Political Activism and Firm Innovation

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Motivation

Political activism is related to firm value
- explicit connections
  - Fisman (2001), Ferguson and Voth (2008), Faccio and Parsley (2009), Goldman, Rocholl and So (2009), and Amore and Bennedsen (2013)
- implicit connections
  - Cooper, et al. (2010), Akey (2014), and Claessens, Feijen and Laeven (2008)

What are the sources of value?
- politically active firms:
  - enjoy preferential access to external financing (Claessens, Feijen and Laeven (2008))
  - are more likely to receive government bailouts in financial distress (Faccio, Masulis and McConnell (2006), Duchin and Sosyura (2012))
  - are also more likely to receive government procurement contracts (Goldman, Rocholl and So (2013))

Research question

Does political activism affect firm investment decisions, especially investment in innovation? If so, how?

- Hypotheses
    - information acquisition
        - the role of political intelligence in securities markets
        - political uncertainty (Pastor and Veronesi (2012))

    - procurement
        - public rent-seeking (Murphy, Shleifer and Vishny (1993))
            - firms bribe to obtain procurement

    - reduced competition
        - cost of entry (Romer and Snyder (1994))
            - Kim (2014)

Sample

- The intersection of NBER patent data files and FEC political contributions file
  - sample period: 1984 – 2004
  - 1,805 unique U.S. firms (9.1% of CRSP/Compustat firms; 59.3% of total market cap)
- Political activism
  - covers 813,692 hard money contributions
  - worth $933,002,309 in 2005 dollars
  - 5,584 unique political candidates
- Innovation
  - 404,536 patents granted
  - 3,814,120 patent citations
- Our sample considers
  - 67.1% of corporate contributions
  - 27.2% of all political candidates running for office

Findings (table 3)

Panel A: Number of patents

	Effpatent$_{t+1}$				Effpatent$_{t+3}$			
Variable	1	2	3	4	5	6	7	8
Pcand/10²	0.276[a] (0.036)		0.162[a] (0.038)		0.331[a] (0.042)		0.202[a] (0.045)	
Camount/10⁶		0.602[a] (0.099)		0.298[a] (0.093)		0.712[a] (0.117)		0.369[a] (0.107)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.326	0.316	0.574	0.570	0.357	0.349	0.597	0.594
R^2 controls only	0.296	0.296	0.563	0.563	0.333	0.333	0.587	0.587
N	123,531	123,531	16,065	16,065	123,531	123,531	16,065	16,065

Panel B: Patent citations

	Cpatent$_{t+1}$				Cpatent$_{t+3}$			
Variable	1	2	3	4	5	6	7	8
Pcand/10²	0.035[a] (0.006)		0.028[a] (0.007)		0.070[a] (0.011)		0.060[a] (0.014)	
Camount/10⁶		0.075[a] (0.016)		0.053[a] (0.017)		0.148[a] (0.030)		0.109[a] (0.032)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.203	0.202	0.385	0.384	0.275	0.274	0.464	0.462
R^2 controls only	0.201	0.201	0.381	0.381	0.272	0.272	0.458	0.458
N	123,531	123,531	16,065	16,065	123,531	123,531	16,065	16,065

First-stage probit

Variable	Probit Model (1 = active; 0 = not active) Coefficient
Ln(size)	0.187[a]
	(0.005)
Ln(sales)	0.136[a]
	(0.007)
Ln(employees)	0.215[a]
	(0.007)
No. business segments	0.029[a]
	(0.004)
No. geographic segments	-0.062[a]
	(0.005)
BM	-0.000[a]
	(0.000)
Leverage	0.274[a]
	(0.025)
CF	-0.026[b]
	(0.010)
Market share	1.840[a]
	(0.312)
$(\text{Market share})^2$	-3.206[a]
	0.645
Herfindahl index	-0.342[a]
	(0.104)
Regulation indicator	0.773[a]
	(0.017)
Government purchases	0.848[a]
	(0.102)
No. politically active firms	-0.000[a]
	(0.000)
Pct. employees unionized	2.014[a]
	(0.062)
Log likelihood	-30,662
N	143,274

Table 3 economic magnitudes (interquartile range)

Panel A: Number of patents

Variable	$Effpatent_{t+1}$				$Effpatent_{t+3}$			
	1	2	3	4	5	6	7	8
$Pcand/10^2$	0.489		0.435		0.517		0.453	
$Camount/10^6$		0.419		0.393		0.430		0.399
N	123,531	123,531	16,065	16,065	123,531	123,531	16,065	16,065

