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PARTISAN CONFLICT AND PRIVATE INVESTMENT

Marina Azzimonti

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ABSTRACT

American politics have been characterized by a high degree of partisan conflict in recent years. Combined with a divided government, this has led not only to significant Congressional gridlock, but also to spells of high fiscal policy uncertainty. The unusually slow recovery from the Great Recession during the same period suggests the possibility that the two phenomena may be related. In this paper, I investigate the hypothesis that political discord depresses private investment. To this end, I construct a novel high-frequency indicator of partisan conflict. The partisan conflict index (PCI) uses a semantic search methodology to measure the frequency of newspaper articles reporting lawmakers' disagreement about policy. I find a negative relationship between the PCI and aggregate investment in the US. Moreover, the decline is persistent, which may help explain the slow recovery observed since the 2007 recession ended. Partisan conflict is also associated with lower investment rates at the firm level, particularly in firms that rely heavily on government spending and in those who actively engage in campaign contributions through PACs.

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A data appendix is available at http://www.nber.org/data-appendix/w21273

1 Introduction

American politics have been characterized by a high degree of partisan conflict in recent years. The combination of increasing polarization and divided government has led not only to significant Congressional gridlock (such as the budgetary warfare that eventually triggered the 18th government shutdown in US history in 2013), but also to spells of high fiscal policy uncertainty (such as the 2012 tax-expirations and the fiscal cliff). The unprecedented slow recovery in investment from the Great Recession during the same period suggests the possibility that the two phenomena may be related. Partisan conflict is relevant for the evolution of private investment for two reasons. First, because expected returns on investment become less predictable when the timing, size, and composition of fiscal policy is uncertain (Azzimonti and Talbert, 2013). To the extent that investment is irreversible and subject to fixed upfront costs, this induces delays in investment decisions (Bernanke 1983; Baker, Bloom, and Davis, 2016; Canes-Wrone and Park 2011).[1] Second, because the resulting legislative gridlock negatively affects the optimal response to adverse shocks and the quality of policy reforms aimed at preventing them (Alesina and Drazen, 1991). This lowers expected returns, and hence discourages investment.

To test the hypothesis that partisan conflict depresses investment, I construct a novel indicator of the degree of partisan conflict based on news provided by the media. The *partisan conflict index* (PCI) is computed using a semantic search approach to measure the frequency of newspaper coverage of articles reporting political disagreement about government policy—both within and between national parties—normalized by the total number of news articles within a given period. In order to show that the resulting measure indeed captures true political discord, I compute the PCI between 1891 and 2013, and show that its behavior is consistent with that of slow-moving variables characterizing the political process. First, I show that the long-run trend in the historical PCI mirrors the evolution of political polarization, as computed by Mc-Carty, Poole, and Rosenthal (2006).[2].

Second, I show that changes in (the trend of) the PCI: (i) are more pronounced under a divided government, (ii) are positively related to the number of cloture attempts (a proxy for filibusters), and (iii) decline with the share of seats in Congress controlled by the President's party (a proxy for political power). Third, I find that short-term increases in partisan conflict are associated with presidential elections and well-known fiscal policy debates, such as the Immigration Act of 1924, the debt ceiling debate, and debates on the Affordable Care Act (both related to its approval and potential repeal in early 2017). This is reassuring, suggesting that the indicator captures disagreement about well-known polemical issues. Interestingly, no clear relationship between partisan conflict and recessions (measured by NBER dates or by periods of high unemployment rates) was detected. For example, the index is much lower than average during the Great Depression, but reached significant levels during the panics of 1893 and 1911, and the Great Recession. Taken together, these observations indicate that the index is mainly capturing political factors, rather than the state of the economy.

[1] See Dixit and Pindyck (1994) for a review of the early theoretical literature on this topic.

[2] The measure has a similar relationship with political polarization computed by Jensen, Kaplan, Naidu, and Wilse-Samson (2012) from Congressional Records

It is worth noting that while the methodology used to compute the PCI is similar to the one used by Baker, Bloom, and Davis (2016) to measure EPU, the two indexes represent different concepts and are therefore characterized by distinctive features. While there are cases in which increases in the PCI are associated with higher economic policy uncertainty (such as during the Obamacare debate and the tax-expirations of 2012, when investors could not predict which policies would be undertaken) this need not always be the case (an example is given by the 2013 shutdown). Interestingly, the indexes move in opposite direction when the country is at war or subject to national security threats, such as World War I, Pearl Harbor, and 9/11. The 9/11 attacks, for example, introduced uncertainty in the economy (so EPU was extremely high), but there was very little disagreement about which policies should be implemented (so PCI was extremely low). This suggests that American politics are very polarized regarding economic policy, but less divided when it comes to national defense issues. It also indicates the presence of a partisan 'rally around the flag" effect. A more detailed comparison between the PCI and EPU can be found in Appendix 5.1.

The PCI is also related to measures of political polarization, such as those computed by McCarty, Poole, and Rosenthal (2006) from roll-call votes. This is to be expected: Policymakers' ideological differences, or polarization, are clearly an important determinant of political disagreement. The further apart parties' views over policies are, the higher the level of conflict should be. While the general trend of partisan conflict since the mid sixties is similar to the one observed in these measures, short-term fluctuations are remarkably different. This is due to the fact that polarization measures bundling Congressional behavior typically ignoring filibuster threats and presidential vetoes, which constitute important sources of policy determination. The interaction between the executive and legislative branches, or between the House and the Senate under a divided government, are important factors affecting the determination of partisan conflict (as pointed out by Alesina and Rosenthal, 1995). Moreover, the PCI deviates significantly from the DW-nominate measure constructed by McCarty, Poole, and Rosenthal (2006) in periods where one party controls Congress and the Presidency. Because the PCI is a signal about the outcome of a game (between two parties with different objectives in the political arena), rather than a measure of the distance in their ideal points, the index developed in this paper is conceptually different from polarization, and does not represent an alternative measure of it.

To quantify the effects of innovations in news about partisan conflict on private investment, I first consider a VAR specification using the historical PCI series. Using data from 1929 to 2013, I find that an increase in PCI is associated with a large and persistent reduction in aggregate investment. Even though this approach does not allow me to uncover a causal relationship between the two variables, it illustrates their long-run co-movement. Moreover, it allows me to show that their relationship is not confounding the effects of other slow-moving variables, such as polarization or political power, or that of economic policy uncertainty. To address potential omitted variables bias, I also study how news about partisan conflict affect the investment rates of publicly traded firms. I use a large panel covering the period 1985:Q1 to 2015:Q1, and exploit the variation on these firms' exposure to government spending, as computed by Belo, Gala, and Li (2013) from input-output tables. This experiment is along the lines of Gulen and Ion (2015), who attempt to tease out the effects of political uncertainty

on investment. Intuitively, higher partisan conflict would imply a higher level of demand uncertainty in firms which are more heavily exposed to government purchases. Controlling for firm fixed-effects and time fixed-effects, I find a strong negative effect of PCI on investment rates of firms belonging to industries highly exposed to government spending. Firms which are more politically engaged, as proxied by campaign contributions through PACs (obtained from Cooper, Gulen, and Pvthinnikov, 2010), are also found to respond more to increases in the PCI, using a similar estimation model. The idea behind this specification is that companies whose returns are more exposed to recessions and crises (i.e. because their profits would suffer disproportionately were a financial crisis to occur) have more incentives to contribute to candidates who are more likely to choose appropriate policies and regulation. More generally, firms that contribute a lot dislike partisan conflict, as it reduces the likelihood of the actions that they were trying to induce from policymakers with their contributions. The higher the degree of partisan conflict, the less likely it is that policy will effectively prevent bad outcomes or be beneficial for a particular firm with vested interests, and hence the lower the returns would be.

2 Measuring partisan conflict

The main objective of this section is to construct an indicator of the degree of partisan conflict to analyze how it evolves over time, understand its determinants, and later assess how it effects private investment.

2.1 Index construction

To construct the partisan conflict index I use a search-based approach that measures the frequency of newspaper articles reporting political disagreement about government policy. The assumption underlying the index is that greater media coverage of ideologically divisive issues, legislative gridlock, presidential vetoes, or filibuster threats indicates intense disagreement between policymakers (either across party lines or within a party).

I will compute two indexes: *Historical Partisan Conflict*(HPC), covering the period 1891-2013, and a benchmark measure, *Partisan Conflict Index* (PCI), covering the interval 1981-present. The latter is updated monthly by the Federal Reserve Bank of Philadelphia, and available free of charge in their website.[3]

Historical Partisan Conflict is computed annually using news articles from five major newspapers that have been digitized since 1891 for the whole sample period: The Wall Street Journal, The New York Times, Chicago Tribune, Los Angeles Times, and The Washington Post. I abstract from other newspapers that have been digitized only for a sub-period, because with a small number of newspapers, the addition or elimination of a newspaper significantly changes the trend of the estimated index.[4] The advantage of this measure is that it allows us

[3]The PCI is available free of charge at https://www.philadelphiafed.org/research-and-data/real-time-center/partisan-conflict-index.

[4]The benchmark series is constructed from the whole sample of newspapers for which digitized versions exist. Because the number of newspapers included is much larger, jumps in the series do not appear as newspapers are included or excluded at particular points in time.

to characterize the long-run trend in partisan conflict and compare it with other slow-moving variables such as polarization and the composition of Congress. The main disadvantage is that the search cannot be refined to the same degree as the benchmark case is. While we can restrict the search over actual articles (excluding, for example, advertisements or obituaries), we cannot restrict it to domestic news or distinguish opinions and commentaries from regular news.

The search used in the construction of the *Partisan Conflict Index* is performed monthly in Factiva (by Dow Jones), covering the interval 1981-present. An advantage of using Factiva's search engine versus the ones provided by each particular newspaper is that the search outcome is homogeneous and an identical set of predefined filters can be applied. In particular, I restrict the comprehensive Boolean search to major US newspapers (see Table 5 in Appendix 5.2 for a full list of sources included) with news written exclusively in English and restricted to events occurring in, or related to, the US.[5] The top news sources resulting from the search are The Washington Post, The New York Times, Los Angeles Times, Chicago Tribune, The Wall Street Journal, Newsday, The Dallas Morning News, The Boston Globe, and Tampa Bay Times (see Figure 1 for a decomposition).

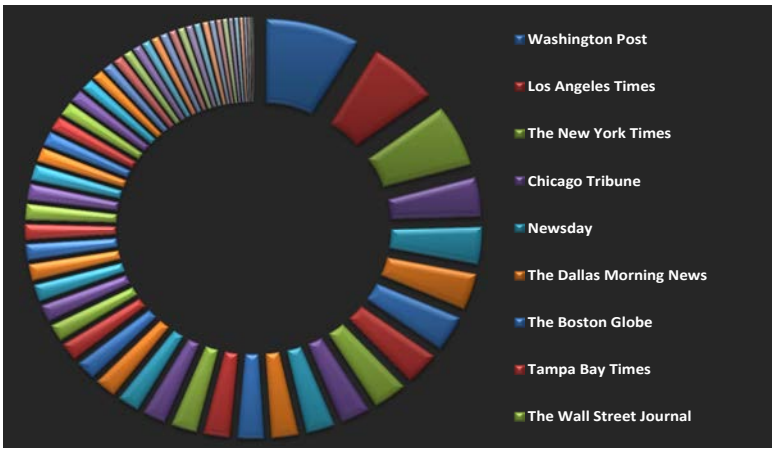

Figure 1: Percentage of news searches in which these subjects are mentioned over the sample.

Routine general news, reviews, interviews, etc. are also excluded in order to reduce the incidence of false positives. A comprehensive list of filters applied can be found in Appendix 5.3. Articles with less than 200 words and republished news are excluded (this is standard in the semantics literature). Note that the search is performed on full articles, not just titles or abstracts.

The index is computed as follows. First, I count the number of articles that discuss disagreement between political parties, branches of government, or political actors (e.g. candidates not yet in office, legislators, etc.) in a given month. In particular, I search for articles

[5]Factiva indexes articles according to the region they are most related to through a semantic algorithm. To filter out news that are not related to the US, I exclude articles which have been indexed to countries/regions *other* than the US. This will include articles which are indexed to the US, as well as articles which have not been coded.

containing at least one keyword in the following two categories: (i) political disagreement and (ii) government. Figure 2 summarizes the resulting terms used in each category. I focus on articles including keywords at the intersection of those two categories. In addition, I also search for specific terms related to partisan conflict, such as "divided party," "partisan divisions," and "divided Congress." Note that the search involves terms related to the political debate (e.g., "fail to compromise"), as well as the outcome of the partisan warfare (e.g. "gridlock" and "filibuster"). The complete set of words included in each category can be found in Appendix 6.

