Firm-Level Political Risk

Measurement and Effects

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This paper

- Develop a novel, firm-level, measure of political risk based on textual analysis of conference call transcripts.
- Quantify role of aggregate vs. firm-level political risk.
- Study association with firm-level outcomes: stock market volatility, hiring, investment, lobbying, and political donations.
- Decompose political risk by topic.

Main Findings

1. Firms affected by political risk retrench hiring and investment (passive management); increase lobbying and donations to politicians (active management).
2. Incidence of political risk across firms is far more volatile and heterogeneous than previously thought: 90% of variation in political risk is at the firm-level.
3. Dispersion of firm-level political risk increases when aggregate political risk is high.
4. Firms that are exposed to risks associated with a particular political topic increase lobbying on that topic, but not on other topics.
5. Increases in lobbying highest with respect to risks associated with health care, economic, and environmental policies.

Outline

Conference Call Transcripts

- Complete transcripts of 175,797 earnings conference calls of US listed firms 2002-16 from Thomson-Reuters.
- Typically four calls per year, after earnings releases.
- Management presentation followed by Q&A with firm's analysts (0-70 questions, average duration 45 min).
- Conversation typically centers on uncertainties that the firm is facing. (Hollander, 2010; Bowen, 2002, 2003; Matsumoto, 2011; Huang, 2015)

What share of the conversation between management and participants centers on risks associated with political topics?

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Measuring Overall Political Risk

1. Extract all two-word combinations ("bigrams") from training libraries that are indicative of discussion of political topics, $\mathbb{P}$, and non-political topics $\mathbb{N}$.
2. Count the number of occurrences of (exclusively) political bigrams in conjunction with a synonym for risk or uncertainty and divide by the total number of bigrams in the transcript:

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

where r is the position of the nearest synonym of risk or uncertainty and $b = 0, 1, ...B_{it}$ are the bigrams contained in call of firm i at time t. (Application of "$tf \times idf$.")

Topic-based Measures of Political Risk

1. Extract all bigrams from a set of Z training libraries of political topics, $\mathbb{Z} = \{\mathbb{P}_1, ..., \mathbb{P}_Z\}$.
2. Then again count the number of bigrams associated with T used in conjunction with a synonym for risk, but now also weight with inverse document frequency.

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

where p is the position of the nearest political bigram, $\mathbb{P} \setminus \mathbb{N}$, that is also within 10 words of a synonym for risk or uncertainty and $f_{b,\mathbb{P}}/B_{\mathbb{P}}$ is its term frequency.

Training Libraries

Non-Political Bigrams, $\mathbb{N}$

- Textbook on financial accounting (Libby, 2011; ▸ cover)
- Santa Barbara Corpus of Spoken American English (non-political topics), Du Bois & al. (2000)

Political Training Libraries $\mathbb{P}, \{\mathbb{P}_T\}$

1. **Overall Political** ($PRisk_{it}$)
   - Textbook on American Politics (Bianco &Canon, 2013; ▸ cover)
   - Political vs non-political newspapers articles; ▸ screenshot
2. **Topic-Based** ($\{PRisk_{it}^{T}\}$)
   - Text contained in 8 topics from OnTheIssues.org ▸ screenshot
   - Contains snippets from newspapers, speeches, press releases, books, voting records, and bill sponsorships identifying where candidates for political office stand on each topic (health care, environment, defense, ...)

Synonyms for “risk” or “uncertainty”

Synonym	Frequency	Synonym	Frequency	Synonym	Frequency	Synonym	Frequency
risk	414569	sticky	4330	apprehension	466	scepticism	48
risks	106947	dangerous	4300	halting	454	indecisive	43
uncertainty	91833	tentative	4020	wager	446	chancy	40
variable	68228	hazardous	3157	precarious	363	menace	38
chance	60889	queries	2677	undetermined	349	qualm	35
possibility	57631	danger	2465	insecurity	348	vacillating	33
pending	53360	fluctuating	2464	debatable	346	gnarly	32
uncertainties	51116	unstable	2441	undecided	341	disquiet	30
uncertain	39229	vague	2427	dicey	330	ambivalence	30
doubt	39045	erratic	1875	indecision	324	imperil	28
bet	21280	query	1835	wavering	266	vacillation	22
variability	21230	jeopardize	1823	iffy	235	incalculable	17
exposed	19563	unsettled	1664	faltering	212	untrustworthy	17
likelihood	19301	unpredictability	1566	quandary	205	diffident	15
threat	19033	dilemma	1547	changeable	189	equivocating	15
probability	15798	hesitancy	1490	insecure	189	misgiving	11
varying	9444	riskier	1353	riskiest	183	changeability	11
unclear	9041	unresolved	1216	hairy	177	fickleness	11
unpredictable	8471	unsure	1155	dubious	158	undependable	9
speculative	8135	irregular	1124	riskiness	135	parlous	8
fear	7943	jeopardy	1078	treacherous	130	fitful	8
reservation	7033	suspicion	1027	oscillating	112	incertitude	8
hesitant	6275	risking	865	perilous	92	unconfident	6
gamble	6072	peril	660	tentativeness	85	diffidence	3
risky	5230	hesitating	628	unreliability	72	fluctuant	3
instability	4765	risked	577	wariness	70	unsureness	3
doubtful	4742	unreliable	550	vagueness	59	niggle	3
hazard	4628	unsafe	487	dodgy	58	doubtfulness	1
tricky	4360	hazy	472	equivocation	55	precariousness	1

Single-word synonyms of ‘risk’, ‘risky’, ‘uncertain’, and ‘uncertainty’ from Oxford Dictionary, excluding ‘question’ ‘unknown’, ‘venture,’ and ‘prospect’.

Outline

Validation

Validate measurement and economic content of $PRisk_{it}$ in four steps.

1. $PRisk_{it}$ **correctly identifies conversations about risks associated with political topics.**
2. Varies intuitively over time and across sectors.
3. Has economic content: associated with outcomes in a way that is highly indicative of reactions to political risk.
4. Falsification exercises using $Risk_{it}$, $NPRisk_{it}$, and $PolX_{it}$.

$PRisk_{it}$ identifies conversations about risks associated with political topics.

- Bigrams with highest scores intuitively linked to politics (‘the constitution,’ ‘public opinion,’ ‘interest groups,’ ‘the FAA’ ...)
- Transcripts with highest $PRisk_{it}$ indeed center around discussions about ballot initiatives, legislation, regulation, government expenditure,...

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$PRisk_{it}$ varies intuitively over time and across sectors

- Mean of $PRisk_{it}$ across firms highly correlated with Baker, Bloom and Davis' EPU index (0.803).
- $PRisk_{it}$ significantly higher around federal elections.
- Sectors with highest $PRisk_{it}$ are finance, construction, ...
- Highly significant correlation between the mean of $PRisk_{it}$ across firms in a given sector and an index of regulatory constraints, as well as the share of the sector's revenue accounted for by federal government contracts.

A Fun Example

	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
Firm FE	no	no
Sample period	2016q3	2016q4
R^2	3,573	3,527

Mainly firms doing business in UK talk about Brexit (increase in #brexit of 10 is associated with a 3-fold increase in share of sales in the UK relative to the mean).

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Economic Content

A. Increase in risk: significantly associated with higher implied and realized stock return volatility.
B. Investment under uncertainty (Bernanke (1983), Dixit and Pindyck (1994) and Bloom & al. (2007): Significantly associated with lower investments, employment growth, but not sales.
C. Political economy response to political risk: Significantly associated with more lobbying, donations to politicians. (Tullock, 1967, Stigler, 1971, and Peltzman 1976)
D. Large firms more likely actively manage political risk (internalize more of the gain) Olson (1965).

A. Association with stock return volatility

$$y_{it} = \delta_s + \delta_t + \beta PRisk_{it} + \gamma' X_{it} + \epsilon_{it}$$

	Implied volatility$_{i,t}$ (standardized)					
	(1)	(2)	(3)	(4)	(5)	(6)
PRisk$_{i,t}$ (standardized)	0.070***	0.048***	0.033***	0.016***	0.031***	0.031***
	(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)
N	114,981	114,981	114,981	114,981	104,934	104,606
Time FE	no	no	yes	yes	yes	yes
Sector FE	no	no	yes	implied	yes	yes
Firm FE	no	no	no	yes	no	no

Randomization inference ▸ t-statistic distribution

B. Association with employment, investment

	$\frac{I_{i,t}}{K_{i,t-1}} * 100$	$\frac{\Delta \text{capexg}_{i,t}}{\text{capexg}_{i,t-1}} * 100$	$\frac{\Delta \text{emp}_{i,t}}{\text{emp}_{i,t-1}} * 100$	$\frac{\Delta \text{sales}_{i,t}}{\text{sales}_{i,t-1}} * 100$
	(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)
N	117,332	22,520	44,699	173,887
Time FE	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes

- Controlling for sector and time effects, higher $PRisk_{it}$ is associated with with lower investment and employment growth, but not sales growth.
- Consistent with reactions to uncertainty predicted by real options literature, "passive" management of political risk.

Go to ▸ sector averages of investment and $\text{PRisk}_{i,t}$

C. Association with lobbying, donations

	Log(1+$ donations$_{i,t+1}$)	# of recipients$_{i,t+1}$	Log(1+$ lobby$_{i,t+1}$)
	(1)	(2)	(3)
PRisk$_{i,t}$ (standardized)	0.092***	0.511***	0.190***
	(0.018)	(0.128)	(0.027)
N	176,173	176,173	147,228
Time FE	yes	yes	yes
Sector FE	yes	yes	yes

- Controlling for sector and time effects, higher $PRisk_{it}$ is associated with with more expenditure and recipients of donations, more lobbying.
- “Active” management of political risk.

D. Small versus large firms

- Substitutability of active and passive means of managing political risk.
- Large firms internalize more of the gain from lobbying Olson (1965)

	$\frac{I_{i,t}}{K_{i,t-1}} * 100$	$\frac{\Delta \text{emp}_{i,t}}{\text{emp}_{i,t-1}} * 100$	Log(1+\$ donations$_{i,t+1}$)	Log(1+\$ lobby$_{i,t+1}$)
	(1)	(2)	(3)	(4)
PRisk$_{i,t}$ (standardized)	–0.184***	–0.753***	0.022	0.175***
	(0.044)	(0.161)	(0.015)	(0.033)
PRisk$_{i,t}$ $\times$ $\mathbb{1}$\{assets$_{i,t}$ $>$ 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

- Small firms: more passive management
- Large firms: more active management

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Validate measurement and economic content of $PRisk_{it}$ in four steps.

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4. **Falsification exercises using $Risk_{it}$, $NPRisk_{it}$, and $PolX_{it}$.**

Placebo: Risk vs. Political Risk

- Measure overall risk (political or non-political), counting number of synonyms for risk or uncertainty:

$$Risk_{it} = \frac{\sum_{b}^{B_{it}} 1[r]}{B_{it}},$$

- Measure political exposure, counting political bigrams without conditioning on risk or uncertainty.

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

- Measure non-political risk, $NPRisk_{it}$.

#1 $Risk_{it}$ should dominate $PRisk_{it}$ when predicting investment and employment growth; $NPrisk_{it}$ should have independent effect.

#2 Vice versa for political activities of the firm.

#3 $PRisk_{it}$ should dominate $PolX_{it}$ when predicting investment and employment.

Placebo #1: $PRisk_{it}$ vs. $Risk_{it}$

	$\frac{I_{i,t}}{K_{i,t-1}} * 100$			$\frac{\Delta emp_{i,t}}{emp_{i,t-1}} * 100$		
	(1)	(2)	(3)	(4)	(5)	(6)
$PRisk_{i,t}$ (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)
$NPRisk_{i,t}$ (standardized)		–0.188***			–0.819***	
		(0.031)			(0.107)	
$Risk_{i,t}$ (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
Time FE	yes	yes	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes	yes	yes

Placebo #2: $PRisk_{it}$ vs. $Risk_{it}$

	Log(1+$ lobby$_{i,t+1}$)			Log(1+$ donations$_{i,t+1}$)			# of recipients$_{i,t+1}$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PRisk$_{i,t}$ (standardized)	0.190***	0.203***	0.215***	0.092***	0.094***	0.105***	0.511***	0.537***	0.467***
	(0.027)	(0.027)	(0.028)	(0.018)	(0.018)	(0.019)	(0.128)	(0.131)	(0.116)
NPRisk$_{i,t}$ (standardized)		–0.040			–0.005			–0.082	
		(0.024)			(0.016)			(0.058)	
Risk$_{i,t}$ (standardized)			–0.041			–0.022			0.072
			(0.034)			(0.023)			(0.093)
R^2	0.268	0.268	0.268	0.250	0.250	0.250	0.148	0.148	0.148
N	147,228	147,228	147,228	176,173	176,173	176,173	176,173	176,173	176,173
Time FE	yes	yes	yes	yes	yes	yes	yes	yes	
Sector FE	yes	yes	yes	yes	yes	yes	yes	yes	

Placebo #3: $PRisk_{it}$ vs. $PolX_{it}$

	$\frac{I_{i,t}}{K_{i,t-1}} * 100$		$\frac{\Delta emp_{i,t}}{emp_{i,t-1}} * 100$	
	(1)	(2)	(3)	(4)
$PRisk_{i,t}$ (standardized)	–0.138***	–0.117***	–0.687***	–0.623***
	(0.031)	(0.032)	(0.107)	(0.113)
$PolX_{i,t}$ (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
Time FE	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes

