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Abstract

We investigate whether firm-level political risk affects corporate cash holdings. Taking a sample of 5,424 US firms with 129,750 firm-quarter observations from 2002Q1 to 2021Q3, we find that cash holdings is higher for firms with greater exposure to firm-level political risk. The positive relationship between firm political risk and cash holdings is consistent for financial constraint and non-constraint firms, high and low growth firms, pro-cyclical and counter-cyclical and competitive industries. Further, our findings are consistent to alternative measures of firm-level political risk and cash holdings. In addition, our findings remain robust with different endogeneity tests: a natural experiment, an instrumental variable approach, and a propensity score matching. Overall, we present novel evidence on the determinants of corporate cash holdings.

JEL classification: G30, G32, H32

Keywords: Firm-level political risk; cash holdings; financial constraints; business cycle

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1. Introduction

Political risk has a substantial impact on corporate financial policies. Prior research document that political uncertainty significantly affects corporate investment (Bertrand *et al.*, 2018; An *et al.*, 2016), stock price (Fan *et al.*, 2008; Roberts, 1990), accounting conservatism (Dai and Ngo, 2021), and cash holdings (Xu *et al.*, 2016). However, all these studies measure political risk through national political events, such as elections and regime changes, and ignore the industry and micro-level political risks that may substantially influence firms' financial decisions. We aim to fill this void in the extant literature. Firm-level political risk is significantly different from national-level political risk because more than 90 per cent of the variation in firm-level political risk stems from firm-specific factors, whereas only one per cent originates from macro-level political uncertainty. This divergence within the firm-level political risk is mainly due to the industry-level policy changes, local political and policy uncertainties, regulatory shocks, and other firm-specific heterogeneity (Hassan *et al.*, 2019). Therefore, such influence of firm-level political risk on corporate policies has important implications for managers. Given this backdrop, we investigate the impact of firm-level political risk on corporate cash holdings.

We conjecture that firm-level political risk positively affects corporate cash holdings at least for three reasons – precautionary motives, avoiding higher financing costs, and managerial conservatism. First, the heightened firm-level political risk decreases firms' asset returns and cash flows that consequently lead to financial constraints (Phan *et al.*, 2019; Brogaard and Detzel, 2015; Pástor and Veronesi, 2013). Hence, firms exposed to high political risk tend to hold larger cash reserves to run their business operations smoothly. Moreover, during political uncertainty, firms prefer to withhold their investments of those that are particularly irreversible in nature, leading to larger cash holdings (Gulen and Ion, 2016). Second, high political instability may push the cost of external financing up because of the

asymmetry of information between the external investors and firms (Myers and Majluf, 1984). As a result, managers prefer to finance from internal sources, i.e., corporate cash holdings, to tap unavoidable investment opportunities to contribute to firm growth. Third, managers become more conservative and are likely to hold more cash during policy uncertainty (Panousi and Papanikolaou, 2012) as they expect cash flows to become more volatile (Pinkowitz and Williamson, 2001). Thus, we expect firm-level political risk to lead firms to have larger cash reserves.

We employ a novel firm-level political risk (PRisk) index developed by Hassan *et al.* (2019) to empirically examine the association between firm-level political risk and cash holdings. Hassan *et al.* (2019) use firms' quarterly conference calls to derive firm-specific, time-varying measures of political risk. They then applied machine-learning algorithms to evaluate the texts of the conference calls and identify the proportion of political narratives. Using this new firm-level political risk, we construct a sample consisting of 5,424 US firms with 129,750 firm-quarter observations from 2002Q1 to 2021Q3. We demonstrate that firm political risk is positively correlated with corporate cash holdings. This positive relationship carries economic significance: an increase of one standard deviation of firm political risk relates to a 0.63 [= 0.004×158.74] standard deviation increase in corporate cash holdings. We further confirm our baseline results employing a battery of robustness tests. First, the positive association between firm-level political risk and cash holdings is consistent across all major types of political risk and for variations of corporate cash holdings measures. Second, our main results also remain unchanged for financially constraint and non-constraint, and high and low growth firms. Third, we find similar results for firms belonging to pro- and counter-cyclical, and competitive industries.

We provide additional evidence to offer further confirmation of the relationship between firm political risk and corporate cash holdings. First, we conduct a novel and unique

natural experiment with redistricting of electoral boundaries under the 2010 decennial census, with a difference-in-differences (DID) framework. The redistricting event offers a plausible exogenous variation in the political risk that firms experience. We place firms that had been redistricted into the treatment group. Our empirical evidence shows that the positive association between firm-level political risk and cash holdings is unchanged when redistricting is applied as a policy-related exogenous shock. Second, following relevant literature (e.g., Gulen and Ion, 2015), we use the Partisan Conflict Index (PCI) as an instrumental variable (IV). Employing the two-stage least squares, we reconfirm that firm-level political risk increases cash holdings after extracting exogenous components from our variable of interest. Third, following Rosenbaum and Rubin (1983), we employ a propensity score matching (PSM) analysis to address unobserved firm-level heterogeneity and find firms with similar characteristics but different levels of political risk. Our post-match empirical results demonstrate that firm political risk remains positively correlated with cash holdings. In sum, our additional evidence confirms that firm-level political risk has a positive association with cash holdings.

Our study has two important contributions to the extant literature. First, we contribute to an emerging strand of literature that investigates the impact of firm-level political risk on corporate policies. For instance, Aye *et al*. (2018) report that firm-level political risk exposure can strongly predict adverse realized volatility, while Chatjuthamard *et al.* (2021) find that firms with relatively higher political risk exposure invest significantly more in corporate social responsibility (CSR) activities. We have expanded this recent stream of literature by providing new empirical evidence that firms' political risk significantly affects their cash holdings.

Second, our paper joins a group of studies that identify the impetus of cash holdings. For instance, the empirical findings suggest that firms hold cash due to volatile earnings and higher external financing cost (Kim *et al.*, 1998), potential growth opportunities (Pinkowitz and Williamson, 2001), asymmetric information (Myers and Majluf, 1984), economic policy

uncertainty (Phan *et al.,* 2019; Gao and Grinstein, 2014; Bhaduri and Kanti, 2011; Pinkowitz *et al.*, 2003), and political uncertainty (Xu *et al*., 2016). In this connection, our paper is broadly linked to Xu *et al.* (2016) and Phan *et al.* (2019), which mainly concentrate on the relationship between political/policy uncertainty and cash holdings. However, both studies use country-level political and policy uncertainty measures which do not reflect the firm-level divergence in political risk. Our study is distinct to this end as we employ the dynamic firm-level political risk index of Hassan *et al.* (2019). This measure of political risk captures industry-, regional-, and national-level political risk in relation to the economy, the environment, health, security, tax, technology, and trade that directly and indirectly affects firm-level corporate policies. Thus, using such a comprehensive micro-level measure, we show that firm political risk is a crucial determinant for corporate cash holdings.

The rest of the paper is structured as follows: Section 2 reviews the literature and develops the hypothesis. Section 3 discusses the data and sample statistics. Section 4 reports the baseline empirical findings. Section 5 addresses the endogeneity concerns, and Section 6 highlights the robustness tests. Finally, Section 7 concludes the paper.

2. Literature review and hypothesis development

This section provides a summary of two aspects of the literature leading to hypothesis development. First, we present extant literature on the rationale behind corporate cash holdings. Second, we highlight how firm-level political risk is likely to affect corporate cash holdings.

2.1. *Rationale behind cash holdings*

Managers favor retained earnings over debt, debt over equity, and short-term debt over long-term debt when financing new projects. This is because the pecking order theory of capital structure advocates that the firm uses its retained earnings to finance the investment

opportunities instead of issuing new securities to resolve information asymmetry. High information asymmetry makes new equity issuance expensive as securities trade at lower prices. When the cost of external financing is higher and firms expect to have considerable volatile earnings, firms usually hold higher cash (Kim *et al.*, 1998). Firms also tend to hold higher cash, particularly when they perceive a growth opportunity but is it associated with riskier cash flows (Pinkowitz and Williamson, 2001). Thus, firms prefer to hold cash to finance investment projects as cash flows become volatile.