Panel B: Patent citations

Variable	$Cpatent_{t+1}$				$Cpatent_{t+3}$			
	1	2	3	4	5	6	7	8
$Pcand/10^2$	0.381		0.379		0.395		0.391	
$Camount/10^6$		0.374		0.372		0.380		0.377
N	123,531	123,531	16,065	16,065	123,531	123,531	16,065	16,065

Subsample analysis (table 5)

Variable	Effpatent$_{t+1}$		Effpatent$_{t+3}$		Cpatent$_{t+1}$		Cpatent$_{t+3}$	
	1	2	3	4	5	6	7	8
Panel A: Contributions to influential Congressional committees								
$Pcand^{Committee}/10^2$	0.538[a]		0.667[a]		0.076[b]		0.158[a]	
	(0.148)		(0.177)		(0.031)		(0.061)	
$Camount^{Committee}/10^6$		0.972[a]		1.238[a]		0.209[a]		0.413[a]
		(0.343)		(0.412)		(0.075)		(0.141)
R^2	0.560	0.560	0.588	0.589	0.350	0.391	0.465	0.468
N	11,323	11,323	11,323	11,323	11,323	11,323	11,323	11,323
Panel B: Contributions to outside committees								
$Pcand^{Non\text{-}Committee}/10^2$	-0.965[c]		-0.788		-0.036		0.009	
	(0.524)		(0.693)		(0.174)		(0.313)	
$Camount^{Non\text{-}Committee}/10^6$		-1.267		-0.634		0.184		0.775
		(1.243)		(1.686)		(0.506)		(0.871)
R^2	0.617	0.613	0.646	0.645	0.413	0.411	0.499	0.499
N	994	994	994	994	994	994	994	994
Panel C: Contributions to politicians joining/leaving influential committees								
$\Delta Pcand^+$	0.068[a]		0.085[a]		0.011[a]		0.023[a]	
	(0.014)		(0.017)		(0.004)		(0.006)	
$\Delta Pcand^-$	0.007		0.002		0.001		-0.004	
	(0.013)		(0.016)		(0.004)		(0.006)	
$I(\Delta Pcand^+ > \Delta Pcand^-)$		0.086[a]		0.124[a]		0.023[a]		0.049[a]
		(0.027)		(0.033)		(0.009)		(0.015)
$I(\Delta Pcand^+ < \Delta Pcand^-)$		-0.049[c]		-0.071[b]		0.007		-0.003
		(0.027)		(0.034)		(0.009)		(0.015)
R^2	0.559	0.554	0.587	0.583	0.389	0.387	0.465	0.464
N	11,323	11,323	11,323	11,323	11,323	11,323	11,323	11,323

Subsample analysis (table 5)

Variable	Effpatent$_{t+1}$		Effpatent$_{t+3}$		Cpatent$_{t+1}$		Cpatent$_{t+3}$	
	1	2	3	4	5	6	7	8
Panel D: Contributions to politicians joining/leaving influential committees during election and off-election years								
				Election year coefficients				
$\Delta Pcand^{+}$	0.036		0.059		-0.001		0.014	
	(0.039)		(0.049)		(0.010)		(0.014)	
$\Delta Pcand^{-}$	0.041		0.025		0.022		0.015	
	(0.037)		(0.047)		(0.015)		(0.024)	
$I(\Delta Pcand^{+} > \Delta Pcand^{-})$		0.040		0.082		0.013		0.037
		(0.046)		(0.057)		(0.015)		(0.025)
$I(\Delta Pcand^{+} < \Delta Pcand^{-})$		-0.050		-0.098		0.030		0.020
		(0.053)		(0.069)		(0.021)		(0.031)
				Non-election year coefficients				
$\Delta Pcand^{+}$	0.071[a]		0.088[a]		0.012[a]		0.024[a]	
	(0.013)		(0.016)		(0.004)		(0.006)	
$\Delta Pcand^{-}$	0.004		-0.000		-0.000		-0.005	
	(0.013)		(0.016)		(0.004)		(0.006)	
$I(\Delta Pcand^{+} > \Delta Pcand^{-})$		0.107[a]		0.144[a]		0.027[a]		0.053[a]
		(0.031)		(0.038)		(0.010)		(0.016)
$I(\Delta Pcand^{+} < \Delta Pcand^{-})$		-0.043		-0.060		0.003		-0.008
		(0.031)		(0.039)		(0.010)		(0.017)
R^2	0.559	0.554	0.587	0.583	0.389	0.387	0.465	0.464
N	11,323	11,323	11,323	11,323	11,323	11,323	11,323	11,323