Extensions

▸ alternative constructions of $PRisk_{it}$ ▸ Firm-level EPU_{it}

Outline

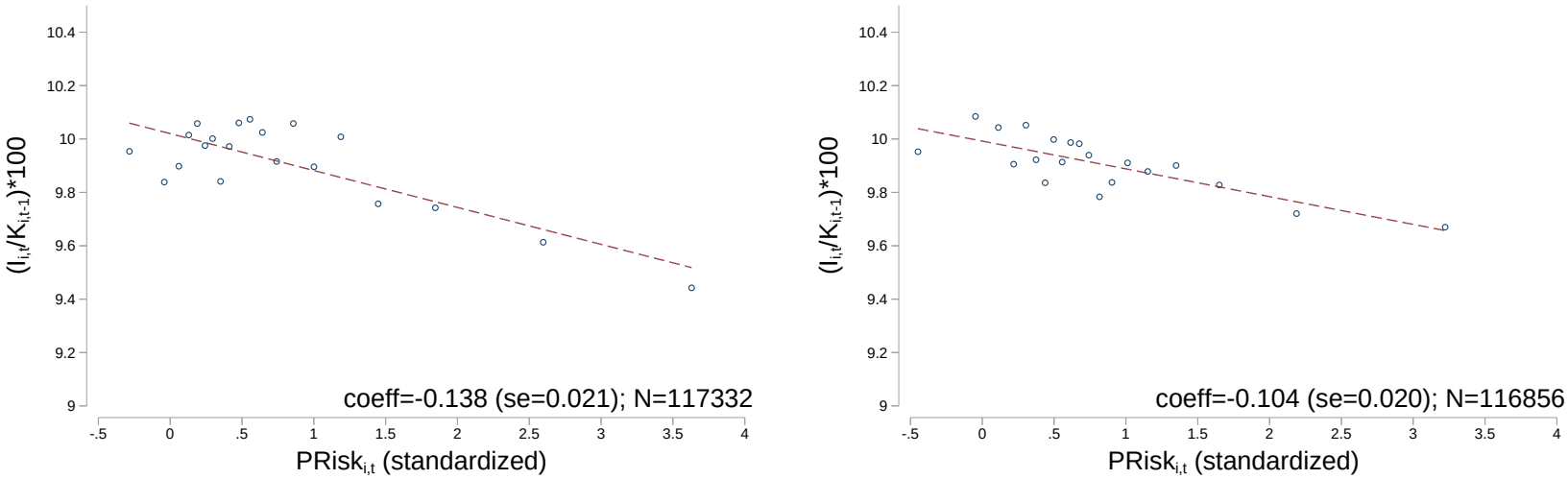
Variance decomposition of $PRisk_{it}$

Time FE (aggregate)	1.0%
Sector FE (SIC 2-digit)	5.5%
Sector $\times$ Time FE	3.0%
"Firm-level"	90.5%
Permanent differences across firms within sector (Firm FE)	20.6%
Variation over time in identity of firms within sector most affected (residual)	70.0%

- Incidence of political risk highly volatile and heterogeneous. Large amount of variation within-time-and-sector.
- At odds with conventional view that political and regulatory decisions have relatively uniform impacts across firms in a developed economy.

Economic content vs. measurement error

Added-variable plots: **Investment**



(a) Sector & Time FE

(b) Firm, Time & Sector*time FE

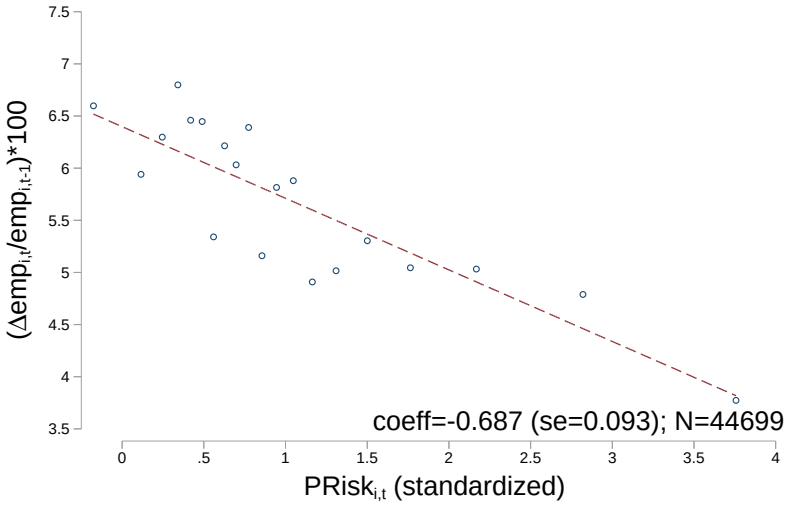
- Most variation in $PRisk_{it}$ is at the firm-level & significantly associated with outcomes we care about!

$\Rightarrow$ Not just measurement error!

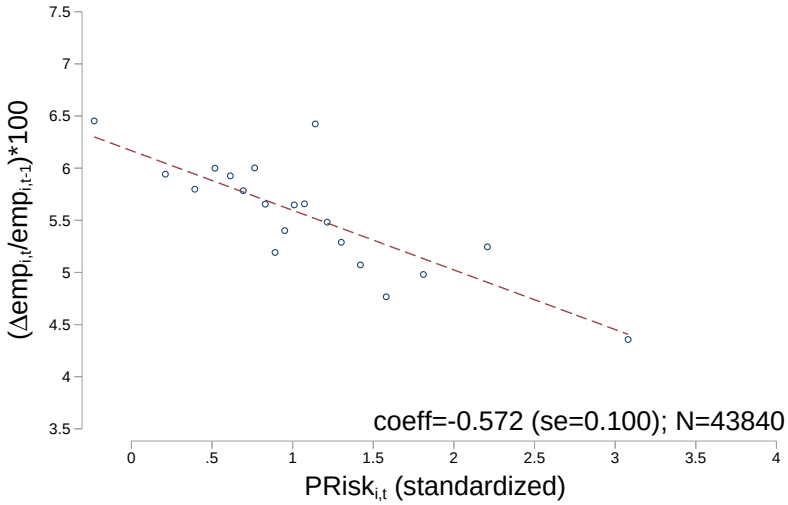
▸ Other outcomes A, ▸ Other outcomes B

Economic content vs. measurement error

Added-variable plots: **Employment**



(a) Sector & Time FE



(b) Firm, Time & Sector*time FE

- Most variation in $PRisk_{it}$ is at the firm-level & significantly associated with outcomes we care about!

$\Rightarrow$ Not just measurement error!

▸ Other outcomes A , ▸ Other outcomes B

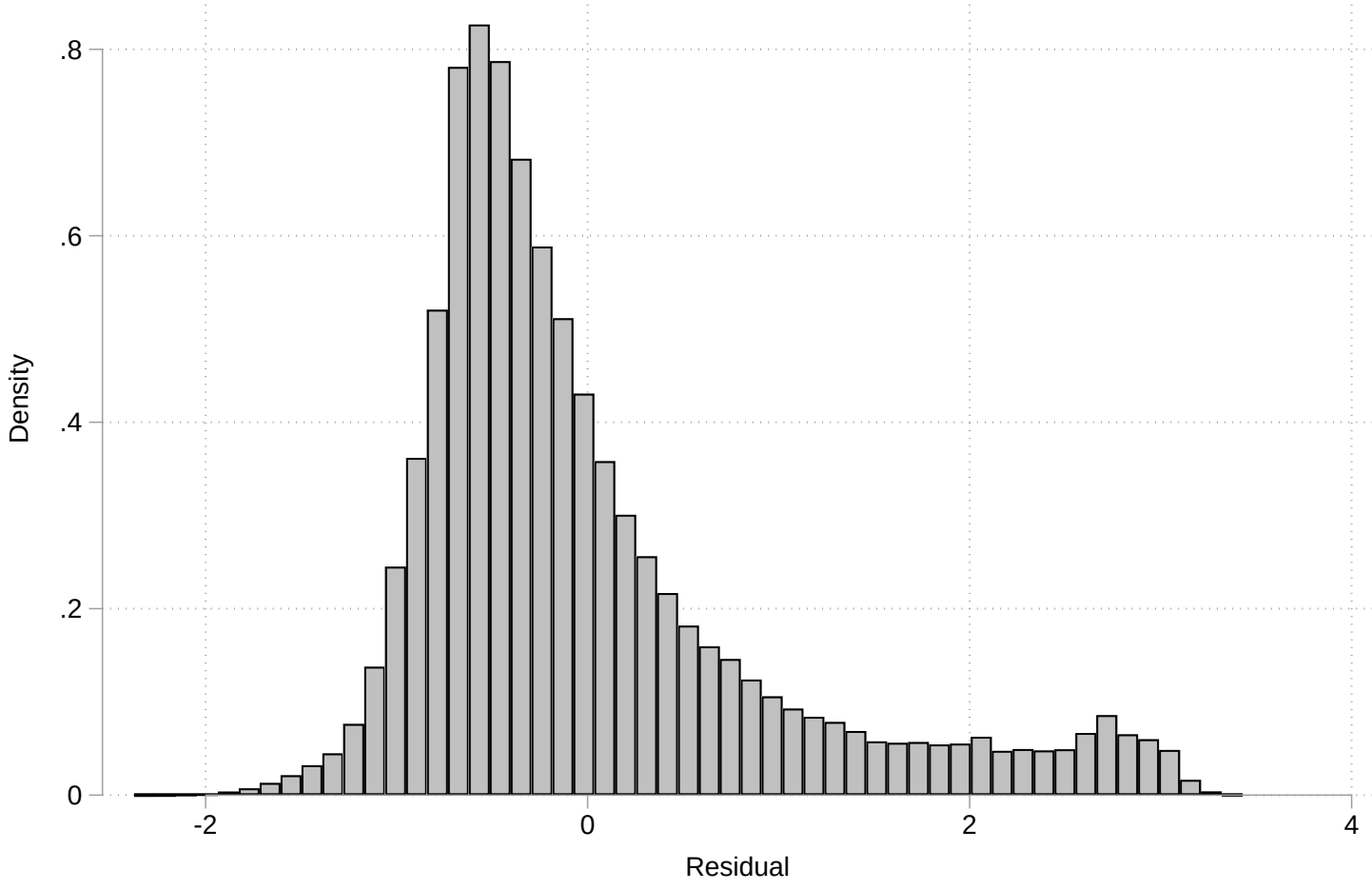
Nature of Firm-level $PRisk_{it}$

	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$_i$ $\times$ mean of PRisk$_{i,t}$		0.029			
		(0.295)			
EPU beta (2-year rolling)$_{i,t}$ $\times$ 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$_{i,t}$) $\times$ mean of PRisk$_{i,t}$					–0.000*
					(0.000)
N	114,981	114,781	114,419	114,981	114,981
Time FE	yes	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes	yes
Sector*time FE	yes	yes	yes	yes	yes

- Firm-level variation not explained by heterogenous loadings on aggregate political risk or volatile government contracts.

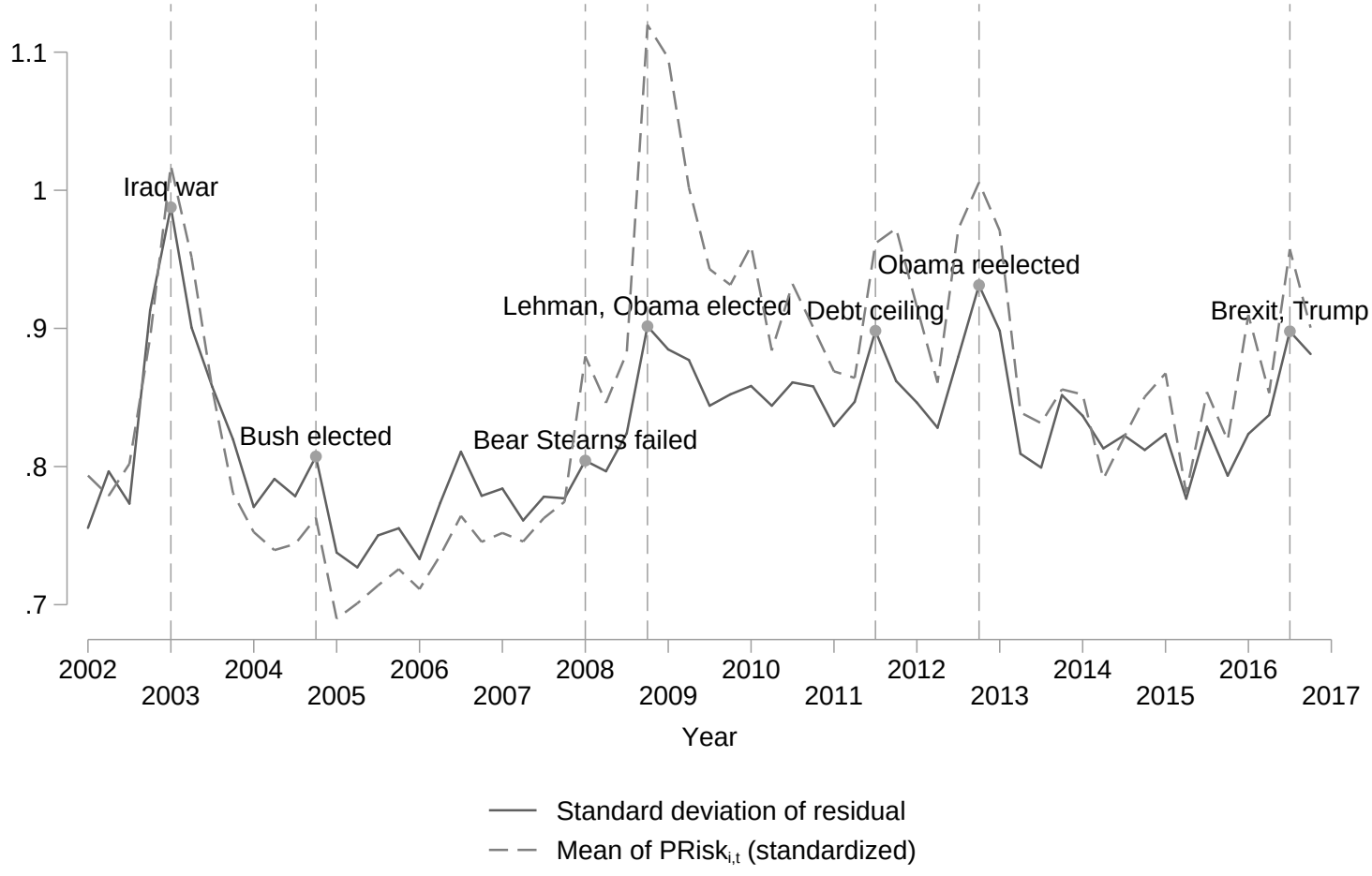
▸ Other outcomes A ▸ Other outcomes B

Distribution of Firm-level $PRisk_{it}$



Dispersion of Firm-level Political Risk

Dispersion increases when aggregate risk is high.



