Are Bigger Banks Better?
Firm-Level Evidence from Germany

Kilian Huber
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Debates Around Bank Size

- The impact of large firms on the economy is receiving significant attention (Zingales 2017, Philippon 2019).
- The issue is particularly salient in banking.
- Banks have steadily grown bigger in the last decades. Recent crises saw prominent failures of large banks.

Market Share of the 10 Biggest Banks in the US

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- Policy debate: Regulation against further increases in bank size may improve financial stability. But regulation could be harmful if bigger banks offer better financial services.
- Influential theories suggest that bigger banks are better for real growth – due to fixed costs, diversification, synergies, or internal capital markets.

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- Challenge: Bank size is endogenous to bank efficiency and real outcomes, e.g., banks merge strategically.
- Method: I identify quasi-experiments from postwar Germany where the timing of bank consolidations was exogenous to banks and borrowers.
- Contribution: I estimate the impact of increases in bank size on the growth of firms. I also analyze bank efficiency, risk-taking, and regional growth.

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5. Municipalities with a consolidating bank's branch did not have faster employment growth.

6. Media mentions and salaries of bank managers increased, which could indicate why banks want to grow big.

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- The postwar evidence highlights that the story is complex. Efficiency-enhancing channels do not always dominate harmful side effects, such as agency and information issues.

- Traditional banking channels still matter today, e.g., soft information (Berger et al. 2019; Nguyen 2019). Technology may affect returns to scale today (Berger & Mester 1997; Berger 2003).

Contribution to the Literature

- Quasi-experiments lead to exogenous variation in the size of the same bank serving the same firm.
- I exame the real and financial effects of size, using firm, municipality, and bank data.
- Existing evidence about the impact of bank size is mixed.
  - Cross-sectional studies: Berger and Mester 1997, Berger et al. 1999, Feng & Serletis 2010, Wheelock & Wilson 2012, 2018, Hughes & Mester 2013, Davies & Tracey 2014, Kovner et al. 2014, Biswas et al. 2017, Hughes et al. 2019
  - Consolidation studies: Rhoades 1998, Berger et al. 1999, Calomiris 1999, Calomiris & Karceski 2000, Focarelli et al. 2002.
- Big banks rely less on small firm lending and soft information.
  - Berger et al. 1995, 2005, Berger et al. 1998, Peek & Rosengren 1998, Strahan & Weston 1998, Berger et al. 2001, Sapienza 2002, Jagtiani et al. 2016.
  - Liberti & Mian 2009, Canales & Nanda 2012, Skrastins & Vig 2018, Cerqueiro et al. 2011, Qian et al. 2015.
- The US bank deregulation literature does not separate the effects of size and entry/competition, in contrast to the setting here (Berger et al. 2019).

The Quasi-Experiments in Postwar Germany

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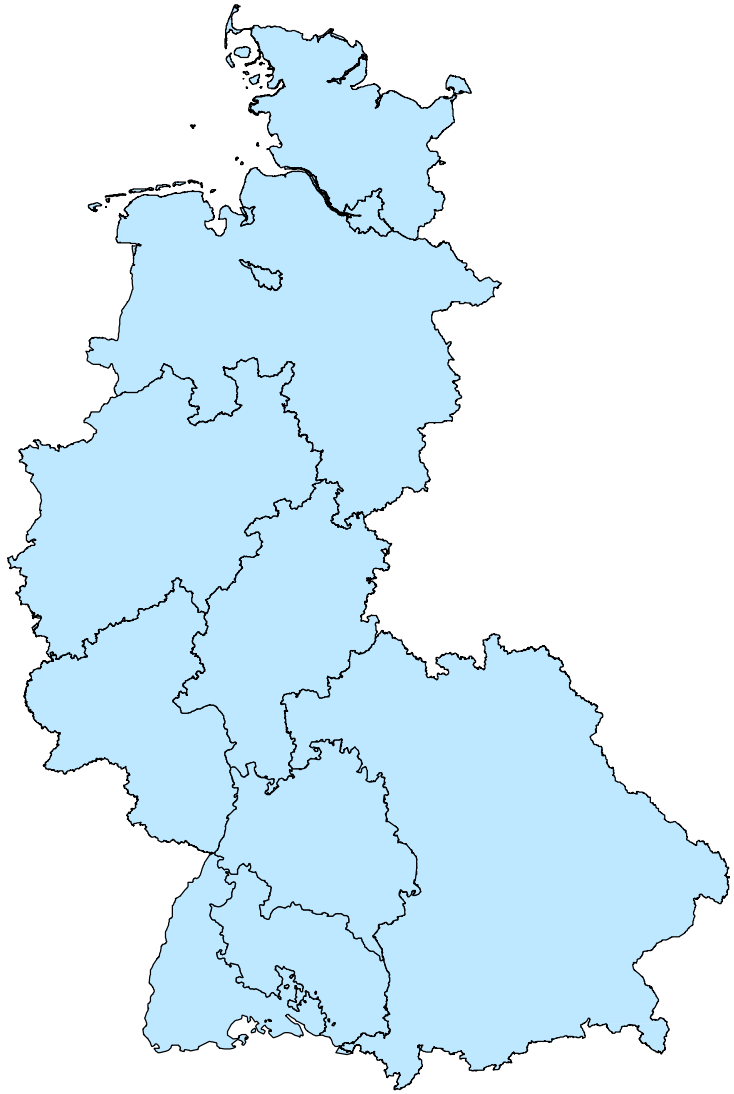
- The Allies blamed financial centralization for the rise of the Nazis and the war.
- As punishment and to prevent future wars, three "treated" banks were not allowed to operate at the national level for 10 years: Deutsche, Dresdner, Commerzbank.
- The remaining banks were untreated by the policy: regional commercial banks, credit unions, public banks.