Instrumental variables (table 6)

Panel A: First-stage regression. Tests for relevant instrument

	Average sensitivity	Average R^2	Total first-stage estimates	Positive first-stage estimates	Negative first-stage estimates	Positive and significant first-stage estimates	Negative and significant first-stage estimates
Variable	-0.0295 [a] (0.004)	0.004	17,873	6,434	11,439	297	1,024

Panel B: Second stage regression. Dependent variable - number of patents

	EW results			VW results		
Variable	Δ Effpatent$_{t+2}$	Δ Effpatent$_{t+3}$	Δ Effpatent$_{t+4}$	Δ Effpatent$_{t+2}$	Δ Effpatent$_{t+3}$	Δ Effpatent$_{t+4}$
Sensitivity to prior margin of victory	-1.028 [a] (0.285)	-1.747 [b] (0.623)	-2.508 [a] (0.850)	-0.851 [a] (0.236)	-1.446 [b] (0.517)	-2.078 [a] (0.706)
R^2	0.123	0.103	0.120	0.123	0.104	0.120
N	20	20	20	20	20	20

Panel C: Second stage regression. Dependent variable - patent citations

	EW results			VW results		
Variable	Δ Cpatent$_{t+2}$	Δ Cpatent$_{t+3}$	Δ Cpatent$_{t+4}$	Δ Cpatent$_{t+2}$	Δ Cpatent$_{t+3}$	Δ Cpatent$_{t+4}$
Sensitivity to prior margin of victory	-0.018 (0.020)	0.011 (0.027)	-0.058 [b] (0.026)	-0.015 (0.016)	-0.009 (0.022)	-0.048 [b] (0.021)
R^2	0.006	0.002	0.004	0.006	0.002	0.040
N	20	20	20	20	20	20

