Economics Bulletin

Volume 43, Issue 1

Drivers of cash holdings value: does economic policy uncertainty matter?

Mohamed Arouri
Université Côté d'Azur, GRM, France

Hayet Ben Haj Hamida
Aix Marseille Univ, CNRS, AMSE, Marseille, France.
CEDIMES-France ECSTRA : LR 1 - IHEC of Carthage

Issam Mejri
IPAG Business School, Nice, France

Srdjan Redzepagic
Université Côté d'Azur, GREDEG, France

Abstract

This paper investigates whether economic policy uncertainty (EPU) affects the way investors value firms' cash holdings. It contributes to two ongoing parallel groups of research studies: studies on the financial impacts of economic policy uncertainty and studies on the drivers of corporate cash holdings. We test for linear and nonlinear causal relationships based on data on firms from S&P500 over the period 2000-2017. Our findings show that while cash holdings increase the firm's market value, economic policy uncertainty reduces it, and its impact is persistent. Moreover, it seems that investors price more cash holdings during periods of high uncertainty and that the cash-EPU-firms value relationship is rather nonlinear.

The project leading to this publication has received funding from the French government under the "France 2030" investment plan managed by the French National Research Agency (reference: ANR-17-EURE-0020) and from Excellence Initiative of Aix-Marseille University - A*MIDEX.

Citation: Mohamed Arouri and Hayet Ben Haj Hamida and Issam Mejri and Srdjan Redzepagic, (2023) "Drivers of cash holdings value: does economic policy uncertainty matter?", *Economics Bulletin*, Volume 43, Issue 1, pages 550-563

Contact: Mohamed Arouri - mohamed.arouri@unice.fr, Hayet Ben Haj Hamida - hayet.BEN-HAJ-HAMIDA@univ-amu.fr, Issam Mejri - i.mejri@ipag.fr, Srdjan Redzepagic - srdjan.redzepagic@univ-cotedazur.fr.

Submitted: March 20, 2022. **Published:** March 30, 2023.

1. Introduction

The last decades have been marked by a substantial increase in policy uncertainty on the one hand, and a substantial increase in cash held by firms, especially American firms, on the other hand. Hence, parallel extant research on economic impacts of policy uncertainty and drivers of cash holdings has greatly contributed to the recent finance and economics literature. By economic policy uncertainty we refer to significant probability of changes in the existing economic policies that determine the rules of economic activities (Baker et al., 2016). The increasing policy uncertainty has led many scholars to study the subject and try to assess its effects on several economic variables. For instance, Gulen and Ion (2016) show a negative impact of economic policy uncertainty on corporate investment. A negative effect of EPU on M&A activities is also reported by Bonaime et al. (2018) and Li et al. (2021). Li (2020) shows that EPU increases both the frequency and volume of insider trades and influences investor sentiments.

In parallel, the important increase in recent years in cash holdings of U.S. firms has attracted attention from researchers. For instance, Bates et al. (2009) show that the average cash-to-assets ratio of U.S. industrial firms has increased from 10.5% to 23% during the 1980-2006 period. Duchin et al. *(*2017) report that the cash balances of US firms exceed 1.5 trillion dollars and account for more than 45.2% of US firms' total financial assets. Research studies on cash holdings have mainly addressed the effect of those liquid assets on important firms' financial decisions such as payout policy, financing, and investment (Pinkowitz et al., 2016). They have also tried to identify the drivers of cash holdings such as precautionary and saving motives (Khieu & Pyles, 2012; Begenau and Palazzo, 2021), tax incentives (Pinkowitz et al., 2013), market competition, agency problems and borrowing costs (Mortal et al., 2020). Moreover, previous research works have established that the value of cash holdings depends on the investors expectation regarding how managers can use those liquid assets for stockholders' interest or turn them into their private benefits (Dittmar and Mahrt-Smith, 2007; Fresard and Salva 2010).

Our paper contributes to this ongoing debate by investigating whether economic policy uncertainty impacts investors valuation of cash held by American firms. Indeed, while there is considerable research works focusing on drivers on cash holdings on the one side, and on financial impacts of economic policy uncertainty on the other side, the association between cash holdings and economic policy uncertainty is largely untouched, with –to the best of our knowledge– some notable exceptions that have investigated economic policy uncertainty as a driver of cash holdings. Harford *et al (*2014), Xu et al. (2016) and Li (2019) suggest that in periods of high economic policy uncertainty, financial constraints and costs are higher and firms can have greater incentive to hold more cash. Based on real options theory, Phan et al. (2019) document that firms delay their investments in periods of high uncertainty and thus may hold more cash.