Extant literature further documents a number of other underlying factors that motivate firms to keep cash or liquid assets in hand. For example, firm size (Al-Najjar, 2013), firm ownership (Gupta and Bedi, 2020; Megginson *et al*., 2014), corporate diversification (Duchin, 2010), financial hedging (Sun *et al*., 2021), labor heterogeneity (Ghaly *et al*., 2017), and employee welfare (Ghaly *et al*., 2015) affect corporate cash holdings. In addition, corporate governance (Kuan *et al*., 2012; Dittmar and Mahrt-Smith, 2003), multiple directorships (Chou and Feng, 2018), CEO belief (Deshmukh *et al*., 2021), board gender diversity (Atif *et al*., 2019), and supply chain (Nguyen *et al.*, 2021) significantly influence firm cash policies.

The recent empirical literature has also paid considerable attention to examine the influence of geopolitical risk (GPR) and political uncertainty on cash holdings. Lee and Wang (2021) show that the increase in GPR makes firms hold more cash as a caution. In particular, the positive influence of GPR on cash holding is more evident in firms with financial constraints (Kotcharin and Maneenop, 2020). Local political uncertainty also significantly affects cash holdings. Xu *et al.* (2016) show that the firms keep less cash in the first year of appointing a new government official for a city. Further, the authors find that firms hold considerably lower cash when the incumbent official is from a different city than the incumbent constituency. They also highlight that managers' hold large cash when firms face considerable political risk.

Another strand of literature has also explored the role of economic policy uncertainty (EPU) on cash holdings. According to Demir and Ersan (2017), firms tend to hold higher cash reserves when they face an increased level of domestic and global economic uncertainty. Gulen and Ion (2016) also report a significant positive relationship between policy uncertainty and cash holdings. This was confirmed by Baum *et al*. (2008) and Gao and Grinstein (2014) who show that the macro-level uncertainty leads to larger cash holdings among the US businesses as a precautionary measure. The incremental policy uncertainty not only intensifies firms' financial difficulties but also makes external financing expensive, which increases firms' reliance on internal resources by hoarding cash from retained earnings (Gilchrist *et al.,* 2014; Baum *et al.,* 2006).

This evidence suggests that firm characteristics, corporate governance, geopolitical and policy uncertainty significantly determine the corporate cash holdings.

2.2. Firm-level political risk and corporate cash holdings

While the discussion in the previous section highlights the impact of political risk and other factors on cash holdings in general, in this section, we specifically discuss how firm-level political risk affects corporate cash holdings.

When a firm experiences high political risk, it tends to suffer extreme difficulties to finance from external sources because of increased financial frictions and volatility in cash flows. Firm-level political risk increases the credit market allocation and equity risk premium, aggravating the capital market's financing friction, which will increase default risk and cost of equity financing (Gilchrist *et al.,* 2014). According to precautionary saving motives (Duchin, 2010; Almeida *et al.,* 2004), the decreased expectations regarding future financing prospects push firms to accumulate internal funds and raising precautionary cash reserves to alleviate the potential negative consequences of political risk. From the real options perspective (Gulen and Ion, 2016; Bernanke, 1983), firms during periods of high political risk prefer to delay their

long-term investment until some of the uncertainty resolves, leading to an increase in cash holdings. For example, Apple Inc.'s political risk increased by 95% between 2017Q1 and 2017Q4 (PRisk score 38.85 in 2017Q1 and 74.49 in 2017Q4). In response to this incremental increase in political risk exposure, Apple increased its cash holdings by 81%, from $15,157 million in 2017Q1 to $27,491 million 2017Q4. In the same period, long-term investment (capital expenditure) reduced from $6,309 million in 2017Q1 to $2,810 million in 2017Q4, reflecting a reduction of 55%.

When firms confront high politically uncertain periods, managers encounter enormous difficulty in predicting firms' future earnings that increases the information asymmetry between external investors and firms, making it difficult for investors to make investment decisions following historical financial data, current, and predicated future information (Nagar *et al.,* 2019; Xu *et al.*, 2016). With worsened information environment during high uncertainty periods, firms would prefer cheaper internal capital for investment, leading firms' demand for cash.

Firm-level political risk also increases managerial conservatism. As uncertainty increases, managers become more risk-averse (Panousi and Papanikolaou, 2012) and tend to hold more in retained earnings. For example, Amazon Inc. experienced a 74.02% incremental increase in political risk between 2015Q3 and 2016Q3 (*PRisk* score 81.70 in 2015Q3 and 142.18 in 2016Q3), and it increased its retained earnings by 162.68% in the same period (retained earnings reported was $1,388 million in 2015Q3 and $3,646 million in 2016Q3). Overall, firm-level political risk will increase managers' risk aversion, consequently, they prefer to adopt conservative financial policies, i.e., hold more cash.

Firm political risks stem from various economic, technological, and environmental sources. Hassan *et al.* (2019) measure several categories of firm-level political risk that have important implications for corporate policies. These include economic policy and budget,

environment, trade, institutions and political process, health care, security and defense, tax policy, and technology and infrastructure. While all these topical measures of firm-level political risk are expected to have a considerable impact on corporate cash holdings, we anticipate that economic policy and budget-related political risk may have a distinct impact on corporate cash holdings. Economic policy and budget related uncertainties, such as unstable monetary and fiscal policies, budget deficit and bankruptcy bills, can increase firms' incentives to delay investment and hold more cash. Since economic policy-related political risk tends to be temporary (Phan *et al.*, 2019), increased cash holdings can provide flexibility that allows firms to exploit future profitable investment opportunities when such uncertainty recedes.

In summary, higher firm-level political risk makes business managers express cautious attitudes, such as postponing investment plans and raising precautionary cash holdings. Thus, we expect firm-level political risk to lead firms to have larger cash reserves. This leads to our main hypothesis:

H1. *Firm-level political risk is positively associated with corporate cash holdings.*

3. Data and methods

In order to investigate the relationship between the firm-level political risk and corporate cash holdings, we estimate the following regression:

$$Cash_{i,t} = \alpha + \beta_1 PRisk_{i,t-1} + \beta_2 (control\ variables)_{i,t} + \beta_3 \sum (firm\ fixed\ effects)_i + \beta_4 \sum (quarter\ effects)_t + \varepsilon_{it} \quad (1)$$

Our dependent variable is firm cash holdings ($Cash_{i,t}$) and the variable of interest is firm political risk ($PRisk_{i,t}$). The firm-level political risk measure, *PRisk*, captures news on the manifestation of political shock. Hassan *et al.* (2019) utilize firms' quarterly conference calls to derive a firm-specific and time-varying measure of political risk. Most firms with a listing on the US stock exchange communicate their view on the firm's past and future performance

to a forum of their analysts and other interested stakeholders holding conference calls at regular intervals. These conferences also act as a platform for responding to questions from the call participants about any challenges the firm may face. Hassan *et al.* (2019) quantified the extent of political risk faced by a given firm in a given quarter by measuring the share of the conversation between conference call participants and firm management that centres on risks associated with politics.

Hassan *et al.* (2019) linguistically distinguished political and non-political subjects and themes by applying machine-learning algorithms. For instance, they deploy a *training archive of political manuscript* such as an undergraduate political science textbook and extracts from newspapers' political section for their basic measure of comprehensive exposure to political risk. Hassan *et al.* (2019) also utilize *a training atheneum of non-political text* such as an accounting textbook, chronicles from non-political segments of newspapers, and manuscripts of speeches on non-political topics. All these were employed to identify the 'bigrams' or the two-word combinations that are commonly used in political texts. They then compute the number of occurrences for which conference-call members use these bigrams in conjunction with synonyms for 'risk' or 'uncertainty'. They also weigh each bigram relative to its term frequency and divide it by the total length of the conference call to obtain political risk measures. We lag *PRisk* by one quarter to mitigate any endogeneity concern. We expect β_1 to be positive and statistically significant if there is any association between firm-level political risk and corporate cash holdings.

