

The Real Effects of Banking the Poor: Evidence From Brazil

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Motivation

- In 2017, around 1.7 billion adults were unbanked (World Bank Findex Database)
- Consensus that finance matters for economic development, but:

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- In 2017, around 1.7 billion adults were unbanked (World Bank Findex Database)
- Consensus that finance matters for economic development, but:
 - Exact channels? \Rightarrow need rich micro-data
 - Distributive effects? \Rightarrow need universe of workers in panel

Question

How does lifting regions from financial autarky affect development and wage inequality?

This paper

2004: Brazilian government expands government-owned banks in cities not served previously ⇒ DiD for financial development

This paper

2004: Brazilian government expands government-owned banks in cities not served previously \Rightarrow DiD for financial development

1. Large increase in overall financial development

\approx "First stage"

2. Aggregate effect: employment, wages, firm dynamics

3. Distributive effect : $\text{var}[\text{wage}] + 15\%$

- Driven by a large increase in wages at the top
- Explained by skill scarcity

Outline

1. Institutional Details and Framework
2. Data and Empirical Strategy
3. Aggregate Effect: Financial and Economic Development
4. Distributive Effect

The banks for all (“Banco para Todos”) program

- Federal government program introduced in 2004
 - Part of the government's 2004-2007 multi-year plan (*Plano Plurianual*)
- Promoted physical presence of government-owned banks
 - Bank branches + correspondent banking outlets
- According to the government, by 2007, public banks had:
 - Opened 7.8 million new accounts
 - Banked 1.46 million low-income people

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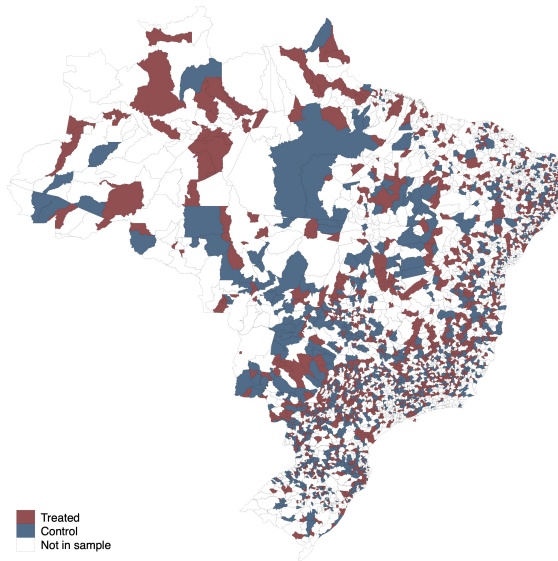
Data

- Matched employer-employee data from *Relação Anual de Informações* (RAIS)
 - Universe of tax-registered firms in Brazil
 - Wages, education, occupation, race, age, and gender
 - Aggregate at city-level: 2000–2014
- City-level bank branches data: ESTBAN
 - No correspondent banking outlets
- City characteristics: IBGE and Census

Empirical strategy

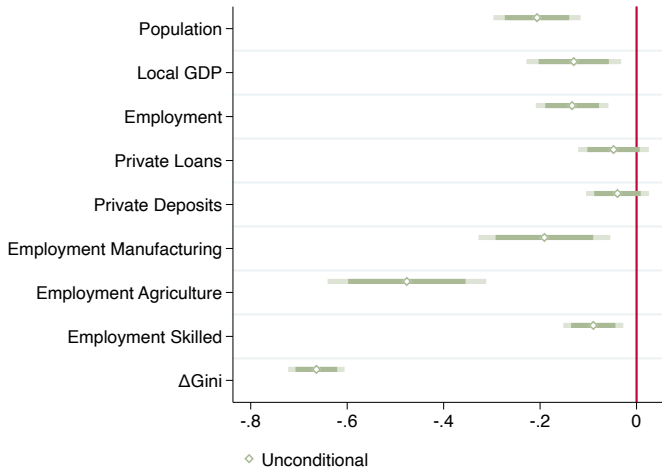
- D-i-D
 - **Treated**: cities without a public branch before 2004
 - **Control**: cities with a public branch before 2004
- Ideally: reform is random and treated and control are similar

Location of treated and control cities



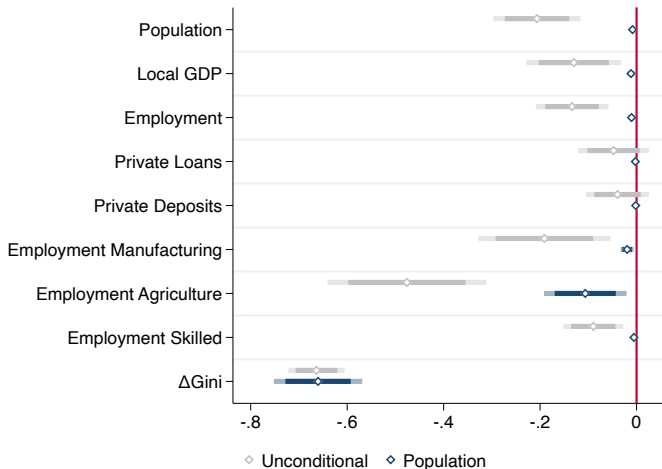
Balance covariate test (2000–2004)