Compared to those research works; our study presents the first attempt to assess whether EPU can influence the way market participants value the cash held by firms. We think that EPU can affect the value of cash via a kind of "wait-and-see" motive. In periods of high EPU, firms can tend to save more cash to seize investment opportunities or face liquidity problems and

investors may value more positively this liquid asset in periods of high uncertainty when external financing are costly and difficult to obtain (Dudley and Zhang, 2016).[1]

According to the agency theory (Jensen and Meckling, 1976; Jensen, 1986), undisciplined managers can turn out free cash-flows into their private benefits by for instance investing in negative net present value (NPV) projects rather than saving or paying dividends to stockholders. This suggests a negative impact of cash holdings on the firm value. We think that this negative relationship between cash holdings and firm value is no longer valid when EPU is high. In fact, firms may become vulnerable during periods of high uncertainty because of lack of internal resources and difficulty to obtain external finance due to financial frictions and risks (Xu et al., 2016; Nagar et al., 2019). In this context, cash holdings could be positively association with firm value. Moreover, if one takes a real option perspective, one can think that in periods of high economic policy uncertainty firms delay their investments and hold more cash to seize profitable investments once the uncertainty recedes. This increase in the value of waiting to invest option and the flexibility provided by holding cash and liquid assets may increase the value of the firm.
Hence, while the agency theory supports a negative relationship between cash holdings and firm value, other arguments go against such a negative relationship during periods of high economic uncertainty. To test which of these two opposing views prevails, we empirically examine whether EPU moderate the cash holdings-firm value relationship.

To do that, we introduce an original comprehensive framework based on an extension of the valuation model developed by Fama and French (1998) to integrate the effect of EPU. Our paper presents two main contributions compared to the emerging literature on the financial effects of economic policy uncertainty. First, we offer the first empirical investigation of the effects of EPU on the value of cash holdings. The second contribution of the paper consists in the use, as suggested by the data, of a nonlinear panel model to assess the impact of EPU on the value of cash held by US firms during both normal and high uncertainty.

The remainder of the paper proceeds as follows. Section 2 presents the data. Section 3 reports and discusses our empirical findings. Section 4 concludes the paper and provides some policy implications.

2. Empirical Methodology

We aim to assess whether economic policy uncertainty affects investors' valuation of cash holdings. We develop a model based on that introduced by Fama and French (1998) in which they regress the firm value on firm financial characteristics and other control variables. Similar models have been recently used for instance to assess the firm value impacts of information asymmetry (Drobetz et al., 2010), earnings quality (Sun et al., 2012) and corporate social responsibility (Arouri and Pijourlet, 2017).

[1] We thank an anonymous review for the comments. The paper has benefited substantially from the valuable suggestions provided.

In a first specification, we assess how economic policy uncertainty affects cash holdings after taking into consideration the impacts of the variables often used in the literature dealing with what determines firms' cash holdings. Formally, we estimate the following model:

$$Cash_{i,t} = \beta_0 + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dNA_{i,t+1} + \beta_5 D_{i,t} + \beta_6 dD_{i,t} + \beta_7 dD_{i,t+1} + \beta_8 PU_{i,t} + \beta_9 PU_{i,t-1} + \beta_{10} Capex_{i,t} + \beta_{11} Laverage_{i,t} + Industry\ effects + \varepsilon_{i,t} \quad (1)$$

Where $Cash_{i,t}$ is cash and cash equivalents, $E_{i,t}$ is Earnings before Interest and Taxes, $NA_{i,t}$ is net assets, defined as total assets minus cash and cash equivalents, $D_{i,t}$ is total dividends paid, $PU_{i,t}$ is the economic policy uncertainty, $Capex_{i,t}$ is the ratio of capital expenditure of the book value of assets, $Laverage_{i,t}$ is the ratio of the book value of debt, which include short term and long term debt, to the book value of assets, $dX_{i,t}$ indicates a past 1-year change of variable $X_{i,t}$ and $dX_{i,t+1}$ indicates a future 1-year change of variable $X_{i,t}$.

We include $PU_{i,t-1}$ to take into consideration the potential persistence in the effect of economic policy uncertainty on firms' cash holdings. In addition, in all our estimations, we use robust standard errors, clustered at the firm-level and we control for industry effects. In Model (1), we are particularly interested in coefficients β_8 and β_9.

Next, we assess how cash and economic policy uncertainty affect the firm value. Formally, we estimate the following model:

$$V_{i,t} = \beta_0 + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dNA_{i,t+1} + \beta_5 D_{i,t} + \beta_6 dD_{i,t} + \beta_7 dD_{i,t+1} + \beta_8 Cash_{i,t} + \beta_9 PU_{i,t} + \beta_{10} PU_{i,t-1} + \beta_{11} dPU_{i,t-1} + \beta_{12} Capex_{i,t} + \beta_{13} Laverage_{i,t} + Industry\ effects + \varepsilon_{i,t} \quad (2)$$

Where $V_{i,t}$ is the firm's market value measured as the market capitalization plus total liabilities.

In Model (2), we are particularly interested in coefficients β_8 and β_9.

