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Abstract

We find that economic policy uncertainty is positively related to cash holdings. This positive relation is attributed to financial constraints that emerge as a new and dominating channel through which policy uncertainty affects corporate financing policies. Neither a delay in investment nor a reduction of the disciplining effect from M&A activities explains this positive relation. Increasing cash holdings during the period of high policy uncertainty contributes to firm excess returns and mitigates the negative impact of policy uncertainty on investment.

Key words: Policy uncertainty, cash holdings, cash-cash flow sensitivity, financial constraints, investment

JEL Classification: G18, G31, G32, G34

I. INTRODUCTION

Recent political conflicts and fiscal crises in the United States have spurred concerns about the impact of economic policy uncertainty on corporate activities.[1] The impact of policy uncertainty on corporate decisions has been investigated extensively in the academic literature, focusing primarily on the firm investment decisions (Bernanke, 1983; Bloom, 2009; Gulen & Ion, 2016; Julio & Yook, 2012; Leahy & Whited, 1996; Rodrik, 1991). Little attention has been paid to another important type of corporate activity, financing decisions, especially those related to corporate cash holdings. Our study attempts to fill this gap by investigating the impact of policy uncertainty on a firm's cash holdings and the underlying economic channels of this impact. We focus on firm cash holdings for two reasons. First, the cash balances of US firms exceed 1.3 trillion dollars (Hoberg *et al.*, 2014), accounting for more than 45 percent of the financial assets (Duchin *et al.*, 2017) and 23 percent of the total firm assets (Bates *et al.*, 2009). Second, compared to other financing choices, the cash holdings policy involves substantial discretion by the firm and thus better represents an intentional shift in firm policy in response to changes in policy uncertainty.

We hypothesize that there are three possible channels through which policy uncertainty may impact on corporate cash holdings. First, the "financial constraints" channel suggests that when financial constraints heighten in a period of higher economic policy uncertainty, firms have greater incentive to hold more cash. Indeed, a growing literature asserts that economic policy uncertainty affects firm financial constraints by increasing financing costs (Gungoraydinoglu *et al.*, 2017; Pástor & Veronesi, 2012, 2013) or hinder firm access to bank loan finance (Bordo *et al.*, 2016; Gilchrist & Jae, 2014). The literature on corporate cash holdings documents that when firms face greater friction in securing

[1] Economic policy uncertainty refers to the uncertainty about *who* will take *what* economic policy actions and *when*, and the economic effects of policy actions (or inaction) - including uncertainties related to the economic ramifications of ''non-economic'' policy matters, for example, military actions (Baker *et al.*, 2016).

outside financing, they tend to cumulate more cash (Denis & Sibilkov, 2010; Harford *et al.*, 2014; Opler *et al.*, 1999). These evidences suggest that, under the "financial constraints" channel, with constraints on capital supply or increasing financing costs (due to economic policy uncertainty), firms are encouraged to hold more cash.

A second channel supporting a positive relation between policy uncertainty and cash holdings is the effect of corporate governance on cash holdings. Bonaime *et al.* (2017) and Nguyen and Phan (2017) document that policy uncertainty discourages merger and acquisitions activities. Since the takeover market is an important external governance mechanism (Cain *et al.*, 2017; Lel & Miller, 2015), the implication of this finding is that managers are less exposed to the threat of the market for corporate control when policy uncertainty heightens. The strength of governance mechanism is relevant for cash holdings policy as weaker governance allows managers more discretions to hoard cash for their personal benefits (Chen *et al.*, 2012; Dittmar *et al.*, 2003; Kalcheva & Lins, 2007). Thus, under the "corporate governance" channel, policy uncertainty is expected to have a positive effect on cash holdings due to its detrimental effect on the external monitoring from the market for corporate control.

The third possible channel through which policy uncertainty impacts corporate cash holdings is investment irreversibility. The real option theory of investment irreversibility suggests that policy uncertainty induces firms to delay their investment by increasing the value of waiting to invest (Bernanke, 1983). Therefore, firms that delay their ex-post investment may strategically hold more cash (from their internally generated cash flows) to take advantage of any rising profitable opportunities in the subsequent period when some or all of the policy uncertainty is resolved (Julio & Yook, 2012). Consequently, under the "investment irreversibility" channel, we hypothesize that the increase in cash holdings when policy uncertainty surges is due to a decline in firm investment.

We examine the relation between policy uncertainty and corporate cash holdings from 1985 to 2014 using the Baker *et al.* (2016) (henceforth, BBD) index to quantify policy uncertainty. The BBD index is a weighted average of measures of (i) frequency of newspaper articles referencing economic policy uncertainty, (ii) the role of policy and federal tax code provisions changes, and (iii) the disagreement among forecasters on future inflation and future government spending. The BBD index significantly correlates with events *ex-ante* expected to generate policy-related uncertainty such as uncertainty over the stimulus package, the debt ceiling dispute, wars, financial crashes and major federal elections. While election years are also used in the literature as another measure of policy uncertainty (Bhattacharya *et al.*, 2017; Jens, 2017; Julio & Yook, 2012), we use the BBD index instead because this index accounts for both uncertainties during the election years and non-election years. Furthermore, the BBD policy uncertainty index captures the effect of elections as well as the extent of election outcomes (Bonaime *et al.*, 2017; Gulen & Ion, 2016; Nguyen & Phan, 2017).[2]

We find a positive relation between policy uncertainty and cash holdings. In terms of economic significance, a doubling in the level of policy uncertainty leads to an increase by 2.13% in the ratio of cash to assets in the following year, which corresponds to an increase by 37.61 million dollars in cash per firm-year. Such positive impact of policy uncertainty on firm cash holdings, however, only persists for two years and becomes insignificant in the third year. This suggests that when policy uncertainty is resolved in the longer run, that is, when the cost of reserving cash is higher, firms hold less cash and may invest in riskier and more profitable assets instead. To assess which one of the three components of policy

[2] Baker *et al.*'s (2016) policy uncertainty index remains a consistent measure of economic policy uncertainty after a wide spectrum of robustness tests. These includes comparing the index with the Chicago Board Options Exchange Market Volatility Index (VIX); controlling for the potential for political slant to skew newspaper coverage of policy uncertainty; and using uncertainty indicators based on the Beige Book releases before each regularly scheduled meeting of the Federal Open Market Committee (FOMC) (see Baker *et al.*, (2016)).

uncertainty (news, tax, inflation and government spending) is driving this result, we also run our regressions separately using each of them as a measure of policy uncertainty. The results show that all components of policy uncertainty have a significant positive impact on corporate cash holdings, with the news-based component having the biggest impact on cash holdings. This result is not surprising as this news-based component represents the biggest fraction of 50% of the total BBD index.

One of the main concerns on the BBD index is that it may inadvertently capture the economic shocks that are unrelated to policy, such as recessions, wars and financial crisis. To ensure that our estimates are attributed purely to the uncertainty related to the political and regulatory system and are not driven by other sources of economic uncertainty, we first control for several macroeconomic measures of general economic uncertainty. We also use the Canadian policy uncertainty index to extract the component of the United States policy uncertainty index that is orthogonal to the Canada policy uncertainty index. Finally, to alleviate further endogeneity concerns, we use an instrumental variable specification in which a measure of political polarization in the United States is used as an instrument for policy uncertainty. The results of these tests confirm our main findings that policy uncertainty is positively associated with corporate cash holdings.

We next examine the possible channels through which policy uncertainty affects corporate cash holdings. First, we examine whether policy uncertainty increases firm cash holdings through its effect in increasing financial constraints. We provide evidence that the aggregate bank credit conditions, as proxied by the spread of commercial and industrial loan rates (on loans greater than US$ 1 million) over the federal funds rates, tighten when policy uncertainty increases. We further show that higher levels of policy uncertainty encourage firms to save more cash from cash flows. These findings imply that firms hold more cash when policy uncertainty increases because of the difficulty in accessing the external financial market.

Second, we consider the hypothesis that policy uncertainty positively affects firm cash holdings because it reduces the disciplining effect from M&A activities. This hypothesis implies that the relation between policy uncertainty and cash holdings should be stronger for firms with weaker corporate governance. We employ two measures of external forces of corporate governance, including the hostile takeover index (Cain *et al.*, 2017) and the product market fluidity index (Hoberg *et al.*, 2014). External governance mechanisms are stronger when firms are more likely to be taken over (as indicated by higher takeover index) (Cain *et al.*, 2017; Lel & Miller, 2015) or threatened by stronger product market competitors (as proxied by a higher fluidity index) (Giroud & Mueller, 2011; Harford *et al.*, 2017; Shleifer & Vishny, 1997). We further use two measures of internal governance to reflect the monitoring effectiveness of independent directors and key subordinate executives. Coles *et al.* (2014) show that board monitoring is weaker for firms with more co-opted boards (i.e.: higher fraction of independent directors who are appointed after the CEO assumes office). Internal monitoring by key executives, as highlighted in Acharya *et al*. (2011) is also more effective when the key executives have longer decision horizon (i.e.: years to retirement) and more influence on the CEOs, as reflected by their level of their compensation relative to the CEO (Cheng *et al.*, 2016). Our results show that the effect of policy uncertainty on cash holdings is more pronounced for firms with lower quality of external and internal corporate governance.

We further examine whether policy uncertainty increases cash holdings because of its impact in reducing corporate investment. Gulen and Ion (2016) show that precautionary delays due to investment irreversibility are the main explanation for the negative effect of policy uncertainty on investment. As such, we should observe a stronger impact of policy uncertainty on cash holdings for those firms with higher investment irreversibility. We employ four measures of investment irreversibility: (1) capital intensity ratio which equals to net PPE divided by total assets; (2) industry-level redeployability of assets using the 1997 capital flows table from the Bureau of Economic Analysis; (3) an index of sunk costs; and (4) a dummy for asset durability following Almeida and Campello (2007). We find that investment irreversibility does not have an impact on the association between policy uncertainty and firm cash holdings. This finding implies that the higher level of cash holdings during periods of higher policy uncertainty is not purely a result of cash savings that otherwise will be spent on capital investment.

In the final cross-sectional analysis, we examine whether firms that rely more on the government for their sales are expected to hold more cash under higher policy uncertainty. To measure industry-based government spending dependence, we use the Benchmark Input-Output Accounts, available from the Bureau of Economic Analysis (BEA) website to calculate the proportion of an industry's total outputs purchased (directly and indirectly) by the government. We find supporting evidence that firms that depend more on government spending are more likely to hold more cash in the period of heightened policy uncertainty.

We then examine whether higher cash holdings as a response to heightened policy uncertainty have added value for shareholders. This test also allows us to distinguish whether firms hold more cash when policy uncertainty increases because of the exacerbation in financial constraints or the weakening of the disciplinary effect of the takeover market. If financial constraints are the main driver behind the relation between policy uncertainty and cash holdings, we should observe a higher value of cash (Denis & Sibilkov, 2010). In contrast, if managers hoard more cash for their private benefits because of the lack of monitoring from the takeover market, the value of cash should decline when policy uncertainty increases (Dittmar & Mahrt-Smith, 2007). To determine the value of corporate cash holdings, we follow Faulkender and Wang (2006) to estimate the additional equity values that result from changes in the cash position of firms over the fiscal year. Our results suggest that increasing cash holdings during the period of high policy uncertainty increases firm stock returns. We further split the sample based on whether policy uncertainty is higher than the sample median or lower than the sample median and show that holding more cash does not add value when policy uncertainty is relatively low. As a result, given that the value of cash holdings improves when policy uncertainty increases, our results lend support to "*financial constraints*" as the dominating mechanism for the effect of policy uncertainty on cash holdings.

In the final set of analysis, we find the evidence of the role of cash holdings in alleviating the dampening effect of policy uncertainty on capital investment. This moderating role is stronger for financially constrained firms, as characterized by being smaller size, younger age and not having debt and paper rated, than for unconstrained firms. Overall, our results support the "*financial constraints*" hypothesis, which holds that when financial constraints increase because of higher policy uncertainty, greater cash holdings allow constrained firms to undertake value-increasing projects that might otherwise be bypassed (Almeida *et al.*, 2004; Denis & Sibilkov, 2010).

Our paper contributes to the existing literature in several ways. First, we contribute to the emerging literature on the effect of economic policy uncertainty on firm decisions. While prior studies document a strong negative relation between policy uncertainties and firm-level capital investment (Bernanke, 1983; Bloom, 2009; Gulen & Ion, 2016; Julio & Yook, 2012; Leahy & Whited, 1996; Rodrik, 1991) or M&A activities (Bonaime *et al.*, 2017; Nguyen & Phan, 2017), we demonstrate that policy uncertainty results in higher corporate cash holdings. Our analyses lean more toward to a financing side of corporate finance. In addition, the literature attributes the dampening effect of policy uncertainty on investment to the precautionary delays due to investment irreversibility (Bonaime *et al.*, 2017; Gulen & Ion, 2016). Our paper, on the other hand, shows a strong evidence that the relation between policy uncertainty and cash holdings is not a manifestation of the delays in investment or a disciplining effect from M&A activities. We further examine two possible competing mechanisms of the effect of policy uncertainty on cash holdings, financial constraints and corporate governance. We highlight the dominating role of financial constraints in explaining the effect, which has not been done in the existing literature. Finally, we further show that holding more cash during the times of heightened policy uncertainty not only has a positive impact on excess returns, but also attenuates the detrimental effect of policy uncertainty on investment as documented by Gulen and Ion (2016). Our paper therefore makes a fundamental contribution to the literature by not only highlighting the effect of policy uncertainty on cash holdings policy but also identifying the different channels through which policy uncertainty affects corporate financing behaviors.

