Corporate cash policies under climate policy uncertainty

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Abstract

We examine the impact of climate policy uncertainty on corporate cash policies using news-based measures of climate policy uncertainty. We find that climate policy uncertainty induces high cash flow volatility, which causes firms to increase precautionary cash holdings. The relation between climate policy uncertainty and cash is more pronounced for firms that are financially constrained, more exposed to the risk of climate disasters, and those in high emission industries. Using the 2015 Paris Agreement as an exogenous shock, our results remain robust. In periods of high climate policy uncertainty, firms increase cash by reducing investment in capital expenditure and acquisitions. Overall, our findings highlight the important implications of climate change policy for corporate liquidity management.

Keywords: Climate change, policy uncertainty, cash holdings, investment

JEL classification: G30, G32, G38

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1 Introduction

Climate change and government policies aimed at transitioning towards a net zero economy introduce new sources of risk for corporations (Adasi Manu et al., 2022; Battiston et al., 2021). Research on whether capital market participants view climate change as a relevant risk factor has gained momentum in recent years. For instance, prior studies show that firms with greater exposure to climate risk incur a higher cost of capital (Javadi and Masum, 2021; Chava, 2014); reduce leverage (Adasi Manu et al., 2022); experience a decrease in firm value and investment performance (Matsumura et al., 2014; Konar and Cohen, 2001); pay more for option protection against downside tail risks (Ilhan et al., 2021); and attract lower returns for their bonds (Huynh and Xia, 2021). While the uncertainty about government climate policy decisions could have important consequences for financial policies such as cash holding decisions of corporations, little is known about the link between climate policy uncertainty and corporate liquidity management. Our study fills this important void in the literature. In this study, we examine whether and to what extent, climate policy uncertainty affects corporate cash policies.

Climate policy uncertainty can affect corporate cash holdings in a number of ways. Since climate risk increases the cost of external financing, which exacerbates firms' financial constraints (Javadi and Masum, 2021; Chava, 2014) and decreases firm value and investment performance (Matsumura et al., 2014; Konar and Cohen, 2001), firms are motivated to increase cash reserves to buffer against financial shocks and maintain smooth operation. Climate risk can also increase corporate conservatism (Adasi Manu et al., 2022; Dang et al., 2022; Nguyen and Phan, 2020), inducing firms to hold more cash, which is the most liquid asset. For these reasons, we expect a positive relation between climate policy uncertainty and cash holdings.

While climate policy uncertainty can be difficult to quantify, Gavriilidis (2021) (henceforth *GK*) fills this gap in the literature by constructing a news-based index that captures climate policy uncertainty at the macro level. *GK* constructs the climate policy uncertainty index by following the methodology used by Baker et al. (2016) for their Economic Policy Uncertainty (EPU) index. *GK* uses newspaper coverage frequency to capture uncertainty about who will make climate policy decisions, what climate policy actions will be undertaken and when, and the real effects of climate policy actions (or inaction).

We use the *KG* index to estimate the effect of climate policy uncertainty on corporate cash holdings. Consistent with the literature, (Boasiako and Keefe, 2021; Bates et al., 2009; Opler et al., 1999), we control for a number of variables that explain corporate cash policy such as firm size, growth opportunities, age, asset tangibility, research and development, profitability, leverage, and dividends. We find strong evidence of a positive association between climate policy uncertainty and corporate cash holdings. The economic effects are also substantial. Cash increases by approximately 12.3%, when the *KG index* doubles, evaluated at the mean value. Our findings are robust to different cash measures, controlling for the global financial crisis, and the inclusion of year and firm fixed effects.

Prior studies provide empirical evidence that firms use internally generated funds to hedge against future cash flow uncertainty and increase their cash holdings in response to increases in cash flow volatility (Han and Qiu, 2007; Bates et al., 2009; Opler et al., 1999). Therefore, if firms increase cash holdings in response to an increase in climate policy uncertainty, then it is possibly because climate policy uncertainty induces high cash flow volatility. We examine the effect of climate policy uncertainty on cash flow volatility and find a positive association between climate policy uncertainty and cash flow volatility.

To identify possible mechanisms through which climate policy uncertainty affects corporate cash holdings, we investigate whether the positive effect of climate policy uncertainty on corporate cash holdings exhibits heterogeneity in the cross-section. We explore cross-sectional variations conditional on the degree of financial constraints, a firm's state location exposure to climate disaster, and a firm's industry carbon emission intensity. Intuitively, if an increase in corporate cash holdings is attributable to climate policy uncertainty, then the positive effect should be more pronounced for financially constrained firms since these firms face more difficulty accessing external capital markets with climate policy uncertainty likely to exacerbate financial constraints. Also, with regards to a firm's state location exposure to climate disaster, we conjecture that the effect of climate policy uncertainty should be stronger for firms that are headquartered in states with high exposure to climate disaster since prior studies show that firms' headquarter locations are usually close to their operations and core business activities (Boasiako and Keefe, 2021; Javadi and Masum, 2021). We exploit the National Oceanic and Atmospheric Administration (NOAA) state-level climate disaster data to measure each state's susceptibility to and potential future impact from climate disaster. In our final cross-sectional analysis, we examine how the effect of climate policy uncertainty on corporate cash holdings varies between firms in high carbon emission industries relative to those in low emission industries. We expect that the effect of climate policy uncertainty on cash should be stronger for firms in high carbon emission industries compared to those in low emission industries. Following Ilhan et al. (2021) industry-level carbon intensity classification, we sort firms into high emitters and low emitters. We find empirical evidence in support of our conjectures relating to the role of financial constraints, firms' state location exposure to climate disaster, and industry carbon emission intensity in the relationship between climate policy uncertainty and corporate cash holdings.

We explore an additional mechanism by which firms accumulate more cash in periods of heightened climate policy uncertainty. We anticipate that if climate policy uncertainty increases managers' perceived cash flow risk and firm financial frictions, it would be optimal for these firms to choose conservative policies by delaying and reducing investments in both capital expenditure and acquisitions. Our results support this conjecture.

To address potential endogeneity concerns, we exploit the 2015 Paris Agreement, under which world governments agreed to take actions to limit global temperature increases, as an exogenous shock to expected climate risk regulation. We assume that high public attention to global warming increases the probability that governments adopt pro-climate policies related to the mitigation of climate change (Ilhan et al., 2021). Importantly, as the probability of a policy change rises, uncertainty about which specific new policies will be selected, and their impact on firm operations, cash flow, and profitability also increases. Whilst this implies more certainty that a regulatory change occurs, pro-climate policies are characterized by large uncertainties in terms of their impact on firm operations, cash flows, and profitability as such policies represent larger deviations from current practices. The case of the US adopting the Paris Agreement in 2015, exiting in 2017, and rejoining in 2021 presents a unique setting for us to exploit in establishing causality. Using a difference-in-differences estimation approach, we provide causal evidence that cash increases following the Paris Agreement, which provides support to our baseline results.

