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Abstract

This paper explores how US partisan conflict impacts the cash management decisions of US firms. Using a sign restrictions approach to identify structural shocks to partisan conflict, we find that an exogenous 10% rise in the Partisan Conflict Index above trend is associated with a 0.4 percentage point increase in average cash-to-total assets above trend. These baseline results hold for both the mean and median ratio of cash-to-total assets for all firms in our sample, across the total assets distribution, as well as for different classifications of firms. Additionally, we conduct a series of robustness checks, including a firm-level regression analysis, all of which uphold these results. Our findings reinforce the signalling effect that political dysfunction can have on corporate managers.

Key words: Partisan conflict, cash holdings, economic policy uncertainty, VAR, sign restrictions.

JEL classification: G30, G32, E32.

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1 Introduction

In June 2016, seventy-nine percent of the chief financial officers (CFOs) responding to the CFO Outlook Survey stated that the U.S. faced "moderate-to-severe" political risk (CFO Survey, 2016). Forty-seven percent of CFOs also indicated that they would limit their business's spending due to heightened political uncertainty. In 2013, half of all chief executive officers (CEOs) responding to the Business Roundtable's CEO Economic Outlook Survey claimed that political disagreement within the federal government over the upcoming budget and the looming debt ceiling crisis was likely to have an adverse effect on their hiring decisions in the short-term. Recent public news reports document similar anecdotes on how political uncertainty impact business decisions. For example, Charles Shultz, the CEO of Starbucks, sent a well-publicized memo to employees urging better customer service in the face of, amongst other issues, "great political uncertainty both at home and abroad (Harwell, 2015)." Jamie Dimon, the CEO of JPMorgan Chase, has discussed his concern regarding uncertainty over health care, immigration, and infrastructure policy (Dimon, 2015). These issues, particularly the first two, have elicited contentious partisan debate amongst members of Congress.

Adopting a macroeconomic methodology, this paper provides substantial empirical evidence that, as a result of delayed business decisions due to heightened partisan conflict, managers will shift an economically significant amount of assets into cash and cash equivalents. Our empirical evidence complements the existing theoretical literature, Azzimonti (2011), for example, which emphasizes how heightened political uncertainty can lead to delayed risky or hard-to-reverse investments, leading firms to increase the amount of total assets held as cash. Since our methodology allows us to disentangle political uncertainty shocks from the common macroeconomic uncertainty shocks, our paper further contributes to the existing empirical cash holdings literature by quantitatively differentiating the impact of the two types of uncertainty shocks, which can be fundamentally different.

We develop a structural vector autoregression (VAR) model that enables us to model the dynamical relationships between cash holdings, partisan conflict, policy uncertainty, as well as the real economy. There are three major advantages to this method. Firstly, a VAR model allows us to effectively model the dynamics between all variables in question. Secondly, the macroeconomic approach allows us to identify structural shocks in political uncertainty which are, by construction, orthogonal to other types of uncertainty shocks. This presents an important advantage because it directly addresses the common endogeneity problem in regressions. Our use of sign restrictions, as discussed below, allows us to apply existing theoretical predictions to empirics. Thirdly, the macroeconomic approach is suitable to study shocks which are *aggregate* by nature,

as are shocks to political and policy uncertainties. Our macroeconomic results are then further consolidated by cross-checking with the firm-level fixed-effects approach that is common to the cash holdings literature.

To proxy for political uncertainty in the United States, we adopt the Partisan Conflict Index introduced by Azzimonti (2014) who shows important differences between a shock to partisan conflict and shocks to "economic policy uncertainty," as discussed by Baker, Bloom, and Davis (2016). Particularly, the Economic Policy Uncertainty Index does not distinguish between uncertainties triggered by political events and monetary policy. There can be instances where economic policy uncertainty is low, but partisan conflict is high, leading investors and firms to still alter their behavior. Thus, a contribution of this paper is that we quantify the impact of political uncertainty on the cash holdings of firms that is distinguishable from the impact of economic policy uncertainty.

This last point is particularly important for the literature on the effects of political uncertainty on financial decision-making. A standard measure of political uncertainty in recent years has been the Economic Policy Uncertainty Index. Using this measure, researchers have studied the effects of political uncertainty on cash holdings (Gao and Grinstein, 2014), bank loan contracting (Francis, Hasan, and Zhu, 2014), and corporate debt financing (Waisman, Ye, and Zhu, 2015). However, our results show that researchers may be able to reevaluate these relationships and separately quantify the effects of policy uncertainty and political conflict. The use of the Partisan Conflict Index also distinguishes this paper from those such as Julio and Yook (2012), who use election dates to proxy for political uncertainty. By using the Partisan Conflict Index, we have the ability to proxy for political uncertainty during non-election years.

Our model is used to test our hypotheses with cash holdings data from the Compustat database for the 1985 – 2014 period. In our macroeconomic methodology, we place our attention on the responses of the average and median cash-to-total assets ratios. To uncover structural shocks in partisan conflict, we use the sign restrictions approach as pioneered by Uhlig (2005). Importantly, our structural shock identification scheme is designed such that partisan conflict shocks are orthogonal to shocks in economic policy uncertainty. Following the methodology of Arias, Rubio-Ramirez, and Waggoner (2014), we impose a set of *contemporaneous* sign and zero restrictions when we simulate impulse responses. Here, we rely on existing theories and anecdotal evidence to help us disentangle exogenous variations in partisan conflict from those in economic policy uncertainty. The use of sign restrictions also allows us to remain agnostic about the direction of the movement of cash holdings, conditional on the structural shocks of interest.

Our baseline results show that an exogenous 10% increase in the Partisan Conflict Index relative to its trend is associated with an increase in the average cash-to-total assets ratio that reaches a peak of 0.4

percentage points above trend approximately one year after the initial shock. This increase above trend is 50.6% of the standard deviation of the detrended mean cash ratio that is reported in Table 1. Our result is qualitatively consistent using both the average and median cash-to-total assets ratios and provides direct evidence that political uncertainty carries substantial influence on firms' cash management decisions. Moreover, we find that political uncertainty associated with partisan conflict exerts a larger impact on the cash ratio than economic policy uncertainty.

The model also predicts that financially constrained firms, growth firms, and firms that belong to high tech industries will experience an increase in the average and median cash-to-total assets ratios in the presence of more intense partisan conflict. Moreover, we show that the increases in the cash-to-total assets ratios in response to a partisan conflict shock occur for all firms across the total assets distribution. However, firms with a smaller amount of assets, which are typically considered financially constrained, experience a larger percentage point increase in both the mean and median cash-to-total assets ratios. These results are robust to the exclusion of the recent period of historically low interest rates that began during the third quarter of 2008, as well as to alternative identification schemes. More importantly, our results remain robust against panel regressions of various specifications, after controlling for firm-specific characteristics, economic policy uncertainty, and midterm and presidential elections.

Overall, this paper is among the first to concurrently identify structural shocks to macroeconomic and political uncertainty, by taking advantage of the Partisan Conflict Index and empirical macroeconomic methodology. We are also among the first to provide robust evidence on the significant positive relationship between political uncertainty and cash holdings. These findings extend a growing literature examining the consequences of US partisan conflict (see Azzimonti (2014,2015,2016), and Cheng, Hankins, and Chiu (2016)). Some economists believe that the slow recovery from the Great Recession can be explained, in part, by a higher degree of uncertainty. In fact, recent survey evidence indicates that greater political uncertainty has "[led] to planned business spending increases of only 1% in the United States (CFO Survey, 2016)." Our empirical results support the hypothesis that shocks to political uncertainty raise the cash holdings of US firms, which may have prolonged the weak recovery from the Great Recession. These insights are important for conveying to politicians the importance of good policy and the broader signaling effects of political dysfunction. Moreover, these results should also indicate to managers and policymakers that the consequences of political uncertainty can be detrimental even when economic policy uncertainty is low.

The remainder of the paper proceeds as follows. We discuss the relevant literature in Section 2, and in Section 3 we provide a discussion of the potential economic channels through which partisan conflict can

impact cash holdings. In Section 4 we present the empirical model, which includes a discussion of the data and a motivation for the sign restriction identification strategy. We provide an extensive discussion of our results and robustness checks in Sections 5 and 6, respectively. Section 7 concludes.

2 Related Literature

Our paper contributes to a growing literature, both theoretical and empirical, explaining how political conflict and political polarization can affect investment spending. On the theoretical front, Azzimonti (2011) develops a model showing how political polarization and instability can lead to higher relative investment-to-consumption prices and thus a lower level of aggregate private investment. Azzimonti (2015) further develops a model in which she shows that private investment will decline when partisan conflict within the US government is high. Specifically, when partisan conflict is relatively high, investors and consumers may worry that politicians will be less likely to formulate timely and appropriate policy responses that can reduce the risk of costly rare events. Cautious investors will reduce investment spending until such a time that partisan conflict subsides and those in government can create and pass effective policies.

On the empirical front, Azzimonti (2015) introduces the Partisan Conflict (PC) Index, the index adopted in our paper, and uses both VAR and two-stage least squares techniques to show that a 10% increase in the PC Index will reduce aggregate private investment by approximately 3.4%. Canes-Wrone and Park (2012) show evidence of what they termed a "reverse political budget cycle (ibid: p. 103)." Using a panel of ten OECD countries, they show that a decline in real private fixed investment occurs during electoral cycles that are associated with a high degree of economic policy uncertainty. These cycles are even more pronounced when political polarization is relatively high. In their model, investments that may entail either sunk or hard-to-reverse costs could be delayed if investors' expectations about the effectiveness of economic policy become more uncertain. Julio and Yook (2012) use the timing of elections, as well as the margin of victory in elections, to measure how political uncertainty impacts investment cycles. They find that firms reduce investment spending by 4.8% in election years compared to nonelection years.

It is important to distinguish the PC Index from the proxies used in Julio and Yook (2012). While the PC Index also measures an increase in political uncertainty around election years, it has two advantages. First, it can measure partisan conflict during non-election years. For example, the PC Index can capture the partisan conflict surrounding the government shutdown of 2013, which occurred during a non-presidential election year. Secondly, the rich variation in the PC Index can distinguish politically contentious election

years from those that were relatively calm. For example, the PC Index shows that partisan conflict was much higher during the November 2012 presidential election compared to the November 2000 presidential election. However, despite the relatively higher level of partisan conflict during the 2012 election, the margin of victory was 3.86 percentage points compared to the close election of November 2000, when the margin of victory was less than one percentage point. Thus, higher political uncertainty does not always correspond to close elections.