Phases of the Banking Policy

- Changes in Allied diplomacy caused changes in banking policy. The timing did not depend on the German economy.
- Phase 1, 1947-52: Containing Germany $\rightarrow$ treated banks only allowed to operate branches within states.

Phase 1: 1947-52

State-level restriction



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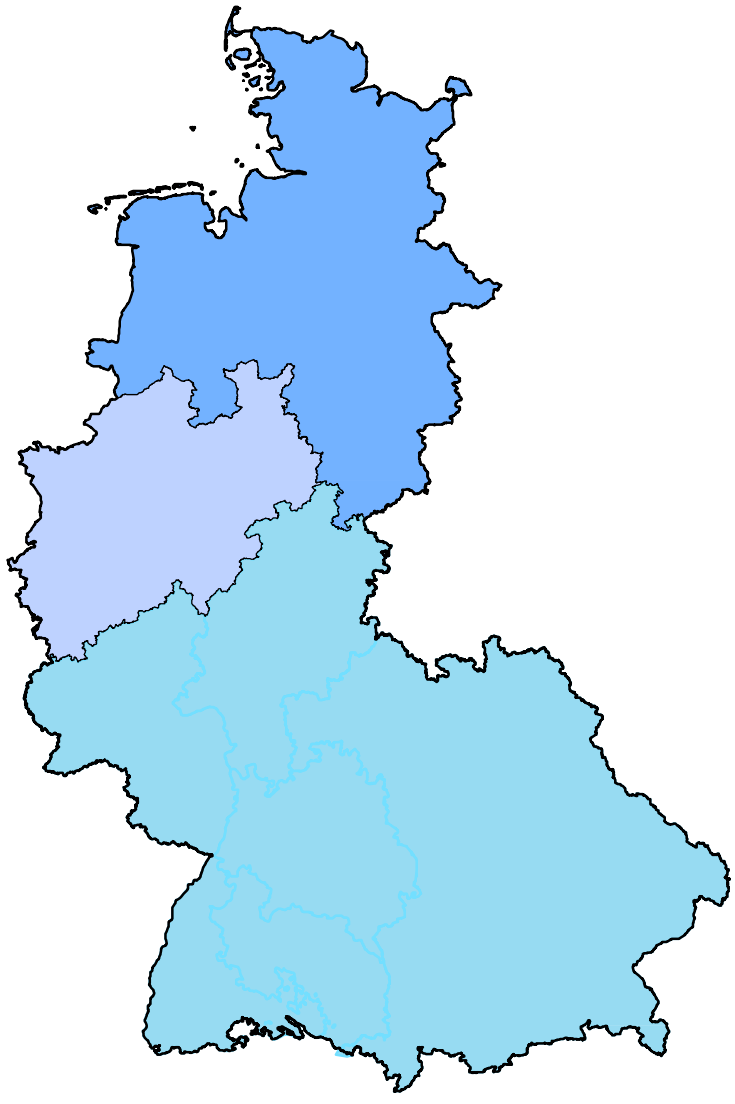
- Phase 2, 1952-57: Friendly occupation $\rightarrow$ treated banks only allowed to operate branches within one of three banking zones.

Phase 2: 1952-57

Zone-level restriction



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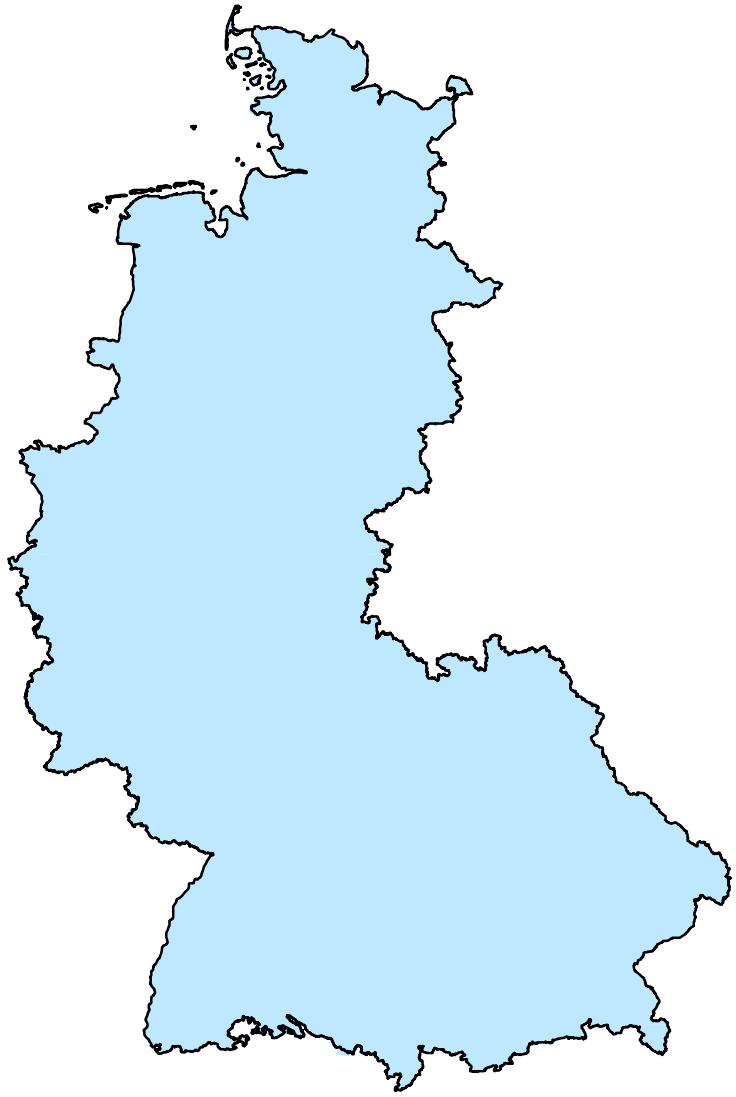
- Phase 2, 1952-57: Friendly occupation $\rightarrow$ treated banks only allowed to operate branches within one of three banking zones.
- Phase 3, from 1957: Sovereign German government $\rightarrow$ restrictions lifted after the Allies leave Germany.

