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FIRM-LEVEL POLITICAL RISK: MEASUREMENT AND EFFECTS

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ABSTRACT

We adapt simple tools from computational linguistics to construct a new measure of political risk faced by individual US firms: the share of their quarterly earnings conference calls that they devote to political risks. We validate our measure by showing that it correctly identifies calls containing extensive conversations on risks that are political in nature, that it varies intuitively over time and across sectors, and that it correlates with the firm's actions and stock market volatility in a manner that is highly indicative of political risk. Firms exposed to political risk retrench hiring and investment and actively lobby and donate to politicians. Interestingly, we find that the incidence of political risk across firms is far more heterogeneous and volatile than previously thought. The vast majority of the variation in our measure is at the firm-level rather than at the aggregate or sector-level, in the sense that it is neither captured by time fixed effects and the interaction of sector and time fixed effects, nor by heterogeneous exposure of individual firms to aggregate political risk. The dispersion of this firm-level political risk increases significantly at times with high aggregate political risk. Decomposing our measure of political risk by topic, we find that firms that devote more time to discussing risks associated with a given political topic tend to increase lobbying on that topic, but not on other topics, in the following quarter.

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From the UK's vote to leave the European Union to the threats of the US Congress to shut down the federal government, recent events have renewed concerns about the effects of risks emanating from the political system on investment, employment, and other aspects of firm behavior. The size of such effects, and the question of which aspects of political decision-making might be most disruptive to business are the subject of intense debates among economists, business leaders, and politicians. However, quantifying the effects of political risk has often proven difficult due to a lack of firm-level data on the extent of exposure to political risk, as well as a lack of data on the kind of political issues firms may be most concerned about.

In this paper, we use textual analysis of quarterly earnings conference-call transcripts to construct firm-level measures of the extent and type of political risk faced by individual firms listed in the United States—and how it varies over time. The vast majority of firms with a listing on a US stock exchange hold regular conference calls with their analysts and other interested parties, a forum where management gives its view on the firm's past and future performance and responds to questions by call participants about any challenges the firm may face. Our approach to quantifying the extent of political risk faced by a given firm at a given point in time is simply to measure the share of the conversation between participants and firm management that centers on risks associated with politics in general, and with specific political topics.

To this end, we adapt a simple pattern-based sequence-classification method developed in computational linguistics (Song and Wu, 2008; Manning et al., 2008) to distinguish between language associated with political versus non-political topics. For our baseline measure of overall exposure to political risk, we use a training library of political text (an undergraduate political science textbook or text from the political section of newspapers) and a training library of non-political text (an accounting textbook, text from non-political sections of newspapers, or transcripts of speeches on non-political topics) to identify two-word combinations ("bigrams") that are frequently used in political texts. We then count the number of instances in which conference-call participants use these bigrams in conjunction with synonyms for "risk" or "uncertainty," and divide by the total length of the conference call to obtain a measure of the share of the conversation that is concerned with risks associated with politics.

For our topic-specific political risk measure, we similarly use training libraries of text concerned with eight political topics (e.g., "economic policy & budget," "environment," and "health care"), as well as the political and non-political training libraries mentioned above, to identify patterns of language frequently used when discussing a particular political topic. This approach yields a measure of the share of the conversation that is about risks associated with each of the eight political topics.

Having constructed our measures, we present a body of evidence bolstering our interpretation that

they are indeed capturing political risk. First, we show that each of our top-scoring transcripts correctly identifies conversations that center on risks associated with politics, including, for example, concerns about regulation, ballot initiatives, and government funding. Similarly, the bigrams identified as most indicative of political text appear intuitive, such as "the constitution," "public opinion," and "the FAA."

Second, we find our measure varies intuitively over time and across sectors: the mean across firms of our main measure of overall political risk increases significantly around federal elections and is highly correlated with the index of aggregate economic policy uncertainty proposed by Baker, Bloom, and Davis (2016). In the cross section, we find that firms operating in sectors most dependent on government regulation and expenditure (including finance, insurance, and construction) on average exhibit significantly higher political risk, according to our measure, than those that are less dependent on government.

In addition to examining averages across time and sector, we also make use of historical episodes in which a particular political shock is associated with a unique combination of words that is used only during the period of interest and not before. For example, we find that firms that feature discussions of "Brexit" in the third quarter of 2016 or discussions of "Trump" in conjunction with the word "tweet" in the fourth quarter of 2016 exhibit significant increases in our measure of their political risk.

Third, we show our measure correlates with firm-level outcomes in a way that is highly indicative of reactions to political risk. Theory predicts that an increase in any kind of risk, and thus also an increase in the firm's political risk, should trigger a rise in the firm's stock market volatility and decrease its investment and employment growth (e.g., Pindyck (1988); Bloom et al. (2007)). In contrast to these "passive" reactions to overall risk, firms may also "actively" manage political (but not non-political) risk by donating to campaigns or lobbying politicians (Tullock, 1967; Peltzman, 1976). Such "active" management of political risks should be concentrated among large but not small firms, because large firms internalize more of the gain from swaying political decisions than small firms (Olson, 1965).

Consistent with these theoretical predictions, we find that increases in our measure of a firm's political risk are associated with significant increases in its stock return volatility and with significant decreases in its investment, planned capital expenditures, and hiring. In addition, we find that firms facing higher political risk tend to subsequently donate more to political campaigns, forge links to politicians, and invest in lobbying activities. Finally, again consistent with theoretical predictions, such active engagement in the political process is primarily concentrated among larger firms.

Importantly, all of these associations remain statistically significant and of the same order of magnitude when we focus exclusively on firm-level variation in our measure of political risk; that is, they continue to hold even when we control for time fixed effects and the interaction of time and sector fixed

effects, suggesting the firm-level variation in our measure has economic content.

In a final step, we conduct a range of falsification exercises by extending our methodology to construct a measure of non-political risk and by decomposing our measure of political risk into a measure of political exposure (i.e., counting only the number of political bigrams, without conditioning on risk) and a measure of risk (i.e., counting only the number of synonyms for risk, without conditioning on political bigrams). We then show our measure of political risk, as well as its components, correlate with firm-level outcomes in the way predicted by theory. For example, when we control for political risk, non-political risk is nevertheless significantly correlated with lower investment and employment growth (consistent with generic reactions to risk), but not with lobbying and donations (consistent with the view that such active participation in the political process may only be effective in managing political, and not non-political, risk). Similarly, the association between political risk and investment and employment growth is substantially attenuated when we control for overall risk, but not when we control for political exposure.

Thus, having bolstered our confidence that our measure indeed reflects economically significant firm-level variation in political risk, we use it to learn about the nature of political risk affecting US firms. Perhaps our most surprising finding is that most of the variation in political risk appears to play out at the level of the firm, rather than the level of (conventionally defined) sectors or the economy as a whole. Taken together, variation in aggregate political risk over time (time fixed effects) and across sectors (sector $\times$ time fixed effects) account for 1.00% and 8.87% of the variation in our measure, respectively. "Firm-level" variation drives the remaining 90.13%, most of which (69.55%) is accounted for by variation over time in the identity of firms most affected by political risk within a given sector.[1] Of course, part of this large firm-level variation may simply result from differential measurement error. However, all the associations between political risk and firm actions outlined above change little when we condition on time, sector, and sector $\times$ time fixed effects, or if we increase the granularity of our definition of sectors. The data thus strongly suggest the large amount of firm-level variation in our measure has real economic content.

To shed light on the origins of firm-level variation in political risk, we provide detailed case studies of the political risk faced by two illustrative firms over our sample period. These studies show the interactions between firms and governments are broad and complex, including the crafting, revision, and litigation of laws and regulations, as well as budgeting and procurement decisions with highly heterogeneous and granular impacts. For example, only a very small number of sample firms from the "electric services" sector will be affected by new regulations governing the emissions of mercury from

[1] This latter number changes only slightly when we go from using 65 SIC-2-digit to 258 3-digit or 409 4-digit sectors.

coal furnaces across state lines, or changing rules about the compensation for providing spare generation capacity in Ohio. Given our reading of these transcripts, we find it quite plausible that the incidence of political risk should be highly volatile and heterogeneous, even within strictly defined sectors.

Our main conclusion from this set of results is that much of the economic impact of political risk is not well described by conventional models in which individual firms have relatively stable exposures to aggregate political risk (e.g., Pastor and Veronesi (2012); Baker et al. (2016)). Instead, a strikingly large portion of the variation in political risk is driven by changes over time in the identity of firms most affected by political risk within a given sector. That is, firms considering their political risk may well be more worried about their relative position in the cross-sectional distribution of political risk (e.g., drawing the attention of regulators to their firms' activities) than about time-series variation in aggregate political risk. We also find this cross-sectional distribution has a fat right tail.

A direct implication of these results is that the effectiveness of political decision-making may have important macroeconomic effects, not only by affecting aggregate political risk, but also by altering the identity of firms affected by political risk and the dispersion of political risk across firms. For example, if some part of the firm-level variation in political risk results from failings in the political system itself (e.g., the inability to reach compromises in a timely fashion), this may affect the allocation of resources across firms, and thus lower total factor productivity, in addition to reducing aggregate investment and employment (and to generating potentially wasteful expenditure on lobbying and political donations). Consistent with this view, we find that a one-percentage-point increase in aggregate political risk is associated with a 0.5-percentage-point increase in the cross-sectional standard deviation of firm-level political risk, suggesting the actions of politicians may indeed influence the dispersion of firm-level political risk.

After studying the incidence and effects of overall political risk, we turn to measuring the risks associated with eight specific political topics. To validate these measures, we again verify that they correctly identify transcripts that feature significant discussions of risks associated with each of the eight political topics. We then make use of the fact that federal law requires firms that engage in lobbying of any branch of government to disclose not only their total expenditure on lobbying, but also the list of topics this expenditure is directed toward. That is, the lobbying data uniquely allow us to observe a firm's reaction(s) to risks associated with specific political topics, and to create a mapping between specific political topics discussed in conference calls and the topics that are the object of the same firm's lobbying activities. Using this mapping, we are able to show that firms that devote more time to discussing risks associated with a given political topic in a given quarter are more likely to begin lobbying on that topic, and not on other topics. A one-standard-deviation increase in political

risk associated with a particular topic results in a 10% increase relative to the mean in the probability that a given firm will lobby on that topic in the following quarter. That is, a significant association exists between political risk and lobbying that holds not only conditional on firm, time, and time $\times$ sector fixed effects, but also within firm and topic.

Probing the heterogeneity of this association across topics, we find the elasticity of lobbying activity with respect to political risk associated with "health care" is the largest, followed by political risks associated with "economic policy & budget" and "the environment," suggesting firms expect lobbying to be the most effective means by which they can manage political risks associated with these topics.

Although we do not interpret the associations between our measures of political risk and firm actions as causal, we believe the persistence of these associations conditional on time, firm, sector $\times$ time, and (in the case of lobbying) topic and topic $\times$ firm fixed effects, rule out many potentially confounding factors, and thus go some way toward establishing such causal effects of political risk.

Going beyond the narrow question of identification, a deeper challenge results from the fact that not all political risk is generated by the political system itself, but rather arises as a reaction to external forces (e.g., from political attempts to reduce the economic impact of a financial crisis). Although we have no natural experiments available that would allow us to systematically disentangle the causal effects of these different types of political risks on firm actions, we attempt to make some progress by studying three budget crises during the Obama presidency. These crises arguably created uncertainty about the federal government's ability to borrow and service its debts that resulted purely from politicians' inability to compromise in a timely fashion. Each of these episodes is also described by unique terms that exclusively come into use in conference calls during the period of interest and not before: "debt ceiling," "fiscal cliff," and "government shutdown." We show the use of these terms is concentrated among firms that derive a higher share of their revenue from the government and is associated with significant increases in our measure of political risk associated with the topic "economic policy & budget." Using the frequency of use of these terms within a given transcript as an instrument for the firm's political risk associated with "economic policy & budget," we estimate a local average treatment effect, where a one-standard-deviation increase in political risk associated with this topic results in a 3.147-percentage-point increase (s.e.=1.059) in the probability that the firm lobbies the government on the same topic in the following quarter.

We make two main caveats to our interpretation. First, all of our measures are likely to contain significant measurement error and should be interpreted with caution. Second, although we show the associations between firm-level variation in our measures and firm actions are statistically and economically significant, we do not claim this firm-level variation is more or less important than aggregate or

sector-level variation.

Our efforts relate to several strands of prior literature. An important set of studies documents that risk and uncertainty about shocks emanating from the political system affect asset prices, international capital flows, investment, employment growth, and the business cycle (Belo et al., 2013; Gourio et al., 2015; Handley and Limao, 2015; Kelly et al., 2016; Koijen et al., 2016; Besley and Mueller, 2017; Mueller et al., 2017).[2] In the absence of a direct measure, this literature has relied on identifying variation in aggregate and sector-level political risk using country-level indices, event studies, or the differential exposure of specific sectors to shifts in government contracting. Many recent studies rely on an influential index of US aggregate economic policy uncertainty (EPU) based on textual analysis of newspaper articles developed by Baker et al. (2016).[3] Relative to this existing work, we provide not just the first firm-level measure of political risk—uniquely allowing a meaningful distinction between aggregate, sector-level, and firm-level exposure—but also a flexible decomposition into topic-specific components, identifying which types of political risk are most strongly associated with firm-level outcomes.

Although our analysis partly corroborates key findings documented in previous research, for example, by showing aggregations of our firm-level political risk measure correlate closely with various sector-level and country-level proxies used in other papers, we also find such aggregations mask much of the variation in political risk, which is significantly more heterogeneous and volatile than previously thought. This finding is in stark contrast to existing theoretical work that has typically viewed political risk as a driver of systematic but not idiosyncratic risk (Croce et al., 2012; Pastor and Veronesi, 2012, 2013; Born and Pfeifer, 2014; Fernandez-Villaverde et al., 2013; Drautzburg et al., 2017).

In particular, our finding that dispersion in firm-level political risk varies widely over time and increases significantly when aggregate political risk is high suggests political actions may affect the economic activity of firms in ways that are not well reflected in representative-agent models. For example, an increase in the dispersion of firm-level political risk may interact with financial or other frictions to reduce growth (Gilchrist et al., 2014; Arellano et al., 2016; Bloom et al., 2016). Or such a spike in the cross-sectional variation of political risk may reduce the efficiency of the allocation, and thus decrease total factor productivity (TFP), if part of the variation in firm-level political risk is inefficient (Hsieh and Klenow, 2009; Arayavechkit et al., 2017).

Another closely related strand of the literature studies the value of connections to powerful politicians (Roberts, 1990; Fisman, 2001; Johnson and Mitton, 2003; Khwaja and Mian, 2005; Jayachandran, 2006;

[2]This literature has highlighted that political uncertainty is reflected in asset prices (Boutchkova et al. (2012); Brogaard and Detzel (2015); Bittlingmayer (1998); Voth (2002)).

[3]Jurado et al. (2015), Bachmann et al. (2013), and Giglio et al. (2016) propose measures of aggregate (political and non-political) uncertainty in the US economy. Caldara and Iacoviello (2016) propose an index of geopolitical uncertainty.

Leuz and Oberholzer-Gee, 2006; Snowberg et al., 2007; Ferguson and Voth, 2008; Vidal et al., 2012; Cooper et al., 2010; Acemoglu et al., 2016, 2017).[4] We contribute to this literature by showing that firms may lobby and cultivate connections to politicians in an attempt to actively manage political risk. The paper closest to our is Akey and Lewellen (2016), which shows that firms whose stock returns are most sensitive with respect to variation in EPU are more likely to donate to politicians.[5]

Finally, several recent studies in economics and finance have adopted methods developed in computational linguistics and natural language processing. These studies tend to use pre-defined dictionaries of significant words and text search methods to process source documents. We go one step further and use an algorithm that learns what word combinations identify text associated with particular political topics. Thus, rather than using an exogenously specified set of words (Loughran and McDonald (2011); Baker et al. (2016)), our approach aims to endogenously capture those word combinations that are indicative of political discourse about a given topic.[6] In addition, whereas prior studies have relied on newspaper archives and corporate disclosures as source texts (Baker et al. (2016); Koijen et al. (2016); Wiesen and Wysocki (2015); Gentzkow and Shapiro (2010)), we introduce the idea that (transcripts of) conference calls provide a natural context to learn about the risks firms face and market participants' views thereof. Importantly, quarterly earnings conference calls capture both supply of and demand for information as management presents its views and then answers questions from call participants.

1 Data

We collect the transcripts of all 175,797 conference calls held in conjunction with an earnings release (hereafter "earnings conference call" or "earnings call") of firms listed in the United States between 2002 and 2016 from Thomson Reuters' StreetEvents. During our sample window, firms commonly host one earnings conference call every fiscal quarter, thus generating roughly four observations per firm per year.[7] Calls typically begin with a presentation by management, during which executives (e.g., the

[4] In turn, politicians reciprocate by distributing favors in the form of bailouts (Faccio et al. (2006); Tahoun and Van Lent (2016)), reduced government oversight (Correia (2014)), more government contracts (Goldman et al. (2009); Tahoun (2014)), and reduced market competition (Benmelech and Moskowitz (2010)).

[5] A large literature documents that lobbying is pervasive in the US political system (Milyo et al. (2000)), can affect policy enactment (Kang (2016)), and yields economically significant returns (De Figueiredo and Silverman, 2006) . Arayavechkit, Saffie, and Shin (2017) develop a quantitative model of lobbying and taxation.

[6] Alternative text-mining approaches (e.g., Latent Dirichlet Allocation, LDA) enable automated topic classification. However, Huang et al. (2016) document that conference-call participants focus their discussion mostly on issues of firm performance, valuation, and financial outlook. LDA-type methods are likely to lack the power to detect politics-related issues as a separate topic. Reflecting the possibly limited advance offered by more sophisticated methods, the literature in computational linguistics has documented that our simple, yet intuitive approach is remarkably robust (Ramos (2003); Mishra and Vishwakarma (2015)).

[7] Firms are not mandated to host conference calls, but illustrative of their importance is the 2014 National Investor Relations Institute survey, which suggests 97% of investor relations officers report that their firms hold quarterly earnings calls. Firms provide access to their calls via live webcasting, and make transcripts and audio files available on their

Chief Executive Officer or the Chief Financial Officer) share information they wish to disclose or further emphasize, followed by a question-and-answer (Q&A) session with market participants (usually, but not limited to, financial analysts). Our measure of political risk is constructed using the entire conference call. Prior research finds the discussion typically centers on uncertainties the firm is facing (Hollander et al. (2010); Bowen et al. (2002); Huang et al. (2016)).[8]

To obtain data on corporate lobbying, we take advantage of the Lobbying Disclosure Act of 1995, which requires lobbyists and lobbying firms to file their lobbying activities with the Clerk of the House of Representatives and the Secretary of the Senate.[9] We rely on the Center for Responsive Politics (CRP), a nonpartisan not-for-profit research group that obtains these reports and standardizes the names of firms and a breakdown of the lobbying expenditures by issues or topics. Lobbying firms are required to provide a good-faith estimate, rounded to the nearest USD 10,000, of all lobbying-related income from each of their clients, as well as a list of topics on which each client lobbies. The Center assigns the value of zero to all those cases in which the lobby expenditure falls below the disclosure threshold. We then manually match the 80 issues from the disclosure forms to the eight topics our topic-based measure of political risk encompasses (see Appendix Table 1 for details). We also obtain data on campaign contributions by the Political Action Committees associated with our sample firms from the CRP. Table 1, Panel A, provides summary statistics.

We obtain data on government contracts for the period 2002 to 2016 from USAspending.gov, an official government website that provides these data under the Federal Funding Accountability and Transparency Act of 2006. We use primary contract awards and take the sum of the net value of all new contracts for a given firm and quarter in which the contract was signed. Using a fuzzy matching algorithm, we match firm names with Compustat firm names. Altogether, 2,695 of the 9,478 unique firms in our dataset receive federal contracts during our sample period.

For each firm-quarter or, if not available, firm-year, we obtain employment, investment, and basic balance-sheet (e.g., total assets) and income-statement (e.g., quarterly earnings) information from Standard and Poors' Compustat. For a smaller set of firms, we also collect data on the firm's projected capital expenditure for the following fiscal year from the I/B/E/S Guidance database. OptionMetrics provides firm-quarter-level implied volatility.[10]

investors' relations websites, public databases, and other websites aimed at investors (e.g., seekingalpha.com).

[8] In untabulated analysis, we find the average number of words spoken in our sample conference calls is 7,533. Matsumoto et al. (2011) obtain the start and end times of each portion of the call. They find a typical earnings conference call lasts for about 46 minutes, with on average 18 minutes for the managerial presentation and 28 minutes for the Q&A. Supporting the premise that uncertainty is driving conversations in conference calls, these authors further show managers alleviate pre-call uncertainty with lengthier conference calls.

[9] The Honest Leadership and Open Government Act of 2007 increased the filing frequency for lobby reports from semi-annually to quarterly.

[10] For European options, OptionMetrics first calculates the theoretical option price as the midpoint of the best closing bid

Finally, we obtain stock price and return data from the Center for Research in Security Prices. The descriptive statistics, reported in Table 1, for the accounting and market data are generally consistent with those of previous studies.

2 Measuring Political Risk at the Firm Level

In this section, we introduce our firm-level measure of political risk. To separate measurement from interpretation, we begin by defining a measure of the share of the quarterly conversation between call participants and firm management that centers on risks associated with political topics. In a second step, we then argue this measure can be interpreted as a proxy for the political risk and uncertainty individual firms face.

2.1 Defining measures of political risk

Objective. We begin with a simple objective: to measure the share of the conversation between analysts and firm management on earnings conference calls that centers on risks associated with political topics. Clearly, any topic that is raised during an earnings conference call will tend to be of some concern either for the firm's management or its analysts, such that quantifying the allocation of attention between different topics is interesting in its own right.

Rather than a priori deciding on specific words associated with different topics, we distinguish political from non-political topics using a pattern-based sequence-classification method developed in computational linguistics (Song and Wu, 2008; Manning et al., 2008). Using this approach, we correlate language patterns used by conference-call participants to that of a text that is either political in nature (e.g., an undergraduate political science textbook) or indicative of a specific political topic (e.g., speeches by politicians about health care). Similarly, we identify the association with risk simply by the use of synonyms of the words "risk" and "uncertainty" in conjunction with this language.

Overall measure. Specifically, we construct our measure of overall political risk by first defining a training library of "political" text, archetypical of the discussion of politics, $\mathbb{P}$, and another training library of "non-political" text, archetypical of the discussion of non-political topics, $\mathbb{N}$. Each training library is the set of all adjacent two-word combinations ("bigrams") contained in the respective

and offer prices, and then computes the implied volatility by inverting the Black-Scholes formula. For American options, OptionMetrics obtains implied volatilities by applying a proprietary pricing algorithm based on the Cox-Ross-Rubinstein binomial tree model.

political and non-political texts (after removing all punctuation).[11] We then similarly decompose each conference-call transcript of firm i in quarter t into a list of bigrams contained in the transcript $b = 1, ..., B_{it}$.[12] We then count the number of occurrences of bigrams indicating discussion of a given political topic within the set of 10 words surrounding a synonym for "risk" or "uncertainty," and divide by the total number of bigrams in the transcript:

$$PRisk_{it} = \frac{\sum_{b}^{B_{it}} \left(1[b \in \mathbb{P} \backslash \mathbb{N}] \times 1[|b - r| < 10] \times \frac{f_{b,\mathbb{P}}}{B_{\mathbb{P}}} \right)}{B_{it}}, \tag{1}$$

where $1[\bullet]$ is the indicator function, $\mathbb{P}\backslash\mathbb{N}$ is the set of bigrams contained in $\mathbb{P}$ but not $\mathbb{N}$, and r is the position of the nearest synonym of risk or uncertainty. The first two terms in the numerator thus simply count the number of bigrams associated with discussion of political but not non-political topics that occur in proximity to a synonym for risk or uncertainty (within 10 words). In our standard specification, we also weight each bigram with a score that reflects how strongly the bigram is associated with the discussion of political topics (the third term in the numerator), where $f_{b,\mathbb{P}}$ is the frequency of bigram b in the political training library and $B_{\mathbb{P}}$ is the total number of bigrams in the political training library. Our overall measure of the share of the conversation devoted to risk associated with political topics is thus the weighted sum of bigrams associated with political (rather than non-political) text that are used in conjunction with synonyms for risk or uncertainty.

This specification follows closely the most canonical weighting scheme used in the automated text-classification literature, where the two terms $1[b \in \mathbb{P}\backslash\mathbb{N}] \times f_{b,\mathbb{P}}/B_{\mathbb{P}}$ are commonly referred to as the bigram's *inverse document frequency* interacted with its *term frequency* (Sparck Jones, 1972; Salton and McGill, 1983; Salton and Buckley, 1988). When more than two training libraries exist, the former generalizes to the more familiar form: log(# of training libraries/# of libraries in which the bigram occurs right). In this sense, (1) is a straight-forward application of a standard text-classification algorithm, augmented by our conditioning on the proximity to a synonym for risk or uncertainty, and a normalization with the length of the transcript. In robustness checks reported below, we experiment with a number of plausible variations of (1). Across all of these variations, we generally find this conventional approach yields the most consistent results.