- Unconditionally very different



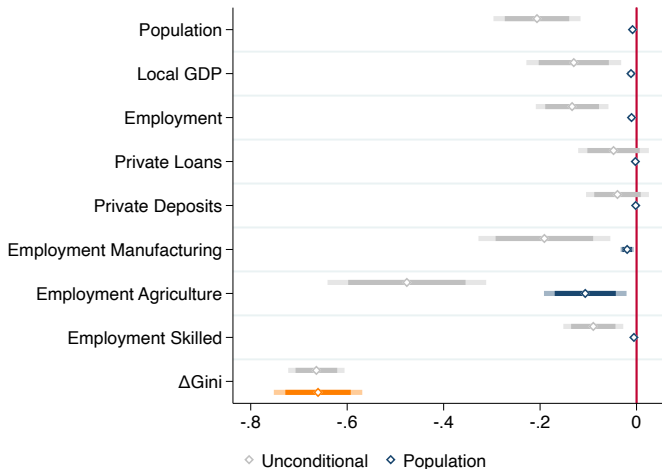
Balance covariate test (2000–2004)

- Match on **population quintile**: within 0.2 standardized band (Imbens and Rubin, 2015)



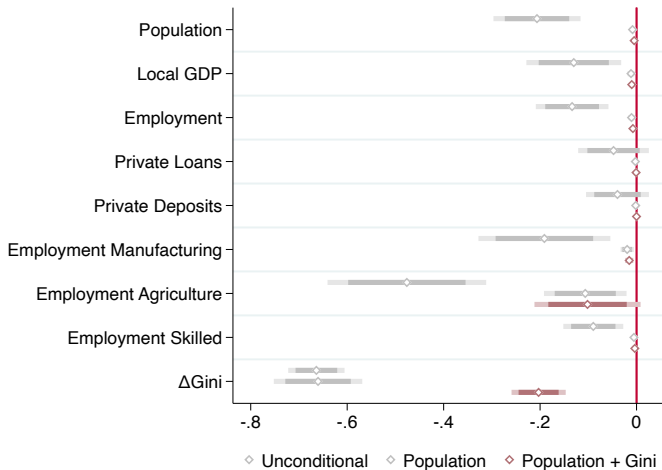
Balance covariate test (2000–2004)

- Except Δ gini \Rightarrow match on that and take three closest



Balance covariate test (2000–2004)

- Almost **complete balance** (will show no pre-trend in event study + robustness different matching)



Specification: matched DiD

City c , belonging to pair p in year t

$$Y_{c,p,t} = \beta \textit{Treated}_c \times \textit{Post}_t + \theta_c + \delta_{p,t} + \varepsilon_{p,c,t}$$

- **Treated** : Cities with no public branch before 2004

Specification: matched DiD

City c , belonging to pair p in year t

$$Y_{c,p,t} = \beta \textit{Treated}_c \times \textit{Post}_t + \theta_c + \delta_{p,t} + \varepsilon_{p,c,t}$$

- Treated : Cities with no public branch before 2004
- City : Within city variation

Specification: matched DiD

City c , belonging to pair p in year t

$$Y_{c,p,t} = \beta \textit{Treated}_c \times \textit{Post}_t + \theta_c + \delta_{p,t} + \varepsilon_{p,c,t}$$

- Treated : Cities with no public branch before 2004
- City : Within city variation
- Pair×year : All correlations between covariates and program

Specification: matched DiD

City c , belonging to pair p in year t

$$Y_{c,p,t} = \beta \textit{Treated}_c \times \textit{Post}_t + \theta_c + \delta_{p,t} + \varepsilon_{p,c,t}$$

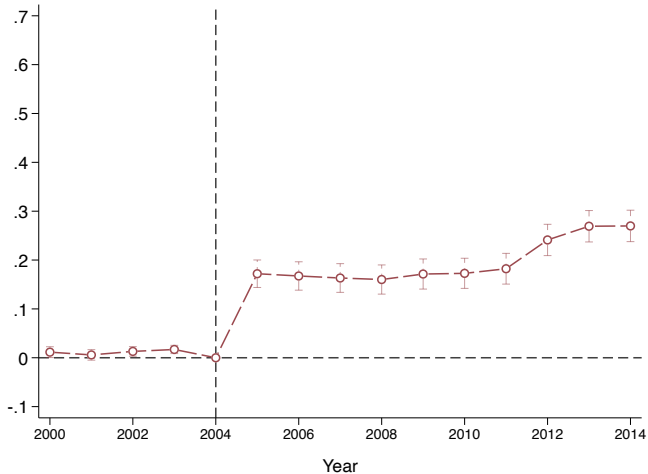
- Key identifying **assumption**:
 - NOT initial presence of government banks is random
 - NOT common support in the level of covariates
 - Only that treated and control cities would have evolved in parallel absent the reform
 - ⇒ Graphical evidence

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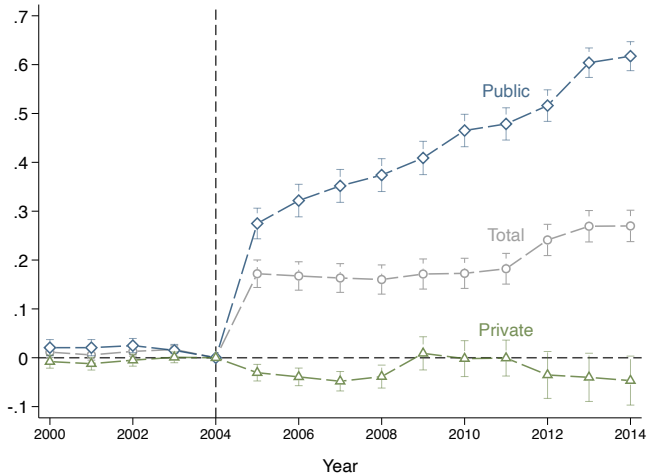
Effect on financial development