Coef.=.495 (s.e. = .0321).

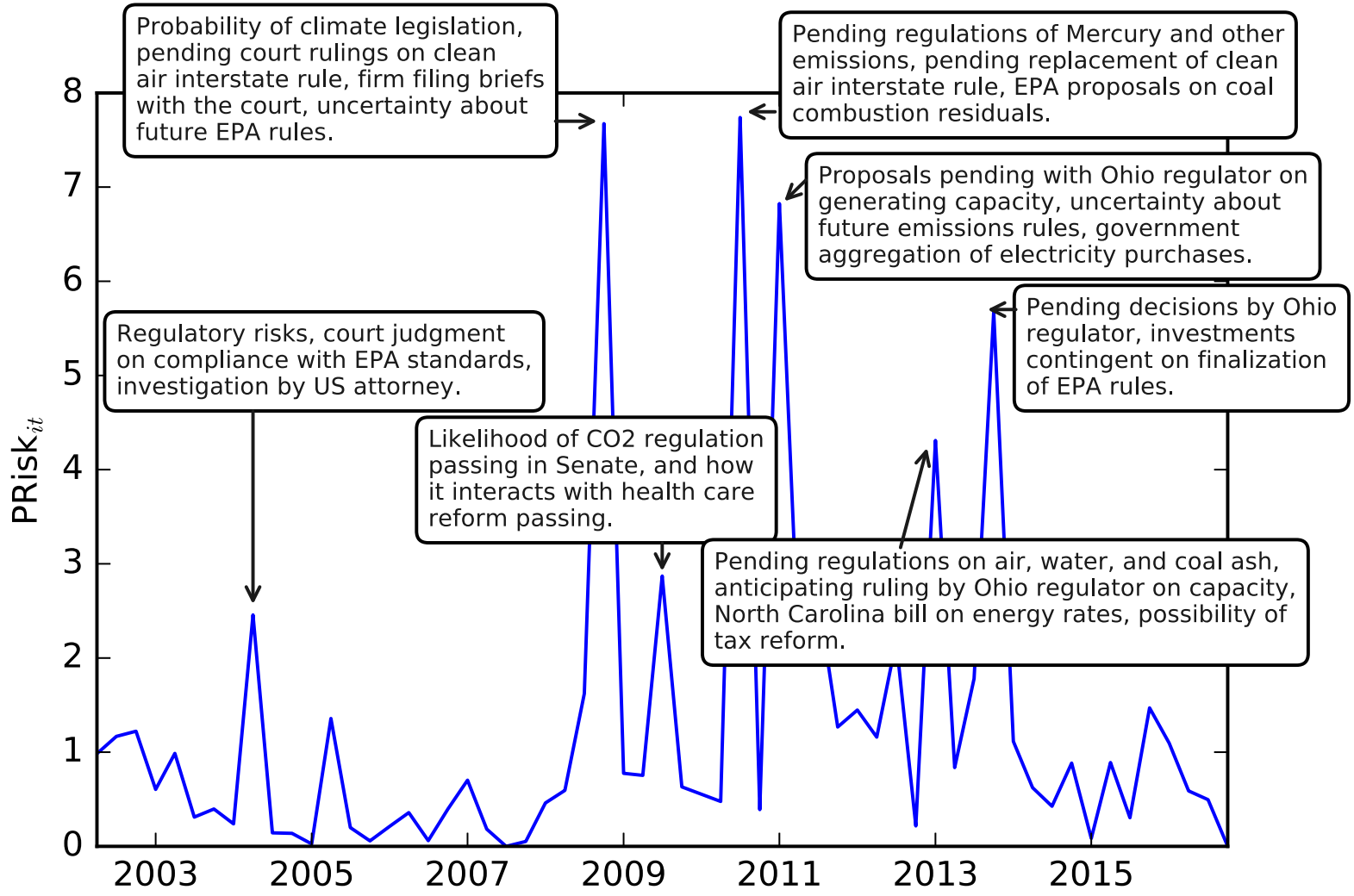
Firm-level Political Risk

- Accounts for most of the variation in $PRisk_{it}$.
- Has economic content: significantly associated with all the same outcomes as aggregate political risk.
- Dispersion in idiosyncratic political risk spikes when aggregate political risk is high.

$\Rightarrow$ Potentially important, novel transmission mechanism to the macroeconomy: Taken at face value, results suggest that dispersion in firm-level political risk misallocates resources $\Rightarrow$ lowers TFP!

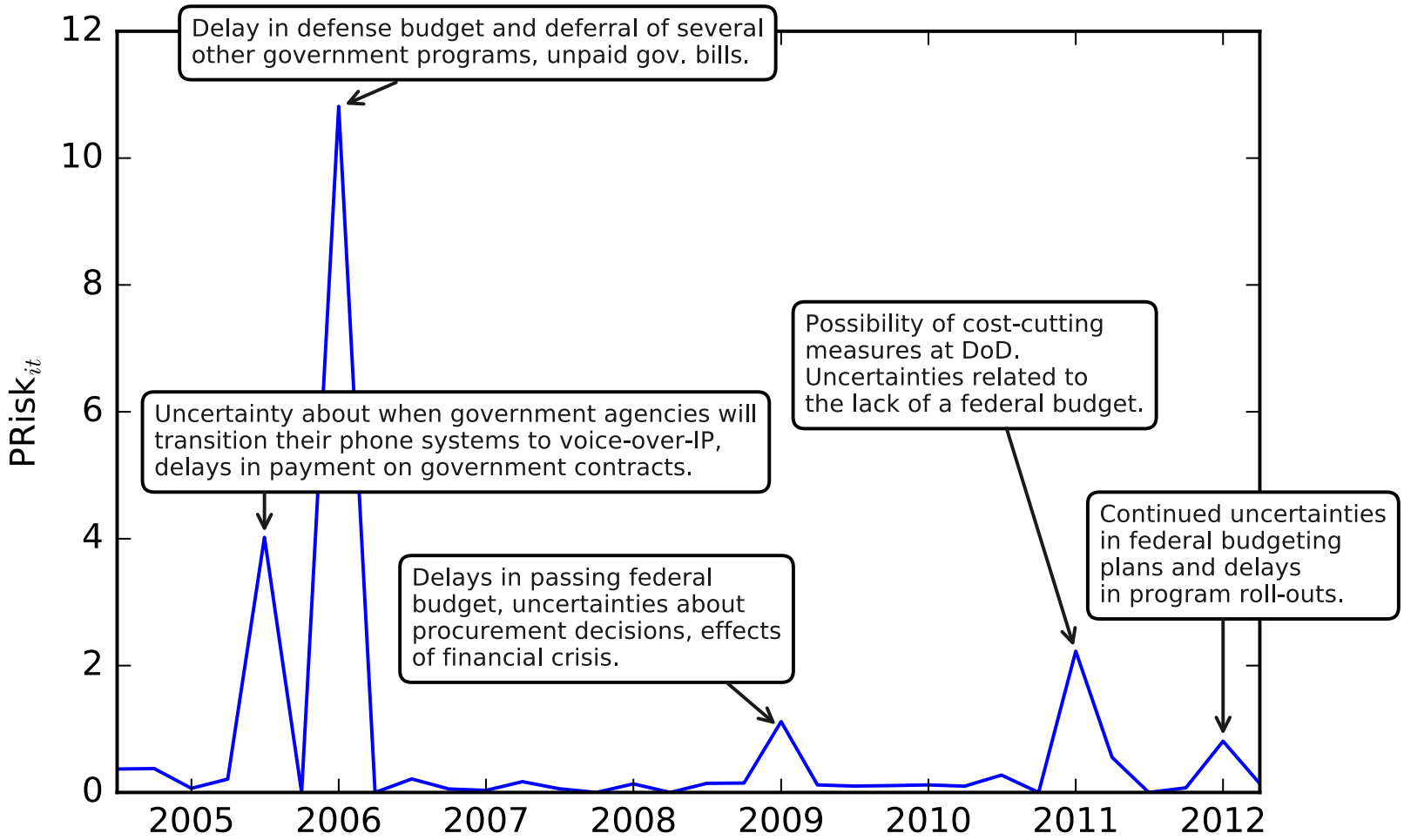
Example #1: Duke Energy Corporation

- A coal company's $PRisk_{it}$



Example #2: Network Equipment Technologies

- A technology company's $PRisk_{it}$



Outline

Validation: Top Political Bigrams for each Topic

Topic	Top five bigrams
Economic Policy & Regulation	balanced budget, legislation provides, bankruptcy bill, medicaid matching, time congress
Environment	air act, from renewable, climate change, clean air, states rights
Trade	free trade, trade agreement, trade agreements, trade barriers, freetrade agreement
Institutions & Political Process	campaign finance, constitution to, finance reform, appropriations bills, federal elections
Health	prescription drug, cut medicare, government takeover, drug plan, for lowincome
Security & Defense	on terror, from iraq, nuclear weapons, our troops, commander in
Tax Policy	estate tax, tax relief, bush tax, the estate, middleclass tax
Technology & Infrastructure	street station, fairness doctrine, cyber warfare, on highways, faithbased organizations

Validation: Transcript excerpts with highest $PRisk_{i,t}$

Topic	Top two context strings
Institutions & Political Process	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)
Health	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)
Security & Defense	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)

▸ Remaining topics ▸ Correlation with BBD-topic measure

Lobbying by political topic

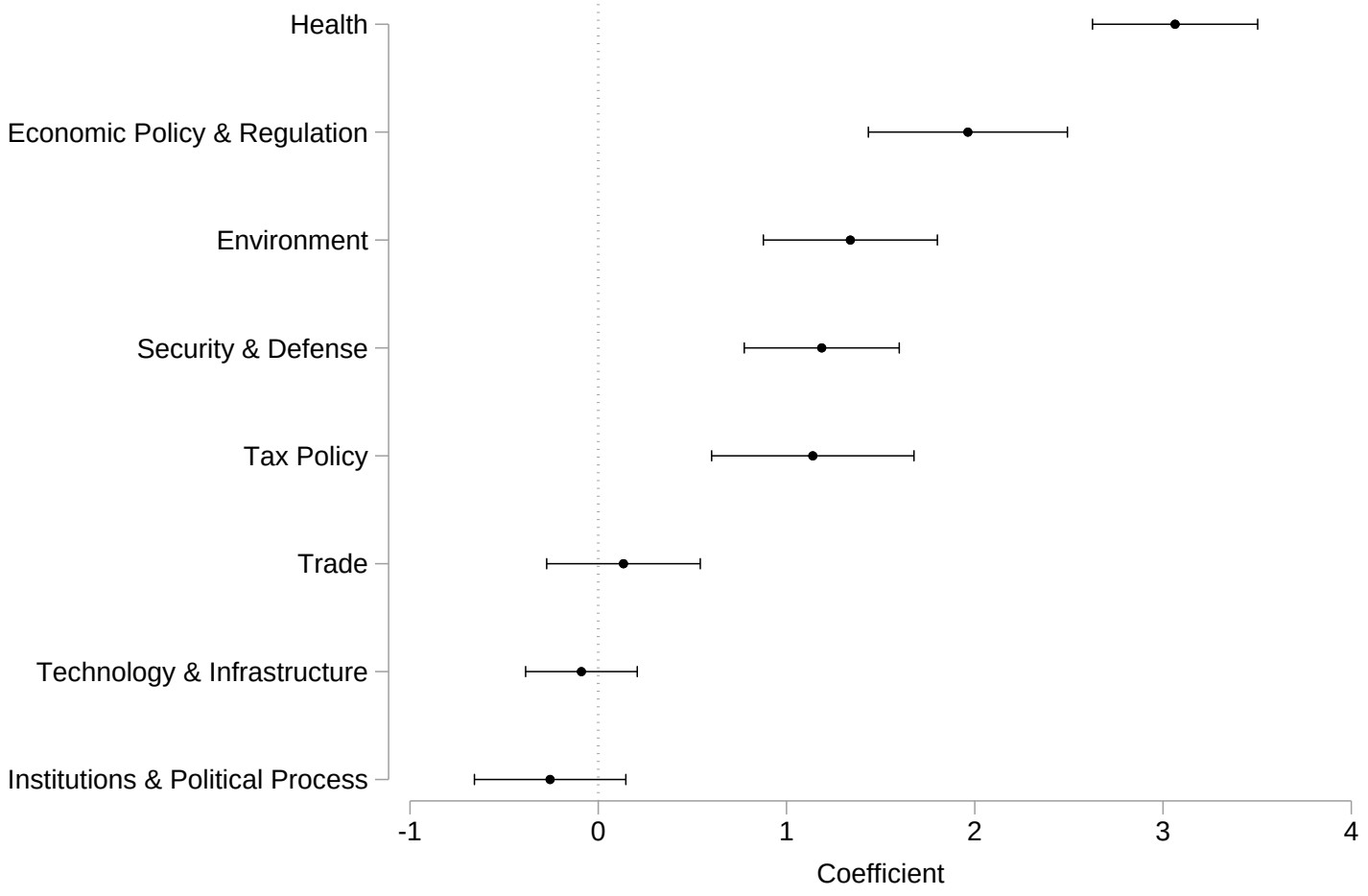
- Lobbying expenses by topic (Center for Responsive Politics), manually match each of 80 topics from disclosure forms to our 8 topic-based measures of $PRisk_{it}^{T}$.

$$1[Lobbying_{i,t+1}^{T} > 0] = \delta_i + \delta_t + \delta_T + \beta PRisk_{it}^{T} + \gamma' X_{it} + \epsilon_{it}$$