Finally, we assess whether economic policy uncertainty has an impact on investors valuation of cash and whether this potential impact in non-linear. The models we estimate are specified as follows:

$$V_{i,t} = \beta_0 + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dNA_{i,t+1} + \beta_5 D_{i,t} + \beta_6 dD_{i,t} + \beta_7 dD_{i,t+1} + \beta_8 Cash_{i,t} + \beta_9 PU_{i,t} + \beta_{10} PU_{i,t-1} + \beta_{11} dPU_{i,t-1} + \beta_{12}(PU_{i,t} * Cash_{i,t}) + \beta_{13} Capex_{i,t} + \beta_{14} Laverage_{i,t} + Industry\ effects + \varepsilon_{i,t} \quad (3)$$

$$V_{i,t} = \beta_0 + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dNA_{i,t+1} + \beta_5 D_{i,t} + \beta_6 dD_{i,t} + \beta_7 dD_{i,t+1} + \beta_8 Cash_{i,t} + \beta_9 PU_{i,t} + \beta_{10} PU_{i,t-1} + \beta_{11} dPU_{i,t-1} + \beta_{12}(PU_{i,t} * Cash_{i,t}) + \beta_{13}(PU_{i,t})^2 Cash_{i,t} + \beta_{14} Capex_{i,t} + \beta_{15} Laverage_{i,t} + Industry\ effects + \varepsilon_{i,t} \quad (4)$$

We are particularly interested in the coefficient β_{12} in Model (3) and the coefficients β_{12} and β_{13} in Model (4). In Model (4), we check for whether the relationship between the firm value, cash and economic policy uncertainty is nonlinear as investors may value more cash when uncertainty becomes very high. In that case, we expect the coefficient β_{13} to be positive.

3. Data and preliminary analysis

Our sample consists of all companies listed in the S&P500 composite index over the 2000-2017 period on a yearly basis. Financial and accounting firm-level information is collected from DataStream. The website by Baker, Bloom and Davis provides monthly EPU index for many countries including the US. The EPU index is based on three components: newspapers coverage of economic policy uncertainty, the number of changes in tax code provisions, and disagreement among economists and analysts on economic policies. Since our accounting and financial data is on a yearly basis, the monthly EPU data is transformed into annual data using the annual mean of monthly EPU indexes. To attenuate the impact of extreme values of EPU in certain years, we use the logarithm of the annual index.

Descriptive statistics reported in Table 1 provide an overview of the sample. The natural logarithm of the market value of assets has a mean of 2.350 and median of 2.312. The mean ratio for Cash is 0.215, with a median ratio of 0.213 and a maximum value of 0.431, indicating that cash has become a critical portion of total assets of US firms which justifies the recent attention paid by researchers to identify firms' cash retention drivers. The mean ratio of EPU is 4.699, with a median of 4.708. The descriptive statistics for both the dependent variables and independent variables are comparable to those provided in prior literature (Arouri and Pijourlet, 2017).

The correlation matrix of the variables we use in the main analysis is presented in Table 2. Cash is positively related to the firm's market value

4. Empirical findings and discussion

4.1. Model Estimation

We estimate the models (1), (2), (3) and (4) using annual data over the 2000-2017 period. All firm-level variables are winsorized by top and bottom 1%. Fixed effects are included in the regressions to control for characteristics that are invariant within the industry. The standard errors are heteroskedasticity-robust.

Results of the estimation of Model (1) are summarized in Table 3. They suggest that firms' cash holdings are positively affected by changes in earnings and leverage but negatively affected by capital expenditure. More importantly, our findings suggest that economic policy uncertainty

positively influences firms' cash holdings. Its seems that American firms hold more cash in periods of high uncertainty. Besides, the positive impact of EPU on firms' cash holdings seems to be persistent as suggested by the significant positive coefficient of $PU_{i,t-1}$.

Results of the estimation of Models (2), (3) and (4) are summarized in Table 4. In Model (2), the coefficient of Cash is significantly positive, the coefficient of EPU is significantly negative and the coefficient of dPU is positive. It seems that holding cash increases the firm's value, economic policy uncertainty reduces it and the impact of EPU on the firm's value is persistent.

In Model (3), the crossed variable EPU*Cash shows a significant positive coefficient at 1%. This result indicates that investors price more cash during periods of uncertainty. When uncertainty is high, firms are concerned with volatile cash-inflows and they need to save cash from the current period to face liquidity problems or external financing constraints or to finance future investments. Thus, a positive relationship between cash holdings and EPU is observed. Furthermore, the policy uncertainty is a shock that enhances the firms existing connections and subsequently affects its market value and cash holding decisions (Xu, 2016)

In Model (4), the coefficient of the variable $\left(\mathrm{PU_{i,t}}\right)^2 * \mathrm{Cash_{i,t}}$ is positive and significant at 1%, suggesting a U-shaped relationship between Cash, EPU and the firm's value. The positive impact of EPU of the value of firms' cash holdings becomes higher in periods of extreme uncertainty.
The signs of the coefficients on the control variables are generally consistent with those in prior literature (Opler et al., 1999; Arouri and Pijourlet, 2017). Market value is positively related to Cash holdings, Leverage and Capex.