Although we construct $PRisk_{it}$ using a weighted rather than a straight sum of bigrams in the numerator, we continue to interpret it as a measure of the *share* of the conversation devoted to risks

[11] Previous research suggests text-classification results generally improve by applying n-grams (usually bigrams) of words as opposed to single words (unigrams) (Tan et al., 2002; Bekkerman and Allan, 2004).

[12] As is standard in the literature, we remove all bigrams that contain pronouns, shortened pronouns, or two adverbs. We have also experimented with more involved procedures for preparing the text contained in the transcript, such as removing stop words and lemmatizing. However, we found these procedures did not substantially affect our results.

associated with political topics, adjusted for the fact that some passages of text can be more or less related to politics. (Nevertheless, we also show below that our results are similar when we do not use this weighting.)

We also define three additional measures for use in a set of falsification exercises and as control variables, disentangling the logical components of $PRisk_{it}$. The first simply measures the political exposure of the firm, without conditioning on risk or uncertainty:

$$PolX_{it} = \frac{\sum_{b}^{B_{it}} \left(1[b \in \mathbb{P}\backslash\mathbb{N}] \times \frac{f_{b,\mathbb{P}}}{B_{\mathbb{P}}}\right)}{B_{it}}. \tag{2}$$

The second measures the overall degree of risk or uncertainty the firm faces, simply by counting the number of synonyms for risk or uncertainty found in the transcript:

$$Risk_{it} = \frac{\sum_{b}^{B_{it}} 1[b \in \mathbb{S}]}{B_{it}}, \tag{3}$$

where $\mathbb{S}$ denotes the set of synonyms for risk or uncertainty used in the construction of (1). The third measures the share of the conversations centering on risks and uncertainties associated with non-political topics, $NPrisk_{it}$, constructed by counting and weighting $\mathbb{N}\backslash\mathbb{P}$ rather than $\mathbb{P}\backslash\mathbb{N}$ in (1).

Topic-based measures. For our topic-based measures, we similarly identify a set of training libraries $\mathbb{Z} = \{\mathbb{P}_1, ..., \mathbb{P}_Z\}$, each containing the complete set of bigrams occurring in one of Z texts archetypical of discussion of a particular political topic, such as health care policy or tax policy. As above, we then calculate the share of the conversation that centers on risks associated with political topic T as the weighted number of bigrams occurring in $\mathbb{P}_T$ but not the non-political library, $\mathbb{N}$, that are used in conjunction with a discussion of political risk:

$$PRisk_{it}^{T} = \frac{\sum_{b}^{B_{it}} \left(1[b \in \mathbb{P}_T\backslash\mathbb{N}] \times 1[|b-p| < 10] \times \frac{f_{p,\mathbb{P}}}{B_{\mathbb{P}}} \times \frac{f_{b,\mathbb{P}_T}}{B_{\mathbb{P}_T}} log(Z/f_{b,\mathbb{Z}})\right)}{B_{it}}, \tag{4}$$

where p is the position of the nearest bigram already counted in our measure of overall political risk (1), that is, a political but not non-political bigram that is also near to a synonym for risk and uncertainty—the nearest bigram for which $1[b \in \mathbb{P}\backslash\mathbb{N}] \times 1[|b-r| < 10] > 0$. Both bigrams ($p$ and b) are again weighted with their term frequencies and inverse document frequencies.

Because we must now distinguish between multiple political topics, b's inverse document frequency, $log(Z/f_{b,\mathbb{Z}})$, now plays a more important role: it adjusts each bigram's weighting for how unique its use is to the discussion of a specific topic compared to all the other political topics, where $f_{b,\mathbb{Z}}$ is the number

of libraries in $\mathbb{Z}$ that contain bigram b. For example, a bigram that occurs in all topic-based political libraries is not useful for distinguishing a particular topic and is thus assigned a weight of $log(Z/Z) = 0$. By contrast, this weight increases the more unique the use of this bigram is when discussing topic T, and is highest ($log(Z/1)$) for a bigram that is used only in discussion of topic T but not in the discussion of any other topic.

Training libraries. Our measures of the share of the conversation devoted to risks associated with politics in general (1) and various political topics (4) differ from similar measures used in the previous literature in two important respects. First, they are constructed using text generated by decision makers within firms rather than newspaper articles or indicators from financial markets. Second, they do not require us to exogenously specify which words or word patterns may be associated with which topic. Instead, the only judgement we have to make is about training libraries—what text may be considered archetypical discussions of a given political topic or non-political topics.

In our applications, we show results using three alternative approaches to defining the political and non-political libraries ($\mathbb{P}$ and $\mathbb{N}$). In the first, we use undergraduate textbooks, where the non-political library consists of bigrams extracted from a textbook on financial accounting (Libby et al. (2011)), to reflect that earnings conference calls tend to focus on financial disclosures and accounting information. As the source for the bigrams in the corresponding political training library, we use Bianco and Canon's textbook, *American Politics Today* (3rd ed.; Bianco and Canon (2013)).

In the second, we construct the non-political library by selecting from Factiva any newspaper articles published in the *New York Times*, *USA Today*, the *Wall Street Journal*, and the *Washington Post* on the subject of "performance," "ownership changes," or "corporate actions" during our sample period, and contrast it with a political training library derived from newspaper articles from the same sources on the subject of "domestic politics."

In both cases, we also include all bigrams from the Santa Barbara Corpus of Spoken American English (Du Bois et al. (2000)) as part of the non-political library to filter out bigrams that are specific to spoken language, such as "next question" or "we should break for lunch." This source records a vast library of face-to-face conversations, on-the-job talk, classroom lectures, sermons, and so on, where we exclude a small part of this library that contains conversations related to politics.[13]

We will show both approaches yield similar results in terms of our analysis, although they identify slightly different bigrams as pivotal for political text. Whereas the textbook-based approach identifies

[13]We exclude the following nine episodes: SBC004 (*Raging Bureaucracy*), SBC011 (*This Retirement Bit*), SBC012 (*American Democracy is Dying*), SBC019 (*Doesn't Work in this Household*), SBC026 (*Hundred Million Dollars*), SBC030 (*Vision*), SBC032 (*Handshakes All Around*), SBC035 (*Hold My Breath*), and SBC038 (*Good Strong Dam*).

bigrams such as "the constitution" and "interest groups" as most pivotal, the newspaper-based approach identifies more topical expressions such as "[health] care reform" and "president obama."

In our preferred specification, we therefore use a hybrid of the two approaches. We first define $\mathbb{P}$ and $\mathbb{N}$ using the textbook-based training libraries, yielding +101,273 bigrams in the set $\mathbb{P}\backslash\mathbb{N}$. We then add the same number of bigrams from the newspaper-based approach (adding 87,812 bigrams that were not already in the set) and normalize the score of these additional bigrams ($f_{b,\mathbb{P}}/B_{\mathbb{P}}$) such that it is equal to the mean of the bigrams identified using only the textbook-based libraries.[14]

For our topic-based measures, we require a set of libraries of political text that have been pre-classified into topics. We rely on the collection of newspaper articles, speeches, press releases, books, voting records, and bill sponsorships, compiled by ontheissues.org, which is a nonpartisan not-for-profit organization that uses this information to educate voters about the positions politicians take on key topics. We believe this source is particularly useful because it includes a wide variety of written texts as well as transcripts of spoken words. From the material provided on the website, we distilled training libraries for eight political topics: "economic policy & budget," "environment," "trade," "institutions & political process," "health care," "security & defense," "tax policy," and "technology & infrastructure."[15]

Finally, we obtain the list of synonyms for "risk" and "uncertainty" from the Oxford dictionary. Because they are likely to have a different meaning in the context of conference calls, we exclude from this list the words "question," "questions" (e.g., conference-call moderators asking for the next question), "unknown" (e.g., unknown callers on the call), "venture," and "prospect." For a similar approach, see Allee and DeAngelis (2015).

As a simple way of reducing reliance on a few bigrams with very high term frequency, we cap all scores calculated using (1) and (4) at the 95th percentile. To facilitate interpretation of our measures, we standardize them with their respective sample standard deviations whenever reporting them.

2.2 Validation

We next describe the output of the measures and verify they indeed capture passages of text that discuss risks associated with particular political topics. Table 2 shows the bigrams in $\mathbb{P}\backslash\mathbb{N}$ with the highest term frequency, ($f_{b,\mathbb{P}}/B_{\mathbb{P}}$), that is, the bigrams associated most strongly with discussion of political versus non-political topics and receiving the highest weight in the construction of $PRisk_{it}$. These bigrams are almost exclusively with strong political connotations, such as "the constitution," "the states," and

[14] Because the newspaper-based libraries are significantly longer than the textbook-based libraries, we chose this approach to ensure both sources of text receive equal weight. Simply adding the newspaper-based and texbook-based political libraries would largely collapse to using only the newspaper-based library, simply due to the different sizes of original texts.

[15] Appendix Table 2 gives details on the mapping between the materials provided on the website and these topics.

"public opinion." A more comprehensive list of the top 600 bigrams that appear both on the list $\mathbb{P}\backslash\mathbb{N}$ and in at least one of our transcripts is given in a separate online appendix posted on the authors' websites. Appendix Figure 1 shows a histogram of these bigrams by their term frequency. It shows the distribution is highly skewed, with the median term frequency being 0.25×10^{-5}. This finding implies the top 120 bigrams listed in Table 2 (with scores ranging from 84.45×10^{-5} to 7.63×10^{-5}) are among the primary drivers of $PRisk_{it}$.

Table 3 reports excerpts of the 20 transcripts with the highest $PRisk_{it}$, a summary of the political risks discussed in the transcripts, and the text surrounding the top-scoring political bigram. All of these highest-scoring transcripts indeed contain significant discussions of risk associated with political topics. For example, the transcript with the highest score (Nevada Gold Casino Inc in September of 2008) features discussions of a pending ballot initiative authorizing an increase in betting limits, the potential impact of a statewide smoking ban, and uncertainties surrounding determinations to be made by the EPA. Other transcripts focus on uncertainty surrounding tort reform, government funding, legislation, and many other political topics.

The second half of the table shows only one false positive: a transcript of a call held by Piedmont Natural Gas that, in fact, does not contain a discussion of risks associated with any political topic. The reason it nevertheless has a relatively high score is that the transcript is very short—only six pages—and contains the one passage shown in column 5, which, although it contains bigrams from $\mathbb{P}\backslash\mathbb{N}$, does not relate to political risk. Reassuringly, all other (i.e., 19 out of 20) transcripts are correctly identified as containing long discussions of political risk relative to the length of the transcript, according to our own reading, which we summarize in column 4.

Although our approach is designed to measure the share of the transcript, not the paragraph, containing discussion of political risks, the fact that the text surrounding the bigram with the highest $f_{b,\mathbb{P}}/B_{\mathbb{P}}$ (shown in column 5) also reliably identifies a passage of text within the transcript that contains the discussion of one of the topics shown in column 4 is reassuring. The only exception is the transcript by Employers Holdings and Transcontinental in which these topics are identified within transcript by other high-scoring bigrams.

On two other occasions, as column 5 shows, the conditioning on proximity to synonyms produces apparently false positives: one in which the word "bet" is not meant to refer to risks associated with the ballot initiative but rather to betting limits, and another in which "government pressures" are discussed in proximity to discussion of "currency risks." Nevertheless, both snippets of text correctly identify discussions of risks associated with political topics. Accordingly, we show evidence below that this conditioning on synonyms for risk or uncertainty has economic content and on average improves

the properties of our measure.

Having examined the workings of our pattern-based classifications, we next examine the properties of the measures they generated. Figure 1 plots the average across firms of our measure of overall political risk at each point in time, $1/N \sum_i PRisk_{it}$. The plot also highlights some important political and economic events, and plots the newspaper-based measure of economic policy uncertainty (EPU) constructed by Baker et al. (2016) for comparison. The two series have a correlation coefficient of 0.80 and thus visibly capture many of the same events driving uncertainty about economic policy. This high correlation is reassuring because both series are constructed using very different data sources and methodologies, but nevertheless yield similar results.[16] It also suggests that, as one might expect, uncertainty about economic policy is a major component of the aggregate variation in political risks on the minds of managers and conference-call participants.

Further probing the variation in the mean of $PRisk_{it}$ over time, we might expect that part of the overall political risk firms face arises due to uncertainty about the identity of future decision makers. For example, Democrats may be more inclined than Republicans to pass tough environmental regulations. Elections should resolve some of the uncertainties about the actions of future decision makers, and thus increase and decrease aggregate political risk at regular intervals. Figure 2 shows results from a regression relating $PRisk_{it}$ to a set of dummy variables indicating quarters with federal elections (presidential and congressional), as well as dummies for the two quarters pre and post these elections. We can see political risk is significantly higher in the quarters in which elections are held and the quarters before, but falls off in the quarter after elections. This effect is most pronounced for presidential elections, when overall political risk tends to be 12.9% of a standard deviation higher (s.e.=0.016). Congressional elections on average have a much smaller effect (3.0% higher, s.e.=0.010); see Appendix Table 3 for details. The relative size of these effects is again intuitive because presidential elections always also entail congressional elections and are thus arguably more decisive for the future political direction of the country than congressional elections alone.

Probing the variation of our measure across sectors (SIC divisions), we find that participants in conference calls of firms in the finance, insurance & real estate sector on average spend the highest proportion of their time discussing risks associated with political topics, followed by the construction, and transportation & communications sectors (see Panel A of Appendix Figure 3). By contrast, firms in the retail trade sector have the lowest average $PRisk_{it}$. At the SIC-2-digit level, the sectors with

[16]For comparison, Appendix Figure 2 plots the average across firms of our measure of non-political risk ($NPRisk_{it}$), which comfortingly is more strongly related to the CBOE stock market volatility index (VIX) (with a correlation of 0.855) than to EPU (with a correlation of 0.562. The reverse is true for the average across firms of $PRisk_{it}$, which is more strongly associated with EPU (with a correlation of 0.804) than with the VIX (with a correlation of 0.666); see Figure 1.

the highest average $PRisk_{it}$ across firms include insurance carriers, producers of tobacco products, depositary institutions, and construction firms (see Panel B of Appendix Figure 3). Overall, these means line up intuitively with parts of the economy that may be considered most dependent on government for regulation or expenditure. Figure 3 formalizes this insight by showing a positive and highly significant correlation between the mean $PRisk_{it}$ across firms in a given 2-digit sector and an index of regulatory constraints (Al-Ubaydli and McLaughlin (2017)), as well as the share of the sector's revenue accounted for by federal government contracts.

To further probe the properties of our measure, we make use of historical episodes in which a particular political shock is associated with a unique word or expression that is used only during the period of interest, and not before. Arguably the best example is the term "Brexit." Appendix Table 4 shows that the 945 firms that mention the term during their earnings call in the third quarter of 2016 exhibit a significant increase in their level of $PRisk_{it}$ (on average by 17.8% of a standard deviation) relative to the previous quarter.[17] The same is true for firms that mention the words "trump" and "twitter" or "tweet" in the fourth quarter of 2016 (on average by 126.0% of a standard deviation).[18]

We next show $PRisk_{it}$ correlates significantly with realized and implied volatility of stock returns—a clear requirement for any valid measure of risk. Our main specification takes the form

$$y_{it} = \delta_t + \delta_s + \beta\ PRisk_{it} + \gamma X_{it} + \epsilon_{it}, \tag{5}$$

where δ_t and δ_s represent a full set of time and sector fixed effects, and the vector X_{it} always contains the log of the firm's assets as a control for its size. Throughout, we use standard errors clustered by firm.[19]

Panel A of Table 4 uses implied stock return volatility, measured using 90-day at-the-money options (again standardized for ease of interpretation). Column 1 shows our most parsimonious specification where we regress this variable on $PRisk_{it}$ and the size control. The coefficient of interest is positive and statistically significant at the 1% level (0.070, s.e.=0.006), suggesting a one-standard-deviation increase

[17] Using segment data from CapitalIQ, we also verify these firms do significantly more of their business in the UK. Regressing the firm's percentage of total sales to the UK on the number of times the term "Brexit" is used in the third quarter of 2016 yields a coefficient of 0.28 (s.e.=0.05).

[18] For firms that mention these terms at least once, the average number of mentions is 6.15 for "brexit" and 6.4 for "trump" and "twitter," or "trump" and "tweet." Multiplying these numbers by the coefficients given in the table yields 6.15 $\times$0.029=0.178 and 6.40 $\times$0.197=1.260.

[19] To corroborate our choice of standard errors, Appendix Figure 4 shows the results of a falsification exercise in the spirit of Fisher's randomization inference procedure, where we repeatedly assign the $PRisk_{it}$ to a randomly selected other firm with replacement. The figure shows a histogram of t-statistics on the estimated coefficient on $PRisk_{it}$ across 500 random assignments. The t-statistics are centered around zero, with no noticeable tendency for positive or negative estimates. Reassuringly, the rates of false positives and negatives are about 2.5%. Appendix Table 5 shows alternative standard errors clustered by sector and time.

in political risk at the firm level is associated with a 0.07-standard-deviation increase in the firm's stock return volatility. Column 2 shows that much of this association is driven by the time-series dimension: when adding the mean of $PRisk_{it}$ across firms at each point in time as a control, the coefficient of interest drops by about one-third (0.048, s.e.=0.006), but remains statistically significant at the 1% level. The coefficient on the mean itself suggests a one-standard-deviation increase in the time series (which is factor 6.74 smaller than in the panel) is associated with a 0.245-standard-deviation increase (s.e.=0.005) in volatility, a number very similar to that documented in previous research (Baker et al., 2016). Columns 3 and 4 build up to our standard specification by adding time and sector fixed effects. Throughout, the estimates of β remain highly statistically significant (0.033, s.e.=0.005 in column 4). It also remains statistically significant but falls to 0.016 (s.e.=0.003) once we go from sector fixed effects to a more demanding specification with firm fixed effects (column 5).

Our measure of political risk at the firm level is thus significantly correlated with stock market volatility even when focusing only on within-time-and-sector variation, bolstering our confidence that $PRisk_{it}$ indeed captures a type of risk. The fact that this association is smaller within time and sector than in the time series is interesting, because it suggests part of the strong association between aggregate political risk and aggregate stock market volatility may be driven by reverse causality, where, for example, politicians entertain reform—and thus create political risk—as a response to deteriorating macroeconomic conditions. To the extent that introducing fixed effects rules out this kind of confounding effect at the macroeconomic level, we hope the smaller estimates we obtain in the within-time-and-sector dimension stimulate future efforts to isolate the causal effect of political risk on volatility and other outcomes (e.g., using a natural experiment that generates exogenous variation in political risk). However, part of the difference in the size of coefficients is also likely due to differential measurement error or the presence of large macroeconomic multipliers, where firms react much more strongly if they know other firms are also affected by higher political risk.

One potential concern with our measure of political risk is that managers' incentives to discuss risks associated with political topics might vary over time. For example, they may have an incentive to blame risks associated with politics for bad performance, and thus talk more about political risks whenever performance is bad. To test for this possibility, column 7 adds to our standard specification a market-based proxy for expected earnings: a firm's pre-call stock return, accumulated during the seven days prior to the earnings-related conference call. Column 8 adds another conventional measure for the earnings surprise.[20] Even after including these controls, the coefficients of interest are similar to the one

[20]Consistent with many prior studies, we define earnings surprise as earnings per share before extraordinary items minus earnings per share in the same quarter of the prior year, scaled by the price per share at the beginning of the quarter (Ball and Bartov (1996)).

in column 4. Appendix Table 6 shows the same holds true when controlling for cumulated returns over longer time periods. We thus find no evidence that managers systematically blame political risks for bad performances, in which case, we would have expected the inclusion of such controls to strengthen the correlation between $PRisk_{it}$ and volatility. Panel B of Table 4 shows parallel results for the larger set of firms for which we can measure realized (rather than implied) volatility, that is, the standard deviation of the firm's daily stock holding return (adjusted for stock splits and dividends) during the quarter.

The conclusion from this first set of validation exercises is that transcripts with the highest $PRisk_{it}$ indeed center on the discussion of political risks and that the time-series and cross-sectional variations of our measure line up intuitively with episodes of high aggregate political risk and with sectors that are most dependent on political decision-making. Consistent with these observations, $PRisk_{it}$ correlates significantly with firms' stock volatility.

3 Managing Political Risk

Next, we further probe the validity of our measure by examining how it correlates with actions taken by the firm. The theoretical literature makes three broad sets of predictions. First, standard models of investment under uncertainty predict that an increase in any kind of risk, and thus also an increase in the firm's political risk, should decrease firm-level investment and employment growth (e.g., Pindyck (1988); Bernanke (1983); Dixit and Pindyck (1994); Bloom et al. (2007)).[21] Second, a large literature in political economy predicts that firms have an incentive to "actively" manage political risk by lobbying and donating to politicians (Tullock, 1967; Stigler, 1971; Peltzman, 1976). Third, active management of political risks should be concentrated among large but not small firms due to free-rider problems (Olson, 1965).

The three panels of Table 5 test each of these predictions in turn. Panel A reports the association between $PRisk_{it}$, again standardized by its standard deviation, and corporate investment and hiring decisions. The capital investment rate, $I_{i,t}/K_{i,t-1}$, measured quarterly, is calculated recursively using a perpetual-inventory method as described in Stein and Stone (2013). For a smaller set of firms, we can also measure the percentage change in projected capital expenditure, $\Delta\text{capexg}_{i,t}/\text{capexg}_{i,t-1}$, as the change (relative to the previous quarter) in the firm's guidance for total capital expenditure for

[21] In macroeconomic models, increases in aggregate risk may increase or decrease aggregate investment, because of general equilibrium effects on the interest rate (precautionary savings; see, e.g., Fernández-Villaverde et al. (2015) and Hassan and Mertens (2017)). However, this ambiguity does not exist at the firm level (i.e., conditional on a time fixed effect). One firm that faces increases in firm-level risk should always decrease its investment relative to another firm that does not experience such an increase.

the next fiscal year. Net hiring, $\Delta \text{emp}_{i,t}/\text{emp}_{i,t-1}$, is the change in year-to-year employment over last year's value.[22][23] All specifications are in the same form as (5), always including time and sector fixed effects, as well as controlling for the log of the firm's assets. The coefficients in columns 1 to 3 suggests a one-standard-deviation increase in political risk is associated with a 0.138-percentage-point decrease in a firm's capital investment rate (s.e.=0.031), a 0.362-percentage-point decrease in planned capital expenditure over the following year (s.e.=0.125), and a 0.687-percentage-point decrease in its employment growth rate (s.e.=0.326). Whereas the former two coefficients are relatively small (corresponding to a 1.4% and 2.7% decrease relative to the sample mean, respectively), the latter coefficient corresponds to an economically large (11.5%) decrease relative to the mean annual employment growth.[24]

Across the board, these results are suggestive of firms' reactions to risk, where firms retrench hiring and investment when faced with heightened political risk. They are also consistent with the findings by Baker et al. (2016), who already document a negative relation between their measures of aggregate economic policy uncertainty and firm-level investment rates and employment growth. (Here we find the same pattern, even after controlling for time fixed effects.) Also consistent with this prior work, column 4 shows a much weaker and statistically insignificant association between $PRisk_{it}$ and sales growth. As argued in Baker et al. (2016), a smaller effect on sales is again consistent with the predictions of the real options literature: larger short-run effects of risk on hard-to-reverse investments in physical and human capital than on short-run output growth.

Panel B examines the degree to which firms affected by political risk also actively engage in the political process. Columns 1-3 study donations on behalf of the firm to politicians. We find a significant association between $PRisk_{it}$ and the dollar amount of campaign donations (column 1) as well as the number of politicians who receive contributions to their election campaigns from the firm (column 2). These associations are economically meaningful, as a one-standard-deviation increase in political risk is associated with a 9.2% increase in the total amount donated to politicians (s.e.=0.018) and an increase in the number of donation recipients of 0.511 (s.e.=0.128), representing a 19% increase relative to the mean of 2.73 recipients. Column 3 examines whether political risk may spur firms to develop ties with both major political parties at the same time, using $Hedge_{it}$, which is an indicator variable that captures those instances wherein firms donate similar amounts to both Democrats and Republicans.[25]

[22] Because these data on investment, capital expenditure, and employment are notoriously noisy, we winsorize each of these variables following the same procedure as in Stein and Stone (2013).

[23] Here, again, the number of observations is smaller because employment data are only available at the annual frequency. In all specifications with a dependent variable measured at the annual frequency, we take an arithmetic mean of $PRisk_{it}$ across all transcripts of a given firm and year.

[24] Because changes in employment are measured at the annual frequency, we show contemporaneous correlations between $PRisk_{it}$ and the outcomes in Panel A. In Panel B, where all outcomes are at the quarterly frequency, we show correlations at the first lag.