Second, we contribute to the corporate cash holdings literature. The prior literature explains the level and value of corporate cash holdings based on various firm- or industry-specific variables, including corporate governance (Dittmar & Mahrt-Smith, 2007; Elyasiani & Zhang, 2015; Harford *et al.*, 2008), financial constraints (Almeida *et al.*, 2004; Denis & Sibilkov, 2010), carry costs (Azar *et al.*, 2016), industry cash flow volatility (Opler *et al.*, 1999), product market threats (Hoberg *et al.*, 2014), refinancing risk (Harford *et al.*, 2014), tax (Foley *et al.*, 2007; Harford *et al.*, 2017), and information asymmetry (Harris & Raviv, 2017). We extend these studies by highlighting the financial constraints emanating from the aggregate uncertainty associated with future economic policy and regulatory outcomes as an important determinant of corporate cash policy. Our paper complements the prior literature that emphasizes the precautionary motives for cash holdings (Bates *et al.*, 2009; Opler *et al.*, 1999). Our findings are important because the aggregate uncertainty derived from the instability of political and regulatory policies is largely outside the control of a firm and cannot be easily hedged through derivatives or financial contracting.

The remainder of this study proceeds as follows. Section II provides details on data and variable description. Section III discusses the main findings and implications while Section IV concludes the paper.

II. DATA AND VARIABLE DESCRIPTIONS

A. Data

To examine the relation between policy uncertainty and corporate cash holdings, we collect measures of economic policy uncertainty developed by Baker *et al.* (2016) from http://www.policyuncertainty.com/. We use Compustat's annual industry file as our primary source of information for firm-specific characteristics from the period between 1985 and 2014. This sample period is dictated by the availability of the policy uncertainty index and the Compustat annual financial data.

Following prior studies on corporate cash holdings (Opler *et al.*, 1999), we exclude financial firms (SIC code between 6000 and 6999) because their operations are subject to industry-specific regulations, such as capital and liquidity requirements, which differ from non-bank financial institutions. We also exclude utility companies (SIC 4900-4999) because their cash holdings are regulated in a number of states (Bates *et al.*, 2009). Firms that are not incorporated in the United States or have negative assets or negative sales are also excluded. Following Almeida and Campello (2007), we eliminate firm-year observations with assets or sale growth greater than 100% because this sharp increase may be associated with major corporate events such as mergers and acquisitions. We further exclude firms with market-to-book ratios that are negative or greater than 10 from the sample (Almeida & Campello, 2007; Gilchrist & Himmelberg, 1995).

B. Variable definitions

A firm's cash holdings (*CASH*) are measured as the ratio of liquid assets (the sum of cash and marketable securities) to the book value of total firm assets. The policy uncertainty variable (*PU*) is measured as the natural logarithm of the arithmetic average of the BBD index in the twelve months of the firm's fiscal year. We include three other components of BBD index, which are the news-based component (*PU_NEWS*), policy uncertainty related to tax code (*PU_TAX*), average of policy uncertainty related to government spending and related to inflation (*PU_GOVCPI*).

We also follow the existing literature to include the following firm-specific control variables that affect firm's cash policy. Firm size (*SIZE*) (measured as the natural log of total assets) is controlled because large firms have better access to external capital markets (due to their greater borrowing capacity) than smaller firms and so are expected to hold less cash (Almeida *et al.*, 2004). Following Opler *et al.* (1999), the market-to-book ratio (*MB*) is also used as a proxy for investment opportunities. Assuming all else equal, we expect that firms with higher market-to-book ratios tend to hold more cash since the bankruptcy cost that those high leverage firms incur if their financial condition worsens are higher. We compute cash flow (*CF*) as earnings after interest, dividends, and taxes but before depreciation, divided by net assets (Opler *et al.*, 1999). Cash flow is assumed to be positively associated with cash holdings because firms with higher cash flows accumulate more cash. Following Harford *et al.* (2014), we also measure cash flow riskiness and compute the average industry standard deviation of cash flow (*ICFVOL*) on a 10-year rolling basis at the two-digit SIC level.

Net working capital (*NWC*) is composed of assets that can substitute for cash or it may compete for the available pool of resources (Fazzari & Petersen, 1993). Hence, a negative relation between net working capital and cash holdings is expected. We expect capital expenditures (*CAPEX*) to be negatively related to cash because firms can draw down on cash reserves in a given year in order to pay for investments and acquisitions (Almeida *et al.*, 2004). Book leverage (*BLEV*) is measured by the debt-to-assets ratio, which equals long-term debt plus short-term debt, divided by the book value of total assets (Frésard & Salva, 2010). A firm can use cash to repay its debt; consequently, a negative relation between firm cash holdings and book leverage is anticipated. We also include a dummy variable (*DIVDUM*) that equals 1 if a firm pays dividends in a given year and 0 otherwise. Dividends distribute cash, which suggests that dividend-paying firms are less risky and have greater access to capital markets, weakening their precautionary motive to hoard cash.

We measure R&D intensity (*R&D*) by scaling R&D expenditures by net sales. If R&D expenditure information is missing, we set the number to 0. The impact of R&D investment on firm cash holdings cannot be determined a priori. Opler *et al.* (1999) report a positive relation between cash holdings and R&D, suggesting that firms engaging in more R&D activities will face higher costs of financial distress (Opler & Titman, 1994). Harford *et al.* (2008), on the other hand, find that R&D investment is unrelated to a firm cash policy while Brown and Petersen (2011) indicate that the association between cash holdings and R&D depends on the level of financial friction the firm experiences.

C. Correlation matrix and descriptive statistics

The correlation matrix and the descriptive statistics of all variables used in the main analysis are presented in Table 1. In Panel A, the overall index (*PU*) is highly correlated with each of its components, especially with *PU_NEWS* (0.9061). Here we also observe that the news component is also highly correlated with the tax components (0.9008), but less so for the other two components combined (0.6788). More importantly, we find that the overall policy uncertainty index (*PU*) is correlated positively with firm cash holdings (*CASH*).

Among the three components of the policy uncertainty index, the news-based measure of policy uncertainty (*PU_NEWS*) has the highest correlation with firm cash holdings. These observations provide an early indication of a positive relation between policy uncertainty and corporate cash holdings. In Panel B, we report the mean, standard deviation, minimum and maximum values of all variables. The mean cash holdings ratio is 16.17%, which corresponds to $285.52 million dollars given the mean value of total assets of $1,765.73 million dollars.

[Insert Table 1 here]

III. MAIN RESULTS

A. Policy uncertainty and cash holdings

In this section, we investigate the effect of policy uncertainty on firm cash holdings. We first test the effect using overall and the main components of the BBD uncertainty index. In the baseline models, we only control for firm-level characteristics that are known to affect cash holdings. We then control for the possible confounding effect of macro-level economic uncertainty.

A1. The overall and component effect of policy uncertainty

We begin our empirical analysis by testing the following baseline regression:

$$CASH_{i,t+1} = \alpha_0 + \beta_1 PU_{i,t} + \beta_j CONTROL_{j,i,t} + \gamma_i Firm\ FE_i + \epsilon_{i,t} \quad (1)$$

The dependent variable is $CASH_{i,t+1}$, of firm *i* in year t+1. Control variables include *SIZE*, *MB*, *CF*, *NWC*, *CAPEX*, *BLEV*, *R&D*, *DIVUM* and *ICFVOL* of firm *i* in year *t* (Opler *et al.*, 1999).[3] In the baseline regressions, we include firm-fixed effects and cluster robust

[3] Section II.B and Appendix A provide the detailed definitions of these variables.

standard errors at the firm level to control for time-invariant firm characteristics and cross-sectional correlations.[4]

The key explanatory variable of interest is policy uncertainty, $PU_{i,t}$, which is measured as the natural logarithm of the arithmetic average of the BBD index in the 12 months of fiscal year *t*. Each firm *i* in year *t* is assigned the same *PU* value of year *t*. This means we cannot include year-fixed effects in the models where *PU* is specified as the *PU* variable is cross-sectionally invariant, as doing so will absorb all explanatory power of *PU*.

In Table 2, we report seven different regression models using Equation (1). The first four models employ the overall policy uncertainty index, while the remaining three models separately use three main components of the index to capture different sources of policy uncertainty. Only *PU* and firm-fixed effects are specified in Column (1), firm-level control variables are further incorporated in Column (2), cash holdings in one-year lead (t+1) is replaced by two-year (t+2) and three-year (t+3) leads as dependent variables in Columns (3) and (4), respectively. The results in Columns (1) and (2) suggest that an increase in policy uncertainty is associated with higher firm cash holdings in the following years. In particular, the coefficient of *PU* of 0.0213 (Column (2)) indicates that when policy uncertainty doubles, firms on average increase their ratio of cash to assets by 2.13%, which corresponds to an increase by 37.61 million dollars in cash per firm-year (2.13% of the mean of total assets of 1,765.73 million dollars). Further, the coefficient of *PU* remains significant in Column (3), meaning that the positive impact of policy uncertainty on cash holdings persists after two years, but with a weaker power when 100% jump in policy uncertainty only results in an 1.48% surge in the cash-to-assets ratio two years later. Further, the effect disappears after three years as suggested by the insignificant explanatory power of *PU* on $CASH_{i,t+3}$ in Column (4).

[4] In an additional robustness check, we use two-dimensional clustering effects by both firm and year, and the explanatory power of policy uncertainty remains significant at the 1% level.

[Insert Table 2 here]

Columns (5) through (7) of Table 2 report the regression results when each of three components of policy uncertainty including news (*PU_NEWS*), tax (*PU_TAX*), inflation and government spending combined (*PU_GOVSCPI*) is of interest instead of the overall index, respectively. We obtain each component by taking a logarithm transformation of the corresponding component BBD index. The results show that all of those uncertainty sources can independently and upwardly drive firm cash holdings in the following year, $CASH_{i,t+1}$. However, the coefficient estimates or the impact on cash holdings differs across these components with news-based index being the strongest factor. In particular, a doubling in the news-, tax-, inflation-government spending-based uncertainty index yields an increase by 1.93%, 1.09%, 0.99% in the cash-to-assets ratio, respectively.

The strongest effect of the news-based PU on cash holdings, compared to other components of PU could be because BBD employs the news-based technique to capture the volatility in all types of economic policies, including those related to tax code, government spending and inflation. The news-based component also represents the biggest fraction of 50% of the overall index, which makes it the main driver of the positive effect of the aggregate policy uncertainty on cash holdings. For this reason, we adopt only the news-based PU measure for all the remaining regressions. Another reason is to alleviate any possible confusion about which components of the BBD index contribute to our results. Nevertheless, we have also conducted all the tests using the overall BBD index and our results are qualitatively unchanged.[5]

[5] Those results are available upon request.

A2. Control for confounding effect of economic uncertainty

One of the main concerns in interpreting our baseline results is that the BBD index may be confounded by other sources of general economic uncertainty. The possible contamination effect can come in two alternative forms. First, the BBD index is likely highly correlated with other macro-economic uncertainty. This is possible because events that lead to policy uncertainty, such as recessions, wars, financial crises, can also possibly drive general macroeconomic uncertainty. It is therefore likely that when firms encounter policy uncertainty, they also face uncertainty in other aspects of their business, such as consumer demand or external finance. In the absence of time-fixed effects, the concern on those possibly omitted economic uncertainty sources becomes very present. Second, the BBD index may capture general economic uncertainty in its construction. Even though Baker *et al.* (2016) have put great effort into mitigating this possible measurement error, the concern is still worth considering.

To control for these possible contaminations, we undertake two alternative robustness tests. First, we address the first confounding form by further controlling for all the plausible proxies for macroeconomic uncertainty that possibly affect firm cash holdings in Equation (1). Second, we resolve the second confounding form by extracting the economic uncertainty components from the original PU measure. We do so by separately running time-series regressions of PU on a list of macro uncertainty variables and obtaining the residuals that capture the extent of policy-related uncertainty *independent* of economic uncertainty. We then replace the original policy uncertainty variable by the residuals obtained in the previous step and rerun Equation (1). If the firm cash holdings are driven by purely policy-related uncertainty as suggested by our baseline results, then policy uncertainty should still have significant explanatory power in these two tests.

To proxy for politically induced economic uncertainty, we first follow Julio and Yook (2012) to construct an election year dummy (*ELECYEAR*) that is equal one on the years of a presidential election. During our sample period 1985-2014, there were seven U.S. presidential elections held every four years in 1988, 1992, 1996, 2000, 2004, 2008, and 2012. Second, we use the Livingstone survey of professional forecasters to compute a proxy for uncertainty about future economic growth (*GDPDIS*).[6] In particular, the survey is prepared every six months in June and December to capture the variation in GDP forecasts. Third, to capture uncertainty about future profitability, we calculate the yearly cross-sectional standard deviation of firm-level profit growth (*SDPROFIT*). Profit growth is obtained by taking a year-on-year change in net profit divided by average sales. Fourth and fifth, to control for equity market-based uncertainty, we include the yearly cross-sectional standard deviation of stock returns (*SDRETURN*) and the implied volatility index (*VXO*) from the Chicago Board Options Exchange, respectively. Finally, we use another comprehensive measure of aggregate uncertainty (*JLN*), developed by Jurado *et al.* (2015), which is based on the co-movement in the unpredictable component of a big number of economic indicators. We take natural logarithms of all of these economic uncertainty measures (except for the election year dummy).

[Insert Table 3 here]

To control for the possible impact of these six proxies on firm cash holdings, we gradually add each of them and eventually all of them together to Equation (1). We run the following regressions:

$$CASH_{i,t+1} = \alpha_0 + \beta_1 PU_{i,t} + \beta_j CONTROL_{j,i,t} + \beta_k EU_{k,i,t} + \gamma_i Firm_i + \epsilon_{i,t} \quad (2)$$

Here, $EU_{i,t}$ is a vector of six proxies for economic uncertainty described above. The regression results provided in Table 3 show that the positive association between PU and

[6] Biannual GDP forecasts from the Livingstone survey of the Philadelphia Federal Reserve Bank.

cash holdings remains highly statistically significant regardless of which economic uncertainty variables are included. After all the economic uncertainty controls are introduced as in Column (7), firms on average increase their cash-to-assets ratio by 0.70% when policy uncertainty increases by 100%; that is approximately 40% of what has been observed in the absence of these macro controls. Additionally, the regression results reveal the significant explanatory powers of these proxies on firm cash holdings. This evidence indicates that the explanatory power of policy uncertainty on cash holdings is not fully absorbed by any of these six proxies that highlight the robustness of our baseline results. This also supports the argument that BBD index comprises macroeconomic uncertainty information that is not captured by any of the other well-known measures adopted in the existing literature.