4.2. Robustness checks

4.2.1. Alternative samples

In this section, we check for whether the main findings are sensitive to alternative sample compositions. The sample period includes the last global financial crisis period, during which uncertainty was extremely high. To mitigate the concern that uncertainty from the financial crisis drives the main results, data from the years 2007–2008 are dropped and the equations (2), (3) and (4) are re-estimated. The results are reported in Table 5. Coefficients are slightly different, but our main findings remain unchanged: investors value more firms cash holdings during periods of high uncertainty and the EPU- Cash-firm's value relationship is nonlinear.

4.2.2. EPU pillars analysis

The EPU index is constructed based on three components related to the monetary, fiscal and tax policy uncertainties. To determine the individual effect of these components, we re-estimate the models (2), (3) and (4) with each component, and we report the results in Table 6.
Following the models' estimation, the results indicate that the tax and fiscal uncertainty components have negative significant effects on the firm's market value (V). Moreover, we note that there are positive significant impacts of fiscal and tax components of EPU on the value of firms' cash holdings as the coefficients ($\mathrm{PU_{i,t}} * \mathrm{Cash_{i,t}}$) are positively significant in Model

(3). More importantly, the coefficient of $\left(PU_{i,t}\right)^2 * Cash_{i,t}$ in Model (4) is significantly positive confirming that investors value more firms' cash holdings during periods of extreme economic policy uncertainty.

5. Conclusion

This paper contributes to two ongoing parallel groups of research studies: studies on the financial impacts of economic policy and studies on drivers of corporate cash holdings. More specifically, we used data on firms from S&P500 over the period 2000-2017 to investigate whether EPU affects the way investors price cash held by firms. Our results show that while cash holdings increase the firm's market value, economic policy uncertainty reduces it and its impact is persistent. Moreover, it seems that investors price more cash during periods of high uncertainty and that the cash holdings-EPU-firms value relationship is nonlinear. Our findings reveal that the relationship between cash holdings and firm value is more complex than it first seems and the agency theoretic arguments supporting a negative relationship seem to be invalid when EPU is too high.

The findings presented in this paper have important implications. It seems that economic policy uncertainty caused by elections, changes in regulations, the enforcement of laws significantly affect firms' behavior and push them to delay investments and hold more cash: the higher the economic policy uncertainty, the higher investors value cash held by the firms. The findings from our paper on how economic policy uncertainty affects cash policies may help policymakers better understand how regulatory decisions can affect firm decisions as we clearly show that cash holdings are not only affected by firm- or industry-characteristics but also by the uncertainty associated with economic policy. Policy uncertainty and government indecision have real economic consequences and affect firms' decisions.

References

Arouri M., Pijourlet G. (2017), "CSR Performance and the Value of Cash Holdings: International Evidence", ***Journal of Business Ethics***, 140, 263–284

Baker, S.R., Bloom, N., Davis, S.J. (2016), "Measuring economic policy uncertainty", ***Quarterly Journal of Economics***, 131, 1593–1636.

Begenau J., Palazzo B. (2021), "Firm selection and corporate cash holdings", ***Journal of Financial Economics***, 139(3), 697-718.

Bonaime A., Gulen H., Ion M. (2018), "Does policy uncertainty affect Merges & Acquisitions?" , ***Journal of Financial Economics***, 129(3), 531-558.

Dittmar, A., Mahrt-Smith, J. (2007), "Corporate governance and the value of cash holdings", ***Journal of Financial Economics***, 83(3), 599–634

Drobetz, W., Gru¨ninger, M. C., Hirschvogl, S. (2010), "Information asymmetry and the value of cash", ***Journal of Banking & Finance***, 34(9), 2168–2184.

Duchin R., Glibert T., Harford J., Ch. Hrdlicka (2017), " Precautionary saving with risky assets: When cash is not cash", ***Journal of Finance***, 72(2), 793-852.

Fama, E. F., French, K. R. (1998), "Taxes, financing decisions, and firm value.", ***Journal of Finance***, 53(3), 819–843.

Frésard, L., Salva, C. (2010), "The value of excess cash and corporate governance: Evidence from US cross-listings", ***Journal of Financial Economics***, 98(2), 359–384

Gulen, H., Ion, M. (2015), "Policy uncertainty and corporate investment", ***Review of Financial Studies***, 29(3), 523-564.

Harfold J., Mansi S.A., Maxwell W.F. (2008), "Corporate governance and firm cash holdings in the US, ***Journal of Financial Economics***, 87(3), 535-555.

Hassen B.E. (1999), "Threshold effects in non-dynamic panels: Estimation, testing and inference", ***Journal of Economics***, 93(2), 345-368.

Jensen M.C., W. H. Meckling (1976), "Theory of the firm: Managerial behavior, agency costs and ownership structure", ***Journal of Financial Economics***, 3(4°, 305-360.

Jensen, M. C. (1986), "Agency costs of free cash flow, corporate finance, and takeovers", ***American Economic Review***, 76(2), 323–329

Khieu D., Pyles M. (2012), "The influence of a credit rating change on corporate cash holdings and their marginal value", ***Financial Review***, 47(2), 341-373.

Li F., Kiang T., Zhang H. (2021), "Does economic policy uncertainty affect cross-border M&As?, ***International Review of Financial Analysis***, 73, 101637.