[25] Specifically, if the ratio of donations to Republicans over donations to Democrats is between the 25th and 75th

Our intuition is that increases in political risk raise the benefit of having established connections with both parties. Consistent with this intuition, we find that as political risk increases, so does the likelihood of the firm "hedging" its political ties. In column 4, we turn to the firm's overall lobbying expenditure, regressing the natural logarithm of one plus the dollar amount of lobby expenditure on $PRisk_{it}$. The estimate (0.190, s.e.=0.027) suggests a one-standard-deviation increase in political risk is associated with a 19.0% increase in the amount of lobbying expenditures.

Taken together, these results are consistent with the view that $PRisk_{it}$ indeed captures variation in political risk: firms more exposed to it retrench hiring and investment to preserve option value, and actively engage in the political system to mitigate these risks. If this interpretation is correct and firms actively manage political risk by forging ties with politicians and lobbying them, we might expect these associations to be stronger for large firms, which internalize more of the gain from influencing political decisions than small firms (Olson, 1965) and have the resources to sway political decisions at the federal or state level. Panel C of Table 5 shows that, indeed, predominantly larger firms are the ones that make use of these active measures (columns 3 and 4), whereas some evidence (albeit statistically significant only at the 10% level) also shows smaller firms that have worse prospects of actively influencing political decisions react with more vigorous retrenchment of investment.

Falsification exercises. Having established that $PRisk_{it}$ correlates with firm actions in a manner highly indicative of political risk, we next conduct a series of falsification exercises comparing the information contained in $PRisk_{it}$ with that in our measures of non-political risk ($NPRisk_{it}$), overall risk ($Risk_{it}$), and political exposure ($PolX_{it}$). The results are shown in Table 6. First, all kinds of risk, whether political or non-political, should be negatively associated with investment and hiring. When we add $NPRisk_{it}$ to the specification with investment as a dependent variable, we find exactly this pattern (column 2 in Panel A). The coefficient on $NPrisk_{it}$ is negative and statistically significant (-0.188, s.e.=0.031), whereas the one on $PRisk$ falls in absolute terms but retains its negative sign and statistical significance (-0.080, s.e.=0.032). The same pattern, albeit with a much smaller change in the size of the coefficient on $PRisk_{it}$, holds for employment growth (column 5), suggesting both measures indeed contain information about risk.

Second, if firms indeed retrench hiring and investment due to *risks* associated with political topics, and not for other reasons, the association between $PRisk_{it}$ and these outcomes should be significantly attenuated when we control for overall risk. We find this pattern in columns 3 and 6 of Panel A, where $Risk_{it}$ drives out most of the negative association between $PRisk_{it}$ and these outcomes.

percentile of the sample.

Third, firms should lobby and donate to politicians only to manage *political* risk, and not other forms of risk that are unrelated to politics. Consistent with this prediction, Panels B and C show $PRisk_{it}$ dominates $NPRisk_{it}$ and $Risk_{it}$ when predicting expenditures on lobbying and donations, as well as the other outcomes proxying for active management of political risk. Neither of the two measures of non-political and overall risk are significantly associated with any of these outcome variables, whereas the coefficient on $PRisk_{it}$ remains stable and highly statistically significant.

We view these contrasting results for active and passive forms of management of political risk (Panel A vs. Panels B and C) as strongly supportive of our interpretation that $PRisk_{it}$ indeed measures the extent of political risk a given firm faces.

Our final falsification exercise, shown in Panel D, again makes use of the idea that $PRisk_{it}$ should affect investment and employment because it contains information about risks (variance) associated with political topics and not because it proxies for political exposure in general. Consistent with this interpretation, $PRisk_{it}$ drives out $PolX_{it}$ in the horse races shown in columns 2 and 4.

The overall conclusion from our falsification exercises is that $PRisk_{it}$ is indeed a valid proxy for firm-level political risk: it meaningfully identifies transcripts that center on the discussion of political risk; its time-series and cross-sectional variation line up intuitively with episodes of high aggregate political risk and with sectors that are most dependent on political decision-making; it correlates with firm actions in a manner highly indicative of political risk; and its logical components (risk and political exposure) both serve their intended purpose—significantly identifying risks associated with political topics.

Choice of training libraries and alternative implementations of $PRisk_{it}$. Before using our measure to study the nature of political risk faced by firms listed in the United States, we discuss alternative implementations of $PRisk_{it}$. Conditional on the structure given in (1), which is a simple adaptation of existing methods in computational linguistics, the only judgment we made is in our choice of training libraries. In addition to our standard specification, which combines materials from both textbooks, newspapers, and the Santa Barbara Corpus of Spoken American English, we also experimented with specifications that relied exclusively on textbooks or newspapers. In each case, we judged the quality of results based on an internal audit study, where we read the 50 transcripts with the highest and lowest scores, and manually measured the share of their contents that focused on risks associated with political topics. In addition, we checked the 500 political bigrams with the highest term frequencies for plausible links to political topics. In the course of this audit study, we quickly determined adding the Santa Barbara Corpus of Spoken American English to the non-political library was always essential. Moreover, both the newspaper-based and the textbook-based approaches yielded surprisingly

similar sets of top-50 transcripts, although both approaches yielded somewhat noisier results than our preferred specification. The correlation of the two alternative measures with $PRisk_{it}$ are 0.964 and 0.706, respectively (see Appendix Table 7). Appendix Table 8 replicates some of the key findings of the paper with these alternative measures.[26]

Beyond the choice of training libraries, we also experimented with two other specifications. In the first, we dropped the weight $\frac{f_{b,\mathbb{P}}}{B_{\mathbb{P}}}$ from (1). Doing so did not fundamentally alter the sorting of transcripts generated (the correlation with $PRisk_{it}$ is .80), but led to a noticeable deterioration in its correspondence with the sorting obtained from our manual reading of transcripts. In the second, we dropped the pattern-based classification algorithm altogether and instead constructed a dummy variable (EPU_{it}) that equals 1 if the transcript contains a combination of words specified by (Baker et al., 2016, p. 1599), that is, if the transcript contained at least one term from each of the following three set of terms: "uncertain", "uncertainties", "uncertainty"; "economic" or "economy"; and "congress," "deficit," "federal reserve," "legislation," "regulation," "regulatory," "the fed," or "white house." Although this simpler measure is directionally still correlated with outcomes in the same way as $PRisk_{it}$, it appears to contain much less information, as shown in Appendix Tables 8 and 9.

4 Firm-level Political Risk

Having bolstered our confidence that $PRisk_{it}$ indeed captures political risk, we now use it to learn about the nature of political risk faced by firms and establish new stylized facts.

A notable feature of the associations between $PRisk_{it}$ and corporate outcomes, as documented in Tables 4 and 5, is that they all hold even when we condition on time and sector (at the SIC 2-digit level) fixed effects. This finding may be somewhat surprising given a focus in the literature on aggregate political risk that emanates from national politics and has relatively uniform impacts within sector (e.g., Pastor and Veronesi (2012)).

To probe the relative contributions of aggregate, sectoral, and firm-level political risk, we conduct a simple analysis of variance—asking how much of the variation in $PRisk_{it}$ is accounted for by various sets of fixed effects. The striking finding from this analysis, reported in Table 7, is that time fixed effects—and thus the time-series variation of aggregate political risk shown in Figure 1—account for only 1.02% of the variation. Sector fixed effects and the interaction of sector and time fixed effects only account for an additional 5.49% and 2.99%, respectively. This finding suggests most of the variation

[26] Another, completely different, approach would be to manually select passages of transcripts that focus on risks associated with political topics, and then use these manually selected passages as the political training library. We decided against this approach because its replicability is limited and for inducing a backward-looking bias by only identifying political risks of the same nature as those that preoccupied firms in the pre-sample.

in $PRisk_{it}$ (90.50%) is within sector and time. Put differently, most of the variation in political risk reflected in our measure plays out at the level of the firm, rather than at level of the sector or the economy as a whole. For lack of a better term, we henceforth refer to this (i.e., within-sector-and-time) variation as "firm-level" variation in political risk.[27]

Further decomposing this firm-level variation, we find that permanent differences across firms in a given sector (i.e., sector × firm fixed effects) account for nearly one quarter (20.55%) of this variation, whereas variation over time in the identity of firms most affected by political risk accounts for the remainder (i.e., the remaining 69.95% not explained by time or firm fixed effects).

Perhaps surprisingly, these conclusions do not change substantially when we use more finely measured sector fixed effects. Repeating the steps of our decomposition with 409 SIC-4-digit sectors (column 3 of Table 7) assigns 17.97% to permanent differences across firms within sector and 62.11% to the residual (i.e., variation over time in the identity of firms most affected by political risk within sector).[28]

Taken at face value, these results are at odds with the conventional view that political events have relatively uniform impacts across firms in a developed economy, where we think of regulatory and spending decisions as affecting large groups of firms at the same time. Instead, our decomposition suggests that, even among US listed firms, such decisions have differential impacts among subsets of firms, and that the identity of the firms most affected by political risk changes considerably over time; that is, when facing political risk, firms may be more concerned about their position in the cross-sectional distribution (e.g., increased scrutiny by regulators of their activities) than about variation in the time series (e.g., elections or large-scale reforms).[29]

Although suggestive, the results from our variance decomposition admit other interpretations. For instance, part of the large firm-level variation might simply be due to differential measurement error that makes firm-level variation harder to pick up than aggregate or sector-level variation. However, the highly significant associations between $PRisk_{it}$ and corporate outcomes, as documented in Tables 4 and 5, strongly suggest this variation nevertheless has economic content. In Figure 4, we take this one step further by showing the associations between $PRisk_{it}$ and investment, planned capital expenditure, and employment growth, respectively, all change very little when we supplement our time and sector fixed

[27] In the macroeconomics literature, such within-sector-and-time variation is also often described as "idiosyncratic" risk. We prefer the term "firm-level" because it avoids confusion with the concept of non-systematic risk in the finance literature. However, we show below that the two concepts are quantitatively almost identical in our application, because very little of the firm-level variation appears to be explained by heterogeneous loadings on aggregate political risk.

[28] Of course, this residual mechanically disappears in the limit when each firm is assigned to its own sector. Nevertheless, the point remains that variation at the level of sectors, defined at conventional levels of granularity, does not absorb most of the variation in $PRisk_{it}$.

[29] Consistent with this interpretation, Akey and Lewellen (2016) also find little persistence in firm's "policy sensitivity" across election cycles, where firms are defined as "policy sensitive" if their monthly stock returns co-move significantly with the EPU measure in the 18 months prior to an election cycle. That is, the loadings of firms' stock returns on aggregate political risk (EPU) appear to be changing across election cycles.

effects with the interaction of sector and time fixed effects (columns 1 and 2), as well as as fixed effects for each firm-sector pair (column 3).[30] For example, the correlation between $PRisk_{it}$ and employment growth is -0.687 (s.e.=0.093) in column 1 and -0.572 (s.e.=0.100) when we add firm-sector and sector $\times$ time fixed effects in column 3. (As before, this pattern is largely invariant to using more granular definitions of sectors; see Appendix Table 10.) Our results thus suggest the large amounts of firm-level variation in political risk have real meaning and are not just an artifact of measurement error.

Another possibility is that this firm-level variation might simply be driven by heterogeneous exposure to aggregate political risk. To probe this possibility, we construct a "political risk beta" for each firm by regressing its daily stock return on Baker, Bloom, and Davis' EPU_t, and then include the interaction of this political risk beta with the mean across firms of $PRisk_{it}$ in our analysis of variance. Specifically, we include it as a control in addition to the full set of time, sector, and sector-time fixed-effects interactions. We find the coefficient on this interaction (not shown) is statistically indistinguishable from zero and accounts for less than a hundredth of the firm-level variation in overall political risk, suggesting it is not well described by a model in which firms have stable heterogenous exposures to aggregate political risk.

Consistent with this result, column 2 of Table 8 shows the association between $PRisk_{it}$ and stock return volatility remains almost unchanged when we control for such heterogenous exposure to aggregate political risk. Column 3 allows for time variation of political risk beta on a two-year rolling window interacted with the mean across firms of $PRisk_{it}$. Here, too, we find the coefficient on $PRisk_{it}$ remains unchanged and highly statistically significant, whereas the alternative measure is statistically insignificant, thus suggesting any information reflected in these alternative measures is subsumed in $PRisk_{it}$.

Alternatively, part of the variation in firm-level political risk could simply reflect variation in government contracts awarded to different firms. To assess this possibility, in columns 4 and 5, we add controls for the log of one plus the dollar amount the firm has outstanding in government contracts. Including this variable, or its interaction with the mean across firms of $PRisk_{it}$, again has little effect on the coefficient of interest, suggesting variation in current government contracts is also not the primary driver of firm-level political risk. (Although, of course, concerns about the future allocation of government contracts might well be.) Appendix Table 12 shows the same result using all the corporate outcomes studied in Table 5 as dependent variables.

To summarize, the main conclusion from this analysis is that the incidence of political risk across

[30] Similar to the results for implied volatility in Table 4, the unconditional correlations tend to be about 30% larger. They are -0.245 (s.e.=0.036) for investment, -0.433 (s.e.=0.125) for capital expenditure, and -0.679 (s.e.=0.106) for employment growth. See Appendix Table 10

firms is far more volatile and heterogeneous than previously thought. Much of the economic impact of political risk plays out within sector and time and is not well described by a model in which individual firms have relatively stable exposures to aggregate political risk. Instead, a surprisingly large share of the variation in political risk is accounted for by changes over time in the identity of firms most affected by political risk within a given sector. That is, in times of heightened political risk, firms may be more concerned about their relative position in the cross-sectional distribution than about time-series variation in aggregate political risk.

In the next section, we elaborate on the macroeconomic implications of this finding before turning to two case studies that further illustrate the nature of the firm-level variation in political risk.

4.1 Macroeconomic effects of firm-level political risk

Much of the academic debate on the effects of political risk has focused on the idea that politicians may cause inefficiencies by creating uncertainty that reduces the average firm's investments in human and physical capital (Baker et al., 2016; Fernández-Villaverde et al., 2015). A direct implication of our findings above is that political risk may also create inefficiencies by creating dispersion of political risk across firms.

To fix ideas, consider a simple model in which a unit mass of firms produce output using capital, $Y_{it} = AK_{it}^{\alpha}$, with $\alpha < 1$ and $\int K_{it} di \equiv \bar{K}_t$. Also suppose some part of the relation between $PRisk_{it}$ and the corporate actions documented in Table 5 is causal and that some of the variation in $PRisk_{it}$ originates from failings in the political system itself (e.g., an inability to reach compromise in a timely manner or myopic decision-making).

Within this model, the conventional concern is that a rise in aggregate political risk distorts (i.e., lowers) $\bar{K}_t$ and that a temporary rise in aggregate political risk may cause business cycles by inducing the average firm to temporarily lower investment. (Taking our results in Table 5 at face value, we are inclined to add socially wasteful lobbying activities and donations to politicians to this list.)

Solving the model, we can show that in addition to these aforementioned effects, the dispersion in political risk across firms lowers total factor productivity. Specifically, assuming $PRisk_{it}$ is log-normally distributed across firms at a given time t, we get $Y_t = e^{-\phi\sigma_t^2}\bar{K}_t^{\alpha}$, where ϕ is a positive constant and σ_t^2 is the cross-sectional variance of $PRisk_{it}$ at time t. That is, the mere existence of dispersion of political risk across firms directly lowers output, and any temporary increase in this dispersion lowers total factor productivity, and may cause a recession. In other words, the effectiveness of political decision-making may have important macroeconomic effects not only by affecting aggregate political risk, but also by altering the identity of firms affected by political risk and the dispersion of firm-level political risk over

time.[31]

To probe this point, we again project $PRisk_{it}$ on sector, time, and the interaction of time and SIC 2-digit sector fixed effects, calculate their cross-sectional standard deviation at each point in time, and plot this variation in the top panel of Figure 5 as a proxy for the time-series variation in σ_t. For comparison, the figure also plots the average across firms of $PRisk_{it}$. The figure shows the dispersion of firm-level political risk tends to be higher during the 2008-9 recession (a regression of the residuals on the percentage growth in real GDP yields a negative and significant coefficient (-2.345, s.e.=1.100)). More striking, however, is the strong correlation with aggregate political risk: the dispersion in political risk across firms is high precisely when aggregate political risk is high. Regressing the residuals on the mean of $PRisk_{it}$ yields a coefficient of 0.476 (s.e.=0.034), implying a one-percentage-point increase in aggregate political risk is associated with a 0.48-percentage-point increase in the cross-sectional standard deviation of firm-level political risk.[32] As is already apparent from visual inspection, the latter association dominates: when we simultaneously regress the dispersion of firm-level political risk on GDP growth and control for aggregate political risk, the coefficient on the latter remains largely unchanged (0.534, s.e.=0.036), whereas the coefficient on the latter flips sign (1.890, s.e.=0.574). (See Appendix Table 11 for details and variations of these regressions.)

This strong association between aggregate political risk and the dispersion of firm-level political risk suggests politicians to some extent control the dispersion of political risk across firms and that events that increase aggregate political risk may also transmit themselves through an increase in the firm-level dispersion of political risk. In this case, part of the well-documented countercyclical variation in uncertainty (Bloom, 2009) may indeed have political origins. This is an important avenue for future research.

The bottom panel of Figure 5 shows the distribution of firm-level political risk, without conditioning on a specific time-period. It further illustrates this variation is large relative to the variation in the whole panel (the standard deviation of this purely firm-level variation is 0.95 of the standard deviation of the full panel), and that it is positively skewed, with a fat right tail.

4.2 Case studies

As a useful illustration of the kind of firm-level political risk picked up by our measure, Figure 6 plots the time series of $PRisk_{it}$ for two particular firms: a large energy firm (panel A) and a small firm

[31] We leave a careful quantification of these effects to future research. It requires resolving the issues of causality mentioned above, taking a systematic approach to identifying part of the variation in $PRisk_{it}$ that is inefficient (unnecessary), as well as a dynamic implementation of the decomposition in Hsieh and Klenow (2009).

[32] This result (in combination with the findings shown in Table 4) is also consistent with the prediction in Pastor and Veronesi (2013) that stocks should be more volatile and correlated when (aggregate) political uncertainty is high.

belonging to the information technology sector (panel B). The full anonymized transcripts are on the authors' websites for reference, highlighting each of the text snippets contributing to the construction of the respective firm's $PRisk_{it}$.

For each spike in the time series, the figures provide a brief description of the risks associated with political topics discussed in the transcript. As shown in panel A, a recurring theme in the genesis of this firm's $PRisk_{it}$ is risks associated with emission regulations. Discussions about emissions rules governed by the US Environmental Protection Agency (EPA) loom large. At various stages, these rules are changed, challenged in court, withdrawn, and re-formulated, each time creating spikes in $PRisk_{it}$. When reading these underlying transcripts, why these regulatory actions have highly heterogeneous, firm-specific, impacts becomes clear. Our example firm relies heavily on coal-burning furnaces of an older generation that specifically emit a lot of mercury and are also located such that they are subject to interstate emissions rules.[33] Other regulatory risks are highly localized, where, for example, an agency in Ohio considers changing rules on compensation for providing spare generating capacity, and another agency in North Carolina considers aggregation of electricity purchases. Both actions specifically impact our example firm because of its relatively large presence in these states. Altogether, only a small number of electricity generating firms might exhibit a similar exposure to these specific regulatory actions. Another recurring theme surrounds the likelihood of climate legislation and its interaction with health care reform. Although these kinds of legislations are arguably broad in their impact, here, too, we find a noticeable firm-specific element: the firm's executives are rooting for health care reform not because of its effect on the firm's health plan, but because it reduces the likelihood of Congress taking up climate legislation.

The example firm in panel B is a smaller high-tech firm, specializing in voice-over-IP systems. As is evident from Figure 6, this firm's exposure to political risk is much simpler, and centers almost entirely on government contracts. Specifically, the company hopes the government will make a strategic decision to invest in the firm's (secure) voice-over-IP standard, and that in particular the Department of Defense will invest in upgrading its telephone infrastructure. Some of this uncertainty is again "aggregate" in the sense that it depends generally on the level of government spending, but much of it is also more specific to procurement decisions of individual agencies and the funding of specific government programs.

These case studies illustrate two main conclusions. First, $PRisk_{it}$ captures risks associated with a broad range of interactions between governments and firms, including regulation, litigation, legislation, budgeting, and procurement decisions. Second, given this breadth of government activities, the incidence

[33]For an in-depth study of the heterogeneous effects of uncertainty about EPA interstate emissions rules, see Dorsey (2017).

of political risk could quite plausibly be highly volatile and heterogeneous across firms, such that much of the economically relevant variation of political risk is at the firm level.

5 Measuring Topic-Specific Political Risk

After studying the incidence and effects of *overall* political risk, we now turn to measuring the risks associated with specific political topics, applying our topic-based measure, $PRisk_{it}^{T}$, to the eight topic-based training libraries, as sourced from ontheissues.org. These libraries enable us to separately measure political risks associated with "economic policy & budget," "environment," "trade," "institutions & political process," "health," "security & defense," "tax policy," and "technology & infrastructure."[34]

Mirroring our approach in section 2, we begin by verifying that our topic-based measures correctly identify transcripts that feature significant discussions of risks associated with each of the eight political topics. We then examine firms' lobbying activities and how they change in the face of political risk associated with each topic. The lobbying data are particularly attractive for this purpose, because we have information on the lobbying activities of each firm by political topic, allowing us to relate this information directly to our topic-specific measure of political risk. Finally, we use these data to study the impacts of three federal budget crises during the Obama presidency on political risk and lobbying.

5.1 Validation

Table 11 shows the top 15 bigrams most indicative of each of our eight political topics (the bigrams with the highest $\frac{f_{b,\mathbb{P}_T}}{B_{\mathbb{P}_T}} log(Z/f_{b,\mathbb{Z}})$). For example, the bigrams most associated with discussion of "economic policy & budget" include "balanced budget," "legislation provides," and "bankruptcy bill;" those most associated with "security & defense" include "on terror," "from iraq," and "nuclear weapons." Looking across topics, these bigrams appear largely intuitive and provide an overview of the types of text classified by ontheissues.org under each topic heading. As before, the table also shows the text surrounding the highest-scoring bigrams within the three highest-scoring transcripts for each topic, which also give an impression as to each transcript's content.

As for our measure of overall political risk, we also read each of these transcripts in detail to verify our measure captures significant discussions of political risks associated with the expected topics, and found it does. For example, the transcript with the highest score in the "economic policy & budget" category discusses the possibility of government stimulus for the construction industry (Ashtead Group PLC in December 2008). Similarly, the transcript with the highest rank in the "security & defense"

[34] We have named these topics in accordance with the titles of constituent collections of text provided by ontheissues.org. See Appendix Table 2 for details.

category (Circor International Inc in May 2011) features discussions of how government budgets cuts and the winding down of activities in Iraq and Afghanistan affect the demand for the firm's products.

Although our approach yields the expected results, we note a few minor exceptions. Specifically, the top-scoring transcript in the health category inadvertently picks up on a specific SEC safe harbor provision that mentions the Medicare Prescription Drug Improvement Act and other health care reforms, prior to the actual call. Nevertheless, the transcript features extensive discussions of a Federal Trade Commission and Department of Justice investigation of the competitive practices in the health care industry and the risks associated with this investigation. We find only one false positive, among the 24 top transcripts listed in Table 11: the February 2007 transcript of a call by Faurecia, in the "economic policy & budget" category features no explicit discussion of political topics, but rather contains talk about how severe adverse economic conditions and the business cycle hit the company's financial performance. The relatively high score on the transcript's topic-based measure appears to be due to conference participants frequently using the bigram "the states" to refer to the situation in the United States, whereas the bigram is likely only political when used in reference to the 50 states in the US. Together, however, our close reading of all of these transcripts confirms the topic-based measures correctly identify transcripts with discussions of the risk associated with each of the eight political topics, albeit with some expected noise.

5.2 Lobbying by topic

The Center for Responsive Politics (CRP) reports for each firm-quarter total expenditure on lobbying and provides a list of topics these lobbying activities are directed toward. Using our mapping between the 80 topics given in the CRP dataset and our eight political topics (see Appendix Table 1), we generate a dummy variable that equals 1 if firm i lobbies on topic T in quarter t, and zero otherwise. Our main specification relating his lobbying activity to our topic-based measures of political risk takes the following form:

$$\mathbb{1}[Lobbying^{T}_{i,t+1} > 0] * 100 = \delta_t + \delta_i + \delta_T + \theta PRisk^{T}_{it} + \gamma^{T} X_{it} + \epsilon^{T}_{it}, \tag{6}$$

where δ_t, δ_i, and δ_T represent full sets of time, firm, and topic fixed effects, respectively, and the vector X_{it} always contains a control for the log of the firm's assets.[35] The coefficient θ measures the association between the firm's political risk associated with a given topic and its propensity to lobby on that topic.[36]

[35] Because the lobbying data are semi-annual rather than quarterly before 2007, we drop the first and third quarters prior to 2007 from the sample and assign the outcome variable for the first half of the year to the second quarter and to the fourth quarter for the second half of the year.

