Politics in Financial Intermediation: Evidence from Brazil

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Motivation

- Who receives bank credit?
- Theory: most promising projects (highest NPV)
- From a macro perspective, this is important for growth (Rajan & Zingales, 1998)
- Reality: multiple factors may matter, including politics

Previous literature

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- What about political finance beyond attempts to influence elections?
- Relatively little evidence
- (Exceptions: e.g. lending to politically connected firms)

Research Question and Empirical Setting

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- Boom is created by exogenous change in global commodity prices

Research Question and Empirical Setting

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- Windfalls: exploit mining and oil&gas booms, which lead to bank deposit inflows
- Boom is created by exogenous change in global commodity prices
- Focus on Brazil
  - 9th largest economy in the world
  - Large endowments of natural resources (iron ore, oil,...)
  - Large banking sector
  - But: developing/emerging economy
  - suffering from institutional weaknesses & poverty

Outline

- Introduction
- Preview of findings & Contribution
- Background and Data
  - Natural resources
  - Banking
  - Politics
- Empirical Strategy & Results
- Dig deeper: Mechanisms
- Conclusion

Preview of findings: Reallocation of liquidity (w/o politics)

- Brazil has 27 provinces and 5,570 municipalities
- Nearly 4,000 munis host bank branches
- 244 munis host natural resource deposits (minerals, oil&gas)
- A given bank has branch in at least 1 muni. Our sample=70 banks
- Ex.: B.d. Brasil. In 2,000 munis, 107 resource munis, HQ in Brasilia

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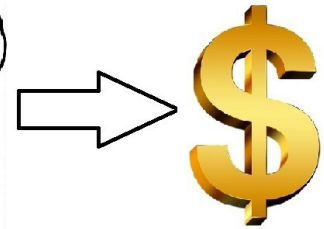

Preview of findings: Political dimension of reallocation

Muni is politically aligned with president

Muni is NOT politically aligned with president

Contribution

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- $\rightarrow$ We contribute to literature on political lending
- $\rightarrow$ and to literature on spatial reallocation of bank liquidity after windfall gains (Gilje et al. 2016, Bustos et al. 2020)

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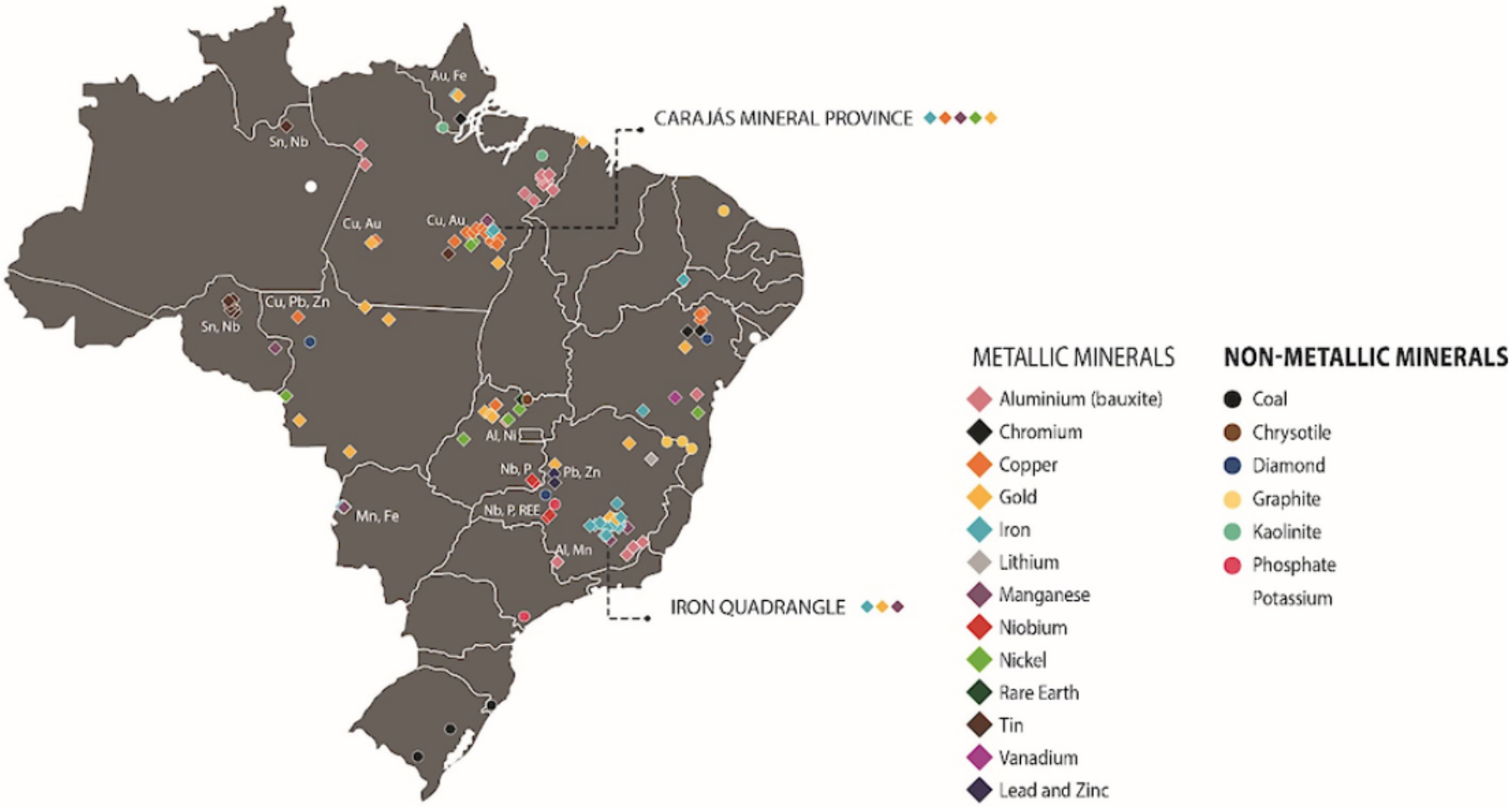
Background and Data: Natural Resources