Li X. (2019), "Economic policy uncertainty and corporate cash policy: International evidence", ***Journal of Accounting and Public Policy***, 38, 106694

Li X. (2020), “The impact pf economic policy uncertainty on insider traders: A cross-country analysis” ***Journal of Business Research***, 119, 41-57.

Nagar, V., J. Schoenfeld, L. Wellman, (2019), “The effect of economic policy uncertainty on investor information asymmetry and management disclosures”, ***Journal of Accounting and Economics***, 67(1), 36-57.

Opler, T., Pinkowitz, L., Stulz, R., Williamson, R. (1999), “The determinants and implications of corporate cash holdings”, ***Journal of Financial Economics***, 52(1), 3–46.

Phan, H. V., Nguyen, N. H., Nguyen, H. T., Hegde, S. (2019), “Policy uncertainty and firm cash holdings”, ***Journal of Business Research***, 95, 71-82.

Pinkowitz L., Stluz R., Williamson R. (2013), “Is there a US high cash holdings puzzle after the financial crisis? ***Fisher College of Business working paper***, 07

Pinkowitz L., Stluz R., Williamson R. (2016), “Do US firms hold more cash than foreign firms do?”, ***Review of Financial Studies***, 29(2), 309-348.

Sun, Q., Yung, K., Rahman, H. (2012), “Earnings quality and corporate cash holdings”, ***Accounting & Finance***, 52(2), 543–571.

Xu N., Chen Q., Xu Y, Chen K.C. (2016), “Political uncertainty and cash holdings: Evidence form China”, ***Journal of Corporate Finance***, 40, 276-295.

Tables

Table 1: Descriptive Statistics

Variable	Mean	Std.Dev.	Min	Max	Median
$\mathbf{V_{i,t}}$	2.350	0.247	1.800	2.738	2.312
$\mathbf{PU_{i,t}}$	4.700	0.259	4.267	5.149	4.707
$\mathbf{Cash_{i,t}}$	0.215	0.246	0.151	0.431	0.213
$\mathbf{E_{i,t}}$	0.007	0.009	-0.025	0.027	0.006
$\mathbf{dE_{i,t}}$	0.003	0.009	-0.023	0.023	0.0003
$\mathbf{dE_{i,t+1}}$	0.003	0.009	-0.023	0.023	0.0003
$\mathbf{dNA_{i,t}}$	0.137	0.227	-0.366	0.644	0.070
$\mathbf{dNA_{i,t+1}}$	0.306	0.588	-0.268	1.812	0.075
$\mathbf{D_{i,t}}$	0.017	0.034	0	0.097	0.008
$\mathbf{dD_{i,t}}$	0.002	0.005	-0.014	0.013	0.00002
$\mathbf{dD_{i,t+1}}$	0.002	0.005	-0.014	0.013	0.00002
Capex	0.063	0.068	0.001	0.234	0.037
Leverage	0.308	0.242	0	0.874	0.260

Notes: $V_{i,t}$ is the firm's market value as the market capitalization plus total liabilities, $E_{i,t}$ is Earnings before Interest and Taxes, $NA_{i,t}$ is net assets, defined as total assets minus cash and cash equivalents, $D_{i,t}$ is total dividends paid, $Cash_{i,t}$ is cash and cash equivalents, $PU_{i,t}$ is the economic policy uncertainty, $Capex_{i,t}$ is the ratio of capital expenditure of the book value of assets, $Laverage_{i,t}$ is the ratio of the book value of debt, which include short term and long term debt, to the book value of assets, $dX_{i,t}$ indicates a past 1-year change of variable $X_{i,t}$ and $dX_{i,t+1}$ indicates a future 1-year change of variable $X_{i,t}$. (1), (2), (3) and (4) refer to equations in the text.

Table 2: Correlation matrix

	$V_{i,t}$	$PU_{i,t}$	Leverage	$E_{i,t}$	Capex	$dE_{i,t}$	$dE_{i,t+1}$	$dNA_{i,t}$	$dNA_{i,t+1}$	$dD_{i,t}$	$dD_{i,t+1}$	$Cash_{i,t}$
$V_{i,t}$	**1.000**											
$PU_{i,t}$	-0.018	1.000										
Leverage	0.042*	-0.048*	1.000									
$E_{i,t}$	0.029*	-0.076*	0.211*	1.000								
Capex	0.063*	-0.084*	0.368*	0.312*	1.000							
$dE_{i,t}$	0.043*	-0.164*	0.349*	0.475*	0.350*	1.000						
$dE_{i,t+1}$	0.031*	-0.021*	0.388*	0.152*	0.299*	0.216*	1.000					
$dNA_{i,t}$	0.043*	-0.186*	0.291*	0.379*	0.364*	0.606*	0.218*	1.000				
$dNA_{i,t+1}$	0.034*	-0.070*	0.362*	0.365*	0.356*	0.326*	0.685*	0.350*	1.000			
$dD_{i,t}$	-0.004	-0.151*	0.283*	0.227*	0.298*	0.529*	0.205*	0.451*	0.238*	1.000		
$dD_{i,t+1}$	-0.012	-0.070*	0.284*	0.216*	0.245*	0.240*	0.529*	0.240*	0.541*	0.544*	1.000	
$Cash_{i,t}$	0.377*	-0.005	-0.084*	0.040*	-0.005	-0.007	0.004	-0.002	-0.002	-0.044*	-0.030*	1.000