Phase 3: From 1957

Restriction lifted



Changes in Bank Operations

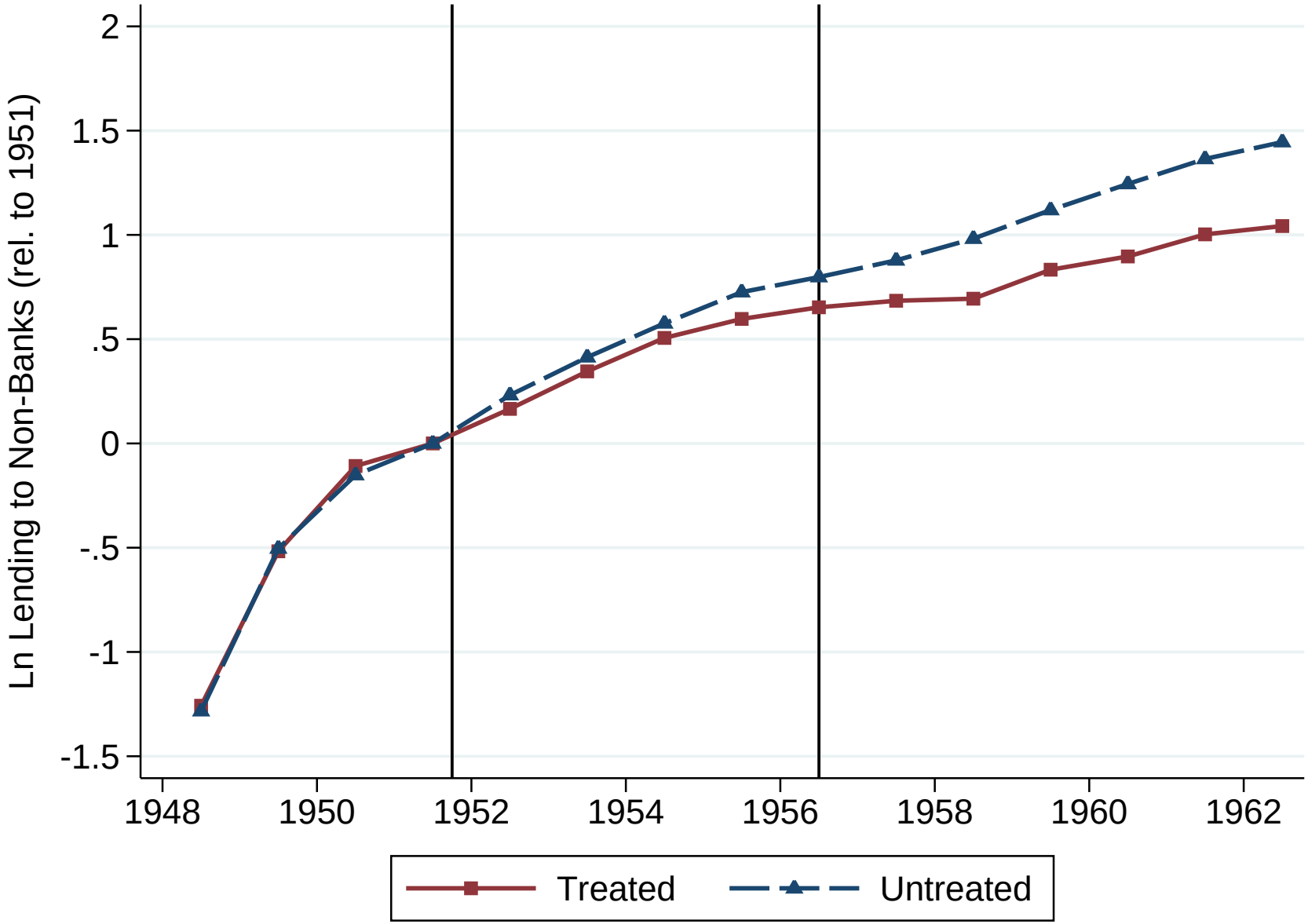
- Historical records suggest that the consolidations affected how the banks operated (Lanner 1951, Horstmann 1991).
  - Spread fixed costs ☺
  - Issued large loans without syndication ☺
  - Used internal capital markets ☺
  - Increased diversification ☺ / ☹
  - Escalated organizational complexity ☹
  - Reduced use of soft information ☹
- No change in the number of branches operating in local markets or the expected performance of bank borrowers.