One alternative way to alleviate the concern over the possibility that the BBD index inadvertently captures the economic shocks that are unrelated to policy is to extract all these possible contaminations from the BBD index. This technique presents an econometric advantage compared to the previous one, which is to mitigate the concern of multi-collinearity resulted from the inclusion of too many correlated variables such as PU and EU into one regression. In particular, we propose an augmented monthly time-series model:

$$USPU_t = \alpha_0 + \beta_1 CANPU_t + \beta_k EU_{k,t} + \epsilon_t \qquad (3)$$

Here, $USPU_t$ and $CANPU_t$ are the logarithm transformation of news-based policy uncertainty measures developed by BBD for the United States (U.S.) and Canada. Due to the close economic relation between the two countries, any aggregate economic shocks to Canada would be expected to affect U.S. as well. Hence, if the BBD index partially captures policy-unrelated economic uncertainty, the inclusion of the Canadian index is to remove the economic uncertainty in U.S. that is derived from economic and policy uncertainty in Canada. The term EU_t represents a vector of six direct measures of macroeconomic uncertainty for the U.S. as defined above. The residuals obtained from running Equation (3) should represent a "cleaner" policy uncertainty index that is by design exempt from the direct and indirect sources of general economic uncertainty.

We aggregate the monthly residuals in Equation (3) to yearly level using arithmetic average, and denote the new and clean measure of policy uncertainty for US as *RPU*. We then repeat the baseline analysis in Equation (1) with *PU* being replaced by *RPU* to be the main variable of interest. Specifically, we run the following model:

$$CASH_{i,t+1} = \alpha_0 + \beta_1 RPU_{i,t} + \beta_j CONTROL_{j,i,t} + \gamma_i Firm_i + \epsilon_{i,t} \quad (4)$$

The regression result using Equation (4) is presented in Column (8) of Table 3. This result confirms our main findings that policy uncertainty is positively associated with firm cash holdings. The relation remains statistically and economically significant when an economic-free policy uncertainty measure is adopted. The result indicates that a doubling in the residual policy uncertainty leads to a surge by 2.49% in the corporate cash-to-assets ratio. The larger positive coefficient on policy uncertainty suggests that the cleaner measure, i.e., exempt from aggregate economic shocks, even possesses stronger explanatory power over cash holdings. This evidence strengthens our argument that policy-related uncertainty indeed positively drives corporate cash holdings.

B. Addressing endogeneity concern: Instrumental variable analysis

In this section, we further control for the endogeneity concern by conducting an instrument variable analysis. We adopt the political polarization in the U.S. Senate or House of Representatives as an instrument variable since this variable arguably only affects firm cash holdings through its influence on policy uncertainty. In particular, we execute a two-stage regression strategy as follows:

$$PU_t = \alpha_0 + \beta_1 POLAR_t + \beta_2 CANPU_t + \beta_k EU_{k,t} + \epsilon_t \quad (5)$$

$$CASH_{i,t+1} = \alpha_0 + \beta_1 FPU_{i,t} + \beta_j CONTROL_{j,i,t} + \gamma_i Firm_i + \epsilon_{i,t} \quad (6)$$

Here, Equation (5) is a monthly time-series regression that is the same with Equation (3), except that a measure of political polarization is further independently incorporated. Our measure of political polarization is based on the *DW-NOMINATE* scores as developed by McCarty *et al.* (1997). In particular, the measure is calculated as the difference in the first dimension of the *DW-NOMINATE* scores between the Republican (code: 200) and Democratic (code: 100)[7] parties. We measure the polarizations of the members in both the Senate and House of Representatives as alternative instruments. PU_t, $CANPU_t$ and EU_t denote the news-based measure of policy uncertainty of the U.S. and Canada, and six other direct proxies for general economic uncertainty as explained in Section III A2, respectively. The F-statistics for the coefficients of *POLAR* and *CANPU* in estimating Equation (5) are 18.13 and 117.58 (significant at less than 1% level), respectively, indicating that the instrument variables meet the required conditions.[8]

The fitted values of *PU* estimated from Equation (5) are aggregated to yearly level to be the key variable of interest, $FPU_{i,t}$, in Equation (6). The specification of Equation (6) is the same with Equation (1), except that the original news-based *PU* is replaced by the fitted *PU.* Firm-level controls, firm-fixed and cluster effects are included in Equation (6) as in Equation (1).

[Insert Table 4 here]

The regression results using Equation (6) are documented in Table 4. In Columns (1) through (4) we add one more year lead in each model to test how long the impact of policy uncertainty on cash holdings will persist. The significantly positive coefficients of the fitted *PU* in Columns (1) through (3) with descending value and insignificant result in Column (4) confirm the baseline findings that policy uncertainty upwardly drives cash holdings and the

[7] Data are obtained from http://voteview.org/dwnomin_comparison.htm for the period, 1998-2014, that is the maximum availability period.
[8] For brevity, we do not display regression results using Equation (5).

impact is weaker over time as the uncertainty becomes less severe. Economically, the results are quite consistent with the baseline ones when the coefficient of 0.0219 of the fitted *PU* in Column (1) reports that a doubling in the level of policy uncertainty leads to an increase by 2.19% in the cash-to-assets ratio in the following year.

As a robustness check, in Column (5) we report results when *CANPU* is excluded from Equation (5). In Columns (6) and (7) we replicate the instrumental analysis procedures in Columns (1) and (5) with the Senate *DW-NOMINATE* scores being replaced by House *DW-NOMINATE* scores as the instrumental variable. The results on the coefficients of the fitted PU consistently point to the same direction and similar explanatory power over cash holdings with the baseline findings as well as findings based on Senate *DW-NOMINATE* scores. In sum, the main results are robust to endogeneity controlling tests using two-stage regression strategy.

C. Mechanisms of the effect of policy uncertainty on cash holdings

In this section, we identify three mechanisms through which policy uncertainty affects corporate cash holdings. Three mechanisms we consider include: (i) financial constraints, (ii) corporate governance, (iii) investment irreversibility. We will test the validity of each proposed mechanism and highlight their relative importance in explaining the observed positive association between policy uncertainty and cash holdings.

C1. Financial constraints

Bordo *et al.* (2016) show a negative impact of policy uncertainty on bank credit growth at both aggregate and firm levels. If that is the case, firms may have difficulty in accessing the external financial market when policy uncertainty increases; therefore, they tend to have more precautionary incentives to reverse cash (Opler *et al.*, 1999). To test the financial constraints mechanism, we first examine whether aggregate bank credit is tightened (i.e., higher firm financial constraints) due to heightened policy uncertainty, thereby leading firms to save more cash from cash flows. These tests will provide evidence on the influence that policy uncertainty has on the supply side of external finance available to firms.

We run the following model to examine the effect of policy uncertainty on general credit market conditions:

$$CISPREAD_t = \alpha_0 + \beta_1 PU_t + \beta_k EU_{k,t} + \delta_t Quarter_t + \epsilon_t \qquad (7)$$

Here, Equation (7) is quarterly time-series regression of a proxy for credit market conditions, *CISPREAD*, on news-based measure of policy uncertainty, *PU_NEWS*, and a list of general macro-economic variables as controls. We follow Harford (2005), Officer (2007) and Harford *et al.* (2014) to capture credit market conditions through *CISPREAD*, the spread of commercial and industrial loan rates (on loans greater than US$ 1 million) over the federal funds rate.[9] The authors argue that larger *CISPREAD* indicates that credit conditions are tightening. We include four quarter dummies to account for the possible seasonality as well as time trend effects on credit supply. The results for this test are displayed in Table 5.

[Insert Table 5 here]

The positive coefficients on *PU_NEWS* show that commercial and industrial loans become costlier when policy uncertainty is stronger, making it more difficult for firms to access these main sources of external finance. In sum, the results provide evidence that policy uncertainty exacerbates the credit market conditions at the aggregate level, which is consistent with findings of Bordo *et al.* (2016).

If an increase in policy uncertainty makes it more difficult for firms to access external finance, they tend to rely more on internally generated resources for investment (Denis &

[9] Following Harford *et al.* (2014), the spread of commercial and industrial loan rates (on loans greater than US$ 1 million) over the federal funds rate are collected from the Federal Reserve Senior Loan Office (SLO) survey published in January 2017.

Sibilkov, 2010; Harford *et al.*, 2014; Opler *et al.*, 1999). Thus, we should observe that firms hold back more cash from cash flows when policy decision making is more instable (Almeida *et al.*, 2004). To test this conjecture, we follow Almeida *et al.* (2004) to specify the following model:

$$\Delta CASH_{i,t} = \alpha_0 + \beta_1 CF_{i,t} + \beta_2 PU_{i,t}*CF_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 TOBINQ_{i,t} + \gamma_i Firm_i + \delta_t Year_t + \epsilon_{i,t} \quad (8)$$

Here, $\Delta CASH_{i,t}$ is the yearly change in the level of cash deflated by total assets of firm *i* in year *t*. *PU, CF, SIZE*, and *TOBINQ* are a news-based policy uncertainty, operating cash flows deflated by total assets, natural logarithm of total assets, and ratio of market-to-book, respectively. The variable of interest is the interaction term, *PU*CF*, which captures the effect of policy uncertainty on the sensitivity of cash reserves to cash flows. If what our prediction is true, we will observe a significant and positive coefficient on the interaction term. Note that, in the presence of year-fixed effects (Year FE), we exclude *PU* in Equation (8) as its explanatory power is subsumed by the year-fixed effects. The inclusion of year-fixed effects has the advantage of controlling for any general economic conditions that may affect the dependent variable. The regression results for these tests are provided in Table 6.

[Insert Table 6 here]

Column (1) documents the regression result using Equation (8). In Column (2) we include three additional control variables: capital expenditure (*CAPEX*); change in net working capital (ΔNWC); and change in book leverage ($\Delta BLEV$) following the literature (Chen *et al.*, 2012). As expected, the coefficient on the interaction term is positive and statistically significant at the 1% level, confirming that firms save more cash from cash flows when policy uncertainty increases. Regarding the control variables, the results are quite consistent with previous studies that show their significant explanatory powers over the change in cash holdings (Chen *et al.*, 2012).

C2. Corporate governance

Existing evidence suggests that corporate governance is among the main determinants of corporate cash holdings policy (Chen *et al.*, 2012; Dittmar *et al.*, 2003; Kalcheva & Lins, 2007). When policy uncertainty surges, external forces of corporate governance, such as threats from merger and acquisition (M&A) activities are expected to be weakened, exacerbating free cash flow issues. Indeed, Bonaime *et al.* (2017) and Nguyen and Phan (2017) show that M&A activities are attenuated by increased policy uncertainty. Given that the M&A threat is an important source of discipline from financial markets (Cain *et al.*, 2017; Lel & Miller, 2015), a weakening in M&A activities gives managers greater discretion to hoard cash for their personal benefit. If policy uncertainty increases cash holdings by reducing external governance mechanisms, the effect of policy uncertainty on cash holdings should be weaker for firms that are more exposed to external governance mechanisms.

To test this conjecture, we employ two measures of external forces of corporate governance, including (i) hostile takeover index developed by Cain *et al.* (2017) and product market fluidity index of Hoberg *et al.* (2014). The takeover index captures the notion that firms are more exposed to external monitoring if they are more likely to be taken over (as indicated by higher takeover index) (Cain *et al.*, 2017). Prior research also emphasizes the importance of product market threat as an effective governance mechanism (Giroud & Mueller, 2011; Harford *et al.*, 2017; Shleifer & Vishny, 1997). To proxy for product market threat, we use the product market fluidity index of Hoberg *et al.* (2014), which captures changes in rival firms' products relative to the firm's products. A higher value of product market fluidity index indicates stronger competitive threats and a stronger external governance mechanism.

We also use two additional measures of internal governance from independent directors and key subordinate executives. First, independent director monitoring is weaker for firms with more co-opted independent directors (those that are appointed after the CEOs assume office) (Coles *et al.*, 2014). Second, the effectiveness of internal monitoring by key executives is stronger when the executives have stronger horizon incentives and influence within the firms. Similar to Cheng *et al.* (2016), we use the number of years to retirement and the executive compensation relative to the CEO to capture executives' horizon and influence, respectively. Our measure of internal governance effectiveness is the sum of the standardized measures of executives' horizon and influence.

We test whether the impact of policy uncertainty on cash holdings is less pronounced for firms with higher takeover index, higher product market fluidity index, or higher internal governance measure, and more pronounced for firms with more co-opted independent directors by running the following models:

$$CASH_{i,t+1} = \alpha_0 + \beta_1 PU_{i,t}*HOSTILE_{i,t}\ (PU_{i,t}*COOPT_{i,t}) + \beta_j CONTROL_{j,i,t} + \gamma_i Firm_i + \delta_t Year_t + \epsilon_{i,t} \qquad (9)$$

$$CASH_{i,t+1} = \alpha_0 + \beta_1 PROFLUID_{i,t}\ (INTGOV_{i,t}) + \beta_2 PU_{i,t}*PROFLUID_{i,t}\ (PU_{i,t}*INTGOV_{i,t}) + \beta_j CONTROL_{j,i,t} + \gamma_i Firm_i + \delta_t Year_t + \epsilon_{i,t} \qquad (10)$$

$HOSTILE_{i,t}$ represents the log of Cain *et al.*'s (2017) firm-based takeover index, $PROFLUID_{i,t}$ denotes the log of Hoberg *et al.*'s (2014) industry-based product market fluidity index, $INTGOV_{i,t}$ is Cheng *et al.*'s (2016) firm-based aggregate measure of internal governance effectiveness, and $COOPT_{i,t}$ is the Coles *et al.*'s (2014) fraction of co-opted independent directors in the board.[10] The variables of interest are the interaction terms,

[10] The Cain *et al.* (2017)'s takeover index is publicly available at: http://pages.uoregon.edu/smckeon/. The Hoberg *et al.* (2014)'s product market fluidity index can be found at http://hobergphillips.usc.edu/industryconcen.htm. Coles *et al.*'s (2014) co-opted boards measures are available at https://sites.temple.edu/lnaveen/data/. The internal governance measure is constructed by the authors following Cheng *et al.* (2016).