Notes: **, ** shows significance at the 1% level and 5 % respectively. $V_{i,t}$ is the firm's market value as the market capitalization plus total liabilities, $E_{i,t}$ is Earnings before Interest and Taxes, $NA_{i,t}$ is net assets, defined as total assets minus cash and cash equivalents, $D_{i,t}$ is total dividends paid, $Cash_{i,t}$ is cash and cash equivalents, $PU_{i,t}$ is the economic policy uncertainty, $Capex_{i,t}$ is the ratio of capital expenditure of the book value of assets, $Laverage_{i,t}$ is the ratio of the book value of debt, which include short term and long term debt, to the book value of assets, $dX_{i,t}$ indicates a past 1-year change of variable $X_{i,t}$ and $dX_{i,t+1}$ indicates a future 1-year change of variable $X_{i,t}$. (1), (2), (3) and (4) refer to equations in the text.*

Table 3: Impact of economy policy uncertainty on firms' cash holdings

Cash holdings	**(1)**	**(1)**
$Cash_{i,t}$	**Coef.**	**Coef.**
Intercept	0.134***	0.1197***
	(0.0005)	(0.0006)
$E_{i,t}$	– 0.0526*	–0.0016
	(0.0289)	(0.0311)
$dE_{i,t}$	0.0762***	– 0.0008
	(0.0159)	(0.0187)
$dE_{i,t+1}$	0.0275*	0.0179
	(0.165)	(0.0173)
$dNA_{i,t+1}$	– 0.0003	–0.0002
	(0.0002)	(0.0002)
$D_{i,t}$	0.0006	0.0082
	(0.009)	(0.0096)
$dD_{i,t}$	0.0239	– 0.0357
	(0.0308)	(0.0358)
$dD_{i,t+1}$	0.006	–0.0115
	(0.0294)	(0.0309)
$PU_{i,t}$	0.0124***	0.0099***
	(0.0004)	(0.0005)
$PU_{i,t-1}$	---------	0.0064***
		(0.0005)
Capex	– 0.008**	– 0.0071*
	(0.0034)	(0.0037)
Leverage	0.0012	0.0015*
	(0.0009)	(0.0009)
Industry fixed effect:	Yes	Yes
F test that all u_i=0	103.052	135.176
Prob > F	0.000	0.000
R-squared	0.1808	0.2480

Notes: ****, **,* shows significance at the 1% level, 5 % and 10% respectively.* $Cash_{i,t}$*, cash and cash equivalents, is the dependant variable.* $E_{i,t}$ *is Earnings before Interest and Taxes,* $NA_{i,t}$ *is net assets, defined as total assets minus cash and cash equivalents,* $D_{i,t}$ *is total dividends paid,* $PU_{i,t}$ *is the economic policy uncertainty,* $Capex_{i,t}$ *is the ratio of capital expenditure of the book value of assets,* $Laverage_{i,t}$ *is the ratio of the book value of debt, which include short term and long term debt, to the book value of assets,* $dX_{i,t}$ *indicates a past 1-year change of variable* $X_{i,t}$ *and* $dX_{i,t+1}$ *indicates a future 1-year change of variable* $X_{i,t}$*. Robust standard deviations are in parentheses. (1), (2), (3) and (4) refer to equations in the text.*

Table 4: Economic policy uncertainty and the value of cash

Market_value $V_{i,t}$	**(2)**	**(3)**	**(4)**
	Coef.	**Coef.**	**Coef.**
Intercept	1.590***	1.749***	2.383***
	(0.041)	(0.059)	(0.115)
$E_{i,t}$	-0.061	-0.061	-0.066
	(0.293)	(0.292)	(0.292)
$dE_{i,t}$	0.092	0.088	0.049
	(0.264)	(0.264)	(0.263)
$dE_{i,t+1}$	-0.082	-0.066	-0.043
	(0.251)	(0.251)	(0.250)
$dNA_{i,t+1}$	0.006	0.006	0.007*
	(0.004)	(0.004)	(0.004)
$D_{i,t}$	-0.008	-0.017	-0.045
	(0.095)	(0.095)	(0.095)
$dD_{i,t}$	0.462	0.437	0.331
	(0.493)	(0.493)	(0.492)
$dD_{i,t+1}$	0.193	0.216	0.236
	(0.454)	(0.454)	(0.453)
$Cash_{i,t}$	3.665***	2.552***	2.751***
	(0.117)	(0.328)	(0.329)
$PU_{i,t}$	-0.018**	-0.043***	-0.027**
	(0.009)	(0.011)	(0.012)
$PU_{i,t-1}$	0.013	0.011	0.008
	(0.008)	(0.008)	(0.008)
$dPU_{i,t-1}$	0.031***	0.029***	0.024***
	(0.009)	(0.009)	(0.009)
$PU_{i,t} * Cash_{i,t}$	---------	0.201***	-1.285***
		(0.055)	(0.237)
$(PU_{i,t})^2 * Cash_{i,t}$	---------	---------	0.734***
			(0.114)
Capex	0.162***	0.159***	0.142***
	(0.040)	(0.040)	(0.040)
Leverage	0.020*	0.020**	0.022**
	(0.010)	(0.010)	(0.010)
Industry fixed effect:	Yes	Yes	Yes
F test that all u_i=0	36.81	36.89	37.14
Prob > F	0.000	0.000	0.000
R-squared	0.119	0.120	0.125