Bank Size in Context

- Average loans / GDP for the:
  - 3 largest banks in the US today = 5.0%
  - 3 treated German banks after re-consolidation = 3.0%

- Regulators label banks whose assets exceed 1% of GDP "systemically important." The consolidations moved all treated banks from below to above this threshold.

Lending by the Treated Banks Did Not Grow Faster



Deposits | Alternative Control

Effect on Lending and Firm Data

- One aim of the treated banks was to increase market share in lending and deposit-taking (Ahrens 2007). This did not happen.

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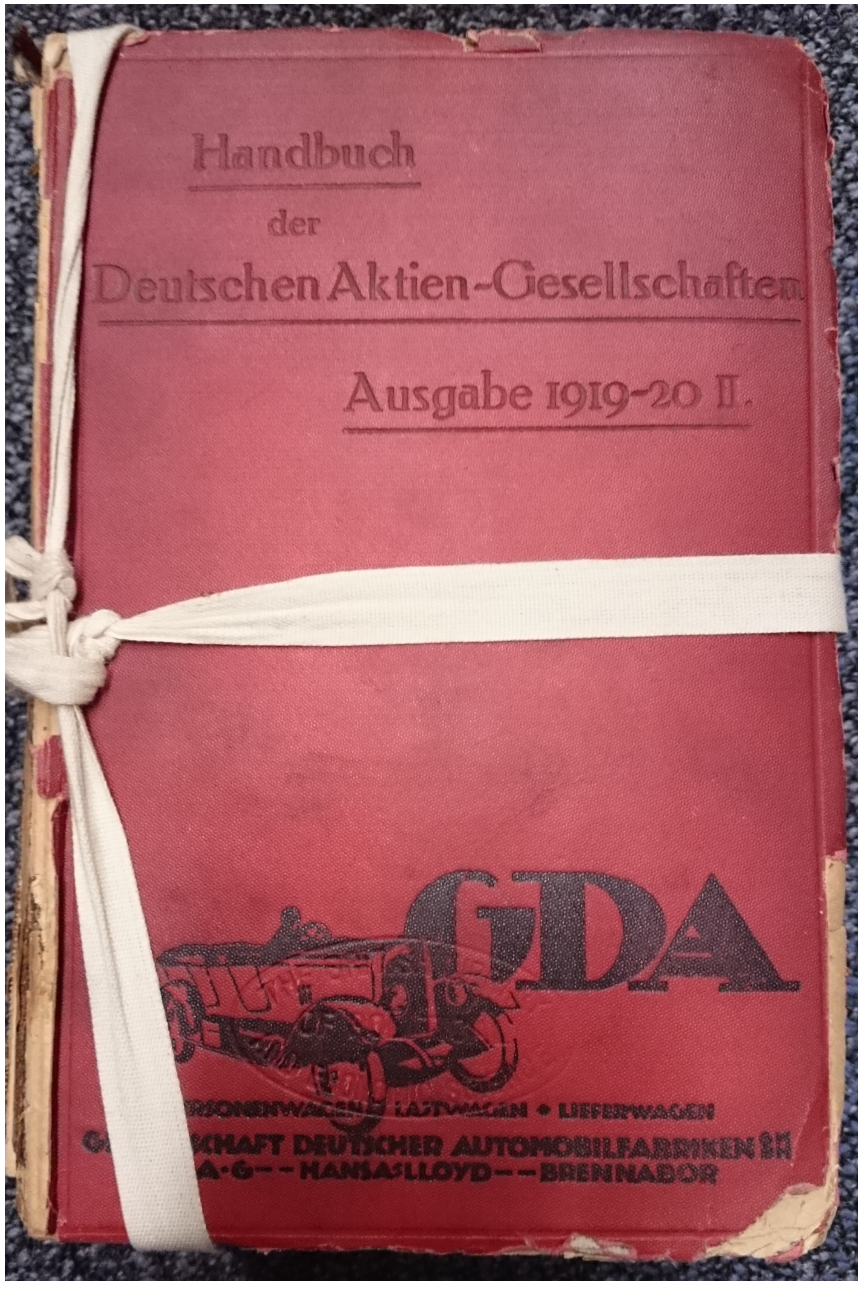
- I photographed 15,000 pages from Hoppenstedt in archives across Germany. Data were entered by hand.

