdom | 127 | 36.86 | 17.51 | 10.80 |
| Brazil | 109 | 21.11 | 12.60 | 10.52 |
| Sweden | 80 | 13.77 | 14.44 | 14.22 |
| South Korea | 68 | 52.95 | 12.07 | 16.48 |
| Switzerland | 62 | 21.70 | 5.18 | 3.82 |
| Spain | 59 | 41.62 | 30.27 | 24.91 |
| Italy | 59 | 45.29 | 31.76 | 26.71 |
| China (Mainland) | 57 | 46.95 | 19.95 | 34.20 |
| Netherlands | 57 | 24.73 | 5.29 | 6.55 |
| Finland | 56 | 15.48 | 23.91 | 19.97 |
| Ireland | 53 | 25.10 | 3.80 | 1.81 |
| Taiwan | 52 | 20.84 | 5.00 | 6.91 |
| Norway | 51 | 19.93 | 11.39 | 4.33 |
| France | 46 | 49.57 | 25.71 | 20.36 |
| Russia | 43 | 58.17 | 3.87 | 76.85 |
| Other Countries | 173 | 12.51 | 10.20 | 11.83 |
| World | 3,966 | 33.61 | 10.28 | 10.56 |

Table IA.2: Variance Decompositions
This table reports a variance decomposition of green investment percentage and environmental political risk under various fixed effects.

Panel A: Green Investment Percentage

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| R-Squared (%) | 0.25 | 43.7 | 7.53 | 46.4 | 90.15 | 90.35 | 91.55 | 90.72 | 90.72 |
| Year FE | Yes | No | No | No | No | Yes | No | No | No |
| Industry × Year FE | No | Yes | No | Yes | No | No | Yes | No | Yes |
| Country × Year FE | No | No | Yes | Yes | No | No | No | Yes | Yes |
| Firm FE | No | No | No | No | Yes | Yes | Yes | Yes | Yes |

Panel B: Environmental Political Risk

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| R-Squared (%) | 0.31 | 6.73 | 2.02 | 8.38 | 32.23 | 32.56 | 35.73 | 33.77 | 33.77 |
| Year FE | Yes | No | No | No | No | Yes | No | No | No |
| Industry × Year FE | No | Yes | No | Yes | No | No | Yes | No | Yes |
| Country × Year FE | No | No | Yes | Yes | No | No | No | Yes | Yes |
| Firm FE | No | No | No | No | Yes | Yes | Yes | Yes | Yes |

Table IA.3: Full Table: Environmental Political Risk and Investment
This table reports the full set of variable coefficients for Table 4 of the main paper. $t$-statistics in parentheses are computed from the variance-covariance matrix clustered by firm. *, **, and *** indicate statistical significance at the ten-, five-, and one-percent level, respectively.