The PC Index also differs from the well-known Economic Policy Uncertainty (EPU) Index developed by Baker, Bloom, and Davis (2016) in several respects. While both indexes are constructed using newspaper search algorithms, each searches different key terms. For example, Azzimonti (2015) notes that her algorithm does not search for words directly related to economic policy, but instead searches for words directly related to political disagreement. Moreover, she shows that the PC and EPU Indexes do not necessarily co-move. For example, immediately following the September 11^{th} terrorist attacks, economic policy uncertainty was quite high. However, partisan conflict was low because most politicians had rallied around a common goal. Similarly, following the Lehman failure, the EPU Index exhibited a stark increase while the PC Index was relatively stable. Conversely, when partisan conflict is exceptionally high, economic policy uncertainty is relatively low, because economic agents are fairly certain that the status quo will persist.[1]

Our paper is also closely related to the broad literature on the cash holdings practices of firms, an active research area since the seminal study on the determinants of corporate cash holdings by Opler, Pinkowitz, Stulz, and Williamson (1999). Since the introduction of this research, corporate cash holdings have experienced astounding growth. Bates, Kahle, and Stulz (2009) examine how well the prevailing theories of corporate cash holdings could explain the increase in cash holdings that they document as occurring between 1980 and 2006. Of these theories, they showed that firms have increased cash as a percentage of total assets for precautionary reasons. Keynes (1936) first discussed the possibility that firms would hold more cash for precautionary reasons. Further evidence for this theory is provided in Opler, Pinkowitz, Stulz, and Williamson (1999), Almeida, Campello, and Weisbach (2004) and Han and Qiu (2007). Simply put, the precautionary motive asserts that firms will hold more cash in order to buffer against adverse shocks, both idiosyncratic and aggregate, particularly when access to external capital is costly.[2]

Our paper is related to several different strands of the literature investigating cash holdings and uncertainty and is also related to the broader literature studying the effects of uncertainty on financial decision-

[1] Recent empirical literature has also started to investigate the relationship between inflation uncertainty and economic policy uncertainty, for example, see Glas and Hartmann (2016).

[2] Brown and Petersen (2011) and Pinkowitz, Stulz, and Williamson (2012) also pointed out that uncertainty related to research and development can cause firms to hold relatively more liquid assets.

making in general. First, our paper is directly associated with the literature investigating how aggregate (macroeconomic) uncertainty affects cash holdings. Baum, Caglayan, Ozkan, and Talavera (2006) show that the dispersion of cash-to-total assets decreased in the presence of macroeconomic uncertainty for all firms in their sample, as well as for financially constrained firms and high growth firms. Financially constrained firms, having restricted access to outside capital sources, will hold more cash if they are uncertain about the future. High growth firms tend to be relatively young firms and have not been able to build up alternative sources of investment capital. Gao and Grinstein (2014) find that aggregate level uncertainty, as opposed to idiosyncratic uncertainty, has a more pronounced effect on the cash holdings decisions of firms. Their results showed that economic policy uncertainty, as well as uncertainty over interest rates, was associated with positive increases in cash holdings. Specifically, they showed that a one standard deviation increase in the EPU Index resulted in a 0.25% increase in cash holdings as a percentage of total assets.[3] The results in Gao and Grinstein (2014) complement evidence from Acharya, Almeida, and Campello (2013), who showed that firms facing greater aggregate risks will choose to hold more cash rather than take out costlier lines of credit with banks.

We are also contributing to the literature on how cashing holdings are affected by political uncertainty. Julio and Yook (2012), along with their analyses on investment cycles, estimate how cash holdings are correlated with election years. Interestingly, they find that election years were associated with an increase in cash held as a percentage of total assets as well as with a decline in investment spending as a percentage of total assets. Thus, they provide evidence that cash holdings should increase around periods typically correlated with political uncertainty. However, the *source* of the uncertainty, i.e. political or policy uncertainty, is not known. Bhagat and Obreja (2013) link cash flow uncertainty to depressed corporate investment, even when the cost of capital is low and attractive investment opportunities exist. The authors cite uncertainty over the implementation of the Affordable Care Act, as well as uncertainty regarding US fiscal policy, as potential reasons for why corporate managers would delay investment spending in the face of reasonable opportunities.

Finally, we are helping to clarify the literature on political uncertainty and financial decision-making. In addition to Gao and Grinstein (2014), Francis, Hasan, and Zhu (2014) and Waisman, Ye, and Zhu (2015) study the effects of political uncertainty on corporate bank loan contracting and debt financing, respectively, by making use of the Economic Policy Uncertainty Index from Baker, Bloom, and Davis (2016). Francis, Hasan, and Zhu (2014) show that elevated political uncertainty can be incorporated into bank loan pricing. Thus, not only can bank loans be harder to obtain during periods of high political uncertainty, but they

[3]Gao and Grinstein (2014) restricted their sample size to the top 25% of non-financial and non-utility firms in the Compustat database.

can also be more expensive to take out. This last point relates closely to our paper, because it reveals a channel through which firms may increase cash. That is, if external financing is costlier during periods of high political uncertainty, firms may choose to keep more of their total assets in the form of cash. Waisman, Ye, and Zhu (2015) show that political uncertainty is associated with an increase in corporate bond spreads, making the cost of debt financing more expensive. As proxies for political uncertainty, Waisman, Ye, and Zhu (2015) use election years and margin of victory, similar to Julio and Yook (2012), as well as the Economic Policy Uncertainty Index. However, in this section we have demonstrated that each of these proxies cannot measure elements of political uncertainty directly related to partisan conflict. Thus, a contribution to this literature is our evidence that the Partisan Conflict Index is an important, and fundamentally different, proxy for politic uncertainty that should be incorporated into the finance literature.

3 The Transmission of Partisan Conflict to Cash Holdings

In this section we outline the possible economic channels through which increases in partisan conflict can lead firms to increase cash holdings as a percentage of total assets. We outline these theories using evidence, both theoretical and empirical, from the previous section.

As discussed in Azzimonti (2011), Canes-Wrone and Park (2012) and, Azzimonti (2015), increases in political polarization and partisan conflict can lead to a decrease in investment spending, particularly investments that are hard to reverse or entail sunk costs. While these authors discussed aggregate private investment, evidence from CFO Survey (2016), discussed in Section 1, revealed that corporate CFOs will also delay investment spending in the presence of political uncertainty. At the corporate level, this reduction in investment spending will translate to a larger percentage of assets held as cash.

Relatedly, the precautionary motive, discussed in Section 2, supposes that firms will hold more cash when external financing is scarce. In Azzimonti's (2015) model, partisan conflict causes risk-averse investors to increase the probability in which they believe costly rare events will happen. For example, investors might believe that heightened partisan conflict reduces the ability of the government to pass meaningful legislation meant to limit the harm of financial crises. By limiting investment, the cost of external financing increases, forcing firms to hold more total assets as cash.

Finally, if firms perceive partisan conflict to be long-lasting, then the belief that politicians will be unable to mitigate costly rare events can be exacerbated. This belief might lead them to question the extent of available profitable investments in the future. A preference for cash in the face of uncertainty over future

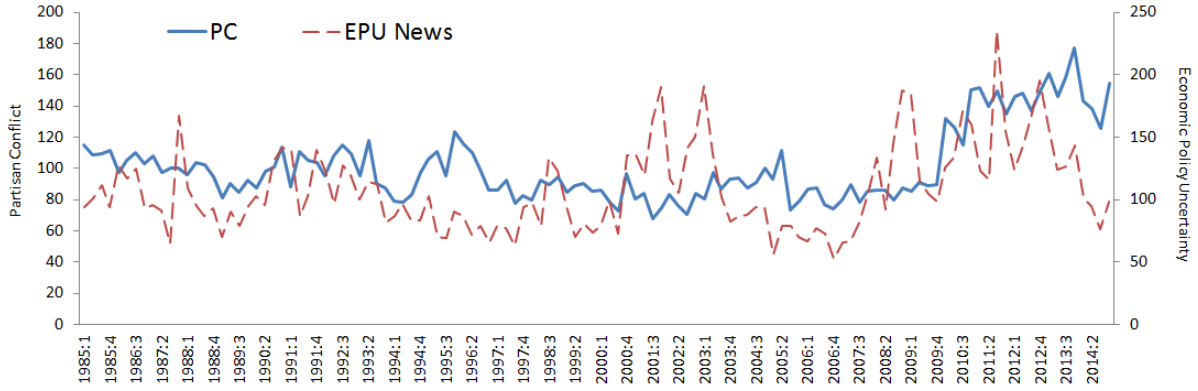
investments is consistent with the model discussed in Almeida, Campello, and Weisbach (2011).

All of these potential channels through which partisan conflict could affect the cash management decisions of firms leads us to believe that, in an *aggregate* model, average and median cash holdings-to-total assets should rise with an increase in partisan conflict.

4 The Empirical Model

The effect of a partisan conflict shock on the cash holdings of US firms is estimated through a vector autoregression (VAR) model. The variables in the VAR model include the Partisan Conflict Index (PC_t), the Economic Policy Uncertainty Index (EPU_t), real private domestic investment (I_t), the federal funds rate (FFR_t) and the average ratio of cash holdings-to-total assets of US firms ($Cash_t$).

Figure 1: Economic Policy Uncertainty & Partisan Conflict Indexes: 1985Q1 – 2014Q4



Note: The left axis measures the Political Conflict (PC) Index and the right axis measures the news-based Economic Policy Uncertainty (EPU) Index.

Quarterly US data from 1985Q1 to 2014Q4 are employed in our estimation. The starting date for our data is based on the availability of the EPU Index, which was developed by Baker, Bloom, and Davis (2016), and is retrieved from the "Economic Policy Uncertainty" website.[4] Our proxy for political uncertainty, the PC Index, is available from the Philadelphia Federal Reserve Bank.[5] The overall EPU Index for the US consists of three components: a measure based on newspaper coverage, a measure of federal tax code provisions set to expire over the next decade, and an indicator drawn on economic forecaster disagreement.

[4]The data can be accessed at `http://www.policyuncertainty.com`.