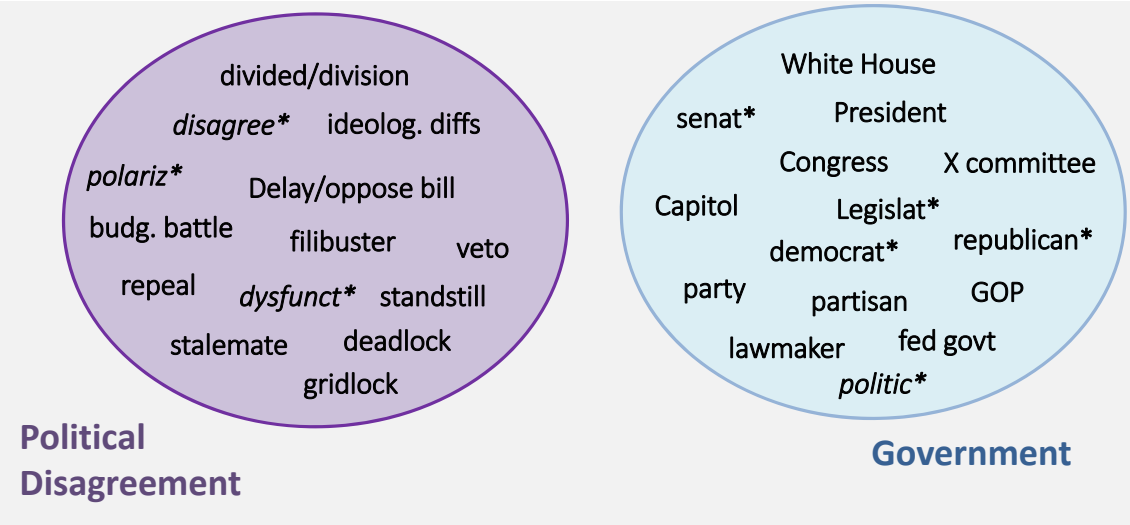

Figure 2: Sample keywords used in the search.

Note: The term "X committee" stands for Appropriations Committee, Finance Committee, or Ways and Means Committee.

The search captures disagreement not only about economic policy (e.g., related to budgetary decisions, tax rates, deficit levels, welfare programs, etc.), but also about private-sector regulation (e.g., financial and immigration reform), national defense issues (e.g., wars, terrorism), and other dimensions that divide policymakers' views (e.g., same-sex marriage, gun control, abortion rights, among others).

For the PCI benchmark series, the particular words included in each category were chosen using a two-stage procedure. In the first stage, I selected words normally used in the political economy and political science literatures that refer to political disagreement. From the outcome of this first-stage search, three articles per month over the period 1981-2012 were selected at random from The New York Times and thoroughly read by the author. Additional words used by the media that were identified during this human audit were incorporated into the initial search in the second stage. The objective of this refinement was to reduce the incidence of false negatives. Some of the original keywords were eliminated in order to reduce false positives. Articles were identified as false positives or false negatives by analyzing whether the article was indeed describing disagreement between policymakers. Words were

eliminated when the incidence of false-positives (or negatives) was higher than 30 % of the articles selected. In addition, the words "polarization" and "dysfunctional" were excluded from the historical search used to construct HPC because these words entered the media language only in the 1980s. The remaining words were observed with a relatively constant frequency in the historical newspapers (using 10-year intervals). In addition "political" and "disagreement" have also been excluded from the historical search because they retrieved a disproportionate amount of foreign news (notably during WWI and WWII). This shortcoming does not arise in the benchmark search used to construct PCI where we can restrict it to domestic articles.[6]

Because the volume of digitized news varies over time, I scale the raw partisan conflict count by the total number of articles in the same newspapers over the same time interval. To do this in the benchmark PCI, I perform a search every month from January 1981 until the present containing the word "today."[7] For the historical series, HPC, I divide the raw partisan conflict count by the number of articles every year that contain the word "the," rather than "today," due to the fact that, early in the sample, there was usually a delay between the date at which an event happened and the date at which it was reported. Finally, I normalize both the PCI and HPC scores to average 100 in the year 1990. This normalization is without loss of generality.

2.2 The historical evolution of partisan conflict

In this section, I study the behavior of the PCI over a long period of time (1891-2013). By comparing its evolution to other indicators of political discord, I attempt to validate the index as an informative signal of true partisan conflict.

The HPC index declined between 1891 and the early 1920s, remained relatively stable until 1965, and exhibited an increasing trend thereafter, as seen from Figure 3. The rise in partisan conflict accelerated during the Great Recession, peaking with the 2013 government shutdown. This behavior, as shown in the next subsections, is consistent with that of other slow-moving variables characterizing political disagreement, such as political polarization and the distribution of political power (e.g. whether the government is divided or not, the degree of presidential influence in Congress, the number of filibusters, etc.) and media trends.

Because these variables are related with the PCI at different frequencies than other shocks (such as elections and wars), the analysis will be divided in two parts: (i) the long-run trend and (ii) short-term fluctuations. To isolate long-run trends from short-term fluctuations, I apply an HP-filter to the series. Since HPC is computed annually, it is filtered using a weight of $w = 6.25$ (see in Ravn and Uhlig, 2002).[8] Figure 4 shows the evolution of the resulting two components of partisan conflict for the HPC series.

[6] Robustness to the set of words is discussed in Appendix 6.1

[7] Using the word "the" to count the total number of articles instead causes no noticeable difference in the index.

[8] HP filtering has been chosen rather than first differences because the trend is not completely removed from the series when using differences. Using a smoothing parameter of $w = 100$ also resulted in slow-moving trends observed in the residual. More details are available from the author upon request.

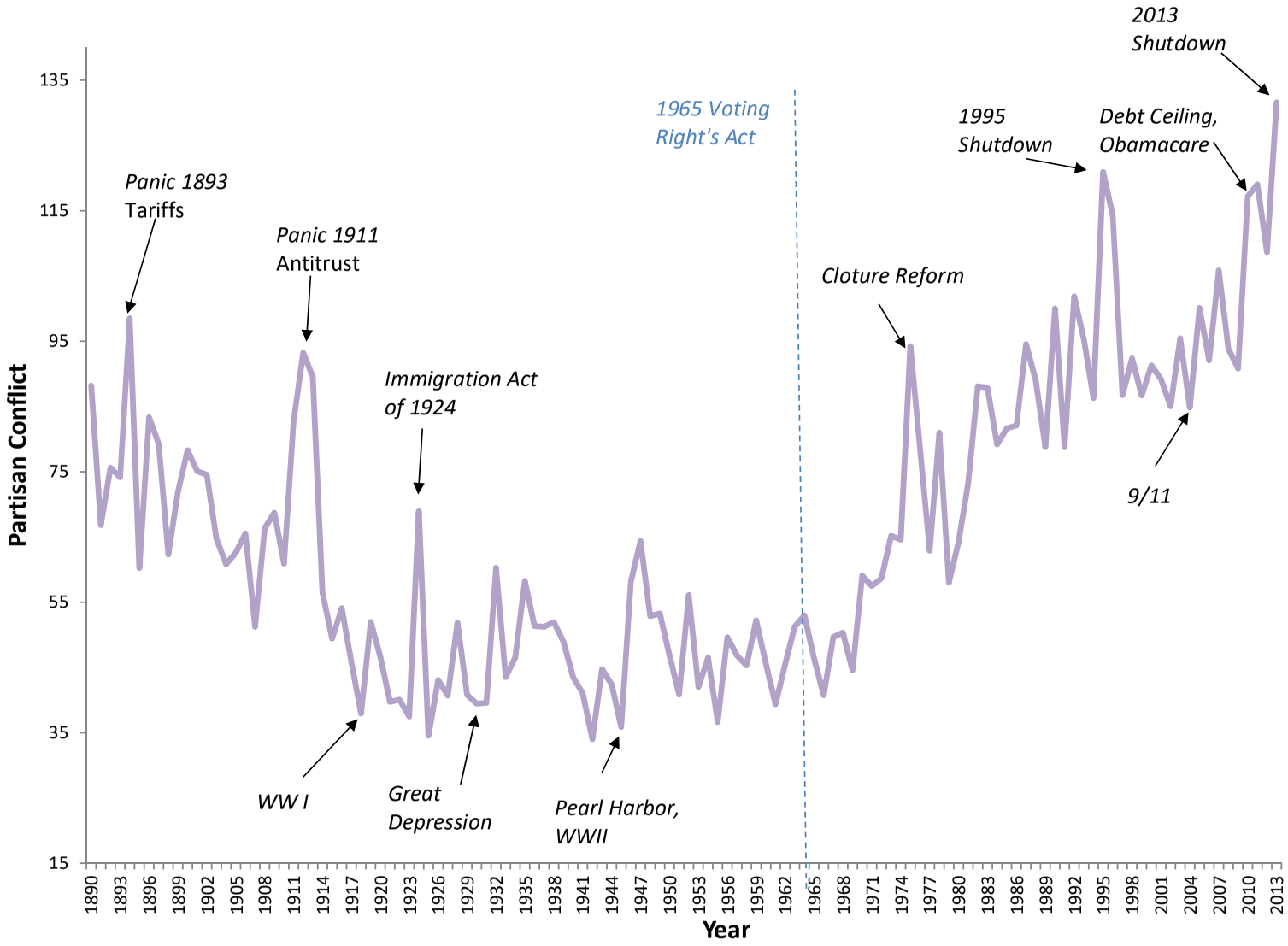

Figure 3: Historical partisan conflict, 1891-2013.

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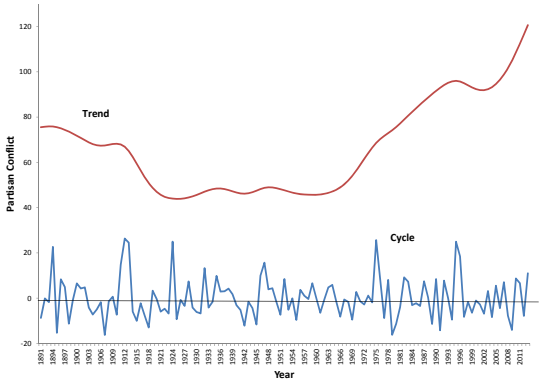


Figure 4: Historical partisan conflict, HP-filtered ($w = 6.25$).

2.2.1 Long-run trend of HPC

I first focus on the relationship between the long-run trend of the HPC series and variables which, according to the political economy literature, reflect political discord. I also discuss the relationship between the PCI and trends in media coverage.

Political determinants Polarization is possibly one of the most important factors (although not the only one) determining partisan conflict. We should expect partisan conflict to intensify when political polarization rises. Intuitively, it is more difficult for parties to agree on the course of social and economic policy when their ideological differences are large. Interestingly, McCarty, Poole, and Rosenthal (2006) document that polarization between political parties has risen significantly in the postwar era. This pattern is consistent with the sustained increase in the PCI over the same period, as shown in Figure 5.

While both series exhibit a decline early in the sample, partisan conflict decreases at a much faster rate and lies below polarization until the 72nd Congress. As the PCI identifies political outcomes rather than policymakers' preferences, the divergence in the two series could be explained by changes in the composition of the government, affecting the political power of the Democratic and Republican parties. For example, between the 63rd and the 71st Congresses both chambers had a Democratic majority. Therefore, even if parties were very polarized, de facto disagreement—as proxied by the PCI—, was not.

To test the conjecture that polarization is associated with higher PCI whereas control of the government by one party is associated with lower PCI, I estimate the following model over the period 1891-2012 (from the 62nd to the 112th Congresses):

$$\Delta HPC_c = \alpha_0 + \alpha_1 \Delta Polar_c + \alpha_2 I_{div,c} + \epsilon_c, \tag{1}$$

where $c =$ denotes a particular Congress. The dependent variable is the first difference in the trend of partisan conflict, ΔHPC_c.[9] The variable $\Delta Polar_c$ represents changes in the trend of political polarization (also de-trended using the HP filter), obtained from McCarty,

[9]First differences are used to ensure stationarity.

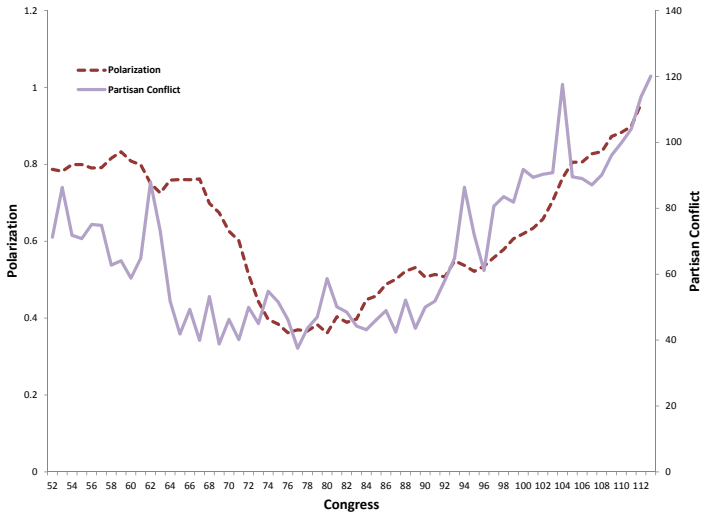


Figure 5: Historical partisan conflict and political polarization.