- Increase in probability of having access to a bank branch



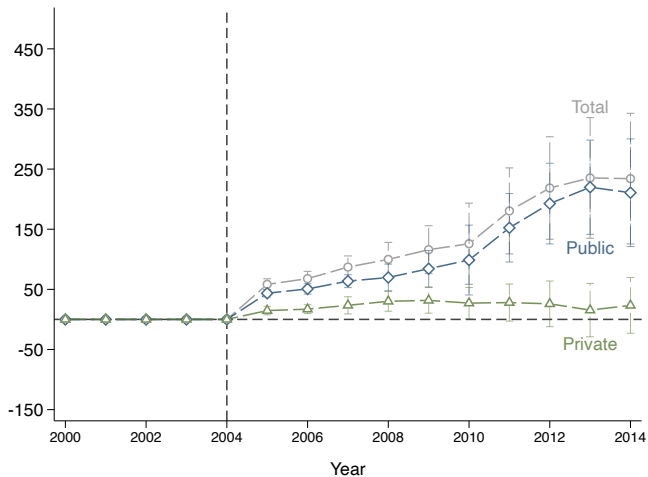
Effect on financial development

- Driven by public banks



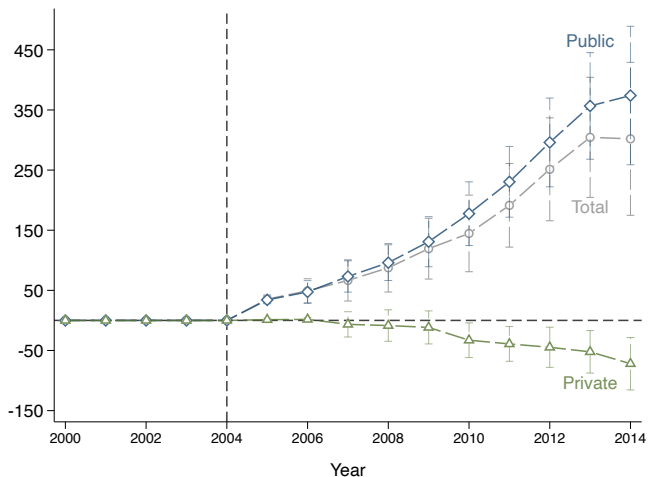
Effect on financial development

- Deposits per capita



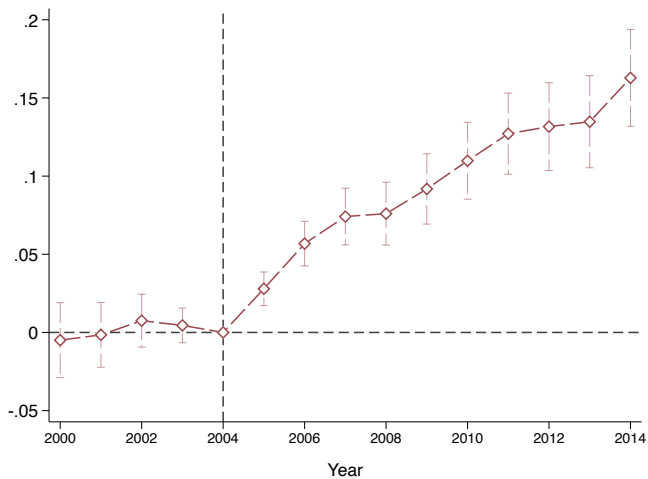
Effect on financial development

- Credit per capita \Rightarrow \uparrow financial development steady state \neq one time infusion [Table](#) [Graph-log](#)



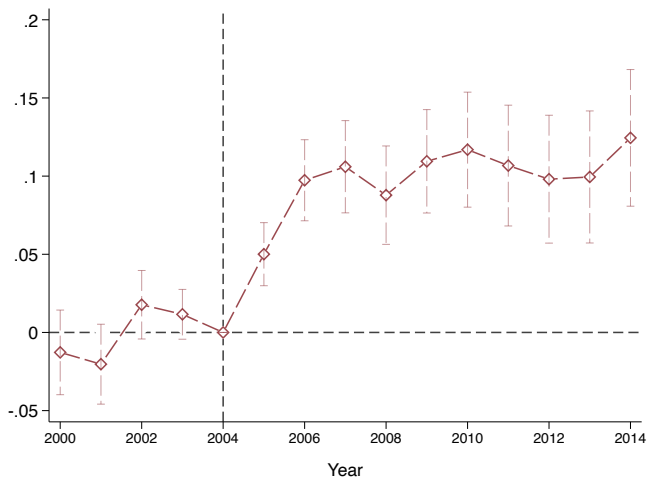
Effect on economic development (1)

- # firms \uparrow



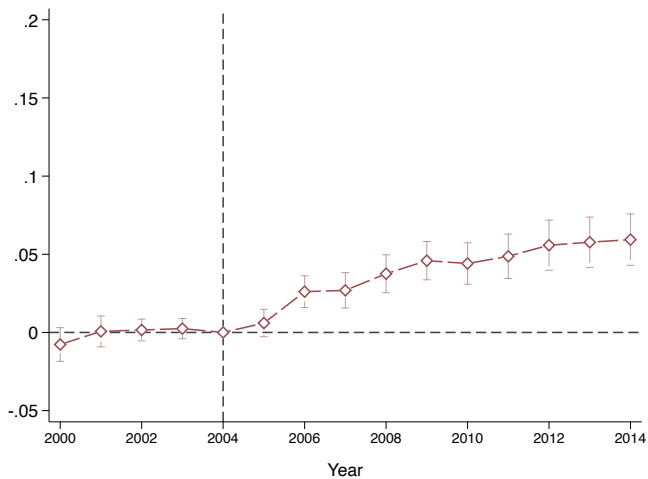
Effect on economic development (1)