[5]The data can be accessed at `https://www.philadelphiafed.org/research-and-data/real-time-center/partisan-conflict-index`

However, since the PC Index is news-based, we employ the news-based EPU Index for the US in our baseline analysis.[6] Data on private domestic investment (deflated with the GDP deflator) and the federal funds rate come from the Federal Reserve Bank of St. Louis database.

Figure 1 displays the PC Index and the news-based EPU Index. As mentioned before, economic policy uncertainty can be high during periods of low political conflict and vice versa. In fact, the unconditional correlation between the PC Index and the EPU Index during our sample period is approximately 0.34.

Table 1: Summary Statistics for Detrended Cash-to-Total Assets Series: 1985Q1 – 2014Q4

	Std. Dev. of Mean Cash Ratio*	Std. Dev. of Median Cash Ratio*
Panel A: Entire Sample		
All Firms	0.79	0.74
Panel B: Size		
Lower 33%	1.09	1.17
Middle 33%	1.04	1.03
Upper 33%	0.64	0.59
Panel C: Constrained/Unconstrained		
Constrained Bond	0.87	0.67
Unconstrained Bond	0.56	0.54
Constrained Commercial Paper	0.75	0.58
Unconstrained Commercial Paper	0.51	0.47
Panel D: Growth		
High Growth	1.65	1.85
Low Growth	1.05	1.04
Panel E: Tech		
High Tech	1.22	1.49
Low Tech	0.57	0.54

* Computed over the one-sided Hodrick-Prescott Filtered aggregate series with units in percentage points.

The cash holdings data come from Compustat Quarterly files. Compustat provides financial information on all publicly traded corporations in the United States by corporate observation. We follow the common practice in the literature and use a ratio that divides cash, cash equivalents, and short-term investments by a firm's total assets to represent cash holdings.[7] Financial firms (SIC 6000-6999) and utilities (SIC 4900-4999) are excluded because the former hold cash related to their unique business practices while the latter hold cash primarily for regulatory purposes. In addition, we exclude firms headquartered outside of the United States. The time series used in the estimation is created by computing the mean of this ratio for all firms and captures the average percentage of total assets that firms holds in liquid securities. Mean cash-to-total assets displays noticeable trends over the sample period. Thus, we extract the business cycle components using a one-sided Hodrick-Prescott (HP) filter with a smoothing parameter set at 1600.[8] In addition to the

[6] In the appendix we reestimate the baseline model using the overall EPU Index and the results remain consistent.

[7] It is assumed that cash, cash equivalents, and short-term investments include non-interest earning assets, low-interest earnings assets, and interest-bearing assets as long as they are short-term.

[8] Stock and Watson (1999) note that cyclical components created by the standard two-side HP filter contain both past and

mean cash ratio, the PC Index and real private domestic investment also display trends and are similarly detrended. With the exception of the federal funds rate and the mean cash-to-total assets ratio, all variables are expressed in log values.[9] Table 1 shows the standard deviations of the detrended mean and median cash ratios over the entire sample period for all firms in the sample, as well as for firms in each of the categories that will be analyzed for this paper. However, in order to facilitate comparisons over the different categories of firms, we provide the mean and median cash-to-total assets ratios for all categories of firms in Table 2.

Table 2: Summary Statistics for Cash-to-Total Assets: 1985Q1 – 2014Q4

Panel A: Entire Sample				
	Mean	Median	Std. Dev.	Observations
All Firms	0.1793	0.0830	0.2199	524659
Panel B: Size				
	Mean	Median	Std. Dev.	Observations
Lower 33%	0.2257	0.1257	0.2475	174718
Middle 33%	0.2069	0.1056	0.2364	174886
Upper 33%	0.1054	0.0490	0.1398	175055
Panel C: Constrained/Unconstrained				
	Mean	Median	Std. Dev.	Observations
Constrained Bond	0.1640	0.0747	0.2075	269669
Unconstrained Bond	0.1024	0.0476	0.1391	149286
Constrained Commercial Paper	0.1478	0.0655	0.1935	367210
Unconstrained Commercial Paper	0.0674	0.0356	0.0883	40349
Panel D: Growth				
	Mean	Median	Std. Dev.	Observations
High Growth	0.2144	0.1148	0.2371	169891
Low Growth	0.1803	0.0801	0.2253	169789
Panel E: Tech				
	Mean	Median	Std. Dev.	Observations
High Tech	0.3077	0.2425	0.2634	168983
Low Tech	0.1183	0.0512	0.1636	355676

Note: Summary statistics are computed over the entire sample period for all firms in each category.

future values of the series. In our view, such filtered series are technically inconsistent with the nature of VAR models, which are backward-looking. However, our baseline results remain qualitatively similar when these variables are detrended using a two-sided HP filter. These results are provided in the appendix.

[9] In the appendix, we provide results using the growth rates of these variables. We also augment the system with the Michigan Consumer and the S&P 500 Indexes. The results remain qualitatively similar.

We consider the following vector autoregression (VAR) model:

$$B(L)y_t = d + \epsilon_t, \tag{1}$$

where $y_t = [PC_t,\ EPU_t,\ I_t,\ Cash_t,\ FFR_t]'$ is a vector of endogenous variables in the VAR model, d is a constant term, and ϵ_t are the reduced-form residuals fulfilling $E(\epsilon_t) = 0$ and $E(\epsilon_t\epsilon_t') = \Sigma$. $B(L) = I + B_1L + B_2L^2 + ... + B_NL^N$, where N is the lag length of the VAR model.

The model is estimated with Bayesian methods using the Gibbs sampling algorithm. Being a simulation method, it is also compatible with the simulation requirements of sign restrictions as described below. We impose non-informative priors so that all of our reported results are data-driven. As discussed in Walentin (2014), the determination of lag length is generally difficult, so a researcher should check reasonable variations in lag lengths. Our baseline model is estimated with four lags.[10] Shocks to the PC Index and the EPU Index are identified by imposing sign and zero restrictions on the *contemporaneous* impulse response functions, based on the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014).[11] Along with partisan conflict shocks, we also identify the effects of economic policy uncertainty shocks in order to facilitate comparison between our work and other studies. The sign restrictions approach is attractive since it allows the identification to remain agnostic with respect to the responses of the key variables of interest. Moreover, unlike the Cholesky decomposition (or recursiveness assumption) method, the results based on the sign and zero restrictions approach are not sensitive to the ordering of the variables.[12]

Table 3: Baseline Sign and Zero Restrictions

	PC_t	EPU_t	FFR_t	I_t	$Cash_t$
Partisan Conflict Shock	+	+		-	
Economic Policy Uncertainty Shock	0	+	-	-	

Note: This table reports the sign and zero restrictions imposed on the *contemporaneous* impulse responses in order to identify the two structural shocks of interest. A blank entry indicates that no restrictions are imposed and we are agnostic about the signs.

Table 3 displays the restrictions we impose. Identification of an adverse shock to partisan conflict (i.e. an exogenous rise in the PC Index) is motivated by the theoretical model developed by Azzimonti (2015),

[10] Our baseline results are robust to the choice of lag lengths from two to five. We report our results using five lags in the appendix.

[11] By not imposing more sign restrictions along the response horizons, we strive to make our identification strategy as parsimonious and intuitive as possible.

[12] In the appendix we estimate the model using a Cholesky decomposition approach. Our baseline results survive these tests.

which was discussed in Section 2. We impose a positive sign response of the EPU Index, which implies that economic policy uncertainty increases contemporaneously with a rise in partisan conflict. Based on the prediction of her model, we also impose a negative sign response of private investment, which conveys our belief that investment should fall *on impact* in response to a shock to partisan conflict. We are agnostic about the effect of an increase in partisan conflict on firms' cash holdings, and let the data decide on the response of the average cash-to-total assets ratio to a partisan conflict shock.

To identify adverse economic policy uncertainty shocks, we impose a fall in both the federal funds rate and investment upon impact. Benati (2013) finds evidence that a shock to the EPU Index leads to a decrease in industrial production growth and a decrease in the real federal funds rate. We also motivate the negative effect of an economic policy uncertainty shock on investment based on the results from Bhagat and Obreja (2013), which was discussed in Section 2.

To differentiate economic policy uncertainty shocks from partisan conflict shocks, we assume that the former does not affect political disagreement within the same period; in other words, shocks to economic policy uncertainty are assumed not to change partisan conflict on impact, but their effect is unrestricted afterwards. This assumption is motivated by the following:

- Azzimonti (2014, 2015) generally discuss that economic policy uncertainty shocks leaves partisan conflict unaffected during the current period. The recent financial crisis serves as an example. The underlying causes that triggered an economic policy uncertainty shock had little to do with current period politics. However, when politicians afterwards start debating financial regulation meant to prevent another crisis (e.g. the various versions of The Federal Reserve Transparency Act that have been brought before the US Congress) or when there is significant disagreement between elected officials regarding interest rate policies set by the Federal Reserve, partisan conflict can be higher.

- Totally exogenous events like wars or terrorist events can trigger spikes in economic policy uncertainty without causing much change in partisan conflict. The reason is that politicians may be in general agreement about what the appropriate policy response should be. For example, after the Sept. 11^{th} attacks, when economic policy uncertainty spiked, politicians in both parties generally agreed that increased security at airports and military actions in Afghanistan were appropriate policy responses. Afterwards, policy disagreements stemming from these shocks have become more contentious.

In section 6.2, we show that our baseline results are robust across different shock identification schemes. In other words, our results are not sensitive to the contemporaneous zero restriction imposed on the PC

Index conditional on the economic policy uncertainty shock.