[36] We use a simple linear probability model instead of a Probit specification purely to facilitate interpretation.

Panel A of Table 9 shows estimates of θ, were column 3 corresponds directly to (6). The coefficient of interest (0.785, s.e.=0.042) implies a one-standard-deviation increase in the political risk associated with a given political topic is associated with a 0.785-percentage-point increase in the probability that a given firm lobbies on that topic in the following quarter. Because on average only 7% of firms lobby on any given topic, this effect corresponds to a 10% increase relative to the mean. Column 4 shows the coefficient estimate is almost unaffected when we include sector $\times$ time fixed effects. Column 5 shows our most demanding specification in which we now also include firm $\times$ topic fixed effects, thereby only focusing on variation within firm and topic. Doing so reduces the coefficient of interest by an order of magnitude, although it remains statistically significant at the 1% level.

Panel B reports similar findings using the log of one plus the dollar expenditure on lobbying as dependent variable, constructed under the assumption that firms spend an equal amount of funds on each topic they actively lobby on in a given quarter.

Our first conclusion from this set of results is that the within-firm-and-topic variation of our topic-based measure has economic content, finding that firms actively manage political risk by lobbying on the political topics they are most concerned about.

Going one step further, we next probe the heterogeneity of this effect across topics by allowing the coefficient θ in (6) to vary by topic. Specifically, we interact $PRisk_{it}^{T}$ with the full set of dummy variables indicating each of the eight political topics. Figure 7 plots the coefficients and standard errors on each of the eight interactions. We find the elasticity of lobbying expenditure with respect to political risk associated with "health care" is the largest (3.064, s.e.=.185), followed by "economic policy & budget" (1.963, s.e.=.224), "environment" (1.339, s.e.=.196), "security & defense" (1.187, s.e.=.174), and "tax policy" (1.140, s.e.=.227), suggesting firms expect to manage political risk associated with these topics most effectively by lobbying. The remaining interactions are statistically indistinguishable from zero.

5.3 Timing and causality

The granularity of these results, linking within-firm-and-topic variation in political risk to topic-specific lobbying expenditures in the subsequent quarter, warrants a brief consideration of the direction of causality. Two obstacles to attributing a causal interpretation to the coefficient θ remain.

The first challenge is that an unobserved non-political event simultaneously increases the share of the conversation devoted to risks associated with a particular political topic and, for reasons unrelated to this risk, increases the propensity to lobby on that same topic, but not other topics. Although thinking of examples of such an unobserved event is somewhat difficult, we cannot rule out this possibility. However, if such an omitted event indeed drives the identification of θ, we may expect it to affect

lobbying expenditures before as much as after the discussion of the political topic at hand. If, however, the causality runs from political risk to lobbying, as a means of managing this risk, we might expect lobbying to respond in the same quarter or after the increase in $PRisk_{it}^{T}$.

To probe this, Appendix Table 13 replicates column 5 of Table 9—our most demanding specification relating lagged $PRisk_{it}^{T}$ to lobbying at $t+1$—while adding both contemporaneous and future $PRisk^{T}$ to the equation. The results show the coefficient on the lag is almost unchanged (0.063, s.e.=0.027), and it shows a larger effect than both the contemporaneous $PRisk_{i,t+1}^{T}$ (0.050, s.e.=0.027) and the lead (0.042, s.e.=0.028), which is statistically indistinguishable from zero. If anything, the lag thus dominates the lead, consistent with a causal interpretation of the results. We interpret this result, however, with caution given the relatively low frequency of the data, the notoriously high persistence of lobbying activities,[37] and the fact that the three point estimates are not dramatically different from each other.

The second challenge to a causal interpretation is that a politically engaged firm may lobby the government on a given topic—regardless of the risks associated with the issue—and then have to defend financial or other risks resulting from this lobbying activity during a conference call, or it might lobby in anticipation of future innovations to political risk. Again, the timing of the effect weighs somewhat against this interpretation. However, we cannot exclude this possibility in the absence of a a natural experiment that exogenously increases political risk associated with a particular topic.

This narrow issue of identification aside, a deeper challenge results from the fact that not all political risk is generated by the political system itself, but rather arises in reaction to external forces. For example, an acute liquidity crisis in the financial system may prompt regulators to act, thus creating political risk from the perspective of the firm. In this case, the political risk itself results from politicians' attempts to minimize non-political risk or other adverse impacts from the crisis. In other words, a meaningful distinction exists between political risk that fundamentally originates from the political system (i.e., actions or inactions by political decision makers) and political risk that arises due to other forces. Again, disentangling the causal effects of these different types of political risks would require a natural experiment.

Although we have no such natural experiments available, we can nevertheless speak to this issue by making use of three historical episodes that allow us to trace rises in political risk directly to specific political crises. We discuss these cases in the next section.

[37] A pooled regression of $\text{Lobbying}_{i,t+1}(\mathbb{1}*100)$ on $\text{Lobbying}_{i,t}(\mathbb{1}*100)$ gives a coefficient of 0.877 (s.e.=0.056). Firms that begin lobbying thus tend to continue doing so for several quarters. Lobbying by topic exhibits similarly high persistence (0.882, s.e.=0.005).

5.4 Case studies

During the Obama presidency, the federal government suffered a sequence of budget crises surrounding the so-called "debt ceiling," the "fiscal cliff," and the "shutdown" of the federal government. These episodes are of special interest because they arguably created uncertainty about the federal government's ability to service its debts and its future borrowing capacity that resulted purely from the inability of politicians to reach a compromise in a timely fashion, and not from some other unobserved factor. Moreover, each of these episodes is associated with a unique bigram that comes into use in conference-call transcripts only during the period of interest and not before. These unique bigrams allow us to measure which firms appeared most concerned with the turmoil associated with these episodes.

The federal debt ceiling was reached on May 16, 2011. By August 2, 2011, Secretary Geithner stated that the treasury's "extraordinary measures" for providing operating funds had been exhausted. An imminent default on federal debt was averted only by a last-minute budget deal. As shown in Figure 8, the use of the bigram "debt ceiling" in earnings conference calls peaks around that time (in the third quarter of 2011). In December 2012, two events converged—the expiration of the Bush-era tax cuts and a scheduled reduction in government spending ("sequestration")—which threatened to send America hurtling over the "fiscal cliff." While President Obama signed the fiscal crisis bill passed by Congress on January 2, 2013, the budget sequestration was only delayed. In addition, on December 31, 2012, the debt ceiling was also expected to be reached. Together, these events led to the debt-ceiling crisis of 2013. As shown in Figure 8, the occurrence of the bigrams "fiscal cliff" and "debt ceiling" peaks in q4 2012 to q1 2013, albeit the latter lower than in q3 2011. Finally, on October 1, 2013, the House—controlled by Republicans—and Senate—controlled by Democrats—failed to reach agreement on a measure to avoid a partial government shutdown, affecting roughly 40% of the civilian federal workforce. The shutdown lasted for 16 days, before a compromise was reached. As for this third episode, Figure 8 shows the use of the bigram "government shutdown" peaks sharply around q4 2013. Notably, Figure 8 further shows each of these episodes is associated with a marked increase in the average across firms in our measure of political risk associated with "economic policy & budget," $PRisk_{it}^{ep\&b}$.

Table 10 probes this apparent effect of the three budget crises on $PRisk_{it}^{ep\&b}$ by examining the cross section of firms. Columns 1-3 in Panel A report that firms that use the bigrams "debt ceiling," "fiscal cliff," and "government shutdown" more frequently in their earnings calls held during these respective periods tend to experience a significantly higher increase in $PRisk_{it}^{ep\&b}$ relative to the previous quarter. For example, one mention of the term "debt ceiling" in a call held in the third quarter of 2013 is associated with a 0.419-standard-deviation increase (s.e.=0.140) in $PRisk_{it}^{ep\&b}$ relative to the previous

quarter.[38]

Although we have no quasi-experimental variation in the identities of the firms most affected by these episodes, we can easily show the firms using the three bigrams more frequently tend to rely on the federal government for significantly larger shares of their revenues.[39] Moreover, this approach arguably enables us to isolate variation in political risk induced by the political process itself, namely, the inability of decision makers to arrive at compromises in a timely fashion.

How might firms react to this politically-induced increase in risk associated with the federal budget? To answer this question, Panel B of Table 10 reports estimates of a regression of a dummy variable that equals 1 if a firm lobbies on the topic "economic policy & budget" in a given quarter on a full set of time and firm fixed effects, and the number of times a conference call contains any of the three bigrams associated with the three crises ("debt ceiling," "fiscal cliff," "government shutdown"). We find firms are significantly more likely to lobby the federal government on this topic in the quarter in which they use one of the three bigrams in their earnings calls, where one additional mention of one of the three bigrams is associated with a 0.698-percentage-point increase (s.e.=0.299) in the probability that the firm lobbies the federal government on the topic of "economic policy & budget."[40]

In column 2, we regress the dummy for lobbying on this specific topic on $PRisk_{it}^{ep\&b}$, returning a positive and significant coefficient (0.235, s.e.=0.079). Finally, in column 3, we use the number of mentions of "debt ceiling," "fiscal cliff," and "government shutdown" during the three respective periods as an instrument for $PRisk_{it}^{ep\&b}$. The result suggests a one-standard-deviation increase in political risk associated with "economic policy & budget" attributable to the three budget crises is associated with a 3.069-percentage-point increase (s.e.=1.112) in the probability that a given firm lobbies on that topic. Under the assumption that firms spend the same dollar amount on each topic they lobby on, this finding translates to a 38.3% (s.e.=12.6%) increase in dollars spent on lobbying on "economic policy & budget" (column 4).

We cautiously interpret these coefficients as the local average treatment effect of the Obama-presidency budget crises on the probability that firms most concerned with these crises lobby the federal government on the topic of "economic policy & budget" in the subsequent quarter.

The notable increase in the coefficient between the OLS and IV specifications (by a factor of 14) is consistent with the view that political risks attributable to the political process itself may be more amenable to influencing by lobbying than political risks resulting from some external force. Alterna-

[38] Two hundred twenty-six earnings conference calls held in the third quarter of 2013 contain this term (on average used 1.561 times).

[39] A pooled OLS regression of # of "debt ceiling," "fiscal cliff," and "government shutdown" on a firm's share in revenue from government contracts (using all firms and quarters) yields a coefficient of 0.154 (s.e.=0.059, clustered by firm).

[40] In total, 2,160 firm-quarters show use of one of these bigrams (on average used 1.687 times).

tively, the increase may also be explained by the presence of substantial measurement error in the within-firm-topic-and-time dimension of our measure or some other force contributing to endogenous selection.

6 Conclusion

Political decisions on regulation, taxation, expenditure, and the enforcement of rules have a major impact on the business environment. Even in well-functioning democracies, the outcomes of these decisions are often hard to predict, generating risk, as witnessed, for example, by the recent episodes surrounding the shutdown of the US federal government or the ongoing debate about health care reform. A major concern among economists is that the effects of such political risk on the decisions of households and firms might entail social costs that may outweigh potential upsides even of well-meaning reforms, prompting questions about the social costs of the fits and starts of political decision-making. However, quantifying the effects of political risk associated with specific political decisions has often proven difficult, partially due to a lack of measurement.

In this paper, we adapt simple tools from computational linguistics to construct a new measure of political risk faced by individual firms: the share of their quarterly earnings conference calls that they devote to political risks. This measure allows us to quantify, and decompose by topic, the extent of political risk faced by individual firms over time.

We show a range of results corroborating our interpretation that our measure indeed reflects meaningful firm-level variation in exposure to political risk: we find that it correctly identifies conference calls that center on risks associated with politics, that aggregations of our measure correlate strongly with measures of aggregate and sectoral political risk used in the prior literature, and that it correlates with stock market volatility and firm actions — such as hiring, investment, lobbying, and donations to politicians — in a way that is highly indicative of political risk.

Analyzing our measure of overall political risk, we document that a surprisingly large share of the variation in political risk appears to play out at the level of the firm, rather than the level of the sector or the economy as a whole. About two-thirds of the variation of our measure is accounted for by variation over time in the identity of firms most affected by political risk within a given sector. Although part of this variation is likely measured with error, we find it has economic content, in the sense that it is significantly associated with all the same firm-level outcomes and actions outlined above.

We corroborate this interpretation using in-depth readings of the political risk faced by two illustrative firms whose interactions with government are indeed broad and complex, including the crafting,

revision, and litigation of laws and regulations, as well as budgeting and procurement decisions with highly granular impacts. Given our reading of these transcripts, we find it quite plausible that the incidence of political risk should be highly volatile and heterogeneous, even across firms within the same sector.

An immediate implication of these results is that the economic impact of political risk is not well described by conventional models in which individual firms have relatively stable exposures to aggregate political risk. Instead, political shocks appear to be a significant source of firm-level (idiosyncratic) risk, and firms may well be as concerned about their relative position in the distribution of firm-level political risk as they are about aggregate political risk. Consistent with this interpretation, we find the distribution of firm-level political risk has high variance and a fat right tail.

Our main conclusion from this set of results is that the effectiveness of political decision-making may affect the economy, not only by affecting aggregate political risk (as is the focus of much of the existing literature), but also by creating idiosyncratic political risk. Such idiosyncratic political risk may affect the macroeconomy through three distinct channels. First, it may lower total factor productivity by distorting the allocation of resources across firms within sector. Second, it may prompt socially wasteful diversion of resources toward lobbying and other attempts to actively manage firm-level political risk. Third, a recent literature in macroeconomics has argued that idiosyncratic risk, regardless of its origin, may have independent effects on the level of hiring and investment in a variety of settings. Our results show political shocks are a significant driver of such generic idiosyncratic risk at the firm level.

Consistent with the view that politicians have some control over the level of idiosyncratic political risk, we also find that the dispersion of firm-level political risk co-moves strongly with aggregate political risk, rising when aggregate political risk is high. Because aggregate political risk tends to be high in economic downturns, this association may also explain part of the countercyclical nature of idiosyncratic risk (both political and non-political), which is the subject of a broader literature.

In addition to our measure of overall political risk, we also generate additional measures of political risks associated with eight specific political topics. To validate these measures, we make use of the fact that firms that engage in lobbying of any branch of government are required to disclose which political topics their efforts are directed toward, enabling us to create a mapping between specific political topics discussed in conference calls and the topics that are the object of the firm's lobbying activities. Using this mapping, we are able to show that firms that devote more time to discussing risks associated with a given political topic in a given quarter are more likely to begin lobbying on that topic in the following quarter. This apparent topic-specific lobbying response to increases in topic-specific political risk is especially high for political risk associated with "health care" and "economic policy &

budget," suggesting firms expect to manage political risks associated with these topics most effectively by lobbying.

In a final set of results, we isolate variation in our measure of political risks associated with "economic policy & budget" that is directly attributable to the federal budget crises during the Obama presidency associated with the debate about the debt ceiling and the shutdown of the federal government. Using this variation as an instrument, we find a one-standard-deviation increase in this kind of political risk, induced by the inability of politicians to compromise on the budget in a timely manner, prompts a three-percentage-point increase in the probability that the affected firms lobby the government on the topic of "economic policy & budget" in the following quarter.

Our results leave a number of avenues for future research. In particular, we hope the ability to measure firm-level variation in political risk will contribute to identifying and quantifying causal effects of political risk in future work, for example, by combining our data with information about natural experiments affecting the degree of political risk associated with particular topics. One such avenue might be to apply our methodology to UK and EU-based firms to study how political risk triggered by the UK's exit from the EU affect firm behavior.

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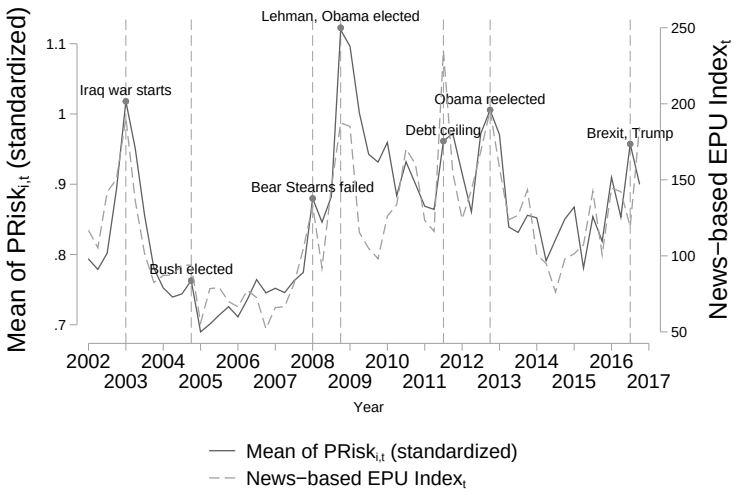
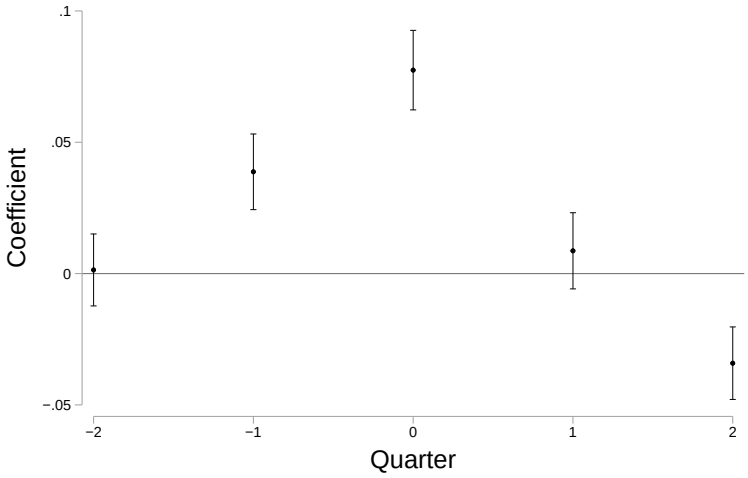
Figure 1: Variation in $PRisk_{i,t}$ over time: Correlation with EPU



Notes: This figure shows the time-average of $PRisk_{i,t}$ (standardized) across firms in each quarter together with the news-based Economic Policy Uncertainty Index developed by Baker, Bloom, and Davis (2016). The Pearson correlation between the two is 0.804 with a p-value of 0.000. $\text{PRisk}_{i,t}$ is standardized by its standard deviation in the panel. The Pearson correlation between the time-average of PRisk with the CBOE Volatility Index (VIX) is 0.666. $PRisk_{i,t}$ is standardized by its standard deviation in the panel.

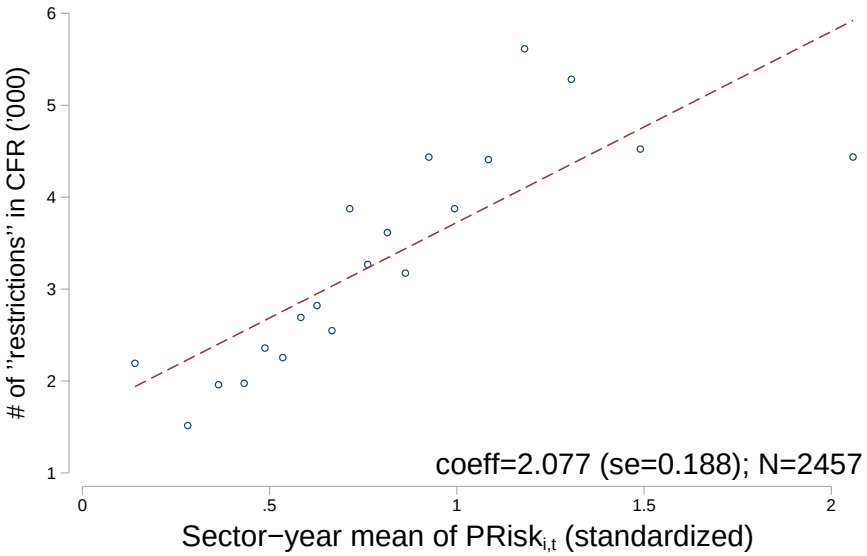
Figure 2: Variation in $PRisk_{i,t}$ around federal elections



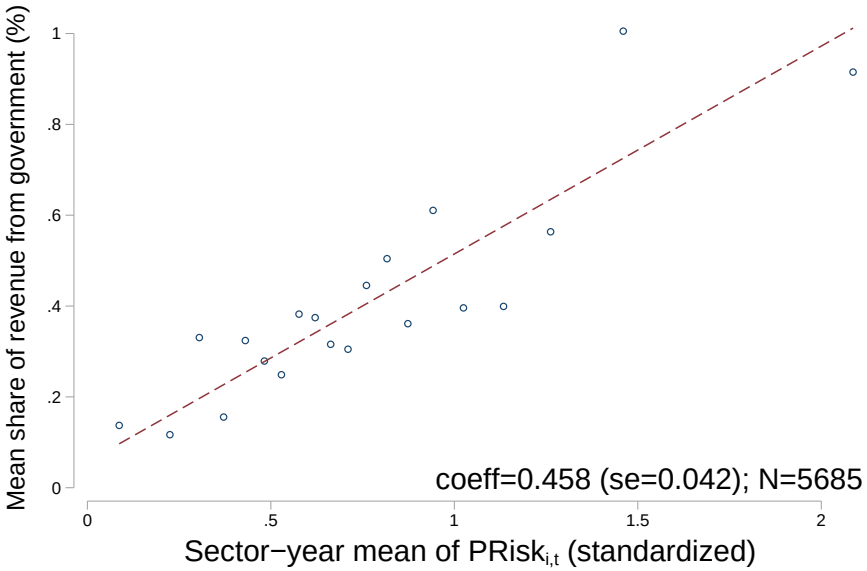
Notes: This figure plots the coefficients and 95% confidence intervals from a regression of $PRisk_{i,t}$ (standardized) on dummy variables indicating quarters with federal (i.e., presidential and congressional) elections, as well as two leads and lags. The specification also controls for firm fixed effects and the log of firm assets. $PRisk_{i,t}$ is standardized by its standard deviation. Standard errors are clustered at the firm level.

Figure 3: $PRisk_{i,t}$ and sector exposure to politics

Panel A: # of restrictive words in the CFR

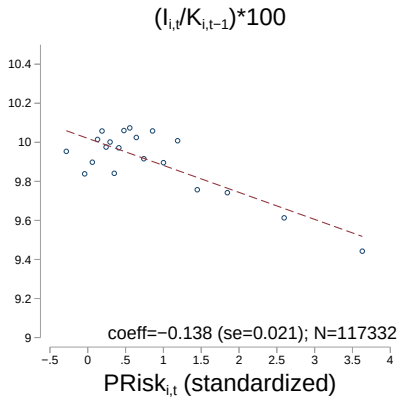


Panel B: Share of revenue from Federal government

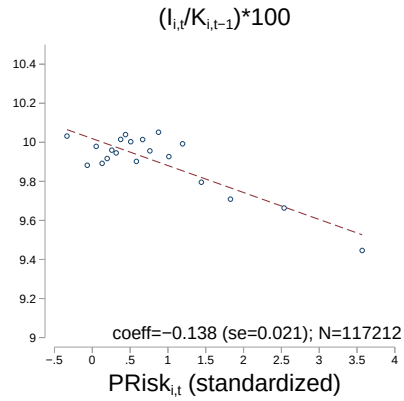


Notes: This figure plots the relationship between the sector-year average of $PRisk_{i,t}$ (standardized) and two different measures of sector exposure to politics. In Panels A and B the number of industries is 211 and 413, respectively. In Panel A, the outcome variable is the number of occurences of restrictive words () – "shall," "must," "may not," "prohibited," and "required" – divided by 1,000. The sector-year word counts are calculated as the sum for each sector-year pair of the probability that a part of the Code of Federal Regulations (CFR) is a about that sector multiplied by the corresponding word count in that part. For more details, see Al-Ubaydli and McLaughlin (2015). In Panel B, the outcome variable is the sector-year average of firms' share of revenue that comes from the Federal government. Firm i's share of revenue from the Federal government is federal contracts$_{i,t}$ (as measured in Table 8) divided total net sales. $PRisk_{i,t}$ is standardized by its standard deviation.