$PU_{i,t}$*$HOSTILE_{i,t}$, $PU_{i,t}$*$PROFLUID_{i,t}$, $PU_{i,t}$*$INTGOV_{i,t}$, and $PU_{i,t}$*$COOPT_{i,t}$, that capture the effect of corporate governance on the association between policy uncertainty and cash holdings. Negative coefficients on three former and positive coefficients on the latter interactions will support our conjecture. Note that in Equation (9), we do not include $HOSTILE_{i,t}$ *(or* $COOPT_{i,t}$*)* independently in the presence of firm-fixed effects due to the "slow-moving" nature of these measures over time (Cain *et al.*, 2017; Coles *et al.*, 2014). In addition, we exclude the PU and include year-fixed effects in Equations (9) and (10) for the same reasons with Equation (8). $CONTROL_{j,i,t}$ comprises all the control variables used in baseline regressions of Equation (1).

[Insert Table 7 here]

The results of these tests are displayed in Table 7. The coefficients on both interaction terms are negative and significant, which is consistent with our hypothesis. Indeed, firms with better corporate governance, i.e., those that are more threatened by external forces of financial and product markets, experience a weaker effect of policy uncertainty on cash holdings.

C3. Investment irreversibility

In a recent study, Gulen and Ion (2016) find that policy uncertainty adversely affects firm investment and document investment irreversibility as the main explanation of the effect. They argue that this is because firms whose investments are harder to reverse are highly incentivized to further delay investments when policy uncertainty surges. Given this evidence, one may expect an increase in cash holdings as the results of a reduction in investment during the time of heightened policy uncertainty. Accordingly, we should observe stronger impact of policy uncertainty on cash holdings for those firms with higher investment irreversibility. To test this argument, we specify the following regression:

$$CASH_{i,t+1} = \alpha_0 + \beta_1 IR_{i,t} + \beta_2 PU_{i,t} * IR_{i,t} + \beta_j CONTROL_{j,i,t} + \gamma_i Firm_i + \delta_t Year_t + \epsilon_{i,} \quad (11)$$

Here, $IR_{i,t}$ is a proxy of investment irreversibility of firm *i* in year *t*. Here, we adopt four measures of investment irreversibility, including (i) capital intensity ratio given by net PPE divided by total assets (*PPE*); (ii) industry-level redeployability of assets (*AR*) using 1997 capital flows table from the Bureau of Economic Analysis; (iii) an index of sunk costs (*SUNK*) based on firms' rent expense and depreciation expense and their past sale of PPE (Fariñas & Ruano, 2005; Kessides, 1990); and (iv) a dummy for asset durability (*AD*) based on firms' sales cyclicality of Almeida and Campello (2007). In addition, we exclude the PU and include year-fixed effects in Equation (11) for the same reasons with Equation (8).

[Insert Table 8 here]

The variable of interest is the interaction term, $PU_{i,t}*IR_{i,t}$, which captures the effect of the level of investment irreversibility on the relation between *PU* and *CASH*. If firms with a higher degree of investment irreversibility tend to hold more cash as a result of a surge in policy uncertainty, then the coefficient of the interaction will be significantly positive. However, the results reported in Table 8 fail to provide supporting evidence for this argument. In fact, coefficients on the interaction term across all four proxies of investment irreversibility are insignificant. The evidence suggests that investment irreversibility does not explain the effect of policy uncertainty on firm cash holdings. This further strengthens the notion that financial constraints and government dependence are the mechanisms through which policy uncertainty affects cash holdings.

C4. Government dependence

We further examine whether policy uncertainty affects cash holdings more for firms that rely more on government spending. Intuitively, if higher policy uncertainty causes firms to hold more cash, then the influence should be stronger for those firms that are more exposed to government demand. To test this prediction, we follow Belo *et al.* (2013) to first measure the magnitude of a firm's dependence on government spending.

Specifically, we compute the percentage of an industry's sales that can be attributed to government purchases by using data from the Benchmark Input-Output Accounts, available from the Bureau of Economic Analysis (BEA) website. In particular, from the use table in the I-O accounts we extract g_i, which is the total dollar amount of product from industry i sold directly to the government sector (federal, local, and state governments). We obtain $a_{i,j}$, which is the dollar amount of input from industry i consumed to produce one dollar of final use of industry j's product from the industry-by-commodity table in the I-O accounts. We define x_i as the total amount of input from industry i consumed, directly and indirectly, to meet the total government sector demand. The x_i can be calculated as follows:

$$x_i = \sum a_{i,j} \cdot g_j \qquad (12)$$

where j runs through all the industries in the economy. Each industry's reliance on government spending is measured by the ratio x_i/y_i, where y_i indicates the industry's total output extracted from the use tables.

The industry classification in the input–output account is based on I–O industry codes. We follow Belo *et al.* (2013) to match the input–output account data to CRSP/Compustat data, using the concordance tables prepared by the BEA. These tables provide concordance between I–O industry codes with SIC codes before I–O benchmark year 1997 and concordance between I–O industry codes with North American Industry Classification System (NAICS) after (and including) benchmark year 1997. We merge the two datasets as follows. Before calendar year 2003, we obtain the three-digit SIC code for each firm based on the Compustat Historical SIC code and then calculate the weighted average of the measure of industry exposure to government spending for all I–O industries in accordance with that three-digit SIC code, with the I–O industry total outputs as the weights. After (and including) calendar year 2003, we directly match the five-digit NAICS codes from CRSP/Compustat with that from the concordance tables. If five-digit NAICS codes are not matched, we match them at the four-digit, three-digit, and then two-digit level.

Our empirical models for this test are as follows:

$$CASH_{i,t+1} = \alpha_0 + \beta_1 PU_{i,t} * GOVSP_{i,t} + \beta_j CONTROL_{j,i,t} + \gamma_i Firm_i + \delta_t Year_t + \epsilon_{i,t} \quad (13)$$

$$CASH_{i,t+1} = \alpha_0 + \beta_1 HIGHGOVSP_{i,t} + \beta_2 PU_{i,t} * HIGHGOVSP_{i,t} + \beta_j CONTROL_{j,i,t} + \gamma_i Firm_i + \delta_t Year_t + \epsilon_{i,t} \quad (14)$$

Here, $GOVSP_{i,t}$ represents the measure of firm dependence on government spending as defined above. There are a certain number of industries that have positive government final use, such as Construction (IO Code: 23); Motor vehicles, bodies and trailers, and parts (IO Code: 3361MV); Computer systems design and related services (IO Code: 5415), or Miscellaneous professional, scientific, and technical services (IO Code: 5412OP). On the other hand, a large range of other industries have zero government exposure throughout the sample period 1995-2014. Because of the time-invariant characteristic of *GOVSP* for a majority of sample firms, we do not include *GOVSP* independently in the presence of firm-fixed effects. In addition, we exclude the *PU* and include year-fixed effects in Equations (10) and (11) because *PU* is no longer the variable of interest for these tests. Further, the inclusion of year-fixed effects has an econometric advantage of controlling for any macro-economic and policy-related conditions that may affect cash holdings. $CONTROL_{i,t}$ comprises all the control variables used in baseline regressions of Equation (1).

Due to a highly industry-concentrated attribute of the government spending measure, as a robustness test, we construct a dummy variable, *HIGHGOVSP*, which is equal to one if government spending is greater than the sample median value, and zero otherwise. This design allows us to specify the *HIGHGOVSP* dummy independently and interact it with *PU* in the same model as given in Equation (14). The variables of interest in Equations (13) and

(14) are the interaction terms, *PU*GOVSP* and *PU*HIGHGOVSP*, respectively, which capture the impact of the degree of government spending sensitivity on the association between policy uncertainty and firm cash holdings. Positive coefficients on the two interactions will provide supporting evidence for our hypothesis that firms that are more dependent on government spending will increase cash holdings more when policy uncertainty is higher.

[Insert Table 9 here]

Columns (1) and (2) of Table 9 present regression results using Equation (13) and Equation (14), respectively. The results suggest that the dependence on government spending serves as a mechanism through which policy uncertainty reinforces its positive impact on firm cash holdings, as indicated by the significant and positive coefficients of the interaction terms, *PU*GOVSP* and *PU*HIGHGOVSP*. In short, the evidence supports the notion that higher exposure to government spending makes cash holding decisions more sensitive to aggregate policy uncertainty.

D. Policy uncertainty and value of cash holdings

The cross-sectional analyses above suggest that financial constraints and corporate governance are among the mechanisms underlying the positive association between policy uncertainty and the level of cash holdings. In this section, we test the stock return reactions to the increased cash holdings when policy uncertainty surges. We refer to this argument as the effect of policy uncertainty on the value of cash holdings. A positive effect is consistent with the hypothesis that shareholders favor firm decisions to reserve more cash, which is the case for financially constrained firms (Denis & Sibilkov, 2010). In contrast, a negative shareholder reaction supports the argument that firm insiders accumulate more cash for personal benefits due to a weakening in corporate governance (Dittmar & Mahrt-Smith, 2007).

To investigate the conjecture, we follow Faulkender and Wang (2006) to specify the following model:

$$r_{i,t} - R^B_{i,t} = \alpha_0 + \beta_1 PU_{i,t} + \beta_2 \Delta CASH_{i,t} + \beta_3 PU_{i,t} * \Delta CASH_{i,t} + \beta_j CONTROL_{j,i,t} + \gamma_i Firm_i + \epsilon_{i,t} \quad (15)$$

$$r_{i,t} - R^B_{i,t} = \alpha_0 + \beta_1 \Delta PU_{i,t} + \beta_2 \Delta CASH_{i,t} + \beta_3 \Delta PU_{i,t} * \Delta CASH_{i,t} + \beta_j CONTROL_{j,i,t} + \gamma_i Firm_i + \epsilon_{i,t} \quad (16)$$

Here, $r_{i,t}$ stands for the annual stock return of firm *i* at time *t* and, $R^B_{i,t}$ represents stock *i*'s benchmark portfolio annual return at time *t*. The benchmark portfolios are 25 Fama-French value-weighted portfolios sorted independently based on firm size and book-to-market characteristics. The dependent variable, $r_{i,t} - R^B_{i,t}$, captures the risk-adjusted annual return, or excess return (*EXRETURN*) of firm *i* at time *t*. $\Delta CASH_{i,t}$ is an annual change in cash of firm *i* at time *t*. $CONTROL_{j,i,t}$ consists of other independent variables used by Faulkender and Wang (2006), including change in non-cash ($\Delta NCASH$), change in earnings ($\Delta EARNING$), change in R&D expense ($\Delta R\&D$), change in interest expense (ΔINT), change in dividend (ΔDIV), market leverage (*MLEV*), lagged cash (*L.CASH*), and two interaction terms, $\Delta CASH*L.CASH$ and $\Delta CASH*MLEV$. All the explanatory variables, except market leverage (constructed as total debt deflated by contemporaneous market value of equity), are standardized by lagged market value of equity. The variable of interest is the interaction term, $PU*\Delta CASH$, that measures the effect of policy uncertainty on the sensitivity of the excess returns to the change in cash holdings, or value of cash holdings in other words. A positive coefficient on the interaction will indicate that increasing cash hoardings during the period of surging policy uncertainty yield higher returns.

Alternatively, we replace the level of *PU* by change in *PU*, Δ*PU* and specify Equation (16). The variable of interest in Equation (16) is the interaction term, Δ*PU**Δ*CASH*, showing how the change in policy uncertainty affects the value of cash holdings. Note that we keep *PU* (or Δ*PU*) in the regression models as we are interested in testing the general impact of policy uncertainty (or change in policy uncertainty) on stock returns. Following our prediction, we would expect the coefficient on these interactions to be significantly positive.

[Insert Table 10 here]

Table 10 displays the results for these tests. First, we run regressions on the full sample using Equation (15) and report the result in Column (1). We split the sample based on whether policy uncertainty is higher or lower than the sample median (Columns (2) and (3)). We present regression results using Equation (16) for the full sample in Column (4) and for subsamples above or below median value of the change in policy uncertainty (Columns (5) and (6)). The coefficient on *PU* in Column (1) is significantly positive while the coefficient on Δ*PU* in Column (4) is significantly negative. These results provide supporting evidence for the notion that in general, stock investors require a premium associated with the policy uncertainty. However, in the years when policy uncertainty increases relative to previous years, stock returns actually decline.

More importantly, the positive coefficients on the interactions, *PU**Δ*CASH* and Δ*PU**Δ*CASH*, in Columns (1) and (4) show that policy uncertainty (or change in policy uncertainty) positively drives the value of cash holdings. The results are further confirmed by the evidence in Columns (2) and (5) indicating that the positive effect is more pronounced in years when policy uncertainty (or change in policy uncertainty) is higher than the sample median value. Meanwhile, holding more cash seems not to have any added value during the years when policy uncertainty (or change in policy uncertainty) is relatively lower as reported in Columns (3) and (6). In sum, the results in Table 10 provide robust evidence on the positive contribution of policy uncertainty to the value of cash holdings, which highlights financial constraints as the main reason why firms hold more cash when policy uncertainty increases.

E. Policy uncertainty, cash holdings and capital investment

Recent evidence has established a negative effect of policy uncertainty on firm capital investment (Baker *et al.*, 2016; Gulen & Ion, 2016). In this section, we examine whether cash holdings serve as a moderating channel to alleviate such a dampening effect of policy uncertainty. Specifically, we argue that when financial constraints increase as a result of higher policy uncertainty, larger cash holdings would allow firms to mitigate underinvestment and reduced growth (Denis & Sibilkov, 2010). In other words, the more financially constrained firms are, the more motives to hoard cash (Bates *et al.*, 2009; Opler *et al.*, 1999). Hence, this moderating role of cash holdings on the relation between policy uncertainty and investment is expected to be stronger for more financially constrained firms. If this is the case, the evidence will document one more benefit of holding more cash when policy uncertainty is higher.