5 Empirical Results

5.1 Baseline Results: Impact of PC Shocks Across All Firms

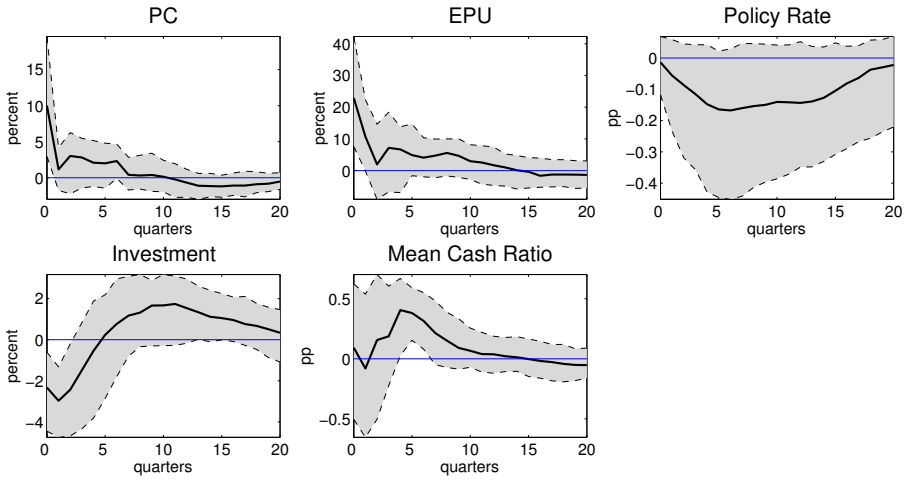
The estimated impulse responses to a 10% positive shock to US partisan conflict are shown in Figure 2.[13] As suggested by Sims and Zha (1999), the impulse responses are presented along with 68% probability bands. We find significant, though short-lived, effects on the EPU index and private investment. In particular, the model predicts that a 10% shock to the PC Index is associated with a 23% increase in the EPU Index and a 3% decrease in private investment. These results are consistent with Azzimonti (2015), who showed that a 10% increase in the PC Index lowers private investment by about 3.4%. More importantly, the model predicts that a positive shock to the PC Index exerts a significant effect on the average cash-to-total assets ratio, which rises after the shock and reaches its peak of 0.4 percentage points above trend after four quarters, which is 50.6% of the standard deviation of the detrended series. Since the median asset value for the entire sample is USD $136,862,000$ in 2009 dollars, our baseline results imply that a median firm increases cash holding by USD $547,448$, an economically significant amount of money. The federal funds rate falls after a partisan conflict shock, but the effect is insignificant. It is plausible that the delayed response of the increase in the average cash-to-total assets ratio following a partisan conflict shock is due to portfolio adjustment costs. That is, firms may not be able to immediately and costlessly adjust how total assets are held.

Figure 3 displays the impulse responses to a 10% positive shock to the EPU Index. The figure shows that a positive economic policy uncertainty shock exerts a negative and significant impact on both investment and interest rates. Specifically, private investment falls by 1% and the federal funds rate decreases by 13 basis points at the trough. Moreover, economic policy uncertainty shocks exert no significant effect on the PC Index.

It is noticeable that an economic policy uncertainty shock also raises the average cash-to-total assets ratio of firms significantly with a peak effect of 0.1 percentage points above trend, occurring five quarters after the impact, which is 12.66% of the standard deviation of the mean cash-to-total assets ratio.

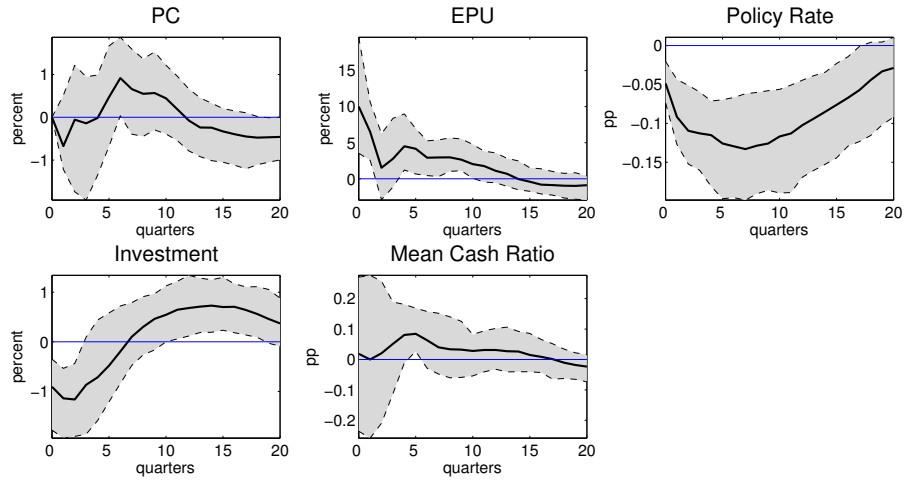
[13] As discussed by Fry and Pagan (2011) and Baumeister and Hamilton (2015), sign restrictions identify a set of models and hence do not uniquely pin down a single structural model. Therefore, the estimation gives no information about the size of identified structural shocks. To facilitate comparison, we normalize the results such that a partisan conflict shock (economic policy uncertainty shock) leads to a rise in the PC Index (EPU Index) by 10%.

Figure 2: Impulse Responses of Mean Cash-to-Total Assets to a 10% Shock to the Partisan Conflict Index Across All Firms



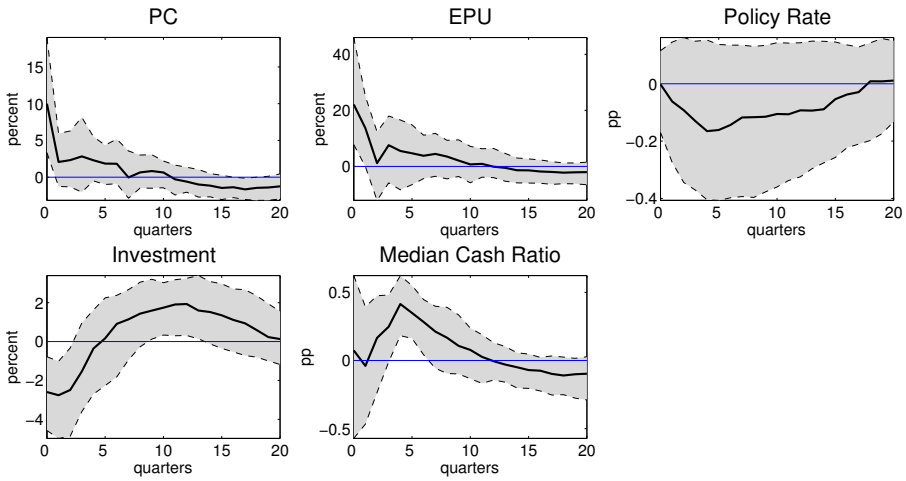
Note: The solid line depicts the median impulse response and the dashed lines form the 68% probability bands. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014).

Figure 3: Impulse Responses of Mean Cash-to-Total Assets to a 10% Shock to the **Economic Policy Uncertainty Index** Across All Firms



Note: The solid line depicts the median impulse response and the dashed lines form the 68% probability bands. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014).

Figure 4: Impulse Responses of *Median* Cash-to-Total Assets to a 10% Shock to the Partisan Conflict Index Across All Firms



Note: The solid line depicts the median impulse response and the dashed lines form the 68% probability bands. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014).

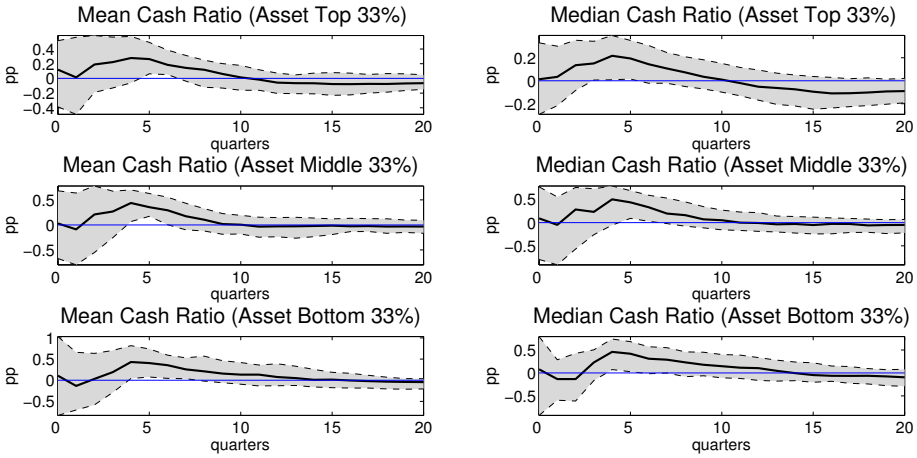
In addition to the analysis of how the average cash-to-total assets ratio responds to a partisan conflict shock, which could potentially be affected by outliers in the sample, we also focus on the *median* cash-to-total assets ratio. Figure 4 displays the impulse response functions when cash-to-total assets are measured by the median as opposed to the mean. The figure tells a similar story. A shock to the PC Index is associated with a similar increase in cash-to-total assets, making the results from Figure 2 robust to an alternative way of measuring cash-to-total assets.

5.2 Impact of PC Shocks Across the Distribution of Total Assets

In this subsection we focus on how the average and median cash-to-total assets ratios for firms across the distribution of total assets respond to a partisan conflict shock. Our motivation is twofold. Firstly, as we will soon discuss in Section 5.3.1, firms in the bottom one-third of the total assets distribution can be generally considered financially constrained. Firms in the top one-third of this distribution are generally considered financially unconstrained. Indeed, Opler, Pinkowitz, Stulz, and Williamson (1999) show that larger firms tend to hold lower cash balances. This is true of our sample as well and is confirmed in Panel B of Table 2. Secondly, as Kueng, Yang, and Hong (2014) discuss, firm size is very much related to where a firm exists in its life cycle. Thus, by focusing on the middle of this distribution, we can examine how firms that might be

between life-cycle stages react to political uncertainty.

Figure 5: Impulse Responses of Mean Cash-to-Total Assets to a 10% Shock to the Partisan Conflict Index Across the Distribution of Total Assets



Note: The solid line depicts the median impulse response and the dashed lines form the 68% probability bands. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014). Asset Top 33%, Asset Middle 33%, and Asset Bottom 33% refer to the top, middle, and bottom one-third of the distribution of firms based on total asset size, respectively. The Asset Bottom 33% group also represents financially constrained firms and the Asset Top 33% group represents financially unconstrained firms. Full results are available upon request.