Following extant literature (Phan *et al.*, 2019; Devos and Rahman, 2018; Bates *et al.*, 2009), we control firm characteristics documented to have a significant impact on corporate cash holdings. We measure cash holdings, our main dependent variable, as cash scaled by the book-value of total assets (*Cash*). *Size* is measured as the natural logarithm of the book value of total assets. The ratio of the market value of assets to the book value of assets is our market-

to-book (M/B) ratio. We calculate cash flow (*Cashflows*) as the ratio of earnings after interest, dividends, and taxes but before depreciation to the book value of assets. Networking capital (*NWC*) is the difference between working capital and cash, all scaled by the book value of total assets. Research and development (*R&D*) is R&D expenses scaled by sales. Capital expenditure (*Capex*) is corporate capital expenditure scaled by the book value of total assets. *Leverage* is the ratio of sum of long-term debt and debt in current liabilities to total assets. *Dividend dummy* is an indicator variable which is 1 if firms pay dividends to common shareholders, and 0 otherwise. *Acquisition* is corporate acquisition expenditure scaled by the book value of total assets. *Industry sigma* is the average standard deviation of cashflow of a firm in each industry. We use two-digit SIC code to define industry. The standard deviation of cash flow is firm-level cash flow scaled by total assets for the past 10 years. We define control variables in Appendix A.

Our sample begins in January 2002 to align with the political risk data, and it ends in September 2021. We obtain cash holdings and other accounting data from COMPUSTAT. We exclude financial firms from our sample with standard industrial classification (SIC) codes between 6000 and 6999, as these firms are subject to statutory capital requirements. We also exclude utility firms with SIC codes between 4900 and 4999 from our sample. The final sample comprises 5,424 firms and 129,750 firm-quarter observations.

3.1. Descriptive statistics

We present the summary statistics of all variables used in this study in Table 1. We winsorize all variables at 1 and 99 percentiles to reduce the effects of outliers. The average (median) value for cash holdings in our sample is 13.1% (7.6%), while standard deviation is 0.162. Phan *et al*. (2019) report similar figures; the average (median) and standard deviation of cash holdings are 14.0% (7.3%) and 0.173, respectively, for their sample spanning between 1986 and 2015. Our independent variable, firm political risk, is the natural logarithm of firm political

risk index in a given quarter. We observe a large variation of political risk across the sample: the average political risk index score is 117.284, with a median of 65.602 and a standard deviation of 158.735. Regarding control variables, the descriptive statistics are qualitatively similar to Xu *et al.* (2016) and Phan *et al*. (2019).

[Insert Table 1 about here]

4. Firm-level political risk and cash holdings: Baseline regression analysis

To test the link between firm-level political risk and corporate cash holdings, we regress cash holdings on firm-level political risk. Table 2 reports the regression results. Model 1 includes all control variables but no quarter and industry fixed effects. Model 2 includes quarter and industry effects to control for a particular quarter- and industry-wide common factors. Model 3 includes firm fixed effects to capture unobserved time-variant firm characteristics to alleviate endogeneity concerns. Model 4 uses an alternative measure for cash holdings, i.e., cash and short-term investments scaled by the net book value of assets, where the net book value of assets is the book value of assets less cash and short-term investments. Finally, we use the heteroscedasticity-robust standard errors clustered by firms for statistical inference. The results suggest that the coefficients of firm political risk are positive (ranging from 0.002 to 0.004) and statistically significant across all three models, indicating that firms hold more cash when their political risk increases. The impact of political risk on cash holdings is also economically significant. For example, the coefficient estimates presented in model 1 of Table 2 indicate a one standard deviation increase in political risk is associated with an increase of 0.63 [= 0.004×158.735] of cash holdings. Our baseline results are consistent with firms' precautionary motives and support our hypothesis. These results are also consistent with Demir and Ersan (2017), Phan *et al.* (2019) and Duong *et al.* (2020), who also provide empirical evidence that a country's policy uncertainty is related to its firms' cash holdings.

The results for the control variables are generally consistent with intuitions. We find firm size, cash flow, net working capital, capital expenditure, leverage, dividend, and acquisition are negatively associated with cash holdings. Conversely, market to book value, R&D, and industry cash flow volatility increase with firm cash holdings.

[Insert Table 2 about here]

We develop a theoretical argument in Section 2.2 that managers become risk-averse by delaying their investment decisions during the periods of higher firm-level political risk and depend more on internal financing, i.e., retained earnings. To examine this argument, in Appendix B, we divide firms into three groups based on their political risk (low, medium and high). The low (high) group contains firms with least (most) level of political risk. Across these groups, we then calculate the average capital expenditures (Capex), retained earnings, and cash holdings (Cash). We find that for the high-minus-low political risk group's capital expenditure is negative and significant, suggesting that capital expenditure is significantly lower in higher political risk tercile. Likewise, retained earnings is found to be significantly greater for firms with higher political risk. Overall, lower capital investment and higher retained earnings during greater firm-level politically risk lead firms to have larger cash reserves.

In addition to the firm-level political risk, Hassan *et al.* (2019) also propose eight topical measures of political risks that are associated with economic policy and budget, environment, trade, institutions and political process, health, security and defense, tax policy, and technology and infrastructure. We provide a brief definition for each of the categories as follows: (i) *'Economic policy and budget'* related political risk, which includes issues such as minimum wage, a balanced budget, bankruptcy bill, and jobs creation; (ii) *'Environment'* comprises air act, renewable energy, climate change, clean air, greenhouse gas and other ecological issues; (iii) *'Trade risk'* covers free trade, trade agreements, trade barriers, globalization, and labor standards; (iv) *'Institutions and political process'* contains campaign finance, finance reform,

federal elections, political system etc.; (v) *'Health risk'* mainly incorporates issues related to prescription drugs, medicare, government takeover, and drug plan; (vi) *'Security and defense'* covers matters such as terrorism, nuclear weapons, and the US troops; (vii) *'Tax policy'* takes into account estate tax, tax relief, bush tax, and tax reform; and (viii) *'Technology and infrastructure'* includes fairness doctrine, cyber warfare and high-tech jobs, among others.

While our baseline models show that firm political risk increases cash holdings, we further examine the impact of these eight specific types of firm political risk on cash holdings. Table 3 presents results using these sub-categories as separate independent variables, and all models use the same control variables used in Table 2 along with quarter and firm fixed effects. We find that all sub-categories of political risk are positively associated with cash holdings at 1% significance level. The estimated coefficients are also almost similar in magnitude, ranging from 0.001 to 0.003, which confirms that our baseline results presented in Table 2 are not sensitive to particular political risk types. The effects of control variables are also qualitatively similar to those presented in Table 2.

[Insert Table 3 about here]

5. Firm-level political risk and corporate cash holdings: Additional evidence

Examining the impact of firm political risk on cash holdings is subject to a few empirical challenges. For instance, firm political risk and cash holdings can be jointly associated with unobservable firm characteristics. That is, while firm political risk and cash holdings might be unrelated, they could be both associated with a firm characteristic that is not considered in Eq. (1). Another possible reason for the endogeneity is that the relationship between firm political risk and cash holdings may be jointly determined, making our estimated coefficients prone to be biased and inconsistent. In this section, we deal with the aforementioned challenges in the following three ways: (i) a natural experiment with difference-in-difference (DID)

estimations, ii) the instrumental variable approach (2SLS); and (iii) using a matched sample following propensity score matching (PSM).