New Data to Study the Postwar "Economic Miracle"



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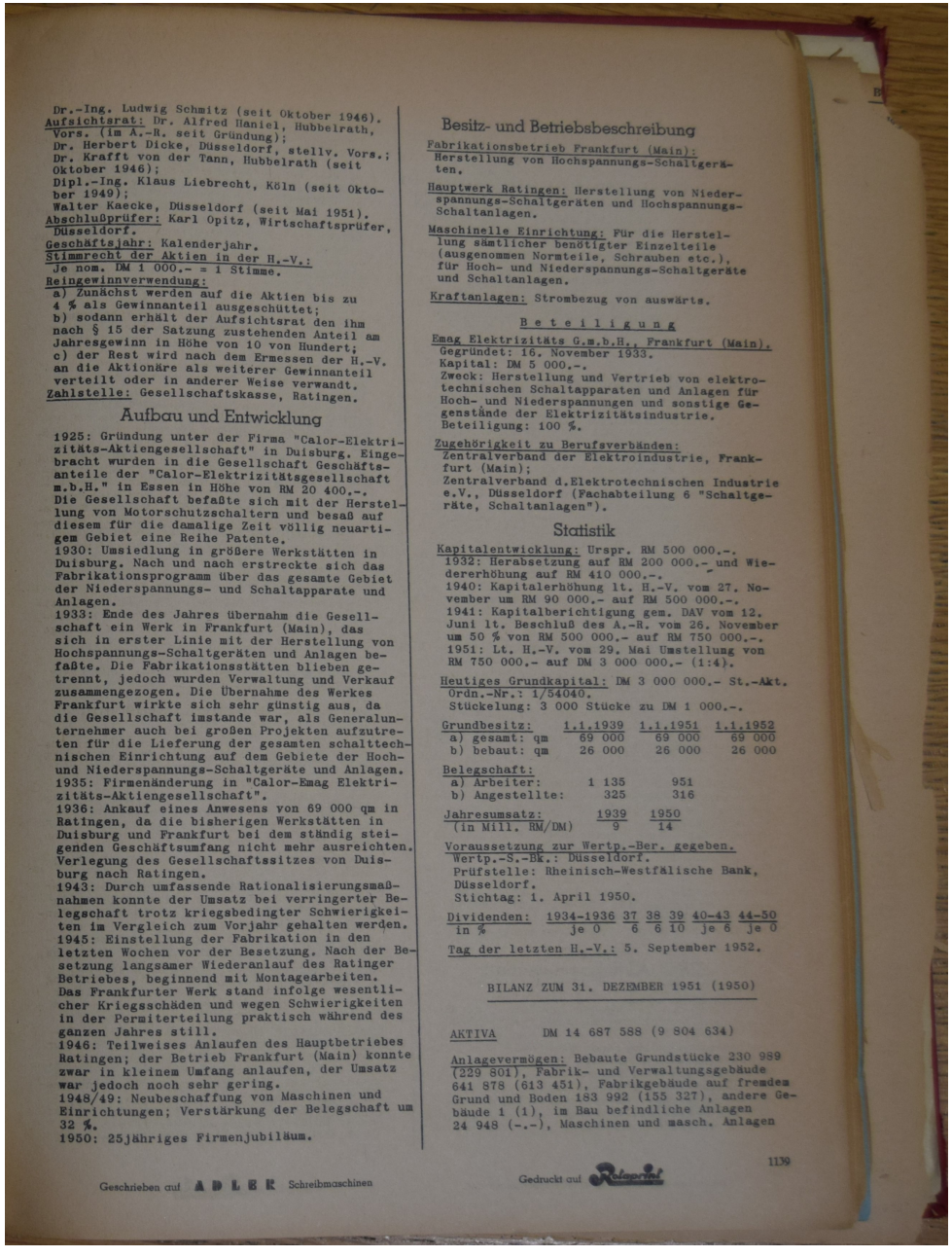

Dr.-Ing. Ludwig Schmitz (seit Oktober 1946).
Aufsichtsrat: Dr. Alfred Haniel, Hubbelrath, Vors. (im A.-R. seit Gründung);
Dr. Herbert Dicke, Düsseldorf, stellv. Vors.;
Dr. Krafft von der Tann, Hubbelrath (seit Oktober 1946);
Dipl.-Ing. Klaus Liebrecht, Köln (seit Oktober 1949);
Walter Kaecke, Düsseldorf (seit Mai 1951).
Abschlußprüfer: Karl Opitz, Wirtschaftsprüfer, Düsseldorf.
Geschäftsjahr: Kalenderjahr.
Stimmrecht der Aktien in der H.-V.: Je nom. DM 1 000.- = 1 Stimme.
Reingewinnverwendung:
a) Zunächst werden auf die Aktien bis zu 4 % als Gewinnanteil ausgeschüttet;
b) sodann erhält der Aufsichtsrat den ihm nach § 15 der Satzung zustehenden Anteil am Jahresgewinn in Höhe von 10 von Hundert;
c) der Rest wird nach dem Ermessen der H.-V. an die Aktionäre als weiterer Gewinnanteil verteilt oder in anderer Weise verwandt.
Zahlstelle: Gesellschaftskasse, Ratingen.