- Oil and gas sector $\approx$ 10% of Brazil's GDP
- Mining sector: $\approx$ 2.5% (mostly iron ore)

Mineral endowment is spread across Brazil

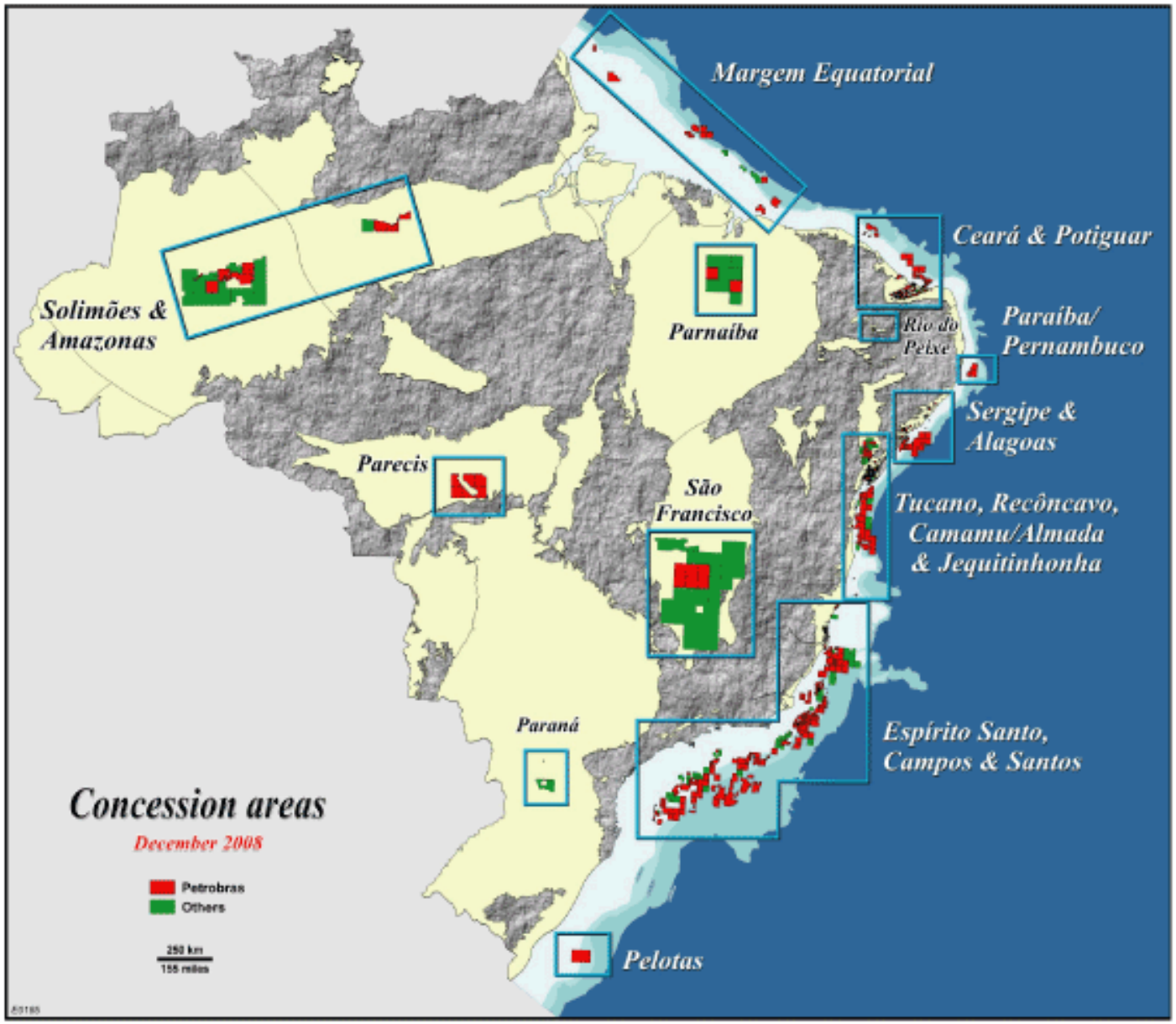
Figure 2.1. **Location of mineral deposits in Brazil**



Source: ANM.

Graph source: OECD.

Oil&gas endowment is spread across Brazil



Graph source: peakoilbarrel.com.

Data: Natural Resources

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- Oil&gas: 158 munis with positive endowment in 2000
- Average endowment = $18 billion
- For each muni, we compute total resource endowment in $
- 244 munis with positive resource endowment

Example of a major mining municipality

- Parauapebas: Population of 270,000
- Gold, copper, iron ore, manganese
- Home of world's largest iron ore mine, huge reserves (Carajás mine)

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- Average bank operates in 123 municipalities (median = 8)

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  - Party can nominate mayor candidate alone or as part of pre-electoral coalition (PEC; more common)
  - Mayor takes office in year after elec (Jan 1)

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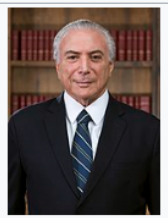
- True for 30% of muni-years over 2001-2022