Investigating the impact of climate policy uncertainty on corporate cash policies represents an important contribution to a burgeoning stream of literature that studies the effects of climate policy uncertainty on corporate behavior and to a more established stream of literature on the determinants of corporate liquidity. Climate policy uncertainty results from government policy changes and regulatory shocks and from other shocks that are similarly beyond a manager's control (e.g., climate disasters). This makes climate policy uncertainty largely exogenous and more difficult to hedge for firms and investors than firm-level climate risk. As the first paper that examines the effect of climate policy uncertainty (measured at the macro level) on corporate cash policies (which is one of the most important corporate financial policies) in the US, we make a distinct contribution to a fast-growing literature on the implications of climate change for corporate financial policies (Adasi Manu et al., 2022; Dang et al., 2022; Javadi and Masum, 2021; Ilhan et al., 2021; Huynh and Xia, 2021; Nguyen and Phan, 2020; Huang et al., 2018).

The rest of the paper is organised as follows. We describe our data and variable construction in Section 2. In Section 3, we present and discuss our results. We carry out additional tests and robustness checks in Section 4 and conclude in Section 5.

2 Data and methodology

2.1 Sample

Our sample includes all U.S. publicly listed firms from the Compustat database for the period 2000–2021.[1] The *KG index* is publicly hosted on the website of Economic Policy Uncertainty.[2] We exclude firms from the utility and financial industries (Standard Industrial Classification (SIC) codes from 4900 to 4999 and 6000–6999, respectively) since these industries are highly regulated and their cash holdings may have a different meaning. We further exclude firm-year observations with missing or negative values for total assets (AT), cash and marketable securities (CHE), and sales (SALE). These sample selection filters result in 79,867 firm-year observations. Finally, we winsorize all continuous variables at their 1st and 99th percentiles to limit the influence of outliers.

2.2 Variable construction

2.2.1 Measuring climate policy uncertainty

We measure climate policy uncertainty using an aggregate index developed by *KG*. The *GK index* is constructed in a similar approach as the Baker et al. (2016) EPU index. The *GK index* is derived from a count of articles in eight major newspapers containing key

[1] The *GK index* covers the period 2000-2021

[2] This is available at https://www.policyuncertainty.com/climate_uncertainty.html

terms related to climate policy uncertainty. The eight newspapers are: Boston Globe, Chicago Tribune, Los Angeles Times, Miami Herald, New York Times, Tampa Bay Times, USA Today and the Wall Street Journal. *GK* scales the number of relevant articles per month with the total number of articles during the same month and standardizes these eight series to have a unit standard deviation and then averages these across each month. Finally, *GK* normalizes the averaged series to have a mean value of 100 for the whole period. Since the *GK index* is provided monthly, we construct the *GK index* as the natural logarithm of the average value of the index over the 12 months of a given fiscal year.

We employ Engle et al. (2020) (henceforth *EGKLS*) measure of climate policy uncertainty, *EGKLS* index, as an alternative measure for robustness checks.[3] The *EGKLS index* measures the extent to which climate change is discussed in the news media. It is calculated as the correlation between the text content of The Wall Street Journal (WSJ) each month (starting from January 1984) and a fixed climate change vocabulary (CVC), which they construct from a list of authoritative texts published by various governmental and research organizations. The WSJ is among the most salient media outlets for market participants. Thus, *EGKLS index* index captures the intensity of climate change discourse that is accessible to the investment community at very low cost. The index associates increased climate change reporting with news about elevated climate risk based on the idea that climate change primarily rises to the media's attention when there is a cause for concern. Since the *EGKLS index* is provided monthly, we compute the annual value as the average value of the index over the 12 months of a given fiscal year and multiply by 100.[4]

[3]Unlike the *GK index*, the *EGKLS index* is derived only from one newspaper (the Wall Street Journal) and available only to 2017

[4]Because *EGKLS* scale the index by a factor of 10,000, we follow Adasi Manu et al. (2022) and Datta et al. (2019) and multiply the index by 100 to allow for better interpretation.

2.2.2 Cash holdings measures

We use the most traditional measures of cash in the literature (Boasiako and Keefe, 2021; Bates et al., 2009; Han and Qiu, 2007; Opler et al., 1999) as our dependent variables. We employ two measures of cash throughout the paper. We construct our first cash measure as cash and marketable securities scaled by total book assets. For our second cash measure, we deflate cash and marketable securities by the book value of total assets, net of liquid assets (cash and marketable securities).

2.2.3 Cash flow volatility measures

There is no standard definition of cash flow volatility in the literature. In the spirit of Keefe and Yaghoubi (2016), we estimate three measures of cash flow volatility. To construct our cash flow volatility measures, we first estimate cash flow using operating income before depreciation (OIBDP) sccaled by net assets (total assets(AT) minus cash and marketable securities(CHE)). Pinkowitz and Williamson (2007) show that a firm's cash holdings are a function of the volatility of the firm's cash flows. By removing cash from total assets we remove this functional relationship. We estimate cash flow volatility using three methods. First, we follow Kim and Sorensen (1986) and estimate the rolling standard deviation of cash flow over the last five years. Second, we follow Stohs and Mauer (1996) and estimate the rolling standard deviation of first differences of cash flow over the last five years. Finally, we estimate the third cash flow volatility measure using the method of De Veirman and Levin (2018). To denote the method used to construct the cash flow volatility measures, we include KS, SM and DL in the variable names. We follow Keefe and Yaghoubi (2016) and construct the De Veirman and Levin (2018) cash flow volatility measure by estimating the model below.

$$\omega_{i,t} = \alpha_i + Year\beta_1 + \varepsilon_{i,t} \tag{1}$$

where $\omega_{i,t}$ represents the first difference of operating income scaled by net assets from $t-1$ to t for firm i and Year is a matrix of year dummies. The residual $\varepsilon_{i,t}$ represents the difference between the observed and the estimated value of operating cash flow of firm i when controlling for time and firm fixed effects. De Veirman and Levin (2018) show that $\hat{\sigma}$ is an unbiased estimator of the true conditional volatility

$$\hat{\sigma}_{i,t} = \sqrt{\frac{\pi}{2}} * |\hat{\varepsilon}_{i,t}|, \tag{2}$$

where $\hat{\varepsilon}_{i,t}$ is the estimated residual from Eq.(1). We estimate Eq.(2) and define the third cash flow volatility measured using the method of De Veirman and Levin (2018) as the rolling five year average of $\hat{\varepsilon}_{i,t}$.

2.2.4 Control variables

We control for a number of variables that explain corporate cash policy, in line with prior literature (Boasiako and Keefe, 2021; Bates et al., 2009; Han and Qiu, 2007; Opler et al., 1999). These include size (*Firm Size*), market to book ratio (*Market-to-book*), firm age (*LN(Firm Age)*), asset tangibility (Tangibility), research and development (*R&D Expenditure*), financial performance (*Profitability*), leverage (*Financial Leverage*), and dividends (*Dividend Paying Firms (0/1)*). A detailed description of how these variables are constructed is provided in Appendix A.