Figure 5 shows the responses of the mean and median cash-to-total assets ratios for firms across the total assets distribution. Following a 10% shock to the PC Index, both the mean and median cash-to-total assets ratios increase across the entire asset size distribution. However, both ratios show the largest increase, about 0.4 percentage points above trend, for firms in the bottom one-third (financially constrained firms) as well as for firms in the middle one-third of the distribution. In fact, the increase in both ratios is very similar for these parts of the distribution. Relative to the standard deviations of the mean cash-to-total assets ratios, the 0.4 percentage point increase relative to trend is 36.7% for the bottom one-third and 38.5% for the middle one-third. The mean and median cash-to-total assets ratios for firms in the top one-third increase by only 0.2 percentage points relative to trend. This increase is 62.5% of the standard deviation of the detrended cash-to-total assets ratio. However, we should expect the cash ratio of larger firms to exhibit less volatility because these firms tend to have more external financing options. Conversely, smaller firms tend to be relatively young and have not yet developed strong ties to external financing that might be available

to these larger firms. Thus, it makes sense that the larger increases in the mean and median cash ratios occur for firms in the bottom two-thirds of the total assets distribution. Also, the similarities between the increases in the mean and median cash ratios for the bottom and middle of the distribution could be related to the fact that these firms hold similar amounts of total assets as cash, both on average and at the median, as indicated by Table 2. Importantly, Figure 5 shows that firms of all sizes pay attention to political activity and respond to more intense partisan conflict by increasing the percentage of total assets that are held as cash.

5.3 Impact of PC Shocks Across Various Firm and Industry Characteristics

The analysis thus far has focused on the mean and median cash-to-total assets ratios for all firms in the Compustat database. However, it is important to recognize that certain categories of firms will have different liquidity needs, varying degrees of access to external funding, and different levels of cash on hand. Thus, these firms should also react differently to partisan conflict and economic policy uncertainty shocks. In this section, we separate firms based upon the following criteria: their level of financial constraint, the rate of sales growth, and whether or not firms operate in a "high tech" industry.

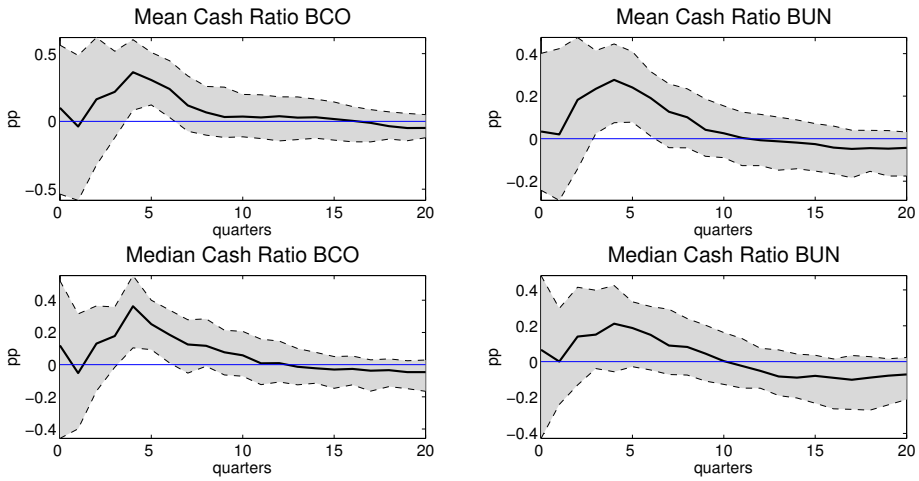
5.3.1 Financially Constrained versus Financially Unconstrained Firms

First, we compare the responses of cash holdings of financially constrained and unconstrained firms. Financially constrained firms are those that do not have easy access to outside capital. During periods of high political uncertainty, these firms will find it especially hard to develop or maintain external financing. In other words, managers of these firms should be more likely to move a higher percentage of the firm's assets to cash.

The literature uses several proxies to determine a firm's level of financial constraint. We employ three of the most common: bond rating, commercial paper rating, and total asset size.[14] Almeida, Campello, and Weisbach (2004) use a firm's S&P bond rating to determine whether or not it is financially constrained. Similarly, Calomiris, Himmelberg, and Wachtel (1995) and Almeida, Campello, and Weisbach (2004) also use a firm's commercial paper rating as a measure of financial constraint. Finally, Gilchrist and Himmelberg (1995) and Almeida, Campello, and Weisbach (2004) consider firms with a smaller value of total assets to be financially constrained and firms with a larger value of total assets to be financially unconstrained.

[14] Additionally, we use a firm's Altman (1968) Z-score as a determinant of financial constraint. A firm with a Z-score of 1.81 or less has a higher likelihood of failure and is considered financially constrained. A firm with a Z-score of 2.99 or above has a lower probability of failure and is thus considered financially unconstrained. Our findings are robust to this alternative measure of financial constraint and are available in the appendix.

Figure 6: Impulse Response of Mean and *Median* Cash-to-total Assets Based on Bond Rating to a 10% Shock to Partisan Conflict



Note: The solid line depicts the median impulse response and the dashed lines form the 68% probability bands. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014). BCO stands for financially constrained firms and BUN stands for financially unconstrained firms based on bond rating. Full results are available upon request.

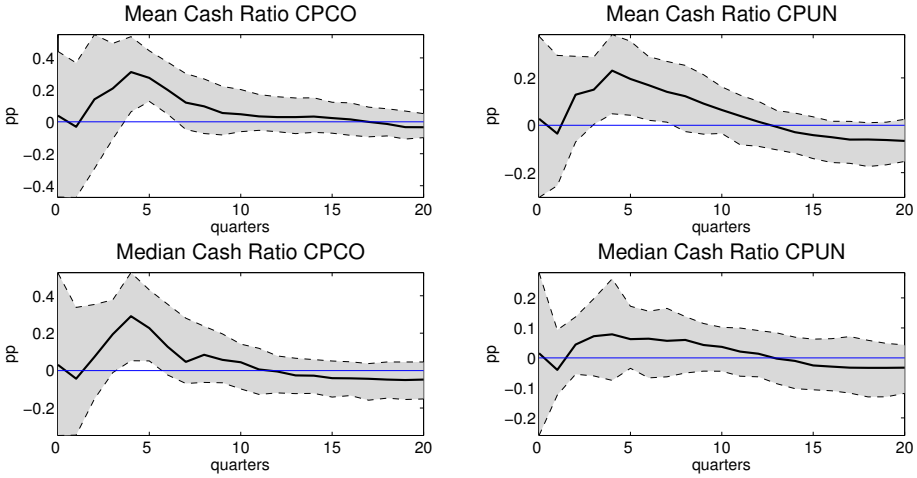
Figure 6 displays the estimated impulse response functions of the mean and median cash-to-total assets ratios of financially constrained and unconstrained firms, respectively, where the determination of financial constraint is based on bond rating. A firm is considered financially constrained if it has never received a rating from S&P and issues a positive level of debt. Firms that issue debt and have a rating are considered financially unconstrained.[15] The statistics presented in Panel C of Table 2 show that non-rated firms with debt (constrained firms) hold considerably more cash as a percentage of total assets than rated firms with debt (unconstrained) at both the mean and median. As the top panel in Figure 6 shows, the mean cash-to-total assets ratio for financially constrained firms rises by almost 0.4 percentage points above trend in response to a 10% shock to the PC Index, whereas the rise for financially unconstrained firms is approximately 0.3 percentage points. In both cases the increase occurs approximately four quarters after the shock. These increases in cash represent 46% and 53.6% of the standard deviations of the detrended mean cash ratios, respectively. The bottom panel of Figure 6 shows that the median cash-to-total assets ratio also increases for financially constrained firms whereas the increase in cash-to-total assets for financially unconstrained firms

[15] Almeida, Campello, and Weisbach (2004) categorize firms with no leverage, and thus no bond rating, as unconstrained. Upon further analysis, though, these firms hold significantly more cash than other financially unconstrained firms. Thus, we drop firms without leverage or a bond rating from the data set. A similar strategy is applied to firms with no leverage and no commercial paper rating.

is no longer significant.

The results presented in Figure 7 show the responses of the mean and median cash-to-total assets ratios for financially constrained and unconstrained firms based on commercial paper rating. An unrated firm that has a positive amount of debt is considered financially constrained while a rated firm that has a positive amount of debt is considered financially unconstrained.[16] The statistics in panel C of Table 2 show that, on average, constrained firms, based on commercial paper rating, hold almost 15% of total assets as cash compared with unconstrained firms, which on average hold only 6.74% of total assets as cash. As shown in the top panel of Figure 7, following a 10% shock to the PC Index, the mean cash-to-total assets ratio for financially constrained firms increases by almost 0.3 percentage points above trend, which represents 40% of the standard deviation of the detrended mean cash-to-total assets ratio. The response of the mean cash-to-total assets ratio for financially unconstrained firms, while statistically different from zero, shows a more muted response of only 0.2 percentage points. However, this increase above trend is still a little more than 39% of the detrended cash-to-total assets ratio for unconstrained firms as measured by commercial paper ratings.

Figure 7: Impulse Response of Mean and *Median* Cash-to-total Assets Based on Commercial Paper Rating to a 10% Shock to Partisan Conflict



Note: The solid line depicts the median impulse response and the dashed lines form the 68% probability bands. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014). CPCO stands for financially constrained firms and CPUN stands for financially unconstrained firms based on commercial rating. Full results are available upon request.

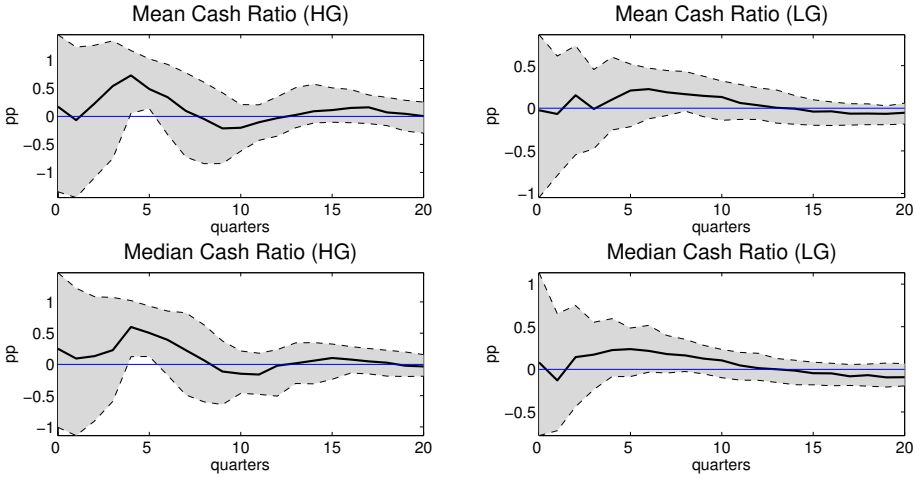
[16] Again, firms with no debt and no rating are excluded.