5.1. *A natural experiment: Redrawing of federal electoral district boundaries*

The United States Constitution (Article 1 of Section 2) requires the congressional representative to states to be apportioned based on the size of the population of those states. In order to comply with this constitutional requirement, if a state's population increases (decreases) over a decade relative to the population in other states, that state may gain (lose) seats in the House of Representatives. Following a series of rulings by the US Supreme Court in the 1960s, the Single-Member District Mandate of 1967 requires that congressional districts are made equal in terms of the population so that people can equally access their political representation. Accordingly, when new population data becomes available subsequent to each decennial census, congressional electoral district boundaries are redrawn as a mandated practice, which is commonly referred to as 'redistricting'.

While firms' headquarters remain in the same address (the first line of address and ZIP code), they may end up in a new district due to redrawn congressional electoral boundaries. For example, following 2010 redistricting in Arizona, a firm with a GVKEY 10757 moved into District 7 in 2010 from District 8 in 2000. In such cases, firms may find it challenging as they may encounter a new political landscape in the new district where they move in, including new congressional representatives with different political priorities and views. Consequently, firms must redesign their approaches to establish connections with new regulatory institutions and politicians in the newly assigned congressional districts. Firms have almost no command over the redistricting outcomes as the primary responsibility for redistricting belongs to the state legislature, independent bipartisan redistricting commissions, independent bodies or a hybrid of both the legislature and the commission. Therefore, this phenomenon offers a plausible

exogenous variation in the political risk that firms experience (Gad *et al.*, 2020; Denes *et al.*, 2017). Within their political space, firms usually prefer trusted long-term relationships with the regulatory bodies and congressional representatives in their home districts. However, redistricting alters this long-established affiliation between the parties, thereby exposing the firms to greater political uncertainty.

The US census of 2010 and the redistricting that followed allow us to apply a *difference-in-difference* approach to estimate the causal impact of firm-level political risk on cash holdings. The redistricting data is obtained based on the longitude and latitude of the COMPUSTAT addresses in which each given firm of our sample is located. We are able to obtain the headquarter address data (i.e., the first lines of addresses, ZIP codes, and states) for 2,521 unique firms from COMPUSTAT sample. We then remove 24 firms as their headquarter addresses were in Canada. We use Google geocoding to determine the latitude and longitude of address for each of the firm in our sample. We match these latitudes and longitudes with those of congressional district boundaries. The US Census Bureau website and shapefiles compiled by Lewis *et al.* (2013) offer data on the geographic boundaries of the congressional districts over time. We then capture any changes related to the district of a firm (i.e., redistricting).

The 2010 census redrew 243 congressional electoral districts across 18 states, affecting 1,431 unique firms. Redistricting did not affect some firms as they remained in the same district. This results in 941 (37%) firms of our sample moving into new congressional districts, and these moving firms constitute our *treated firms.* In line with Gad *et al.* (2020), we propose the following model for DID estimation:

$$Cash_{i,t} = \alpha + \beta_1 Treated\ firm_{i,t} \times After_{i,t} +$$

$$\beta_2 Treated\ firm_{i,t} + \beta_3 After_{i,t} + \beta_4 control\ variables + \varepsilon_{i,t} \qquad (2)$$

The *treated firm* variable takes into account the shift in firms' political risk as a consequence of redistricting. For this design, we take all firms located in a given congressional district five years prior to redistricting and classify them into three groups as per their ranking of political risk. For all firms located in the new districts, we use their political risk ranking and then repeat the process as measured over the five years preceding the redistricting. In order to facilitate this, we generate a categorical treatment variable with a value ranging between -1 to +1. The value takes +1 if firm-level political risk has increased due to congressional redistricting, zero if political risk has remained unchanged, and -1 if political risk has decreased due to redistricting. *After*, an indicator variable, equals 1 after 2011, and 0 otherwise.[1] Our interest is in the interaction term $Treated\ firm_{i,t} \times After_{i,t}$.

Table 4 presents the results of our DID regressions for natural experiment. In column 1, we report regression results, including firm-fixed effects, while in column 2 covers the industry as well as quarter fixed effects. The coefficient for $Treated\ firm_{i,t} \times After_{i,t}$ is positive and significant at least at 5% level across both columns. This implies that firms with higher political risk after redistricting had higher cash holdings than those unaffected by redistricting. Taken together, the baseline results we present in Table 2 are consistent for periods related to exogenous shocks.

[Insert Table 4 about here]

5.2 *Instrumental variable approach*

To overcome further potential endogeneity related issues in our baseline model, we also use an instrumental variable. Specifically, we undertake two-stage least squares (2SLS) and re-estimate Eq. (1) to capture the exogenous element from firm political risk. However, to execute

[1] The proposed new district lines of the 2010 census were settled in court in 2011. Thus, we consider 2011 when redistricting was implemented.

the 2SLS method, we face the major challenge of identifying an exogenous instrumental variable with no obvious nexus with cash holdings. To choose such a variable, we draw on relevant literature (e.g., D'Mello and Toscano, 2020; Azzimonti, 2018) and use the *Partisan Conflict Index* (PCI) as an IV for our case. The significance of this index is that it captures policy disagreement between and within political parties as well as between Congress and the President at a given point in time. Given its measurement, we strongly believe that it is a valid instrument for our model as firm political risk is expected to be high when the country-level partisan conflict is high. However, there is limited evidence, if any, that establishes the link between partisan conflict and the amount of cash firms' hold. Hence, we expect the PCI to have positive association with firm-level political risk.

We display our results of IV regression in Table 5. We report the findings from the first stage of the 2SLS regression in column 1 of Table 5, where firm political risk is treated as a dependent variable. Here, we control for variables used in our baseline estimation (Table 2). As expected, the PCI has a significant positive nexus with firm political risk, which confirms the relevance of the instrumental variable. Our endogeneity concern has been validated by the evidence from the Wu-Hausman endogeneity test. It is also important to highlight that the null hypothesis of the weak instrument has been clearly rejected by Kleibergen-Paap under-identification test statistic and the Anderson-Rubin Wald Chi-square.

We present the second-stage regression results in column 2 of Table 5. The predicted percentage of PCI from the first-stage regression is used to estimate corporate cash holdings. The instrumented firm political risk variable (*PRisk fitted*) has a positive and significant coefficient at the 1% level. This finding is consistent with those in our baseline regressions that firm political risk significantly increases the amount of cash firms' hold.

[Insert Table 5 about here]

5.3 *Propensity Score Matching*

Our results are robust to industry-quarter and firm fixed-effect regressions that capture industry and firm-specific factors. However, an unobserved characteristic that is not industry- or firm-specific could impact firm political risk and cash holdings. This concern may cause the relationship between firm political risk and corporate cash holdings to be spurious. In this section, we match firms employing propensity score matching to alleviate such endogeneity related concerns.

We, first, classify firm-quarter observations based on high political risk and low political risk into treatment and control groups, respectively. For each treatment firm-quarter, the dummy variable, *PRisk dummy, high political risk* (above median political risk), equals one; for each control firm-quarter, *low political risk (*below median political risk*),* equals zero. Then, we follow the steps below. First, we run a logit regression using *PRisk dummy* as the dependent variable to produce the propensity score. We control all explanatory variables as considered in the baseline models in Table 2. We show the results in Table 6. Column 1 of Table 6 shows that most of the explanatory variables are significant in the pre-matched sample. Next, we use the closest propensity score to make sure that firms in the treatment (*high political risk* = 1) and control groups (*low political risk* = 0) have similar characteristics. Particularly, we work with the closest propensity score to match each firm-quarter observation with high political risk and a firm-quarter observation with low political risk. We then set the maximum difference between the propensity score of each firm-quarter observation and that of its matched peer not to exceed 0.1% in absolute value.

We re-run the logit regression in our post-match sample in order to confirm that firm-quarter observations in both the treatment and control groups are identical. The results, column 2 of Table 6, show that all coefficients for explanatory variables are statistically insignificant, implying no distinct differences in firm characteristics except cash holdings between the

groups. Moreover, in column 2 the coefficients are generally smaller compared to those in column 1, meaning that the degrees of freedom decline in the restricted sample. Overall, the tests with the pre- and post-matched samples refer that the propensity score matching eliminates obvious differences in the control variables.