2.3 Methodology

To investigate the impact of climate policy uncertainty on firm cash holdings, we employ a fixed effect model in line with Adasi Manu et al. (2022) and Nguyen and Phan (2020). This allows us to account for unobserved firm-level time invariant factors that may also affect firm cash holdings. We therefore estimate the following model:

$$Cash_{i,t(+1)} = \alpha_{i,t} + \beta_1 CPU_t + \beta_2 Cont_{i,t} + FFE + YFE + \varepsilon_{i,t(+1)} \tag{3}$$

where $Cash_{i,t(+1)}$ is either the cash-to-assets or cash-to-net assets ratio as described in Section (2.2.2) for firm i at either time t or $t+1$.[5] CPU_t is climate policy uncertainty at time t, measured by the *KG* index and for robustness checks, the *EGKLS* index. $Cont_{i,t}$ is a vector of control variables for each firm i in year t, which includes *Firm Size*, *Market-to-book*, *LN(Firm Age)*, *Tangibility*, *R&D Expenditure*, *Profitability*, *Leverage* and *Dividend Paying Firms (0/1)*. *FFE* presents firm fixed effects and *YFE* denotes year fixed effects. Finally, we use the heteroscedasticity-robust standard errors clustered by firms for statistical inference.

2.4 Summary statistics

Table 1 presents summary statistics of our data. All continuous variables are winsorized at the top and bottom 1%. The mean values of our two main measures of cash, $Cash/Assets$ and $Cash/NetAssets$ are 0.22 and 0.77, respectively. The mean *KG index* is 4.3 and that of the *EGKLS index* is 0.62.The summary statistics for all other variables are quite consistent with prior studies.

PLEASE INSERT TABLE 1 HERE

[5] We use $Cash_{i,t+1}$ as an additional specification across all our estimations

3 Empirical results

3.1 Climate policy uncertainty and cash holdings

We present regression results of our baseline model in Table 2, where we test for the impact of climate policy uncertainty on corporate cash holdings. In columns 1 and 2, the dependent variable is $Cash/Assets$. In columns 3 and 4, the dependent variable is $Cash/NetAssets$. Across all 4 specifications, we include firm and year fixed effects in addition to our control variables. The results in all four columns of Table 2 show positive and statistically significant coefficients (at the 1% level) for our variable of interest, *KG Index*, suggesting that firms increase their holdings of cash in periods of high climate policy uncertainty. The results are also economically meaningful. We use the most conservative coefficient in Column 2 to gauge the economic importance. The coefficient associated with *KG Index* is 0.0275. This indicates that firms increase their holdings of cash by approximately 12.3% (0.0275/0.2244), when the *KG Index* increases by 100%, evaluated at the mean value. The results in Table 2 are therefore consistent with our main hypothesis. In the subsequent sections, we conduct cross-sectional analyses and also explore plausible channels by which climate policy uncertainty might positively impact corporate cash holdings.

PLEASE INSERT TABLE 2 HERE

3.2 Climate policy uncertainty and cash flow volatility

In this section, we examine why firms increase their holdings of cash in periods of high climate policy uncertainty. Prior studies (Han and Qiu, 2007; Bates et al., 2009; Pinkowitz and Williamson, 2007; Opler et al., 1999) show that firms use internally generated funds to hedge against future cash flow uncertainty and increase their cash holdings in response to increases in cash flow volatility. Hence, if firms hold more cash in periods of high climate policy uncertainty, then it plausibly because climate policy uncertainty induces high cash flow volatility. We examine the effect of climate policy uncertainty on cash flow volatility in this section. We employ three cash flow volatility measures (CFV_KS, CFV_SM, and CFV_DL) for our analysis and provide a detailed description of their construction in Section (2.2.3). We present the regression results in Table 3. Across all three specifications of Table 3, the coefficients associated with the variable of interest, *KG Index*, are all positive and statistically significant at the 1% level, suggesting that firms increase their precautionary holdings of cash in periods of high climate policy uncertainty because they face high cash flow volatility in such periods, thereby increasing the deadweight costs of financial distress.

PLEASE INSERT TABLE 3 HERE

3.3 Cross-sectional analyses of the drivers of the relation between climate policy uncertainty and cash holdings

3.3.1 Economic channel: firm financial constraints

Climate policy uncertainty could be more detrimental to financially constrained firms. Firms that are financially constrained face difficulty in accessing external financial markets and this could be exacerbated by climate policy uncertainty since prior studies (Javadi and Masum, 2021; Chava, 2014) show that climate risk increases the cost of external financing. Following this proposition, we predict that the positive effect of climate policy uncertainty on corporate cash holdings is more pronounced for financially constrained firms. To test our prediction, in Panel A of Table 4, we construct *FinCon (0/1)*, an indicator variable that takes the value of one if a company's financial constraint level (measured using the Hadlock and Pierce (2010) size-age index) is greater than its respective Fama and French (1997) industry median, and zero otherwise. The variable of interest in Panel A is the interaction term, *KG Index* $\times$ *FinCon (0/1)*. Across Columns 1-4 of Panel A, the coefficients associated with *KG Index* $\times$ *FinCon (0/1)* are all consistent with our expectations. The positive effect of climate policy uncertainty on corporate cash holdings is more pronounced for financially constrained firms.

3.3.2 Firm exposure to climate disaster

In the next cross-sectional analysis, we investigate whether a firm's location exposure to climate disaster plays an important role in the relationship between climate policy uncertainty and corporate cash holdings. Given that firms' headquarter locations are usually close to their operations and core business activities (Boasiako and Keefe, 2021; Javadi and Masum, 2021), we expect that firms in states with high exposure to climate disaster should be more impacted by climate policy uncertainty than those in states with low climate disaster exposure. We use the National Oceanic and Atmospheric Administration (NOAA) state-level climate disaster data to measure each state's susceptibility to and potential impact from climate disaster.[6] The NOAA provides comprehensive state-level data of all 310 climate disaster events occurring between 1980-2021 with losses exceeding \$1 billion. In Panel B of Table 4, we create an indicator variable, *CliExp (0/1)*, which captures the severity of state-level climate disaster exposure and takes the value of one if a company's headquarter state's number of billion-dollar climate disaster is equals or above the median of the National Oceanic and Atmospheric Administration billion-dollar

[6]The NOAA climate disaster exposure data is available at www.ncdc.noaa.gov/billions/mapping

climate disaster ranking. The variable of interest in Panel B is the interaction term, *KG Index* $\times$ *CliExp (0/1)*. Across Columns 1-4 of Panel B, the coefficients associated with *KG Index* $\times$ *CliExp (0/1)* are all consistent with our expectations. The positive effect of climate policy uncertainty on corporate cash holdings is more pronounced for firms in states with severe exposure to climate disaster.