The behavior of the median cash-to-total assets ratio based on commercial paper rating, presented in the bottom panel of Figure 7, is similar to that seen when using bond rating. In response to a 10% shock to the PC Index, the median ratio for financially constrained firms increases significantly by 0.3 percentage points after four quarters but the ratio for financially unconstrained firms shows no significant movement. Overall, our evidence shows that financially constrained firms are indeed more susceptible to partisan conflict shocks.

5.3.2 High Growth versus Low Growth Firms

Growth firms are expected to hold a higher percentage of assets as cash during periods of intense partisan conflict. This is because growth firms, like financially constrained firms, tend to be relatively young. Moreover, growth firms are more likely to have a higher percentage of assets devoted to research and development and other risky endeavors. The managers of these firms are likely to reduce spending in these risky areas if they believe that political conflict reduces the probability that these investments will pay off. The distinction between high growth and low growth firms is based on a ranking of year-on-year sales growth, where the top 33% of firms are considered high growth firms and the bottom 33% are considered low growth firms.

Figure 8: Comparison of Impulse Responses of Mean and *Median* Cash-to-Total Assets for High Growth and Low Growth Firms



Note: The solid line depicts the median impulse response and the dashed lines form the 68% probability bands. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014). HG stands for high growth and LG stands for low growth. Firms are classified based on year-on-year sales growth. Full results are available upon request.

Indeed, as Panel D of Table 2 shows, high growth firms, on average, hold slightly more than 21% of total assets as cash. At the median, these firms hold 11.48% of total assets as cash. Comparatively, low growth firms, on average, hold 18.03% of total assets as cash and only 8.01% of total assets as cash at the median.

In line with this prediction, the results in the top panel of Figure 8 show that the average cash-to-total assets ratio for high growth firms increases by more than 0.5 percentage points above trend approximately four quarters after a 10% shock to the PC Index, representing 30% of the standard deviation of the detrended cash-to-total assets ratio. Conversely, the mean cash-to-total assets ratio for low growth firms is not different from zero. The bottom panel reveals similar findings when using the median cash-to-total assets ratio.

5.3.3 High Tech Firms versus Low Tech Firms

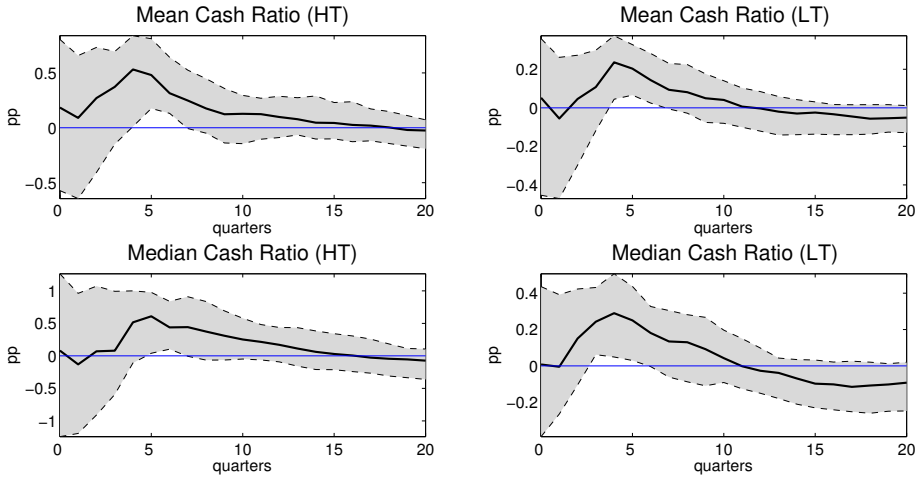
Finally, we compare the response of the average cash-to-total assets ratios following a shock to partisan conflict for high tech and low tech firms. Booth and Zhou (2013) find that the average cash-to-total assets ratio for high tech firms increased by a factor of three between 1980 and 2006 while the cash holdings of low tech firms showed little change. Both Booth and Zhou (2013) and Brown, Fazzari, and Petersen (2009) point out that high tech firms tend to finance research and development with cash. This is because high tech firms tend to be young and the opportunities for future growth are uncertain. However, as noted by Brown, Fazzari, and Petersen (2009), when high tech firms exhaust the ability to finance research and development with cash they will attempt to continue financing R&D by making external equity issuances. However, if this external financing becomes scarce during periods of high political uncertainty, then high tech firms would be forced to delay R&D projects in order to have enough cash to handle day-to-day affairs.

Conversely, low tech firms, which tend to be have more certain growth prospects might still be able to attract equity financing during periods of uncertainty. Low tech firms might also be in a better position to use debt financing as well. Thus, following an increase in partisan conflict, high tech firms should hold a larger percentage of total assets as cash compared to low tech firms. Following Brown, Fazzari, and Petersen (2009), we select high tech firms based upon three digit SIC codes and include pharmaceuticals, office and computing equipment, communications equipment, electronic components, scientific instruments, medical instruments, and software.

As revealed by Panel E of Table 2, the difference in cash holdings between high tech and low tech firms is stark. High tech firms hold 30.77% of total assets as cash on average compared with just 11.83% for low tech firms. Even at the median, high tech firms hold 24.25% of total assets as cash while low tech firms hold only 5.12%.

Figure 9 shows that the mean and median cash-to-total assets ratios for both high tech and low tech firms display significant increases five quarters after a 10% partisan conflict shock. As expected, the increases in the mean and median ratios for high tech firms are larger than the increases exhibited by low tech firms. The increase in both ratios for high tech firms reach a peak of approximately 0.5 percentage points above trend, while for low tech firms, the increases in the mean and median cash-to-total assets ratios are 0.3 percentage points. These increases above trend of cash-to-total assets represent 41% and 52.63% of the standard deviations of the detrended high tech and low tech cash-to-total assets ratios, respectively. This provides evidence for our hypothesis that high tech firms are more vulnerable to partisan conflict shocks.

Figure 9: Comparison of Impulse Responses of Mean and *Median* Cash-to-Total Assets for High Tech and Low Tech Firms



Note: The solid line depicts the median impulse response and the dashed lines form the 68% probability bands. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014). HT stands for high tech firms and LT stands for low tech firms. Definitions of high and low tech are taken from Brown, Fazzari, and Petersen (2009). Full results are available upon request.

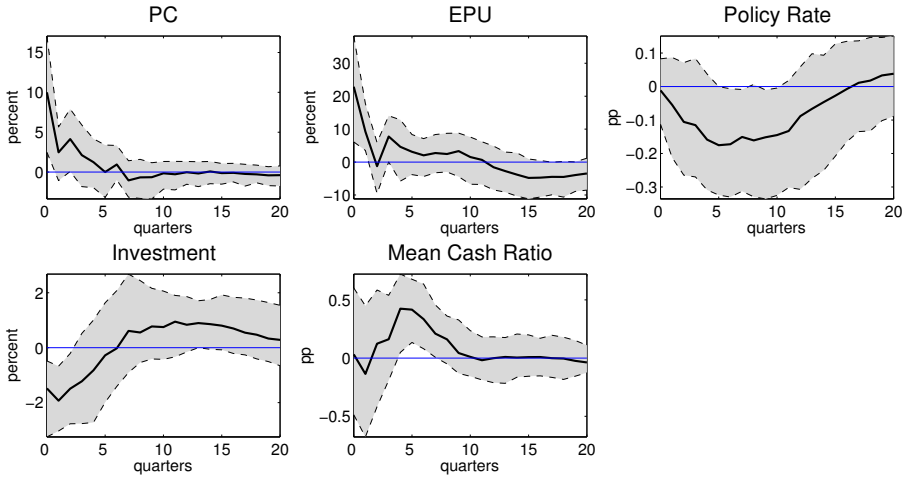
6 Robustness Checks

6.1 Excluding the Zero Lower Bound

Beginning in 2008, in response to the worsening financial crisis, the Federal Reserve's Federal Open Market Committee (FOMC) began lowering the targeted federal funds rate. These actions culminated in an eventual target range for the federal funds rate between 0 and 0.25%, referred to by economists as the "zero lower

bound." During this period, the US political system experienced some very contentious political events, reflected by large increases in the PC Index. Since both high partisan conflict and low interest rates are associated with firms holding more cash, it is worth checking to see how this period of historically low interest rates, coupled with exceptionally high partisan conflict has affected the results that have been presented thus far.

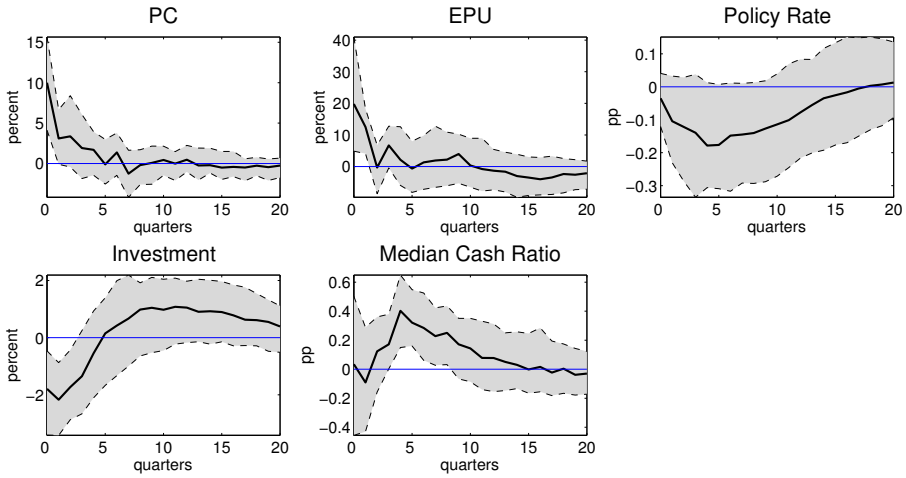
Figure 10: Robustness of Impulse Response of Mean Cash-to-Total Assets to a 10% Shock to Partisan Conflict Index Excluding the Zero Lower Bound



Note: The solid line depicts the median impulse response and the dashed lines form the 68% probability bands. The estimated time period is from 1985Q1 to 2008Q3. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014).

We re-estimate the baseline model, but truncate the data set after the third quarter of 2008, the quarter prior to the FOMC setting the target rate below one percent. The results, presented in Figure 10, are consistent with those shown in Figure 2. After an initial insignificant fall, the average cash-to-total assets ratio shows an increase and reaches a significant 0.4 percentage point above trend peak four quarters after the shock. The response of the median cash-to-total assets ratio, presented in Figure 11, shows similar results, but becomes significant sooner than the forth quarter following the initial shock.