We, next, estimate the impact of firm political risk on cash holdings in the matched sample. Column 3 of Table 6 controls quarter and industry fixed effects, while column 4 includes quarter and firm fixed effects. We find that firm political risk coefficient is positive and significant. It suggests that a firm's political risk still positively affects its corporate cash holdings. Overall, the PSM verifies that our results presented in Table 2 are attributable to variations in the observables between firm-quarter observations with and those without firm political risk.

[Insert Table 6 about here]

6. Firm-level political risk and cash holdings: Additional analysis

In this section, we have performed a battery of robustness tests. First, we investigate whether our results remain the same for both financially constrained and non-constrained firms. Such an examination is motivated by the fact that corporate cash holdings can be significantly different between financially constrained and non-constrained firms. Financially constrained firms have fewer opportunities to raise capital from external sources (Faulkender and Wang, 2006). Therefore, the marginal value of the cash will generally be high for firms' facing financial constraints, and they may hold excess cash to boost their investment growth compared to their non-constrained peers. To capture such difference, we run cash holdings regressions distinctly between these two subgroups. Following existing literature (Phan *et al.*, 2019), we use the size and the market-to-book ratio of firms primarily as measures of financial constraints. We also employ the size-age (SA) index of Hadlock and Pierce (2010) and the Whited-Wu index of Whited and Wu (2006) as alternative measures of financial constraints. Table 7

presents results for the two sub-group of firms based on financial constraints – financially constrained (FC) and non-constrained (Non-FC). The results indicate that, for both subgroups, the positive relationship between firm political risk and cash holdings prevails, suggesting that our findings are not sensitive to the degree of financial constraints.

[Insert Table 7 about here]

Second, prior research (Lyandres and Palazzo, 2016; Fresard, 2010) also reports that a firm's cash holdings is significantly affected by its rivals' cash holdings choices, particularly in the industries where competitive rivalry is high. If firm political risk aggravates financial constraints, firms in high rivalry industries may fear losing their market share to cash-affluent peers. Therefore, we conjecture that firms operating their business in industries with high rivalry may hold larger cash compared to firms operating in low rivalry industries. To investigate this conjuncture, following Phan *et al.* (2019), we employ the Herfindahl-Hirschman index (HHI) to measure the extent of industry rivalry. We calculate HHI by aggregating the squares of firms' market shares within the same industry (3-digit SIC code) in a particular year, where market share is the ratio of a firm's sales to the total sales of the industry. Our calculated HHI scales from 0 to 10,000 as the whole percentages is used. Then a dummy variable '*competitive industry dummy'* is constructed equaling one in case of HHI value for the industry is less than 1500, and 0 otherwise. Table 8 presents results with industry competitive rivalry. We focus on the interaction term "*PRisk* × *competitive industry dummy*". The results show that, according to our prediction, the positive relationship between firm political risk and cash holdings is stronger for firms operating in industries with intense competitive rivalry.

[Insert Table 8 about here]

Third, existing literature shows that rapidly growing firms keep a higher level of cash to devote capital in new investment projects (e.g., Bigelli *et al.,* 2014; Boyle and Guthrie,

2003). Thus, we further examine whether high growth firms mainly influence our baseline findings. For doing so, we re-estimate our Eq. (1) for high and low growth subsamples. In particular, to proxy for growth opportunity, we use the market-to-book ratio (M/B). We create terciles based on M/B, and if a firm's M/B is in the top (bottom) tercile of the sample, we classify that firm as a high growth (low growth) firm. Table 9 presents the results related to high and low growth firms. We find the firm political risk is positively associated with cash holdings across both subsamples. This indicates that the positive association between firm political risk and cash holdings is robust and independent of a firm's growth opportunities.

[Insert Table 9 about here]

Fourth, business cyclicality can also influence the positive association between firm-level political risk and cash holdings. This is because firms may hold higher cash reserves during the difficult phase of the economy. To deal with this issue, we divide our sample-based business cycle. Specifically, we identify counter- and pro-cyclical industries. If the association between the firm political risk and corporate cash holdings is driven by business cycles, then our results will hold only for pro-cyclical industries. Following extant literature (Almeida and Campello, 2007; Sharpe, 1994; Shleifer and Vishny, 1992), we use asset liquidation to identify cyclicality. We use the firm's sales cyclicality as a proxy for asset liquidation. To test the linkage between firm political risk and cash holdings across cyclical industries, we, first, estimate the correlation between a firm's sales and the annual gross national product (GNP) over our sample period. We then calculate the industry average correlation of the firms in the same 2-digit SIC industry code. Next, we group industries as pro-cyclical if their average correlation coefficient is above the median and countercyclical if the average correlation is below the median. After that, we re-estimate our baseline regression across the subgroups. We show in Table 10 that firm-level political risk has a positive and significant effect on the amount

of cash holdings across both the industry subgroups. This implies that the positive relationship between political risk and cash holdings is not confined to business cyclicality.

[Insert Table 10 about here]

Finally, one may further argue that our baseline results simply capture the effects of policy-related uncertainty since extant literature reveals that policy-related uncertainty exerts significant impact on corporate policies. For example, policy uncertainty affects firm-level investment (Kang *et al.,* 2014), mergers and acquisitions (Bonaime *et al.,* 2018), stock market volatility (Arouri *et al.,* 2016; Liu and Zhang, 2015), and cash holdings (Phan *et al.,* 2019; Demir and Ersan, 2017). To address this concern, we control Baker *et al*.'s (2016) economic policy uncertainty index in our analysis and present the results in Table 11. Even after controlling economic policy uncertainty, we still document a significant positive relationship between firm political risk and cash holdings.

[Insert Table 11 about here]

7. Conclusion

The role of country-level political risk on corporate financial decision-making is a well-researched agenda. However, firm-level political risk has attracted relatively less research interest, which motivates us to empirically examine the relationship between firm-level political risk and corporate cash holdings. We conjecture that firm-level political risk exacerbates their financial constraints and investment delay, encouraging managers to hold more cash. To test this hypothesis empirically, we employ a novel firm-level political risk measure developed by Hassan *et al.* (2019). We provide strong evidence that firms with high political risk have a greater tendency to hold more cash. The positive effect of firm-level political risk on cash holdings is consistent across all major types of political risk. Moreover, we also show that the relationship remains significant across different firm subsamples – financially constrained and non-constrained firms, high and low growth firms, and pro-cyclical

and counter-cyclical industries. Our results are robust to a range of tests to buttress against endogeneity concerns, including a natural experiment, instrumental variable estimations, and propensity score matching estimates.

Our study has crucial implications for the practitioners and policymakers, which could play a critical role in designing appropriate corporate cash holding policies. First, when a firm experience greater firm-level political risk, policy makers could promote policies that will reduce uncertainty and encourage managers to invest rather than holding cash. Second, managers and corporate boards need to be aware of any types of political risks since we demonstrate that different types of political risk significantly influence cash holdings.

Our study also offers important future research directions. Due to data unavailability, we could not make any comparative analysis with China that has a different political system and economic structure. Future research, benefiting from new Chinese data, can conduct a comparative analysis to re-examine the effect of firm-level political risk on cash holdings between China and the US. Future researchers may also investigate this relationship in the context of developing countries where political turbulence is high.

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Table 1: Summary statistics.