3.3.3 Industry carbon emission intensity

In our final cross-sectional analysis, we examine how the effect of climate policy uncertainty on cash holdings varies with a firm's industry carbon emission intensity. In Panel C of Table 4, we construct *HighEmi (0/1)*, which is set to one if a firm is in Ilhan et al. (2021) top-10 carbon emission industries classification (SIC codes 3300-3399, 4900-4999, 3200-3299, 4500-4599, 4400-4499, 2900-2999, 1300-1399, 4000-4099, 2600-2699, 7500-7599). The variable of interest is *KG Index* $\times$ *HighEmi (0/1)*. We do not include a separate *HighEmi (0/1)* because as an industry-level variable, it is subsumed by the firm fixed effects. Across Columns 1-4 of Panel C, the coefficients associated with *KG Index* $\times$ *HighEmi (0/1)* are all consistent with our expectations. The positive effect of climate policy uncertainty on corporate cash holdings is more pronounced for firms in high carbon emission industries.

PLEASE INSERT TABLE 4 HERE

3.4 Investment channel

Our analysis thus far documents a strong positive effect of climate policy uncertainty on corporate cash holdings. In this section, we investigate how firms accumulate more cash in periods of heightened climate policy uncertainty. The positive relation between climate policy uncertainty and cash holdings could arise from investment delays. To further establish the direct relation between climate policy uncertainty and corporate cash holdings due to precautionary purposes, we conduct a complementary analysis along firms' investment activities. The intuition is that firms are more likely to delay or reduce irreversible investments amid high climate policy uncertainty and hold more cash as a precaution. We present the results in Table 5. In Columns 1 and 2, the dependent variables are measures of investment in capital and in Columns 3 and 4, the dependent variables are measures of acquisition investment. The first measure of capital expenditure investment in Column 1, ($CAPX/AT$), is based on the ratio of capital expenditure to total assets (Boasiako et al., 2022; Gulen and Ion, 2016). The second measure of investment in capital expenditure in Column 2, ($CAPX/PPEGT$), is based on the ratio of capital expenditure to gross property, plant and equipment (Cordis and Kirby, 2017; Adam and Goyal, 2008). In Column 3, we measure acquisition investment, ($Aqc/Assets$), as the ratio of acquisitions to total assets and in Column 4, acquisition investment, ($Aqc/PPEGT$), is the ratio of acquisitions to gross property, plant and equipment (Boasiako and Keefe, 2021). Across Columns 1-4 of Table 5, we find evidence of a negative association between investments and climate policy uncertainty, which is consistent with the proposition that firms forgo investment in capital expenditure and acquisitions to accumulate cash in periods of high climate policy uncertainty.

PLEASE INSERT TABLE 5 HERE

4 Additional analyses and robustness checks

4.1 Paris agreement

To address potential endogeneity concerns, we use the 2015 Paris Agreement as a quasi-natural experiment. The Paris Agreement, which is the most ambitious climate deal ever struck increased public attention to climate change and involved an abrupt tightening of global climate policies. As the probability of a policy change rises, so does uncertainty about which specific new policies will be selected and what their impact on firm cash flow and profitability will be. While this implies more certainty that a regulatory change occurs, pro-climate policies are characterized by large uncertainties in terms of their impact on firm profitability as such policies represent larger deviations from current practices. The case of the US adopting the Paris Agreement in 2015, exiting in 2017, and rejoining in 2021 presents a unique setting for us to exploit in establishing causality. Figure 1 shows that there is a spike in both the KG and EGKLS climate change news index after the US joined the Paris Agreement in April 2016. After the US exited the Paris Agreement in June 2017, both climate change news indexes begin to fall, and both spiked again after the US rejoined in February 2021. Following prior studies (Boasiako et al., 2022; Qiu and Wang, 2018; Klasa et al., 2018; He, 2018), we use a difference-in-differences approach and examine the effect of climate policy uncertainty on cash holdings.

PLEASE INSERT FIGURE 1 HERE

In Table 6, we construct our variable of interest, *Paris Agreement (0/1)*, an indicator that moves from zero to one when the Paris Agreement was adopted; it moves from one to zero when the US exited and reverts to one when the US rejoined the Paris Agreement. Across Columns 1-4 of Table 6, the coefficients associated with *Paris Agreement (0/1)* are positive and statistically significant at the 1% level, supporting our baseline finding that greater climate policy uncertainty leads to higher corporate cash holdings.

PLEASE INSERT TABLE 6 HERE

4.2 Alternative climate policy uncertainty measure

To ensure the robustness of our results, we re-estimate the baseline results with the *EGKLS Index*, an alternative measure of climate policy uncertainty. We provide a detailed description of the *EGKLS Index* and how it is constructed in Section (2.2.1). We present the results in Table 7. Across Columns 1-4, the coefficients associated with *EGKLS Index* are positive and statistically significant at the 1% level, suggesting that firms increase their cash holdings in periods of high climate policy uncertainty. Again, the results are economically meaningful. In Column for example, the coefficient of the *EGKLS Index* is 0.5441, which indicates that a one standard deviation increase in climate policy uncertainty leads to a 7.14% (0.5441*0.1313) increase in cash, corresponding to 31.8% (7.14%/22.44%) of the sample mean of cash (22.44%). The results in Table 7 are therefore consistent with our baseline results.

PLEASE INSERT TABLE 7 HERE

4.3 Excluding the global financial crisis

Since our sample period includes the global financial crisis (GFC), we conduct a robustness test that excludes the GFC period of 2007-2009 to alleviate concerns about its possible confounding effects. The results reported in Table 8 indicate that our findings are robust to the exclusion of the GFC.

PLEASE INSERT TABLE 8 HERE

4.4 Inclusion of additional controls

As further robustness test, we include additional firm-level controls such as net working capital and industry cash flow volatility. Also, to address potential concerns that climate policy uncertainty and cash could be correlated with unobserved growth opportunities, we control for expectations about future economic prospects proxied by the one-year ahead GDP growth forecast and the expected change in inflation over the coming year, which are outcomes of the Philadelphia Federal Reserve's biannual Livingston survey. The results reported in Table 9 indicate that our baseline findings are robust to controlling for the additional firm-level controls and expected growth opportunities. Overall, these robustness tests further strengthen our findings of the positive association between climate policy uncertainty and corporate cash holdings.

PLEASE INSERT TABLE 9 HERE

4.5 Alternative explanation: increase in net debt issues

We have so far established that an increase in firm cash holding during the period of heightened climate policy uncertainty is due to increased cash flow risk and reduction in investments. However, one may raise a concern that an increase in firm cash holdings during the period of climate policy uncertainty may be attributed to firms issuing new debt and holding the cash proceeds. This is quite unlikely given that empirical evidence shows that firms exposed to climate risk incur higher cost of debt (Javadi and Masum, 2021). Nevertheless, we run the net debt issues regressions and present the results in Table 10. The dependent variable in Column 1 is $NetDebt/Assets$, measured as the difference between long-term debt issuance and long-term debt reduction, scaled by the book value of assets. In Columns 2, the dependent variable is $NetDebt/Sales$, measured as the difference between long-term debt issuance and long-term debt reduction, scaled by sales. The results in both Columns 1 and 2 indicate that firms actually decrease net debt issues during high climate policy uncertainty periods. This evidence discounts the alternative explanation and is consistent with higher external financing costs amid climate policy uncertainty.