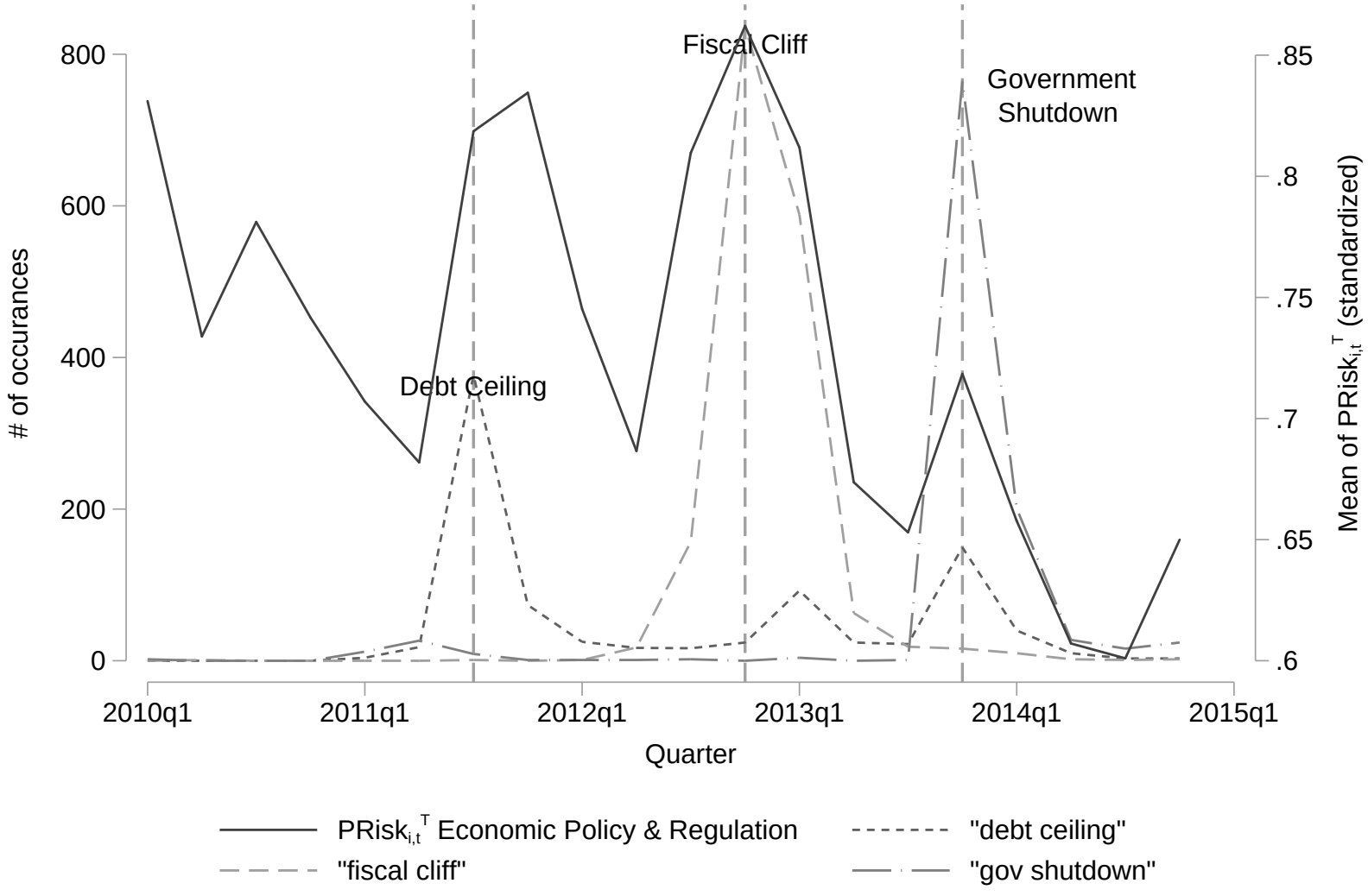
	$Lobbying_{i,t+1}^{T}(\mathbb{1} * 100)$				
	(1)	(2)	(3)	(4)	(5)
$PRisk_{i,t}^{T}$ (standardized)	1.223***	1.088***	0.785***	0.804***	0.089***
	(0.083)	(0.083)	(0.042)	(0.042)	(0.026)
R^2	0.105	0.128	0.311	0.316	0.643
N	1,177,824	1,177,824	1,177,824	1,177,824	1,177,824
Time FE	yes	yes	yes	yes	yes
Sector 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

Heterogeneity across topics

$$1[Lobbying^{T}_{i,t+1} > 0] = \delta_i + \delta_t + \delta_T + \zeta^{T}\delta_T \times PRisk^{T}_{it} + \gamma' X_{it} + \epsilon_{it}$$



Application: Obama-era Budget Crises



Application: Obama-era 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$\times$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

Regression of # any of the above on share of government in firm revenues yields .465***(.135).

Application: Budget Crises

PANEL B	Lobbying$^{ep\&r}_{i,t+1}(\mathbb{1} * 100)$			Log(1+Lobbying$^{ep\&r}_{i,t}$($))
	(1)	(2)	(3)	(4)
# of 'debt ceiling', 'fiscal cliff', and 'shutdown'	0.698**			
	(0.299)			
PRisk$^{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$\times$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

Conclusion

- Introduced simple, firm-level measure of political risk.
- Firm-level variation in political risk associated with lower hiring & investment, but higher expenditures on lobbying and donations to politicians.
- Most variation in political risk is at the firm-level. Identity of firms most affected within sector changes dramatically over time.
- Dispersion of firm-level political risk increases when aggregate political risk is high, possibly lowering TFP.
- Firms that devote more time discussing risks associated with a particular political topic increase lobbying on that topic and not other topics (actively manage political risk).

Top 60 political bigrams used in $PRisk_{i,t}$

Bigram	$(f_{b,\mathbb{P}}/B_{\mathbb{P}}) * 10^5$	Overall frequency	Bigram	$(f_{b,\mathbb{P}}/B_{\mathbb{P}}) * 10^5$	Overall frequency
the constitution	84.45	10	president obama	14.53	7
the states	56.38	285	congress the	14.28	8
public opinion	49.98	4	first amendment	14.28	1
interest groups	49.74	8	the legislative	14.03	86
of government	48.51	307	the republican	14.03	10
the gop	43.00	1	tea party	14.03	1
in congress	32.75	105	of civil	13.79	14
national government	28.56	7	court has	13.79	30
social policy	26.10	1	groups and	13.54	106
the civil	25.61	63	civil war	13.30	8
elected officials	25.36	3	the congress	13.30	47
politics is	22.65	7	struck down	13.30	3
political parties	21.67	3	shall have	13.30	7
the political	21.42	1083	the constitutional	12.56	13
office of	21.42	57	new deal	12.56	20
interest group	20.19	1	the presidential	12.31	118
the bureaucracy	20.19	1	ruled that	12.31	15
and senate	19.45	19	of representatives	12.06	10
government and	18.71	320	economic policy	11.82	15
for governor	17.45	2	african americans	11.82	2
executive branch	16.99	2	policy goals	11.82	2
support for	16.74	140	a political	11.82	119
the epa	16.47	135	of social	11.82	29
in government	16.25	208	civil service	11.57	2
congress to	15.51	19	federal courts	11.57	1
political process	15.27	18	of speech	11.57	1
care reform	15.02	101	government policy	11.57	52
government in	14.77	7	argued that	11.33	8
due process	14.77	6	the democratic	11.33	6
and social	14.53	138	islamic state	11.32	1

68,990 unique bigrams in total.

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Transcript excerpts with highest $\text{PRisk}_{i,t}$

Firm Name	Call Date	$\text{PRisk}_{i,t}$ (std)	Text surrounding bigram with highest weight ($f_{b,\mathbb{P}}/B_{\mathbb{P}}$)
NEVADA GOLD CASINOS INC	10-Sep-2008	37.43	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	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	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	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	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	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	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	leadership i just wondered if you **had concerns** about how **the political** —INSTABILITY— might affect **policies that** have **ramifications for** the industry

back

Transcript excerpts with highest $\text{PRisk}_{i,t}$

Firm Name	Call Date	$\text{PRisk}_{i,t}$ (std)	Text surrounding bigram with highest weight ($f_{b,\mathbb{P}}/B_{\mathbb{P}}$)
FPIC Insurance Group, Inc.	30-Oct-2008	27.89	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	was **an accurate** metaphor and really given all the —UNCERTAINTIES— **of government involvement** in operations and business activities and given the capital
Nanogen, Inc.	8-Aug-2007	26.81	**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	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	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	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	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

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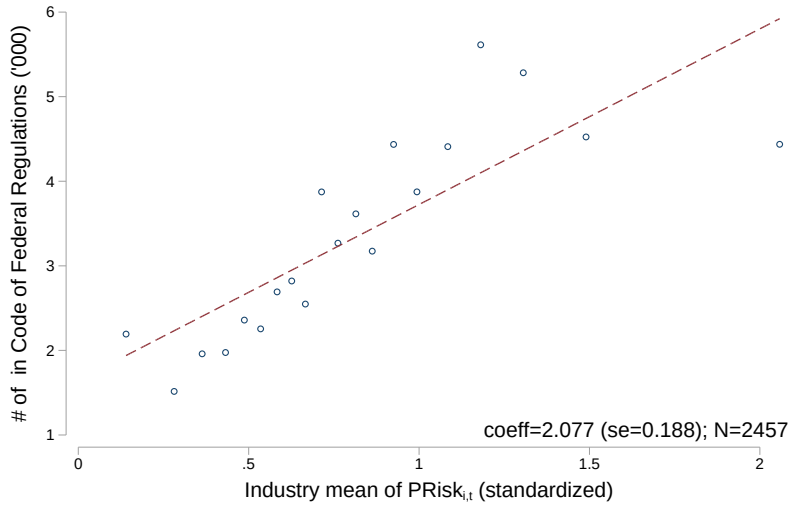
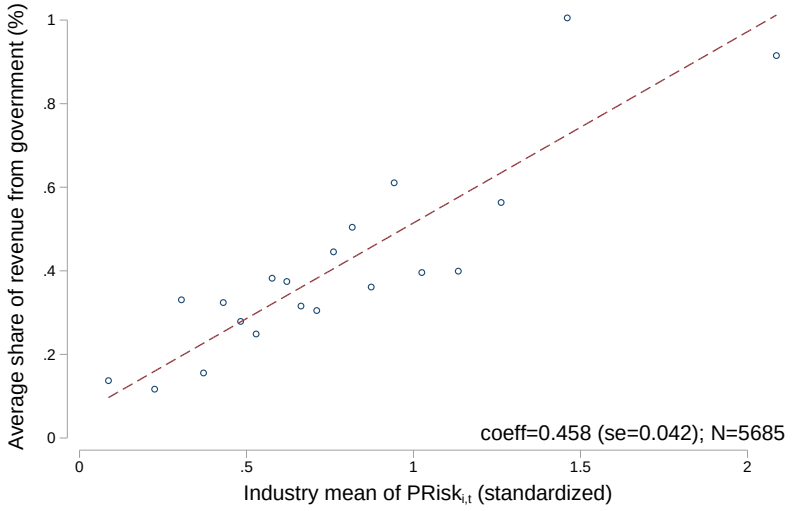
$PRisk_{i,t}$, regulation, and government expenditure



(a) # of restrictive words in the CFR



(b) Share of government revenue

Relationship between the industry-year average of $PRisk_{i,t}$ and two different measures of industry exposure to politics.