Aufbau und Entwicklung

1925: Gründung unter der Firma "Calor-Elektrizitäts-Aktiengesellschaft" in Duisburg. Eingebracht wurden in die Gesellschaft Geschäftsanteile der "Calor-Elektrizitätsgesellschaft m.b.H." in Essen in Höhe von RM 20 400.-. Die Gesellschaft befaßte sich mit der Herstellung von Motorschutzschaltern und besaß auf diesem für die damalige Zeit völlig neuartigem Gebiet eine Reihe Patente.
1930: Umsiedlung in größere Werkstätten in Duisburg. Nach und nach erstreckte sich das Fabrikationsprogramm über das gesamte Gebiet der Niederspannungs- und Schaltapparate und Anlagen.
1933: Ende des Jahres übernahm die Gesellschaft ein Werk in Frankfurt (Main), das sich in erster Linie mit der Herstellung von Hochspannungs-Schaltgeräten und Anlagen befaßte. Die Fabrikationsstätten blieben getrennt, jedoch wurden Verwaltung und Verkauf zusammengezogen. Die Übernahme des Werkes Frankfurt wirkte sich sehr günstig aus, da die Gesellschaft imstande war, als Generalunternehmer auch bei großen Projekten aufzutreten für die Lieferung der gesamten schalttechnischen Einrichtung auf dem Gebiete der Hoch- und Niederspannungs-Schaltgeräte und Anlagen.
1935: Firmenänderung in "Calor-Emag Elektrizitäts-Aktiengesellschaft".
1936: Ankauf eines Anwesens von 69 000 qm in Ratingen, da die bisherigen Werkstätten in Duisburg und Frankfurt bei dem ständig steigenden Geschäftsumfang nicht mehr ausreichten. Verlegung des Gesellschaftssitzes von Duisburg nach Ratingen.
1943: Durch umfassende Rationalisierungsmaßnahmen konnte der Umsatz bei verringerter Belegschaft trotz kriegsbedingter Schwierigkeiten im Vergleich zum Vorjahr gehalten werden.
1945: Einstellung der Fabrikation in den letzten Wochen vor der Besetzung. Nach der Besetzung langsamer Wiederanlauf des Ratinger Betriebes, beginnend mit Montagearbeiten. Das Frankfurter Werk stand infolge wesentlicher Kriegsschäden und wegen Schwierigkeiten in der Permiterteilung praktisch während des ganzen Jahres still.
1946: Teilweises Anlaufen des Hauptbetriebes Ratingen; der Betrieb Frankfurt (Main) konnte zwar in kleinem Umfang anlaufen, der Umsatz war jedoch noch sehr gering.
1948/49: Neubeschaffung von Maschinen und Einrichtungen; Verstärkung der Belegschaft um 32 %.
1950: 25jähriges Firmenjubiläum.

Geschrieben auf ADLER Schreibmaschinen

Besitz- und Betriebsbeschreibung

Fabrikationsbetrieb Frankfurt (Main): Herstellung von Hochspannungs-Schaltgeräten.

Hauptwerk Ratingen: Herstellung von Niederspannungs-Schaltgeräten und Hochspannungs-Schaltanlagen.

Maschinelle Einrichtung: Für die Herstellung sämtlicher benötigter Einzelteile (ausgenommen Normteile, Schrauben etc.), für Hoch- und Niederspannungs-Schaltgeräte und Schaltanlagen.

Kraftanlagen: Strombezug von auswärts.

Beteiligung

Emag Elektrizitäts G.m.b.H., Frankfurt (Main).
Gegründet: 16. November 1933.
Kapital: DM 5 000.-.
Zweck: Herstellung und Vertrieb von elektrotechnischen Schaltapparaten und Anlagen für Hoch- und Niederspannungen und sonstige Gegenstände der Elektrizitätsindustrie.
Beteiligung: 100 %.

Zugehörigkeit zu Berufsverbänden:
Zentralverband der Elektroindustrie, Frankfurt (Main);
Zentralverband d.Elektrotechnischen Industrie e.V., Düsseldorf (Fachabteilung 6 "Schaltgeräte, Schaltanlagen").

Statistik

Kapitalentwicklung: Urspr. RM 500 000.-. 1932: Herabsetzung auf RM 200 000.- und Wiedererhöhung auf RM 410 000.-. 1940: Kapitalerhöhung lt. H.-V. vom 27. November um RM 90 000.- auf RM 500 000.-. 1941: Kapitalberichtigung gem. DAV vom 12. Juni lt. Beschluß des A.-R. vom 26. November um 50 % von RM 500 000.- auf RM 750 000.-. 1951: Lt. H.-V. vom 29. Mai Umstellung von RM 750 000.- auf DM 3 000 000.- (1:4).

Heutiges Grundkapital: DM 3 000 000.- St.-Akt. Ordn.-Nr.: 1/54040. Stückelung: 3 000 Stücke zu DM 1 000.-.

Grundbesitz:	1.1.1939	1.1.1951	1.1.1952
a) gesamt: qm	69 000	69 000	69 000
b) bebaut: qm	26 000	26 000	26 000

Belegschaft:		
a) Arbeiter:	1 135	951
b) Angestellte:	325	316

Jahresumsatz: (in Mill. RM/DM)	1939	1950
	9	14

Voraussetzung zur Wertp.-Ber. gegeben.
Wertp.-S.-Bk.: Düsseldorf.
Prüfstelle: Rheinisch-Westfälische Bank, Düsseldorf.
Stichtag: 1. April 1950.

Dividenden:	1934-1936	37	38	39	40-43	44-50
in %	je 0	6	6	10	je 6	je 0

Tag der letzten H.-V.: 5. September 1952.