Background and Data: Politics

No.	Portrait	Name	Elected	Term of office		Political party
				Took office	Left office	
34		Fernando Henrique Cardoso (born 1931)	1994 1998	1 January 1995	31 December 2002	PSDB
35		Luiz Inácio Lula da Silva (born 1945)	2002 2006	1 January 2003	31 December 2010	PT
36		Dilma Rousseff (born 1947)	2010 2014	1 January 2011	31 August 2016[x]	PT
37		Michel Temer (born 1940)	—	31 August 2016	31 December 2018	MDB
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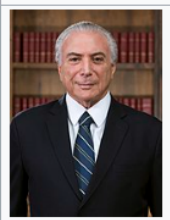
37		Michel Temer (born 1940)	—	31 August 2016	31 December 2018	MDB
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- Example: muni Porto Velho, Rondonia
- 2005: Alignment from 0 to 1 because winner of 2004 mayor elec was co-nominated by PT (& previous mayor was not)
- 2013: Alignment from 1 to 0 because PEC nominating 2012 winner did not include PT
- Other muni's: Alignment changes due to pres-elec rather than mayor-elec

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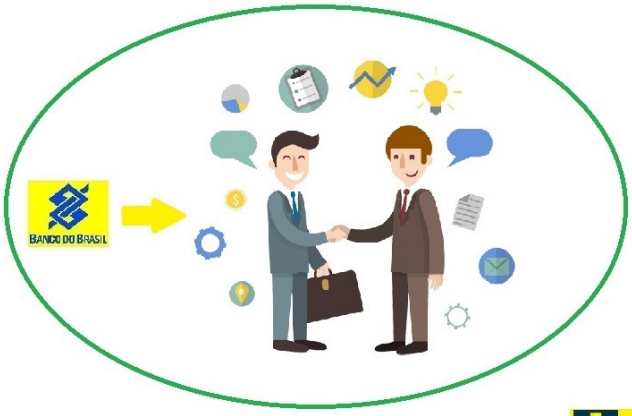
Overview



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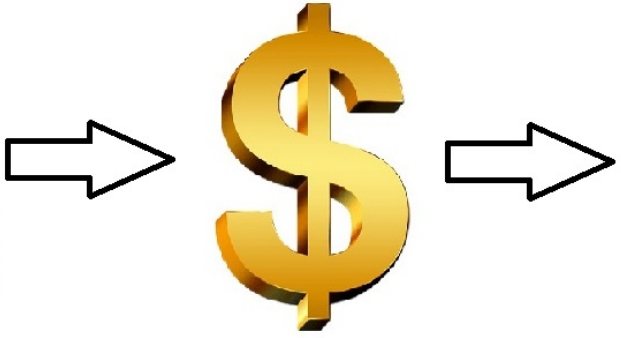
Do resource booms raise local bank branch deposits?



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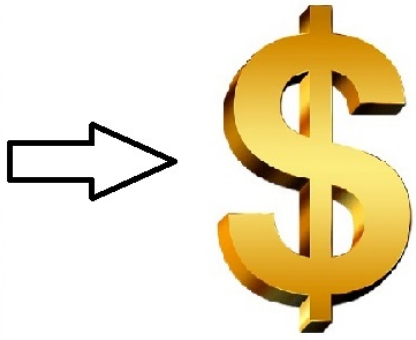

$$Deposits_{i,j,t} = \beta_0 + \beta_1[RESendow_{j,t=0} \times RESprice_{j,t}] + \gamma_{i,j} + \mu_{i,t} + \varepsilon_{i,j,t}$$

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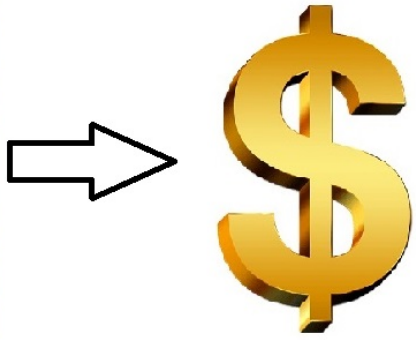

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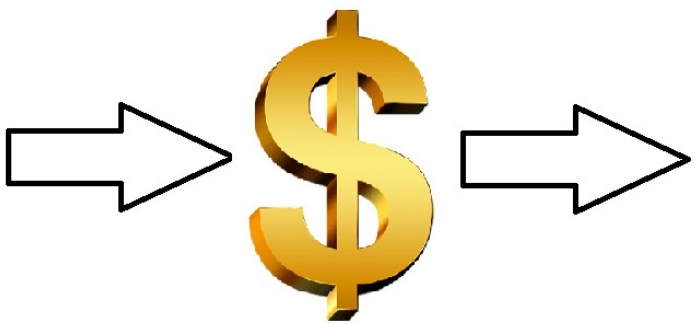
Dependent Variable →	ihs(Deposits)
Unit of Observation →	Bank-muni--year
	(1)
Resource endowment × ihs(Resource price)	0.032** (0.014)
Fixed effects	Bank-Muni, Muni-Year
Observations	154,289

- Mechanisms: wages ↑, resource revenue sharing, supply chain links

Do we observe the same at the bank level?

- Next question: Are local deposit inflows in booming resource munis important enough to influence deposits at the entire bank level?