Notes: Polarization obtained from McCarty, Poole, and Rosenthal (2006), who use information on roll-call votes in Congress to compute legislators' ideal points in each Congress. Measure normalized to 100 in 1990. Data are from *http://voteview.com/downloads.asp.*

Poole, and Rosenthal (2006; see note in Figure 5 for more details). The dichotomic variable $I_{div,c}$ equals 1 under a divided government (that is, when a party has a majority in the House and the other party a majority in the Senate) and 0 otherwise. Finally, ϵ_c represents the error term.

The estimated coefficients are reported in the first column of Table 1. Both are positive and statistically significant, indicating that polarization and partisan conflict are indeed positively related, and that the PCI is typically higher under a divided Congress.

I consider an alternative measure of partisan control, *Pres Seats* H_c, representing the share of seats held by the President's party in the House. Including changes in its trend as an additional explanatory variable does not change the results from the benchmark case, as shown in the second column of Table 1. A negative and statistically significant coefficient associated with Δ*Pres Seats* H_c indicates that when the Presidency and the House are controlled by the same party, political disagreement—as reported by the media—declines.[10]

Interestingly, the share of seats controlled by the President's party in the Senate *Pres Seats* S_c has no significant impact on the partisan conflict index, as shown in column (3) of this table. This is reasonable given super-majority rules and filibusters in the Senate. For much of US history, filibusters were rare and only used in matters of great importance. Nowadays, they have become a major tool by which a large part of the majority party's Senate agenda is blocked by an organized minority party filibuster. The threat of a filibuster is typically proxied by the number of cloture motions filed, as they are filed not only to interrupt filibusters in progress, but also to preempt anticipated filibusters. The evolution of the PCI is remarkably

[10]Notice that the trend is calculated by HP-filtering *Pres Seats* H_c.

Table 1: The long-run behavior of HPC

Dep var: ΔHPC_c	(1)	(2)	(3)	(4)	(5)
$\Delta Polar_c$	0.195**	0.189**	0.144**	−0.077	0.113*
	(0.0732)	(0.0735)	(0.0634)	(0.060)	(0.062)
$I_{div,c}$	2.502***	2.307***	2.008***	1.86***	1.93***
	(0.681)	(0.743)	(0.664)	(0.46)	(0.47)
$\Delta Pres\,Seats\,H_c$		-41.45**		-16.72	
		(16.07)		(10.75)	
$\Delta Pres\,Seats\,S_c$			-4.289		
			(10.61)		
$\Delta Cloture_c$				0.51***	
				(0.13)	
$\Delta MediaCov_c$					0.61***
					(0.09)
Observations	60	52	52	46	60
R-squared	0.145	0.181	0.093	0.55	0.59

Notes: The dependent variable is the first difference in the trend of partisan conflict. The independent variables in specification (1) are $I_{div,c}$ and the first difference of the polarization trend. Specification (2) includes the first difference in the trend component of the share of seats controlled by the President's party in the House, $\Delta Pres\,Seats\,H_c$, while specification (3) includes the equivalent measure in the Senate, $\Delta Pres\,Seats\,S_c$. Sample period is 1891-2012. Specification (4) augments Specification (2) by adding changes in the trend to cloture motions filed. Each observation corresponds to a Congress. Specification (5) extends Specification (1) to account for trends media coverage, $\Delta MediaCov_c$. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

similar to that of cloture motions filed, as seen in Figure 6. Their correlation, computed between the 66th and 112th Congress, is 89%.[11]

The strong positive relationship between PCI and cloture holds even after controlling for polarization and the distribution of political power, as seen from the highly significant coefficient of $\Delta Cloture_c$ in column (4) of Table 1. The model estimated is identical to the one in Specification (2), but augmented to incorporate changes in the trend of cloture motions files. The model fit is better than in previous specifications, as indicated by an R2 of 0.59. Interestingly, polarization becomes insignificant once cloture is considered. This could be due to the fact that partisan conflict captures filibuster threats (recall that 'filibuster' is a word used in the search), whereas polarization is based only on actual votes. Notice, however, that since I only have observations from the 66th Congress and onwards, the sample over which

[11]The number of motions filed prior to 1975 was close to zero, exhibited a large spike in early 1975 (beginning of the 94th Congress). This is due to a procedural reform by which the number of Senators needed to invoke cloture is reduced from two-thirds to three-fifths (about 60 out of 100). While this reform would explain an increase in the average number of motions filed, it does not explain the rising trend. Barber and McCarthy (2013) conjecture that the increasing portion arises as a result of rising polarization.

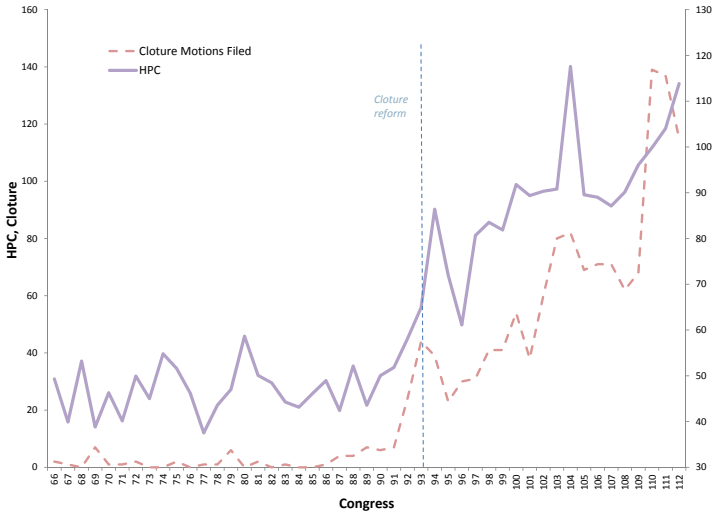


Figure 6: Historical partisan conflict and filibuster threats (cloture motions filed), 66th to 112th Congresses.

Specifications (2) and (4) are computed is different.

Media coverage Because the partisan conflict index is based on news reports, changes in media coverage are also likely to impact the measure. Figure 7 shows the evolution of HPC (solid line) alongside a measure of media coverage of government news (broken line). The latter corresponds to the share $\frac{G}{T}$, where the number of government-related news articles G are identified using the set of words in the "Government" ball of Figure 2, and T, the total number of articles in a year, is proxied by articles including the word "the."

The two variables exhibit a very similar trend. Extending the benchmark regression in eq. (1) to include changes in the trend of media coverage reinforces this observation: the correlation between changes in the trend of media coverage and those in HPC is about 0.6, and statistically significant. Moreover, the resulting R2 is increased from 0.145 in the benchmark case (Specification 1) to 0.59 in Specification (5), as seen in Table 1. This result is robust to including other control variables such as the share of seats controlled by the President in the House or Senate, or the trends in cloture. Results are omitted due to space constraints, but are available upon request from the author.

That the HPC index is highly correlated with the share of news devoted to politics over time could be due to the fact that newspapers devote a larger share of news to politics in periods of high disagreement, precisely when investors are most interested in obtaining a signal about true partisan conflict. On the other hand, it could well be the case that trends in media coverage respond to other factors, such as competition from alternative news sources (i.e. TV, radio, or the internet) that emphasize political disagreement. The HPC index would be a more accurate reflection of true partisan conflict in the former case than in the latter case. I am mostly interested in the effect of news about partisan conflict on investors'

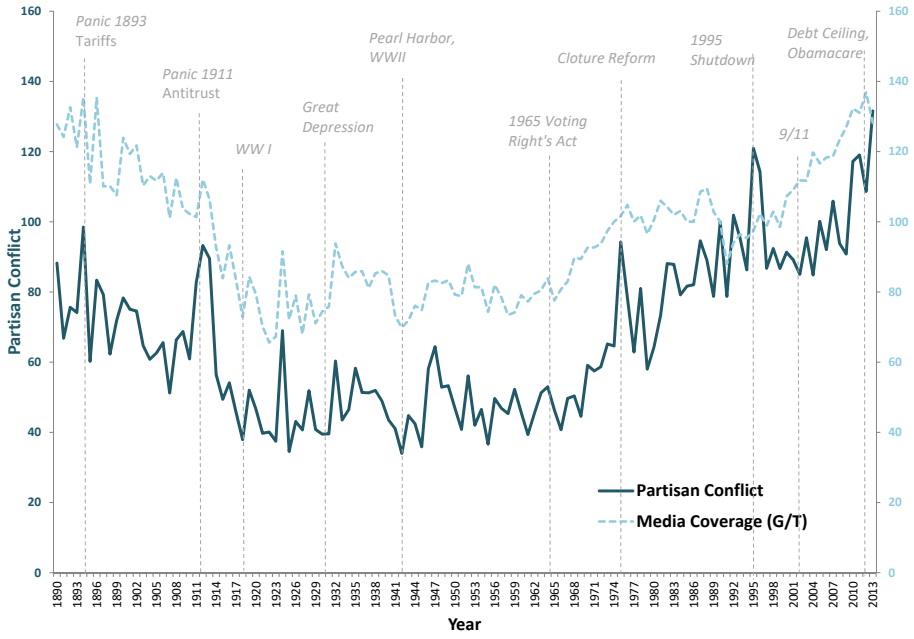


Figure 7: Historical partisan conflict (solid line) and media coverage (broken line).

decisions, regardless of whether these news are reporting true changes in political discord or are simply an artifact of media manipulation. It would be interesting, in future work, to try to disentangle the effects of these two forces more systematically.

2.2.2 Short-run fluctuations of HPC

In this section, I focus on the relationship between the PCI and determinants of (true) partisan conflict at shorter frequencies. More specifically, I consider how changes in the cyclical component of HPC are related to: (i) elections, (ii) recessions, and (iii) wars. The benchmark model follows.

$$\hat{H}PC_t = \beta_0 + \beta_1 PresElec_t + \beta_2 War_t + \beta_3 Recess_t + \epsilon_t,$$

where $\hat{H}PC_t$ denotes the cycle component of HP-filtered partisan conflict data in year t, $PresElec_t$ denotes a dummy variable that takes a value of 1 in years where a presidential election is held. The dichotomic variable War_t takes a value of 1 if there is more than 1 military death per 100,000 people in the population in a given year and 0 otherwise.[12] This variable captures, for example, the Spanish-American War, WWI, WWII, the Korean War, and the most violent years of the Vietnam war. The variable $Recess_t$, which follows the NBER definition of a recession, is obtained from the Federal Reserve Bank of St. Louis FRED

[12]Data are obtained from http://violentdeathproject.com/countries/united-states.

dataset. The results for the benchmark specification are summarized in the first column of Table 2, and will be discussed below.

(i) Elections The most natural source of short-run fluctuations in the PC indicator is the arrival of election dates, an anticipated shock. We should expect the index to be higher than average during elections purely for mechanical reasons: Newspapers increase the proportion of articles covering political debates and emphasize differences between candidates during those periods. In addition, partisan conflict may also intensify endogenously, as legislators try to pursue a particular agenda or block specific legislation to tilt election results in their party's favor (see Groseclose and McCarty, 2001 on strategic disagreement). Political agents (incumbent legislators, the opposition, the President, etc.) have incentives to exaggerate their positions to signal a particular type in an attempt to attract votes, also referred to as 'posturing' in the political economy literature (see Ash, Morelli, and Van Weelden, 2014). An estimated coefficient of $\beta_1 = 3.32$ indicates that the index does indeed spike in years in which Presidential elections take place. This is not the case when midterm elections are considered (see Specification 2). This result should be taken with caution, however, since there is a midterm election every other year in the historical sample. When shorter intervals are analyzed (e.g., at a monthly frequency), periods surrounding a midterm election are indeed characterized by higher observations of the index.