BILANZ ZUM 31. DEZEMBER 1951 (1950)

AKTIVA DM 14 687 588 (9 804 634)

Anlagevermögen: Bebaute Grundstücke 230 989 (229 801), Fabrik- und Verwaltungsgebäude 641 878 (613 451), Fabrikgebäude auf fremdem Grund und Boden 183 992 (155 327), andere Gebäude 1 (1), im Bau befindliche Anlagen 24 948 (-.-), Maschinen und masch. Anlagen

1139

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Empirical Strategy: Firm-Level Analysis

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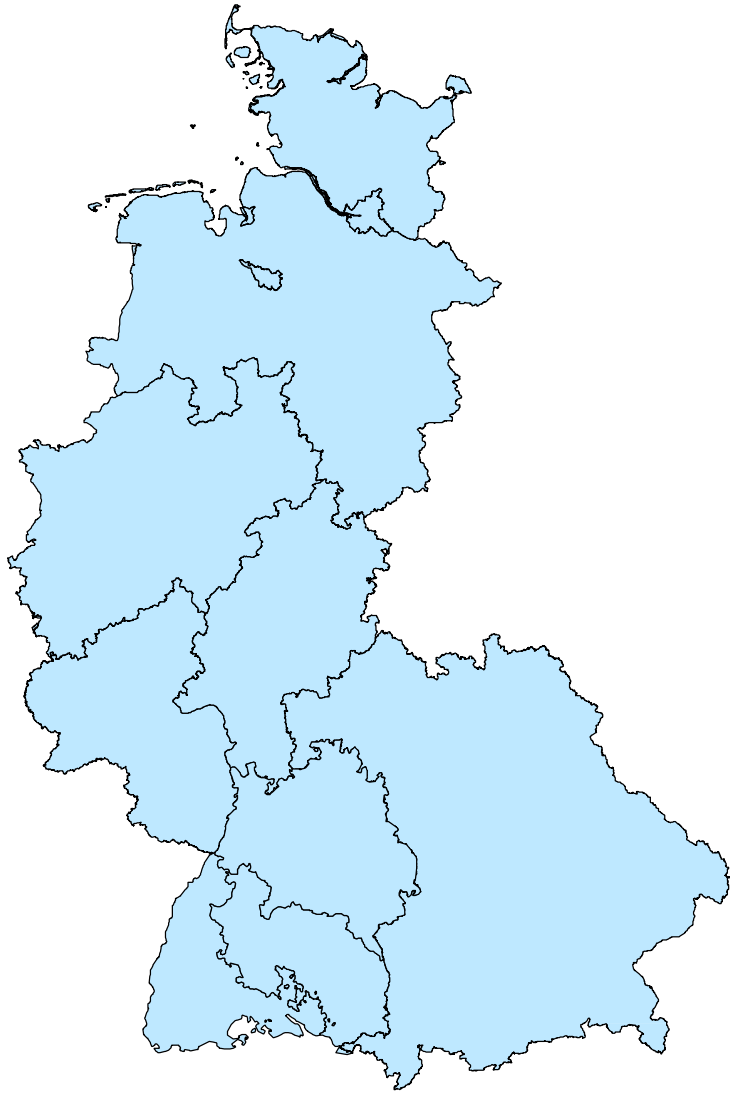
- Switching banks is costly, so shocks to relationship banks affect firms. I test whether firms with a treated relationship bank grew faster.
- Identifying assumption: Firms with a treated relationship bank would have grown at the same rate as firms with untreated relationship banks, had the reforms not happened.

The "Focused" Sample

- Develop a sharper test using the fact that the Western zone remained unaffected by the 1952 reform.