Natural experiment (1994 election)
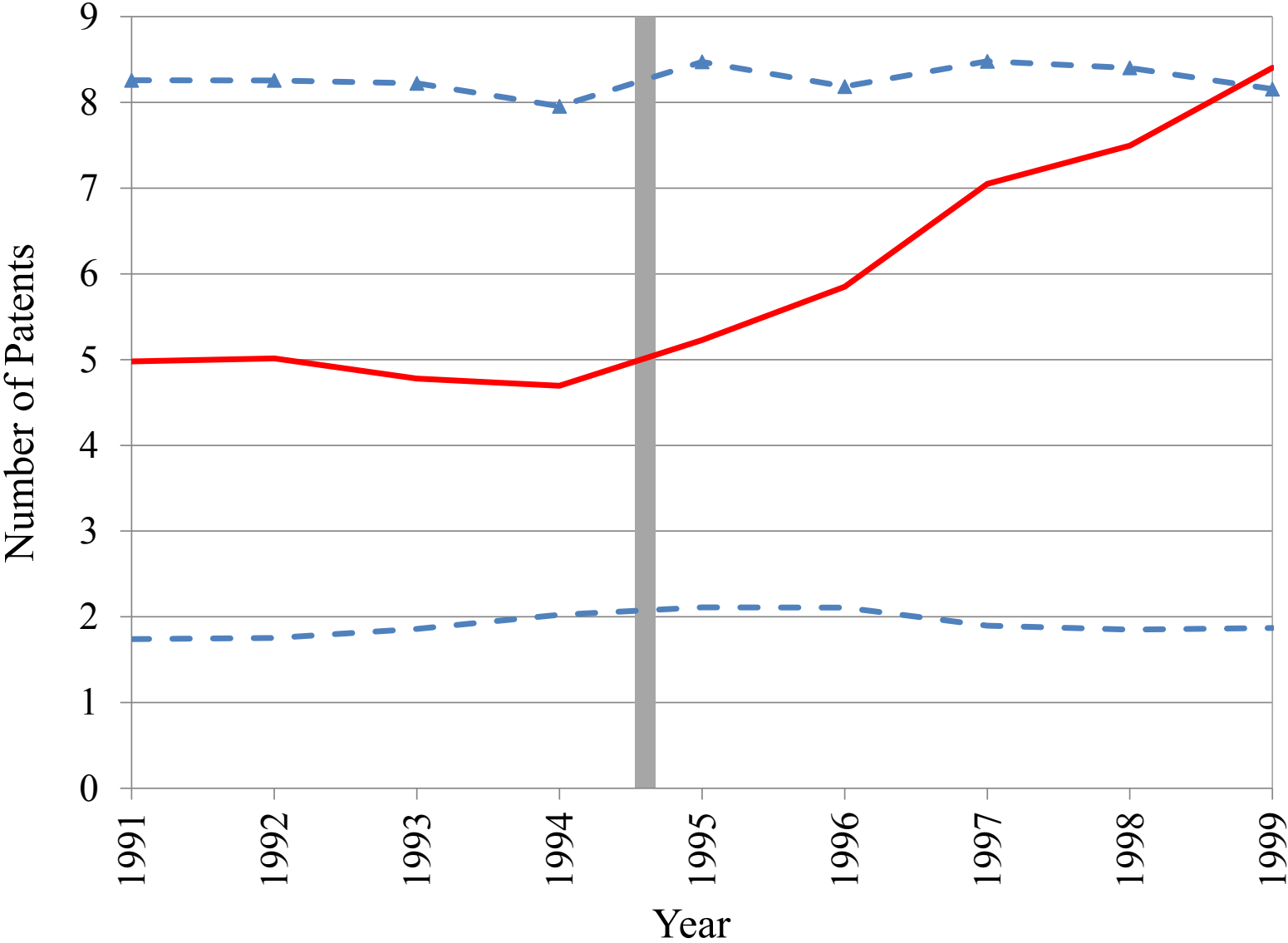
Natural experiment (placebo 1987 election)
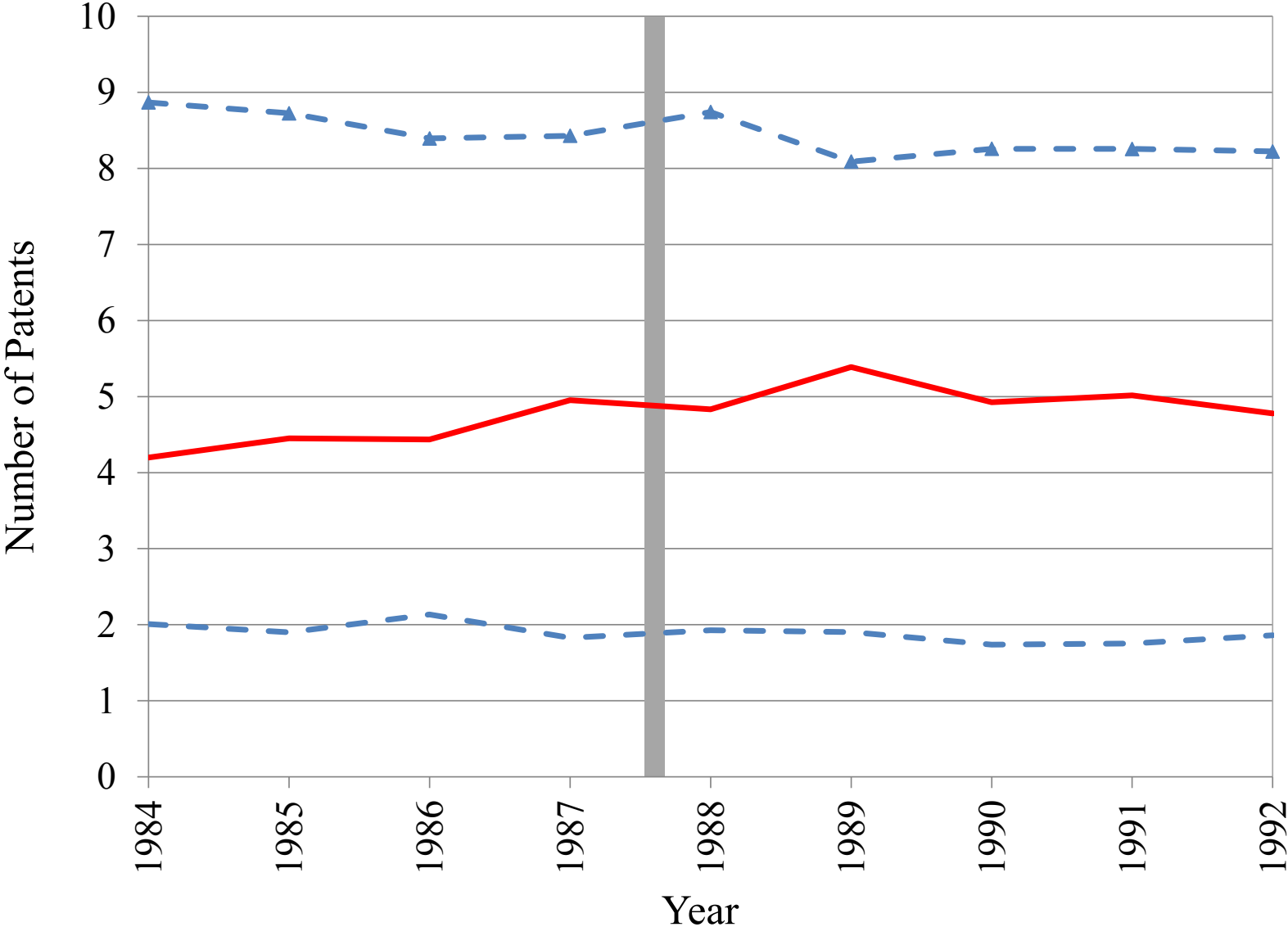
Channels