- Employment \uparrow



Effect on economic development (1)

- Mean wage \uparrow



Effect on economic Development (2)

- Firms expand at the **extensive** and **intensive** margin (establishment = pre-reform)

Dependent variable	# Firms	Establishment size				
	(1)	(2)	(3)	(4)	(5)	(6)
Treated×Post	0.098*** (0.013)	0.101*** (0.015)				
City FE	✓	✓				
Match×Year FE	✓	✓				
Observations	79,995	79,995				

Effect on economic Development (2)

- Employment ↑

Dependent variable	# Firms	Establishment size	Employment			
	(1)	(2)	(3)	(4)	(5)	(6)
Treated×Post	0.098*** (0.013)	0.101*** (0.015)	0.100*** (0.016)			
City FE	✓	✓	✓			
Match×Year FE	✓	✓	✓			
Observations	79,995	79,995	79,995			

Effect on economic Development (2)

⇒ Mean wage ↑

Dependent variable	# Firms	Establishment size	Employment	Wage		
	(1)	(2)	(3)	(4)	(5)	(6)
Treated×Post	0.098*** (0.013)	0.101*** (0.015)	0.100*** (0.016)	0.041*** (0.006)		
City FE	✓	✓	✓	✓		
Match×Year FE	✓	✓	✓	✓		
Observations	79,995	79,995	79,995	79,995		

Effect on economic Development (2)

- ↑ industrial diversification (e.g., Hausmann-Rodrik, 2003; Imbs-Wacziarg, 2003)

Dependent variable	# Firms	Establishment size	Employment	Wage	# Industries	HHI-Industries
	(1)	(2)	(3)	(4)	(5)	(6)
Treated×Post	0.098*** (0.013)	0.101*** (0.015)	0.100*** (0.016)	0.041*** (0.006)	0.047*** (0.007)	-0.010** (0.004)
City FE	✓	✓	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓	✓	✓
Observations	79,995	79,995	79,995	79,995	79,995	79,995

Mechanism: monitoring or fixed investment costs?

- Monitoring costs/ soft information (Greenwood and Jovanovic, 1990)
- Non-convex costs (Buera, Kaboski, and Shin, 2011)

Mechanism: monitoring or fixed investment costs?

- Monitoring costs/ soft information (Greenwood and Jovanovic, 1990)
 - Theory : local banks better at screening borrowers
 - Prediction : higher effect in banking deserts
 - Proxy : distance to nearest city with a bank
 - Test : cities closer vs. farther from a bank
- Non-convex costs (Buera, Kaboski, and Shin, 2011)

Mechanism: monitoring or fixed investment costs?

- **Monitoring costs/ soft information** (Greenwood and Jovanovic, 1990)
 - Theory : **local** banks better at **screening** borrowers
 - Prediction : higher effect in **banking deserts**
 - Proxy : **distance** to nearest city with a bank
 - **Test** : cities **closer** vs. **farther** from a bank
- **Non-convex costs** (Buera, Kaboski, and Shin, 2011)
 - Theory : high fixed/set-up costs \Rightarrow harder to “save out of poverty trap”
 - Prediction : **more entry into large-scale sectors**
 - Proxy : average establishment employment (in unconditional sample)
 - **Test** : small- vs. large-scale sectors (median split)

Mechanism: monitoring costs vs. fixed investment costs

Dependent Variable	Employment	Establishment size	# Firms	Entry	Exit
	(1)	(2)	(3)	(4)	(5)
Panel A: Distance to nearest bank					
Treated×Post	0.060*** (0.016)	0.017 (0.019)	0.069*** (0.015)	0.170*** (0.027)	0.101*** (0.020)
Treated×Post×High Distance _c	0.116*** (0.027)	0.018 (0.031)	0.152*** (0.023)	0.083** (0.038)	-0.068*** (0.026)
Match×Industry×Year FE	✓	✓	✓	✓	✓
Match×Industry×Year× Proxy FE	✓	✓	✓	✓	✓
Observations	154,090	113,112	153,215	153,215	153,215

Mechanism: monitoring costs vs. Fixed Investment Costs

Dependent Variable	Employment (1)	Establishment size (2)	# Firms (3)	Entry (4)	Exit (5)
Panel A: Distance to nearest bank					
Treated×Post	0.060*** (0.016)	0.017 (0.019)	0.069*** (0.015)	0.170*** (0.027)	0.101*** (0.020)
Treated×Post×High Distance _c	0.116*** (0.027)	0.018 (0.031)	0.152*** (0.023)	0.083** (0.038)	-0.068*** (0.026)
Panel B: Fixed costs in investment					
Treated×Post	0.243*** (0.019)	0.058*** (0.015)	0.206*** (0.016)	0.274*** (0.026)	0.068*** (0.019)
Treated×Post×High Fixed Costs _j	-0.153*** (0.020)	-0.039 (0.024)	-0.195*** (0.016)	-0.181*** (0.025)	0.014 (0.022)
Match×Industry×Year FE	✓	✓	✓	✓	✓
Match×Industry×Year× Proxy FE	✓	✓	✓	✓	✓
Observations	154,090	113,112	153,215	153,215	153,215

Additional results: channel

- Channel:
 - Larger effect for cities in “banking deserts”
 - No larger effects for industries with higher fixed costs
 - ✓ Models with monitoring costs / soft information (Greenwood and Jovanovic, 1990)
 - ✗ ~~Non-convex costs (Buera, Kaboski, and Shin, 2011)~~