Notes: ****, **,* shows significance at the 1% level, 5 % and 10% respectively. $V_{i,t}$, the firm's market value as the market capitalization plus total liabilities, is the dependant variable. $E_{i,t}$ is Earnings before Interest and Taxes, $NA_{i,t}$ is net assets, defined as total assets minus cash and cash equivalents, $D_{i,t}$ is total dividends paid, $Cash_{i,t}$ is cash and cash equivalents, $PU_{i,t}$ is the economic policy uncertainty, $Capex_{i,t}$ is the ratio of capital expenditure of the book value of assets, $Laverage_{i,t}$ is the ratio of the book value of debt, which include short term and long term debt, to the book value of assets, $dX_{i,t}$ indicates a past 1-year change of variable $X_{i,t}$ and $dX_{i,t+1}$ indicates a future 1-year change of variable $X_{i,t}$. Robust standard deviations are in parentheses. (1), (2), (3) and (4) refer to equations in the text.*

Table 5: Economic policy uncertainty and the value of cash in sub-period

Market_value $V_{i,t}$	(2)	(3)	(4)
	Coef.	**Coef.**	**Coef.**
Intercept	1.603***	1.777***	2.366***
	(0.045)	(0.065)	(0.123)
$E_{i,t}$	-0.009	0.210	0.196
	(0.316)	(0.323)	(0.323)
$dE_{i,t}$	0.544**	0.158	0.116
	(0.268)	(0.292)	(0.291)
$dE_{i,t+1}$	-0.121	-0.050	-0.028
	(0.285)	(0.285)	(0.285)
$dNA_{i,t+1}$	0.006	0.005	0.006
	(0.004)	(0.004)	(0.004)
$D_{i,t}$	-0.089	-0.057	-0.083
	(0.103)	(0.104)	(0.104)
$dD_{i,t}$	1.282**	0.660	0.552
	(0.507)	(0.538)	(0.537)
$dD_{i,t+1}$	0.263	0.266	0.296
	(0.502)	(0.501)	(0.500)
$Cash_{i,t}$	3.636***	2.507***	2.710***
	(0.125)	(0.356)	(0.357)
$PU_{i,t}$	0.005	-0.039***	-0.024*
	(0.008)	(0.012)	(0.012)
$PU_{i,t-1}$	-0.010	0.003	0.001
	(0.008)	(0.009)	(0.009)
$dPU_{i,t-1}$	-0.009	0.029***	0.024**
	(0.316)	(0.009)	(0.010)
$PU_{i,t} * Cash_{i,t}$	--------	0.205***	-1.188***
		(0.060)	(0.255)
$(PU_{i,t})^2 * Cash_{i,t}$	--------	---------	0.687***
			(0.122)
Capex	0.161**	0.152***	0.135***
	(0.043)	(0.043)	(0.043)
Leverage	0.019*	0.021*	0.022**
	(0.011)	(0.011)	(0.011)
Industry fixed effect:	Yes	Yes	Yes
F test that all u_i=0	30.26	30.32	30.50
Prob > F	0.000	0.000	0.000
R-squared	0.118	0.120	0.123

Notes: ****, **,* shows significance at the 1% level, 5 % and 10% respectively. $V_{i,t}$, the firm's market value as the market capitalization plus total liabilities, is the dependant variable. $E_{i,t}$ is Earnings before Interest and Taxes, $NA_{i,t}$ is net assets, defined as total assets minus cash and cash equivalents, $D_{i,t}$ is total dividends paid, $Cash_{i,t}$ is cash and cash equivalents, $PU_{i,t}$ is the economic policy uncertainty, $Capex_{i,t}$ is the ratio of capital expenditure of the book value of assets, $Laverage_{i,t}$ is the ratio of the book value of debt, which include short term and long term debt, to the book value of assets, $dX_{i,t}$ indicates a past 1-year change of variable $X_{i,t}$ and $dX_{i,t+1}$ indicates a future 1-year change of variable $X_{i,t}$. Robust standard deviations are in parentheses. (1), (2), (3) and (4) refer to equations in the text.*