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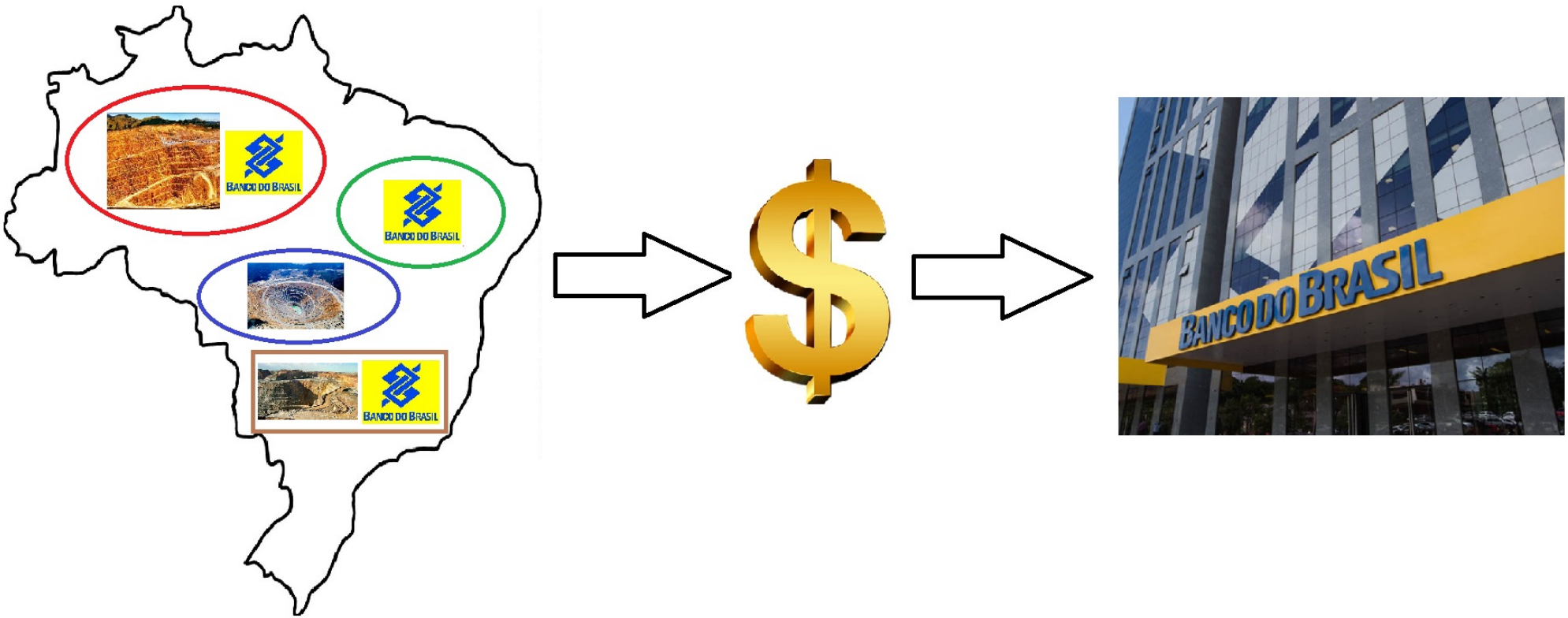

- To answer this, we need a bank-specific boom variable...
- ...instead of a muni-specific boom variable

Defining bank-level resource boom exposure

- Intuition: 3 factors determine a bank's res-boom exposure
  - Which share of my operations is in resource-endowed munis?
  - How large is endowment in endowed munis where I operate?
  - Current global prices of the resources found in these munis =?

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$$BoomExposure_{i,t} = \sum_{j}^{J} \frac{Deposits_{i,j,t=0}}{TotalDeposits_{i,t=0}} \times RESendow_{j,t=0} \times RESprice_{j,t}$$

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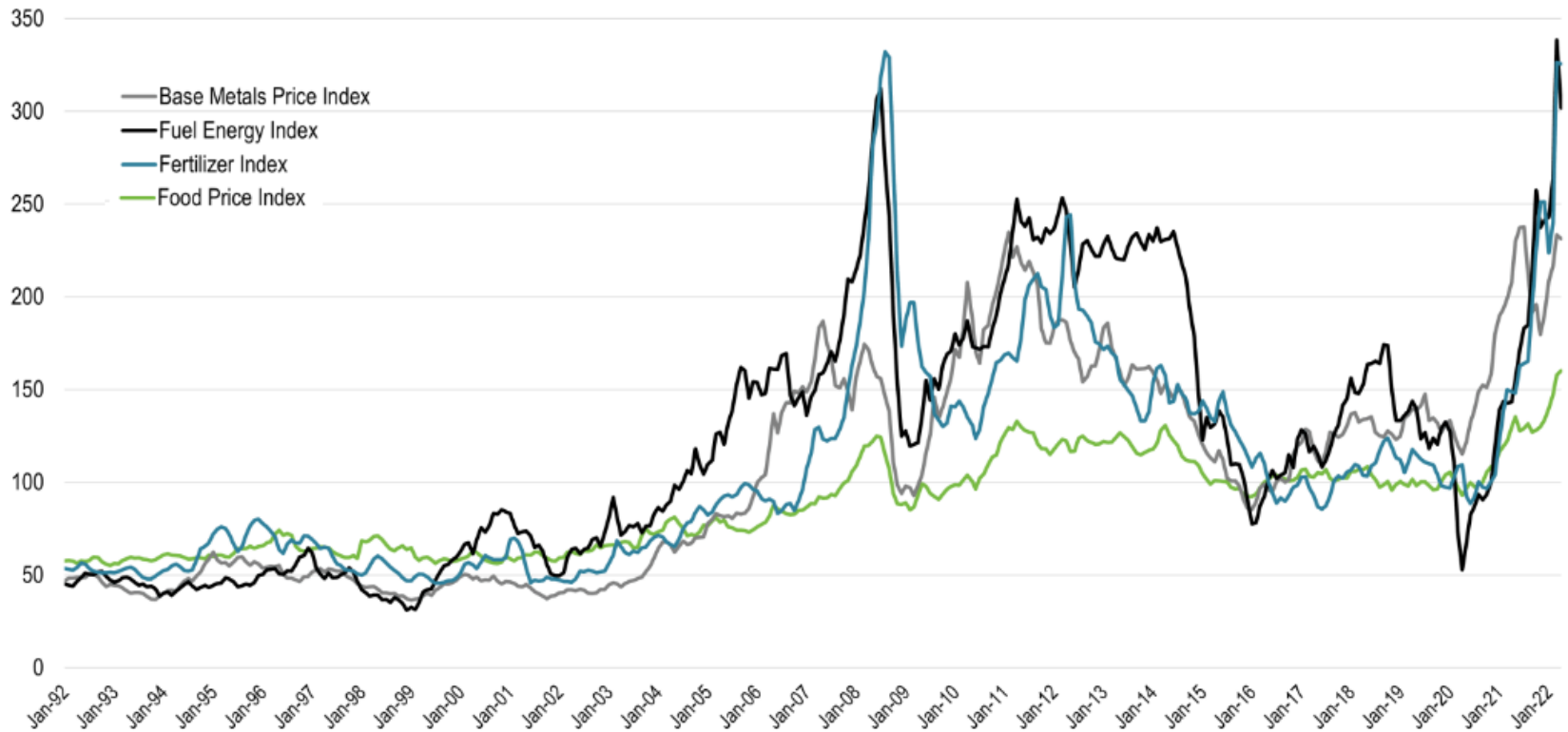
- Deposit share: fixed at t=0 to "avoid" endogenous branch openings
- Endowment: fixed at t=0 because exploration could depend on (large) banks' performance
- Prices vary over time, but determined on world markets