Additional results: channel

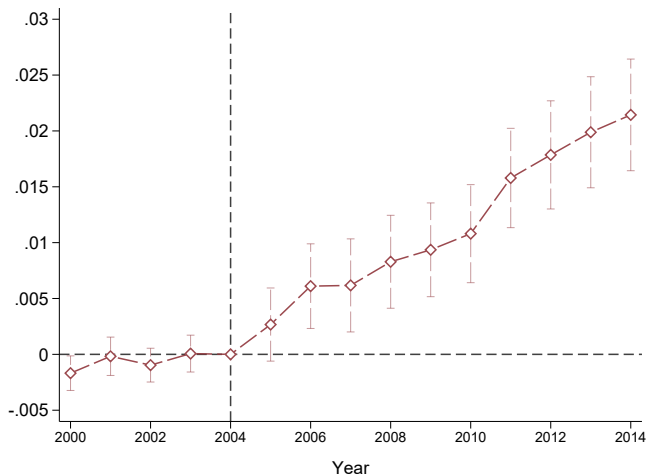
- Channel:
 - Larger effect for cities in “banking deserts”
 - No larger effects for industries with higher fixed costs
 - ✓ Models with monitoring costs / soft information (Greenwood and Jovanovic, 1990)
 - ~~✗ Non-convex costs (Buera, Kaboski, and Shin, 2011)~~
- Other results:
 - Similar effect for tradables

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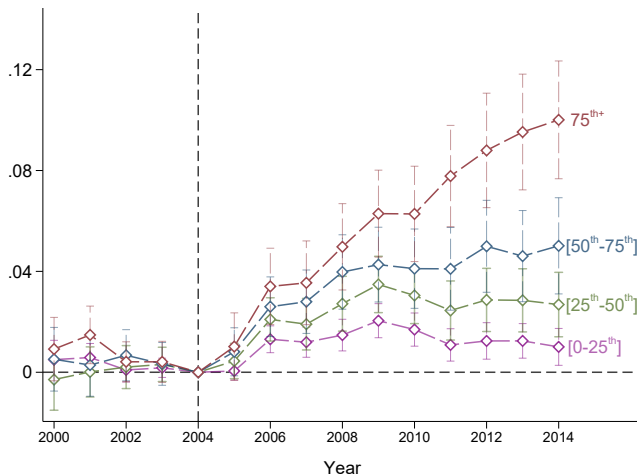
Effect on wage inequality (1)

- Increase by 7% relative to pre-reform mean



Effect on wage inequality (1)

- Driven by **top** of the distribution



Why does wage inequality increase?

1. Better employer-employee matching
2. Demand skilled > demand unskilled (complementary skill-K, Fonseca and Van Doornik, 2021)
3. Skill supply is scarce

Why does wage inequality increase?

1. Better employer-employee matching

- Prediction: ↓ **dispersion** of worker ability within firms (e.g., Eeckhout and Kircher, 2011)
- Proxy: average lifetime wages
- Result: ↑ **within-firm dispersion** Table

2. Demand **skilled** > demand **unskilled** (complementary skill-K, Fonseca and Van Doornik, 2021)

3. Skill **supply** is **scarce**

Why does wage inequality increase?

1. Better employer-employee matching

2. Demand skilled > demand unskilled (complementary skill-K, Fonseca and Van Doornik, 2021)

- Prediction: higher share of skilled workers
- Proxy: education
- Result: negligible change in share of skilled workers Table

3. Skill supply is scarce

Mechanism: skill scarcity?

- Skill scarcity can \uparrow skill premium \Rightarrow \uparrow inequality
 - Even if labor demand rises uniformly across skills
- Prediction: inequality rises less where supply of skills is larger
- Proxy:
 - Share of college-educated population (high = no scarcity)
 - Skill premium relative to control cities (low = no scarcity)
- Hinges on workers not moving freely

Migration

Migration cost

Mechanism: evidence of skill scarcity

Dependent variable:	Gini			
	(1)	(2)	(3)	(4)
Treated×Post	0.012*** (0.002)	0.016*** (0.002)	0.018*** (0.002)	0.020*** (0.003)
Treated×Post×Low skill gap		-0.008*** (0.003)		-0.006** (0.003)
Treated×Post×High share skilled population			-0.014*** (0.003)	-0.013*** (0.003)
City×Industry FE	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓
Observations	79,995	79,995	79,995	79,995

Robustness to controls

Robustness

- Effect not driven by:
 - Additional social welfare programs (Caixa vs. Banco de Brazil)
 - Industry specific shocks (city-industry level with industry \times year similar)
 - State specific shocks (state \times year FE)
 - Informality
 - Matching criteria, # of matches
- \uparrow in inequality not driven by change in composition
 - Residualized wages (age, sex, race, industry occupation)
 - Restrict to existing workers and firms

Implication: complementarities in development policies?

Scarce skills + lower financial frictions \Rightarrow higher wages

- Profits of entrepreneurs in high skill sectors go down
- Implication for industry specialization and LR growth?

Conclusion

- Financial development leads to:
 - **Economic development**: higher employment, firm creation, and wages
 - **Higher inequality**, driven by higher top wages
 - Evidence consistent with **monitoring costs** and **skill scarcity**
- **Skill differentiation** is important for understanding **distributional** impact
- **Simultaneous policies** might be needed for full benefits of financial access
 - Implications for policies like promotion of digital banking (i.e., Brazil's Pix)

Thank you!