Figure 11: Robustness of Impulse Response of *Median* Cash-to-Total Assets to a 10% Shock to Partisan Conflict Index Excluding the Zero Lower Bound



Note: The solid line depicts the median impulse response and the dashed lines form the 68% probability bands. The estimated time period is from 1985Q1 to 2008Q3. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014).

Investment experiences a 2% decline almost immediately after the shock, compared with a 3% decline when zero lower bound observations are included. Our findings suggest that the presence of the zero lower bound may have amplified the effect of a partisan conflict shock on investment. This finding is in fact consistent with the theoretical predictions in Basu and Bundick (2012) and Johannsen (2014).

6.2 Alternative Shock Identification

In this section, we present evidence that our baseline results in Section 5 are robust to a range of alternative shock identification schemes.

6.2.1 Alternative Sign Restrictions Scheme

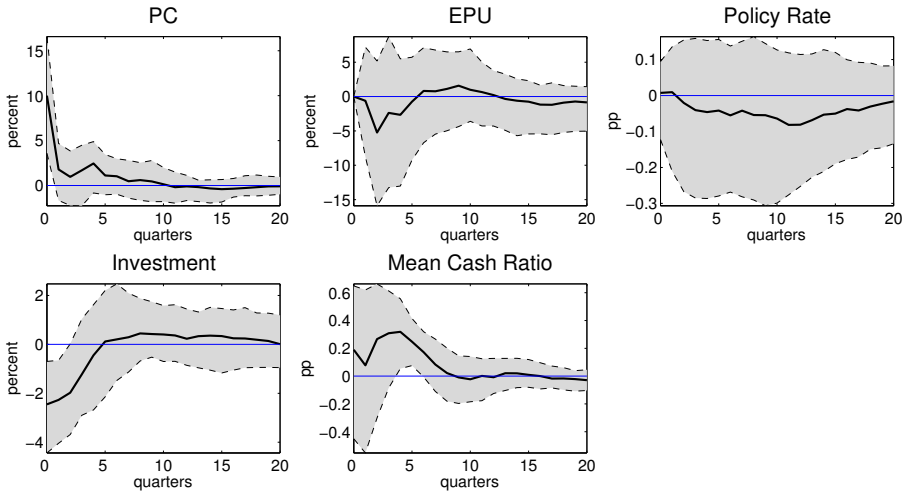
Table 4 displays our alternative sign and zero restrictions scheme. Rather than assuming a zero contemporaneous response of the PC Index conditional on an adverse economic policy uncertainty shock, we make the assumption in the reverse direction: we assume that economic policy uncertainty does not respond to an adverse partisan conflict shock within the same period. Moreover, we are agnostic about the contemporaneous response of partisan conflict when an economic policy uncertainty shock occurs.

Table 4: Alternative Sign and Zero Restrictions

	PC_t	EPU_t	FFR_t	I_t	$Cash_t$
Partisan Conflict Shock	+	0		-	
Economic Policy Uncertainty Shock		+	-	-	

Note: This table reports the sign and zero restrictions imposed on the *contemporaneous* impulse responses in order to identify the two structural shocks of interest. A blank entry indicates that no restrictions are imposed and we are agnostic about the signs.

Figure 12: Robustness of Impulse Response of Mean Cash-to-Total Assets to a 10% Shock to the Partisan Conflict Index Across All Firms Using an Alternative Sign and Zero Restrictions Scheme

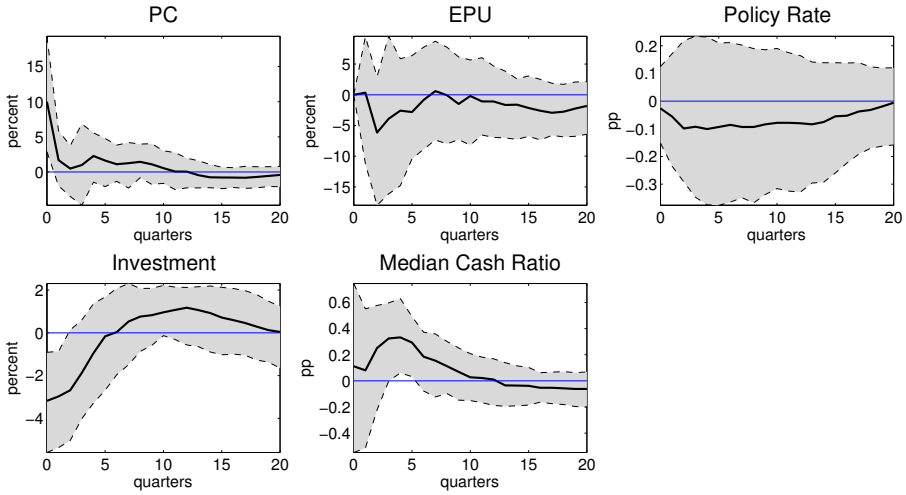


Note: The solid lines depicts the median impulse response and the dashed lines form the 68% probability bands. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014). Sign and zero restrictions are imposed according to the alternative identification scheme shown in Table 4 and discussed in Section 6.2.1.

Figures 12 and 13 display the impulse responses of mean and median cash-to-total assets, respectively, following a 10% increase in the PC Index. Both the mean and median cash-to-total assets ratios rise by 0.3 percentage points above trend four quarters after the shock. Private investment falls by 2% on impact. Thus, our baseline line results remain robust to this alternative identification.[17]

[17]The impulse responses to an economic policy uncertainty shock under the alternative sign restriction scheme presented in Table 4 are provided in the appendix.

Figure 13: Robustness of Impulse Response of *Median* Cash-to-Total Assets to a 10% Shock to the Partisan Conflict Index Across All Firms Using an Alternative Sign and Zero Restrictions Scheme



Note: The solid lines depicts the median impulse response and the dashed lines form the 68% probability bands. Identification is made using sign and zero restrictions according to the algorithm proposed by Arias, Rubio-Ramirez, and Waggoner (2014). Sign and zero restrictions are imposed according to the alternative identification scheme shown in Table 4 and discussed in Section 6.2.1.

6.3 Firm-Level Analysis

In this section we complement the aggregate structural model with firm level fixed-effects regressions. It is worth discussing why we use a fixed-effects OLS specification as opposed to a panel VAR specification. Firm-level cash holdings decisions are arguably unlikely to cause changes in aggregate level uncertainty such as economic policy uncertainty and partisan conflict. For example, it is unlikely that changes in a firm's cash holdings would lead to heighten partisan conflict. However, discussion in Sections 2 and 3, as well as the results presented in Section 5 lead us to believe that aggregate level uncertainty *will* impact a firm's cash holdings as a percentage of total assets. Thus, similar to Gao and Grinstein (2014), we choose to analyze the impact of aggregate uncertainty using a specification traditional to the cash holdings literature rather than considering a panel VAR.[18]

$$Cash_{i,t} = \beta_1 PC_t + \beta_2 EPU_t + \beta_3 MidtermElection_t + \beta_4 PresidentialElection_t + \boldsymbol{\gamma}\mathbf{X}_{i,t} + \alpha_i + \epsilon_{i,t} \quad (2)$$

[18] Juessen and Linnemann (2010) point out that the impulse response functions from a panel VAR can be affected by biased coefficients on individual variables in unpredictable ways. However, the methods recommended in the literature for correcting bias in a panel VAR setting can be hard to implement when a data set is unbalanced and contains missing values, as is the case with firm-level data sets. For example, firms having at least one missing quarter make up of over seventy percent of our data set. Thus, given our motivation and these concerns, we do not consider a panel VAR specification.

The general regression specification is given in equation 2. As in the aggregate structural model, PC Index is the log of the Partisan Conflict Index and EPU Index is the log of the news-based Economic Policy Uncertainty Index. We also include the variables Midterm Election and Presidential Election to indicate the years in which these elections are held, respectively. This approach allows us to make some comparisons to Julio and Yook (2012) and also gives us the ability to look at the impact of partisan conflict during non-election years.

X is a vector of firm level control variables that are common to the cash holdings literature and are described below. Market-to-Book ratio is the market value of a firm's equity to its book value and is a proxy for a firm's growth opportunities. Cash Flow measures a firm's earnings after paying out interest, dividends, and taxes divided by total assets. Net Working Capital-to-Assets is a firm's current assets net of cash, cash equivalents, short-term assets, and current liabilities to total assets. Leverage measures a firm's long-term and current debt as a percentage of total assets. R&D-to-Sales is a measure of a firm's research and development expenditures as a percentage of total sales. Acquisitions-to-Assets measures a firm's acquisitions for the current quarter as a percentage of total assets. Dividend is an indicator variable that equals one if a firm issues a dividend during the current quarter and zero otherwise. Investment Grade is also an indicator variable that equals one if a firm has an investment grade bond or commercial paper rating and zero otherwise. Size is the natural log of a firm's total assets measured in 2009 dollars. CF Volatility measures the standard deviation of industry-level cash flows over the previous five years based on two-digit SIC codes. The value assigned to each firm is the cash flow volatility for the industry in which the firm belongs. This follows the method suggested by Opler, Pinkowitz, Stulz, and Williamson (1999).

The model includes firm level fixed-effects to control for any unobserved heterogeneity that might be correlated with the variables in the model. Standard errors are clustered at the firm level. With the exception of the Dividend and Investment Grade indicator variables, all firm-level controls are winsorized at the 1% level to remove potential outliers.

The results from the estimation of equation 2 are presented in column 1 of Table 5.[19] Importantly, an increase in the PC Index is positively correlated with an increase in cash-to-total assets. Thus, the positive correlation between cash holdings and partisan conflict that was established in the structural model is also present here. We also show positive coefficients on the Midterm Election and Presidential Election indicator variables. However, the increase in cash holdings is larger during midterm election years and, in fact, the

[19]In addition to the specifications presented in columns 1 and 2, we also test specifications in which we lag the PC and EPU Indexes by one quarter, exclude observations post-2008 to ensure that the zero lower bound period is not driving the results, and substitute the Overall EPU Index for the News-based EPU Index. The results remain consistent.

point estimate on Presidential Election is not statistically significant. The control variables are similar to results from the cash holdings literature.