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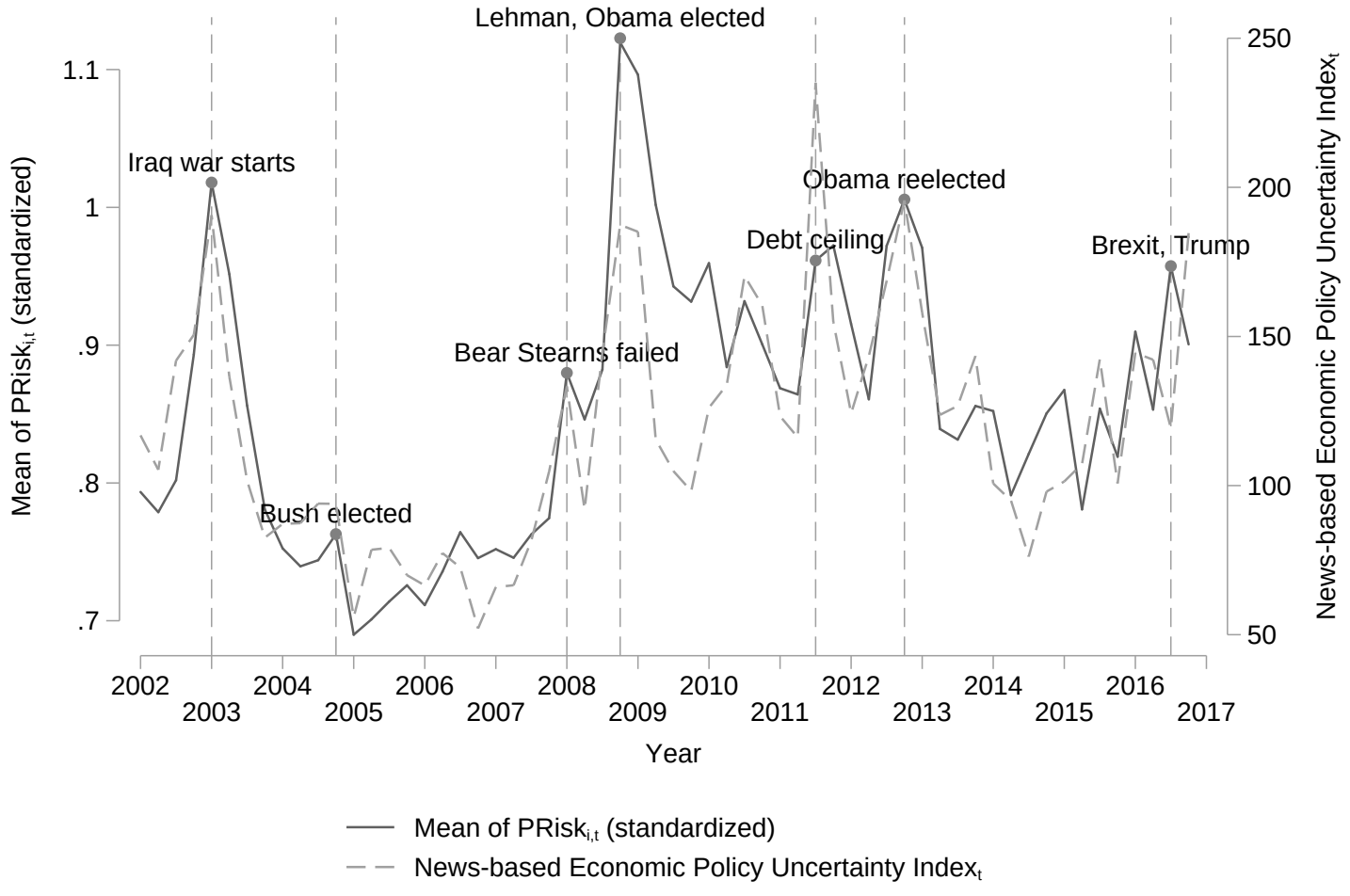
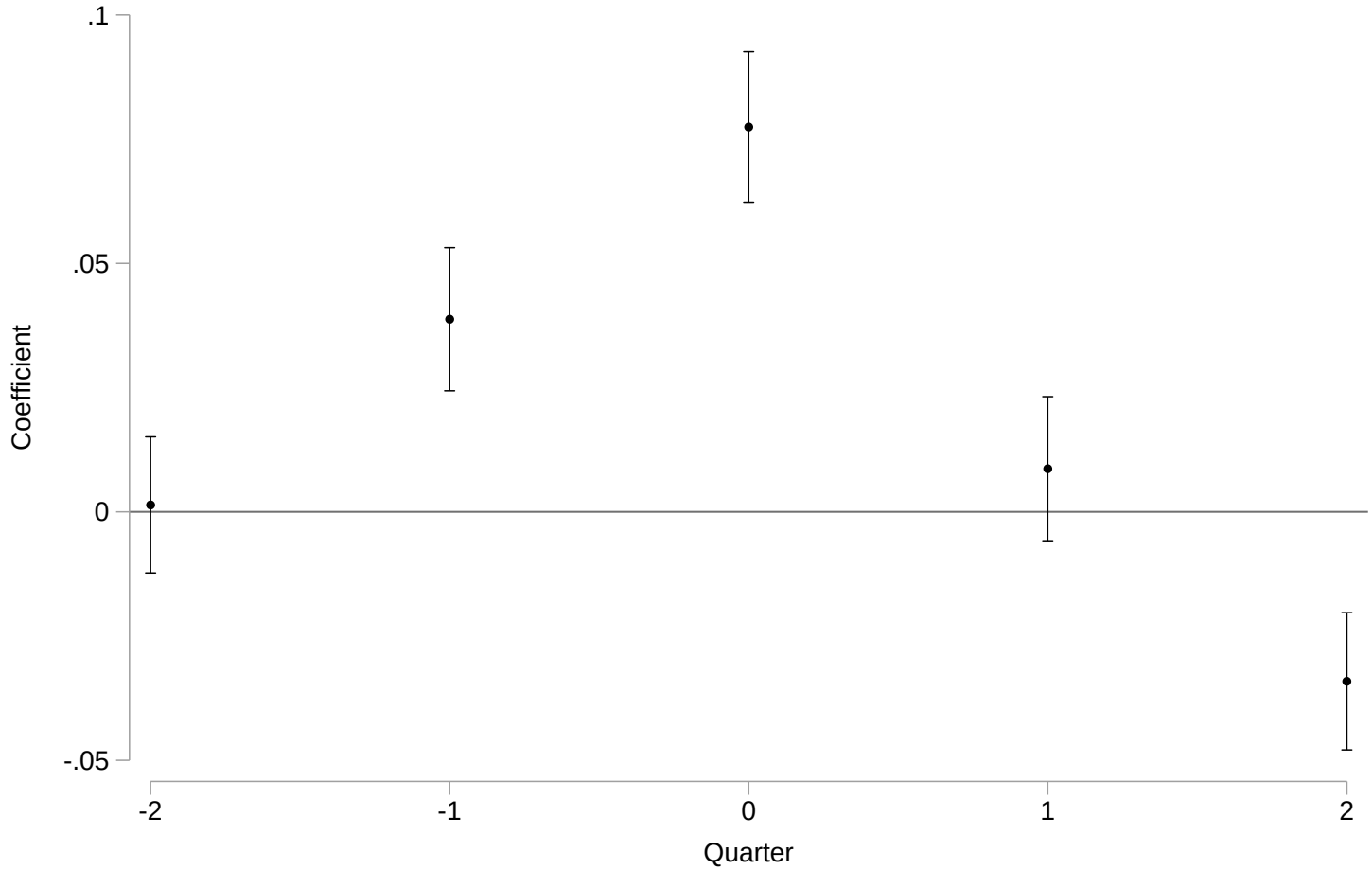
Mean of $PRisk_{i,t}$ across firms



Correlation with BBD newspaper-based measure=0.803.

back

$PRisk_{i,t}$ higher around federal elections



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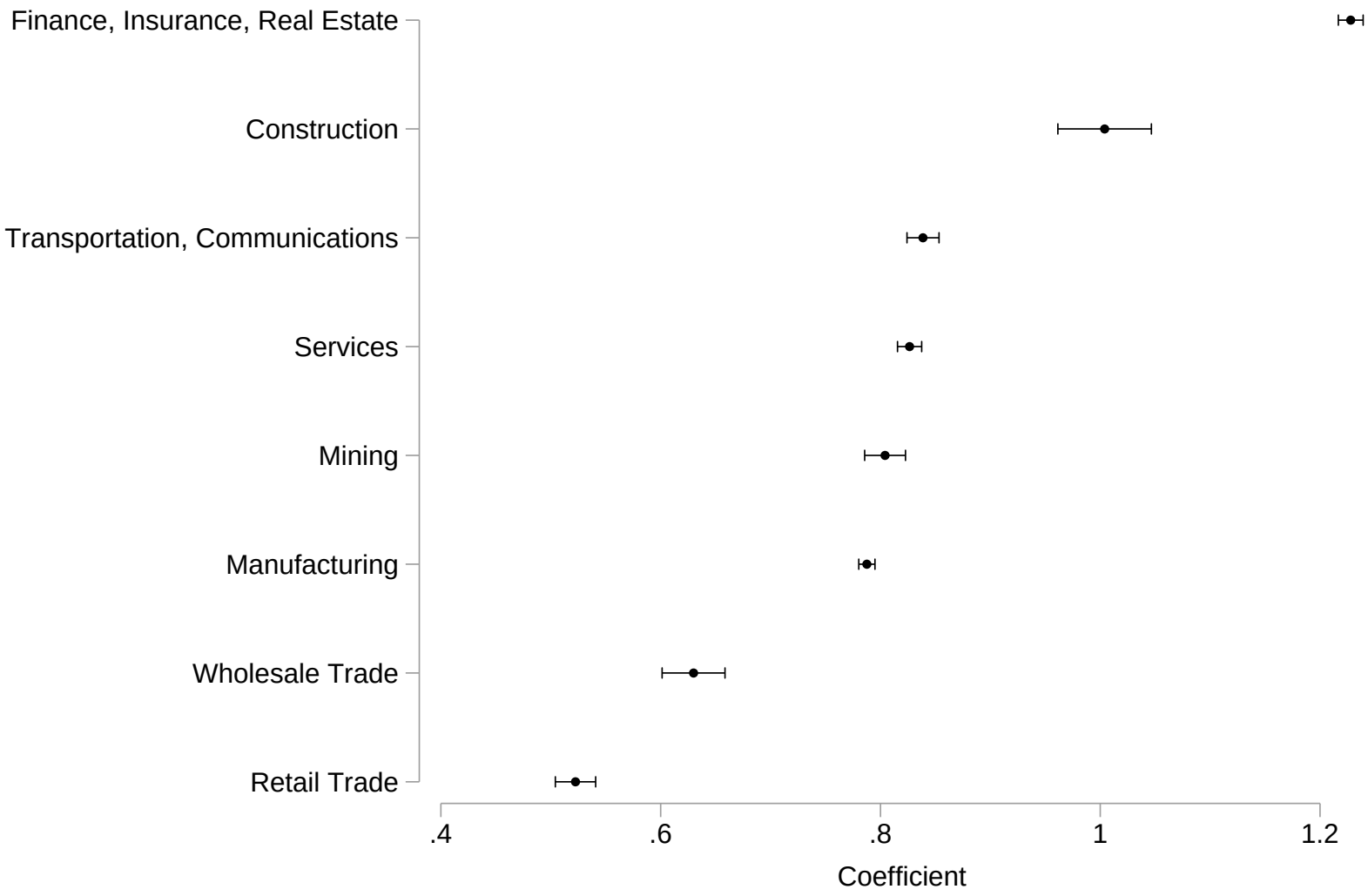
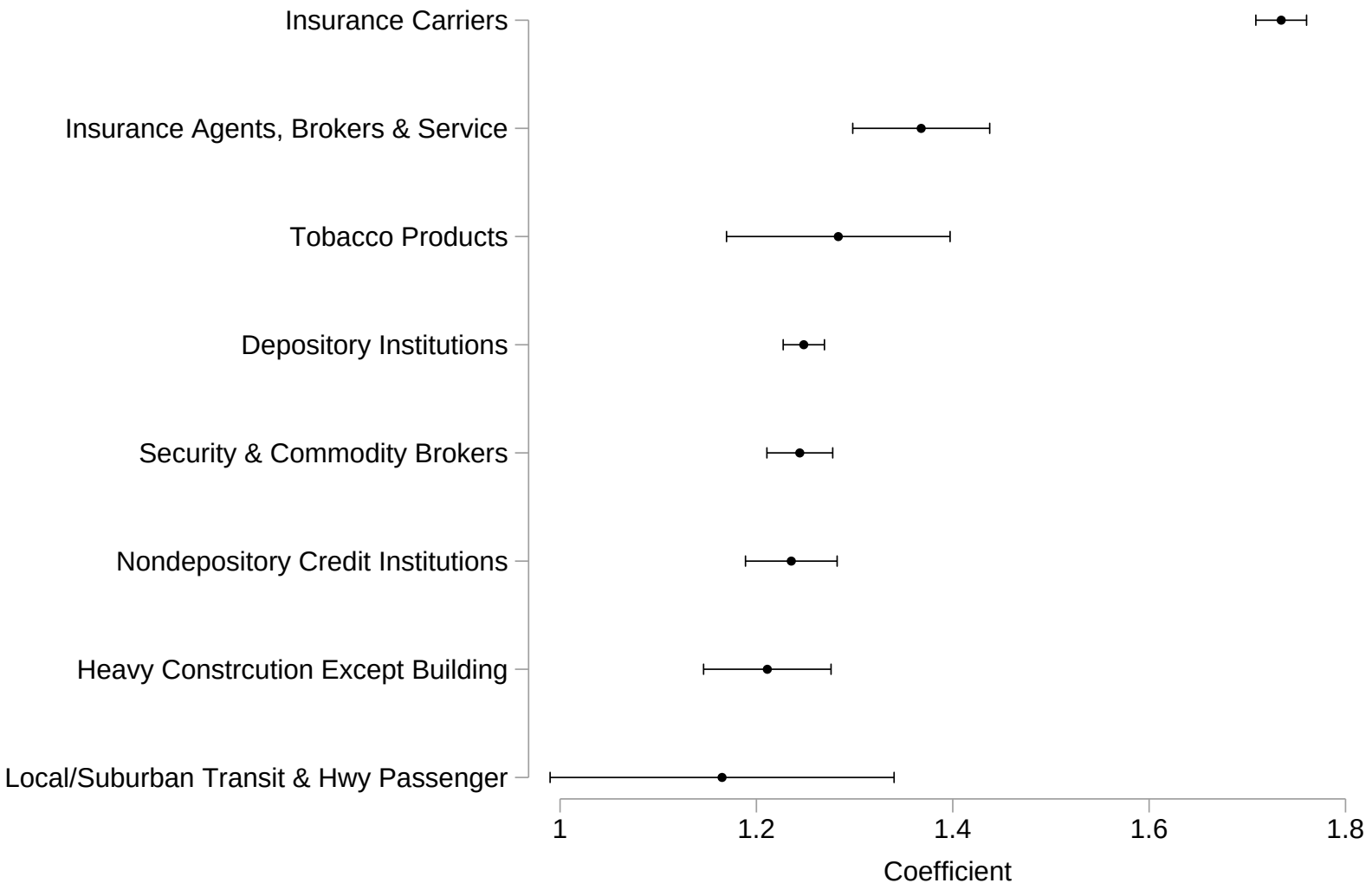
Mean of $PRisk_{i,t}$ by SIC division