(ii) Recessions The state of the economy can potentially affect partisan conflict, and hence the PCI, in the short run. Recessions are periods when automatic stabilizers (such as unemployment benefits) kick in. Several of these stabilizers are highly redistributive in nature, and thus potentially conflictive. We should expect partisan conflict to intensify in "bad times," when revenues tend to be low and spending needs tend to be large. An example is the 2007 recession, when the subsequent conflict over tax-cut expirations led to gridlock and hence extreme values in HPC. Surprisingly, the HPC index is not statistically different during booms and recessions, as seen by the high standard error on the coefficient ot *Recess*. This could be explained by the fact that recessions are seen as periods of 'national emergency,' were policy response is highly valued by voters. Inspection of Figure 3 reveals that while HPC is significantly higher during the 1893 and 1911 panics, it takes one of it lowest values of the century during the Great Depression. To test the robustness of this result, I include alternative proxies for recessions in specifications (3) and (4). In (3), a lagged value of the unemployment rate (obtained from FRED) is introduced. In (4), a lagged value of the HP-filtered unemployment rate is used instead. The coefficients are statistically insignificant, reinforcing the observations that the state of the economy is not an important determinant of the cyclical behavior of the PCI, at least at the annual frequency.[13]

(iii) Wars Finally, I analyze how wars affect news about partisan conflict. Following Mueller (1973), a large strand of the political science literature has analyzed the effects of dramatic and sharply focused international crises (or wars) on the popular support of

[13]Lagged values of GDP growth can also be used as alternative proxies for a recession (ommitted due to space constraints). Their coefficients are also statistically insignificant.

Table 2: The cyclical behavior of HPC

Dep var: $\hat{HPC}_t$	(1)	(2)	(3)	(4)
$PresElec_t$	3.32**		3.12*	3.10*
	(1.53)		(1.63)	(1.63)
$MidtermElec_t$		1.91		
		(1.35)		
War_t	-2.95**	-3.28**	-2.37*	-2.39*
	(1.45)	(1.52)	(1.42)	(1.40)
$Recess_t$	-0.35	-0.28		
	(1.66)	(1.65)		
U_{t-1}			-0.024	-0.25
			(0.118)	(0.38)
Observations	123	123	112	112
R-squared	0.0580	0.038	0.049	0.05

Notes: The dependent variable is HP-filtered (using weight $w = 6.25$) historical partisan conflict. The independent variables in specification (1) are the dichotomic variables which take a value of 1 if there is a Presidential election ($PresElec_t$), a war (War_t) or a recession ($Recess_t$) . Specification (2) considers a midterm election instead ($MidtermElec_t$). Specification (3) includes considers the lagged unemployment rate (U_{t-1}) as an alternative proxy for a recession, while specification (4) considers HP-filtered values of the unemployment rate (lagged one period). Sample period is 1891-2013 for specifications 1-3, and 1901-2013 for specifications (3) and (4). Each observation corresponds to a calendar year. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

the President of the United States. The unprecedented increase in George W. Bush's public approval ratings, from 51% to 86% following the September 11th terrorist attacks, is a typical example of the 'rally around the flag" effect. Mathews (1919) argues that *one effect of war upon the party system (...) is to bring about, at least for a time, a relatively greater stability of party control, if not complete quiescence of partisanship, either through coalition or through cessation of party opposition, or both.* This would suggest that a rally around the flag should be observed at the party level. Interestingly, lower-than-average HPC scores are recorded during episodes of war and national security threats in the historical series. The clearest examples are given by the First War World and the Second War World in Figure 3. As the third row of Table 2 indicates, HPC is significantly lower during wars even after other sources of short-term fluctuations are considered. One may argue that lower PC scores are observed during wars because newspapers devote a larger percentage of coverage to documenting events related to the war itself, rather than to government policy. Inspection of the evolution of the EPU suggests that this is not the case, as this series increases significantly during these events. An example is given by the large spike in EPU observed during 9/11, a period where

partisan conflict reached record lows (relative to trend).[14]. This is discussed in more detail in Appendix 5.1, where I contrast the evolution of partisan conflict to that of EPU.

Taken together, the results of this section indicate that: (i) HPC is higher during Presidential elections, (ii) there exists a *partisan* rally-around-the flag, (iii) there is no evidence that HPC is higher during recessions than it is in booms (at annual frequencies).

2.3 The (more recent) evolution of partisan conflict

In this section I describe the more recent evolution of partisan conflict. Figure 8 depicts the benchmark PCI measure. Recall that this measure is more precise, due to the greater availability of digitized newspapers and the possibility of filtering out foreign news, among others. Additionally, it is computed at a monthly frequency, which allows us to better analyze the behavior of partisan conflict at shorter frequencies.

The first observation is that the index has fluctuated around a constant mean for most of the sample, but exhibited an increasing trend starting at the outset of the Great Recession (e.g., around 2007). The index reached its highest level of our 30-year sample period during the shutdown of 2013, a value closely followed by the unexpected victory of D. Trump in the 2016 Presidential election and his first two months in office.

The vertical lines in Figure 8 indicate months in which Congress held midterm elections. Consistently with fact (i), the index spikes when elections are held. The rally-around-the flag effect (fact ii. above) is even more evident when analyzing the monthly PCI, as the series is clearly below average during both Gulf Wars, the Beirut and Oklahoma City bombings and, particularly, 9/11 when it decreased dramatically from the spike associated with the Bush vs Gore election. This reinforces the previous observation that partisan conflict subsides significantly not only when the country is at war, but also when it is subject to national security threats.

The figure also displays other historical events that resulted in deviations from the trend. Most noticeable are the government shutdowns of 1995 and 2013, the passage of "Obamacare," the debt ceiling debate, the partisan divide on immigration, and the potential repeal of the Affordable Care Act in early 2016. This is reassuring, suggesting that the indicator captures disagreement about well-known polemic issues. True partisan conflict is also expected to increase at short frequencies when polemic issues over which a decision must be taken arise in the legislative agenda. As Lowell (1902) noted *...the amount of party voting depends largely upon the accident of some question in which the parties are sharply divided happening to come up for decision...in England, parties frame the issues. In America the issues do not, indeed, make the parties, but determine the extent of their opposition to each other in matters of legislation.* [15]

[14]Recall that both EPU and PCI share the same denominator, namely, the number of newspaper articles during a period

[15]At a particular point in time, it is impossible, unfortunately, to disentangle whether partisan conflict is high because parties are ideologically far apart on a particular issue from the relevance of the issue per se. Polarization levels cannot, therefore, be inferred from PCI at very short frequencies. The index can be a better proxy for polarization over longer time spans where specific issues are "averaged out."

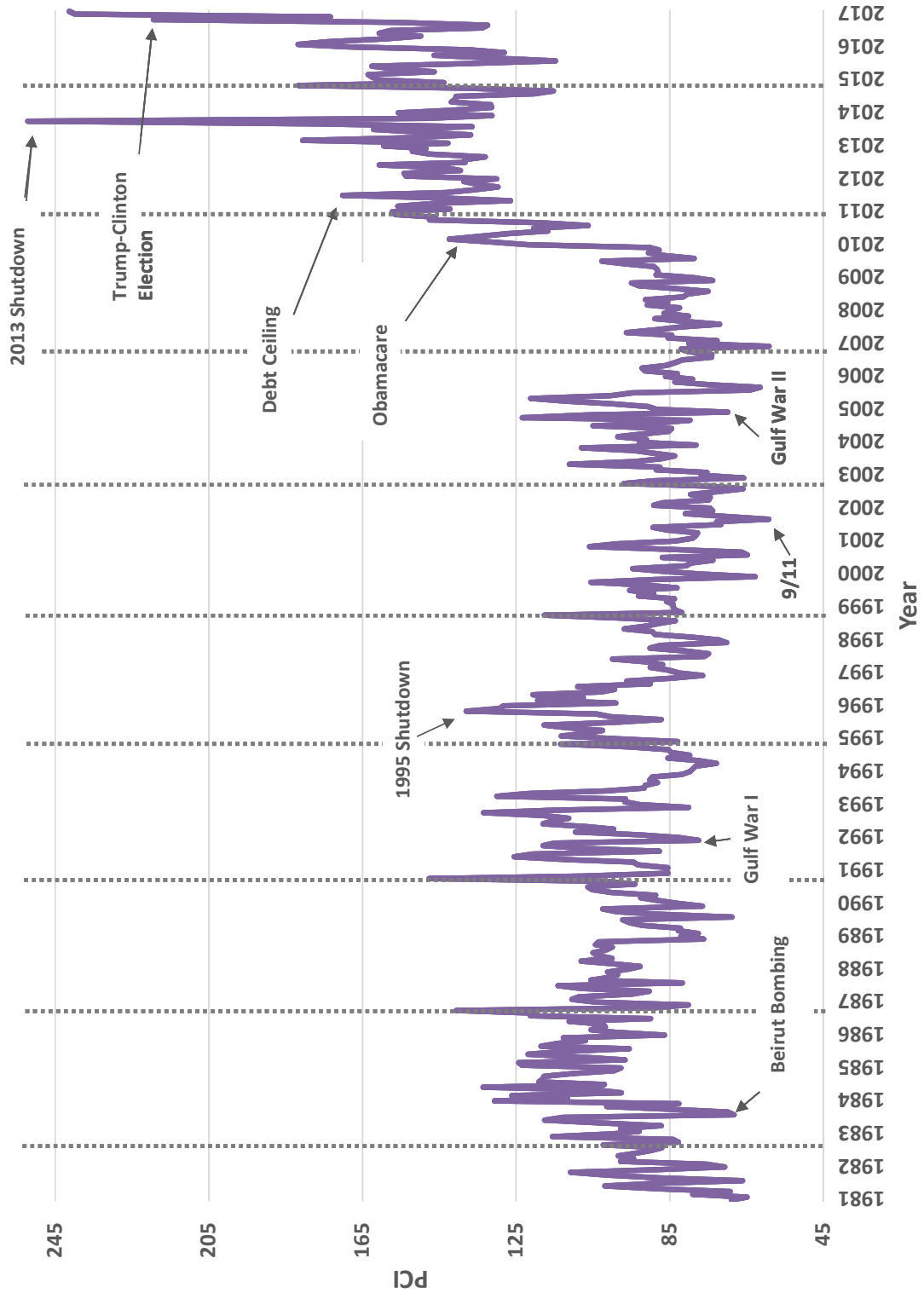


Figure 8: Partisan conflict index (PCI=$\bar{s}_t$), 1981-2015. PCI normalized to 100 in 1990. Vertical lines represent midterm elections.

3 Partisan Conflict and Private Investment

In this section, I explore empirically the effects of news about partisan conflict on private investment. In particular, I want to test whether innovations to the PCI and private investment are negatively related.

To do so, I take two complementary approaches. In the first one, I consider a VAR specification using yearly data from 1929 to 2013. Although this approach does not allow me to robustly identify a causal relationship between HPC and investment, it illustrates their long-run co-movement. Moreover, I can show that their relationship is not confounding the effects of other slow-moving variables such as polarization or the share of seats held by the President in Congress, neither it is capturing the effects of economic policy uncertainty.

In the second approach, I use panel data of publicly traded firms to identify the effects of partisan conflict on private investment. Using firm-level regressions that control for firm fixed-effects and calendar-quarter fixed-effects, I find that there is a significant negative correlation between partisan conflict and investment rates, particularly in firms belonging to sectors highly exposed to government spending and those actively engaged in campaign contributions through PACs.

3.1 VAR Approach

To test the impact of partisan conflict on aggregate investment, I estimate a vector auto regression (VAR) model and recover orthogonal shocks by using a Cholesky decomposition of the following: War, Recession, Divided Congress, Historical Partisan Conflict, Interest Rates, Log-Investment, and Log-GDP. War is proxied with the number of military deaths per 100,000 people in the population in a given year, while the recession indicator is obtained from the NBER. Investment and output are obtained from the Bureau of Economic Analysis (BEA), and correspond to seasonally adjusted 'Gross Private Domestic Investment' and 'Gross Domestic Product,' respectively. Real variables are constructed using the GDP deflator, and expressed in billions of 2005 dollars. Interest rates are proxied by Moody's Seasoned AAA Corporate Bond Yield, as this series goes back to 1929.[16] The sample is restricted to the period 1929-2013 due to lack of investment data prior to the start date.

[16] Mortgage rates are available only since 1971 whereas the Federal Funds Rate is available from 1954.