To test this hypothesis, we estimate the following model:

$$CAPEX_{i,t+1} = \alpha_0 + \beta_1 CASH_{i,t} + \beta_2 PU_{i,t} * CASH_{i,t} + \beta_j CONTROL_{j,i,t} + \gamma_i Firm_i + \delta_t Year_t + \epsilon_{i,t} \qquad (17)$$

Here, $CAPEX_{i,t+1}$ is a proxy for capital investment that is calculated by capital expenditure deflated by total assets of firm i in year $t+1$. $PU_{i,t}$ and $CASH_{i,t}$ are news-based policy uncertainty and cash holdings measures of firm i in year t. $CONTROL_{i,t}$ comprise variables that are well documented to affect investment including firm-level size (*SIZE*), market-to-book ratio (*MB*), book leverage (*BLEV*), cash flows (*CF*), and sales growth (*SG*).

The variable of interest is the interaction term, *PU*CASH*, which captures the impact of cash holdings on the association between policy uncertainty and capital investment. If cash holdings weaken the negative impact of policy uncertainty on capital investment, the coefficient of the interaction term should be positive.

To test whether the moderating role of cash holdings is more pronounced for more financially constrained firms, we follow Almeida *et al.* (2004) and Denis and Sibilkov (2010) to partition our sample into two groups: financially constrained (*FC*) and unconstrained (*UC*). Since there is no agreement on the best approach to classify financial constrained vs. unconstrained firms in prior studies, we rely on the following four well documented categorization schemes. We then rerun Equation (17) separately on the two groups for each classification scheme.

- Scheme 1: In every year over the sample period, we rank firms based on their asset size and assign to the financially constrained (unconstrained) group those firms in the bottom (top) three deciles of the annual size distribution.
- Scheme 2: We classify those firms that have their debt rated by Standard & Poor's (S&P Long-term Senior Debt rating) and their debt not in default (rating of "D") as financially unconstrained. Firms that do not have their debt rated but report positive long-term debt are defined as financially constrained.
- Scheme 3: Firms are classified as financially unconstrained if they have their short-term rated by S&P's and their debt is not in default. Firms are defined as financially constrained if they have positive short-term debt but are not rated by S&P's.
- Scheme 4: We calculate firm age by taking the difference between the year of interest and IPO year. For every year in the sample period, we again rank firms by their ages and assign those firms in the bottom (top) three deciles into financially constrained (unconstrained) groups.

The intuitions behind these four classification schemes are obvious. Financially constrained firms are typically characterized as small, less well known, and young and, hence, more vulnerable to capital market frictions (Almeida *et al.*, 2004; Hadlock & Pierce, 2010). In addition, having debt or paper ratings is an indicator of good market evaluation of a firm's long-term or short-term credit quality, hence allowing the firm to relatively more easily tap into the capital markets (Gilchrist & Himmelberg, 1995; Kashyap *et al.*, 1994; Whited, 1992).

[Insert Table 11 here]

We display regression results for these tests in Table 11. In particular, in Column (1) we replicate the baseline model of explaining investment as in Gulen and Ion (2016). Specifically, we add the *ELECYEAR* indicator and ΔGDP variable as macro control variables. The significantly negative coefficient on *PU* confirms the finding of Gulen and Ion (2016) that policy uncertainty is negatively associated with firm capital investment. In Column (2), we further include *PU* and *PU*CASH* variables independently and hence, omitting year-fixed effects. The result in Column (2) shows that the coefficient on the interaction term, *PU*CASH*, is positive and statistically significant as expected. The result is further confirmed in Column (3) when we exclude all macro-level independent variables that allows us to include year-fixed effects. Overall, the results are evidence of the mitigating role of cash holdings on the dampening effect of policy uncertainty on capital investment.

Columns (4) through (11) of Table 11 present regression results on subgroups of constrained (*FC*) and unconstrained (*UC*) firms using four aforementioned classification schemes. We find that the coefficients of the interaction term, *PU*CASH*, are more positive and statistically significant for the *FC* subsamples. Meanwhile, the interaction shows no significant explanatory power on capital investment for financially unconstrained firms. In other words, the results indicate that the increase in cash reserves is likely to allow financially constrained firms to avoid underinvestment induced by higher policy uncertainty. The results strongly support our hypothesis that cash holdings serve as a mechanism to mitigate the negative association between policy uncertainty and capital investment, and the moderating impact is more pronounced for more financially constrained firms.

F. Additional robustness tests

In this section we further conduct robustness checks to confirm the validity of main findings regarding the level and the value of cash holdings. First, we further control for possible omitted control variables by performing first-differenced regressions where we re-estimate all models in Table 2 with all level variables being replaced by their annual changes (Bates *et al.*, 2009). In particular, in our new estimate, the dependent variable is the changes in level of cash holdings from year *t* to *t+1* (i.e., *ΔCASH (t+1)*), year *t+1* to *t+2* (i.e., *ΔCASH (t+2)*) or year *t+2* to *t+3* (i.e., *ΔCASH (t+3)*). The independent variables consist of the changes in the level of policy uncertainty measure and other firm-level controls from year *t-1* to *t*. The results for these first-differenced models reported in Appendix A2 show a significant positive association between a change in policy uncertainty and a change in cash holdings. The result is consistent with what we documented earlier in Table 2.

In the second robustness test, we re-estimate all models in Table 2 with standard errors being clustered by both firm and year. This technique controls for the possibility that standard errors are correlated across firms and over time (Bates *et al.*, 2009; Cameron *et al.*, 2011). The test results in Appendix A3 show that overall and component measures of policy uncertainty remain statistically significant and positive in determining the level of cash holdings. This corroborates our previous findings of a positive relation between policy uncertainty and corporate cash holdings.

Next, we address the concerns that our results on the value of cash holdings as reported in Table 10 may be confounded by general macro-economic uncertainty other than policy uncertainty. In particular, similar to robustness tests for regressions of level of cash holdings, we control for these possible endogeneity concerns in three ways. First, we augment Equations (15) and (16) by further incorporating six measures of macro-economic uncertainty measures (i.e., $EU_{i,t}$) used in the main tests. Second, we re-estimate Equations (15) and (16) in the presence of year fixed effects, and thereby excluding the stand-alone measure of policy uncertainty, *PU* (or ΔPU), to control for the general economic conditions that may affect *EXRETURN*. Finally, we re-estimate Equations (15) and (16) with original measure of policy uncertainty being replaced by its fitted value, *FPU* (the same with what has been used in Columns (1) to (4) in Table 4). Results for these robustness checks (presented in Appendix A4) confirm those observed in Table 10 that the positive impact of policy uncertainty on the value of cash holdings is validated after controlling for possible confounding effects of general macro-economic uncertainty.

IV. CONCLUSION

Our paper investigates the impact of policy uncertainty on corporate cash holdings for US firms during the 1985-2014 period using the economic policy uncertainty developed by Baker *et al.* (2016). We find a strong positive association between policy uncertainty and corporate cash holdings. This result is robust to controlling for measures of macroeconomic uncertainty, as well as using an instrumental variable analysis with political polarization as an instrument for policy uncertainty.

To explore the economic mechanisms underlying the policy uncertainty-cash holdings relation, we find that policy uncertainty deteriorates the credit market conditions at the aggregate level, as reflected by the increase in the spread of commercial and industrial loan rates (on loans greater than US$ 1 million) over the federal funds rate. We further show that firms save more cash from their cash flows when policy uncertainty increases. These findings imply that firms hoard more cash in anticipation of greater difficulty in accessing external financial markets when policy uncertainty increases. We also find that the effect of policy uncertainty on cash holdings is stronger for government-dependent firms and for firms with weaker monitoring by independent directors and executives and those less exposed to external governance mechanisms such as takeover threats or market competition. Our results show that firms with a higher level of investment irreversibility do not hold more cash when policy uncertainty heightens, implying that the effect of policy uncertainty on cash holdings is not a manifestation of the reduced investment when policy uncertainty increases.

We further document that the market rewards firms that retain more cash with higher valuations, consistent with such firms being able to create more value than an otherwise equivalent firm with less internal cash. Finally, we find evidence of the role of cash holdings in mitigating the dampening effect of policy uncertainty on capital investment. This association is stronger for financially constrained firms than for unconstrained firms. Overall, our results support the "*financial constraints*" mechanism that firms hold more cash in anticipation of greater difficulty in accessing external financial markets when policy uncertainty increases.

Our paper makes a significant contribution to the literature in at least two ways. First, our paper complements the recent literature on the consequences of economic policy uncertainty on corporate policies. We contribute to this emerging literature by showing that policy uncertainty has implications that extend to corporate cash holdings policies. We further identify the exacerbation of financial constraints when policy uncertainty heightens as the alternative channel through which policy uncertainty influences corporate policies. A second major contribution of the paper is to the literature on the level and value of corporate cash holdings. Our findings support the notion that cash holdings are not only affected by firm- or industry-characteristics but also by the uncertainty associated with economic policy. Our results have important implications for policymakers. Firms respond to uncertainty shocks by increasing their cash holdings, implying that government indecision has real economic consequences.

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Table 1
Correlation matrix and summary statistics

Panel A: Correlation matrix

	CASH	*PU*	*PU_NEWS*	*PU_TAX*	*PU_GOVCPI*	*SIZE*	*MB*	*CF*	*NWC*	*CAPEX*	*BLEV*	*R&D*	*DIVDUM*	*ICFVOL*
CASH	1													
PU	0.0351***	1												
PU_NEWS	0.0607***	0.9061***	1											
PU_TAX	0.0353***	0.9235***	0.9008***	1										
PU_GOVCPI	-0.0387***	0.8401***	0.6788***	0.8474***	1									
SIZE	-0.2060***	0.0411***	0.0721***	0.0182***	-0.0813***	1								
MB	0.1419***	-0.0815***	-0.0763***	-0.0638***	-0.0867***	0.0261***	1							
CF	-0.2487***	-0.0136***	-0.049***	-0.0163***	0.0314***	0.3129***	-0.0763***	1						
NWC	-0.2196***	-0.0211***	-0.0557***	-0.0164***	0.0617***	-0.0727***	-0.1877***	0.2578***	1					
CAPEX	-0.1887***	-0.0431***	-0.0657***	-0.0417***	0.0261***	0.0466***	0.0578***	0.1269***	-0.1530***	1				
BLEV	-0.4515***	-0.0047	-0.0184***	-0.0073**	0.0500***	0.1930***	-0.0648***	0.0519***	-0.1084***	0.1067***	1			
R&D	0.3823***	-0.0105***	0.0111***	-0.0059*	-0.0439***	-0.1191***	0.1454***	-0.4344***	-0.1681***	-0.0721***	-0.1413***	1		
DIVDUM	-0.1776***	0.0293***	-0.0044	0.0172***	0.0557***	0.4196***	0.0352***	0.2265***	0.0831***	0.0351***	0.0018	-0.1169***	1	
ICFVOL	0.2436***	0.1718***	0.1782***	0.1117***	-0.0295***	-0.0091***	0.0983***	-0.1483***	-0.2493***	-0.1132***	-0.1605***	0.1247***	-0.1338***	1

Panel B: Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
CASH	80,988	0.1617	0.1898	0.0001	0.9114
SIZE	80,988	5.0884	2.1273	0.0050	12.7565
MB	80,988	2.2072	1.6593	0.1783	8.8555
CF	80,988	0.0341	0.1711	-1.1350	0.2971
NWC	80,988	0.1248	0.1841	-0.4121	0.5802
CAPEX	80,988	0.0609	0.0622	0.0000	0.3587
BLEV	80,988	0.2005	0.1781	0.0000	0.7239
R&D	80,988	0.0876	0.4125	0.0000	4.6741
DIVDUM	80,988	0.2899	0.4537	0.0000	1.0000
ICFVOL	80,988	0.2421	0.1233	0.0650	0.7096

The table presents the correlation matrix (Panel A) and the summary statistics (Panel B) for the main variables used in the analysis. The data extends from 1985 to 2014. Panel B reports firm-year observations that do not have any missing values on all used variables. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 2
Policy uncertainty and cash holdings

Dep. Var.	*CASH (t+1)*	*CASH (t+1)*	*CASH (t+2)*	*CASH (t+3)*	*CASH (t+1)*	*CASH (t+1)*	*CASH (t+1)*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ind. Var.							
PU	**0.0227*****	**0.0213*****	**0.0148*****	**0.0043**			
	[8.89]	[8.73]	[5.64]	[1.58]			
PU_NEWS					**0.0193*****		
					[9.44]		
PU_TAX						**0.0109*****	
						[9.67]	
PU_GOVCPI							**0.0099*****
							[6.26]
SIZE		-0.0068***	-0.0034**	-0.0002	-0.0074***	-0.0068***	-0.0060***
		[-4.98]	[-2.37]	[-0.13]	[-5.42]	[-4.95]	[-4.28]
MB		0.0037***	0.0029***	0.0021***	0.0037***	0.0035***	0.0035***
		[7.52]	[5.61]	[3.80]	[7.49]	[7.26]	[7.20]
CF		0.0059	-0.0115*	-0.0132*	0.0066	0.0061	0.0047
		[0.97]	[-1.84]	[-1.94]	[1.09]	[1.01]	[0.78]
NWC		-0.1547***	-0.1068***	-0.0779***	-0.1535***	-0.1540***	-0.1558***
		[-18.09]	[-12.01]	[-8.36]	[-17.94]	[-18.00]	[-18.23]
CAPEX		-0.2866***	-0.2137***	-0.1557***	-0.2853***	-0.2851***	-0.2899***
		[-21.03]	[-14.77]	[-10.43]	[-20.90]	[-20.90]	[-21.21]
BLEV		-0.2234***	-0.1592***	-0.1078***	-0.2234***	-0.2228***	-0.2246***
		[-30.15]	[-20.49]	[-13.36]	[-30.17]	[-30.07]	[-30.27]
R&D		0.0406***	0.0318***	0.0267***	0.0405***	0.0405***	0.0405***
		[7.29]	[5.25]	[4.08]	[7.28]	[7.29]	[7.29]
DIVDUM		-0.0000	-0.0073***	-0.0112***	0.0005	0.0002	-0.0004
		[-0.02]	[-3.36]	[-4.86]	[0.24]	[0.10]	[-0.18]
ICFVOL		0.0039	0.0260	0.0386**	0.0116	0.0113	0.0154
		[0.24]	[1.51]	[2.14]	[0.74]	[0.72]	[0.98]
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	85,390	79,413	70,230	62,815	79,413	79,413	79,413
Adjusted R-squared	0.702	0.729	0.714	0.712	0.729	0.729	0.729