Same ▸ chart for top 5 two-digit SIC industries ▸ back

Average $PRisk_{i,t}$ by SIC-2 division



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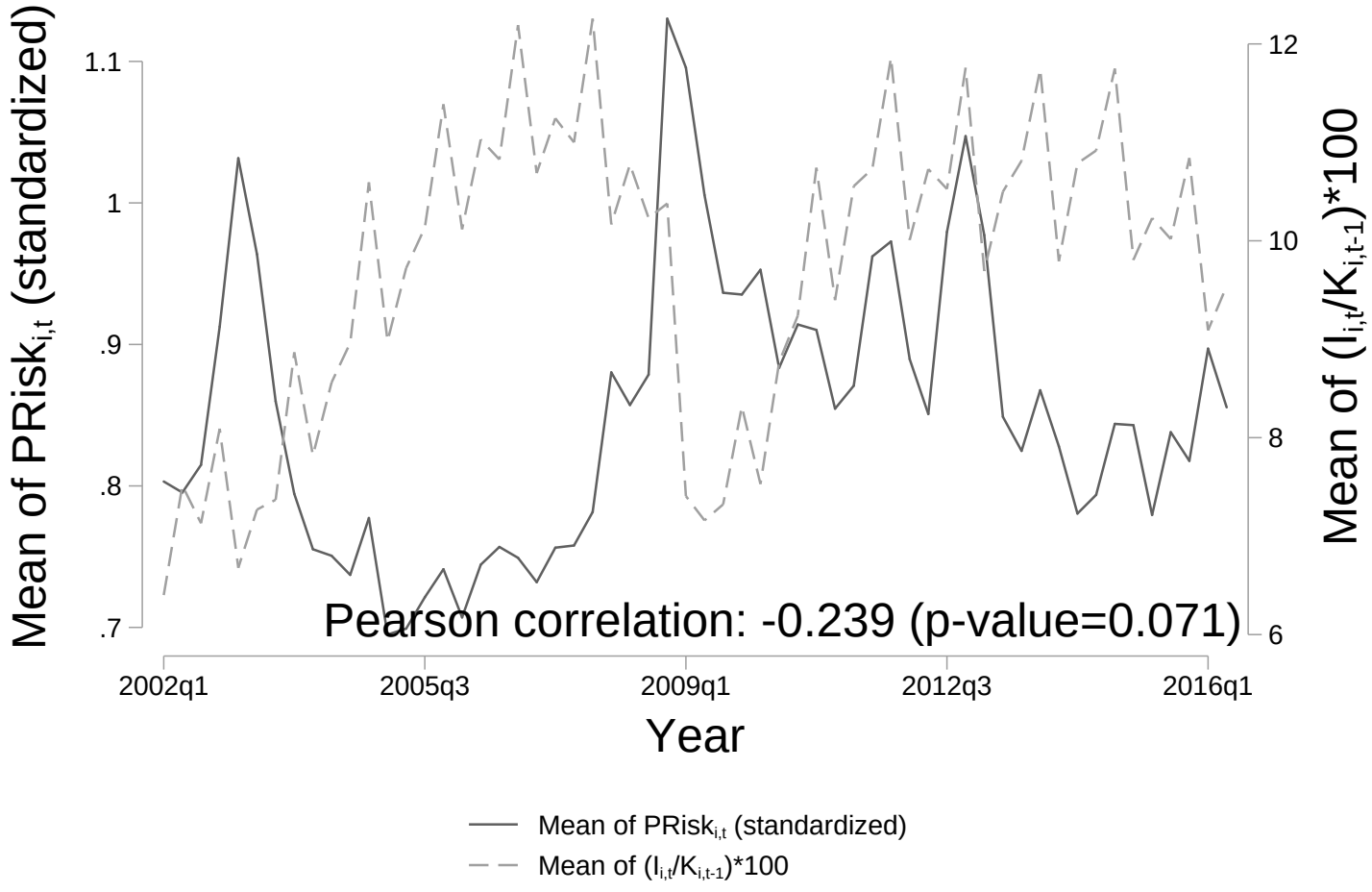
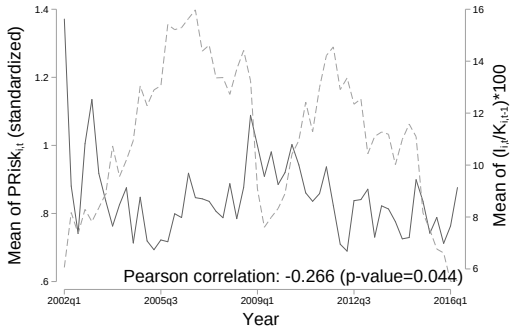
Aggregate variation in $PRisk_{i,t}$ vs. Investment

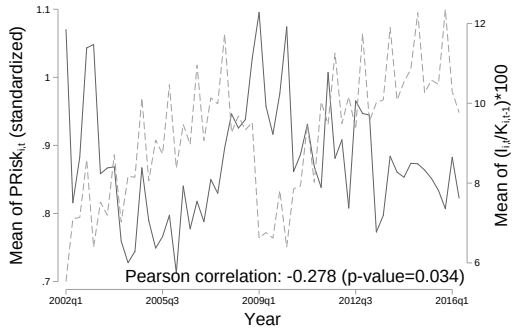


Go back to table on investment and employment

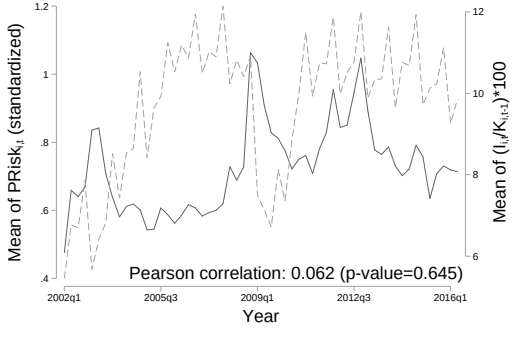
Sector-level variation in $PRisk_{i,t}$ vs. Investment



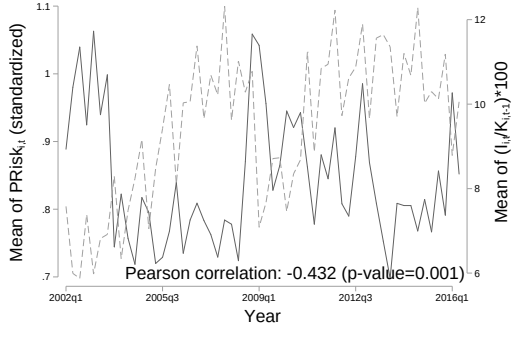
Mining



Construction



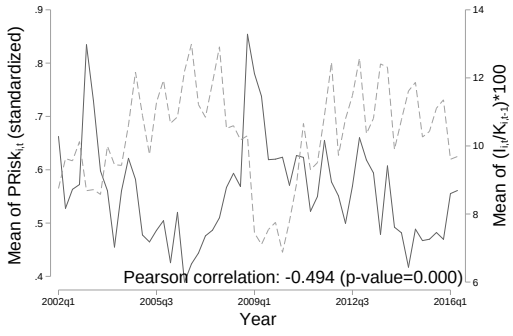
Manufacturing



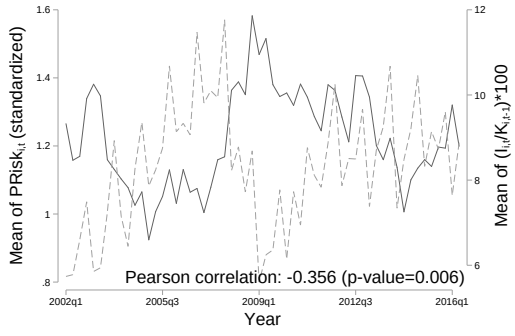
Transportation; communication; electric, gas, and sanitary services

Go back to table on investment and employment

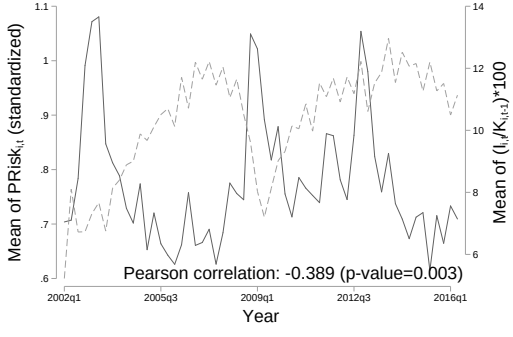
Sector-level variation in $PRisk_{i,t}$ vs. Investment



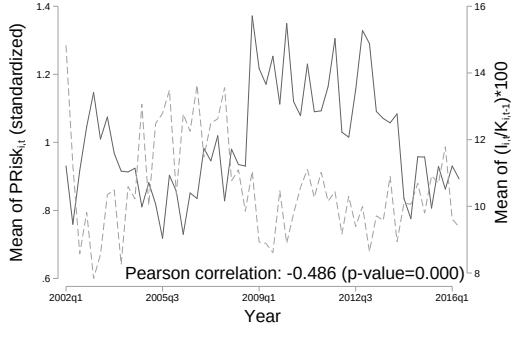
Wholesale trade



Retail trade



Finance, insurance, and real estate



Services

Go back to table on investment and employment

Alternative constructions of $PRisk_{it}$

	Implied volatility$_{i,t}$ (standardized)					
	(1)	(2)	(3)	(4)	(5)	(6)
PRisk$_{i,t}$ (standardized)	0.033***					
	(0.005)					
Textbook-based PRisk$_{i,t}$ (standardized)		0.031***				
		(0.005)				
Newspaper-based PRisk$_{i,t}$ (standardized)			0.031***			
			(0.005)			
PRisk$_{i,t}$ (standardized, not capped)				0.020***		
				(0.005)		
Unweighted PRisk$_{i,t}$ (standardized)					0.040***	
					(0.005)	
Firm level EPU$_{i,t}$ ($\mathbb{1}$)						0.021*
						(0.013)
N	114,981	114,981	114,981	114,981	114,981	114,981
Time FE	yes	yes	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes	yes	yes

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$PRisk_{it}$ vs. Firm-level EPU_{it}

	Realized volatility$_{i,t}$ (standardized)		$I_{i,t}/K_{i,t-1}$ * 100	
	(1)	(2)	(3)	(4)
Firm level EPU$_{i,t}$ (𝟙)	0.016*	0.005	–0.138	–0.065
	(0.009)	(0.009)	(0.088)	(0.087)
PRisk$_{i,t}$ (standardized)		0.018***		–0.135***
		(0.003)		(0.031)
N	162,124	162,124	117,332	117,332
Time FE	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes

Go ▸ back

Firm-level variation vs. measurement error

	Log(1+$ donations$_{i,t+1}$)		# of recipients$_{i,t+1}$		Log(1+$ lobby$_{i,t+1}$)	
	(1)	(2)	(3)	(4)	(5)	(6)
PRisk$_{i,t}$ (standardized)	0.091***	0.005	0.515***	0.074**	0.189***	0.027***
	(0.019)	(0.006)	(0.130)	(0.029)	(0.028)	(0.010)
N	176,173	176,173	176,173	176,173	147,228	147,228
Time FE	yes	yes	yes	yes	yes	yes
Sector*time FE	yes	yes	yes	yes	yes	yes
Firm FE	no	yes	no	yes	no	yes

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Nature of Firm-level $PRisk_{it}$ (other outcomes)

	(1)	(2)	(3)	(4)	(5)
PANEL A	Implied volatility$_{i,t}$ (standardized)				
PRisk$_{i,t}$ (standardized)	0.033***	0.033***	0.032***	0.034***	0.035***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
PANEL B	$\frac{I_{i,t}}{K_{i,t-1}} * 100$				
PRisk$_{i,t}$ (standardized)	–0.138***	–0.150***	–0.144***	–0.137***	–0.139***
	(0.032)	(0.033)	(0.033)	(0.032)	(0.032)
PANEL C	$\frac{\Delta \text{capexg}_{i,t}}{\text{capexg}_{i,t-1}} * 100$				
PRisk$_{i,t}$ (standardized)	–0.364***	–0.386***	–0.416***	–0.361***	–0.363***
	(0.128)	(0.128)	(0.130)	(0.129)	(0.129)
PANEL D	$\frac{\Delta \text{emp}_{i,t}}{\text{emp}_{i,t-1}} * 100$				
PRisk$_{i,t}$ (standardized)	–0.636***	–0.596***	–0.636***	–0.597***	–0.599***
	(0.107)	(0.112)	(0.107)	(0.108)	(0.108)
Time FE	yes	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes	yes
Sector×time FE	yes	yes	yes	yes	yes

Go back to the ▸ full realizied volatility table

Nature of Firm-level $PRisk_{it}$ (other outcomes)

	(1)	(2)	(3)	(4)	(5)
PANEL E			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)
PANEL F			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)
PANEL G			# 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)
PANEL H			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)
Time FE	yes	yes	yes	yes	yes
Sector FE	yes	yes	yes	yes	yes
Sector×time FE	yes	yes	yes	yes	yes

Go back to the ▸ full realizied volatility table

Validation: Transcript excerpts with highest $PRisk_{i,t}$

Topic	Top two context strings
Economic Policy & Regulation	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** short-term —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)
Environment	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)
Trade	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)