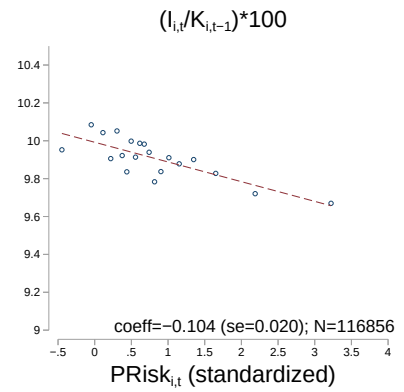
Figure 4: Association between $PRisk_{i,t}$ and corporate actions



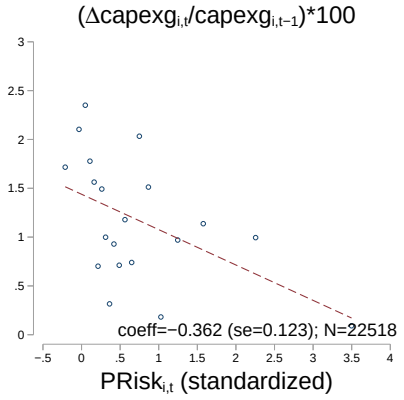
(a) Sector and time fixed effects



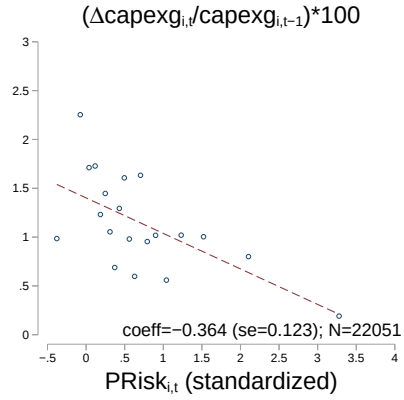
(b) Adding sector*time fixed effects



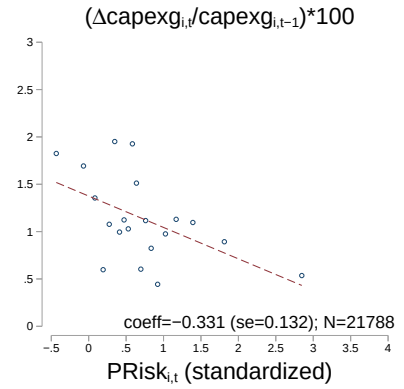
(c) Adding firm fixed effects



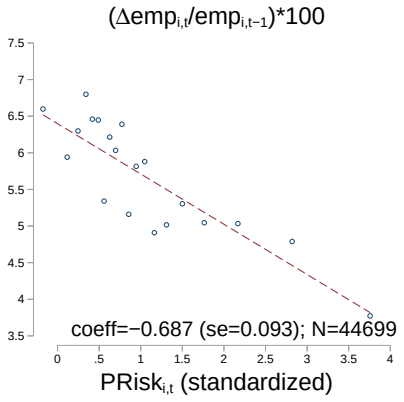
(d) Sector and time fixed effects



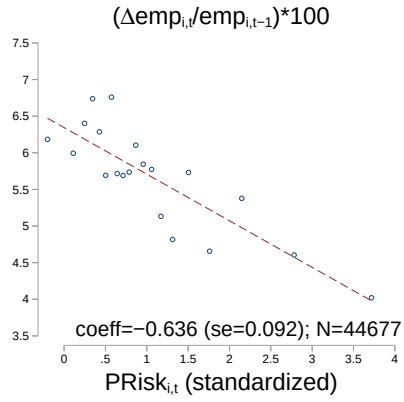
(e) Adding sector*time fixed effects



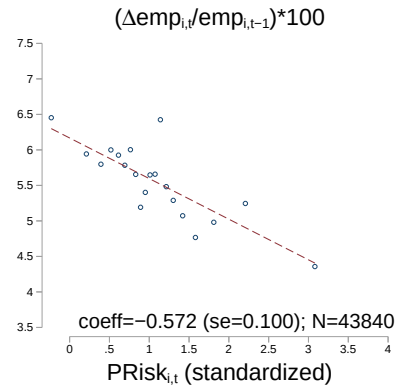
(f) Adding firm fixed effects



(g) Sector and time fixed effects



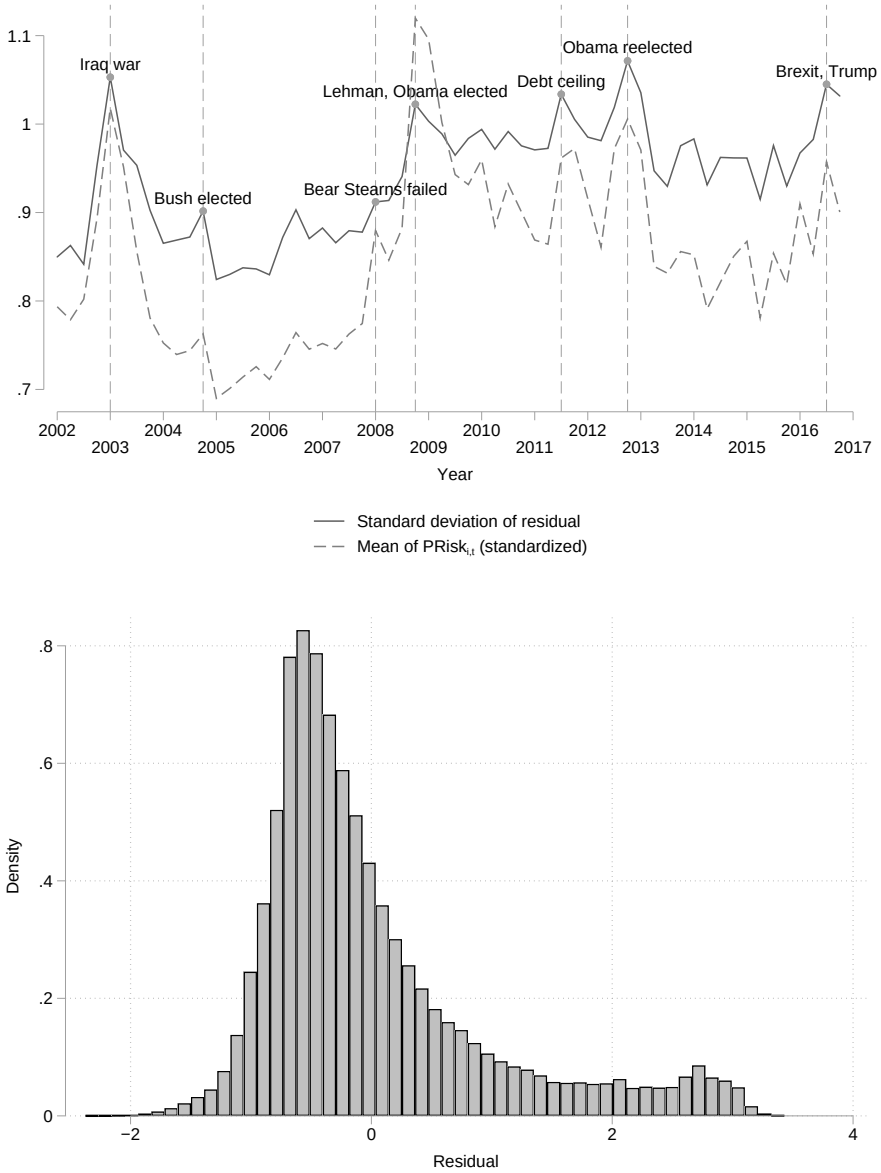
(h) Adding sector*time fixed effects



(i) Adding firm fixed effects

Notes: This figure shows nine panels of added-variable plots of investment, $I_{i,t}/K_{i,t-1} * 10$, (Panels a, b, and c), capex guidance, $\Delta\text{capexg}_{i,t}/\text{capexg}_{i,t-1} * 100$, (Panels d, e, and f), and employment, $\Delta\text{emp}_{i,t}/\text{emp}_{i,t-1} * 100$, (Panels g, h, and i) on $PRisk_{i,t}$ (standardized). The left-hand panels control for sector and time fixed effects, the middle panels control, in addition, for sector*time interactions, and the right-hand panels control, in addition, for firm fixed effects. All specifications control for the log of firm assets. $PRisk_{i,t}$ is standardized by its standard deviation.

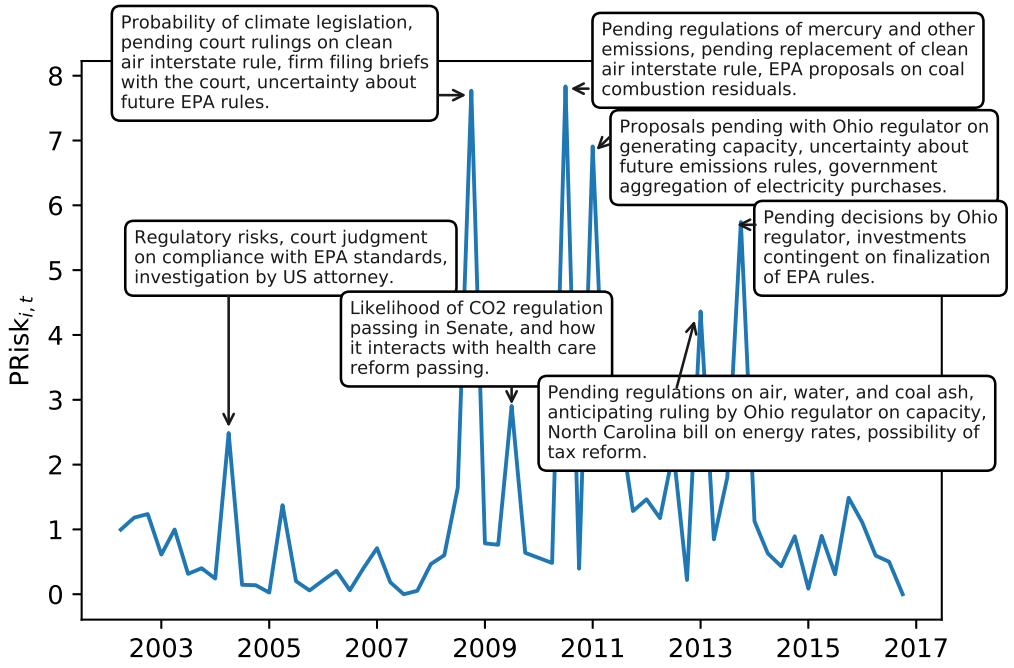
Figure 5: Dispersion of firm-level political risk



Notes: Together with the mean of $PRisk_{i,t}$ (standardized), the top panel plots the cross-sectional variation at each point in time in the residual from a projection of $PRisk_{i,t}$ (standardized) on sector, time, and the interaction of time and SIC2-digit sector fixed effects. A regression of the former on the latter yields a coefficient of .582 (s.e. = .04). $PRisk_{i,t}$ is standardized by its standard deviation. Panel B shows the distribution of the residuals from the above-mentioned projection. The standard deviation of the distribution is .95; the skewness is 1.454.

Figure 6: Two case studies

(a) Panel A: $PRisk_{i,t}$ of a large energy firm



(b) Panel B: $PRisk_{i,t}$ of a small information technology firm

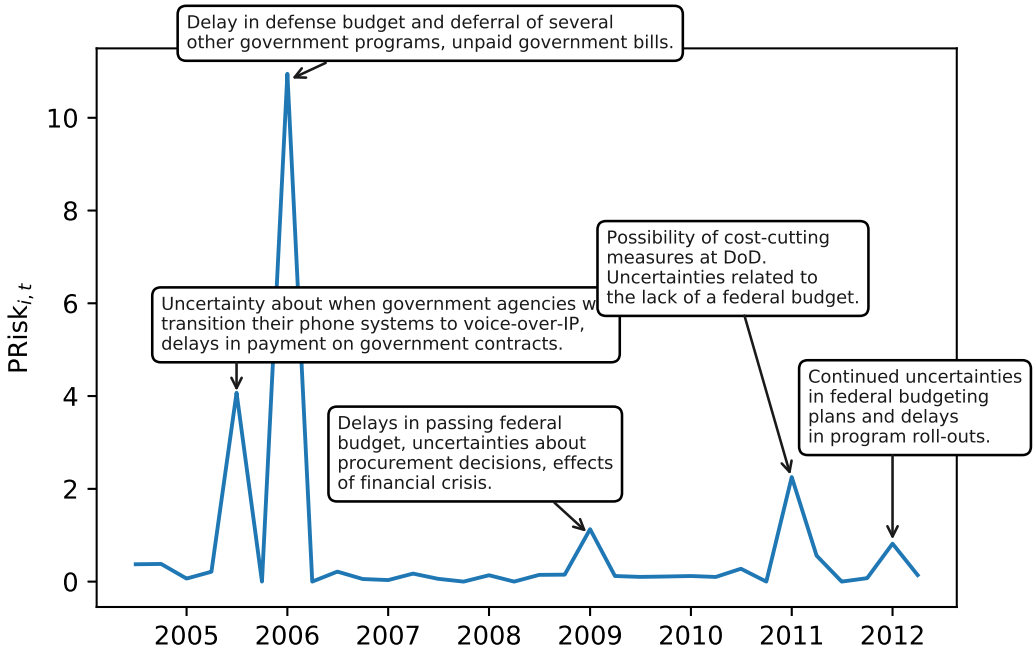
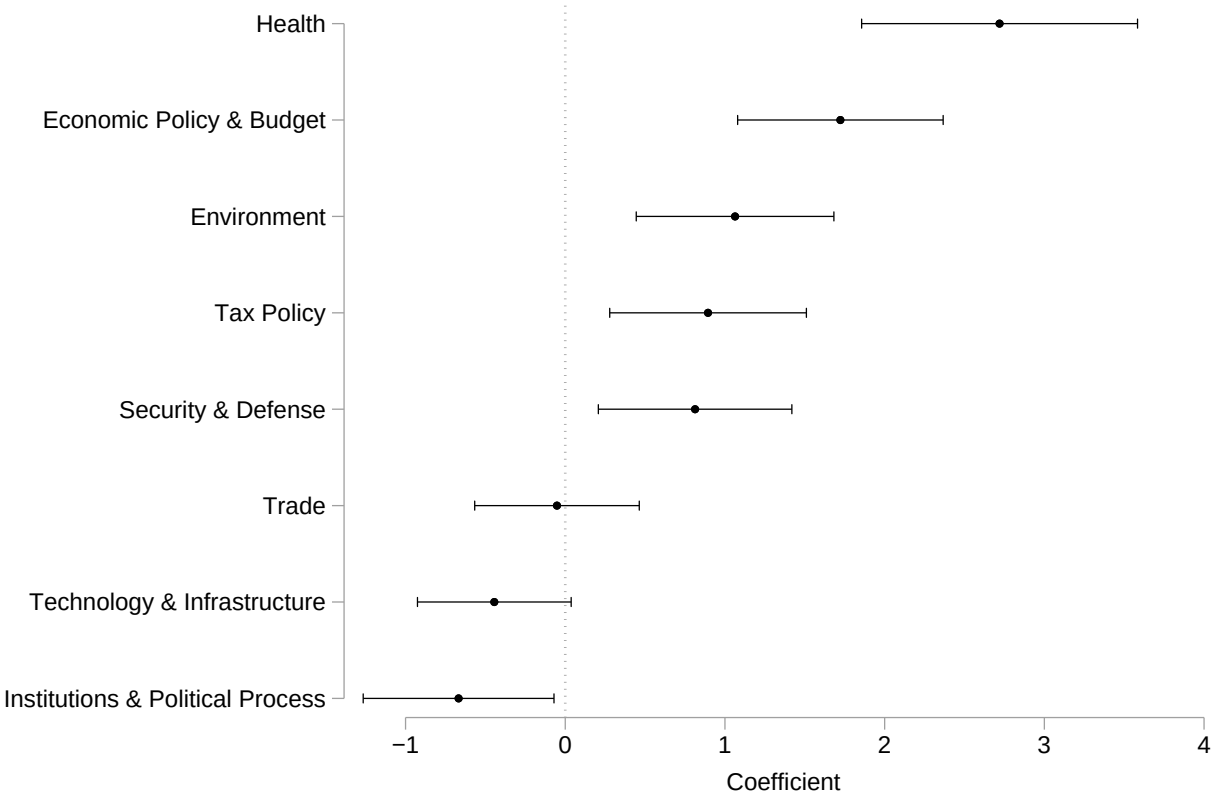
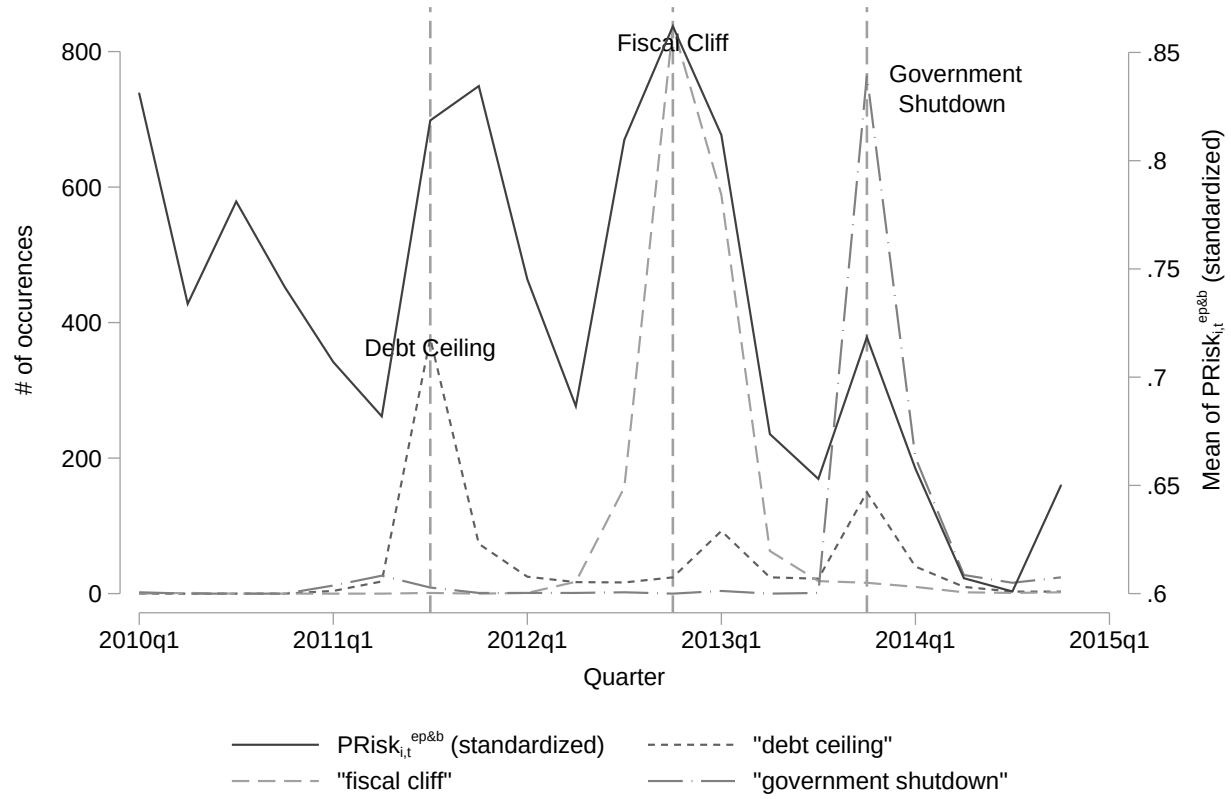


Figure 7: Elasticity of lobbying with respect to topic-specific political risk



Notes: This figure plots the coefficients and their 95% confidence intervals of $\text{topic}_{i,t}^{T} \times \text{PRisk}_{i,t}^{T}$ for $T = \{1, \ldots, 8\}$ from a regression of $\text{Lobbying}_{i,t+1}^{T}(\mathbb{1} * 100)$ on $\text{topic}_{i,t}^{T} \times \text{PRisk}_{i,t}^{T}$ (standardized) for $T = \{1, \ldots, 8\}$, firm, topic, time fixed effects, and log of firm assets. The variables $\text{topic}_{i,t}^{T}$ are dummy variables for each given topic. $PRisk_{i,t}^{T}$ is standardized by its standard deviation. Standard errors are double clustered at the firm and topic level.

Figure 8: Event study: Debt Ceiling, Fiscal Cliff, and Government Shutdown



Notes: This figure plots the total number of occurences of "debt ceiling", "fiscal cliff", and "government shutdown" for all sample earnings call transcripts together with the average across firms in our measure of political risk associated with "economic policy & budget", $PRisk_{i,t}^{ep\&b}$. $PRisk_{i,t}^{ep\&b}$ is standardized by its standard deviation.

Table 1: Summary statistics

Panel A: Firm-quarter	Mean	Median	St. Dev.	Min	Max	N
$\text{PRisk}_{i,t}$ (standardized)	0.86	0.49	1.00	0.00	3.76	176,173
$\text{Assets}_{i,t}$ (millions)	15,271	1,217	97,502	0.13	3,069,706	173,887
Realized $\text{volatility}_{i,t}$ (standardized)	1.20	0.99	1.00	0.04	83.03	162,124
Implied $\text{volatility}_{i,t}$ (standardized)	2.01	1.78	1.00	0.05	9.38	114,981
Earnings $\text{announcement surprise}_{i,t}$	-0.01	0.00	1.43	-235.83	301.81	161,375
Stock return 7 days prior to earnings $\text{call}_{i,t}$	0.00	0.00	0.02	-0.24	0.40	148,183
Investment rate, $I_{i,t}/K_{i,t-1}$	0.10	0.09	0.07	-0.10	0.40	117,332
$\Delta\text{capex guidance}_{i,t}/\text{capex guidance}_{i,t-1}$	0.12	0.00	9.81	-1.00	1,079.00	22,520
$\Delta\text{sales}_{i,t}/\text{sales}_{i,t-1}$	0.28	0.02	27.49	-529.21	7,482.69	173,887
Lobby $\text{expense}_{i,t}$ (thousdands)	80.08	0.00	381.08	0.00	15,460.00	147,228
Donation $\text{expense}_{i,t}$ (thousdands)	5.13	0.00	27.71	0.00	924.50	176,173
# of $\text{recipients}_{i,t}$	2.73	0.00	14.01	0.00	521.00	176,173
$\text{Hedge}_{i,t}$	0.06	0.00	0.24	0.00	1.00	176,173
Federal $\text{contracts}_{i,t}$ (thousands)	3,516	0.00	49,488	0.00	3,841,392	162,124
PRisk Economic Policy & $\text{Budget}_{i,t}$ (standardized)	0.30	0.07	1.00	0.00	62.70	176,173
PRisk Environment $_{i,t}$ (standardized)	0.18	0.03	1.00	0.00	133.97	176,173
PRisk $\text{Trade}_{i,t}$	0.15	0.00	1.00	0.00	227.69	176,173
PRisk Institutions & Political $\text{Process}_{i,t}$ (standardized)	0.21	0.03	1.00	0.00	98.53	176,173
PRisk $\text{Health}_{i,t}$ (standardized)	0.16	0.02	1.00	0.00	97.19	176,173
PRisk Security & $\text{Defense}_{i,t}$ (standardized)	0.22	0.06	1.00	0.00	165.69	176,173
PRisk $\text{Tax Policy}_{i,t}$	0.18	0.02	1.00	0.00	111.75	176,173
PRisk Technology & $\text{Infrastructure}_{i,t}$ (standardized)	0.21	0.02	1.00	0.00	106.67	176,173
Panel B: Firm-year	**Mean**	**Median**	**St. Dev.**	**Min**	**Max**	N
$\text{PRisk}_{i,t}$ (standardized)	1.07	0.75	1.00	0.00	3.92	44,699
$\Delta\text{emp}_{i,t}/\text{emp}_{i,t-1}$	0.06	0.03	0.19	-0.50	1.00	44,699
Panel C: Firm-topic-quarter	**Mean**	**Median**	**St. Dev.**	**Min**	**Max**	N
$\text{PRisk}^T_{i,t}$ (standardized)	0.61	0.16	1.00	0.00	3.77	1,177,824
$\text{Lobby}^T_{i,t}$ ($\mathbb{1}$)	0.07	0.00	0.25	0.00	1.00	1,177,824

Notes: This table shows the mean, median, standard deviation, minimum, maximum, and number of non-missing observations of all variables that are used in the subsequent regression analyses. Panels A, B, and C show the relevant statistics for the regression sample at the firm-year, firm-quarter, and firm-topic-quarter unit of analysis, respectively. In Panel A, $PRisk_{i,t}$ is the average for a given firm and quarter of the transcript-based scores of political risk; in Panel B, it is the average for a given firm and year; and in Panel C, $PRisk^T_{i,t}$ is the average for a given firm and quarter of the transcript-based scores of topic T. Each of the three are capped at the 95% percentile and standardized by their respective standard deviation. Realized $\text{volatility}_{i,t}$ is the standard deviation of 90-day stock holding returns of firm i in quarter t. Implied $\text{volatility}_{i,t}$ is for 90-day at-the-money options of firm i and time t. Both realized and implied volatility are winsorized as in Stein and Stone (2013). Stock return 7 days prior to earnings $\text{call}_{i,t}$ is the average stock return for the 7 days prior to the earnings call at date t. Earnings $\text{announcement surprise}_{i,t}$ is defined as $(\text{EPS}_{i,t} - \text{EPS}_{i,t-4})/\text{price}_{i,t}$, where $\text{EPS}_{i,t}$ are earnings per share (basic) of firm i at time t and $\text{price}_{i,t}$ is the closing price of quarter t. Capital investment, $I_{i,t}/K_{i,t-1}$, is a measure for capital expenditure, and is calculated recursively using a perpetual-inventory method and winsorized as in Stein and Stone (2013). Capex guidance, $\Delta\text{capexg}_{i,t}/\text{capexg}_{i,t-1}$, is the quarter-to-quarter percentage change of the capital expenditure guidance about the closest (usually current) fiscal year-end. We allow for a quarter gap if no guidance (about the same fiscal year-end) was given in the preceding quarter and winsorize the resulting variable at the 1st and 99th percentile. Net sales, $\Delta\text{sales}_{i,t}/\text{sales}_{i,t-1}$ is the change in quarter-to-quarter sales over last quarter's value, winsorized at the 1st and 99th percentile. Lobby $\text{expense}_{i,t}$ is the total lobby expense during quarter t by firm i. Donation $\text{expense}_{i,t}$ the sum of all contributions paid to federal candidates in quarter t by firm i. # of $\text{recipients}_{i,t}$ is defined as the total number of recipients of donations made in quarter t by firm i. $\text{Hedge}_{i,t}$ is a dummy variable equal to one if donations to Republicans over donations to Democrats are between the 25th and 75th percentile of the sample. Federal $\text{contracts}_{i,t}$ is the net value from all federal contracts (excluding modifications) of firm i in quarter t. Net hiring, $\Delta\text{emp}_{i,t}/\text{emp}_{i,t-1}$, is the change in year-to-year employment over last year's value and is winsorized at the 1st and 99th percentile. Finally, $PRisk^T_{i,t}$ where $T = \{$Economic policy & budget, Environment, Trade, Institutions & political process, Health, Security & defense, Tax policy, Technology & infrastructure$\}$, are the separate topic scores, standardized by their respective standard deviation. All variables are restricted to the set of observations of the largest regression sample that is reported in any of the subsequent tables.