In this table, we regress firm cash holdings (cash-to-assets ratio, *CASH*) on policy uncertainty (log of BBD index) in Column (1) and include firm-level controls including size (*SIZE*), market-to-book ratio (*MB*), cash flow (*CF*), net working capital (*NWC*), capital expenditure (*CAPEX*), book leverage (BLEV), R&D expense (*R&D*), dividend paying dummy (*DIVDUM*), industry cash flow volatility (*ICFVOL*) in Column (2). In Column (3) and (4), we replace cash holdings in one year lead (t+1) by two and three year lead (t+2, and t+3), respectively. In Column (5) through (7), we replace the overall policy uncertainty measure in Column (2) by each of its three components (news (*PU_NEWS*), tax (*PU_TAX*), and government spending combined with inflation (*PU_GOVCPI*)). All continuous variables are winsorized at 1% levels and defined in Appendix A1. In all regressions, we include firm fixed effects and firm clustering effects. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 3
Controlling for general economic uncertainty

Dep. Var.	*CASH (t+1)*							
	Original PU							Cleaner PU
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ind. Var.								
PU_NEWS	**0.0192*** **	**0.0137*** **	**0.0193*** **	**0.0168*** **	**0.0177*** **	**0.0166*** **	**0.0070*** **	**0.0249*** **
	[9.39]	[6.18]	[9.44]	[7.88]	[8.45]	[7.86]	[2.87]	[6.63]
SIZE	-0.0075***	-0.0089***	-0.0073***	-0.0069***	-0.0068***	-0.0075***	-0.0087***	-0.0064***
	[-5.47]	[-6.34]	[-5.32]	[-5.05]	[-4.91]	[-5.31]	[-5.84]	[-4.50]
MB	0.0037***	0.0037***	0.0037***	0.0037***	0.0037***	0.0038***	0.0037***	0.0031***
	[7.60]	[7.51]	[7.52]	[7.40]	[7.58]	[7.59]	[7.37]	[6.18]
CF	0.0067	0.0079	0.0065	0.0066	0.0067	0.0063	0.0086	0.0044
	[1.10]	[1.30]	[1.08]	[1.08]	[1.11]	[1.04]	[1.39]	[0.72]
NWC	-0.1538***	-0.1522***	-0.1537***	-0.1537***	-0.1546***	-0.1520***	-0.1515***	-0.1513***
	[-17.97]	[-17.79]	[-17.96]	[-17.72]	[-18.07]	[-17.88]	[-17.55]	[-17.56]
CAPEX	-0.2858***	-0.2832***	-0.2853***	-0.2937***	-0.2907***	-0.2833***	-0.2876***	-0.2864***
	[-20.94]	[-20.82]	[-20.91]	[-21.32]	[-21.25]	[-20.62]	[-20.77]	[-20.73]
BLEV	-0.2236***	-0.2198***	-0.2237***	-0.2235***	-0.2248***	-0.2216***	-0.2162***	-0.2184***
	[-30.21]	[-29.58]	[-30.18]	[-29.87]	[-30.32]	[-29.91]	[-28.67]	[-29.31]
R&D	0.0405***	0.0407***	0.0405***	0.0407***	0.0405***	0.0412***	0.0418***	0.0410***
	[7.30]	[7.32]	[7.28]	[7.29]	[7.28]	[7.21]	[7.30]	[7.17]
DIVDUM	0.0004	0.0009	0.0004	0.0005	0.0004	0.0008	0.0008	0.0001
	[0.20]	[0.42]	[0.20]	[0.23]	[0.21]	[0.37]	[0.39]	[0.03]
ICFVOL	0.0116	-0.0066	0.0121	0.0128	0.0169	0.0159	-0.0141	0.0169
	[0.74]	[-0.41]	[0.77]	[0.81]	[1.07]	[0.97]	[-0.80]	[1.03]
ELECYEAR	0.0045***						0.0067***	
	[7.17]						[9.04]	
GDPDIS		0.0091***					0.0176***	
		[5.76]					[6.95]	
SDPROFIT			-0.0008*				-0.0051***	
			[-1.93]				[-7.12]	
VXO				0.0050***			-0.0119**	
				[3.93]			[-1.98]	
SDRETURN					0.0147***		0.0225***	
					[5.03]		[6.70]	
JLN						0.0049***	0.0098*	
						[4.35]	[1.84]	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	79,413	79,413	79,413	77,749	79,413	74,906	73,242	73,242
Adjusted R-squared	0.729	0.729	0.729	0.731	0.729	0.731	0.734	0.733

In this table, we regress firm cash holdings (*CASH*) on news-based policy uncertainty measure (*PU_NEWS*), controlling for both firm-level characteristics and country-level economic uncertainty measures. In Column (1) through (6), we add each of six proxies for general economic uncertainty, including election year dummy (*ELECYEAR*), GDP forecast dispersion (*GDPDIS*), standard deviation of cross-sectional profit growth (*SDPROFIT*), implied volatility *(VXO*), standard deviation of cross-sectional real returns (*SDRETURN*), and Jurado *et al.* (2015)'s index (*JLN*). In Column (7) we include all of these six macro-economic uncertainty measures together. In Column (8), we replace the original news-based policy uncertainty measure by a cleaner measure that is residuals obtained by running monthly time-series regressions of the original news-based index of United States on that of Canada and aforementioned six economic uncertainty proxies. All continuous variables are winsorized at 1% levels and defined in Appendix A1. In all regressions, we include firm fixed effects and firm clustering effects. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 4
Instrumental variable analysis

Dep. Var.	*CASH (t+1)*	*CASH (t+2)*	*CASH (t+3)*	*CASH (t+4)*	*CASH (t+1)*	*CASH (t+1)*	*CASH (t+1)*
	With Canada PU				Without Can PU	With Can PU	Without Can PU
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ind. Var.							
FPU_NEWS (Senate)	**0.0219*** **	**0.0217*** **	**0.0104*** **	**-0.0036**			
	[8.94]	[8.45]	[4.09]	[-1.42]			
FPU_NEWS (Senate)					**0.0188*** **		
					[6.65]		
FPU_NEWS (House)						**0.0195*** **	
						[7.67]	
FPU_NEWS (House)							**0.0178*** **
							[6.19]
SIZE	-0.0079***	-0.0037	-0.0023	0.0008	-0.0079***	-0.0079***	-0.0079***
	[-3.22]	[-1.44]	[-0.87]	[0.29]	[-3.23]	[-3.22]	[-3.22]
MB	0.0032***	0.0028***	0.0012*	0.0021***	0.0031***	0.0031***	0.0030***
	[4.83]	[4.11]	[1.66]	[2.79]	[4.59]	[4.69]	[4.53]
CF	-0.0006	-0.0190**	-0.0072	-0.0173*	-0.0013	-0.0011	-0.0015
	[-0.08]	[-2.54]	[-0.93]	[-1.94]	[-0.18]	[-0.15]	[-0.21]
NWC	-0.1242***	-0.0614***	-0.0238*	0.0034	-0.1251***	-0.1248***	-0.1256***
	[-11.09]	[-5.28]	[-1.94]	[0.27]	[-11.16]	[-11.14]	[-11.21]
CAPEX	-0.2796***	-0.1857***	-0.1208***	-0.0704***	-0.2808***	-0.2813***	-0.2824***
	[-15.34]	[-10.13]	[-6.14]	[-3.77]	[-15.38]	[-15.43]	[-15.48]
BLEV	-0.1983***	-0.1232***	-0.0631***	-0.0283***	-0.1991***	-0.1986***	-0.1989***
	[-20.34]	[-12.50]	[-6.33]	[-2.75]	[-20.37]	[-20.35]	[-20.36]
R&D	0.0316***	0.0187***	0.0125**	0.0067	0.0317***	0.0316***	0.0317***
	[5.08]	[3.05]	[2.06]	[0.93]	[5.10]	[5.08]	[5.10]
DIVDUM	0.0002	-0.0086***	-0.0127***	-0.0156***	0.0001	-0.0000	-0.0000
	[0.08]	[-3.09]	[-4.13]	[-4.68]	[0.04]	[-0.00]	[-0.02]
ICFVOL	0.0031	0.0135	0.0069	-0.0089	0.0055	0.0048	0.0049
	[0.16]	[0.67]	[0.33]	[-0.40]	[0.29]	[0.25]	[0.26]
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,186	37,211	34,223	30,199	41,186	41,186	41,186
Adjusted R-squared	0.785	0.777	0.777	0.775	0.784	0.784	0.784

The table reports second-stage regression of firm cash holdings (*CASH*) over the fitted values of news-based policy uncertainty measure (*PU_NEWS*), and firm-level control variables. The fitted values are obtained from running first-stage monthly time-series regressions of original news-based policy uncertainty measure on DW-NOMINATE scores as an instrumental variable and six other macro-economic uncertainty measures. In Columns (1) through (4), the Senate DW-NOMINATE scores are used, while in Columns (6) and (7), the House DW-NOMINATE scores are employed as instrumental variable. In Column (1) through (4) and (6), the news-based policy uncertainty measure of Canada is included in the first-stage regressions, while in Columns (5) and (7), the measure is excluded from the list of macro-economic uncertainty. All continuous variables are winsorized at 1% levels and defined in Appendix A1. In all regressions, we include firm fixed effects and firm clustering effects. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 5
Policy uncertainty and credit market conditions

Dep. Var.	*CISPREAD (t)*							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ind. Var.								
PU_NEWS	**0.4086*****	**0.4139*****	**0.2249*****	**0.4144*****	**0.4550*****	**0.4008*****	**0.3948*****	**0.1653*****
	[6.22]	[5.94]	[3.68]	[5.96]	[7.12]	[7.12]	[5.11]	[2.94]
ELECYEAR		-0.0178						0.0609
		[-0.40]						[1.38]
GDPDIS			0.2882***					0.4626***
			[7.66]					[10.25]
SDPROFIT				0.0093				-0.1598***
				[0.37]				[-7.90]
VXO					-0.1904***			0.4302*
					[-3.76]			[1.81]
SDRETURN						-0.9374***		-0.0013
						[-6.30]		[-0.01]
JLN							-0.1026**	-0.5406**
							[-2.16]	[-2.50]
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	122	118	118	118	118	114	102	102
Adjusted R-squared	0.205	0.193	0.477	0.193	0.258	0.422	0.174	0.658

The table reports quarterly time-series regressions of a proxy for credit market conditions (*CISPREAD*) on news-based policy uncertainty measure (*PU_NEWS*) and macro-economic uncertainty measures as controls. All variables are defined in Appendix A1. In all regressions, we include year-quarter fixed effects to control for seasonality and time trend. T-statistics based on robust standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 6
Policy uncertainty, and cash-cash flow sensitivity

Dep. Var.	∆*CASH (t)*	
	(1)	(2)
Ind. Var.		
PU_NEWS*CF	**0.0553*** **	**0.0414** **
	[3.12]	[2.30]
CF	-0.0202	0.0906
	[-0.24]	[1.08]
MB	0.0046***	0.0055***
	[11.32]	[13.32]
SIZE	0.0076***	0.0064***
	[9.19]	[7.60]
CAPEX		-0.3614***
		[-31.70]
∆*NWC*		-0.3192***
		[-42.52]
∆*BLEV*		-0.0815***
		[-11.58]
Firm FE	Yes	Yes
Year FE	Yes	Yes
Firm Cluster	Yes	Yes
Observations	85,025	81,763
Adjusted R-squared	0.184	0.272

Dependent variable is the change in cash holdings (∆*CASH*), defined as the change in cash holdings for firm *i* from year *t-1* to *t*, scaled by total assets. The key variable of interest is the interaction term, *PU_NEWS*CF*, which captures the effect of the news-based policy uncertainty measure on the cash-cash flow sensitivity. In Column (1) we control for firm size (*SIZE*) and market-to-book ratio (*MB*). In Column (2) we further include capital expenditure (*CAPEX*), change in net working capital ($\Delta NWC_{i,t} = NWC_{i,t} - NWC_{i,t-1}$), and change in book leverage ($\Delta BLEV_{i,t} = BLEV_{i,t} - BLEV_{i,t-1}$). All continuous variables are winsorized at 1% levels and defined in Appendix A1. In all regressions, we include firm, and year fixed effects and firm clustering effects. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 7
Policy uncertainty, cash holdings, and corporate governance

Dep. Var.	*CASH (t+1)*			
	(1)	(2)	(3)	(4)
Ind. Var.				
PU_NEWS*HOSTILE	**-0.0021*** **			
	[-3.35]			
PROFLUID		0.0412**		
		[2.41]		
PU_NEWS*PROFLUID		**-0.0083** **		
		[-2.31]		
INTGOV			0.0279	
			[1.57]	
PU_NEWS*INTGOV			**-0.0059***	
			[-1.68]	
PU_NEWS*COOPT				**0.0034*** **
				[2.82]
Control	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes
Observations	75,818	40,391	19,734	14,280
Adjusted R-squared	0.733	0.789	0.777	0.791