Table 5: Cash Holdings and Partisan Conflict

	(1) Cash		(2) Δ Cash
Market-to-Book	0.00601***	Δ Market-to-Book	−0.0000312
	(0.000379)		(0.000346)
Cash Flow	0.0476***	Δ Cash Flow	0.00638
	(0.00887)		(0.00504)
Net Working Capital-to-Assets	−0.0407***	Δ Networking Capital	−0.0645***
	(0.00301)		(0.00318)
Capital Expend.-to-Assets	−0.230***	Δ Capital Expend.-to-Assets	−0.238***
	(0.0199)		(0.00969)
Leverage	−0.128***	Δ Leverage	−0.0977***
	(0.00408)		(0.00415)
R&D-to-Sales	0.0166***	Δ R&D-to-Sales	0.00268***
	(0.00135)		(0.000531)
Acquisitions-to-Assets	−0.208***	Δ Acquisitions-to-Assets	−0.334***
	(0.00911)		(0.00726)
Dividend	0.00249	Δ Dividend	−0.00225***
	(0.00194)		(0.000658)
Investment Grade	−0.0153***	Δ Investment Grade	0.000928
	(0.00283)		(0.00127)
Size	−0.00510***	Δ Size	0.0952***
	(0.00124)		(0.00317)
CF Volatility	0.000472	Δ CF Volatility	0.0000704
	(0.000483)		(0.000172)
PC Index	0.0185***	PC Index Growth	0.00856***
	(0.00270)		(0.00106)
EPU Index	−0.00501***	EPU Index Growth	−0.00137***
	(0.000939)		(0.000363)
Midterm Election	0.00237***	Midterm Election$_{nextyear}$	0.00211***
	(0.000492)		(0.000265)
Presidential Election	0.000474	Presidential Election$_{nextyear}$	0.00107***
	(0.000497)		(0.000257)
Constant	0.195***	Constant	−0.00282***
	(0.0219)		(0.000107)
Observations	420063		392785
Adjusted R^2	0.723		0.0941

Note: Standard errors in parentheses are clustered at the firm level. * $p < .10$, ** $p < .05$, *** $p < .01$. All regressions include firm fixed-effects. Δ represents the first difference. Cash refers to the ratio of cash-to-total assets. PC Index and EPU Index in column 1 are in natural logs. PC Index Growth and EPU Index Growth are the differenced natural log of the PC Index and EPU Index, respectively.

In order to make this model more comparable to the macroeconomic structural model, and in an attempt to control for nonstationary variables we estimate a second regression specification using the first difference of all variables.[20] In doing so, we also follow the approach of Bates, Kahle, and Stulz (2009). The results from this regression are presented in column 2. The only exception is that we replace the Midterm and Presidential Election variables with indicator variables that equal one if an election will be held in the following year. This approach is similar to that used by Azzimonti (2015). A positive coefficient on either of these variables would indicate that the change in a firm's cash-to-total assets will be larger in anticipation of an election year. This is the correlation we would expect if firms associate election years with uncertainty. Also, since PC Index and EPU Index are initially measured in natural logs, taking the first difference of these variables transforms them into growth rates. We again observe a positive correlation between the PC Index and cash-to-total assets. Similarly, the estimated coefficient on Midterm Election is again positive. However, we now observe a positive coefficient on Presidential Election, indicating that the change in a firm's cash-to-total assets ratio is larger when an election will be held in the next calendar year. We do observe some differences in signs and statistical significance for the control variables across models 1 and 2, notably the coefficients on Market-to-Book, Cash Flow, Dividend, and Investment Grade.

We also observe a negative correlation between the EPU Index and cash-to-total assets in both columns 1 and 2. These results are counter to the positive correlation between these variables as discussed in Gao and Grinstein (2014). A major factor contributing to such a difference is that Gao and Grinstein (2014) restrict their sample to the top 25% of firms as measured by total assets, but the results presented in Table 5 of this paper include firms across the entire total assets distribution. We thus conduct additional regressions where we divide the sample into quartiles as measured by total assets size. These results are provided in Table 6. We find that the negative correlation is statistically significant for the smallest 50% of firms and not statistically significant for firms in the 50^{th} – 75^{th}. The correlation between the EPU Index and cash-to-total assets is positive and statistically significant for the top 25% of firms as measured by total assets, showing that our results remain consistent with those presented in Gao and Grinstein (2014). Furthermore, in unreported results, the negative correlation between the EPU Index and cash-to-total assets exists even when we remove the PC Index and election indicator variables from the regressions using both the entire sample and total asset quartiles. Thus, multicollinearity between the EPU and the PC Index is unlikely to explain the result.

[20]Due to missing observations in the Cash Holdings variable, we were unable to detrend cash holdings for each firm using a Hodrick-Prescott filter. Deleting all firms that had at least one missing quarter resulted in the loss of over seventy percent of the data set.

Table 6: Cash Holdings and Partisan Conflict: Quantile Regressions

	(Quartile 1) Cash Holdings	(Quartile 2) Cash Holdings	(Quartile 3) Cash Holdings	(Quartile 4) Cash Holdings
Market-to-Book	0.00515***	0.00922***	0.01332***	0.00987***
	(0.00048)	(0.00086)	(0.00123)	(0.00163)
Cash Flow	0.02071*	0.00717	−0.03369*	−0.0542**
	(0.01060)	(0.01765)	(0.02005)	(0.0236)
Net Working Capital-to-Assets	−0.02323***	−0.11868***	−0.10416***	−0.130***
	(0.00378)	(0.00767)	(0.00827)	(0.0119)
Capital Expend.-to-Assets	−0.11741***	−0.29705***	−0.27317***	−0.333***
	(0.03435)	(0.03413)	(0.03259)	(0.0449)
Leverage	−0.10676***	−0.17993***	−0.11098***	−0.0849***
	(0.00588)	(0.01012)	(0.00735)	(0.00709)
R&D-to-Sales	0.01611***	0.01143***	0.01389***	0.0212***
	(0.00170)	(0.00166)	(0.00535)	(0.00598)
Acquisitions-to-Assets	−0.35422***	−0.22026***	−0.18023***	−0.128***
	(0.04139)	(0.02062)	(0.01298)	(0.00918)
Dividend	0.02889***	0.00427	−0.00296	0.00130
	(0.02890)	(0.00442)	(0.00268)	(0.00262)
Investment Grade	0.11022***	0.00500	0.00093	−0.0146***
	(0.00262)	(0.00931)	(0.00268)	(0.00252)
Size	0.01099***	−0.00183	−0.01270***	−0.00684***
	(0.00359)	(0.00354)	(0.00274)	(0.00214)
CF Volatility	0.00075	0.0002	0.00012	0.00174**
	(0.00166)	(0.00072)	(0.00089)	(0.000729)
PC Index	0.03419***	0.00774	0.00611	0.0308***
	(0.00753)	(0.00558)	(0.00409)	(0.00299)
EPU Index	−0.01656***	−0.00494***	0.000023	0.00264***
	(0.00266)	(0.00185)	(0.00134)	(0.00100)
Midterm Election	0.00243	0.00307***	0.00183**	0.00156***
	(0.00151)	(0.00094)	(0.00073)	(0.000471)
Presidential Election	0.00305**	0.00118	−0.00107	−0.00221***
	(0.00151)	(0.001)	(0.00073)	(0.000470)
Constant	0.01883	0.24999***	0.31851***	0.0775*
	(0.05614)	(0.05818)	(0.04536)	(0.0411)
Observations	102046	105199	106023	106795
Adjusted R^2	0.622	0.84	0.804	0.724

Note: Standard errors in parentheses are clustered at the firm level. * $p < .10$, ** $p < .05$, *** $p < .01$. All regressions include firm fixed-effects. Δ represents the first difference. Cash refers to the ratio of cash-to-total assets. PC Index and EPU Index in column 1 are in natural logs. PC Index Growth and EPU Index Growth are the differenced natural log of the PC Index and EPU Index, respectively.

More importantly, the correlation between the PC Index and cash-to-total assets remains *positive* across all quartiles, although it is only statistically significant in the bottom and top quartiles. In these quartiles, we do observe a stronger correlation with cash-to-total assets than the correlation between the EPU Index

and cash-to-total assets, consistent with our findings in the aggregate model. Overall, the results in this section imply that *while firms might react differently to uncertainty regarding economic policy, they behave in a similar and stronger manner when faced with political uncertainty.*

7 Conclusion

This paper analyzes how the cash holdings of US firms respond to an increase in US partisan conflict. Using a sign and zero restrictions identification strategy, we show that the average and median cash-to-total assets ratios for all non-financial and non-utility companies in the Compustat database increase by approximately 0.4 percentage points above trend following a 10% shock to US partisan conflict. The response of cash-to-total assets to a partisan conflict shock is relatively larger and more persistent compared to the responses caused by a 10% shock to economic policy uncertainty.

A more nuanced look at which types of firms are more responsive to a partisan conflict shock reveals that most of the increase in the mean and median cash-to-total assets ratios is due to financially constrained firms, firms with high sales growth, and high tech firms. However, this is to be expected given the liquidity needs of these types of firms, the riskiness of the types of projects undertaken by these firms, and the firms' access to external financing.

Additionally, we confirm that the increases of the mean and median cash-to-total assets ratios in response to a partisan conflict shock exist even after removing the recent period where the federal funds rate has been near the zero lower bound. Lastly, we confirm that the increase in the mean and median cash-to-total assets ratios exists across the entire total assets distribution, though firms in the lower two-thirds of the distribution experience larger increases in both ratios.

Importantly, we provide that evidence of a positive relationship between partisan conflict and cash-to-total assets exist at the firm level in addition to the aggregate level. The firm-level regressions also confirm that the impact of a partisan conflict shock on cash-to-total assets is larger than the effect of an economic policy uncertainty shock. We also show evidence that the change in cash-to-total assets is larger in quarters prior to an election year, even when we include the PC Index, which supports Julio and Yook (2012).

An important implication of these results is that the signals sent by government dysfunction can have real effects. Throughout most of 2011, CFOs, Controllers, and CEOs surveyed by the American Institute of CPAs listed political instability and domestic political leadership as one of their top concerns (AICPA, 2011). One way that managers have responded to this political instability is by directing assets away from

projects such as research and development and into the relative safety of cash and cash equivalents. However, if the signals conveyed a more stable political environment, these assets could be directed to potentially more profitable endeavors. Politicians and policymakers should be more mindful of these effects.

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