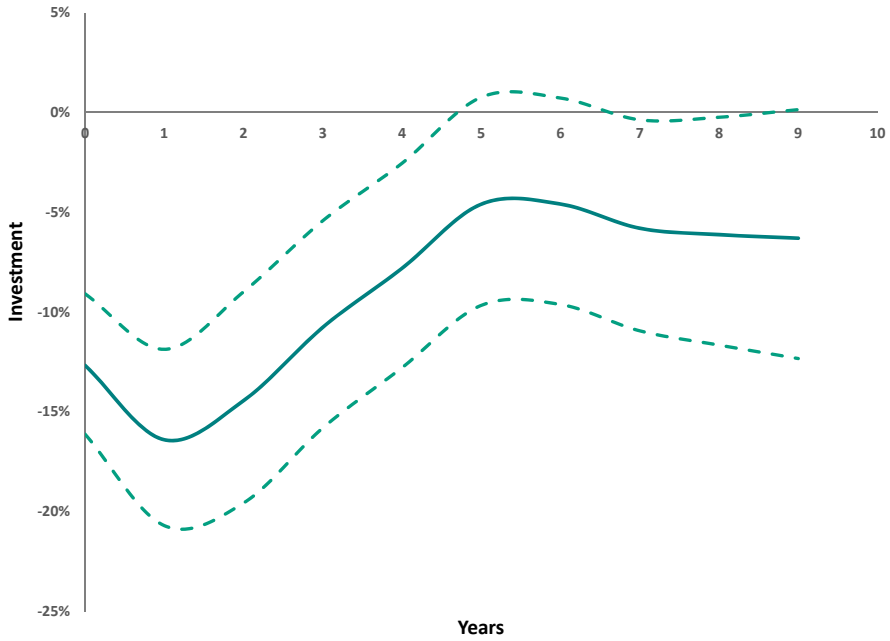


Figure 9: Impulse-response function of a one-standard deviation increase in HPC. Solid line: mean estimate; dashed outer lines: one-standard-error bands. Estimated using a yearly Cholesky VAR model with War, Recession, Divided Congress, Historical Partisan Conflict, Interest Rates, Log-Investment, and Log-GDP (in that order).

In the baseline specification, I use yearly data with three-year lags. The VAR is stable, so impulse-response functions can be constructed. Figure 9 shows that an increase of a one-standard deviation of the—orthogonalized—shock to the historical partisan conflict index causes a significant and persistent reduction of log-investment. A standard deviation of the HPC corresponds to a 22.5 point increase in the index, implying a 13% reduction (on average) in aggregate real investment upon impact. The largest impact is seen after one year, in which investment declines 16%. Interestingly, HPC increased by about 26 points (slightly above a one-standard deviation) between 2010 and 2011, suggesting that part of the slow recovery in investment could have resulted from investors' reaction to news about political turmoil.

Robustness to Specification: Figure 10 shows the response of log-investment under alternative specifications. The solid line replicates the response obtained under the benchmark model. The line denoted 'Last' (solid with x-markers) considers an alternative ordering of the Cholesky decomposition: War, Recession, Divided Congress, Interest Rates, Log-Investment, Log-GDP, and HPC. That is, we allow for the possibility of log-investment and log-output to cause HPC. Even though the response is smaller, the qualitative result holds: increases in HPC are associated with declines in private investment. The dashed-line includes polarization and the share of seats held by the President in the House (PPH), two variables which were shown to be significant determinants in the trend of HPC (see Section 2.2.1 for a description

of these variables and their impact on HPC). The model considers War, Recession, Divided Congress, PPH, Polarization, HPC, Interest Rates, Log-Investment, and Log-GDP (in that order). Finally, the dotted line incorporates EPU to the model.[17] We can see that the main result, namely that the relationship between HPC and log-investment is negative, is robust to several modifications of the benchmark model.

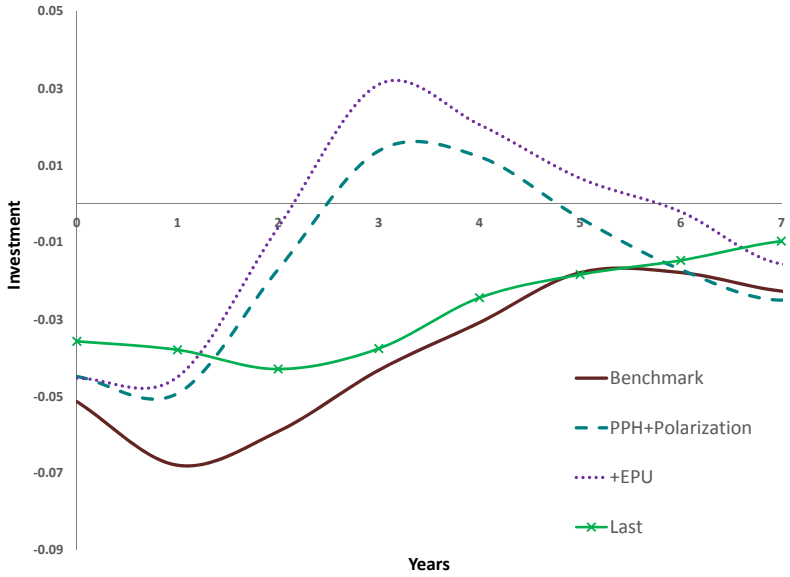


Figure 10: Impulse-response function of a one-standard deviation increase in HPC. 'Benchmark' (solid line) estimated using a VAR with War, Recession, Divided Congress, HPC, Interest Rates, Log-Investment, and Log-GDP (in that order); 'Last' (x-marker) uses War, Recession, Divided Congress, Log-Investment, Log-GDP, HPC; 'PPH+Polarization' (dashed line) includes: War, Recession, Divided Congress, PPH, Polarization, HPC, Log-Investment, and Log-GDP (in that order); Finally, '+EPU' (dotted line) considers: War, Recession, Divided Congress, PPH, Polarization, HPC, EPU, Interest Rates, Log-Investment, and Log-GDP (in that order).

Decomposing the changes in investment: It is possible to decompose how the private sector reacts to a shock in partisan conflict by investigating the response of investment components, namely fixed residential and non-residential investment, as well as changes in inventories. The series 'Private Residential Fixed Investment,' 'Private Nonresidential Fixed Investment,' and 'Change in Private Inventories' are obtained from FRED (under the labels PRFIA, PNFIA, and CBIA, respectively).[18] Real variables are constructed using the GDP deflator, and expressed in billions of 2005 dollars. The VAR specification is analogous to the benchmark model, the only difference being the introduction of the three investment components. The Cholesky decomposition is now: War, Recession, Divided Congress, Historical

[17]The ordering is War, Recession, Divided Congress, PPH, Polarization, HPC, EPU, Interest Rates, Log-Investment, and Log-GDP in that case.

[18]In contrast to the benchmark investment measure, these are not seasonally adjusted

Partisan Conflict, Interest Rates, Change in Inventories, Log-Non-Residential Investment, Log-Residential Investment, and Log-GDP. The results are presented in Figure 11, which also depicts the response of our benchmark investment measure for ease of comparison.

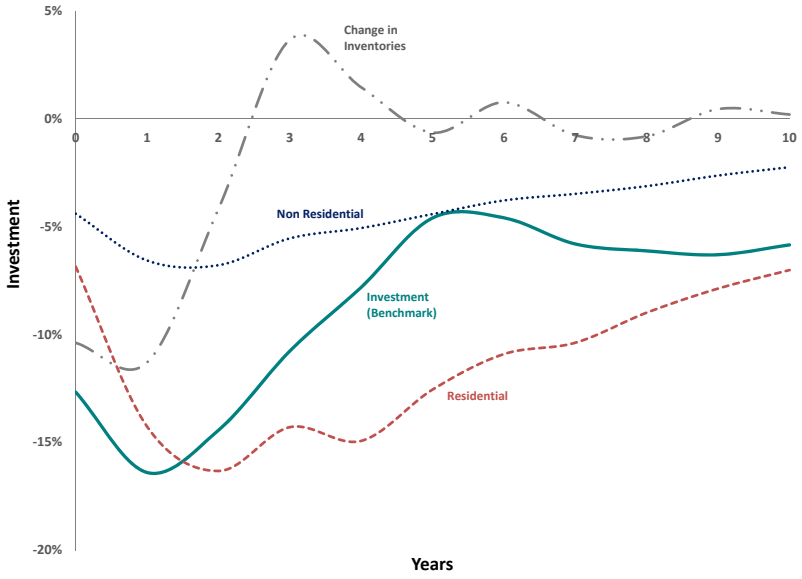
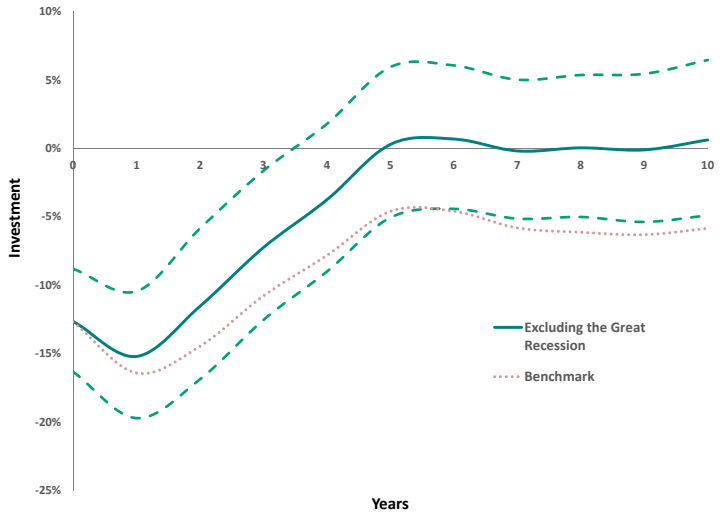


Figure 11: Impulse-response function for different investment measures (of a one-standard deviation increase in HPC). Solid line: investment (in logs, benchmark measure). Dashed line: Private Residential Fixed Investment (in logs). Dotted line: private non-residential fixed investment (in logs). Semi-dashed line: Change in inventories. Estimated using a yearly Cholesky VAR model with War, Recession, Divided Congress, Historical Partisan Conflict, Interest Rates, Change in Inventories, Log-Non-Residential Investment, Log-Residential Investment, and Log-GDP (in that order).

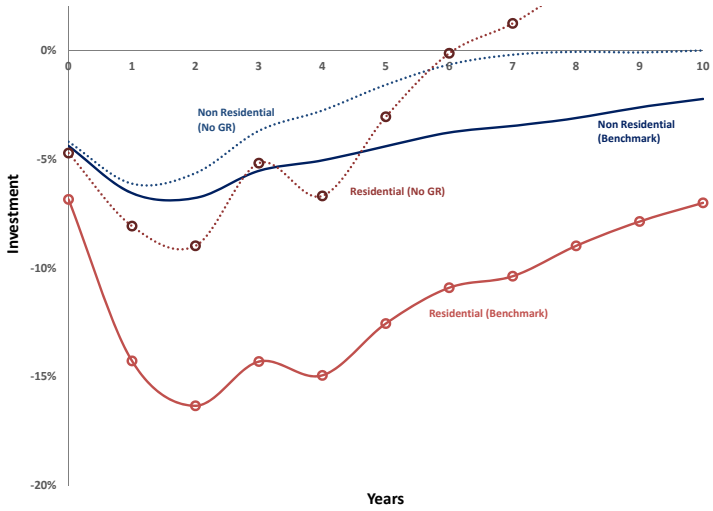
The first thing to note is that the immediate (e.g. on impact) response of each individual investment component is smaller than in the benchmark model, with the largest effect observed in the decline of inventories. Secondly, the overall impact is much larger in residential investment (dashed line) than in non-residential investment (dotted line). Finally, the reductions in fixed investment (both residential and non-residential) are more persistent than those of inventories. The effect of partisan conflict vanishes in inventories after two years (standard errors omitted in the figure, but available upon request).[19]

In light of this result, a natural question arises as to whether these changes are driven by the recent housing and financial crisis. Figure 12 depicts the response of investment as computed in Figures 9 and 11, together with those obtained by computing the same VAR models over the period 1929-2006 (e.g. excluding the Great Recession). The solid line in the first panel depicts the results for the benchmark investment measure, whereas the dashed lines represent standard errors. For ease of comparison, the dotted line replicates the

[19]For robustness, I have also computed the response to a partisan conflict shock of each component in a separate VAR model and the results are qualitatively similar. The joint specification seems more reasonable though, as errors affecting each component are likely to be correlated.



(a) Investment



(b) Investment Components

Figure 12: Benchmark vs No Great Recession period (e.g. 1929-2006). See note to Figure 11 for details on the VAR model.

response computed using the whole sample (1929-2013). The two estimations are similar, with persistence being somewhat smaller once the Great Recession is excluded (note that the previous estimation falls within the one-standard deviation band of the new model). This indicates that the response of investment to partisan conflict is not driven by the reaction of investment to the most recent financial crisis.

The second panel shows the response of investment components for the two sample periods. The most noticeable difference, as expected, corresponds to the response of residential fixed investment. When the Great Recession is excluded from the sample, the estimated

response of residential fixed investment (dotted line with circles) is smaller and significantly less persistent than when the full period is considered (solid line with circles). The standard errors are not shown for readability, but it is worth mentioning that the reduction in residential investment is statistically significant only for the first three periods after the innovation in partisan conflict. Even though the magnitude of the response to the shock is smaller when the period 2007-2013 is excluded, residential investment responds negatively to increases in partisan conflict. The response of non-residential investment is similar in the first few periods to the one obtained in the full sample (dotted and solid lines, respectively).