The table presents the summary statistics of all the variables. We use cash, cash is scaled by the book value of total assets, as a proxy for corporate cash holdings (*Cash*). *PRisk* is the firm-level political risk measure of Hassan *et al.* (2019). *Size* is the natural logarithm of the market capitalization. Market-to-book (*M/B*) is the ratio of market value of assets to book value of total assets. *Cashflow* is the ratio of earnings after interest and tax expenses, and dividends, but before depreciation expense to the book value of total assets. Net working capital (*NWC*) is measured as the difference between working capital and cash, all scaled by the book value of total assets. Research and development (*R&D*) is R&D expenses scaled by sales. Capital expenditure (*Capex*) is the ratio of capital expenditure to book value of total assets. *Leverage* is book value of debt divided by the book value of total assets. *Dividend* dummy is an indicator variable. It takes the value of 1 if a common dividend is paid in a given year, and 0 otherwise. *Acquisition* is corporate acquisition expenditure scaled by the book value of total assets. *Industry sigma* is the average standard deviation of cashflow of a firm in each industry. We use two-digit SIC code to define industry. The standard deviation of cash flow is firm-level cash flow scaled by total assets for the past 10 years. Appendix A provides the definitions of the variables.

Variable	N	Mean	Median	Std. Dev.	Min	Max
Cash	129,750	0.131	0.076	0.162	0.000	0.998
PRisk	129,750	117.284	65.602	158.735	0.000	937.584
Size	129,750	7.143	7.134	1.967	2.429	11.794
M/B	129,750	2.166	1.623	1.626	0.631	10.098
Cashflow	129,750	0.001	0.013	0.052	-0.272	0.089
NWC	129,750	0.026	0.020	0.157	-0.506	0.447
R&D	129,750	0.014	0.000	0.027	0.000	0.153
Capex	129,750	0.029	0.015	0.037	0.000	0.214
Leverage	129,750	0.254	0.223	0.226	0.000	1.076
Dividend dummy	129,750	0.404	0.000	0.491	0.000	1.000
Acquisition	129,750	0.015	0.000	0.044	-0.001	0.280
Industry sigma	129,750	0.028	0.024	0.018	0.006	0.091

Table 2: Firm-level political risk and cash holdings.

The table reports regressions of firm cash holdings on firm-level political risk. We use cash from Model 1 to 3, where cash is scaled by the book value of total assets, as a proxy for corporate cash holdings. In Model 4, following Ghaly *et al*. (2015) we use cash and short-term investments scaled by net book value of assets, where net book value of assets is book value of assets less cash and short-term investments. *PRisk* is the firm-level political risk measure of Hassan *et al.* (2019). *Size* is the natural logarithm of the market capitalization. Market-to-book (*M/B*) is the ratio of market value of assets to book value of total assets. *Cashflow* is the ratio of earnings after interest and tax expenses, and dividends, but before depreciation expense to the book value of total assets. Net working capital (*NWC*) is measured as the difference between working capital and cash, all scaled by the book value of total assets. Research and development (*R&D*) is R&D expenses scaled by sales. Capital expenditure (*Capex*) is the ratio of capital expenditure to book value of total assets. *Leverage* is book value of debt divided by the book value of total assets. *Dividend* dummy is an indicator variable. It takes the value of 1 if a common dividend is paid in a given year, and 0 otherwise. *Acquisition* is corporate acquisition expenditure scaled by the book value of total assets. *Industry sigma* is the average standard deviation of cashflow of a firm in each industry. We use two-digit SIC code to define industry. The standard deviation of cash flow is firm-level cash flow scaled by total assets for the past 10 years. Appendix A provides the definitions of the variables. We cluster standard errors at the firm level. The symbols ***, **, and * indicate levels of significance at the 1%, 5%, and 10% levels, respectively.

	Model 1	Model 2	Model 3	Model 4
PRisk	0.004***	0.004***	0.002***	0.031**
	(0.000)	(0.000)	(0.000)	(0.016)
Size	-0.011***	-0.010***	0.006***	-0.166***
	(0.000)	(0.000)	(0.005)	(0.000)
M/B	0.016***	0.015***	0.004***	0.072***
	(0.000)	(0.000)	(0.000)	(0.000)
Cashflow	-0.328***	-0.356***	-0.030	-0.520
	(0.000)	(0.000)	(0.187)	(0.309)
NWC	-0.143***	-0.144***	-0.147***	-0.786***
	(0.000)	(0.000)	(0.000)	(0.000)
R&D	0.755***	0.563***	0.259***	-17.354***
	(0.000)	(0.000)	(0.006)	(0.000)
Capex	-0.429***	-0.348***	-0.182***	-1.844***
	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.124***	-0.116***	-0.067***	-1.332***
	(0.000)	(0.000)	(0.000)	(0.000)
Dividend dummy	-0.017***	-0.015***	0.005**	-0.013
	(0.000)	(0.000)	(0.024)	(0.474)
Acquisition	-0.205***	-0.236***	-0.171***	-0.571***
	(0.000)	(0.000)	(0.000)	(0.000)
Industry sigma	0.013***	0.014***	0.016***	0.029
	(0.000)	(0.000)	(0.000)	(0.305)
Intercept	0.167***	0.147***	0.134***	2.180***
	(0.000)	(0.000)	(0.000)	(0.000)
Adjusted R^2	0.348	0.354	0.048	0.010
N	129,750	129,750	129,750	129,750
Quarter FE	No	Yes	Yes	Yes
Industry FE	No	Yes	No	No
Firm FE	No	No	Yes	Yes

Table 3: Alternative firm-level political risk measures and cash holdings.

The table presents regression results of firm cash holdings on different types of political risk measures. Hassan *et al*. (2019) developed 8 different measures of firm-level political risk using machine learning from firms' conference calls. $PRisk_{Econ.}$, $PRisk_{Env.}$, $PRisk_{Hlth.}$, $PRisk_{Inst.}$, $PRisk_{Sec.}$, $PRisk_{Tax}$, $PRisk_{Tech.}$, and $PRisk_{Trd.}$ measure the firm-level political risk related to economic policy and budget, environment, health, institutions and political process, security and defense, tax policy, technology and infrastructure, and trade respectively. Appendix A provides definitions for control variables. We cluster standard errors at the firm level. The symbols ***, **, and * indicate levels of significance at the 1%, 5%, and 10% levels, respectively.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
$PRisk_{Econ.}$	0.003***							
	(0.000)							
$PRisk_{Env.}$		0.002***						
		(0.000)						
$PRisk_{Hlth.}$			0.002***					
			(0.000)					
$PRisk_{Inst.}$				0.002***				
				(0.000)				
$PRisk_{Sec.}$					0.002***			
					(0.000)			
$PRisk_{Tax}$						0.002***		
						(0.000)		
$PRisk_{Tech.}$							0.002***	
							(0.000)	
$PRisk_{Trd.}$								0.001***
								(0.000)
Size	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***
	(0.006)	(0.005)	(0.005)	(0.006)	(0.004)	(0.005)	(0.005)	(0.005)
M/B	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cashflow	-0.028	-0.027	-0.028	-0.026	-0.029	-0.029	-0.026	-0.026
	(0.224)	(0.241)	(0.230)	(0.256)	(0.209)	(0.210)	(0.251)	(0.254)
NWC	-0.151***	-0.151***	-0.151***	-0.151***	-0.150***	-0.151***	-0.151***	-0.152***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D	-0.274***	-0.271***	-0.276***	-0.277***	-0.278***	-0.277***	-0.272***	-0.288***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)
Capex	-0.179***	-0.180***	-0.180***	-0.179***	-0.180***	-0.178***	-0.179***	-0.178***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.066***	-0.065***	-0.065***	-0.066***	-0.065***	-0.065***	-0.065***	-0.065***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dividend	0.005**	0.005**	0.005**	0.005**	0.005**	0.005**	0.005**	0.004**
dummy	(0.024)	(0.034)	(0.033)	(0.027)	(0.025)	(0.031)	(0.022)	(0.039)
Acquisition	-0.171***	-0.171***	-0.171***	-0.171***	-0.171***	-0.171***	-0.172***	-0.172***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Industry sigma	0.016***	0.016***	0.016***	0.016***	0.016***	0.016***	0.016***	0.016***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intercept	0.125***	0.130***	0.130***	0.130***	0.127***	0.128***	0.129***	0.135***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adjusted R^2	0.048	0.047	0.047	0.047	0.047	0.047	0.048	0.047
Observations	127,059	126,597	126,442	126,297	126,970	125,422	125,568	123,282
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4: Firm-level political risk and cash holdings – Redistricting DID.