PLEASE INSERT TABLE 10 HERE

5 Conclusion

We examine the relation between climate policy uncertainty and corporate cash holdings. Using the *KG Index* index developed by Gavriilidis (2021) as a proxy for climate policy uncertainty, we find robust evidence that corporate cash holdings are positively related to climate policy uncertainty. Our analyses suggest that climate policy uncertainty induces high cash flow volatility, which prompts firms to increase their cash holdings.

In further analyses, we show that the effect of climate policy uncertainty is more pronounced for firms that are financially constrained, firms with greater exposure to climate disasters and for firms in industries with high carbon emission. Results from the investment channel analysis show that in periods of high climate policy uncertainty, firms forgo investments in capital expenditure and acquisitions to increase their cash holdings.

By investigating the impact of climate policy uncertainty on corporate cash policies, we make an important contribution to a burgeoning stream of literature that studies the effects of climate policy uncertainty on corporate behavior and to a more established stream of literature on the determinants of corporate liquidity.

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Table 1: Summary statistics

This table provides summary statistics for the key variables used in our analyses for the sample period 2000 to 2021. Refer to Appendix A for variable definitions.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	N	Mean	Median	Std. Dev	25th percentile	75th percentile
Cash/Assets	79,867	0.2244	0.1296	0.2416	0.0416	0.3289
Cash/NetAssets	79,863	0.7699	0.1489	2.0257	0.0434	0.4899
KG Index	79,867	4.3416	4.4359	0.6759	3.5811	4.8272
EGKLS Index	68,251	0.6157	0.5998	0.1313	0.5168	0.7524
Firm Size	79,867	6.1683	6.1192	2.1811	4.5536	7.7063
Market-to-book	79,867	2.4673	1.6386	2.5685	1.1108	2.7021
LN(Firm Age)	79,867	2.3474	2.4849	1.0492	1.6094	3.1355
Tangibility	79,867	0.5407	0.3989	0.4629	0.1843	0.7872
R&D Expenditure	79,867	0.0673	0.0047	0.1263	0	0.0792
Profitability	79,867	0.0402	0.1009	0.2570	0..0015	0.1692
Financial Leverage	79,867	0.5509	0.5081	0.3494	0.3063	0.7100
Dividend Paying Firms (0/1)	79,867	0.3200	0	0.4664	0	1

Table 2: Climate policy uncertainty and corporate cash holdings

This table reports the effect of climate policy uncertainty on corporate cash holdings. The dependent variable is *Cash*, which is either the cash-to-assets ratio or cash-to-net assets ratio. Across Columns 1-4, the variable of interest is *KG Index*, the measure of climate policy uncertainty. All continuous variables are winsorized at the 1% level. A detailed description of the variables is provided in Appendix A. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Cash*			
Variables	$Cash/Assets_t$	$Cash/Assets_{t+1}$	$Cash/NetAssets_t$	$Cash/NetAssets_{t+1}$
	(1)	(2)	(3)	(4)
KG Index	0.0353***	0.0275***	0.0952***	0.1515***
	(0.0028)	(0.0024)	(0.0274)	(0.0221)
Firm Size	-0.0210***	-0.0297***	-0.0256	-0.1843***
	(0.0021)	(0.0021)	(0.0228)	(0.0227)
Market-to-book	0.0144***	0.0083***	0.1036***	0.0423***
	(0.0005)	(0.0005)	(0.0062)	(0.0062)
LN(Firm Age)	-0.0198***	-0.0168***	-0.1504***	-0.1365***
	(0.0022)	(0.0023)	(0.0237)	(0.0250)
Tangibility	-0.0588***	-0.0358***	-0.3544***	-0.2404***
	(0.0047)	(0.0044)	(0.0446)	(0.0402)
R&D Expenditure	0.0199	0.0507**	0.6303**	1.0569***
	(0.0203)	(0.0217)	(0.2926)	(0.3081)
Profitability	-0.0291***	-0.0196**	-0.7481***	-0.3661***
	(0.0071)	(0.0077)	(0.0898)	(0.0997)
Financial Leverage	-0.0740***	-0.0530***	-0.4848***	-0.2649***
	(0.0040)	(0.0040)	(0.0425)	(0.0446)
Dividend Paying Firms (0/1)	0.0034	-0.0021	0.0269*	0.0387***
	(0.0026)	(0.0026)	(0.0157)	(0.0143)
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	79,867	70,643	79,863	70,641
R^2	0.1100	0.0738	0.0561	0.0333

Table 3: Climate policy uncertainty and cash flow volatility

This table reports the effect of climate policy uncertainty on cash flow volatility. The dependent variable is *Cash Flow Volatility*, which is CFV_KS in Column 1, CFV_SM in Column 2, and CFV_DL in Column 3. Across Columns 1-3, the variable of interest is *KG Index*, the measure of climate policy uncertainty. All continuous variables are winsorized at the 1% level. A detailed description of the variables is provided in Appendix A. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Cash Flow Volatility*		
Variables	CFV_KS	CFV_SM	CFV_DL
	(1)	(2)	(3)
KG Index	5.3965***	5.2565***	11.1883***
	(1.0782)	(1.2359)	(1.0991)
Firm Size	-7.6885***	-8.9144***	-5.5860***
	(0.9822)	(1.1175)	(1.0505)
Market-to-book	0.7519***	-0.4890**	1.0727***
	(0.2413)	(0.2482)	(0.2200)
LN(Firm Age)	-4.4491***	-2.5213**	-12.0724***
	(0.9707)	(1.1906)	(1.1483)
Tangibility	-5.7945***	-4.8741**	-7.2123***
	(1.6057)	(2.1638)	(1.5476)
R&D Expenditure	59.4729***	72.2242***	32.7026***
	(10.9959)	(13.1862)	(10.0359)
Profitability	-17.5097***	-18.2474***	-23.0175***
	(3.4496)	(4.1323)	(3.2179)
Financial Leverage	-1.9170	0.6874	0.4405
	(2.0965)	(2.3737)	(1.7710)
Dividend Paying Firms (0/1)	1.0898**	0.7872	1.3429*
	(0.5042)	(0.5455)	(0.7015)
Year Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes
Observations	50,074	49,414	49,388
R^2	0.0605	0.0550	0.0783

Table 4: Cross-sectional analyses: Financial constraints, exposure to climate disaster, and industry carbon emission