Table 2: Top 120 political bigrams used in construction of $PRisk_{i,t}$

Bigram	$(f_{b,\mathbb{P}}/B_{\mathbb{P}}) \times 10^5$	Frequency	Bigram	$(f_{b,\mathbb{P}}/B_{\mathbb{P}}) \times 10^5$	Frequency
the constitution	84.45	10	president has	11.30	7
the states	56.38	285	governor and	11.27	10
public opinion	49.98	4	government the	11.08	55
interest groups	49.74	8	this election	10.93	26
of government	48.51	307	white house	10.83	21
the gop	43.00	1	the politics	10.83	27
in congress	32.75	105	political party	10.83	5
national government	28.56	7	american political	10.83	2
social policy	26.10	1	politics of	10.83	5
the civil	25.61	63	and political	10.59	983
elected officials	25.36	3	general election	10.59	30
politics is	22.65	7	policy is	10.59	135
political parties	21.67	3	the islamic	10.53	1
the political	21.42	1083	federal reserve	10.34	118
office of	21.42	57	judicial review	10.10	6
interest group	20.19	1	limits on	9.85	53
the bureaucracy	20.19	1	vote for	9.85	5
and senate	19.45	19	the faa	9.79	21
government and	18.71	320	shall not	9.60	4
for governor	17.45	2	constitution and	9.60	4
executive branch	16.99	2	the nation	9.60	48
support for	16.74	140	the presidency	9.60	2
the epa	16.47	135	senate and	9.60	27
in government	16.25	208	the va	9.53	77
congress to	15.51	19	efforts to	9.36	751
political process	15.27	18	the electoral	9.36	5
care reform	15.02	101	of citizens	9.36	12
government in	14.77	76	any state	9.36	7
due process	14.77	6	a president	9.11	6
and social	14.53	138	the governments	9.11	200
president obama	14.53	7	the partys	8.86	1
congress the	14.28	8	and congress	8.86	7
first amendment	14.28	1	clause of	8.86	1
the legislative	14.03	86	the taliban	8.68	1
the republican	14.03	10	a yes	8.68	11
tea party	14.03	1	states or	8.62	40
of civil	13.79	14	free market	8.62	27
court has	13.79	30	passed by	8.62	12
groups and	13.54	106	other nations	8.62	1
civil war	13.30	8	national and	8.62	193
the congress	13.30	47	that congress	8.62	27
struck down	13.30	3	powers and	8.37	3
shall have	13.30	7	most americans	8.37	2
the constitutional	12.56	13	of religion	8.37	1
new deal	12.56	20	government is	8.37	228
the presidential	12.31	118	politics and	8.37	21
ruled that	12.31	15	the south	8.37	277
of representatives	12.06	10	a government	8.37	89
economic policy	11.82	15	yes vote	8.16	1
african americans	11.82	2	to enact	8.13	6
policy goals	11.82	2	proposed by	8.13	25
a political	11.82	119	the legislature	8.13	32
of social	11.82	29	political system	8.13	5
civil service	11.57	2	the campaign	8.13	37
federal courts	11.57	1	governor in	7.89	1
of speech	11.57	1	and party	7.88	2
government policy	11.57	52	federal bureaucracy	7.88	3
argued that	11.33	8	state the	7.68	31
the democratic	11.33	6	presidential election	7.63	158
islamic state	11.32	1	their constituents	7.63	2

Notes: This table shows the top 120 bigrams with the highest term frequency $(f_{b,\mathbb{P}}/B_{\mathbb{P}})$ and receiving the highest weight in the construction of $PRisk_{i,t}$. The frequency counts the number of occurrences of the bigram across all transcripts.

Table 3: Transcript excerpts with highest $PRisk_{i,t}$: Panel A

Firm name	Call date	$PRisk_{i,t}$ (standardized)	Discussion of political risks associated with:	Text surrounding bigram with highest weight ($f_{b,\mathbb{P}}/B_{\mathbb{P}}$)
Nevada Gold Casinos Inc	10-Sep-2008	37.43	– impact of statewide smoking ban on revenues; – ballot initiative to amend the constitution to remove caps on bets; – EPA determinations concerning project development.	gaming industry is currently **supporting a ballot** initiative to **amend the constitution to authorize an** increase in the —BET— limits allow additional
Axis Capital Holdings Limited	9-Feb-2010	35.09	– exposure of insurance portfolio to political risk in Spain, Portugal, Greece, Ukraine, and Kazakhstan.	accident year ratios the combined ratios we have talked about **the political** —RISK— business particularly really shouldnt be looked at on a
Female Health	10-Feb-2009	31.83	– developments regarding USAID, a major customer; – FDA approval of company products; – Senate vote on stimulus funding and government funding of AIDS/HIV prevention; – restrictions on funding of organizations that permit abortion.	market acceptance the economic and business environment and the impact **of government pressures** currency —RISKS— capacity efficiency and supply **constraints and** other
Employers Holdings Inc	01-May-2014	31.36	– passage of California Senate Bill on workers's compensation.	of —HAZARD— **groups but** as you start moving it around **the states** you can have an impact robert paun sidoti company analyst
National Mentor Holdings, Inc.	12-Feb-2010	30.66	– state and Federal budgets; – Federal stimulus package; – funding of Medicaid.	governments **both president obamas budget proposal and separate legislation** —PENDING— **in congress would provide** funding to continue **the medicaid** stimulus for **another**
Applied Energetics, Inc.	11-May-2009	29.63	– collaboration with Pentagon to develop technology to counter IED/roadside bombs; – funding of weapons programs.	of products and the —UNCERTAINTY— of the timing **and magnitude of government funding and** customer orders **dependence on** sales **to government** customers
Calian Group Ltd	09-Feb-2011	29.58	– impact of revenues of government cost cutting initiatives.	sure benoit poirier desjardins securities analyst okay and in terms **of government** cost cutting initiatives is there any —RISK— of missing consensus
Insurance Australia Group Ltd	23-Feb-2012	27.89	– Australian election for prime minister; – likelihood of carbon tax introduction.	leadership i just wondered if you **had concerns** about how **the political** —INSTABILITY— might affect **policies that** have **ramifications for** the industry
FPIC Insurance Group, Inc.	30-Oct-2008	27.89	– impact of the composition of Congress on the likelihood of tort reform; – Florida state politics.	a —CHANCE— for national **tort reform and** i dont see **the constitution of** congress **changing in** such a way after **this election**
Bankfinancial Corp	4-Nov-2008	27.62	– TARP and CPP programs; – developments in Freddie Mac; – consequences of a change in administration and party in power.	was **an accurate** metaphor and really given all the —UNCERTAINTIES— **of government involvement** in operations and business activities and given the capital

Notes: This panel lists the top 10 transcripts sorted on $PRisk_{i,t}$ together with their associated firm name, earnings call date, $PRisk_{i,t}$ (standardized), and the text surrounding the bigram that has received the highest weight in the transcript. Bigrams for which $b \in \mathbb{P} \backslash \mathbb{N}$ are marked bold; the bigram that received the highest weight is precisely in the middle of the text excerpt. A synonym of "risk" or "uncertainty" is written in small caps and surrounded by dashes. $PRisk_{i,t}$ is standardized by its standard deviation. Duplicate firms are removed from this top list.

Table 3: Transcript excerpts with highest $PRisk_{i,t}$: Panel B

Firm name	Call date	$PRisk_{i,t}$ (standardized)	Discussion of political risks associated with:	Text surrounding bigram with highest weight ($f_{b,\mathbb{P}}/B_{\mathbb{P}}$)
Nanogen, Inc.	8-Aug-2007	26.81	– FDA approval of company products.	**a dip** in revenues during q related to the —UNCERTAINTY— **of government approval for** the phase **funding of** the cdc contract additionally
World Acceptance Corporation	25-Jul-2006	26.56	– impact of legislation in Texas and other states.	management analyst i wanted to followup on the regulatory **front the states** that you had **mentioned the** —POSSIBILITY— of some positive **legislation**
United Refining Company	23-Jul-2010	25.45	– effect of government tax refund on bottom line; – state funding of infrastructure projects and the associated demand for asphalt products.	shape on asphalt **the funding is** very —IFFY— in all **the states so** and the private work is very slow operator operator
Magellan Health Services	29-Jul-2010	25.40	– actions of state Medicaid administrators and insurance regulators; – state procurement of healthcare reform and Federal regulations; – state gubernatorial elections; – Affordable Care Act.	future so this is a time of quite —UNCERTAINTY— for **the states** they are not **sure what** the fmap will be if
Piraeus Bank SA	19-Mar-2015	24.83	– political situation in Greece; – consequences of elections on bank deposits; – relations between EU and Greece, politics of Greece leaving the Euro zone.	that this time around the process or the impact of **the political** —**uncertainty**— has been a bit more subdued than last time
Piedmont Natural Gas	9-Jun-2009	24.79	—	**your point** as you will recall in all three of **the states** that we have serve jim we are —EXPOSED— only to
Platinum Underwriters Holdings Ltd	18-Feb-2010	23.94	– politics and government decision-making in Kazakhstan and Ukraine; – China's ability to fulfill lending commitments.	we have had historically had a very small participation in **the political** —RISK— market backing only a couple of players **parties that**
Transcontinental Inc.	14-Sep-2006	22.89	– tax reform in Quebec.	magazines when you look at exports that we do to **the states no** —DOUBT— that is affecting the top and the bottom
Hemisphere Media Group Inc	12-Aug-2014	22.84	– restructuring of government debt in Puerto Rico.	i think largely a result of the —UNCERTAINTY— regarding restructuring **of government** debt and the general overhang on **the weak economy in**
Pointer Telocation Ltd	30-May-2012	22.54	– political conditions in Israel.	anticipated such —RISKS— and —UNCERTAINTIES— include **a dependence on** economic **and political conditions in israel the** impact of competition supply constraints as

Notes: This panel lists the top 11-20 transcripts sorted on $PRisk_{i,t}$ together with their associated firm name, earnings call date, $PRisk_{i,t}$ (standardized), and the text surrounding the bigram that has received the highest weight in the transcript. Bigrams for which $b \in \mathbb{P} \backslash \mathbb{N}$ are marked bold; the bigram that received the highest weight is precisely in the middle of the text excerpt. A synonym of "risk" or "uncertainty" is written in small caps and surrounded by dashes. $PRisk_{i,t}$ is standardized by its standard deviation. Duplicate firms are removed from this top list.

Table 4: Validation: Implied and realized volatility

Panel A	Implied volatility$_{i,t}$ (standardized)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
PRisk$_{i,t}$ (standardized)	0.070***	0.048***	0.041***	0.033***	0.016***	0.031***	0.031***
	(0.006)	(0.006)	(0.006)	(0.005)	(0.003)	(0.005)	(0.005)
Mean of PRisk$_{i,t}$ (standardized)		0.245***					
		(0.005)					
Stock return 7 days prior$_{i,t}$						0.696**	0.719**
						(0.308)	(0.307)
Earnings announcement surprise$_{i,t}$							–0.112**
							(0.053)
R^2	0.209	0.262	0.383	0.439	0.695	0.450	0.452
N	114,981	114,981	114,981	114,981	114,981	104,934	104,606
Panel B	Realized volatility$_{i,t}$ (standardized)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
PRisk$_{i,t}$ (standardized)	0.046***	0.025***	0.018***	0.019***	0.011***	0.019***	0.019***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)
Mean of PRisk$_{i,t}$ (standardized)		0.225***					
		(0.004)					
Stock return 7 days prior$_{i,t}$						2.048***	2.107***
						(0.290)	(0.289)
Earnings announcement surprise$_{i,t}$							–0.024*
							(0.012)
R^2	0.091	0.140	0.260	0.280	0.420	0.333	0.338
N	162,124	162,124	162,124	162,124	162,124	148,183	147,502
Time FE	no	no	yes	yes	yes	yes	yes
Sector FE	no	no	no	yes	implied	yes	yes
Firm FE	no	no	no	no	yes	no	no

Notes: This table shows results of panel regressions with realized and implied volatility as the dependent variable in Panels A and B, respectively. Realized volatility$_{i,t}$ is the standard deviation of 90-day stock holding returns of firm i in quarter t and is winsorized as in Stein and Stone (2013). Implied volatility$_{i,t}$ is for 90-day at-the-money options of firm i and time t and is also winsorized as in Stein and Stone (2013). $PRisk_{i,t}$ is our measure for firm-level political risk. Stock return 7 days prior$_{i,t}$ is the average stock return for the 7 days prior to the earnings call at date t. Earnings announcement surprise$_{i,t}$ is defined as (EPS$_{i,t}$− EPS$_{i,t-4}$)/price$_{i,t}$, where EPS$_{i,t}$ are earnings per share (basic) of firm i in time t and price$_{i,t}$ is the closing price of quarter t. All regressions control for the log of firm assets. Realized volatility$_{i,t}$, implied volatility$_{i,t}$, and $PRisk_{i,t}$ are standardized by their respective standard deviation. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 5: Managing political risk

Panel A	$\frac{I_{i,t}}{K_{i,t-1}} * 100$	$\frac{\Delta \text{capexg}_{i,t}}{\text{capexg}_{i,t-1}} * 100$	$\frac{\Delta \text{emp}_{i,t}}{\text{emp}_{i,t-1}} * 100$	$\frac{\Delta \text{sales}_{i,t}}{\text{sales}_{i,t-1}} * 100$
	(1)	(2)	(3)	(4)
$\text{PRisk}_{i,t}$ (standardized)	–0.138***	–0.362***	–0.687***	0.061
	(0.031)	(0.125)	(0.107)	(0.049)
R^2	0.070	0.041	0.038	0.001
N	117,332	22,520	44,699	173,887
Panel B	$\text{Log}(1+\$ \text{ donations}_{i,t+1})$	$\#$ of $\text{recipients}_{i,t+1}$	$\text{Hedge}_{i,t+1}$	$\text{Log}(1+\$ \text{ lobby}_{i,t+1})$
	(1)	(2)	(3)	(4)
$\text{PRisk}_{i,t}$ (standardized)	0.092***	0.511***	0.007***	0.190***
	(0.018)	(0.128)	(0.001)	(0.027)
R^2	0.250	0.148	0.137	0.268
N	176,173	176,173	176,173	147,228
Panel C	$\frac{I_{i,t}}{K_{i,t-1}} * 100$	$\frac{\Delta \text{emp}_{i,t}}{\text{emp}_{i,t-1}} * 100$	$\text{Log}(1+\$ \text{ donations}_{i,t+1})$	$\text{Log}(1+\$ \text{ lobby}_{i,t+1})$
	(1)	(2)	(3)	(4)
$\text{PRisk}_{i,t}$ (standardized)	–0.184***	–0.753***	0.022	0.175***
	(0.044)	(0.161)	(0.015)	(0.033)
$\text{PRisk}_{i,t} \times \mathbb{1}\{\text{assets}_{i,t} > \text{median assets}\}$	0.111*	0.138	0.192***	0.119**
	(0.064)	(0.199)	(0.041)	(0.057)
N	117,332	44,699	176,173	147,228
Time FE	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes

Notes: Panel A shows the results from various regressions of capital investment (column 1), capital expenditure guidance (column 2), net hiring (column 3), and net sales (column 4) on $PRisk_{i,t}$. Capital investment, $I_{i,t}/K_{i,t-1} * 100$, is calculated recursively using a perpetual-inventory method as described in Stein and Stone (2013). Capex guidance, $\Delta\text{capexg}_{i,t}/\text{capexg}_{i,t-1}$, is the quarter-to-quarter percentage change of the capital expenditure guidance about the closest (usually current) fiscal year-end. We allow for a quarter gap if no guidance (about the same fiscal year-end) was given in the preceding quarter. Net hiring, $\Delta\text{emp}_{i,t}/\text{emp}_{i,t-1} * 100$, is the change in year-to-year employment over last year's value. Net sales is defined similarly on quarterly data. Capital investment and net hiring are winsorized as in Stein and Stone (2013). Capital expenditure guidance and net sales are winsorized at the 1st and 99th percentile. Panel B shows the results of various regressions of lobbying and donation activity by firms on $PRisk_{i,t}$. $\text{Log}(1+\$ \text{ donations}_{i,t+1})$ (column 1) is the log of one plus the sum of all contributions paid to federal candidates; $\#$ of $\text{recipients}_{i,t+1}$ (column 2) is defined as the number of recipients of donations; $\text{hedge}_{i,t+1}$ (column 3) is a dummy variable equal to one if donations to Republicans over donations to Democrats are between the 25th and 75th percentile of the sample; $\text{log}(1+\$ \text{ lobby}_{i,t+1})$ (column 4) is the log of one plus total lobby expense. In all regressions, $PRisk_{i,t}$ is standardized by its standard deviation. All specifications control for the log of firm assets. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 6: Falsification exercises: political risk, non-political risk, and political exposure

Panel A	$\frac{I_{i,t}}{K_{i,t-1}}$ * 100			$\frac{\Delta \text{emp}_{i,t}}{\text{emp}_{i,t-1}}$ * 100		
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{PRisk}_{i,t}$ (standardized)	–0.138***	–0.080**	–0.040	–0.687***	–0.413***	–0.235*
	(0.031)	(0.032)	(0.035)	(0.107)	(0.112)	(0.131)
$\text{NPRisk}_{i,t}$ (standardized)		–0.188***			–0.819***	
		(0.031)			(0.107)	
$\text{Risk}_{i,t}$ (standardized)			–0.167***			–0.760***
			(0.042)			(0.145)
R^2	0.070	0.071	0.071	0.038	0.040	0.039
N	117,332	117,332	117,332	44,699	44,699	44,699
Panel B	$\text{Log}(1+\$ \text{ lobby}_{i,t+1})$			$\text{Log}(1+\$ \text{ donations}_{i,t+1})$		
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{PRisk}_{i,t}$ (standardized)	0.190***	0.203***	0.215***	0.092***	0.094***	0.105***
	(0.027)	(0.027)	(0.028)	(0.018)	(0.018)	(0.019)
$\text{NPRisk}_{i,t}$ (standardized)		–0.040			–0.005	
		(0.024)			(0.016)	
$\text{Risk}_{i,t}$ (standardized)			–0.041			–0.022
			(0.034)			(0.023)
R^2	0.268	0.268	0.268	0.250	0.250	0.250
N	147,228	147,228	147,228	176,173	176,173	176,173
Panel C	# of $\text{recipients}_{i,t+1}$			$\text{Hedge}_{i,t+1}$		
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{PRisk}_{i,t}$ (standardized)	0.511***	0.537***	0.467***	0.007***	0.008***	0.007***
	(0.128)	(0.131)	(0.116)	(0.001)	(0.001)	(0.001)
$\text{NPRisk}_{i,t}$ (standardized)		–0.082			–0.001	
		(0.058)			(0.001)	
$\text{Risk}_{i,t}$ (standardized)			0.072			0.001
			(0.093)			(0.001)
R^2	0.148	0.148	0.148	0.137	0.137	0.137
N	176,173	176,173	176,173	176,173	176,173	176,173
Panel D	$\frac{I_{i,t}}{K_{i,t-1}}$*100			$\frac{\Delta \text{emp}_{i,t}}{\text{emp}_{i,t-1}}$*100		
	(1)	(2)		(3)	(4)	
$\text{PRisk}_{i,t}$(standardized)	–0.138***	–0.117***		–0.687***	–0.623***	
	(0.031)	(0.032)		(0.107)	(0.113)	
$\text{PolX}_{i,t}$(standardized)		–0.083*			–0.188	
		(0.042)			(0.129)	
R^2	0.070	0.070		0.038	0.038	
N	117,332	117,332		44,699	44,699	

Notes: This table splits risk into various components. $PRisk_{i,t}$ is our standard measure of political risk; $NPRisk_{i,t}$ (non-political risk) is calculated as $PRisk_{i,t}$ based on non-political bigrams instead of political bigrams; $Risk_{i,t}$ counts the number of synonyms of "risk" or "uncetrainty" irrespective whether they are near a political bigram; and $PolX_{i,t}$ (political exposure) is calculated as $PRisk_{i,t}$ based on all political bigrams regardless whether they are near a synonym of "risk" or not. As with $PRisk_{i,t}$, all measures are relative to the transcript length. All other variables are defined as in the preceding tables. Each regression specification controls for the log of firm assets, as well as time and sector fixed effects. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 7: Variance decomposition

Sector granularity	2-digit SIC	3-digit SIC	4-digit SIC
Time FE (aggregate)	1.02%	1.02%	1.02%
Sector FE	5.49%	7.71%	8.45%
Sector × time FE	2.99%	9.52%	13.66%
"**Firm-level**"	90.50%	81.75%	76.86%
Permanent differences across firms within sectors (Firm FE)	20.55%	18.01%	17.07%
Variation over time in identity of firms within sectors most affected by political risk (residual)	69.95%	63.74%	59.79%

Notes: This table shows tabulations of the R^2 from a projection of $PRisk_{i,t}$ on various sets of fixed effects.