Taken together, these figures indicate that the lower persistence in overall investment to a partisan conflict shock is due to the behavior of residential investment. Its reduction upon impact, on the other hand, does not seem to depend significantly on whether the Great Recession period is excluded form the sample (this happens because the response of inventories is more marked for the period 1929-2006 than it is for the full sample, result ommitted).

The results from this VAR specification should be interpreted as "informed correlations" between these variables, as the exercise does not allow us to isolate the causal effect of PCI on aggregate investment.

3.2 Firm-level Data Approach

In this section, I exploit the heterogeneity of US publicly traded firms to study the effects of partisan conflict on private investment. To do so, I use a panel of Compustat firms with quarterly data over the period 1985:Q1-2015:Q1. I consider two alternative strategies. In the first one, firms are differentiated by their ex-ante exposure to government demand of goods and services, a measure obtained from Belo, Gala, and Li (2013). Their measure is computed using detailed industry level data from the NIPA input-output accounts. Firms which are more exposed to government spending are expected to have lower investment rates when partisan conflict is high (but moderate) through the uncertainty channel. This exercise, in the spirit of Baker, Bloom, and Davis (2016) and Gulen and Ion (2015), yields better causal identification than what was presented in previous sections using aggregate investment levels. However, the level of exposure is obtained only at the industry level (i.e., three digit SIC codes) for a specific group of publicly traded companies, making the result less general.

The second strategy differentiates firms by their individual contributions to U.S. political campaigns, using an index constructed by Cooper, Gulen, and Ovtchinnikov (2010). These authors showed that firms which devote a larger share of revenues to campaign contributions tend to have abnormal future returns, in particular if the candidates supported hold office in the same state in which the firm is located. We should expect firms that donate more through PACs to have a larger response to innovations to the PCI, as potential gridlock makes it less likely to receive political favors from the candidates supported. In addition, companies whose returns are more exposed to low-probability events (i.e. because their profits would suffer disproportionately were a financial crisis to occur) have more incentives to contribute to candidates who are more likely to choose appropriate policies and regulation. The higher the degree of partisan conflict, the less likely it is that policy will effectively prevent bad outcomes, and hence the lower the returns would be for these firms. A benefit of Cooper,

Gulen, and Ovtchinnikov (2010)' contribution index is that it is firm specific (rather than industry specific), but it involves a smaller number of firms than the one used in the first exercise.

Data Firm-level data is obtained from Compustat for the period 1985:Q1-2015:Q1. I exclude all financial firms (SIC codes between 6000 and 6999), utilities (SIC codes between 4900-4999), and government entities (SIC codes greater than or equal than 9000). The capital stock of firm i, K_{it} is measured using net property, plant and equipment (corresponding to PPENTQ in Compustat) in quarter t, whereas investment I_{it} is measured by the growth rate of capital. This is a normalized measure of net investment (i.e. gross investment minus depreciation). Firms' sales are measured by SALEQ in Compustat. All nominal values are converted to 2009-dollars using the quarterly GDP deflator obtained from FRED. Variables expressed in Canadian dollars, i.e. those with CURCDQ=CAD, are converted to US dollars using quarterly exchange rates also obtained from FRED. Firm-quarters with missing or negative PPENT data are excluded.

Investment rates I/K are computed as the ratio between investment in quarter t and capital in quarter $t-1$.[20] To limit the impact of outliers and potential data errors, I exclude investment rates that are lower than the 1st percentile or larger than the 99th percentile of the whole sample. This results in 479,620 firm-quarter observations. The investment rate of the median firm is about 3% per quarter in the sample.

Government exposure The first approach differentiates firms by their exposure to government spending. I use Belo, Gala, and Li (2013)'s exposure measure, defined as the proportion of each industry's total output that is purchased directly by the government sector (federal plus state and local), as well as indirectly through the chain of economic links across industries. Indirect effects arise form the fact that in order for a specific sector to make a sale to the government, it uses inputs from other sectors. The authors compute indirect governments spending effects using the Leontief inverse. I use the average exposure over time for each 3-digit SIC industry to construct the variable Exp_i. Even though most of the government exposure is concentrated at low levels, some industries rely heavily on the sales to the government sector. For example, Radio and Television Broadcasting (SIC 483)'s exposure is about 72 %, followed by Ordnance and Accessories (SIC 348) at 66% and Search and Navigation Equipment (SIC 381) at 58%. These industries have also been identified as highly exposed to government policy by Baker, Bloom, and Davis (2016) using data on federal contracts and Nekarda and Ramey (2011) using an alternative measure derived from NIPA accounts.

The main investment rate specification takes the following form

$$\frac{I_{it}}{K_{it-1}} = \alpha_i + \beta \ln(PCI_t) \times Exp_i + \gamma M_t + QRT_t + \epsilon_{it}$$

where i indexes firms and t indexes time. The dependent variable I_{it}/K_{it-1} represents the investment rate, $\ln(PCI_t)$ is the natural logarithm of quarterly PCI, Exp_i denotes the

[20] Quarter t corresponds to the calendar quarter rather than the fiscal quarter. This is done for consistency with PCI measures.

government exposure level of the industry to which firm i belongs, α_i is the firm fixed-effect, and QRT_t represents calendar-quarter dummies. To control for macroeconomic conditions (M_{it-1}), and following Gulen and Ion (2015), I include lagged quarterly change in (log) GDP.

Table 3 displays the results for the estimated effects on firms' investment rates of the natural logarithm of partisan conflict interacted with the measure of exposure, $\ln(PCI_t) \times Exp_i$. I control for unobserved characteristics of the firm with firm fixed-effects, as well as unobserved common factors that change over time, with time fixed-effects. Standard errors are clustered at the firm level and the calendar-quarter level in order to correct for potential cross-sectional and serial correlation in the error term ϵ_{it} (Petersen (2009). The estimated coefficient of -0.0631 indicates for the median firm in the sample, which sells 17% of its output to the government, a 1% increase in partisan conflict is associated with a decline of 0.0107 in their investment rate (computed as -0.0631×0.17).[21] Given that the investment rate of the median firm is 3.4%, a one percent increase in partisan conflict is associated with a 0.32 percent decline in investment (computed as $0.0107/3.4 \times 100$). To put this number in perspective, notice that $\ln(PCI)$ was 4.42 in 2007 and reached 4.97 in 2011. This 55 log point increase, according to the estimation, would have been associated with a 17% decline in investment rates for the median firm. This result is in line with the theoretical predictions in Bernanke (1983) and Dixit and Pindyck (1994), among others.

Given the forward looking nature of firm investment decisions, Specifications (2) to (5) include forecasts for the growth rate of government expenditures relative to GDP (interacted with government exposure) as an additional control. The variable corresponds to the mean forecasted change in quarterly Real Federal Government Consumption and Gross Investment (rfedgov2), obtained from Federal Reserve Bank of Philadelphia's Survey of Professional Forecasters. The coefficient of interest has a similar magnitude when compared to the benchmark case, as seen by comparing the first two specifications.

The third specification in the table considers the effects of the moving average of the partisan conflict index since the last election,

$$\overline{PCI_t} = \sum_{l=0}^{L} \frac{PCI_{t-l}}{L+1},$$

where L is the number of quarters since the last election, under the convention that $L = 0$ indicates the quarter in which an election (either midterm or presidential) is held. The idea behind this specification is that investors who are trying to learn the true degree of partisan conflict from news may average out what they have observed since the last time the composition of government changed. This is consistent with a Bayesian updating posterior if the PCI at any given point in time is understood as a signal about true partisan conflict (see Azzimonti, 2017). For consistency, I will use the moving average of the natural logarithm of PCI instead, $\overline{\ln(PCI_t)}$. The result is presented in the second column of Table 3. The estimated coefficient is still negative and statistically significant. Moreover, a one percent increase in beliefs about partisan conflict has a stronger effect on investment decisions, -0.0810, than a one percent increase in the index itself. The third specification controls for economic policy

[21] Median firm is defined as the firm in the third quintile of total deflated sales over the time period.

Table 3: Panel regression with firm fixed-effects and time fixed-effects

Dep. Var.: I/K_{it}	(1)	(2)	(3)	(4)	(5)
$\ln(PCI_t) \times Exp_i$	-0.0631***	-0.0566*			
	(0.031)	(0.032)			
$\overline{\ln(PCI_t)} \times Exp_i$			-0.0810**	-0.0794**	
			(0.033)	(0.032)	
$\ln(PCI_t) \times Exp_i \times I_{t<2007}$					-0.0705*
					(0.0420)
$\ln(PCI_t) \times Exp_i \times I_{t\geq 2007}$					-0.0676*
					(0.0390)
Observations	391,616	391,616	391,616	391,616	
Number of firms	11,419	11,419	11,419	11,419	11,419
Firm fixed-effects	Yes	Yes	Yes	Yes	Yes
Quarter Dummies	Yes	Yes	Yes	Yes	Yes
Forecasted Δ GX/GDP	No	Yes	Yes	Yes	Yes
EPU	No	No	No	Yes	No

Notes: The sample period is 1985:Q1-2015:Q1. The dependent variable is the the investment rate I/K of firm i in quarter t. Capital K_{it} is measured with (Net) Property, Plant, and Equipment and investment I_{it} with the change in this variable. The investment rate is defined by I_{it}/K_{it-1}. The independent variables in specification (1) are the natural log of PCI, $\ln(PCI_t)$ interacted with firm exposure Exp_i, lagged GDP growth, firm-fixed-effects, and time-fixed effects. Specifications (2) to (5) include forecasted government expenditures as a percentage of GDP. Specification (3) considers $\overline{\ln(PCI_t)}$, the moving average of PCI between elections, interacted with firm exposure. Specification (4) controls for EPU, by interacting $\ln(EPU_t) \times Exp_i$. Specification (5) is identical to (2) but allows for the coefficient to differ in the period prior to the Great Recession. All regressions are weighted by average sales of the firm during the sample period. Standard errors are clustered by firm and corrected for heteroscedasticity and autocorrelation; they are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1

uncertainty by including the interaction between the natural logarithm of EPU and firm's exposure to government spending Exp_i in a specification similar to (2). The estimated effect of PCI is basically unchanged. Finally, to study whether the results are driven by the recent financial crisis, I allow the coefficient on the interaction term to be different in the period prior to 2007 to that following the Great Recession. I compute this using a specification analogous to (2), with the independent variable is interacted with a dummy variable $I_{t<2007} = 1$ for any year between 1929 and 2006 and zero otherwise; the dummy $I_{t\geq 2007} = 1$ is analogously defined but for any year between 2007 and 2015. The resulting coefficients, shown under Specification (5), are almost identical to each other and close in magnitude to the coefficient found in the benchmark specification.[22] This indicates that the negative effect of partisan conflict on firm investment rates is not resulting from their behavior in the most recent recession, consistently with the findings from the VAR model.

[22]See Appendix 6.2 for a replication of Specifications (3) through (5) which excludes forecasts about government expenditures.

Political contributions In the second strategy, publicly traded firms are differentiated by their political contribution practices. I use a contribution index developed by Cooper, Gulen, and Ovtchinnikov (2010), who collect data from the U.S. Federal Election Commission (FEC) to create contributions to political campaigns in the U.S made by corporations through their corporate political action committees (PACs). Under the assumption that firms support a portfolio of candidates on presidential and mid-term elections, it is possible to sum up, over a rolling multiyear window, the number of candidates that each firm supports. Because the ability of the candidate to actually help a particular firm through policy depends on other factors, the index only includes candidates that hold office in the same state in which the firm is headquartered, and it is adjusted by the candidate's strength (defined next). In particular, letting $Cont_{it}$ denote the contribution index in period t, we have that

$$Cont_{it} = \sum_{j=1}^{J} I_{jt} \times \frac{NVC_{jt}}{NOV_{jt}} \times H_{jt,t-5},$$

where I_{jt} is a dummy variable that equals one if candidate j is in office at time t, and zero otherwise; NVC_{jt} denotes the number of votes that candidate j's party holds in office at time t whereas NOV_{jt} is the number of votes that candidate j's opposing party holds in office at time t. Hence, the ratio $\frac{NVC_{jt}}{NOV_{jt}}$ reflects the party's strength relative to the opposition. Finally, $H_{jt,t-1}$ is an indicator variable that equals one if candidate j is running for office from the state in which firm i is headquartered and zero otherwise. The variable J denotes the total number of candidates that receive contributions from firm i. The authors compute this index for a series of presidential and mid-term elections between 1984 and 2004. In the estimation, I focus on the *average* value of the index over this interval of time, $Cont_i = \sum_t Cont_{it}$ so it is time-independent. This variable is interacted with the partisan conflict index. Intuitively, firms with high average contribution indexes are relatively more affected by political gridlock, as the ability of the candidates they support to enact favorable policies is lower. Therefore, we expect the coefficient on $\ln(PCI_t) \times Cont_i$ to be negative.[23]

The main investment rate specification takes the following form

$$\frac{I_{it}}{K_{it-1}} = \alpha_i + \beta \ln(PCI_t) \times Cont_i + \gamma M_t + QRT_t + \epsilon_{it},$$

which is analogous to the previous model with the exception that now the interaction term is $\ln(PCI_t) \times Cont_i$.