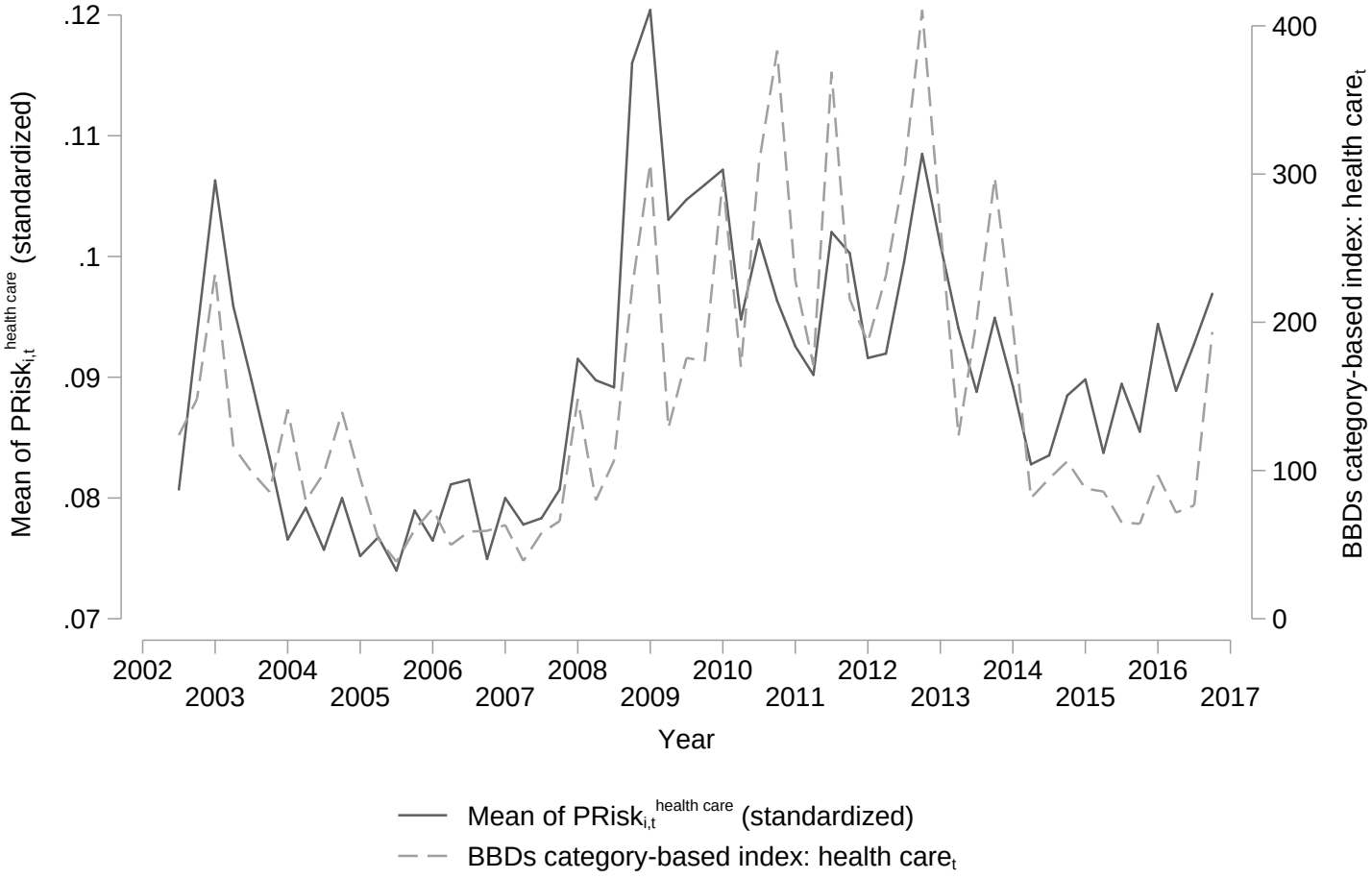
back

Validation: Transcript excerpts with highest $PRisk_{i,t}$

Topic	Top two context strings
Tax Policy	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) "are concerned about the continued —**THREAT**— **on** survivorship life sales from ongoing efforts ***in congress to*** fully ***repeal the*** *federal* ***estate tax*** for **longterm care** sales our guidance **remains to** growth the big increase in firstquarter group **longterm care** sales *was driven*" (Manulife Financial Corporation on 3-May-2002)
Technology & Infrastructure	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)

back

Validation: Mean of $\text{PRisk}_{i,t}^{HealthCare}$



Correlation with BBD health care measure 0.698.

Go to top bigrams by ▸ topic ▸ back

Lobbying by political topic: Timing

	$\text{Lobbying}^{T}_{i,t+1}(\mathbb{1} * 100)$
	(1)
$\text{PRisk}^{T}_{i,t}$ (standardized)	0.063**
	(0.027)
$\text{PRisk}^{T}_{i,t+1}$ (standardized)	0.050*
	(0.027)
$\text{PRisk}^{T}_{i,t+2}$ (standardized)	0.042
	(0.028)
Time FE	yes
Firm FE	yes
Topic FE	yes
Firm*topic FE	yes
N	791,568

Summary statistics: Firm-quarter data

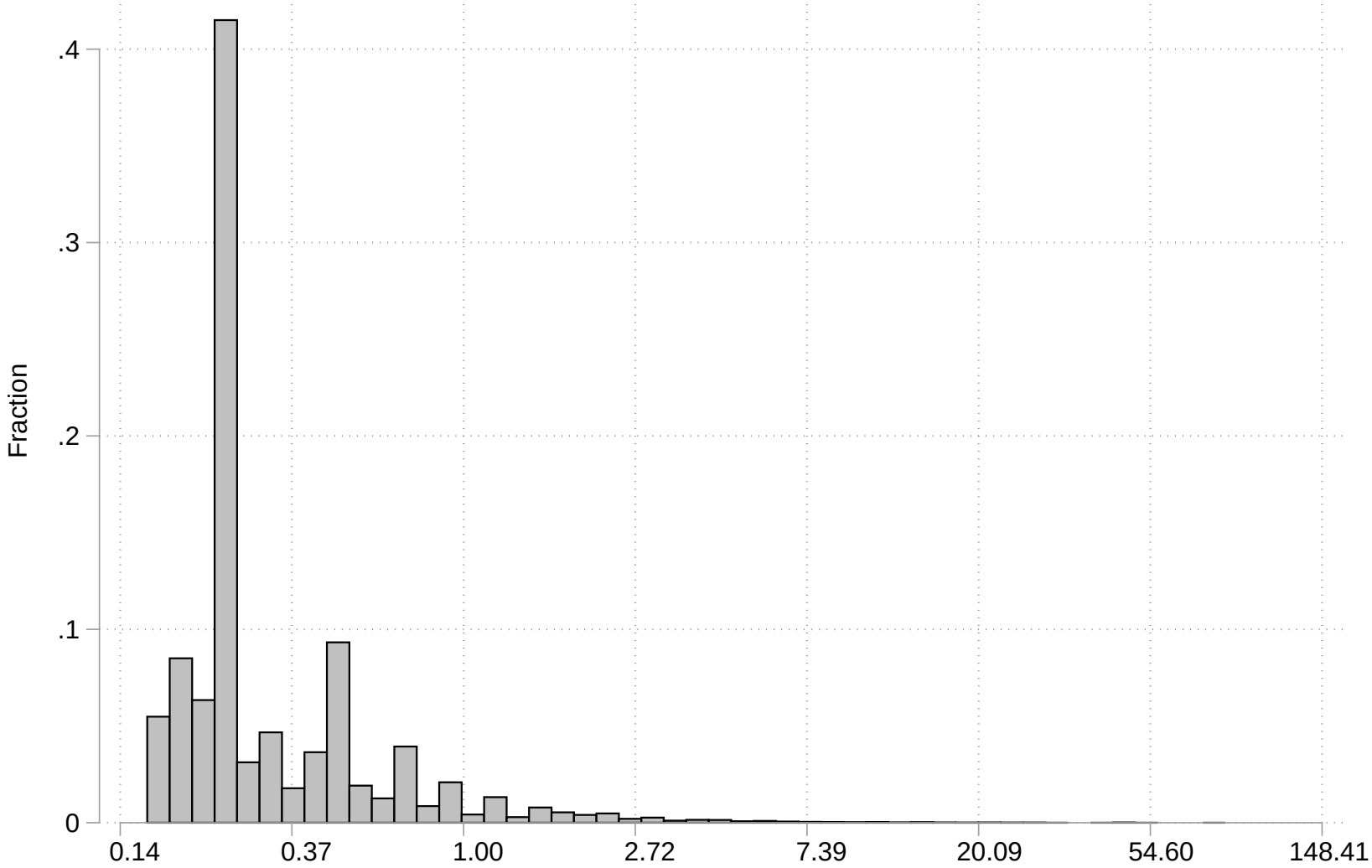
PANEL A: FIRM-QUARTER	Mean	Median	St. Dev.	Min	Max	*N*
$\text{PRisk}_{i,t}$ (standardized)	0.86	0.49	1.00	0.00	3.76	176,173
$\text{Assets}_{i,t}$ (millions)	15,271	1,217	97,502	0.13	3,069,706	173,887
$\text{Realized volatility}_{i,t}$ (standardized)	1.20	0.99	1.00	0.04	83.03	162,124
$\text{Implied volatility}_{i,t}$ (standardized)	2.01	1.78	1.00	0.05	9.38	114,981
$\text{Earnings announcement surprise}_{i,t}$	-0.01	0.00	1.43	-235.83	301.81	161,375
Average stock return 7 days prior to $\text{earnings call}_{i,t}$	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
$\text{Lobby expense}_{i,t}$ (thousdands)	80.08	0.00	381.08	0.00	15,460.00	147,228
$\text{Donation expense}_{i,t}$ (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
$\text{Federal contracts}_{i,t}$ (thousands)	3,516	0.00	49,488	0.00	3,841,392	162,124
$\text{PRisk}_{i,t}^{\text{Economic Policy \& Regulation}}$ (standardized)	0.30	0.07	1.00	0.00	62.70	176,173
$\text{PRisk}_{i,t}^{\text{Environment}}$ (standardized)	0.18	0.03	1.00	0.00	133.97	176,173
$\text{PRisk}_{i,t}^{\text{Trade}}$ (standardized)	0.15	0.00	1.00	0.00	227.69	176,173
$\text{PRisk}_{i,t}^{\text{Institutions \& Political Process}}$ (standardized)	0.21	0.03	1.00	0.00	98.53	176,173
$\text{PRisk}_{i,t}^{\text{Health}}$ (standardized)	0.16	0.02	1.00	0.00	97.19	176,173
$\text{PRisk}_{i,t}^{\text{Security \& Defense}}$ (standardized)	0.22	0.06	1.00	0.00	165.69	176,173
$\text{PRisk}_{i,t}^{\text{Tax Policy}}$ (standardized)	0.18	0.02	1.00	0.00	111.75	176,173
$\text{PRisk}_{i,t}^{\text{Technology \& Infrastructure}}$ (standardized)	0.21	0.02	1.00	0.00	106.67	176,173

Summary statistics: Firm-topic-quarter and firm-annual data

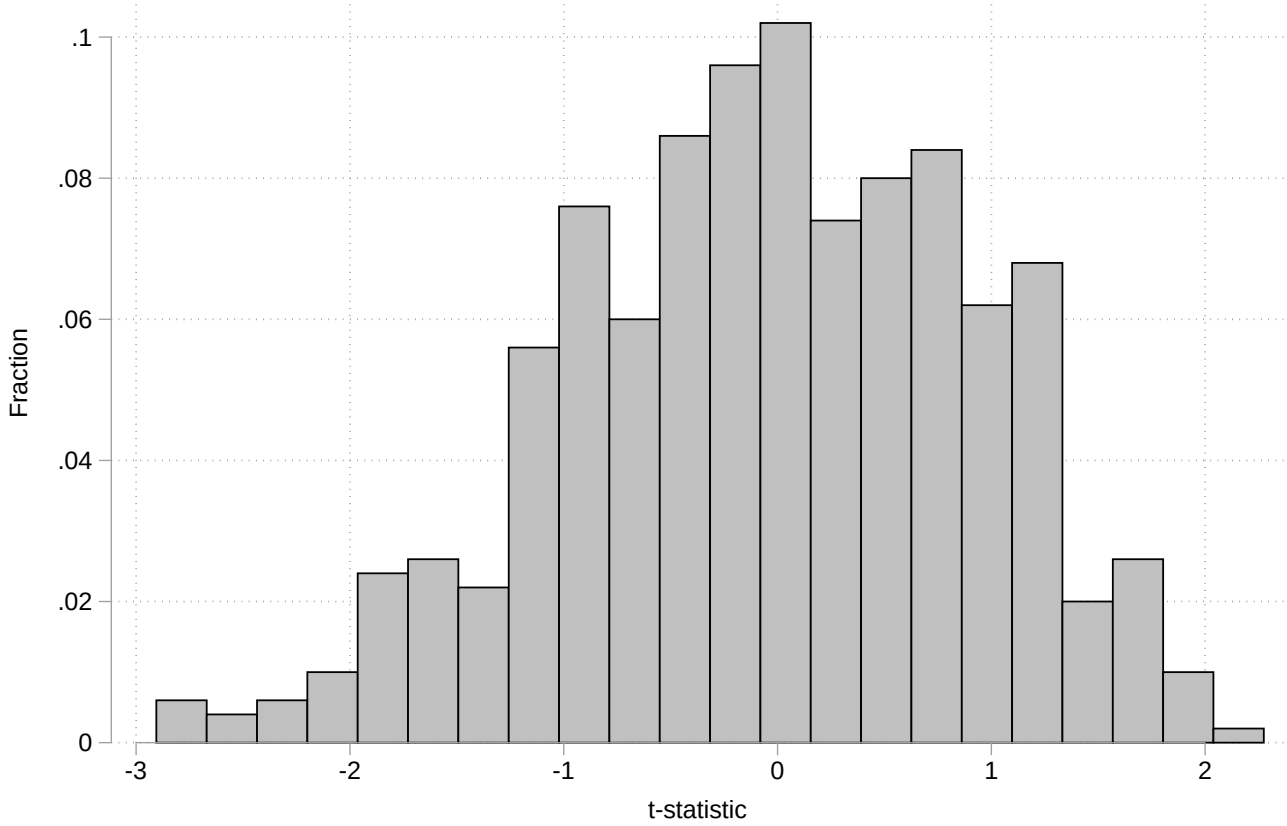
PANEL C: FIRM-TOPIC-QUARTER	Mean	Median	St. Dev.	Min	Max	*N*
$\text{PRisk}^{T}_{i,t}$ (standardized)	0.61	0.16	1.00	0.00	3.77	1,177,824
$\text{Lobby}^{T}_{i,t}$ ($\mathbb{1}$)	0.07	0.00	0.25	0.00	1.00	1,177,824