Panel A: Effect on Green Investment

| Dep Var. in Year $t+1$ | % Green Investment | | | | | $\frac{\text{Green}}{\text{Assets}}$ |
|---|---|---|---|---|---|---|
| | OLS | | | | WLS | OLS |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| E-PRisk | −0.54*** | −0.56*** | −0.64*** | −0.64*** | −1.59** | −0.48*** |
| | (−2.86) | (−2.80) | (−3.63) | (−3.85) | (−2.45) | (−3.97) |
| PRisk | 1.52 | 1.57 | 1.79 | 1.85 | −0.90 | 1.60* |
| | (1.33) | (1.36) | (1.37) | (1.43) | (−0.38) | (1.93) |
| Non-PRisk | 0.26 | 0.26 | 0.21 | 0.20 | 0.05 | 0.26 |
| | (1.17) | (1.20) | (1.12) | (1.07) | (0.18) | (1.35) |
| PSentiment | | 0.13 | 0.08 | 0.10 | −0.05 | 0.09 |
| | | (0.73) | (0.46) | (0.54) | (−0.19) | (0.75) |
| Non-PSentiment | | −0.001 | −0.002 | −0.002 | 0.04 | −0.01 |
| | | (−0.09) | (−0.14) | (−0.16) | (1.41) | (−0.75) |
| CC Exposure | | | | 0.15 | 0.28 | 0.08 |
| | | | | (0.72) | (0.88) | (0.52) |
| CC Sentiment | | | | −0.58 | −1.20** | −0.31 |
| | | | | (−1.37) | (−2.31) | (−1.09) |
| log(Market Capitalization) | | | | −0.30 | −2.47 | 1.35** |
| | | | | (−0.56) | (−1.61) | (2.48) |
| log(Market-to-Book) | | | | −0.61 | 0.59 | −0.45 |
| | | | | (−0.61) | (0.69) | (−0.88) |
| ROA | | | | −0.30 | −16.57 | −3.63** |
| | | | | (−0.09) | (−1.60) | (−2.08) |
| Debt Ratio | | | | −1.61 | −0.67 | −5.17** |
| | | | | (−0.36) | (−0.07) | (−2.09) |
| Foreign Ownership | | | | 0.003 | −0.01 | 0.04 |
| | | | | (0.05) | (−0.16) | (0.71) |
| Return SD | | | | 0.69 | 0.63 | 0.59 |
| | | | | (0.43) | (0.29) | (0.74) |
| ESG Score | | | | −0.05* | −0.11* | −0.05** |
| | | | | (−1.72) | (−1.93) | (−2.22) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 3,966 | 3,966 | 3,966 | 3,966 | 3,966 | 3,966 |
| Adjusted $R^2$ | 0.87 | 0.87 | 0.86 | 0.86 | 0.90 | 0.83 |

Panel B: Effect on Non-green and Total Investment

| Dep Var. in Year $t+1$ | $\frac{\text{Non-Green}}{\text{Assets}}$ | $\frac{\text{Total}}{\text{Assets}}$ | $\frac{\text{Non-Green}}{\text{Assets}}$ | $\frac{\text{Total}}{\text{Assets}}$ |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| E-PRisk | 0.31 | −0.16 | 0.29 | −0.20 |
| | (1.28) | (−0.83) | (1.22) | (−1.04) |
| PRisk | −0.93 | 0.64 | −0.74 | 0.87 |
| | (−0.47) | (0.38) | (−0.37) | (0.50) |
| Non-PRisk | 0.34 | 0.62 | 0.32 | 0.58 |
| | (0.77) | (1.60) | (0.73) | (1.54) |
| PSentiment | 0.64* | 0.70** | 0.62* | 0.71** |
| | (1.77) | (1.97) | (1.73) | (2.02) |
| Non-PSentiment | −0.01 | −0.02 | −0.02 | −0.03 |
| | (−0.38) | (−0.72) | (−0.61) | (−0.89) |
| CC Exposure | | | −0.22 | −0.15 |
| | | | (−0.65) | (−0.48) |
| CC Sentiment | | | 1.23* | 0.92 |
| | | | (1.75) | (1.37) |
| log(Market Capitalization) | | | 0.13 | 1.49 |
| | | | (0.07) | (0.76) |
| log(Market-to-Book) | | | 0.48 | 0.03 |
| | | | (0.18) | (0.01) |
| RoA | | | 14.35 | 10.71 |
| | | | (1.44) | (1.07) |
| Debt Ratio | | | −1.18 | −6.35 |
| | | | (−0.14) | (−0.83) |
| Foreign Ownership | | | 0.44*** | 0.47*** |
| | | | (2.58) | (2.86) |
| Return SD | | | 10.38** | 10.97** |
| | | | (2.20) | (2.37) |
| ESG Score | | | 0.07 | 0.01 |
| | | | (0.69) | (0.14) |
| Firm FE | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes |
| Industry× Year FEs | Yes | Yes | Yes | Yes |
| $N$ | 3,966 | 3,966 | 3,966 | 3,966 |
| Adjusted $R^2$ | 0.85 | 0.85 | 0.85 | 0.85 |