Table 8: The nature of firm-level political risk

Panel A	Implied volatility$_{i,t}$ (standardized)				
	(1)	(2)	(3)	(4)	(5)
PRisk$_{i,t}$ (standardized)	0.033***	0.033***	0.032***	0.034***	0.035***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
EPU beta$_i$ × mean of PRisk$_{i,t}$		0.029			
		(0.295)			
EPU beta (2-year rolling)$_{i,t}$ × mean of PRisk$_{i,t}$			0.001		
			(0.004)		
Log(1+$ federal contracts$_{i,t}$)				–0.013***	–0.004
				(0.001)	(0.004)
Log(1+$ federal contracts$_{i,t}$) × mean of PRisk$_{i,t}$					–0.000*
					(0.000)
R^2	0.488	0.488	0.488	0.493	0.493
N	114,981	114,781	114,419	114,981	114,981
Panel B	Realized volatility$_{i,t}$ (standardized)				
	(1)	(2)	(3)	(4)	(5)
PRisk$_{i,t}$ (standardized)	0.017***	0.018***	0.018***	0.019***	0.019***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
EPU beta$_i$ × mean of PRisk$_{i,t}$		0.385***			
		(0.067)			
EPU beta (2-year rolling)$_{i,t}$ × mean of PRisk$_{i,t}$			–0.021		
			(0.022)		
Log(1+$ federal contracts$_{i,t}$)				–0.008***	0.003
				(0.001)	(0.003)
Log(1+$ federal contracts$_{i,t}$) × mean of PRisk$_{i,t}$					–0.000***
					(0.000)
R^2	0.321	0.321	0.319	0.322	0.322
N	162,124	162,070	160,435	162,124	162,124
Time FE	yes	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes	yes
Sector×time FE	yes	yes	yes	yes	yes

Notes: This table is similar to Table 4. It shows results of panel regressions with realized and implied volatility as the dependent variable in Panels A and B, respectively. EPU beta$_{i,t}$ is a firm-specific beta obtained from a regression of daily stock returns on Baker, Bloom, and Davis' daily Economic Policy Uncertainty (EPU) Index; EPU beta (2-year rolling)$_{i,t}$ is a firm-quarter specific beta obtained from a regression of daily stock returns on Baker, Bloom, and Davis' daily EPU Index on a rolling sample of 8 quarters prior to the quarter at hand; mean of $PRisk_{i,t}$ is the cross-sectional average of $PRisk_{i,t}$ at each point in time; and log(1+$ federal contracts$_{i,t}$) is the total amount of federal contracts awarded to firm i in quarter t. All regressions control for the log of firm assets. All remaining variables are defined as in Table 4. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 9: Topic-specific lobbying and topic-specific political risk

Panel A	$\text{Lobbying}^T_{i,t+1}(\mathbb{1} * 100)$				
	(1)	(2)	(3)	(4)	(5)
$\text{PRisk}^T_{i,t}$ (standardized)	1.223***	1.088***	0.785***	0.804***	0.099***
	(0.083)	(0.083)	(0.042)	(0.042)	(0.025)
R^2	0.105	0.128	0.311	0.316	0.647
N	1,177,824	1,177,824	1,177,824	1,177,824	1,177,824
Panel B	$\text{Lobbying}^T_{i,t+1}$ (\$)				
	(1)	(2)	(3)	(4)	(5)
$\text{PRisk}^T_{i,t}$ (standardized)	0.201***	0.202***	0.023***	0.025***	0.026***
	(0.022)	(0.022)	(0.007)	(0.007)	(0.007)
R^2	0.269	0.269	0.751	0.763	0.763
N	1,177,824	1,177,824	1,177,824	1,177,824	1,177,824
Time FE	yes	yes	yes	yes	yes
Sector FE	yes	yes	implied	implied	implied
Topic FE	no	yes	yes	yes	yes
Firm FE	no	no	yes	yes	yes
Sector*time FE	no	no	no	yes	yes
Firm*topic FE	no	no	no	no	yes

Notes: This table shows the results from regressions of $\text{Lobbying}_{i,\tau,t+1}(\mathbb{1} * 100)$ and $\text{Lobbying}_{i,\tau,t+1}$ (\$) on $PRisk^T_{i,t}$ (standardized) in Panel A and B, respectively. Lobbying is semi-annual for all pre-2008 quarters; the quarters for which there is no lobby expense are excluded from the regression. $PRisk^T_{i,t}$ is standardized by its standard deviation. All specifications control for the log of firm assets. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Table 10: Case studies: Obama-presidency budget crises

Panel A	Δ PRisk$^{ep\&r}_{i,t}$			PRisk$^{ep\&r}_{i,t}$
	(1)	(2)	(3)	(4)
# of 'debt ceiling'	0.206***	0.434***	0.419***	
	(0.056)	(0.145)	(0.140)	
# of 'fiscal cliff'		0.016		
		(0.047)		
# of 'government shutdown'			0.072*	
			(0.039)	
# of 'debt ceiling', 'fiscal cliff', and 'government shutdown'				0.213***
				(0.017)
Time FE	no	no	no	yes
Firm FE	no	no	no	yes
Time×sector FE	no	no	no	yes
Sample period	2011-q3	2013-q1	2013-q4	All
R^2	0.006	0.006	0.017	0.279
N	3,342	2,891	2,967	147,228
Panel B	Lobbying$^{ep\&r}_{i,t+1}(\mathbb{1}*100)$			Log(1+Lobbying$^{ep\&r}_{i,t}$(\$))
	(1)	(2)	(3)	(4)
# of 'debt ceiling', 'fiscal cliff', and 'government shutdown'	0.698**			
	(0.299)			
PRisk$^{ep\&r}_{i,t}$		0.235***	3.069***	0.383***
		(0.079)	(1.112)	(0.126)
Time FE	yes	yes	yes	yes
Firm FE	yes	yes	yes	yes
Time×sector FE	yes	yes	yes	yes
Sample period	All	All	All	All
Model	OLS	OLS	IV	IV
F-statistic on instruments			59.133	59.133
R^2	0.679	0.679	0.674	0.717
N	147,228	147,228	146,727	146,727

Notes: The regressions in columns 1, 2, 3 of Panel A are restricted to 2011-q3, 2013-q1, 2013-q4, respectively. PRisk$^{ep\&b}_{i,t}$, where "ep&b" stands for topic "economic policy & budget," is standardized by its standard deviation in all specifications. In columns 3 and 4 of Panel B, PRisk$^{ep\&b}_{i,t}$ is instrumented by # of 'debt ceiling', # of 'fiscal cliff', # of 'government shutdown'; # of 'debt ceiling', 'fiscal cliff', and 'government shutdown' together; and their second- and third-order polynomials. Lobbying$^{ep\&b}_{i,t+1}(\mathbb{1})$, where "ep&r" likewise stands for topic "economic policy & budget," is multiplied by 100 to aid readability of the table. Standard errors are robust. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively. A pooled OLS regression of # of 'debt ceiling', 'fiscalcliff', and 'government shutdown' on a firm's share in revenue from government contracts, using all firms and quarters, gives a coefficient (and standard error) of .154***(.059, clustered by firm).

Table 11: Top bigrams and transcript excerpts for each topic-specific measure of political risk

Topic name	Top fifteen topic bigrams	Top three text excerpts
Economic Policy & Budget	balanced budget, legislation provides, bankruptcy bill, medicaid matching, time congress, emergency economic, budget amendment, struggling economy, and discourages, surpluses in, plants making, in aid, deficit spending, create jobs, government when	1) "to obtain there are a number ***of encouraging*** *indicators* ***of government support for the institutional*** construction **sector in** order to ***create jobs*** and invest in an aging infrastructure however with the ***new administration there*** **remains** shortterm —UNCERTAINTY— also the residential housing market" (Ashtead Group plc on 9-Dec-2008) 2) "**the competitive** *landscape in* the car equipment **sector *is changing*** completely half of the interior suppliers in ***the states*** are **filing for** bankruptcy ***the huge*** —FEAR— of car *makers is* **to entrust** someone with a market and in months time they will" (Faurecia on 5-Feb-2007) 3) "**our foreign** investors ***have come*** to enquire about the possible —RISK— of the jgb price ***collapse in*** terms of the ***fundamentals of*** the japanese *governments fiscal* status it is true that the high level ***of government*** debt as a ratio ***of gdp***" (Sumitomo Mitsui Financial Group Inc on 24-May-2012)
Trade	free trade, trade agreement, trade agreements, trade barriers, freetrade agreement, up markets, the andean, globalization is, labor standards, all trade, policy objectives, jordan the, american free, duties on, trade relations	1) "the —RISKS— **moving forward** are what happens with the state ***of government intervention*** around the ***world as*** it *pertains to* ***free trade*** as it *pertains to taxing* ***and*** **changing** of ***tax structure*** **of *multinational companies*** and we *are obviously* trying to influence" (Procter Gamble Company on 27-Oct-2010) 2) "we continue to look at that **project and** do what we can while were waiting ***for approval*** of our nonfree ***trade agreement*** **permit that** is —PENDING— with the ***government and*** were hopeful well get *that permit* approved soon in the meantime we" (Exxon Mobil Corp on 31-Oct-2013) 3) "***agreement*** **while** the **agreement reached** seemed a reason to celebrate it seems that popular politics seems to ***be voting*** **down *free trade*** in ***this election season*** what does tpp mean to fedex does management view the —RISK— of tpp not *being approved*" (FedEx Corp on 16-Mar-2016)
Technology & Infrastructure	street station, fairness doctrine, cyber warfare, on highways, faithbased organizations, net neutrality, human services, require public, and faithbased, the fcc, proposals during, private entities, structurally deficient, hightech jobs, highspeed rail	1) "act on their own ultimately letting the courts decide it eschelon wants ***the states*** to set ***rates because*** we —***fear***— ***the fcc will leave*** special **access rates alone** *while states might* insist on costbased **rates which** is what we prefer a decision" (Eschelon Telecom, Inc. on 15-May-2006) 2) "i think theres a lot ***of*** —***uncertainty***— out there regarding the regulatory situation both ***in congress*** and the *courts at* ***the fcc*** and in ***the states a*** **lot has** happened this year and i would tell you that the vast majority of" (XO HLDGS INC on 29-Oct-2002) 3) "thanks i do appreciate the color ill just ask one more and ill get back in *the queue* just on **net neutrality** you mentioned in your **comments that *the ruling in the states has*** lifted some —***uncertainty***— ***but*** we have obama coming" (Sandvine Corp on 15-Jan-2009)
Security & Defense	on terror, from iraq, nuclear weapons, our troops, commander in, in chief, al qaeda, weapons of, mass destruction, of military, in afghanistan, to authorize, constitution to, timetable in, troops in	1) "the defense side of aerospace defense **markets continue** to have —UNCERTAINTY— for due to limited ***budgets and*** the **winding down *of military*** activities in ***iraq and afghanistan and*** we continue to watch for the effects ***of government budget cuts*** specifically we are" (Circor International Inc on 05-May-2011) 2) "***that*** are really *relevant* ***in todays defense and intelligence*** market there are vagaries and —UNCERTAINTIES— to the ***government budget*** but **the *intelligence and surveillance and*** reconnaissance the isr **world will *remain a*** high area ***of government*** **investment** as we **move forward** and" (PAR Technology Corp on 30-Mar-2016) 3) "all of **our markets** since **businesses have less** clarity about the future the impact of a ***struggling economy the*** —***threat***— ***of war*** *along* **with *record*** *budget* ***deficits in*** many of ***the states where*** we operate is proving to be as challenging as" (PS Business Parks on 28-Feb-2003)

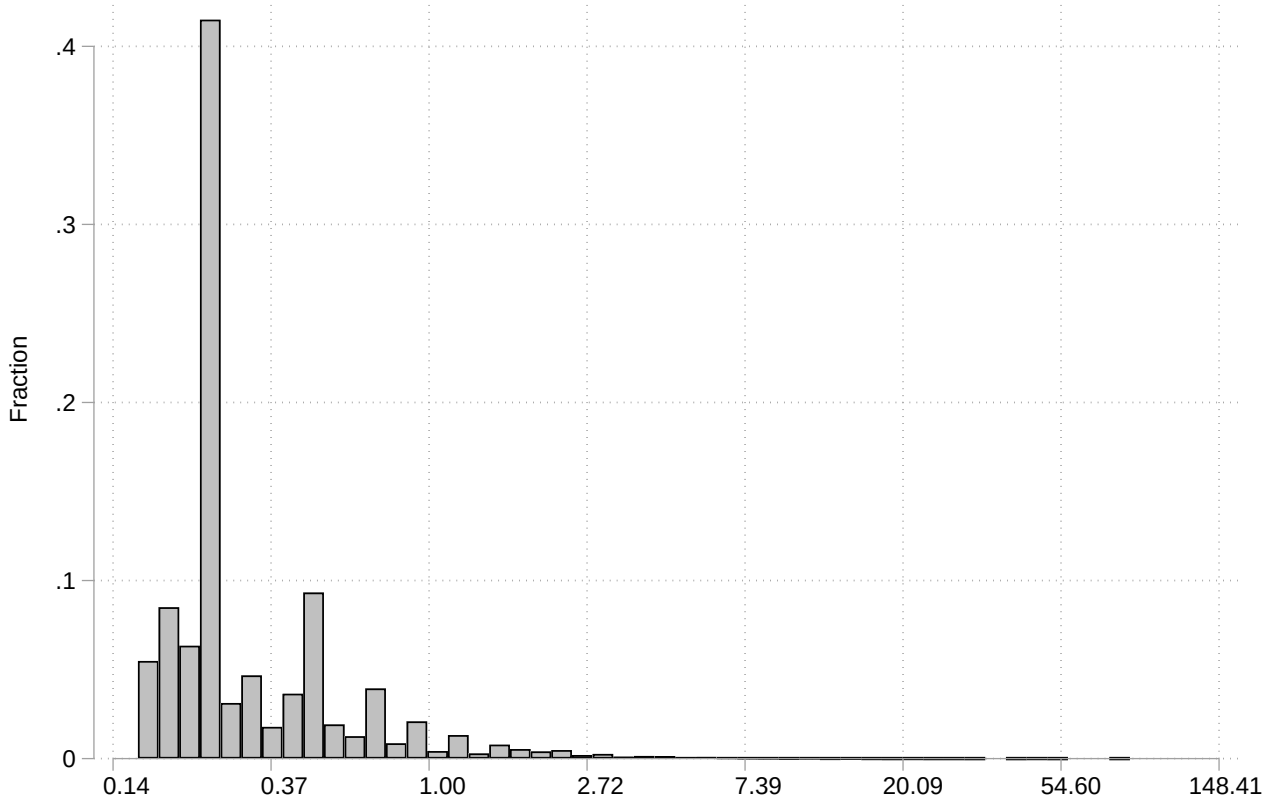
Notes: This table lists the topic name (column 1), the top fifteen topic bigrams (column 2), and the text surrounding the top three topic bigrams (column 3). The top fifteen topic bigrams are selected based on their score, while the top three topic bigrams with surrounding text are selected based on their score weighted by the highest-scoring political bigram within ± ten words. The bigram in question is underlined and in the middle of the text excerpt, topic bigrams are in italic, and political bigrams (such that $b \in \mathbb{P} \backslash \mathbb{N}$) are in bold. A synonym of "risk" or "uncertainty' is written in small caps and surrounded by dashes. Duplicate firms are removed from the text excerpt list.

Table 11: Top bigrams and transcript excerpts for each topic-specific measure of political risk (continued)

Topic name	Top fifteen topic bigrams	Top three text excerpts
Health	prescription drug, cut medicare, government takeover, drug plan, for lowincome, human services, medicare prescription, have health, generic drugs, schip benefits, like medicaid, provide health, bill fails, care under, part d	1) "the **internet site** of ***the commission*** at httpwwwsecgov these —RISKS— and —UNCERTAINTIES— include among others the impact of ***the medicare prescription drug improvement act*** of and other **healthcare *reforms and*** initiatives possible **reductions of** changes *in reimbursements* from form ph ***of government***" (Medcath Corporation on 12-Aug-2004) 2) "within discontinued operations in our financial *statements as* we **have previously said** we originally decided to participate in ***the medicare part d*** **program back** in because most of the underwriting —RISK— *was covered* by the ***government and*** we believed it would complement" (Torchmark Corp on 04-Feb-2016) 3) "result of the market conditions and cost pressures experienced by these **plans as** weve stated in the **past as these health plans** feel greater mlr **pressure *their interest*** in outsourcing —RISK— grows we also continue to see interest from ***the states on***" (Magellan Health Services on 31-Oct-2008)
Environment	air act, from renewable, climate change, clean air, states rights, greenhouse gas, nuclear power, nations energy, foreign oil, with opec, global warming, fish habitat, carbon emissions, legislators are, emissions from	1) "***from*** **convincing to** *compelling the* most **recent scientific** report issued by the ***united nations*** foundation has **dispelled any lingering** —**doubt**— ***climate change is real*** it **is pervasive** and the time to begin acting is now **both *public opinion*** and the ***body politic***" (Exelon Corporation on 25-Apr-2007) 2) "to be the case for that will be very similar to *or* ***virtually identical to*** thereafter we are —UNSURE— ***the clean air act program provides*** that ***the states should*** **figure** out how to do this and how they will go about it" (GenOn Energy Inc on 09-Nov-2011) 3) "market for these carbon accounting ***solutions in*** the us is attractive it is currently voluntary in nature there is —PENDING— ***climate change legislation in congress that if passed would*** institute **mandatory emissions** reporting requirements for approximately facilities and therefore create ***an increased***" (Enernoc Inc on 27-Jul-2009)
Tax Policy	estate tax, tax relief, bush tax, the estate, middleclass tax, continued unfair, full repeal, typical american, increase taxes, raise taxes, tax cuts, largest budget, tax cut, tax reform, repeals the	1) "quantitative easing coming to ***an end*** a budget crisis coming theres been a lot ***of government money*** **being thrown** around **tax relief** thrown around thats stimulating spending i think there is a lot ***of*** —***uncertainty***— *on* okay what is going to happen" (Novellus Systems Inc on 27-Apr-2011) 2) "there are theres **the** —***suspicion***— *that* there will be ***in congress an*** attempt to remove **the sunset *provision*** *from* ***the estate tax*** as you know the way its currently drafted it goes away in for one year **and comes** back into full" (Manulife Financial Corporation on 4-Feb-2003) 3) "corp president i wouldnt equate the potential *win by de blasio in* **november as** in any way connected to real ***estate tax*** **increase** i ***think everyone*** **always has** a —FEAR— *with incumbents and* with ***new administrations*** that real *estate taxes* become a" (SL Green Realty Corp on 24-Oct-2013)
Institutions & Political Process	campaign finance, constitution to, finance reform, appropriations bills, federal elections, political system, public financing, of voters, texas constitution, constitution and, in politics, on immigration, political parties, presidential elections, federal election	1) "president and ceo **absolutely yes** andrew marcus deutsche banc **securities analyst** i —DOUBT— for obviously there has been *some* ***campaign finance reform*** how do you think it is going to affect ***the political*** *trends in david j* barrett hearstargyle television inc president" (Hearst-Argyle Television, Inc. on 30-Oct-2002) 2) "introduced during our visits on the hill we continue to ***hear a*** *resounding* ***support for private*** **capital** in overall ***housing finance reform efforts*** obviously **the *fha*** *has* **already *taken steps*** **to decrease its** —**risk**— and the ultimate —**risk**— ***to taxpayers by*** **implementing**" (Radian Group Inc on 05-May-2011) 3) "*publicly* ***funded and*** about half of the capital ***spending on highways roads and bridges*** by ***all levels of government*** comes ***from federal funding*** as a result the —UNCERTAINTY— of longer term ***funding is*** limiting ***spending on*** new contracts **to upgrade our** ageing" (Innophos Holdings Inc on 29-Jul-2014)

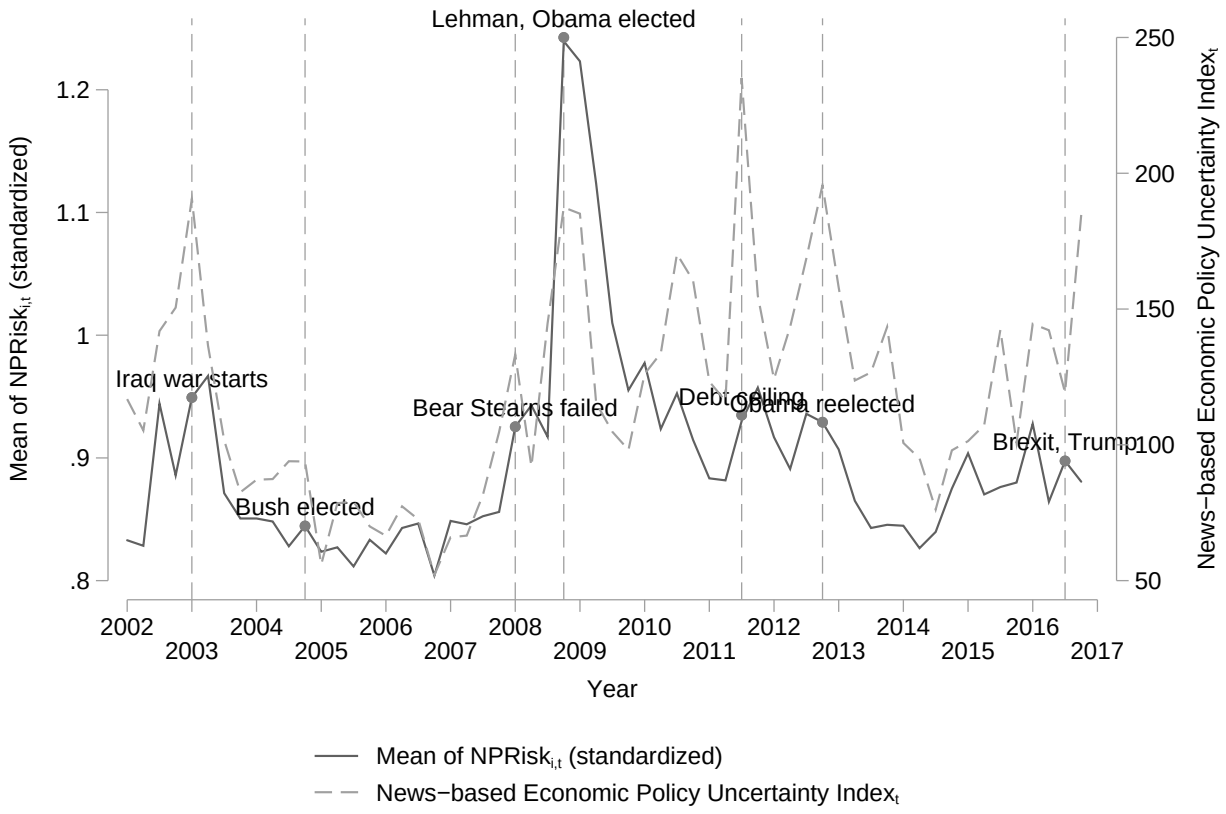
Notes: This table continues the previous table. It lists the topic name (column 1), the top fifteen topic bigrams (column 2), and the text surrounding the top three topic bigrams (column 3). The top fifteen topic bigrams are selected based on their score, while the top three topic bigrams with surrounding text are selected based on their score weighted by the highest-scoring political bigram within ± ten words. The bigram in question is underlined and in the middle of the text excerpt, topic bigrams are in italic, and political bigrams (such that $b \in \mathbb{P} \backslash \mathbb{N}$) are in bold. A synonym of "risk" or "uncertainty' is written in small caps and surrounded by dashes. Duplicate firms are removed from the text excerpt list.

Appendix Figure 1: Term frequency of political bigrams ($\mathbb{P} \setminus \mathbb{N}$) in earnings call transcripts



Notes: This figure plots a histogram of the log of bigram scores $(f_{b,\mathbb{P}}/B_{\mathbb{P}}) \times 10^5$. The number of bigrams is 68,990. The mean, median, standard deviation, min, and max of $(f_{b,\mathbb{P}}/B_{\mathbb{P}}) \times 10^5$ are .442, .246, .9, .158, 84.45, respectively.

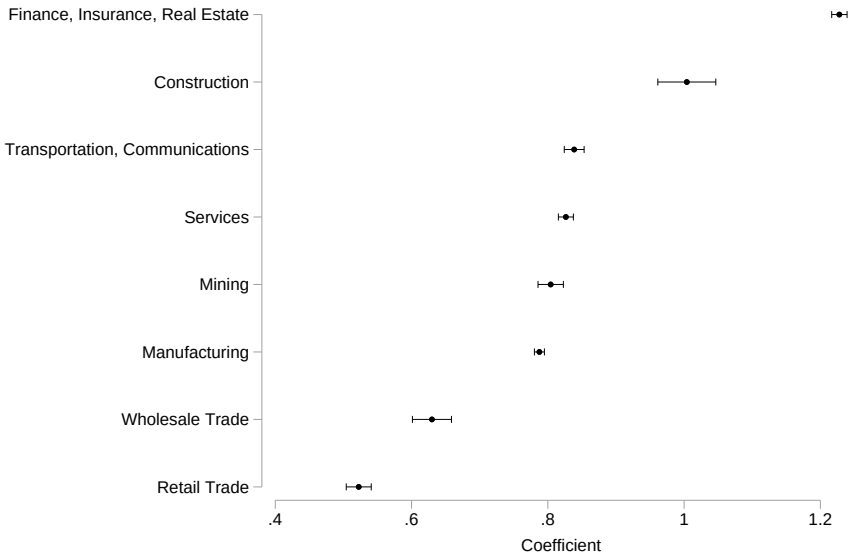
Appendix Figure 2: Time-series of non-political risk ($NPRisk_{i,t}$)



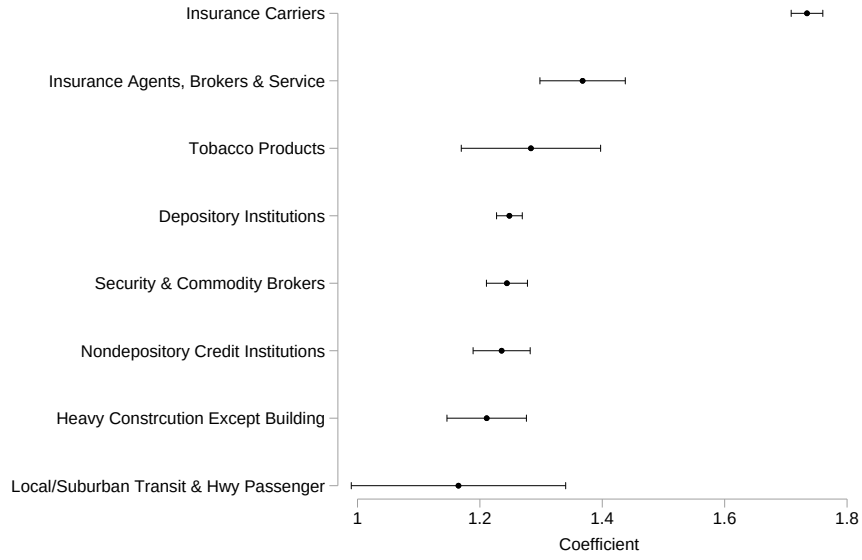
Notes: This figure shows the mean of $NPRisk_{i,t}$ (standardized) across firms in each quarter together with the news-based Economic Policy Uncertainty Index developed by Baker, Bloom, and Davis (2016). The Pearson correlation between the two is 0.562 with a p-value of 0.000. $NPRisk_{i,t}$ is standardized by its standard deviation in the panel. The Pearson correlation between the mean of $NPRisk_{i,t}$ and the Chicago Board Options Exchange Volatility Index (CBOE VIX) is is 0.855 with a p-value of 0.000.