The table presents the regression results for DID analysis of firm cash holdings on political risk based on congressional redistricting. *Treated* is a categorical variable, ranging from +1 to -1. +1 if firm-level political risk has increased due to congressional redistricting, zero if political risk has remained unchanged, and -1 if political risk has decreased due to redistricting. *After*, an indicator variable, equals to 1 after 2011, and 0 otherwise. Appendix A provides definitions for control variables. We cluster standard errors at the firm level. The symbols ***, **, and * indicate levels of significance at the 1%, 5%, and 10% levels, respectively.

	Model 1	Model 2
Treated × After	0.007***	0.006**
	(0.007)	(0.050)
Treated	-0.008***	-0.006**
	(0.000)	(0.012)
After	0.038***	0.049***
	(0.000)	(0.000)
PRisk	0.004***	0.002***
	(0.000)	(0.000)
Size	-0.002	-0.012***
	(0.660)	(0.000)
M/B	-0.003	0.007***
	(0.241)	(0.000)
Cashflow	-0.083*	-0.248***
	(0.076)	(0.000)
NWC	-0.172***	-0.145***
	(0.000)	(0.000)
R&D	0.087	0.713***
	(0.644)	(0.000)
Capex	-0.214***	-0.255***
	(0.000)	(0.000)
Leverage	-0.073***	-0.116***
	(0.000)	(0.000)
Dividend dummy	0.001	-0.012***
	(0.775)	(0.000)
Acquisition	-0.138***	-0.190***
	(0.000)	(0.000)
Industry sigma	0.006***	0.006***
	(0.000)	(0.000)
Intercept	0.136***	0.179***
	(0.000)	(0.000)
Adjusted R^2	0.063	0.286
N	24,311	24,311
Quarter FE	Yes	Yes
Industry FE	No	Yes
Firm FE	Yes	No

Table 5: Firm-level political risk and cash holdings – 2SLS regressions.

The table reports two-stage least squares (2SLS) regressions results. First-stage regression results are in column 1 where *PRisk* is the dependent variable. The second stage regression coefficients are reported in column 2. The instrumental variable is the partisan conflict index suggested by Gulen and Ion (2015). We employ the partisan conflict index developed by Azzimonti (2018). Appendix A provides definitions for control variables. We cluster standard errors at the firm level. The symbols ***, **, and * indicate levels of significance at the 1%, 5%, and 10% levels, respectively.

	First-stage	Second stage
	PRisk	Cash
Partisan conflict	0.092***	
	(0.000)	
PRisk fitted		0.912***
		(0.000)
Size	-0.066***	0.053***
	(0.000)	(0.000)
M/B	-0.052***	0.046***
	(0.000)	(0.000)
Cashflow	0.324	-0.074
	(0.781)	(0.504)
NWC	-0.162***	0.020
	(0.000)	(0.763)
R&D	-0.012	-0.029
	(0.975)	(0.938)
Capex	-0.426***	0.296*
	(0.001)	(0.058)
Leverage	-0.092**	0.100
	(0.024)	(0.799)
Dividend dummy	-0.023	0.025
	(0.220)	(0.147)
Acquisition	-0.191**	0.050
	(0.020)	(0.558)
Industry sigma	0.004***	0.001
	(0.000)	(0.838)
Intercept	4.395***	-11.086***
	(0.000)	(0.009)
Adjusted R^2	0.255	0.260
N	104,644	104,644
Firm FE	Yes	Yes
Endogeneity test:		
Wu-Hausman F-statistic	9333.890***	
Underidentification test:		
Kleibergen-Paap LM statistic	21.635***	
Weak identification test:		
Kleibergen-Paap rk Wald F-statistic	21.918***	
Weak instrument robust inference:		
Anderson-Rubin Wald Chi-square	578.25***	

Table 6: Firm-level political risk and cash holdings – Propensity Score Matching.

The table provides the results of regression using samples identified using propensity score matching. We divide the full sample based on above and below median of firm-level political risk. Column 1 presents the results of pre-match regressions and column 2 reports post-match regression results. Columns 3 and 4 show results of the regression of cash holding on firm-level political risk based on the matched sample. Appendix A provides definitions for control variables. We cluster standard errors at the firm level. The symbols ***, **, and * indicate levels of significance at the 1%, 5%, and 10% levels, respectively.

	Pre-match	Post-match	Cash	Cash
	PRisk dummy			
PRisk			0.004***	0.002***
			(0.000)	(0.000)
Size	0.045***	0.007	-0.011***	-0.007***
	(0.000)	(0.377)	(0.000)	(0.003)
M/B	-0.005	0.005	0.015***	0.005***
	(0.467)	(0.525)	(0.000)	(0.000)
Cashflow	-1.195***	0.123	-0.355***	-0.034
	(0.000)	(0.595)	(0.000)	(0.165)
NWC	-0.166**	0.029	-0.146***	-0.145***
	(0.038)	(0.732)	(0.000)	(0.000)
R&D	1.039*	0.135	0.531***	-0.284***
	(0.073)	(0.825)	(0.000)	(0.005)
Capex	-1.310***	-0.074	-0.365***	-0.189***
	(0.000)	(0.804)	(0.000)	(0.000)
Leverage	-0.163***	-0.048	-0.115***	-0.065***
	(0.001)	(0.378)	(0.000)	(0.000)
Dividend dummy	-0.035	0.002	-0.016***	0.004*
	(0.177)	(0.945)	(0.000)	(0.090)
Acquisition	-1.152***	-0.025	-0.246***	-0.177***
	(0.000)	(0.898)	(0.000)	(0.000)
Industry sigma	1.056	-0.686	1.507***	1.668***
	(0.168)	(0.395)	(0.000)	(0.000)
Intercept	-0.035	-0.004	0.168***	0.153***
	(0.597)	(0.958)	(0.000)	(0.000)
Psuedo. R^2	0.016	0.000	0.366	0.047
N	163,886	126,713	102,845	102,845
Quarter FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	No
Firm FE	No	No	No	Yes

Table 7: Firm-level political risk, financial constraints, and cash holdings.

The table presents regression results of firm cash holdings on firm political risk for subsamples of firms based on financial constraints. We sort firms based on following measures of financial constraints: size of firms, market-to-book (M/B) ratio, size-age index, and Whited-Wu index. Financially constrained (FC) firms belong to the subgroup of firms with below the sample median of size or M/B, and above the sample median of size-age or Whited-Wu index. Financially unconstrained (Non-FC) firms belong to the subgroup which have size or M/B above the sample median, and below the sample median of the size-age or Whited-Wu index. Appendix A provides definitions for control variables, but we suppress their estimates for brevity. We cluster standard errors at the firm level. The symbols ***, **, and * indicate levels of significance at the 1%, 5%, and 10% levels, respectively.

	Firm size		M/B		Size-age index		Whited-Wu index	
	FC	Non-FC	FC	Non-FC	FC	Non-FC	FC	Non-FC
PRisk	0.002**	0.003***	0.002***	0.003***	0.002***	0.003***	0.003***	0.003***
	(0.012)	(0.000)	(0.000)	(0.000)	(0.008)	(0.000)	(0.000)	(0.000)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.051	0.053	0.055	0.056	0.049	0.059	0.048	0.046
Observations	59,284	70,472	64,478	65,278	58,799	70,957	64,082	62,196
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 8: Firm-level political risk, industry rivalry, and cash holdings.