Table IA.4: Interaction with % Green
This table reports the results of regressing investment on an interaction of E-PRisk with an indicator for when lagged % Green is above its yearly average. At the bottom, we report the $F-$statistic associated with the total effect from summing the coefficient on E-PRisk and that of the interaction. *, **, and *** indicate statistical significance at the ten-, five-, and one-percent level, respectively.

| Dep Var. in Year $t+1$ | % Green | $\frac{\text{Green}}{\text{Assets}}$ | $\frac{\text{Non-Green}}{\text{Assets}}$ | $\frac{\text{Total Invest}}{\text{Assets}}$ |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| E-PRisk | $-0.97^{***}$ | $-0.78^{***}$ | $0.73^{***}$ | $-0.14$ |
| | $(-5.40)$ | $(-5.95)$ | (3.07) | $(-0.56)$ |
| E-PRisk × High % Green Firm | 0.47 | 0.86 | 0.10 | 0.38 |
| | (0.90) | (1.55) | (0.13) | (0.44) |
| High % Green Firm | $-2.78$ | $-1.61$ | $4.83^{*}$ | 1.99 |
| | $(-1.36)$ | $(-1.07)$ | (1.85) | (0.87) |
| Firm FE | Yes | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes | Yes |
| Industry × Year FEs | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes |
| $N$ | 2,832 | 2,832 | 2,832 | 2,832 |
| Adjusted $R^2$ | 0.86 | 0.83 | 0.86 | 0.86 |
| Total E-PRisk Effect for High % Green Firms | $-0.50$ | 0.08 | 0.83 | 0.24 |
| $F-$stat | (1.08) | (0.02) | (1.16) | (0.09) |

Table IA.5: Positive vs. Negative E-PRisk Shocks
This table reports the results of regressing green investment on a decompostion of E-PRisk into its positive and negative components. Positive E-PRisk is equal to E-PRisk when (the fixed effects de-meaned) E-PRisk is positive and zero otherwise. Negative E-PRisk is equal to $-1$ times E-PRisk when (the fixed effects de-meaned) E-PRisk is negative and zero otherwise. Both are standardized by the full sample standard deviation of E-PRisk. $^{*}$, $^{**}$, and $^{***}$ indicate statistical significance at the ten-, five-, and one-percent level, respectively.

| Dep Var. in Year $t+1$ | % Green | | Green/Assets | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Positive E-PRisk Shocks | $-0.89^{***}$ | | $-1.52^{***}$ | |
| | $(-4.32)$ | | $(-2.84)$ | |
| Negative E-PRisk Shocks | | $1.95^{**}$ | | $4.31^{**}$ |
| | | (2.25) | | (2.21) |
| Firm FE | Yes | Yes | Yes | Yes |
| Country $\times$ Year FE | Yes | Yes | Yes | Yes |
| Industry $\times$ Year FE | Yes | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes | Yes |
| $N$ | 3,966 | 3,966 | 3,966 | 3,966 |
| Adjusted $R^2$ | 0.86 | 0.86 | 0.21 | 0.21 |

Table IA.6: Alternative Third-party News-based E-PRisk Measure
This table reports the results of regressing green investment on an alternative measure of E-PRisk based on third party news articles from RavenPack. The measure is equal to one if a firm-year has at least one news article that mentions "uncertainty"-related and environmental/policy-related keywords and zero otherwise. *, **, and *** indicate statistical significance at the ten-, five-, and one-percent level, respectively.

| Dep Var. in Year $t+1$ | E-PRisk | % Green Investment | |
|---|---|---|---|
| | (1) | (2) | (3) |
| E-PRisk (Third Party News-based) | $1.54^{*}$ | $-0.88^{**}$ | $-0.83^{*}$ |
| | (1.91) | ($-2.03$) | ($-1.92$) |
| E-PRisk | | | $-0.63^{***}$ |
| | | | ($-3.76$) |
| Firm FE | Yes | Yes | Yes |
| Country × Year FE | Yes | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes |
| Other Controls | Yes | Yes | Yes |
| $N$ | 3,966 | 3,966 | 3,966 |
| Adjusted $R^2$ | 0.18 | 0.86 | 0.86 |