Effect on Wage Inequality

Dependent variable:	Gini	Wage			
		[0-25th]	[25th-50th]	[50th-75th]	[75th+]
	(1)	(2)	(3)	(4)	(5)
Treated×Post	0.012*** (0.002)	0.010*** (0.003)	0.024*** (0.005)	0.034*** (0.007)	0.055*** (0.008)
City FE	✓	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓	✓
Observations	79,995	79,995	79,995	79,995	79,995

Summary Statistics

	Mean	Med.	St. Dev.	N
Loans per Capita	2,178.97	1,318.48	2,471.04	70,695
Public Loans per Capita	1,947.36	1,110.20	2,379.00	70,695
Private Loans per Capita	231.61	53.34	445.12	70,695
Total Branches	1.72	1.00	1.25	70,695
Public Branches	0.92	1.00	0.63	70,695
Private Branches	0.80	1.00	0.91	70,695
Deposits per Capita	1,446.11	1,041.17	1,469.56	70,695
Public Deposits per Capita	1,055.89	733.40	1,232.78	70,695
Private Deposits per Capita	390.21	102.22	629.18	70,695
Wage	913.01	881.31	268.35	70,695
Total Employment	1,023.15	648.00	1,446.76	70,695
Share Skilled	0.09	0.08	0.05	70,695
Skill Premium	2.28	2.14	0.69	70,617
Gini Index	0.31	0.31	0.05	70,695
Population	12,156.20	9,031.00	12,474.92	70,695
GDP per Capita	13,581.36	9,500.44	23,343.73	70,695
Share Manufacturing	0.21	0.14	0.20	70,695
Share Agriculture	0.14	0.09	0.14	70,695

Effect on Financial Development

Dependent Variable:	Has Bank Branch			New Loans per Capita			New Deposits per Capita		
	All (1)	Public (2)	Private (3)	All (4)	Public (5)	Private (6)	All (7)	Public (8)	Private (9)
Treated×Post	0.187*** (0.015)	0.425*** (0.016)	-0.022* (0.013)	155.164*** (28.461)	181.635*** (24.569)	-26.470** (11.574)	142.325*** (25.428)	118.632*** (19.738)	23.692* (12.096)
City FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	79,995	79,995	79,995	79,995	79,995	79,995	79,995	79,995	79,995

Back

Local Demand Shocks Plays Limited Role

Dependent variable	Employment					
	Manufacturing		1 st tercile HHI		1 st quartile HHI	
Tradable Definition						
Tradable	Yes	No	Yes	No	Yes	No
	(1)	(2)	(3)	(4)	(5)	(6)
Treated×Post	0.085*** (0.033)	0.103*** (0.013)	0.103*** (0.020)	0.092*** (0.015)	0.107*** (0.017)	0.033 (0.021)
Match×Industry×Year FE	✓	✓	✓	✓	✓	✓
Observations	31,480	123,558	45,530	56,586	32,800	40,716

Mechanism: No Better Matching

Dependent variable:	Std. Dev. Worker Type			
	(1)	(2)	(3)	(4)
Treated×Post	0.011*** (0.003)	0.011*** (0.003)	0.011*** (0.003)	0.011*** (0.004)
City FE	✓			
City×Industry FE		✓	✓	✓
Match×Year FE	✓	✓	✓	
Match×Industry×Year FE				✓
Observations	1,162,412	1,162,412	1,162,412	1,162,412

Matching: Robustness to Variance Decomposition

Dependent variable	Var[log(Wage)]				
Level of Partition	None	Industry		Firms	
Component		between	within	between	within
	(1)	(2)	(3)	(4)	(5)
Treated×Post	0.014*** (0.003)	0.008*** (0.002)	0.007*** (0.002)	0.010*** (0.002)	0.005*** (0.002)
City FE	✓	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓	✓
Observations	70,680	70,680	70,680	70,680	70,680

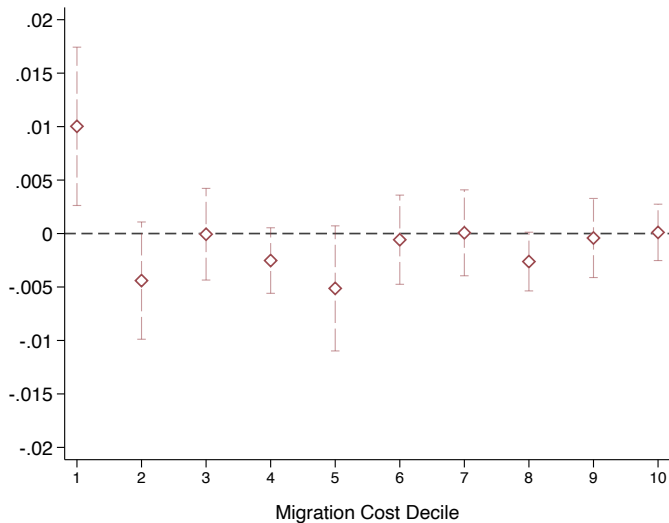
Mechanism: No Higher Demand for Skills

Dependent variable	Skill premium	Wage skilled	Wage unskilled	Share skilled
	(1)	(2)	(3)	(4)
Treated×Post	0.083*** (0.010)	0.118*** (0.012)	0.028*** (0.006)	0.002* (0.001)
City×Industry FE	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓
Observations	70,602	70,602	70,680	70,680

Effect on Migration

Sample: Dependent variable:	All workers			Skilled workers		
	Share local (1)	Share movers (2)	Share new (3)	Share local (4)	Share movers (5)	Share new (6)
Treated×Post	-0.019*** (0.004)	0.000 (0.001)	0.021*** (0.004)	-0.021*** (0.006)	0.007*** (0.002)	0.020*** (0.006)
City FE	✓	✓	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓	✓	✓
Observations	79,995	79,995	79,995	79,901	79,901	79,901