Large variation in natural resource prices over 2001-2022

Main Commodity Price Indexes, 1992-2022



Main Commodity Price Indexes 1992 2022

Source: IMF Primary Commodity Prices. Note: 2016=100.

- Large variation in natural resource prices during 2001-2022

Increased exposure to resource booms raises bank deposits

$$ihs(Deposits_{i,t}) = \beta_0 + \beta_1 ihs(BoomExposure_{i,t}) + \gamma_i + \mu_t + \varepsilon_{i,t}$$

- Inverse hyperbolic sine: take care of banks with zero exposure

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Dependent Variable →	ihs(Deposits)
Unit of Observation →	Bank-year
	(1)
ihs(Exposure)	0.689***
	(0.129)
Fixed effects	Bank, Year
Observations	880
# Banks	70

- Increased exposure to resource booms raises bank deposits

Analyzing credit supply

- We have just seen: Boom exposure $\rightarrow$ Bank deposits $\uparrow$
- Does that lead to more credit, in origin or destination muni's?

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Bank exposure and credit

$$ihs(Credit_{i,j,t}) = \beta_0 + \beta_1 ihs(BoomExposure_{i,t}) + C_{i,j,t-1} + \gamma_{i,j} + \mu_{j,t} + \varepsilon_{i,j,t}$$

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Dependent Variable →	ihs(Credit)	ihs(Credit)
Unit of Observation →	Bank-municipality-year	
Sample →	Resource-endowed (=origin) municipalities	Non-resource-endowed (=destination) municipalities
	(1)	(2)
ihs(Exposure)	0.467*	0.371*
	(0.238)	(0.196)
Fixed effects	Bank-Muni, Muni-Year	Bank-Muni, Muni-Year
Observations	11,382	139,134
# Banks	41	65
# Municipalities	152	2,279

- Exposure ↑ → more credit in endowed & non-endowed muni's

Bank exposure and credit: Political dimension

$$
\begin{aligned}
Credit_{i,j,t} = \; & \delta_0 + \delta_1 BoomExposure_{i,t} \\
& + \delta_2 BoomExposure_{i,t} \times PolAlignment_{j,t} \\
& + C_{i,j,t-1} + \gamma_{i,j} + \mu_{j,t} + \varepsilon_{i,j,t}
\end{aligned}
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Dependent Variable →	ihs(Credit)	
Unit of Observation →	Bank-municipality-year	
Sample →	Non-resource-endowed (=destination) municipalities	
	(1)	(2)
ihs(Exposure)	0.371*	0.370*
	(0.196)	(0.195)
ihs(Exposure) × Political alignment		0.002
		(0.007)
Fixed effects	Bank-Muni, Muni-Year	Bank-Muni, Muni-Year
Observations	139,134	139,134
# Banks	65	65
# Municipalities	2,279	2,279