This table reports how the effect of climate policy uncertainty on corporate cash holdings varies with financial constraints, a firm's state location exposure to climate disaster, and carbon intensities by industry in Panels A, B, and C, respectively. The dependent variable is *Cash*, which is either the cash-to-assets ratio or cash-to-net assets ratio. Across Columns 1-4 of Panel A, the variable of interest is the interaction term *KG Index* × *FinCon (0/1)*. *FinCon (0/1)* is an indicator variable that takes the value of one if a company's financial constraint level (measured using the Hadlock and Pierce (2010) size-age index) is greater than its respective industry median, zero otherwise. In Panel B, the variable of interest is *KG Index* × *CliExp (0/1)*. *CliExp (0/1)* is an indicator variable which captures severity of state-level climate disaster exposure takes the value of one if a company's state of incorporation's number of billion-dollar climate disaster equals or above the median of the National Oceanic and Atmospheric Administration billion-dollar climate disaster ranking. In Panel C, we construct *HighEmi (0/1)*, which is set to one if a firm is in Ilhan et al. (2021) top-10 carbon emission industries classification. The variable of interest is *KG Index* × *HighEmi (0/1)*. We do not include a separate *HighEmi (0/1)* because as an industry-level variable, it is subsumed by the firm fixed effects. All continuous variables are winsorized at the 1% level. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Cash*			
Panel A: Role of financial constraints				
Variables	$Cash/Assets_t$ (1)	$Cash/Assets_{t+1}$ (2)	$Cash/NetAssets_t$ (3)	$Cash/NetAssets_{t+1}$ (4)
KG Index × *FinCon (0/1)*	0.0066**	0.0070**	0.1012***	0.0549
	(0.0030)	(0.0030)	(0.0367)	(0.0365)
KG Index	0.0366***	0.0282***	0.0368	0.1288***
	(0.0038)	(0.0035)	(0.0426)	(0.0388)
FinCon (0/1)	-0.0541***	-0.0592***	-0.4698***	-0.3113**
	(0.0121)	(0.0124)	(0.1385)	(0.1389)
Firm Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	79,867	70,643	79,863	70,641
R^2	0.1127	0.0775	0.0567	0.0338
Panel B: Firm's state climate disaster exposure				
KG Index × *CliExp (0/1)*	0.0047**	0.0041*	0.0866***	0.0618***
	(0.0022)	(0.0023)	(0.0204)	(0.0206)
KG Index	0.0324***	0.0255***	0.0593**	0.1302***
	(0.0030)	(0.0027)	(0.0299)	(0.0247)
CliExp (0/1)	-0.0162	-0.0155	-0.3593***	-0.2749***
	(0.0101)	(0.0103)	(0.0923)	(0.0926)
Firm Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	79,867	70,643	79,863	70,641
R^2	0.1102	0.0740	0.0565	0.0335
Panel C: Industry carbon emission intensity				
KG Index × *HighEmi (0/1)*	0.0063***	0.0067***	0.0233	0.0312**
	(0.0023)	(0.0024)	(0.0151)	(0.0149)
KG Index	0.0345***	0.0267***	0.0923***	0.1479***
	(0.0029)	(0.0025)	(0.0278)	(0.0225)
Firm Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	79,867	70,643	79,863	70,641
R^2	0.1101	0.0740	0.0561	0.0333

Table 5: Climate policy uncertainty and investments

This table reports the effect of climate policy uncertainty on investments. In Columns 1 and 2, the dependent variable is investment in capital expenditure and in Columns 3 and 4, the dependent variable is investment in acquisitions. Across Columns 1-4, the variable of interest is *KG Index*, the measure of climate policy uncertainty. All continuous variables are winsorized at the 1% level. A detailed description of the variables is provided in Appendix A. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Investment*			
Variables	*Capex/Assets* (1)	*Capex/PPEGT* (2)	*Aqc/Assets* (3)	*Aqc/PPEGT* (4)
KG Index	-0.0154***	-0.0342***	-0.0045***	-0.0253***
	(0.0012)	(0.0039)	(0.0017)	(0.0094)
Firm Size	0.0082***	0.0531***	0.0164***	0.1121***
	(0.0007)	(0.0026)	(0.0010)	(0.0056)
Market-to-book	0.0039***	0.0176***	0.0005*	0.0061***
	(0.0002)	(0.0009)	(0.0003)	(0.0016)
LN(Firm Age)	-0.0189***	-0.1270***	-0.0135***	-0.0916***
	(0.0011)	(0.0039)	(0.0012)	(0.0075)
Tangibility	0.0832***	0.0604***	0.0193***	-0.0947***
	(0.0031)	(0.0075)	(0.0031)	(0.0143)
R&D Expenditure	0.0124*	-0.0336	-0.0158	-0.0830
	(0.0065)	(0.0305)	(0.0105)	(0.0638)
Profitability	0.0298***	-0.0016	0.0501***	0.1885***
	(0.0032)	(0.0113)	(0.0039)	(0.0229)
Financial Leverage	0.0063***	-0.0010	0.1291***	0.5486***
	(0.0015)	(0.0055)	(0.0037)	(0.0190)
Dividend Paying Firms (0/1)	0.0023*	-0.0050*	0.0034**	-0.0069
	(0.0012)	(0.0030)	(0.0015)	(0.0077)
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	79,571	79,004	76,956	76,397
R^2	0.2149	0.1636	0.1901	0.1206

Table 6: Robustness: Impact of Paris agreement on corporate cash holdings

This table reports the effect of the Paris agreement on corporate cash holdings. The dependent variable is *Cash*, which is either the $cash-to-assets$ ratio or $cash-to-netassets$ ratio. The variable of interest is *Paris Agreement (0/1)*, an indicator that moves from zero to one when the Paris agreement was adopted; it moves from one to zero when the US exited and reverts to one when the US rejoined the Paris agreement. All continuous variables are winsorized at the 1% level. A detailed description of the variables is provided in Appendix A. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Cash*			
Variables	$Cash/Assets_t$	$Cash/Assets_{t+1}$	$Cash/NetAssets_t$	$Cash/NetAssets_{t+1}$
	(1)	(2)	(3)	(4)
Paris Agreement (0/1)	0.0720***	0.0462***	0.1941***	0.3584***
	(0.0057)	(0.0049)	(0.0559)	(0.0430)
Firm Size	-0.0210***	-0.0297***	-0.0256	-0.1843***
	(0.0021)	(0.0021)	(0.0228)	(0.0227)
Market-to-book	0.0144***	0.0083***	0.1036***	0.0423***
	(0.0005)	(0.0005)	(0.0062)	(0.0062)
LN(Firm Age)	-0.0198***	-0.0168***	-0.1504***	-0.1365***
	(0.0022)	(0.0023)	(0.0237)	(0.0250)
Tangibility	-0.0588***	-0.0358***	-0.3544***	-0.2404***
	(0.0047)	(0.0044)	(0.0446)	(0.0402)
R&D Expenditure	0.0199	0.0507**	0.6303**	1.0569***
	(0.0203)	(0.0217)	(0.2926)	(0.3081)
Profitability	-0.0291***	-0.0196**	-0.7481***	-0.3661***
	(0.0071)	(0.0077)	(0.0898)	(0.0997)
Financial Leverage	-0.0740***	-0.0530***	-0.4848***	-0.2649***
	(0.0040)	(0.0040)	(0.0425)	(0.0446)
Dividend Paying Firms (0/1)	0.0034	-0.0021	0.0269*	0.0387***
	(0.0026)	(0.0026)	(0.0157)	(0.0143)
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	79,867	70,643	79,863	70,641
R^2	0.1100	0.0738	0.0561	0.0333