Table 6: The components of economic policy uncertainty and the value of cash

Market_value $V_{i,t}$	**Monetary Component**			**Fiscal Component**			**Tax Component**		
	(2)	**(3)**	**(4)**	**(2)**	**(3)**	**(4)**	**(2)**	**(3)**	**(4)**
Intercept	1.482***	1.486***	2.340***	1.569***	1.655***	1.973***	1.565***	1.646***	1.992***
	(0.037)	(0.044)	(0.116)	(0.033)	(0.042)	(0.08)	(0.033)	(0.042)	(0.082)
$\mathbf{E_{i,t}}$	0.021	0.020	0.052	-0.034	-0.039	-0.057	-0.033	-0.039	-0.054
	(0.293)	(0.294)	(0.293)	(0.293)	(0.293)	(0.292)	(0.293)	(0.293)	(0.292)
$\mathbf{dE_{i,t}}$	-0.001	0.000	-0.032	0.088	0.087	0.069	0.089	0.090	0.068
	(0.265)	(0.256)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)
$\mathbf{dE_{i,t+1}}$	-0.059	-0.058	-0.018	-0.108	-0.093	-0.065	-0.111	-0.098	-0.072
	(0.251)	(0.252)	(0.251)	(0.251)	(0.251)	(0.251)	(0.251)	(0.251)	(0.251)
$\mathbf{dNA_{i,t+1}}$	0.008**	0.008**	0.007*	0.005	0.005	0.006	0.005	0.005	0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
$\mathbf{D_{i,t}}$	-0.073	-0.072	-0.081	0.003	-0.002	-0.023	0.005	0.001	-0.021
	(0.097)	(0.097)	(0.096)	(0.095)	(0.095)	(0.095)	(0.095)	(0.095)	(0.095)
$\mathbf{dD_{i,t}}$	0.399	0.397	0.338	0.470	0.447	0.381	0.469	0.445	0.373
	(0.493)	(0.493)	(0.491)	(0.493)	(0.492)	(0.492)	(0.493)	(0.492)	(0.492)
$\mathbf{dD_{i,t+1}}$	0.432	0.433	0.370	0.139	0.145	0.197	0.137	0.141	0.194
	(0.458)	(0.458)	(0.456)	(0.455)	(0.454)	(0.454)	(0.455)	(0.454)	(0.454)
$\mathbf{Cash_{i,t}}$	3.670***	3.642***	3.444***	3.667***	3.103***	3.021***	3.667***	3.133***	3.049***
	(0.117)	(0.215)	(0.216)	(0.117)	(0.209)	(0.209)	(0.117)	(0.210)	(0.211)
$\mathbf{PU_{i,t}}$	-0.002	-0.003	0.002	-0.007	-0.018***	-0.013**	-0.006	-0.017***	-0.012**
	(0.008)	(0.010)	(0.010)	(0.004)	(0.006)	(0.006)	(0.004)	(0.006)	(0.006)
$\mathbf{PU_{i,t-1}}$	0.021***	0.021***	0.017**	0.006	0.004	0.003	0.006	0.005	0.004
	(0.008)	(0.008)	(0.008)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
$\mathbf{dPU_{i,t}}$	0.020***	0.020	0.019**	0.015***	0.014***	0.013***	0.015***	0.014***	0.013***
	(0.007)	(0.007)	(0.007)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
$\mathbf{PU_{i,t} * Cash_{i,t}}$	-------	0.006	-1.831***	--------	0.092***	-0.595***	---------	0.088***	-0.655***
		(0.041)	(0.235)		(0.028)	(0.149)		(0.029)	(0.154)
$\mathbf{(PU_{i,t})^2 * Cash_{i,t}}$	-------	---------	1.014***	----------	----------	0.357***	---------	---------	0.384***
			(0.128)			(0.076)			(0.078)
Capex	0.143***	0.143	0.128***	0.165***	0.163***	0.150***	0.166***	0.164***	0.151***
	(0.040)	(0.143)	(0.040)	(0.04)	(0.040)	(0.040)	(0.040)	(0.040)	(0.040)
Leverage	0.020*	0.020	0.021**	0.021**	0.021**	0.022**	0.021**	0.021**	0.022**
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Industry fixed effect:	Yes			Yes			Yes		
F test that all u_i=0:	36.84			36.83			36.83		
Prob > F	0.000			0.000			0.000		
R-squared	0.12			0.123			0.12		

Notes: ****, **,* shows significance at the 1% level, 5 % and 10% respectively. $V_{i,t}$, the firm's market value as the market capitalization plus total liabilities, is the dependant variable. $E_{i,t}$ is Earnings before Interest and Taxes, $NA_{i,t}$ is net assets, defined as total assets minus cash and cash equivalents, $D_{i,t}$ is total dividends paid, $Cash_{i,t}$ is cash and cash equivalents, $PU_{i,t}$ is the economic policy uncertainty, $Capex_{i,t}$ is the ratio of capital expenditure of the book value of assets, $Laverage_{i,t}$ is the ratio of the book value of debt, which include short term and long term debt, to the book value of assets, $dX_{i,t}$ indicates a past 1-year change of variable $X_{i,t}$ and $dX_{i,t+1}$ indicates a future 1-year change of variable $X_{i,t}$. Robust standard deviations are in parentheses. (1), (2), (3) and (4) refer to equations in the text.*