Effect on Migration by Migration Cost



Robustness: Heterogeneity by Supply of Skilled Labor

Dependent variable:	All workers													
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Treated×Post	0.012*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.006*** (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.007*** (0.002)	0.009*** (0.002)	0.009*** (0.002)	0.002 (0.002)
Treated×Post×Skill gap	-0.009*** (0.002)		-0.009*** (0.002)	-0.009*** (0.002)	-0.006*** (0.002)	-0.009*** (0.002)	-0.010*** (0.002)	-0.009*** (0.002)	-0.010*** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)	-0.008*** (0.002)
Treated×Post×Share skilled population		-0.008*** (0.002)	-0.008*** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)	-0.008*** (0.002)	-0.012*** (0.002)	-0.005*** (0.002)	-0.010*** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)	-0.007*** (0.002)	-0.008*** (0.002)	-0.009*** (0.002)
Treated×Post×Employment per capita				0.002 (0.002)										0.013*** (0.004)
Treated×Post×Share skilled labor force					0.012*** (0.002)									0.011*** (0.002)
Treated×Post×Employment						0.003 (0.002)								-0.014*** (0.004)
Treated×Post×GDP per capita							0.009*** (0.002)							0.006*** (0.002)
Treated×Post×Population								0.006*** (0.002)						0.021*** (0.004)
Treated×Post×Number of firms									0.005*** (0.002)					0.002 (0.003)
Treated×Post×Number of bank branches										0.005*** (0.002)				-0.002 (0.002)
Treated×Post×Total credit											0.006*** (0.002)			0.004 (0.002)
Treated×Post×Share agriculture												-0.003** (0.001)		0.001 (0.002)
Treated×Post×Share manufacturing													0.001 (0.001)	-0.000 (0.002)
City×Industry FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	70,620	70,680	70,620	70,620	70,620	70,620	70,620	70,620	70,620	70,620	70,620	70,620	70,620	

Robustness: Numbers of Matched Controls

Dependent variable	Has Public Branch	# Firms	Employment	Wage	Gini
	(1)	(2)	(3)	(4)	(5)
Panel A: Two control cities per match					
Treated×Post	0.428*** (0.015)	0.091*** (0.014)	0.096*** (0.017)	0.045*** (0.006)	0.015*** (0.002)
City FE	✓	✓	✓	✓	✓
Match-Year FE	✓	✓	✓	✓	✓
Observations	62055	62055	62055	62055	62055
Panel B: One control city per match					
Treated×Post	0.432*** (0.018)	0.044*** (0.017)	0.064*** (0.020)	0.041*** (0.007)	0.016*** (0.002)
City FE	✓	✓	✓	✓	✓
Match-Year FE	✓	✓	✓	✓	✓
Observations	42450	42450	42450	42450	42450

Robustness: Matching Criteria

Dependent variable	Has Public Branch	# Firms	Employment	Wage	Gini
	(1)	(2)	(3)	(4)	(5)
Panel A: Baseline					
Treated×Post	0.425*** (0.016)	0.098*** (0.013)	0.100*** (0.016)	0.041*** (0.006)	0.012*** (0.002)
Panel B: Population + Share skill					
Treated×Post	0.437*** (0.015)	0.089*** (0.013)	0.090*** (0.017)	0.039*** (0.006)	0.012*** (0.002)
Panel C: Population + Share manufacturing					
Treated×Post	0.425*** (0.016)	0.098*** (0.013)	0.100*** (0.016)	0.041*** (0.006)	0.012*** (0.002)
Panel D: Population + Inequality (level)					
Treated×Post	0.4247*** (0.0151)	0.0917*** (0.0127)	0.0836*** (0.0165)	0.0398*** (0.0062)	0.0138*** (0.0019)
City FE	✓	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓	✓
Observations	81,390	81,390	81,390	81,390	81,390

Robustness: State-by-Year Fixed Effects

Dependent variable	Has Public Branch	# Firms	Employment	Wage	Gini
	(1)	(2)	(3)	(4)	(5)
Treated×Post	0.436*** (0.016)	0.060*** (0.013)	0.054*** (0.016)	0.031*** (0.006)	0.014*** (0.002)
City FE	✓	✓	✓	✓	✓
Match-Year FE	✓	✓	✓	✓	✓
State-Year FE	✓	✓	✓	✓	✓
Observations	79,995	79,995	79,995	79,995	79,995

Robustness: Arcsin log transformation

Dependent Variable:	Bank Branches			Loans			Deposits		
	All	Public	Private	All	Public	Private	All	Public	Private
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treated×Post	0.261*** (0.018)	0.331*** (0.019)	0.005 (0.014)	2.864*** (0.224)	5.823*** (0.266)	-0.332* (0.184)	2.951*** (0.232)	6.132*** (0.266)	-0.369** (0.187)
City FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	79,995	79,995	79,995	79,995	79,995	79,995	79,995	79,995	79,995

Robustness: Poisson Regression

Dependent variable	Credit	Bank Branches	# Firms	Employment	Wage	Gini
	(1)	(2)	(3)	(4)	(5)	(6)
Treated×Post	0.653*** (0.059)	0.265*** (0.023)	0.076*** (0.010)	0.046*** (0.013)	0.021*** (0.007)	0.015*** (0.005)
City FE	✓	✓	✓	✓	✓	✓
Match-Year FE	✓	✓	✓	✓	✓	✓
Observations	70,680	70,680	70,680	70,680	70,680	70,680