Table 7: Robustness: Alternative measure of climate policy uncertainty

This table reports the effect of climate policy uncertainty on corporate cash holdings using the alternative climate policy uncertainty measure. The dependent variable is *Cash*, which is either the $cash-to-assets$ ratio or $cash-to-netassets$ ratio. Across Columns 1-4, the variable of interest is *EGKLS Index*, the measure of climate policy uncertainty. All continuous variables are winsorized at the 1% level. A detailed description of the variables is provided in Appendix A. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Cash*			
Variables	$Cash/Assets_t$	$Cash/Assets_{t+1}$	$Cash/NetAssets_t$	$Cash/NetAssets_{t+1}$
	(1)	(2)	(3)	(4)
EGKLS Index	0.5441***	0.4301***	1.4054***	2.4588***
	(0.0456)	(0.0459)	(0.3880)	(0.3761)
Firm Size	-0.0207***	-0.0286***	-0.0316	-0.1702***
	(0.0024)	(0.0023)	(0.0243)	(0.0232)
Market-to-book	0.0145***	0.0080***	0.0974***	0.0397***
	(0.0006)	(0.0006)	(0.0070)	(0.0066)
LN(Firm Age)	-0.0233***	-0.0190***	-0.1335***	-0.1199***
	(0.0024)	(0.0026)	(0.0255)	(0.0267)
Tangibility	-0.0642***	-0.0395***	-0.3680***	-0.2478***
	(0.0050)	(0.0047)	(0.0478)	(0.0434)
R&D Expenditure	-0.0070	0.0405*	0.4318	1.0137***
	(0.0222)	(0.0231)	(0.3241)	(0.3248)
Profitability	-0.0239***	-0.0161*	-0.6587***	-0.3560***
	(0.0077)	(0.0082)	(0.0938)	(0.1021)
Financial Leverage	-0.0734***	-0.0514***	-0.4275***	-0.2289***
	(0.0044)	(0.0043)	(0.0456)	(0.0471)
Dividend Paying Firms (0/1)	0.0054**	-0.0019	0.0365**	0.0353**
	(0.0027)	(0.0028)	(0.0166)	(0.0142)
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	68,251	62,486	68,248	62,484
R^2	0.1049	0.0671	0.0491	0.0288

Table 8: Robustness: Exclusion of the global financial crisis period

This table reports the effect of climate policy uncertainty on corporate cash holdings excluding the global financial crisis period of 2007-2009. The dependent variable is *Cash*, which is either the $cash-to-assets$ ratio or $cash-to-netassets$ ratio. Across Columns 1-4, the variable of interest is *KG Index*, the measure of climate policy uncertainty. All continuous variables are winsorized at the 1% level. A detailed description of the variables is provided in Appendix A. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Cash*			
Variables	$Cash/Assets_t$ (1)	$Cash/Assets_{t+1}$ (2)	$Cash/NetAssets_t$ (3)	$Cash/NetAssets_{t+1}$ (4)
KG Index	0.0351***	0.0277***	0.1028***	0.1625***
	(0.0029)	(0.0025)	(0.0277)	(0.0229)
Firm Size	-0.0223***	-0.0314***	-0.0395	-0.1996***
	(0.0022)	(0.0023)	(0.0243)	(0.0252)
Market-to-book	0.0144***	0.0082***	0.1029***	0.0398***
	(0.0005)	(0.0005)	(0.0064)	(0.0066)
LN(Firm Age)	-0.0184***	-0.0156***	-0.1497***	-0.1389***
	(0.0023)	(0.0026)	(0.0251)	(0.0277)
Tangibility	-0.0595***	-0.0352***	-0.3613***	-0.2276***
	(0.0049)	(0.0049)	(0.0462)	(0.0440)
R&D Expenditure	0.0153	0.0578**	0.5279*	1.0763***
	(0.0215)	(0.0225)	(0.2971)	(0.3212)
Profitability	-0.0354***	-0.0258***	-0.7576***	-0.3472***
	(0.0076)	(0.0084)	(0.0928)	(0.1028)
Financial Leverage	-0.0713***	-0.0525***	-0.4454***	-0.2530***
	(0.0042)	(0.0044)	(0.0437)	(0.0476)
Dividend Paying Firms (0/1)	0.0032	-0.0018	0.0305*	0.0383**
	(0.0027)	(0.0029)	(0.0169)	(0.0161)
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	68,826	57,064	68,823	57,062
R^2	0.1126	0.0772	0.0556	0.0347

Table 9: Robustness: Inclusion of additional controls

This table reports the effect of climate policy uncertainty on corporate cash holdings after including controls for net working capital, industry cash flow volatility, GDP growth forecast and expected inflation, which are both obtained from the Livingston Survey. The dependent variable is *Cash*, which is either the $cash-to-assets$ ratio or $cash-to-netassets$ ratio. Across Columns 1-4, the variable of interest is *KG Index*, the measure of climate policy uncertainty. All continuous variables are winsorized at the 1% level. A detailed description of the variables is provided in Appendix A. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Cash*			
Variables	$Cash/Assets_t$	$Cash/Assets_{t+1}$	$Cash/NetAssets_t$	$Cash/NetAssets_{t+1}$
	(1)	(2)	(3)	(4)
KG Index	0.0353***	0.0281***	0.0839***	0.1444***
	(0.0030)	(0.0025)	(0.0296)	(0.0234)
Firm Size	-0.0170***	-0.0279***	-0.0076	-0.1734***
	(0.0021)	(0.0021)	(0.0230)	(0.0229)
Market-to-book	0.0152***	0.0087***	0.1073***	0.0453***
	(0.0005)	(0.0005)	(0.0063)	(0.0062)
LN(Firm Age)	-0.0197***	-0.0164***	-0.1533***	-0.1383***
	(0.0022)	(0.0023)	(0.0245)	(0.0258)
Tangibility	-0.0541***	-0.0335***	-0.3338***	-0.2236***
	(0.0047)	(0.0044)	(0.0454)	(0.0408)
R&D Expenditure	0.0217	0.0514**	0.6278**	1.0427***
	(0.0201)	(0.0215)	(0.2922)	(0.3075)
Profitability	-0.0125*	-0.0097	-0.6895***	-0.3130***
	(0.0071)	(0.0077)	(0.0910)	(0.1009)
Financial Leverage	-0.0911***	-0.0625***	-0.5593***	-0.3278***
	(0.0041)	(0.0041)	(0.0451)	(0.0466)
Dividend Paying Firms (0/1)	0.0041	-0.0014	0.0264*	0.0374***
	(0.0026)	(0.0026)	(0.0158)	(0.0142)
Net Working Capital	-0.1517***	-0.0944***	-0.6103***	-0.5667***
	(0.0092)	(0.0094)	(0.0856)	(0.0869)
Industry Cash Flow Volatility	0.7564***	0.6653***	1.6938	1.6343
	(0.1106)	(0.1153)	(1.0309)	(1.0794)
GDP Growth	0.0855***	0.0021	0.2522**	0.8142
	(0.0222)	(0.0463)	(0.1109)	(1.0584)
Inflation	-0.1015	0.0197	0.1006	2.2709
	(0.1231)	(0.2144)	(0.8223)	(2.9746)
Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	78,244	69,247	78,240	69,246
R^2	0.1298	0.0822	0.0591	0.0356