The first column of Table 4 reports the coefficient of $\ln(PCI_t) \times Cont_i$, controlling for firm fixed-effects and time fixed-effects (this is a specification equivalent to the one in column (1), but considering contributions rather than exposure to government spending). The

[23] An alternative interpretation could be that firms mostly try to buy inaction from policymakers through campaign contributions. This would be the case if firms were more interested in preventing new regulations than in repealing existing ones or in preventing the introduction of new regulations. If that were the case, we would expect the coefficient on $\ln(PCI_t) \times Cont_i$ to be positive or insignificant, as firm would actually *benefit* from gridlock. As we see from the result of the empirical model, the coefficient is actually negative, supporting the hypothesis that partisan conflict is worse for firm that contribute a lot. I would like to thank an anonymous referee for pointing this alternative hypothesis.

Table 4: Panel regression with firm fixed-effects and time fixed-effects

Dep. Var.: I/K_{it}	(1)	(2)	(3)
$\ln(PCI_t) \times Cont_i$	-0.00419***		
	(0.00136)		
$\overline{\ln(PCI_t)} \times Cont_i$		-0.00539***	-0.0048***
		(0.00174)	(0.0014)
Observations	35,041	35,041	35,041
Number of firms	661	661	661
Firm fixed-effects	Yes	Yes	Yes
Quarter Dummies	Yes	Yes	Yes
EPU	No	No	Yes

Notes: The sample period is 1985:Q1-2015:Q1. The dependent variable is the the investment rate I/K of firm i in quarter t. Capital K_{it} is measured with (Net) Property, Plant, and Equipment and investment I_{it} with the change in this variable. The investment rate is defined by I_{it}/K_{it-1}. The independent variables in specification (1) are the natural log of PCI, $\ln(PCI_t)$ interacted with political contributions $Cont_i$, lagged GDP growth, firm-fixed-effects, and time-fixed effects. Specification (2) considers $\overline{\ln(PCI_t)}$, the moving average of PCI between elections, interacted with political contributions. Specification (3) controls for EPU, by interacting $\ln EPU \times Cont_i$. All regressions are weighted by average sales of the firm during the sample period. Standard errors are clustered by firm and corrected for heteroscedasticity and autocorrelation; they are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1

number of observations is much smaller than in the previous section for two reasons. First, because the sample period under consideration is restricted to coincide with the period in which the contribution index is computed, namely 1985:Q1 to 2004:Q4. Second, because only about 9% of Compustat firms engage in contributions through PACs. As a result, the sample consists of only 661 firms and 35,041 firm-quarter observations (relative to 11,419 firms and 391,616 firm-quarter observations in the previous specification). These firms have slightly different characteristics: they tend to be significantly larger (average sales are three times larger) and have lower investment rates (median investment rates are 2.4% versus 3.4% before). The estimated coefficient is negative and significant. Considering that the median firm (measured in terms of sales) in this sample has a contribution index of 2.6, a one percent increase in the partisan conflict index is associated with a decline in the investment rate of $-0.0109 = -0.00419 \times 2.6$. This number is slightly below the one computed when firms were differentiated by their exposure to government spending, but because the investment rate is actually smaller, it corresponds to a 0.45 percent change in the investment rate of the median firm ($0.45 = -0.0109/2.4 \times 100$). The second column re-computes Specification (1) but using the moving average of partisan conflict instead of the PCI interacted with the firms' contri-

bution index. This specification is analogous to the one estimated in column (2) of Table 3. As in the previous case, the resulting coefficient -0.00539 is larger, indicating that a one percent increase in expectations about partisan conflict discourages investment even more than a one percent increase in PCI. Notice that the last two specifications are estimated in a period that precedes the Great Recession (e.g. it ends in 2004). This is reassuring, as the effects of news about political discord identified in this paper are not just driven by abnormal trends taking place during the Great Recession. Finally, the last column controls for EPU by including the interaction between $\ln EPU$ and the contribution index $Cont_i$. The negative and statistically significant coefficient on PCI indicates that the findings are not confounding the effects of the EPU indicator.

4 Conclusion and extensions

This paper investigates whether news about partisan conflict and private investment are negatively related. I develop an index of partisan conflict based on a semantic-search approach on newspaper articles. I show that the indicator has a plausible behavior, as it is consistent with that of other variables determining the political process (such as polarization and political power), as well as trends in media coverage, and short-term shocks that are expected to affect true partisan conflict. Using historical data (e.g. 1929 to 2013), I show that the index is negatively associated with real aggregate investment in the US. I also show that innovations to the PCI result in lower investment rates at the firm level.

This is a first step towards understanding the effects of political disagreement on economic outcomes, and as such it could be improved in several dimensions. First, the index only considers the frequency of articles reporting political discord but ignores the intensity and relevance of alternative news articles. Second, the analysis makes exclusive use of newspapers, ignoring other sources of news such as cable TV or internet outlets. It may be interesting to study the effect of these alternative sources of information, particularly social media, on investors' expectations in future work. Analyzing the effects of partisan conflict on the US budget cycle (following Alt and Lassen, 2006), its effects on the composition of durable and nondurable consumption, on employment levels, or on foreign direct investment could also be interesting extensions to this work.

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5 Appendix

5.1 Partisan conflict and economic policy uncertainty

The methodology used to compute the PCI is similar to the one Baker, Bloom, and Davis (2016) followed to construct EPU. While we both use a semantic search approach to identify relevant newspaper articles, the set of words used in the searches is dramatically different. While these authors include the words 'economic/economy,' 'uncertainty' and an proxies for 'policy,' I search for words that indicate disagreement between policymakers.

In addition, as EPU and PCI represent different concepts, they are characterized by distinctive features. High levels of partisan conflict are interpreted as situations where agreement between two parties that share decision-making power is hard to reach, so policies are expected to be less effective at preventing recessions and tail risks. Moderate levels of partisan conflict should be associated with positive economic policy uncertainty, as investors cannot predict which policies will be undertaken. Examples are the debt ceiling debate (will the government change taxes to avoid a fiscal cliff?), the passage of Obamacare (will Congress modify the health care system effectively, or will this result in an explosion of public debt?), or the uncertainty associated with tax expirations (will tax cuts expire or will the two parties agree on further extensions?). In situations like these, we would expect government dysfunction to induce economic policy uncertainty and the two indexes to move in tandem. Figure 13, which depicts the PCI (solid line) together with the news-based EPU index (dashed line), shows that the indexes share a similar trend.

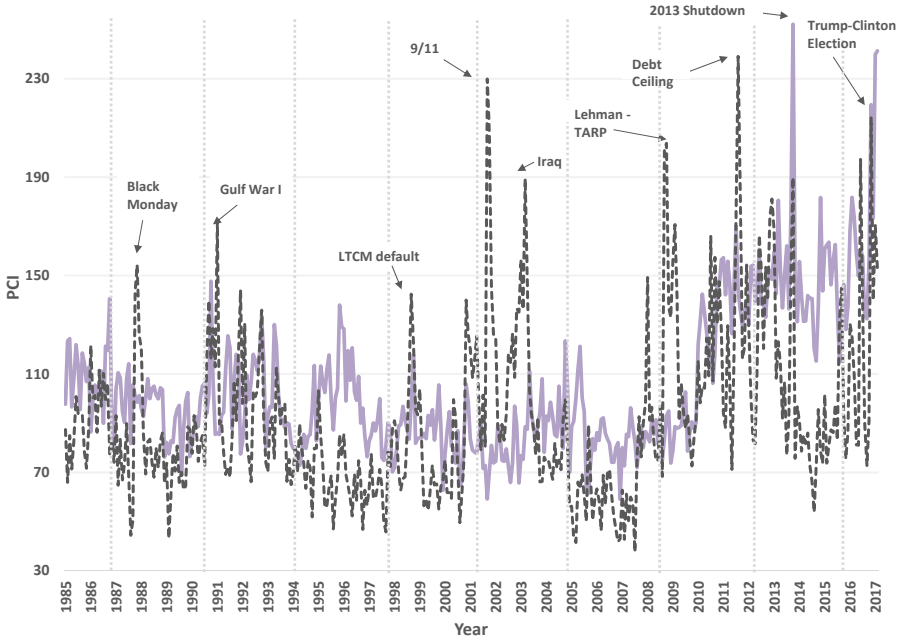

Figure 13: Partisan conflict (solid) and news-based economic policy uncertainty (dashed). Shutdown spike truncated for readability.

Partisan conflict need not, however, always cause economic policy uncertainty to increase. Under extreme levels of partisan disagreement (e.g., when Congress is divided and polarization levels are high) the government may enter a gridlock state, or even a shutdown and the relationship between EPU and PCI may break, at least in the short-run. This is consistent with the behavior of the series in Figure 13 around the 2013 shutdown. Notice, however, that shutdowns may still be detrimental for the economy. When the PCI reaches extreme values, investors become very pessimistic about the ability of the government to take the appropriate measures to reduce tail risks or recessions, and this may depress investment.

There is no clear relationship between cyclical PCI and EPU (that is, between deviations from trend of these two variables). This happens because measured EPU may fluctuate as a consequence of factors unrelated to policy and regulation determined by the executive and legislative powers, and thus to partisan conflict. Inspecting Figure 13, we can see that EPU is affected by monetary policy (such as interest rate cuts by the Federal Reserve) but the PCI is completely unresponsive to it. This is reasonable, as monetary policy is chosen by an independent authority, but may cause (monetary) policy uncertainty. Finally, there are important differences in the behavior of the two variables in the presence of military conflict: While the EPU increases during wars or under national security threats (for example, 9/11 or the Gulf Wars), partisan conflict tends to remain relatively low or even decrease. The fact that the EPU increases sharply during these events indicates the existence of a substantial proportion of newspaper articles discussing government policy. These articles are not, however, reporting high levels of conflict between parties. This suggests that lower-than-

average values of the PCI during national threats do indeed reflect rallies around the flag, rather than just being a by-product of changes in media coverage toward war-related news. Because of all these factors, the correlation between partisan conflict and the news-based index of economic policy uncertainty developed by Baker, Bloom, and Davis (2016) is only 0.34 in the recent period (1985-2015).[24]

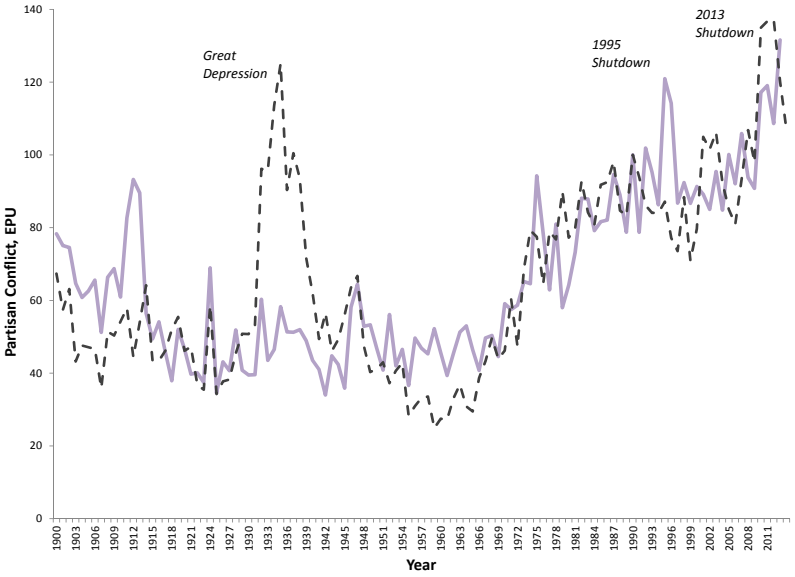

Figure 14: Partisan conflict (solid) and news-based economic policy uncertainty (dashed). Both series are normalized to 100 in 1990.