Bank exposure and credit: Political dimension, Part I

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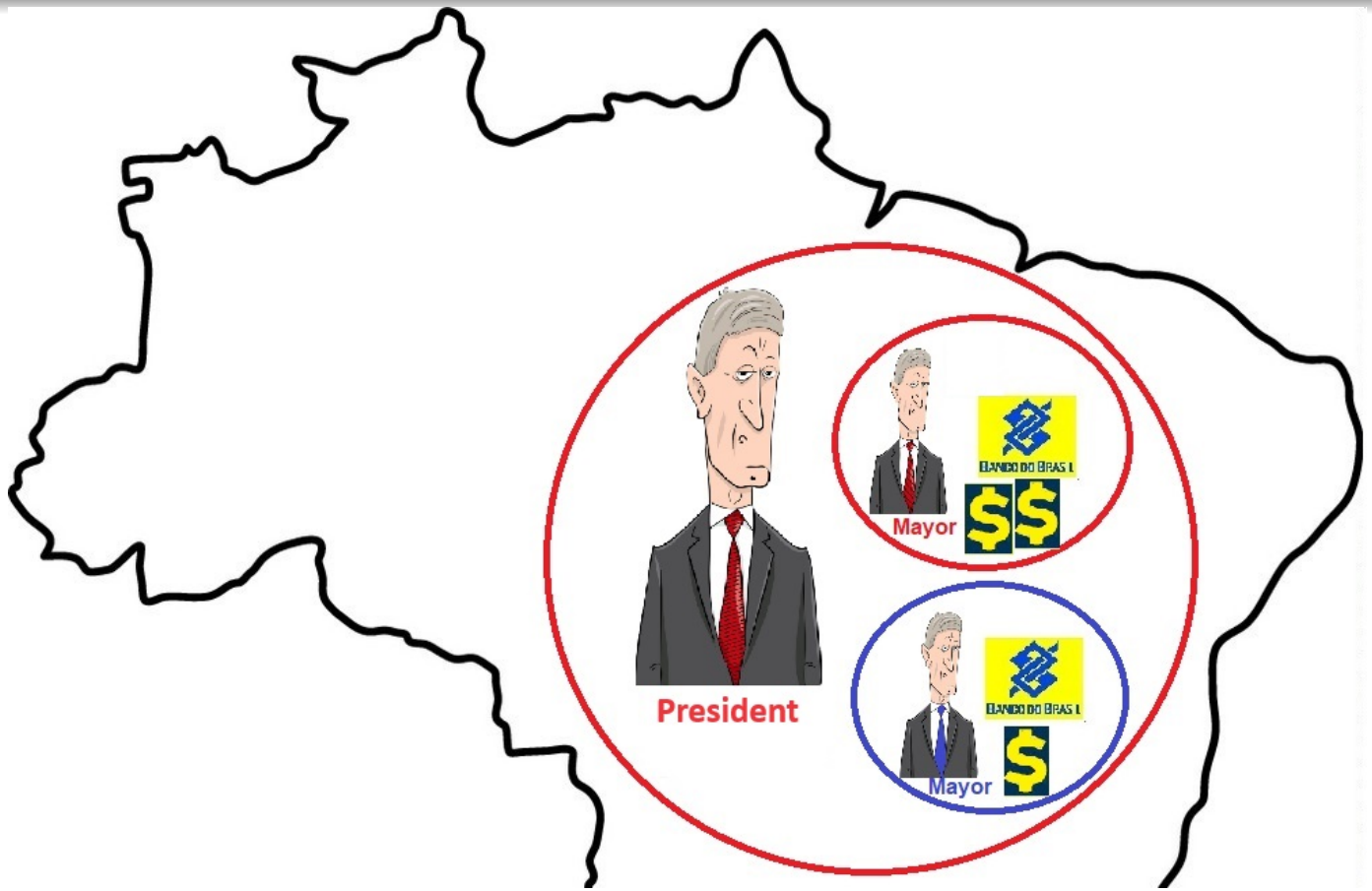
ihs(Credit_{i,j,t}) = \; & \delta_0 + \delta_1 ihs(BoomExposure_{i,t}) \\
& + \delta_2 ihs(BoomExposure_{i,t}) \times PolAlignment_{j,t} \\
& + \delta_3 ihs(BoomExposure_{i,t}) \times PolAlignment_{j,t} \times StateOwned_i \\
& + \omega OtherRelevantInteractions + C_{i,j,t-1} + \gamma_{i,j} + \mu_{j,t} + \varepsilon_{i,j,t}
\end{aligned}
$$

Bank exposure and credit: Political dimension, Part II

Dependent Variable →	ihs(Credit)	
Unit of Observation →	Bank-municipality-year	
Sample →	Non-resource-endowed (=destination) municipalities	
	(1)	(2)
ihs(Exposure)	0.370*	0.428**
	(0.195)	(0.210)
ihs(Exposure) × Political alignment	0.002	-0.016**
	(0.007)	(0.007)
ihs(Exposure) × State-owned		-0.189**
		(0.091)
ihs(Exp.) × Pol. alignm. × State-owned		0.048***
		(0.008)
Fixed effects	Bank-Muni, Muni-Year	Bank-Muni, Muni-Year
Observations	139,134	139,134
# Banks	65	65
# Municipalities	2,279	2,279
Effect of political alignment on state-owned banks' credit in destination municipalities		0.031***
		(0.007)

- Res-windfall → state-owned banks grant more credit to aligned m.
- Private banks grant less credit to munis aligned with president