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

Distribution of bigram scores

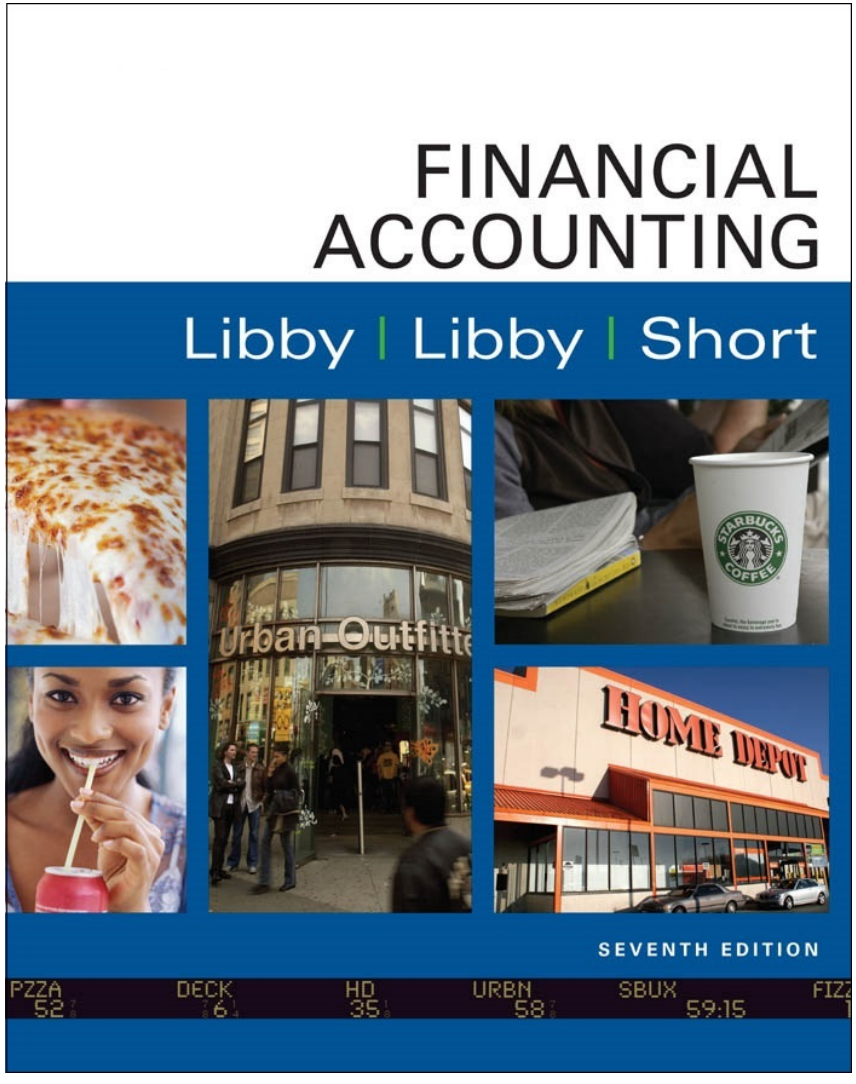


t-statistics from placebo regressions



500 repetitions; number of false positives and negatives at two-sided 95% Confidence is .6 and 2.6 percent, respectively.
Go back to ▸ risk validation table

Libby, Libby & Short, 2011



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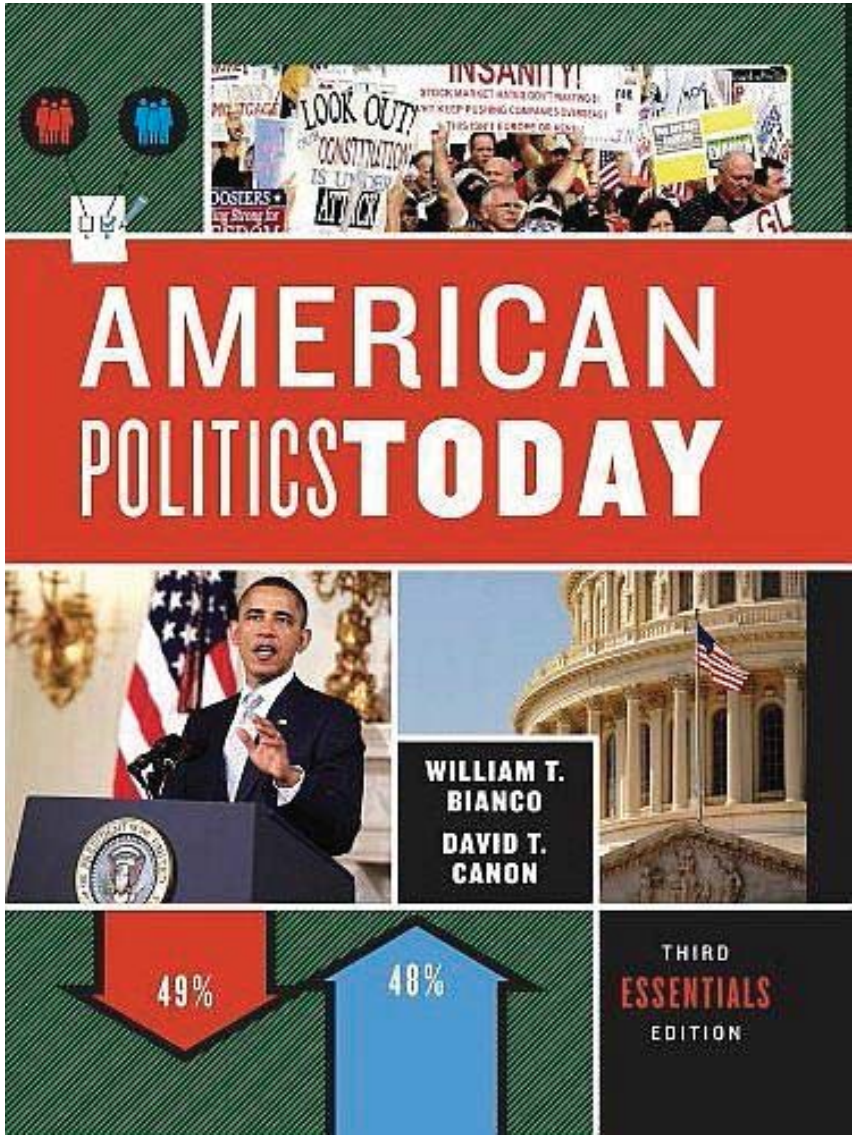
Bianco & Canon, 2013



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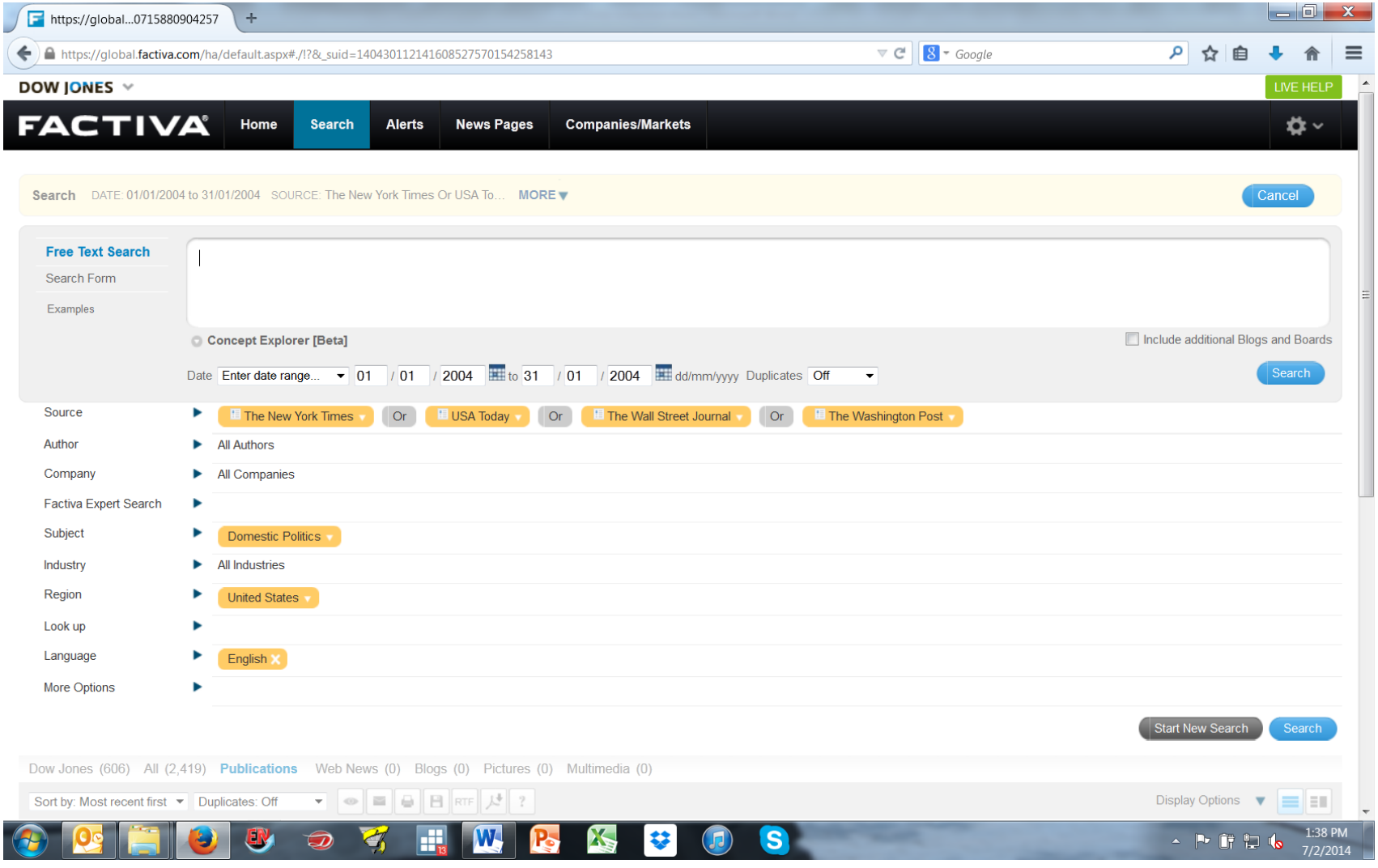
Factiva newspaper articles



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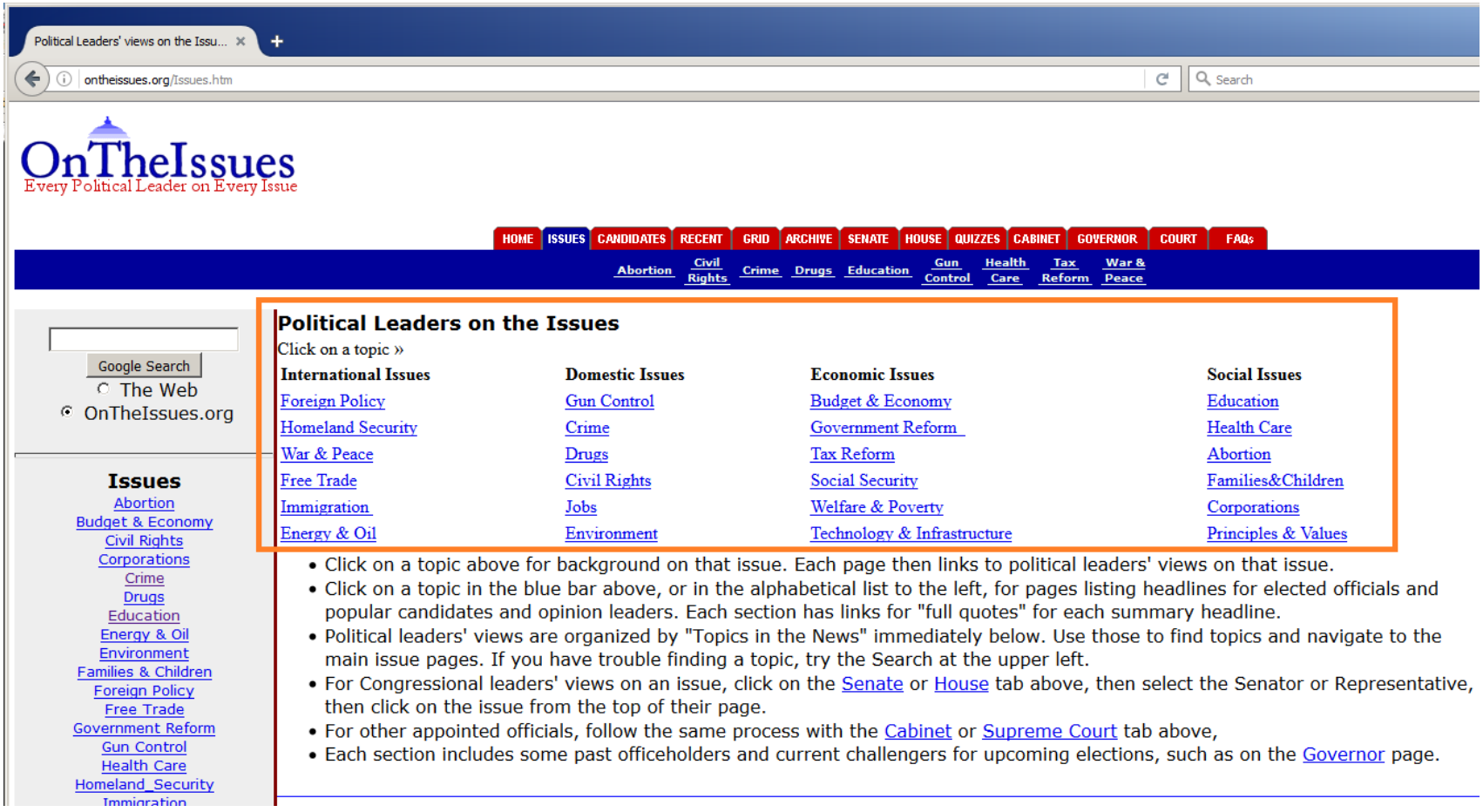
Screenshot from OnTheIssues.org



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Ontheissue.org topic to our topic mapping

Our 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

Lobby issue to topic mapping, part #1

Political Topic	Lobbying issues
Economic Policy & Regulation	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

Lobby issue to topic mapping, part #2

Political Topic	**Lobbying issues**
Trade	Commodities; Foreign Relations; Postal; Tariffs; Trade
Institutions & Political Process	Government Issues; Torts
Health	Health Issues; Medicare & Medicaid; Medical Research & Clinical Labs; Pharmacy
Security & Defence	Defense; Disaster & Emergency Planning; Homeland Security; Intelligence; Veterans Affairs
Tax Policy	Taxes
Technology & Infrastructure	Aerospace; Computers & Information Technology; Science & Technology