In this table, we regress firm cash holdings (*CASH*) on news-based policy uncertainty measure (*PU_NEWS*), the interaction between policy uncertainty and a measure of corporate governance, and firm-level controls. Two measures of external governance include *HOSTILE* that is log of firm-based hostile takeover index as developed by Cain *et al.* (2017), and *PROFLUID* that is log of industry-based product market competition index as constructed by Hoberg *et al.* (2014). Two proxies for internal governance consists of *INTGOV* that is an aggregate measure of a firm's overall internal governance effectiveness as suggested by Cheng *et al.* (2016), and *COOPT* that is the number of co-opted independent directors scaled by board size as documented by Coles *et al.* (2014). Control variables are the same with those used in Table 2. All continuous variables are winsorized at 1% levels and defined in Appendix A1. In all regressions, we include firm and year fixed effects and firm clustering effects. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 8
Policy uncertainty, cash holdings, and investment irreversibility

Dep. Var.	*CASH (t+1)*			
	(1)	(2)	(3)	(4)
Ind. Var.				
PPE	-0.2687***			
	[-6.89]			
PU_NEWS*PPE	**0.0017**			
	[0.21]			
AR		-0.0587		
		[-0.62]		
PU_NEWS*AR		**0.0155**		
		[0.80]		
SUNK			0.0366	
			[1.26]	
PU_NEWS*SUNK			**-0.0081**	
			[-1.31]	
DURABLE				-0.0147
				[-0.79]
PU_NEWS*AD				**0.0030**
				[0.74]
Control	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes
Observations	79,403	77,949	79,413	79,413
Adjusted R-squared	0.741	0.731	0.731	0.731

In this table, we regress firm cash holdings (*CASH*) on each of four proxies for investment irreversibility including (i) capital intensity ratio (*PPE*); (ii) industry-level asset redeployability (*AR*); (iii) industry-level measure of cost sunkness (*SUNK*); and (iv) asset durability (*AD*), its interaction with news-based policy uncertainty (*PU_NEWS*), and firm-level controls. Control variables are the same with those used in Table 2. All continuous variables are winsorized at 1% levels and defined in Appendix A1. In all regressions, we include firm and year fixed effects and firm clustering effects. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 9
Policy uncertainty, cash holdings, and government spending

Dep. Var.	*CASH (t+1)*	
	(1)	(2)
Ind. Var.		
PU_NEWS*GOVDEP	**0.0042****	
	[2.32]	
HIGHGOVDEP		-0.0833***
		[-3.69]
PU_NEWS*HIGHGOVDEP		**0.0157*****
		[3.24]
SIZE	-0.0106***	-0.0107***
	[-3.74]	[-3.77]
MB	0.0031***	0.0031***
	[4.33]	[4.28]
CF	0.0127	0.0135*
	[1.63]	[1.73]
NWC	-0.1111***	-0.1112***
	[-9.28]	[-9.30]
CAPEX	-0.2589***	-0.2607***
	[-14.28]	[-14.34]
BLEV	-0.1901***	-0.1896***
	[-18.11]	[-18.06]
R&D	0.0296***	0.0294***
	[4.91]	[4.89]
DIVDUM	0.0024	0.0024
	[0.82]	[0.83]
ICFVOL	-0.0622***	-0.0635***
	[-2.63]	[-2.67]
Firm FE	Yes	Yes
Year FE	Yes	Yes
Firm Cluster	Yes	Yes
Observations	37,367	37,367
Adjusted R-squared	0.793	0.793

In this table, we regress firm cash holdings (*CASH*) on industry-based government spending dependence (*GOVDEP*), news-based policy uncertainty measure (*PU_NEWS*), the interaction term (*PU_NEWS*GOVDEP*), and firm-level controls in Column (1). In Column (2), we replace *GOVDEP* by a dummy (*HIGHGOVDEP*) indicating if a firm's industry-based government spending dependence is greater than the sample median value. We include both *HIGHGOVDEP* dummy, and the interaction term *PU_NEWS*HIGHGOVDEP* in Column (2). All continuous variables are winsorized at 1% levels and defined in Appendix A1. In all regressions, we include firm and year fixed effects and firm clustering effects. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 10
Policy uncertainty, and value of cash holdings

Dep. Var.	*EXRETURN (t)*					
	PU_NEWS			Δ*PU_NEWS*		
Sample	Full	Above median	Below median	Full	Above median	Below median
	(1)	(2)	(3)	(4)	(5)	(6)
Ind. Var.						
PU_NEWS	0.1054***	0.1520***	-0.0679**			
	[12.59]	[5.92]	[-2.38]			
Δ*CASH*	-0.4079	-1.3705	-0.5803	0.7721***	0.7161***	0.6351***
	[-0.89]	[-1.21]	[-0.37]	[21.95]	[13.23]	[8.19]
PU_NEWS*ΔCASH	**0.2526*** **	**0.4476** **	**0.2826**			
	[2.58]	[1.92]	[0.81]			
Δ*PU_NEWS*				-0.0641***	0.0225	0.0966***
				[-6.34]	[1.28]	[3.49]
Δ*PU_NEWS*ΔCASH*				**0.4139*** **	**0.7799*** **	**-0.5519**
				[3.78]	[4.33]	[-1.40]
Δ*NONCASH*	0.0484***	0.0197	0.0872***	0.0451***	0.0692***	0.0441***
	[5.02]	[1.52]	[5.73]	[4.69]	[4.97]	[3.01]
Δ*EARNING*	0.3959***	0.3811***	0.4096***	0.3925***	0.3698***	0.4209***
	[27.12]	[20.35]	[15.50]	[26.98]	[17.43]	[20.12]
Δ*R&D*	-0.0830	-0.2166	0.3492	-0.1173	-0.1337	-0.0741
	[-0.55]	[-1.00]	[1.45]	[-0.78]	[-0.61]	[-0.32]
Δ*INT*	-1.4573***	-1.6170***	-0.4948*	-1.5370***	-1.8664***	-1.4815***
	[-9.46]	[-7.63]	[-1.88]	[-10.02]	[-9.45]	[-5.88]
Δ*DIV*	0.0768	-0.0149	0.1930	0.0005	0.2096	0.0286
	[0.31]	[-0.05]	[0.46]	[0.00]	[0.57]	[0.08]
MLEV	-0.1459***	-0.1499***	-0.1577***	-0.1419***	-0.1481***	-0.1231***
	[-37.57]	[-27.32]	[-25.66]	[-36.83]	[-29.23]	[-20.26]
L.CASH	0.2297***	0.2246***	0.2012***	0.2367***	0.2866***	0.2164***
	[15.80]	[10.85]	[8.56]	[16.32]	[13.58]	[10.39]
Δ*CASH*L.CASH*	-0.3358***	-0.3405***	-0.2520***	-0.3287***	-0.3158***	-0.2842***
	[-6.36]	[-4.50]	[-3.05]	[-6.26]	[-4.25]	[-3.55]
Δ*CASH*MLEV*	-0.0666***	-0.0661***	-0.0671***	-0.0672***	-0.0672***	-0.0792***
	[-6.53]	[-4.91]	[-3.39]	[-6.61]	[-4.58]	[-4.37]
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes
Observations	65,996	33,009	30,703	65,996	33,001	31,061
Adjusted R-squared	0.180	0.192	0.177	0.179	0.210	0.166

The dependent variable is stock return over fiscal year minus the return on a benchmark portfolio. The benchmark portfolios are 25 Fama-French value weighted portfolio sorted based on size and book-to-market ratio. The independent variables include news-based policy uncertainty measure, *PU_NEWS* (or change in this measure, Δ*PU_NEWS*), change in cash (Δ*CASH*), the interaction term, *PU_NEWS*ΔCASH* (or ΔPU_NEWS*ΔCASH), change in book assets net of cash *(*Δ*NONCASH*), change earnings interest and extraordinary items *(*Δ*EARNING*), change in R&D expenses *(*Δ*R&D*), change in interest expenses (Δ*INT*), change in dividends (Δ*DIV*), market leverage (*MLEV*), lagged cash holdings (*L.CASH*), and two interaction terms, Δ*CASH*L.CASH* and Δ*CASH*MLEV*. The variable of interest is the interaction term, *PU_NEWS*ΔCASH* (or Δ*PU_NEWS*ΔCASH*), that captures the impact of news-based policy uncertainty (or change in news-based policy uncertainty) on the value of cash holdings. For each variable of interest, we run three separate regressions for full sample and subsamples of above and below the median value of *PU_NEWS* (Columns (1) through (3), and of Δ*PU_NEWS* (Columns (4) through (6)). All continuous variables are winsorized at 1% levels and defined in Appendix A1. In all regressions, we include firm fixed effects and firm clustering effects. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 11
Policy uncertainty, cash holdings and capital investment

Dep. Var.	*CAPEX (t+1)*										
FC Criteria	Full	Full	Full	Size		Debt Rating		Paper Rating		Age	
Sample				FC	UC	FC	UC	FC	UC	FC	UC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ind. Var.											
PU_NEWS	-0.0052***	-0.0089***									
	[-5.83]	[-8.11]									
CASH		-0.1035***	-0.0809***	-0.0569*	-0.027	-0.0435*	0.0244	-0.0356	-0.0549	-0.0691**	0.0047
		[-6.68]	[-5.14]	[-1.90]	[-0.76]	[-1.66]	[0.38]	[-1.45]	[-0.51]	[-2.02]	[0.12]
PU_NEWS*CASH		**0.0218*****	**0.0175*****	**0.0144****	**0.0053**	**0.0124****	**-0.0034**	**0.0107****	**0.0066**	**0.0201*****	**0.0017**
		[6.68]	[5.30]	[2.29]	[0.70]	[2.22]	[-0.26]	[2.04]	[0.29]	[2.78]	[0.20]
SIZE	-0.0071***	-0.0071***	-0.0013**	0.0005	-0.0028***	-0.0017**	-0.0023**	-0.0022***	-0.0049***	0.001	-0.0017
	[-14.22]	[-14.21]	[-2.19]	[0.42]	[-2.94]	[-2.34]	[-2.19]	[-3.81]	[-2.62]	[0.53]	[-1.44]
MB	0.0041***	0.0041***	0.0043***	0.0026***	0.0047***	0.0046***	0.0044***	0.0042***	0.0037***	0.0035***	0.0039***
	[21.65]	[21.73]	[22.32]	[7.72]	[15.48]	[16.76]	[12.84]	[18.42]	[7.13]	[8.73]	[7.73]
BLEV	-0.0361***	-0.0367***	-0.0445***	-0.0393***	-0.0504***	-0.0510***	-0.0572***	-0.0457***	-0.0394***	-0.0594***	-0.0499***
	[-15.25]	[-15.21]	[-18.76]	[-8.71]	[-11.85]	[-16.49]	[-11.11]	[-16.99]	[-3.28]	[-7.70]	[-8.41]
CF	0.0293***	0.0297***	0.0234***	0.0162***	0.0422***	0.0281***	0.0393***	0.0271***	0.0775***	0.0072***	0.0182***
	[17.65]	[17.90]	[14.50]	[7.46]	[8.43]	[12.06]	[6.57]	[13.86]	[3.35]	[2.59]	[4.62]
Δ*SALE*	0.0102***	0.0101***	0.0121***	0.0075***	0.0130***	0.0117***	0.0113***	0.0118***	0.0100***	0.0067***	0.0112***
	[13.00]	[12.85]	[14.76]	[5.16]	[8.20]	[10.49]	[5.85]	[12.27]	[2.69]	[3.61]	[4.45]
ELECYEAR	-0.0029***	-0.0029***									
	[-9.56]	[-9.57]									
Δ*GDP*	0.1438***	0.1431***									
	[15.50]	[15.42]									
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	83,251	83,246	83,246	20,999	27,107	48,178	17,624	59,062	5,969	10,888	9,230
Adjusted R-squared	0.581	0.581	0.591	0.482	0.695	0.576	0.728	0.567	0.748	0.715	0.631

In this table, we regress firm capital investment (*CAPEX*) on the news-based policy uncertainty measure (*PU_NEWS*), cash holdings (*CASH*), the interaction term (*PU_NEWS*CASH*), and other controls. Firm-level controls include size (*SIZE*), market-to-book ratio (*MB*), book leverage (*BLEV*), cash flows (*CF*), sales growth ($\Delta SALE_{it} = (SALE_{it} - SALE_{i,t-1})/SALE_{i,t-1}$). Country-level controls include election year dummy (*ELECYEAR*), and GDP growth ($\Delta GDP_t = (GDP_t - GDP_{t-1})/GDP_{t-1}$). Column (1) reports regression result without *CASH* included. Columns (2) to (3) report the results for the whole sample, where all the country-level variables including *PU_NEWS* are excluded and year fixed effects are included in Column (3). In Columns (4) through (11), we rerun the model in Column (3) on subsamples of financially constrained (FC) and unconstrained (UC) firms using four classification schemes, including firm size, debt rating, paper rating, and firm age. All continuous variables are winsorized at 1% levels and defined in Appendix A1. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Appendix A1: Variable codes, names and definitions		
Code	Name	Definition
Panel A: Firm-level Characteristics		
CASH	Cash Holdings	Cash and marketable securities deflated by total assets.
SIZE	Firm Size	Logarithm transformation of the total assets.
MB	Market-to-Book Ratio	Ratio of market-to-book value of equity.
CF	Cash Flows	Earnings after interest, dividends, and taxes, but before depreciation, deflated by total assets.
NWC	Net Working Capital	Working capital net of liquid assets, deflated by total assets.
CAPEX	Capital Expenditure	Capital investment, deflated by total assets.
BLEV	Book Leverage	Ratio of total debt (long-term and short-term debt), deflated by total assets.
MLEV	Market Leverage	Ratio of total debt (long-term and short-term debt), deflated by market value of equity.
R&D	Research & Development (over Sales)	R&D expense, deflated by net sales. Missing observations are replaced by zero.
DIVDUM	Dividend Dummy	Dummy variable indicating if a firm pays dividend in a particular year.
ΔSALE	Sales Growth	Yearly change in net sales, divided by lagged net sales.
HOSTILE	Hostile Takeover Index	Log transformation of hostile takeover index that is developed by Cain *et al.* (2017).
EXRETURN	Excess Return	Difference between real stock return and a benchmark 25 Fama-French value-weighted portfolios sorted independently based on firm size and book-to-market.
PPE	Property, Plants and Equipment	Ratio of net PPE-to-total assets.
AR	Asset Redeployability	The cross-industry redeployability of a given asset by computing the proportion of industries in which the asset is used. The industry-level redeployability index is the value-weighted average of each asset's redeployability score.
SUNK	Cost Sunkness Index	Using firms' rent expense, their depreciation expense, and their sales of PPE in the past 12 quarters to normalize by PPE at the beginning of the current quarter. We then aggregate these three proxies up to the three-digit SIC level by taking the industry-level means of the firm-level values and then combine the three proxies into one sunk-cost index, which, at any time t, takes a value of 0, 1, or 2, where 0 is for industries with all three proxies above their cross-sectional medians at time t; 2 is for industries with all proxies below these medians; and 1 is for the remaining industries.
AD	Asset Durability Dummy	Calculating the correlation between each firm's quarterly sales and GNP (over our entire sample period) and then aggregate these correlations at the three-digit SIC level by taking averages of the firm-level correlations and then creating an indicator variable that equals one for industries with correlations above the sample median, and zero for the rest of the industries.
Panel B: Industry-level Characteristics		