Main result



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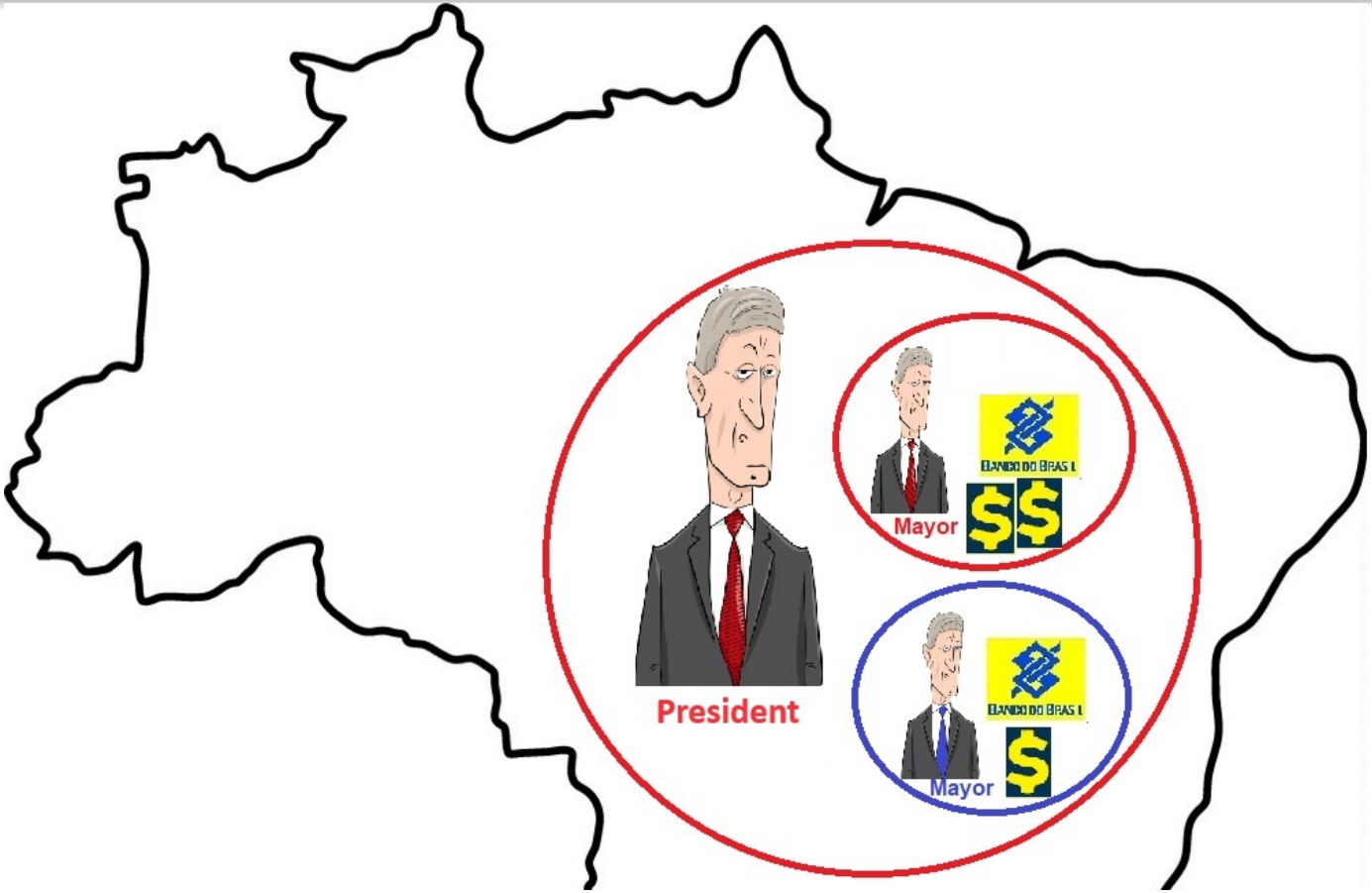

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- If not, then what's the mechanism?
- Is it bad? Misallocation, or efficient?

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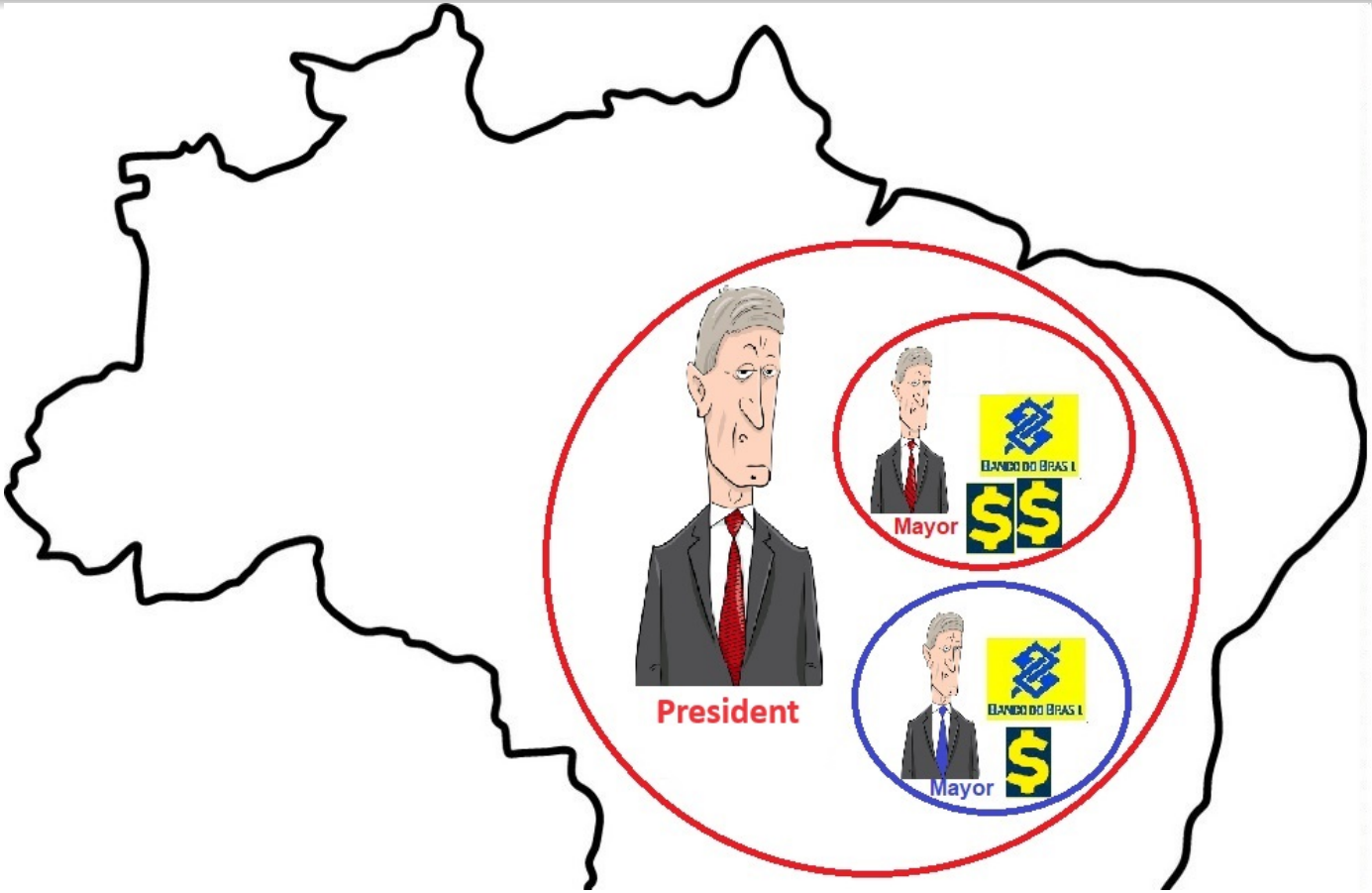

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- Faced w. 2 munis, private banks grant less credit to aligned m.