How does political activism affect firm investment decisions, especially investment in innovation?

- Reduced competition
  - above evidence inconsistent with the hypothesis

- Information acquisition
  - "political intelligence" literature
    - Nagy and Painter (2012), Kim (2012), Bainbridge (2012)

- Procurement

Political contributions, innovation, and future legislation (table 9)

Panel B: Regression results for new innovator firms						
	All deregulation		Congressional Acts		Executive orders	
Variable	1	2	3	4	5	6
New innovator	0.002		0.004[b]		-0.001	
	(0.002)		(0.002)		(0.005)	
New innovator × Politically active		0.006[b]		0.008[a]		0.001
		(0.002)		(0.002)		(0.007)
New innovator × Politically inactive		-0.004		-0.004		-0.004
		(0.007)		(0.007)		(0.008)
Log likelihood	-233.78	-232.95	-122.82	-122.01	-135.61	-135.51
Pseudo R^2	0.001	0.004	0.004	0.010	0.000	0.001
N	8,812	8,812	8,812	8,812	8,812	8,812

Panel C: Regression results for deregulated firms						
	All deregulation		Congressional Acts		Executive orders	
Variable	1	2	3	4	5	6
Δ Ln(abstech)	1.008[a]		0.658[a]		1.021[a]	
	(0.334)		(0.209)		(0.426)	
Δ Ln(abstech) × Politically active		1.235[a]		0.907[a]		1.173[a]
		(0.247)		(0.210)		(0.311)
Δ Ln(abstech) × Politically inactive		0.078		0.020		0.124
		(0.090)		(0.054)		(0.114)
Log likelihood	-588.13	-587.69	-415.38	-415.00	-334.41	-334.42
Pseudo R^2	0.004	0.005	0.002	0.003	0.017	0.005
N	1,281	1,281	1,281	1,281	1,281	1,281

Patent activity of politically active and inactive firms in government connected and non-connected industries (table 11)

Variable	Politically active firms	Politically inactive firms	Difference
Panel C: DiD results			
Government connected industries	1.811	1.418	0.393
			(1.18)
Non-connected industries	2.326	2.132	0.194
			(0.96)
Difference	-0.515	-0.715	0.199
			(0.73)

Why should anyone care?

- Political contributions are valuable
  - we analyse one (of potentially many) sources of value
  - obvious question – why not everyone contribute?
    - related to literature on determinants on political participation (Masters and Keim (1985), Zardkoohi (1985), Grier, Munger and Roberts (1991, 1994), Hart (2001))
- Results related to literature on determinants of innovation
  - Spiegel and Tookes (2008), Ferreira, Manso, and Silva (2014), Seru (2014), Atanassov (2013), Hirshleifer, Low, and Teo (2012), Kortum and Lerner (2000), Tian and Wang (2013), others
- Results also related to literature on policy uncertainty and real investment
  - Barro (1991), Pindyck and Solimano (1993), Alesina and Perotti (1996), Bloom, Bond, and Van Reenen (2007), Julio and Yock (2012, 2014)