ICFVOL	Industry Cash Flow Volatility	The average industry standard deviation of cash flow at the two-digit SIC level on a 10-year rolling basis.
PROFLUID	Product Market Fluidity	Log transformation of industry-based product market fluidity index that is developed by Hoberg *et al.* (2014).
GOVDEP	Government Spending	Government-related sales over total sales of a particular industry.
Panel C: Country-level Characteristics		
PU	Policy Uncertainty (Overall)	Log transformation of BBD Index (Overall).
PU_NEWS	Policy Uncertainty (News)	Log transformation of BBD Index (News).
PU_TAX	Policy Uncertainty (Tax Codes)	Log transformation of BBD Index (Tax Codes).
PU_GOVCPI	Policy Uncertainty (Government Spending and Inflation combined)	Average of Log transformation of BBD Index (Government Spending) and of BBD Index (consumer price index).
RPU	Residual Policy Uncertainty	Residuals obtained by running monthly time-series regressions of U.S. PU on Canadian PU and U.S. macro variables.
FPU	Fitted Policy Uncertainty	Estimated value obtained by running monthly time-series regressions of U.S. PU on a measure of political polarization (POLAR), Canadian PU and U.S. macro variables.
POLAR	Political Polarization	Difference in the first dimension of the DW-NOMINATE scores between the Republican (code: 200) and Democratic (code: 100) parties for either Senate and House of Representatives members.
DW-NOMINATE	DW-Nominate Score	The DW-NOMINATE scores as developed by McCarty *et al.* (1997)
ELECYEAR	Election Year Dummy	Dummy variable indicating the presidential election years.
GDPDIS	GDP Dispersion	Log transformation of GDP Dispersion.
SDPROFIT	Profit Volatility	Log transformation of profit growth.
VXO	Implied Volatility	Log transformation of VXO index.
SDRETURN	Return Volatility	Log transformation of standard deviation of real return.
JLN	Jurado, Ludvigson & Ng (2015)'s Index	Log transformation of JLN aggregate uncertainty index.
ΔGDP	GDP Growth	Yearly change in GDP, divided by lagged GDP.
CISPREAD	Credit Market Condition	Log transformation of quarterly spread of commercial and industrial loan rates (on loans greater than US$ 1 million) over the federal funds rate.
INTGOV	Internal Governance Effectiveness	The sum of the standardised executives' incentives and ability measures. Similar to Cheng *et al.* (2016), we use the number of years to retirement age (assumed to be 65) to capture key executives' incentives and the ratio of the average of executives' annual compensations to the CEO's annual compensation to capture key executives' ability to monitor the CEO.
COOPT	Co-oped Independent Directors	The numbers of co-opted independent directors scaled by board size.

Appendix A2: First-differenced model

Dep. Var.	*ΔCASH (t+1)*	*ΔCASH (t+1)*	*ΔCASH (t+2)*	*ΔCASH (t+3)*	*ΔCASH (t+1)*	*ΔCASH (t+1)*	*ΔCASH (t+1)*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ind. Var.							
ΔPU	**0.0229*** **	**0.0189*** **	**0.0053** **	**-0.0012**			
	[11.65]	[9.32]	[2.30]	[-0.49]			
ΔPU_NEWS					**0.0147*** **		
					[9.08]		
ΔPU_TAX						**0.0089*** **	
						[10.40]	
ΔPU_GOVCPI							**0.0099*** **
							[8.18]
ΔSIZE		-0.0428***	-0.0113***	-0.0054*	-0.0429***	-0.0423***	-0.0428***
		[-15.59]	[-4.12]	[-1.94]	[-15.65]	[-15.40]	[-15.55]
ΔMB		0.0002	-0.0007	-0.0012***	0.0003	0.0001	0.0001
		[0.59]	[-1.59]	[-2.66]	[0.66]	[0.32]	[0.22]
ΔCF		-0.0038	0.0014	0.0084*	-0.0038	-0.0038	-0.0042
		[-0.81]	[0.28]	[1.68]	[-0.81]	[-0.80]	[-0.89]
ΔNWC		0.0958***	0.0223***	0.0158**	0.0957***	0.0960***	0.0957***
		[15.45]	[3.77]	[2.45]	[15.45]	[15.49]	[15.43]
ΔCAPEX		-0.0368***	0.0196**	-0.0036	-0.0376***	-0.0365***	-0.0368***
		[-4.20]	[2.01]	[-0.39]	[-4.29]	[-4.17]	[-4.20]
ΔBLEV		0.0584***	0.0361***	0.0296***	0.0578***	0.0583***	0.0586***
		[9.41]	[6.19]	[4.85]	[9.30]	[9.39]	[9.44]
ΔR&D		-0.0129*	-0.0009	-0.0009	-0.0130*	-0.0128*	-0.0128*
		[-1.93]	[-0.09]	[-0.16]	[-1.95]	[-1.93]	[-1.92]
ΔDIVDUM		-0.0021*	-0.0024*	-0.0016	-0.0021*	-0.0021*	-0.0021*
		[-1.78]	[-1.92]	[-1.19]	[-1.76]	[-1.77]	[-1.82]
ΔISIGMA		0.0477	0.0107	0.0129	0.0659**	0.0585**	0.0591**
		[1.62]	[0.33]	[0.38]	[2.26]	[2.00]	[2.02]
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	71,613	65,782	56,252	50,038	65,782	65,782	65,782
R-squared	0.0833	0.1042	0.0843	0.0878	0.1042	0.1045	0.1039

In this table, we regress change in firm cash holdings (*ΔCASH*) on change in policy uncertainty (Δlog of BBD index) in Column (1) and include changes in firm-level controls including size (*ΔSIZE*), market-to-book ratio (*ΔMB*), cash flow (*ΔCF*), net working capital (*ΔNWC*), capital expenditure (*ΔCAPEX*), book leverage (*ΔBLEV*), R&D expense (*ΔR&D*), dividend paying dummy (*ΔDIVDUM*), industry cash flow volatility (*ΔICFVOL*) in Column (2). In Column (3) and (4), we replace change in cash holdings in one-year lead (t+1) by changes in two and three-year lead (t+2, and t+3), respectively. In Column (5) through (7), we replace change in the overall policy uncertainty measure in Column (2) by change in each of its three components (news (*ΔPU_NEWS*), tax (*ΔPU_TAX*), and government spending combined with inflation (*ΔPU_GOVCPI*)). All continuous variables are winsorized at 1% levels and defined in Appendix A1. In all regressions, we include firm fixed effects and firm clustering effects. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Appendix A3: Two-dimensional firm-year clustering

Dep. Var.	*CASH (t+1)*	*CASH (t+1)*	*CASH (t+2)*	*CASH (t+3)*	*CASH (t+1)*	*CASH (t+1)*	*CASH (t+1)*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ind. Var.							
PU	**0.0227****	**0.0213*****	**0.0148****	**0.0043**			
	[2.62]	[3.48]	[2.17]	[0.47]			
PU_NEWS					**0.0193*****		
					[3.31]		
PU_TAX						**0.0109*****	
						[3.41]	
PU_GOVCPI							**0.0099*****
							[2.84]
SIZE		-0.0068***	-0.0034*	-0.0002	-0.0074***	-0.0068***	-0.0060***
		[-4.05]	[-1.71]	[-0.10]	[-4.41]	[-4.04]	[-3.44]
MB		0.0037***	0.0029***	0.0021***	0.0037***	0.0035***	0.0035***
		[4.95]	[4.53]	[3.13]	[5.15]	[4.72]	[4.55]
CF		0.0059	-0.0115	-0.0132*	0.0066	0.0061	0.0047
		[1.02]	[-1.59]	[-1.96]	[1.14]	[1.06]	[0.80]
NWC		-0.1547***	-0.1068***	-0.0779***	-0.1535***	-0.1540***	-0.1558***
		[-18.38]	[-11.16]	[-8.08]	[-18.07]	[-18.33]	[-18.72]
CAPEX		-0.2866***	-0.2137***	-0.1557***	-0.2853***	-0.2851***	-0.2899***
		[-17.88]	[-12.50]	[-8.58]	[-17.27]	[-17.78]	[-18.30]
BLEV		-0.2234***	-0.1592***	-0.1078***	-0.2234***	-0.2228***	-0.2246***
		[-24.76]	[-15.37]	[-10.55]	[-24.85]	[-24.66]	[-24.88]
R&D		0.0406***	0.0318***	0.0267***	0.0405***	0.0405***	0.0405***
		[8.18]	[5.18]	[4.12]	[8.17]	[8.20]	[8.19]
DIVDUM		-0.0000	-0.0073**	-0.0112***	0.0005	0.0002	-0.0004
		[-0.02]	[-2.76]	[-4.07]	[0.22]	[0.10]	[-0.16]
ISIGMA		0.0039	0.0260	0.0386	0.0116	0.0113	0.0154
		[0.21]	[1.10]	[1.49]	[0.64]	[0.61]	[0.81]
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	85,390	79,413	70,230	62,815	79,413	79,413	79,413
Adjusted R-squared	0.702	0.729	0.714	0.712	0.729	0.729	0.729

In this table, we regress firm cash holdings (cash-to-assets ratio, *CASH*) on policy uncertainty (log of BBD index) in Column (1) and include firm-level controls including size (*SIZE*), market-to-book ratio (MB), cash flow (*CF*), net working capital (*NWC*), capital expenditure (*CAPEX*), book leverage (*BLEV*), R&D expense (*R&D*), dividend paying dummy (*DIVDUM*), industry cash flow volatility (*ICFVOL*) in Column (2). In Column (3) and (4), we replace cash holdings in one-year lead (t+1) by two and three year lead (t+2, and t+3), respectively. In Column (5) through (7), we replace the overall policy uncertainty measure in Column (2) by each of its three components *(news* (PU_NEWS), *tax* (PU_TAX), and government spending combined with *inflation* (PU_GOVCPI)). All continuous variables are winsorized at 1% levels and defined in Appendix A1. In all regressions, we include firm fixed effects and two-dimensional firm-year clustering effects. Robust t-statistics based on firm-year clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Appendix A4: Control for endogeneity in regressions of value of cash holdings

Dep. Var.	*EXRETURN (t)*					
	(1)	(2)	(3)	(4)	(5)	(6)
Ind. Var.						
PU_NEWS	0.1418***					
	[13.04]					
PU_NEWS*ΔCASH	**0.2743*** **	**0.1679***				
	[2.62]	[1.73]				
FPU_NEWS			0.1089***			
			[9.30]			
FPU_NEWS*ΔCASH			**0.2431***			
			[1.74]			
Δ*PU_NEWS*				0.0052		
				[0.33]		
Δ*PU_NEWS*ΔCASH*				**0.4353*** **	**0.3460*** **	
				[3.84]	[3.21]	
Δ*FPU_NEWS*						-0.0779***
						[-5.54]
Δ*FPU_NEWS*ΔCASH*						**0.5689*** **
						[3.73]
Δ*CASH*	-0.5317	-0.0354	-0.3360	0.7479***	0.7485***	0.7879***
	[-1.08]	[-0.08]	[-0.51]	[20.73]	[21.50]	[14.79]
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Macro Controls	Yes	No	No	Yes	No	No
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	No	Yes	No
Firm Cluster	Yes	Yes	Yes	Yes	Yes	Yes
Observations	60,244	65,996	35,332	60,244	65,996	32,549
Adjusted R-squared	0.191	0.199	0.192	0.189	0.200	0.201

The dependent variable is stock return over fiscal year minus the return on a benchmark portfolio. The benchmark portfolios are 25 Fama-French value weighted portfolio sorted based on size and market-to-book ratio. The independent variables include news-based policy uncertainty measure, *PU_NEWS* (or fitted value of PU obtained from running Equation (5), *FPU_NEWS*; or change in PU_NEWS, Δ*PU_NEWS*; or change in FPU_NEWS, Δ*FPU_NEWS*), change in cash (Δ*CASH*), the interaction terms *PU_NEWS**Δ*CASH* (or *FPU_NEWS**Δ*CASH*; or Δ*PU_NEWS**Δ*CASH*; or Δ*FPU_NEWS**Δ*CASH*). Other firm controls are also specified in all regressions but not reported for brevity, including change in book assets net of cash (Δ*NONCASH*), change earnings interest and extraordinary items (Δ*EARNING*), change in R&D expenses (Δ*R&D*), change in interest expenses (Δ*INT*), change in dividends (Δ*DIV*), market leverage (*MLEV*), lagged cash holdings (*L.CASH*), and two interaction terms, Δ*CASH*L.CASH* and Δ*CASH*MLEV*. In Column (1) and (4), we further control for six measures of general economic uncertainty (*ELECYEAR*, *GDPDIS*, *SDPROFIT*, *VXO*, *SDRETURN*, and *JLN*). All variables are defined in Appendix A1. In all regressions, we include firm fixed effects and firm clustering effects. In Column (2) and (5), we further control for year fixed effects. Robust t-statistics based on firm clustered standard errors are reported in the brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.