Analyzing financial consequences of political lending

$$ROA_{i,j,t} = \beta_0 + \beta_1 ihs(BoomExposure_{i,t}) + C_{i,j,t-1} + \gamma_{i,j} + \mu_{j,t} + \varepsilon_{i,j,t}$$

Analyzing financial consequences of political lending

$$ROA_{i,j,t} = \beta_0 + \beta_1 ihs(BoomExposure_{i,t}) + C_{i,j,t-1} + \gamma_{i,j} + \mu_{j,t} + \varepsilon_{i,j,t}$$

Dependent Variable →	Bank-municipality-level Return on Assets in %			
Sample →	Non-resource-endowed (=destination) municipalities			
Timing of *Exposure* →	Current		(t–1)	
	(1)	(2)	(3)	(4)
ihs(Exposure)	1.063	1.045	-2.538	-2.589
	(0.941)	(0.905)	(1.827)	(1.849)
ihs(Exposure) × Political alignment		0.129		0.021
		(0.126)		(0.021)
ihs(Exposure) × State-owned		-0.062		0.183
		(0.068)		(0.180)
ihs(Exposure) × Political alignment × State-owned		-0.169		-0.080*
		(0.124)		(0.046)
Observations	139,134	139,134	139,134	139,134

- Political lending reduces profitability → evidence of misallocation

Outline

- Introduction
- Preview of findings & Contribution
- Background and Data
  - Natural resources
  - Banking
  - Politics
- Empirical Strategy & Results
- Dig deeper: Mechanisms
  - Role of elections
  - Other potential channels
  - Who receives political credit?
- Conclusion

Mechanisms

Dependent Variable →	ihs(Credit)						
Sample →	Non-resource-endowed (destination) municipalities						
Explored Heterogeneity →	Election Year	Full Election Cycle (Baseline= Elec year)	Political competition		Corruption measure	Level of economic development	Urban vs. Rural
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ihs(Exposure) × Political alignment × State-owned	0.044***	0.048**	0.028***	0.025***	0.043***	0.050***	0.041***
	(0.009)	(0.019)	(0.007)	(0.007)	(0.014)	(0.010)	(0.011)
ihs(Exp.) × Pol. alignment × State-owned × Municipal election year	0.003						
	(0.022)						
ihs(Exp.) × Pol. alignment × State-owned × 1Y before municipal election year		0.007					
		(0.011)					
ihs(Exp.) × Pol. alignment × State-owned × 2Y before municipal election year		0.004					
		(0.026)					
ihs(Exp.) × Pol. alignment × State-owned × 3Y before municipal election year		-0.036					
		(0.030)					
ihs(Exp.) × Pol. al. × State-o. × Last municipal election won by large margin			0.040***				
			(0.010)				
ihs(Exp.) × Pol. al. × State-o. × Victory margin in last mun. elec. (sc. by sdev)				0.024***			
				(0.006)			
ihs(Exp.) × Pol. alignment × State-owned × Corrupt municipality					-0.031		
					(0.033)		
ihs(Exp.) × Pol. alignment × State-owned × Large GDP per capita						-0.005	
						(0.013)	
ihs(Exp.) × Pol. alignment × State-owned × Urban municipality							0.009
							(0.018)

Mechanisms

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- Political lending not stronger in year of muni mayor election (elec in Oct.)
- c2: No significant difference in effect across all years of elec cycle
- Difference across mayors that won with different vote share margin?

Mechanisms

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							(0.018)

- Larger effect if aligned mayor won the election by a large margin
- → Channel liquidity windfall to strong allies (where money is more safe?)
- ...or mayors with large local pol-support have more bargaining power?

Mechanisms

- Other sources of heterogeneity / channels?

Dependent Variable →	ihs(Credit)						
Sample →	Non-resource-endowed (destination) municipalities						
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						(0.013)	
ihs(Exp.) × Pol. alignment × State-owned × Urban municipality							0.009
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- Local level of corruption or economic development have no effect

Who gets those politically motivated loans?

- In a politically aligned muni, who is recipient of those politically motivated loans?

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Who gets those politically motivated loans?

- In a politically aligned muni, who is recipient of those politically motivated loans?
- Claessens et al. (2008): firms that donate to (elec-winning) federal deputies gain more credit afterwards
- $\rightarrow$ could it be that aligned mayors channel credit to those who donated to the mayor in electoral campaign?
- We show results that are consistent with this

President party mayors get more elec donations

Dependent variable →	ln(Donations)			
Included Donations →	All donations		Donations by physical people	
Sample →	All	Excl. donations above 90th percentile	All	Excl. donations above 90th percentile
	(1)	(2)	(3)	(4)
Mayor candidate is (co-)nominated by president party	0.204***	0.120***	0.265***	0.124**
	(0.023)	(0.025)	(0.053)	(0.050)
Fixed effects	Candidate, Election	Candidate, Election	Candidate, Election	Candidate, Election
Observations	23,019	22,312	7,768	7,376

- Conjecture: Donors know that under a mayor candidate who is aligned with president, more money would flow in after election → donate more to obtain a share of that extra money

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Conclusion

- Politically motivated lending, unrelated to elections
- More lending to munis where mayor has strong local support
- Negatively affects lender profitability, suggesting misallocation
- Developing countries may struggle to efficiently absorb large financial gains due to institutional weaknesses