Robustness: Ruling Out Government Programs

- Largest government programs (e.g., Bolsa Família) disbursed by **one** government bank: [Caixa](#)
- Add dummy: Caixa present prior to the reform
- Treated cities with Caixa do **not** experience larger growth

Dependent variable	Credit	Bank Branches	# Firms	Employment	Wage	Gini
	(1)	(2)	(3)	(4)	(5)	
Treated×Post	0.521*** (0.027)	0.163*** (0.020)	0.121*** (0.026)	0.049*** (0.011)	0.014*** (0.003)	
Treated×Post×Caixa	-0.152*** (0.031)	-0.103*** (0.025)	-0.033 (0.031)	-0.013 (0.013)	-0.002 (0.003)	
City FE	✓	✓	✓	✓	✓	
Match-Caixa-Year FE	✓	✓	✓	✓	✓	
Observations	79,995	79,995	79,995	79,995	79,995	

Robustness: Worker Composition

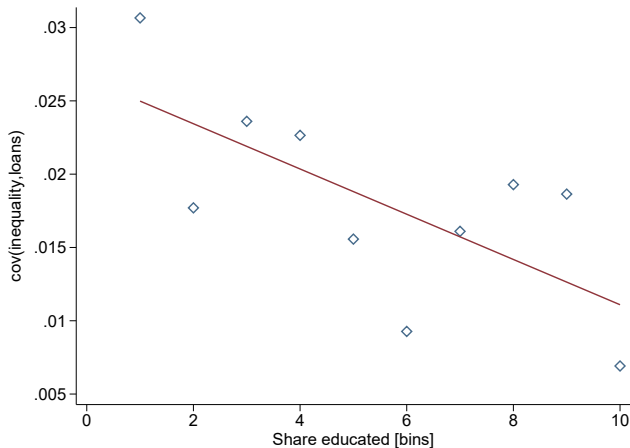
Dependent variable	Var[log(Wage)]					
	None	Age×Sex ×Race	Industry	Industry ×Occupation	Workers 2004–2014	Firms 2004
	(1)	(2)	(3)	(4)	(5)	(6)
Treated×Post	0.015*** (0.003)	0.014*** (0.002)	0.011*** (0.002)	0.010*** (0.002)	0.021*** (0.003)	0.013*** (0.002)
City FE	✓	✓	✓	✓	✓	✓
Match×Year FE	✓	✓	✓	✓	✓	✓
Observations	79,995	79,995	79,995	79,995	79,980	79,995

Robustness: Informality

Dependent variable	Has Public Branch	# Firms	Employment	Wage	Gini
	(1)	(2)	(3)	(4)	(5)
Treated×Post	0.425*** (0.016)	0.098*** (0.013)	0.100*** (0.016)	0.041*** (0.006)	0.012*** (0.002)
City FE	✓	✓	✓	✓	✓
Informality-Match-Year FE	✓	✓	✓	✓	✓
Observations	79,995	79,995	79,995	79,995	79,995

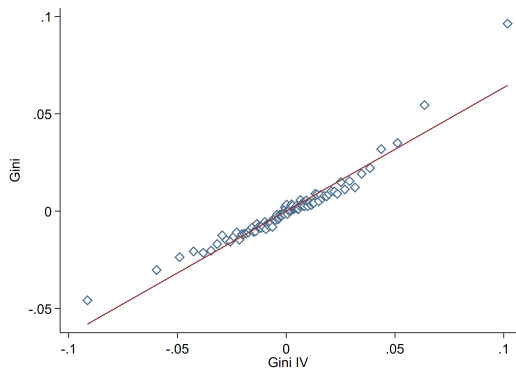
Financial Development, Skill Scarcity and Inequality

- Universe of cities: 1996–2014
- $\Delta Inequality_{ct} = \Delta \widehat{Loan Supply}_{ct} \times Bin[Share\ Educated Population_{c,t_0}]$
- $\widehat{Loan Supply}_{ct}$ = shift-share

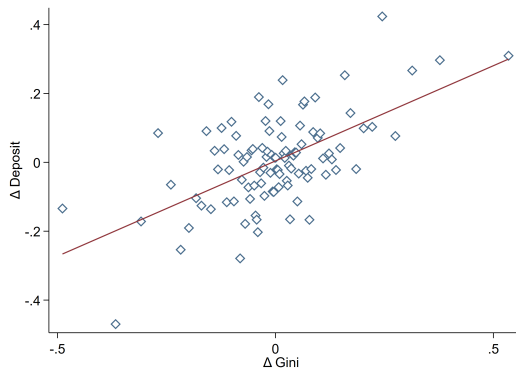


Inequality \Rightarrow Financial Development

First Stage: $\Delta Income_c = \sum_{q \in c} \Delta Income_{q,-c}$

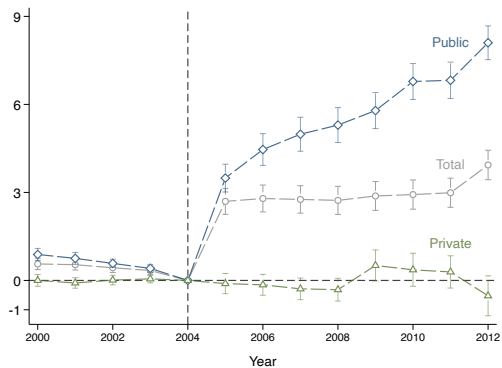


Second Stage: $\Delta \widehat{Gini}_c = \Delta Deposit_c$



Effect on Financial Development

Credit



Deposits