Table 10: Robustness: Net debt issues

This table reports the results of the net debt issues regressions. The dependent variable in Column 1 is $NetDebt/Assets$ measured as the difference between long-term debt issuance and long-term debt reduction, scaled by the book value of assets. In Columns 2, the dependent variable is $NetDebt/Sales$ measured as the difference between long-term debt issuance and long-term debt reduction, scaled by sales. All continuous variables are winsorized at the 1% level. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable:	
Variables	$NetDebt/Assets$	$NetDebt/Sales$
KG Index	-0.0120***	-0.0336***
	(0.0016)	(0.0050)
Firm Size	0.0130***	0.0450***
	(0.0010)	(0.0033)
Market-to-book	-0.0016***	-0.0023**
	(0.0003)	(0.0011)
LN(Firm Age)	-0.0111***	-0.0405***
	(0.0011)	(0.0040)
Tangibility	0.0148***	0.0575***
	(0.0029)	(0.0111)
R&D Expenditure	-0.0361***	-0.1059**
	(0.0099)	(0.0456)
Profitability	-0.0185***	-0.1448***
	(0.0039)	(0.0154)
Financial Leverage	0.1440***	0.3622***
	(0.0029)	(0.0101)
Dividend Paying Firms (0/1)	0.0156***	0.0263***
	(0.0015)	(0.0040)
Year Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
Observations	76,131	74,025
R^2	0.2023	0.1489

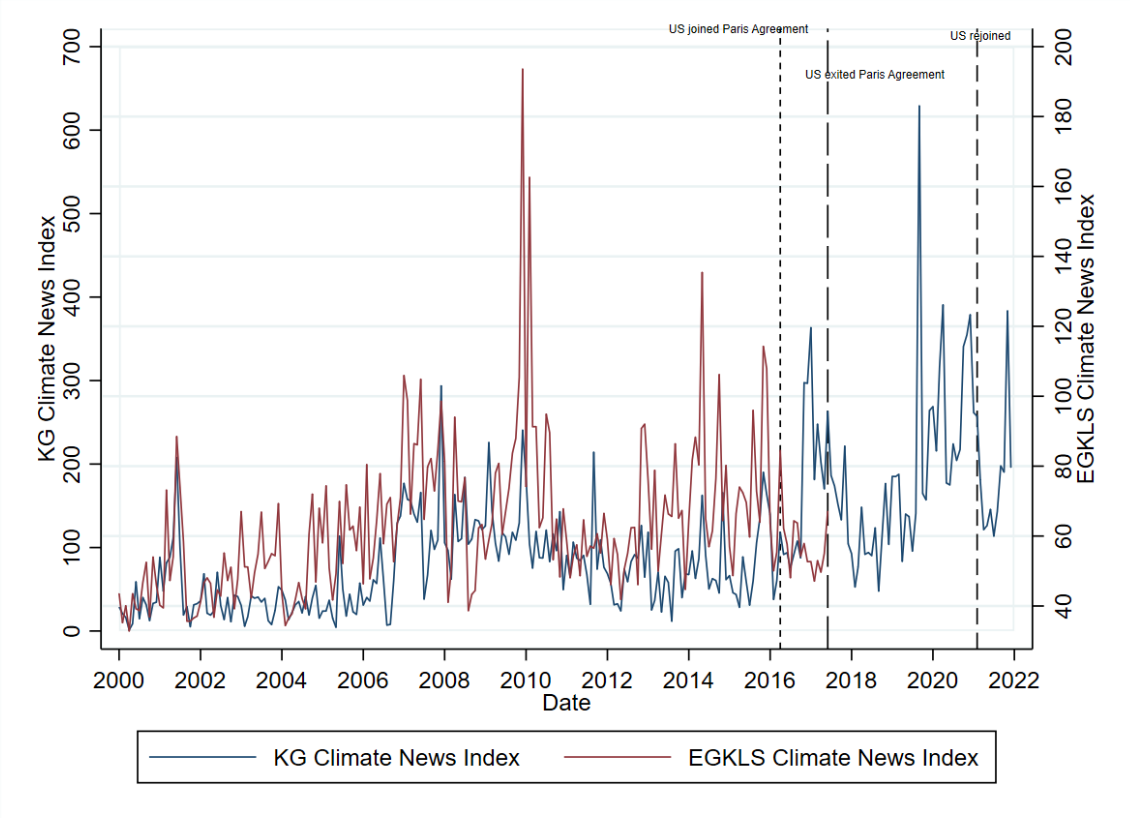

Figure 1: KG and EGKLS Climate News Index

Figures 1. This figure shows the KG and EGKLS Climate News Index from 2000 to 2021 and from 2000 to 2018, respectively. We annotated with Paris Agreement news announcements in the US.

Appendices

A Variable definitions

This table provides the definition of the key variables used. Accounting data are from Compustat.

Variable	Definition
Cash/Assets	The ratio of Cash and marketable securities (CHE) to total book assets (AT)
Cash/NetAssets	The ratio of Cash and marketable securities (CHE) to the difference of total book assets (AT) and Cash and marketable securities (CHE)
KG index	The natural logarithm of the *KG index*
EGKLS index	The *EGKLS index* $\times$ 100
FinCon (0/1)	FinCon (0/1), an indicator variable that takes the value of one if a company's financial constraint level (measured using the Hadlock and Pierce (2010) size-age index) is greater than its respective industry median, zero otherwise
Firm Size	Natural logarithm of total book assets (AT)
Market-to-book	Ratio of total book assets (AT) less the book value of common equity (CEQ) plus the total market value of equity (CSHO $\times$ $PRCC_C$) all divided by the total book assets (AT)
LN(Firm Age)	Natural Logarithm of the number of years a firm has been listed in the merged CRSP/Compustat database
Tangibility	Ratio of gross property, plant, and equipment (PPEGT) to total book assets (AT)
R&D Expenditure	Ratio of research and development expense (XRD) to total book assets (AT)
Profitability	Ratio of operating income before depreciation (OIBDP) to total book assets (AT)
Financial Leverage	The ratio of total liabilities (LT) to beginning year total assets (AT)
Dividend paying firm (0/1)	Set to one in the year a firm pays dividend and zero otherwise; set to zero if missing
Industry Cash Flow Volatility	Standard deviation of industry average cash flows for the previous 10 years, we require at least 3 years of observations
Net Working Capital	Ratio of net working capital (WCAP-CHE) to total book assets (AT)
GDP Growth	One-year ahead GDP growth forecast from the Livingston Survey
Inflation	The expected change in the consumer price index (CPI) over the coming year from the Livingston Survey