The last important difference between the two series lies on the fact that there exist two types of EPU. The first one, which has been explored in the theoretical section, relates to *which* policies would be chosen at each point in time, or more specifically, whether preventives policies would be implemented at all. The second one is associated with the uncertain *consequences* of policies that have already been chosen by the government (see Pastor and Veronesi, 2013 for a theoretical discussion). Partisan conflict only causes the first type of uncertainty. Discussions surrounding the approval of a stimulus package or whether the debt-ceiling would be lifted to avert default are clear examples. The policies implemented in response to the Great Depression, 9/11, or the Iraq wars, on the other hand, faced little or no opposition, in a period of low PC. For example, the New Deal was easily approved with a Democratic supermajority in both houses. The response to the terrorist attacks in 2001 was clearly a bipartisan effort. The large spikes observed in the EPU series result from uncertainty about whether the implemented policies would be effective (to end the Great Depression, to discourage further attacks, or to avoid a war with other Middle-Eastern countries), rather than

[24]This correlation is computed using only the news-based index of economic policy uncertainty and not the final EPU. The reason is that tax expirations account for about one-third of the EPU index, which I wanted to exclude to make the comparison. If I use the benchmark EPU measure, which includes tax expirations, the correlation between the two indexes is about 0.47.

about whether they would be implemented or not. The disconnect between the two series in these episodes is evident by looking a the historical partisan conflict and economic policy uncertainty series, in Figure 14.

5.2 Sources

Table 5: Newspaper coverage in Factiva

News Source	*Start Date*	*News Source*	*Start Date*
The Arizona Republic	Jan-1999	The New York Times	Jun-1980
The Arkansas Democrat Gazette	Oct-1994	Newsday	Jul-1985
The Atlanta Journal Constitution	Jan-1986	The News-Gazette	Mar-2000
The Baltimore Sun	Sept-1990	The Oklahoman	Nov-1981
Boston Herald	Jul-1991	Omaha World-Herald	Aug-1983
Buffalo News	Feb-1992	The Orange County Register	Nov-1986
Charlotte Observer	Jan-1994	The Oregonian	Jul-1989
Chicago Sun-Times	Jul-1985	Orlando Sentinel	Oct-1987
Chicago Tribune	Jan-1985	The Philadelphia Inquirer	Oct-1994
The Christian Science Monitor	Sept-1988	Pittsburgh Post-Gazette	Jul-1990
The Cincinnati Enquirer	Jan-2002	The Plain Dealer	Mar-1989
The Columbus Dispatch	Dec-1991	The Sacramento Bee	Jan-2003
The Boston Globe	Jan-1987	San Antonio Express-News	Feb-1994
The Courier Journal	Jan-2002	The San Francisco Chronicle	Apr-2012
The Dallas Morning News	Aug-1984	San Jose Mercury News	Jan-1994
The Denver Post	Aug-1988	The Seattle Times	Dec-2008
Detroit Free Press	Jan-1994	South Florida Sun-Sentinel	Jan-1990
The Detroit News	Jan-2002	St. Louis Post-Dispatch	Jan-1992
The Fort Worth Star-Telegram	Jun-2001	St. Paul Pioneer Press	Jan-1994
The Hartford Courant	May-1991	The Star-Ledger	Jan-1991
Houston Chronicle	Apr-2012	Star-Tribune	Jan-1986
Indianapolis Star	Jan-2002	Tampa Bay Times	Nov-1986
Investor's Business Daily	Jan-2002	Tampa Tribune	Jul-2011
The Kansas City Star	Jan-1991	The Times-Picayune	Apr-1992
Los Angeles Times	Jan-1985	USA Today	Apr-1987
The Miami Herald	Oct-1994	U-T San Diego	Jan-2000
The Milwaukee Journal Sentinel	Jan-2000	The Wall Street Journal	Jun-1979
New York Daily News	Dec-1992	The Washington Post	Jan-1984
New York Post	Sept-1997	Washington Post.com	Oct-2007

Note: This table contains the names of the main US newspapers used in constructing the partisan conflict index, together with the coverage start month in Factiva's database.

5.3 Filters

NADVTR	Advertorials	GLIFE	Lifestyle
NEDC	Commentary/opinion	GROYAL	Royal Family
NCOPRO	Country Profile	GCOM	Society/Community/Work
NEDI	Editorial	GWEA	Weather
NITV	Tv listings	NRGN	Routine general news
NLET	Letters	E52	Eurozone currency news
NOBT	Obituaries	GRAPE	Rape
NPEO	People profiles	GJURI	Juri
NPAN	Personal announcements	gdoga	Dog attacks
NRAN	Rankings	gdomv	Domestic violence
NRVW	Reviews	ghara	Harrassment
GSPO	Sports	gprob	Probation
GENT	Entertainment	gtrff	Traffic violations
GAWARD	Awards/Lotteries	gvand	Vandalism

In addition, news items are restricted to at least 200 words. In addition, I exclude editorials and commentaries from the search in an attempt to reduce potential ideological biases (see the work by Gentzkow and Shapiro, 2010, on media slant).

6 Words used in Search Query

The set of words used in the Factiva query follows:

Political Disagreement: standstill, stalemate, gridlock, disagreemein, fail to compromise, polarization, polarized, dysfunctional, ideological difference(s), deadlock, budget battle / fight, filibuster, standoff, veto, vetoes, vetoing, delay /oppose bill.

Government: White House, senate, senator, Capitol, Congress, congressman(woman), party, partisan, Republican, GOP, Democrat, political, politician, legislator, lawmaker, "the President", Appropriation Committee, Finance Committee, Ways and Means Committee, federal government.

6.1 Robustness to the set of words

In this subsection, I analyze whether the PC indicator is robust to restricting the search to involve specific terms related to fiscal policy. The article search focuses on political disagreement, without being specific about particular policy terms. For a robustness check, I recomputed the historical index conditioning articles to involve specific public policies. The index is computed using articles containing at least one word at the intersection of the following three categories: (i) political disagreement, (ii) government, and (iii) public policy. The terms involved in the first two categories are identical to the ones used to construct the

historical index. The list of terms used in the third category can be found below.[25]

On average, these articles correspond to about 60% of the total number of counts obtained in the original search, with the ratio increasing to over 76% since 2006.

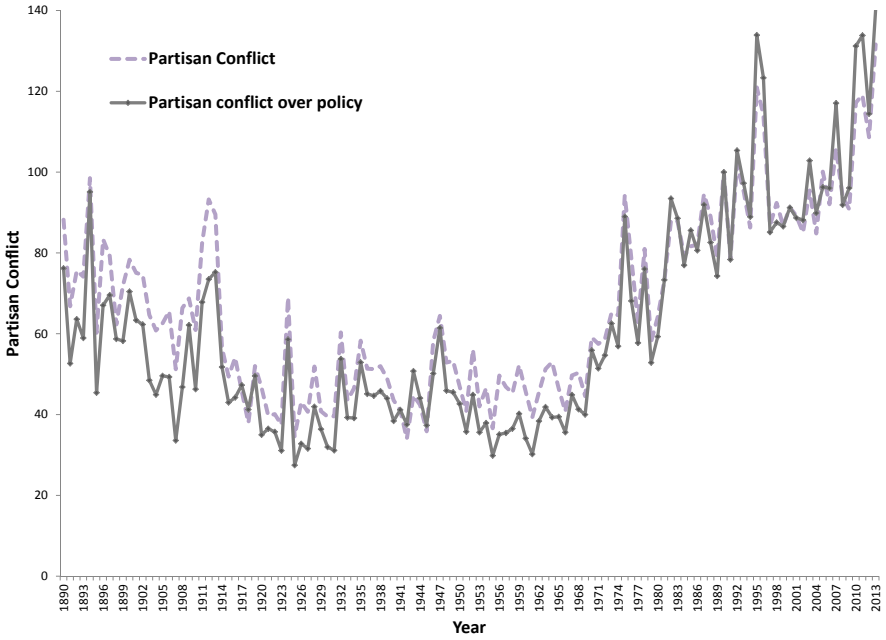

Figure 15: Partisan conflict: historical series (dashed) vs. partisan conflict over specific policies (solid).

The resulting index (computed following the methodology described in Section 2.1), *Partisan conflict over policies*, can be found together with the historical series in Figure 15. When conditioning the search to contain specific policy terms, the resulting index is on average lower than the historical one until about 1968, year after which the two series become virtually identical. This is consistent with the observation that race and religion (rather than wealth) were the dominant determinants of political ideology before the 1970s. For example, the policy terms listed above do not capture terms related to the debate on voting participation that lead to the Voting Rights Act of 1965.

Keywords The list of terms used in the robustness check are summarized below.

- **Govt policy**: tax (taxation, taxes, taxed), tariff, fiscal stimulus, health care, social security, debt ceiling (or limit), welfare, Medicare, Medicaid, part d, affordable care act, food stamps, AFDC, tanf, oasdi, earned income tax credit, EITC, public assistance,

[25]The list includes all the policy terms used in Baker et.al. (2016), plus the following additional terms: tax (taxation, taxes, taxed), budget, war, constitutional amendment, immigration, sovereign debt, monometallist, bimetallist, (silver or gold) coinage, duty (or duties), alcohol (or liquor) prohibition, federal credit, grant in aid, commerce competition, and commerce clause.

nutritional assistant program, head start program, entitlement program, wic program, government subsidies, deficit, budget, national (federal or sovereign) debt, government policy, public policy, government spending (or expenditures), entitlement spending (or expenditures), unemployment insurance (or benefits), disability insurance (or benefits), health insurance (or benefits), medical insurance reform, constitutional reform, welfare reform, duty (or duties).

- **Regulation**: prescription drugs, drug policy, food and drug admin, FDA, Gramm-Rudman, Bank supervision, thrift supervision, malpractice reform, constitutional reform, financial reform, medical insurance reform, welfare reform, tort reform, constitutional amendment, Glass-Steagall, Dodd-Frank, housing financial services committee, capital requirement, security exchange commission, sec, deposit insurance, fdic, fslic, ots, occ, firrea, truth in lending, monometallist, bimetallist, (silver or gold) coinage, alcohol (or liquor) prohibition.

- **Labor**: minimum (or living) wage, union rights, card check, national labor rel. board, nlrb, collective bargaining, right to work, closed shop, worker compensation, maximum hours, wages and hours, advanced notice requirement, affirmative action, overtime requirements, at-will employment, Davis-Bacon, equal employment opportunity, eeo, osha, immigration.

- **Competition**: monopoly, patent, copyright law, federal trade commission, ftc, unfair business practice, cartel, competition law, price fixing, price discrimination, class action, antitrust, merger policy, competition policy, commerce competition, and commerce clause..

- **Environment**: carbon tax cap and trade, pollution controls, environmental restrictions, clean air act, clean water act, energy policy, drill* restrict*.

- **Trade**: dumping, trade policy (act, agreement, or treaty), duty (or duties), import tariff (or barrier).

- **Defense**: national security, military invasion (conflict, embargo, or procurement), war, armed forces, police action, base closure, saber rattling, naval blockade, no-fly zone, defense spending (or expenditures), military spending (or expenditures).

6.2 Panel regressions without forecast

Table 6: Panel regression with firm fixed-effects and time fixed-effects

Dep. Var.: I/K_{it}	(1)	(2)	(3)	(4)
$\ln(PCI_t) \times Exp_i$	-0.0631***			
	(0.031)			
$\overline{\ln(PCI_t)} \times Exp_i$		-0.0886***	-0.0881***	
		(0.033)	(0.033)	
$\ln(PCI_t) \times Exp_i \times I_{t<2007}$				-0.0777**
				(0.0410)
$\ln(PCI_t) \times Exp_i \times I_{t\geq 2007}$				-0.0746**
				(0.0385)
Observations	391,616	391,616	391,616	391,616
Number of firms	11,991	11,991	11,991	11,991
Firm fixed-effects	Yes	Yes	Yes	Yes
Quarter Dummies	Yes	Yes	Yes	Yes
Forecasted Δ GX/GDP	No	No	No	No
EPU	No	No	Yes	No

Notes: The sample period is 1985:Q1-2015:Q1. The dependent variable is the the investment rate I/K of firm i in quarter t. Capital K_{it} is measured with (Net) Property, Plant, and Equipment and investment I_{it} with the change in this variable. The investment rate is defined by I_{it}/K_{it-1}. The independent variables in specification (1) are the natural log of PCI, $\ln(PCI_t)$ interacted with firm exposure Exp_i, lagged GDP growth, firm-fixed-effects, and time-fixed effects. Specification (2) considers $\overline{\ln(PCI_t)}$, the moving average of PCI between elections, interacted with firm exposure. Specification (3) controls for EPU, by interacting $\ln EPU \times Exp_i$. Specification (4) is identical to (1) but allows for the coefficient to differ in the period prior to the Great Recession. All regressions are weighted by average sales of the firm during the sample period. Standard errors are clustered by firm and corrected for heteroscedasticity and autocorrelation; they are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1