The table reports regression results of firm cash holdings on the interaction of firm-level political risk and competitive industry dummy. We define *'competitive industry dummy'* as an indicator variable. It takes the value of 1 for an industry if the industry's Herfindahl-Hirschman Index (HHI) is below 1500, and otherwise 0. Appendix A provides definitions for control variables, but we suppress their estimates for brevity. We cluster standard errors at the firm level. The symbols ***, **, and * indicate levels of significance at the 1%, 5%, and 10% levels, respectively.

	Model 1	Model 2	Model 3
PRisk	0.003***	0.003***	0.002***
	(0.000)	(0.000)	(0.000)
Competitive industry dummy	-0.007	-0.015*	0.001
	(0.349)	(0.073)	(0.915)
PRisk × Competitive industry dummy	0.002***	0.002***	0.001***
	(0.000)	(0.000)	(0.000)
Other controls	Yes	Yes	Yes
Adjusted R^2	0.348	0.354	0.048
Observations	129,750	129,750	129,750
Quarter FE	No	Yes	Yes
Firm FE	No	No	Yes
Industry FE	No	Yes	No

Table 9: Firm-level political risk and cash holdings – high or low growth firms.

The table reports regression results of corporate cash holdings on firm political risk based on firms sorted on their growth opportunities. The high growth firms have a market-to-book ratio in the top tercile of the sample as assumed to have high growth opportunities. The low growth firms have a market-to-book ratio in the bottom tercile of the sample. Appendix A provides definitions for control variables, but we suppress their estimates for brevity. We cluster standard errors at the firm level. The symbols ***, **, and * indicate levels of significance at the 1%, 5%, and 10% levels, respectively.

	High growth	Low growth	High growth	Low growth	High growth	Low growth
PRisk	0.004**	0.004***	0.004***	0.004***	0.002***	0.002***
	(0.010)	(0.000)	(0.004)	(0.000)	(0.009)	(0.000)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.298	0.276	0.304	0.284	0.061	0.058
Observations	43,225	43,277	43,225	43,277	43,225	43,277
Quarter FE	No	No	Yes	Yes	Yes	Yes
Firm FE	No	No	No	No	Yes	Yes
Industry FE	No	No	Yes	Yes	No	No

Table 10: Firm-level political risk and cash holdings – pro-cyclical, countercyclical industries.

The table reports regression results of firm cash holdings on firm-level political risk for two subsamples of firms belonging to either countercyclical or pro-cyclical industries. Countercyclical industries have industry average correlation between sales and annual GNP below the sample median. Pro-cyclical industries have industry average correlation between sales and annual GNP above the sample median. Appendix A provides definitions for control variables, but we suppress their estimates for brevity. We cluster standard errors at the firm level. The symbols ***, **, and * indicate levels of significance at the 1%, 5%, and 10% levels, respectively.

	Countercyclical industries (1)	Pro-cyclical industries (2)	Countercyclical industries (1)	Pro-cyclical industries (2)	Countercyclical industries (1)	Pro-cyclical industries (2)
PRisk	0.002***	0.005***	0.002***	0.003***	0.003***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.375	0.307	0.057	0.039	0.383	0.314
Observations	68,446	61,310	68,446	61,310	68,446	61,310
Quarter FE	No	No	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes	No	No
Industry FE	No	No	No	No	Yes	Yes
Test of difference in coefficients of PRisk of two subgroups:						
$\chi 2$	28.95					
p-value	0.000					

Table 11: Firm-level political risk and cash holdings – controlling for economic policy uncertainty.

The table presents regression results of firm cash holdings on firm level political risk and policy uncertainty. *Policy uncertainty* is measured by economic policy uncertainty (EPU) of Baker *et al*.'s (2016). *Policy uncertainty* is the average of the monthly EPU in each quarter. Appendix A provides definitions for control variables. We cluster standard errors at the firm level. The symbols ***, **, and * indicate levels of significance at the 1%, 5%, and 10% levels, respectively.

	Model 1	Model 2	Model 3
PRisk	0.003***	0.003***	0.001***
	(0.000)	(0.000)	(0.000)
Policy uncertainty	0.042***	0.042***	0.033***
	(0.000)	(0.000)	(0.000)
Size	-0.011***	-0.010***	-0.005**
	(0.000)	(0.000)	(0.012)
M/B	0.017***	0.016***	0.006***
	(0.000)	(0.000)	(0.000)
Cashflow	-0.341***	-0.371***	-0.042*
	(0.000)	(0.000)	(0.061)
NWC	-0.143***	-0.143***	-0.143***
	(0.000)	(0.000)	(0.000)
R&D	0.791***	0.596***	0.268***
	(0.000)	(0.000)	(0.004)
Capex	-0.407***	-0.295***	-0.125***
	(0.000)	(0.000)	(0.000)
Leverage	-0.122***	-0.115***	-0.063***
	(0.000)	(0.000)	(0.000)
Dividend dummy	-0.017***	-0.014***	-0.006***
	(0.000)	(0.000)	(0.003)
Acquisition	-0.186***	-0.208***	-0.152***
	(0.000)	(0.000)	(0.000)
Industry sigma	0.012***	0.013***	0.013***
	(0.000)	(0.000)	(0.000)
Intercept	-0.045***	-0.058***	-0.030***
	(0.000)	(0.000)	(0.060)
Adjusted R^2	0.364	0.369	0.074
N	129,750	129,750	129,750
Industry FE	No	Yes	No
Firm FE	No	No	Yes

Appendix A: Definition of variables.

Variable	Definition
Cash holding measure:	
Cash	Cash (Chq) is scaled by the book value of total assets (AT).
Political risk measure:	
PRisk	Natural logarithm of Hassan *et al*.'s (2019) firm-level political risk measure.
Firm characteristics:	
Size	Natural logarithm of book value of total assets (AT).
M/B	Computed using book value of total assets, market value of equity, book value of common equity, and book value of total assets as the following in COMPUSTAT codes: M/B = (AT + (PRCC_F × CSHO) – CEQ)/AT.
Cashflow	Computed as earnings before depreciation minus interest expenses minus taxes minus dividends (OIBDP − XINT − TXT − DVC) all scaled by total assets (AT).
NWC	Measured as the difference between working capital (WCAP) and cash (CHE), all scaled by total assets (AT).
R&D	R&D expenses (XRD) scaled by net sales (SALE). For missing R&D expenses (XRD) the value of R&D is set to zero.
Capex	Capital expenditure (CAPX) scaled by total assets (AT).
Leverage	Measured as the ratio of sum of long-term debt (DLTT) and debt in current liabilities (DLC) to total assets (AT).
Dividend dummy	A dummy variable and is set equal to 1 if firms pay dividends (DVC) to common shareholders, and 0 otherwise.
Acquisition	Acquisitions (AQC) scaled by total assets (AT).
Industry sigma	Average standard deviation of cashflow of a firm in each industry. We use two-digit SIC code to define industry. The standard deviation of cash flow is firm-level cash flow scaled by total assets for the past 10 years.
Policy uncertainty	Policy uncertainty is measured by averaging monthly policy uncertainty index in each quarter. Baker, Bloom, and Davis (2016) develop economic policy uncertainty (EPU).

Appendix B: Capital expenditures, retained earnings, and cash holdings across firm-level political risk terciles.

This table reports capital expenditures, retained earnings, and cash holdings across different terciles of firm-level political risks (*PRisk*). We first sort companies based on Hassan *et al.*'s (2019) firm-level political risk measure and create three groups. The low (high) group contains firms with least (most) political risk. We then calculate average capital expenditures (Capex), retained earnings, and cash holdings (Cash) across these groups. Appendix A provides variable definitions. The final row indicates the difference between high-minus-low groups. T-statistics are reported in parentheses. The symbols ***, **, and * indicate level of significance at the 1%, 5%, and 10% levels, respectively.

		Capex	Retained Earnings	Cash
PRisk	Low	0.029	1663.685	0.119
	Medium	0.029	1995.059	0.123
	High	0.027	2214.100	0.139
	High-Low	-0.002***	550.414***	0.020***
		(-3.41)	(4.07)	(8.51)