Appendix Figure 3: Mean of $PRisk_{i,t}$ across sectors

Panel A: 1-digit SIC sectors with the highest mean of $PRisk_{i,t}$



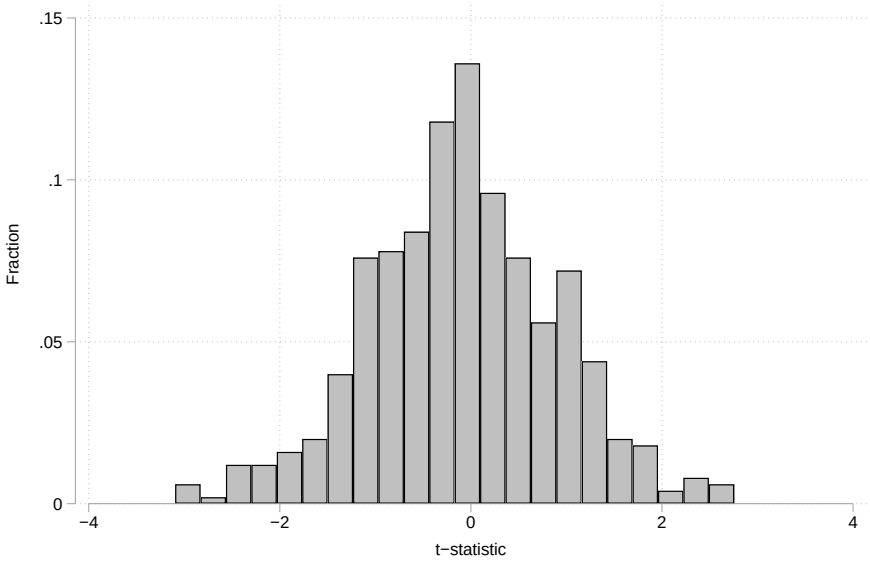
Panel B: 2-digit SIC sectors with highest mean of $PRisk_{i,t}$



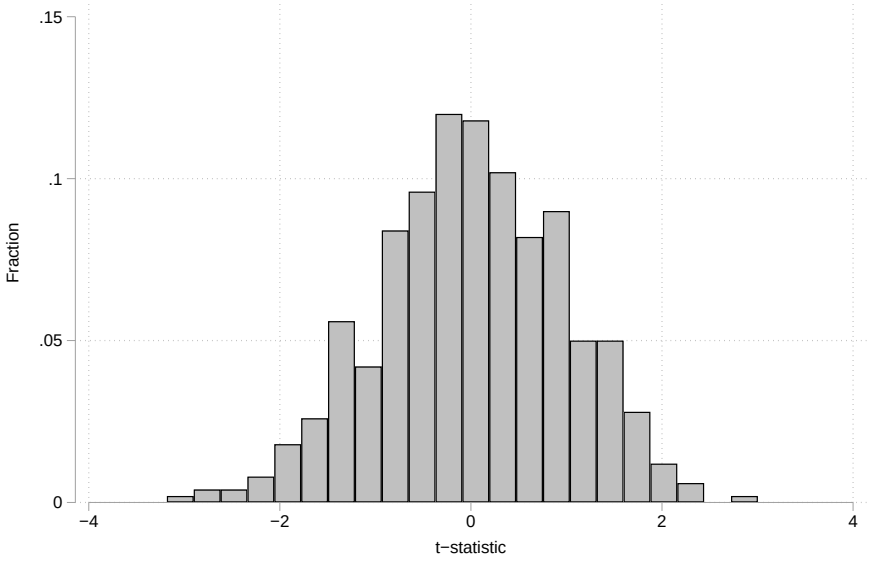
Notes: This figure plots the coefficients and 95% confidence intervals from a projection of $PRisk_{i,t}$ (standardized) on a complete set of sector dummies without a constant. In Panel A, we use a dummy for each 1-digit SIC sector and plot the top 8 coefficients; in Panel B, we use a dummy for each 2-digit SIC sector and again plot the top 8 coefficients. $PRisk_{i,t}$ is standardized by its standard deviation.

Appendix Figure 4: Distribution of t-statistics from placebo regressions

Panel A: Firm-quarter unit of analysis



Panel B: Firm-topic-quarter unit of analysis



Notes: Panel A plots a histogram of the t-statistics from 500 regressions of realized volatility$_{i,t}$ (standardized) on $PRisk_{i,t}$ (as in column 4 of Table 4) where the time series of $PRisk_{i,t}$ belonging to a given firm has been randomly assigned (with replacement). Standard errors are clustered at the firm level. The number of false positives and negatives at the two-sided 95% confidence interval is 1.8 and 3.40 percent, respectively. Panel B plots a histogram of the t-statistics from 500 regressions of Lobbying$^{T}_{i,t+1}(\mathbb{1} * 100)$ on $PRisk^{T}_{i,t}$ (as in column 3 of Table 9) where the time series of $PRisk^{T}_{i,t}$ belonging to a given firm-topic unit has been randomly assigned (with replacement). Standard errors are clustered at the firm level. The number of false positives and negatives at the two-sided 95% confidence interval is 1.2 and 2.00 percent, respectively.

Appendix Table 1: Mapping of political topics to CRP lobbying issues

Political topic	**Lobbying issues**
Economic Policy & Budget	Accounting; Advertising; Apparel, Clothing, & Textiles; Arts & Entertainment; Automotive Industry; Aviation, Airlines & Airports; Banking; Bankruptcy; Beverage Industry; Chemical Industry; Consumer Product Safety; Copyright, Patent & Trademark; District of Columbia; Economics & Economic Development; Federal Budget & Appropriations; Finance; Food Industry; Gaming, Gambling & Casinos; Manufacturing, Insurance; Labor, Antitrust & Workplace; Marine, Boats & Fisheries; Media Information & Publishing; Minting/Money/Gold Standard; Radio & TV Broadcasting; Railroads; Roads & Highways; Small Business; Telecommunications; Tobacco; Transportation; Travel & Tourism; Trucking & Shipping; Unemployment
Environment	Agriculture; Animals; Clean Air & Water; Environment & Superfund; Fuel, Gas & Oil; Hazardous & Solid Waste; Natural Resources; Real Estate & Land Use; Utilities
Trade	Commodities; Foreign Relations; Postal; Tariffs; Trade
Institutions & Political Process	Government Issues; Torts
Health	Health Issues; Medicare & Medicaid; Medical Research & Clinical Labs; Pharmacy
Security & Defense	Defense; Disaster & Emergency Planning; Homeland Security; Intelligence; Veterans Affairs
Tax Policy	Taxes
Technology & Infrastructure	Aerospace; Computers & Information Technology; Science & Technology

Appendix Table 2: Mapping of political topics to topics given by OnTheIssues.org

Political topic	**OnTheIssues.org topics**
Economic Policy & Budget	Budget & Economy; Jobs; Corporations
Environment	Energy & Oil; Environment
Trade	Free Trade
Institutions & Political Process	Government Reform
Health	Health Care
Security & Defense	Homeland Security; War & Peace
Tax Policy	Tax Reform
Technology & Infrastructure	Technology & Infrastructure
	Not used: Abortion; Civil Rights; Crime; Drugs; Education; Families & Children; Foreign Policy; Gun Control; Immigration; Principles & Values; Social Security; Welfare & Poverty

Appendix Table 3: $PRisk_{it}$ and federal elections elections

	PRisk$_{i,t}$ (standardized)	
	(1)	(2)
Federal elections$_t$	0.090***	0.030***
	(0.008)	(0.010)
Presidential elections$_t$		0.129***
		(0.016)
Sector FE	yes	yes
Year FE	yes	yes
Number of firms	5,720	5,720
Number of periods	60	60
R^2	0.066	0.066
N	144,340	144,340

Notes: Federal elections$_t$ is a dummy variable equal to one in the fourth quarter of every even year. Presidential elections$_t$ is a dummy variable equal to one in the fourth quarter of 2004, 2008, and 2012. We control for sector and year effects, and the log of firm assets in both regressions. $PRisk_{i,t}$ is standardized by its standard deviation. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Appendix Table 4: Event studies: Brexit and Trump

	Δ PRisk$_{i,t}$ (standardized)	
	(1)	(2)
# of 'brexit'	0.029***	
	(0.005)	
# of 'trump', and ('twitter' or 'tweet')		0.197***
		(0.053)
# of firms with regressor > 0	954	5
Sample period	2016q3	2016q4
R^2	0.010	0.002
N	3,573	3,527

Notes: This table shows regressions of $\Delta PRisk_{i,t}$ on word counts of 'brexit' (column 1) and word counts of 'trump' together with 'twitter' or 'tweet' (column 2). The regression samples are restricted to 2016-q3 (column 1) and 2016-q4 (column 2). The average number of mentions (for firms with at least one mention is 6.15 ('brexit') and 6.4 ('trump' and 'twitter', or 'trump' and 'tweet'). Multiplying these numbers with the coefficients above yields the average increases cited in the text: $6.15 \times 0.029 = 0.178$ and $6.40 \times 0.197 = 0.1260$, respectively. Standard errors are robust. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Appendix Table 5: Standard errors: Firm-quarter specifications

	Realized volatility$_{i,t}$ (standardized)			
	(1)	(2)	(3)	(4)
PRisk$_{i,t}$ (standardized)	0.019***	0.019***	0.019***	0.019***
	(0.002)	(0.006)	(0.003)	(0.003)
Standard error	robust	clustered by sector	clustered by quarter	clustered by firm
Time FE	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes
R^2	0.280	0.280	0.280	0.280
N	162,124	162,124	162,124	162,124

Notes: $PRisk_{i,t}$ is standardized by its standard deviation. All specifications include log of firm assets as a control. Standard errors are robust in column 1, clustered at the firm level in column 2, clustered at the SIC-2 level in column 3, and clustered at the time level in column 4. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Appendix Table 6: Alternative proxies for firm performance

Panel A	Implied volatility$_{i,t}$ (standardized)		
	(1)	(2)	(3)
PRisk$_{i,t}$ (standardized)	0.031***	0.031***	0.031***
	(0.005)	(0.005)	(0.005)
Stock return 7 days prior$_{i,t}$	0.696**		
	(0.308)		
Stock return 30 days prior$_{i,t}$		–0.073	
		(0.633)	
Stock return 90 days prior$_{i,t}$			–0.617
			(1.070)
R^2	0.450	0.450	0.450
N	104,934	104,935	104,940
Panel B	Realized volatility$_{i,t}$ (standardized)		
	(1)	(2)	(3)
PRisk$_{i,t}$ (standardized)	0.019***	0.019***	0.019***
	(0.003)	(0.003)	(0.003)
Stock return 7 days prior$_{i,t}$	2.048***		
	(0.290)		
Stock return 30 days prior$_{i,t}$		4.583***	
		(0.881)	
Stock return 90 days prior$_{i,t}$			2.508*
			(1.304)
R^2	0.333	0.333	0.332
N	148,183	148,210	148,228
Time FE	yes	yes	yes
Sector FE	yes	yes	yes

Notes: All regressions control for the log of firm assets. *PRisk*$_{i,t}$ is standardized by its standard deviation. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Appendix Table 7: Alternative implementations of $PRisk_{it}$: Correlations

	$\text{PRisk}_{i,t}$	Textbook-based $\text{PRisk}_{i,t}$	Newspaper-based $\text{PRisk}_{i,t}$	Unweighted $\text{PRisk}_{i,t}$	Firm-level $\text{EPU}_{i,t}$
$\text{PRisk}_{i,t}$	1.000				
Textbook-based $\text{PRisk}_{i,t}$	0.964	1.000			
Newspaper-based $\text{PRisk}_{i,t}$	0.706	0.558	1.000		
Unweighted $\text{PRisk}_{i,t}$	0.821	0.748	0.810	1.000	
Firm-level $\text{EPU}_{i,t}$	0.212	0.204	0.191	0.218	1.000

Notes: This table reports correlations between various alternative implementations of $PRisk_{i,t}$. $PRisk_{i,t}$ (standardized) is defined as before; *Textbook-based* $PRisk_{i,t}$ (standardized) is like $PRisk_{i,t}$ but based on a list of political bigrams from the textbook-based library that is not appended with political bigrams from the newspaper-based library; *Newspaper-based* $PRisk_{i,t}$ (standardized) is like $PRisk_{i,t}$ but based on a list of political bigrams from only the newspaper-based library; *Unweighted* $PRisk_{i,t}$ (standardized) counts, like $PRisk_{i,t}$, the number of political bigrams near synonyms divided by the transcript length, but unlike $PRisk_{i,t}$ the numerator is not weighted by the scores of the bigrams; and Firm level $\text{EPU}_{i,t}$ ($\mathbb{1}$) is a dummy variable equal to one if the transcript has at least one of the word combinations specificed in Baker, Bloom, and Davis' paper

Appendix Table 8: Alternative implementations of $PRisk_{it}$: Estimations

Panel A	Implied volatility$_{i,t}$ (standardized)						Log(1+$ lobby$_{i,t+1}$)					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
PRisk$_{i,t}$ (standardized)	0.033***						0.190***					
	(0.005)						(0.027)					
Textbook-based PRisk$_{i,t}$ (standardized)		0.031***						0.176***				
		(0.005)						(0.026)				
Newspaper-based PRisk$_{i,t}$ (standardized)			0.031***						0.197***			
			(0.005)						(0.029)			
PRisk$_{i,t}$ (standardized, not capped)				0.020***						0.136***		
				(0.005)						(0.029)		
Unweighted PRisk$_{i,t}$ (standardized)					0.040***						0.182***	
					(0.005)						(0.029)	
Firm level EPU$_{i,t}$ (𝟙)						0.021*						0.695***
						(0.013)						(0.083)
N	114,981	114,981	114,981	114,981	114,981	114,981	147,228	147,228	147,228	147,228	147,228	147,228
Panel B	$I_{i,t}/K_{i,t-1}$ * 100						Δemp$_{i,t}$/emp$_{i,t-1}$ * 100					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
PRisk$_{i,t}$ (standardized)	–0.138***						–0.687***					
	(0.031)						(0.107)					
Textbook-based PRisk$_{i,t}$ (standardized)		–0.137***						–0.641***				
		(0.031)						(0.109)				
Newspaper-based PRisk$_{i,t}$ (standardized)			–0.105***						–0.718***			
			(0.033)						(0.112)			
PRisk$_{i,t}$ (standardized, not capped)				–0.110***						–0.473***		
				(0.032)						(0.123)		
Unweighted PRisk$_{i,t}$ (standardized)					–0.156***						–0.897***	
					(0.034)						(0.114)	
Firm level EPU$_{i,t}$ (𝟙)						–0.138						–2.316***
						(0.088)						(0.457)
N	117,332	117,332	117,332	117,332	117,332	117,332	44,699	44,699	44,699	44,699	44,699	44,699
Time FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Notes: This table reports estimation results from replications of key findings using alternative implementations of $PRisk_{i,t}$. $PRisk_{i,t}$ (standardized) is defined as before; *Textbook-based* $PRisk_{i,t}$ (standardized) is like $PRisk_{i,t}$ but based on a list of political bigrams from the textbook-based library that is not appended with political bigrams from the newspaper-based library; *Newspaper-based* $PRisk_{i,t}$ (standardized) is like $PRisk_{i,t}$ but based on a list of political bigrams from only the newspaper-based library; *Unweighted* $PRisk_{i,t}$ (standardized) counts, like $PRisk_{i,t}$, the number of political bigrams near synonyms divided by the transcript length, but unlike $PRisk_{i,t}$ the numerator is not weighted by the scores of the bigrams; and Firm level EPU$_{i,t}$ (𝟙) is a dummy variable equal to one if the transcript has at least one of the word combinations specificed in Baker, Bloom, and Davis' paper. Implied volatility, investment, employment, and lobbying are defined as before. $PRisk_{i,t}$, *Textbook-based* $PRisk_{i,t}$, *Newspaper-based* $PRisk_{i,t}$, and *Unweighted* $PRisk_{i,t}$ are standardized by their respective standard deviations. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Appendix Table 9: Horse-race between $PRisk_{it}$ and firm-level EPU

Panel A: Volatility regressions	Realized volatility$_{i,t}$ (standardized)		Implied volatility$_{i,t}$ (standardized)	
	(1)	(2)	(3)	(4)
Firm level EPU$_{i,t}$ (𝟙)	0.016*	0.005	0.021*	0.003
	(0.009)	(0.009)	(0.013)	(0.013)
PRisk$_{i,t}$ (standardized)		0.018***		0.032***
		(0.003)		(0.005)
N	162,124	162,124	114,981	114,981
Panel B: Corporate outcomes	$I_{i,t}/K_{i,t-1}$ * 100		Δemp$_{i,t}$/emp$_{i,t-1}$ * 100	
	(1)	(2)	(3)	(4)
Firm level EPU$_{i,t}$ (𝟙)	–0.138	–0.065	–2.316***	–1.690***
	(0.088)	(0.087)	(0.457)	(0.470)
PRisk$_{i,t}$ (standardized)		–0.135***		–0.602***
		(0.031)		(0.110)
N	117,332	117,332	44,699	44,699
Time FE	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes

Notes: Firm level EPU$_{i,t}$ (𝟙) is a dummy variable equal to one if the transcript has at least one of the word combinations specificed in Baker, Bloom, and Davis' paper. $PRisk_{i,t}$, realized and implied volatility, investment, and employment are defined as before. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Appendix Table 10: Firm-level political risk and firm actions: Alternative definitions of sectors

		2-digit SIC		3-digit SIC		4-digit SIC	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\frac{I_{i,t}}{K_{i,t-1}}$ * 100	–0.245***	–0.138***	–0.104***	–0.149***	–0.106***	–0.166***	–0.102***
	(0.036)	(0.032)	(0.024)	(0.033)	(0.026)	(0.035)	(0.028)
$\frac{\Delta \text{capexg}_{i,t}}{\text{capexg}_{i,t-1}}$ * 100	–0.433***	–0.364***	–0.331**	–0.399**	–0.397**	–0.482***	–0.423**
	(0.125)	(0.128)	(0.149)	(0.158)	(0.188)	(0.169)	(0.201)
$\frac{\Delta \text{emp}_{i,t}}{\text{emp}_{i,t-1}}$ * 100	–0.679***	–0.636***	–0.572***	–0.697***	–0.574***	–0.718***	–0.575***
	(0.106)	(0.107)	(0.114)	(0.113)	(0.122)	(0.117)	(0.127)
Sector FE	no	yes	implied	yes	implied	yes	implied
Time FE	no	yes	yes	yes	yes	yes	yes
Sector*time FE	no	yes	yes	yes	yes	yes	yes
Firm FE	no	no	yes	no	yes	no	yes
# of sectors	n/a	65		258		407	
Variance decomposition							
Firm-level variation	n/a	90.50%		81.75%		76.86%	
Permanent differences across firms within sector (Firm FE)	n/a	20.55%		18.01%		17.07%	
Variation over time in identity of firms within sector most affected (residual)	n/a	69.95%		63.74%		59.79%	

Notes: This table shows the coefficients and standard errors of regressions of $PRisk_{i,t}$ on the variable indicated in the most left column using different industry classifications — 2-digit (columns 2-3), 3-digit (columns 4-5), and 4-digit SIC (columns 6-7) — as fixed effects. Capital investment, capital expenditure guidance, and net hiring are defined as in 5. In all regressions, $PRisk_{i,t}$ is standardized by its standard deviation. All specifications control for the log of firm assets. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively. The lower panel of the table shows tabulations of the R^2 from a projection of $PRisk_{i,t}$ on various sets of fixed effects.

Appendix Table 11: Dispersion of firm-level political risk

	Standard deviation of residual				
	(1)	(2)	(3)	(4)	(5)
Mean of $\text{PRisk}_{i,t}$ (standardized)	0.476***		0.534***	0.474***	0.510***
	(0.034)		(0.036)	(0.048)	(0.034)
Real GDP growth_t (% change)		–2.345**	1.890***		
		(1.100)	(0.574)		
R^2	0.776	0.073	0.812	0.625	0.806
N	60	60	60	60	58

This table reports estimates from OLS regressions using the standard deviation of the residual from a projection of $PRisk_{i,t}$ (standardized) on firm, time, and sector × time fixed effects, calculated by quarter, as dependent variable. Column 1 corresponds to the data plotted in Figure 5. Column 2 uses real GDP growth_t (% change) instead of the mean of $PRisk_{i,t}$. Column 3 adds both. Column 4 replicates column 1 but restricts the data to firms with non-missing data at least 58 of the 60 quarters. Column 5 replicates column 1 and controls for EPU beta (2-year rolling)$_{i,t}$ × mean of $PRisk_{i,t}$ when projecting $PRisk_{i,t}$ on the set of fixed effects. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Appendix Table 12: Specification of Table 8 using other firm-level outcomes

	(1)	(2)	(3)	(4)	(5)
Panel A			$\frac{I_{i,t}}{K_{i,t-1}}$ * 100		
$PRisk_{i,t}$ (standardized)	–0.138***	–0.150***	–0.144***	–0.137***	–0.139***
	(0.032)	(0.033)	(0.033)	(0.032)	(0.032)
R^2	0.120	0.120	0.120	0.120	0.121
N	117,332	110,713	107,937	117,332	117,332
Panel B			$\frac{\Delta \text{capexg}_{i,t}}{\text{capexg}_{i,t-1}}$ * 100		
$PRisk_{i,t}$ (standardized)	–0.364***	–0.386***	–0.416***	–0.361***	–0.363***
	(0.128)	(0.128)	(0.130)	(0.129)	(0.129)
R^2	0.183	0.159	0.161	0.183	0.183
N	22,520	21,262	20,671	22,520	22,520
Panel C			$\frac{\Delta \text{emp}_{i,t}}{\text{emp}_{i,t-1}}$ * 100		
$PRisk_{i,t}$ (standardized)	–0.636***	–0.596***	–0.636***	–0.597***	–0.599***
	(0.107)	(0.112)	(0.107)	(0.108)	(0.108)
R^2	0.078	0.079	0.078	0.080	0.080
N	44,699	42,150	44,677	44,699	44,699
Panel D			Log(1+$ donations$_{i,t+1}$)		
$PRisk_{i,t}$ (standardized)	0.091***	0.100***	0.102***	0.077***	0.077***
	(0.019)	(0.020)	(0.020)	(0.018)	(0.018)
R^2	0.264	0.281	0.288	0.292	0.292
N	176,173	166,857	161,529	176,173	176,173
Panel E			# of recipients$_{i,t+1}$		
$PRisk_{i,t}$ (standardized)	0.515***	0.549***	0.557***	0.466***	0.465***
	(0.130)	(0.137)	(0.141)	(0.124)	(0.124)
R^2	0.164	0.174	0.182	0.182	0.182
N	176,173	166,857	161,529	176,173	176,173
Panel F			Hedge$_{i,t+1}$		
$PRisk_{i,t}$ (standardized)	0.007***	0.008***	0.008***	0.007***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R^2	0.157	0.167	0.171	0.172	0.173
N	176,173	166,857	161,529	176,173	176,173
Panel G			Log(1+$ lobby$_{i,t+1}$)		
$PRisk_{i,t}$ (standardized)	0.189***	0.204***	0.213***	0.167***	0.167***
	(0.028)	(0.029)	(0.029)	(0.026)	(0.026)
R^2	0.283	0.295	0.300	0.317	0.317
N	147,228	138,953	133,957	147,228	147,228
Time FE	yes	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes	yes
Sector×time FE	yes	yes	yes	yes	yes

Notes: This table is similar to Table 8; it shows results of the same panel regressions, but instead of using realized and implied volatility as outcome, we use the outcome specified above the respective panel. We only report the coefficient of $PRisk_{i,t}$. All remaining variables and regression specifications are defined as in Table 8. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.

Appendix Table 13: Timing of associations between lobbying an topic-specific political risk

	$\text{Lobbying}^T_{i,t+1}(\mathbb{1} * 100)$		
	(1)	(2)	(3)
$\text{PRisk}^T_{i,t}$ (standardized)	0.079***		0.063**
	(0.027)		(0.027)
$\text{PRisk}^T_{i,t+1}$ (standardized)	0.047*	0.054*	0.050*
	(0.028)	(0.028)	(0.027)
$\text{PRisk}^T_{i,t+2}$ (standardized)		0.043	0.042
		(0.028)	(0.028)
Time FE	yes	yes	yes
Sector FE	implied	implied	implied
Topic FE	yes	yes	yes
Firm FE	yes	yes	yes
Firm*topic FE	yes	yes	yes
Number of firms	5962	5626	5626
Number of periods	36	35	35
Number of topics	8	8	8
R^2	0.702	0.721	0.721
N	860,504	791,568	791,568

This table shows the results from a regression of $\text{Lobbying}^T_{i,t+1}(\mathbb{1})$ on two leads of $\text{PRisk}^T_{i,t}$. $\text{PRisk}^T_{i,t}$ is standardized by its standard deviation. Lobbying is semi-annual for all pre-2008 quarters; the quarters for which there is no lobby expense are excluded from the regression. All specifications control for the log of firm assets. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1, 5, and 10% level, respectively.