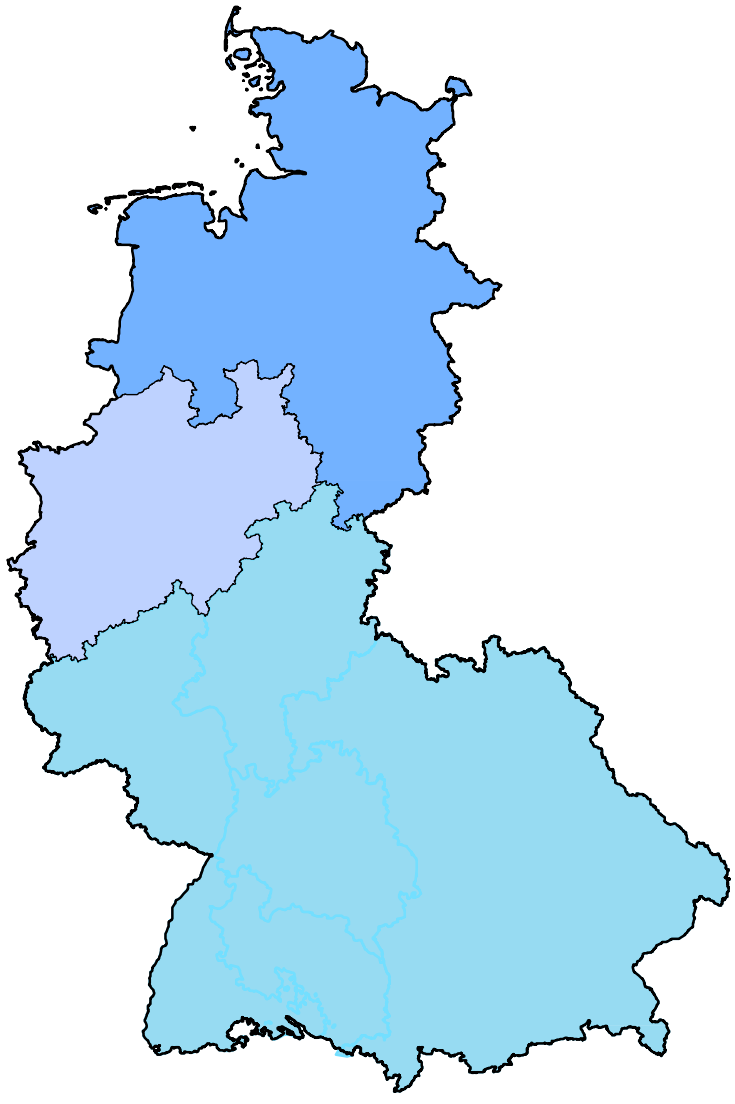
Phase 1: 1947-1952

State-level restriction



Phase 2: 1952-1957

Zone-level restriction



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- Develop a sharper test using the fact that the Western zone remained unaffected by the 1952 reform.
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- Keep only firms along the border of the Western zone and firms that do not produce coal or steel.

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- Focused experiment: bank treated in both 1952 and 1957 (not in Western zone) vs. bank treated only in 1957 (in Western zone).
- Keep only firms along the border of the Western zone and firms that do not produce coal or steel.
- Balanced characteristics in focused sample.
- No differential pre-trends 1949-1951 in any sample.

Sample Balancing Test

Outcome	Rel. bank treated in 1952/57		Rel. bank treated in 1952	
Employment	0.063	0.061	-0.001	0.005
	(0.008)	(0.009)	(0.017)	(0.021)
Age	0.055	0.038	0.016	-0.032
	(0.023)	(0.011)	(0.042)	(0.025)
Observations	1,170	2,226	279	501
R^2	0.070	0.026	0.001	0.003
Sample	All	All	Focused	Focused
Firm type	Stock	Non-stock	Stock	Non-stock

Specification

- Baseline specification:

$$(firm\ growth\ between\ t\ and\ t')_{ib} =$$
$$\theta \cdot (relationship\ bank\ treated\ between\ t\ and\ t')_b$$
$$+\eta \cdot X_{ib} + \epsilon_{ib}$$

  - Firm i with relationship bank b.
  - Outcomes: symmetric growth rate from t (pre-reform) to t' (post-reform) of bank debt, employment, revenue.
  - Controls X_{ib}: 18 industry FE, ln age, size, all interacted with zonal FE (North, West, South).
  - Standard errors clustered by county.

Effect on Firm Employment Growth

	Employment growth 1951-56			
Rel. bank treated in 1952	-0.001	-0.001	0.001	-0.001
	(0.004)	(0.005)	(0.006)	(0.006)
Observations	1,521	1,472	353	342
R^2	0.000	0.063	0.000	0.110
Industry FE*Zone FE	No	Yes	No	Yes
ln age*Zone FE	No	Yes	No	Yes
Size bin FE*Zone FE	No	Yes	No	Yes
Sample	All		Focused	

Growth is the average annual symmetric growth rate. Controls: 18 industry FE, ln age, size, all interacted with zonal FE (North, West, South).

Results on Firms

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- Elasticity of firm employment w.r.t. size of banks = -0.0009 (95% CI: -0.0024 , 0.0005). For context, average assets of US banks grew by 314% from 1950 to 1990.

Opaque Firms

- Dealing with opaque firms requires collecting and processing soft information, e.g., for “character loans”.
- In large hierarchies, it is difficult to transfer soft information and to incentivize employees to generate it (Berger & Udell 2002, Stein 2002, Brickley et al. 2003).
- Opaque firms:
  - less than 50 employees.
  - younger than 10 years in 1951.
  - low asset tangibility (bottom 10 % of industry avg. of fixed tangible assets / assets).

Effect on Opaque Firms

Outcome	$\Delta \frac{Bk\ debt}{Assets}$ 1951-60	$\Delta \frac{Cap}{Assets}$ 1951-60	Empl. growth 1951-60	$\Delta \frac{Bk\ debt}{Assets}$ 1951-60	Empl. growth 1951-56
Rel. bank treated	-0.014	0.006	0.000		
	(0.005)	(0.004)	(0.015)		
0 < Fraction rel. banks				-0.013	-0.016
treated $\leq$ 0.5				(0.005)	(0.011)
0.5 < Fraction rel. banks				-0.018	-0.029
treated $\leq$ 1				(0.006)	(0.015)
Observations	74	74	160	74	295
R^2	0.561	0.775	0.341	0.567	0.229
Controls	Yes	Yes	Yes	Yes	Yes
Firm type	Stock	Stock	Stock	Stock	Non-Stock

Growth is the average annual symmetric growth rate. Controls: 18 industry FE, ln age, size, all interacted with zonal FE (North, West, South).

Results on Opaque Firms

- Results suggest that treated banks were worse at processing soft information after 1952.
- The decision-making procedure on loans changed.
- Before 1952, the state-level banks made decisions in regionally specialized councils (Horstmann 1991). After the reforms, a more centralized structure took over.

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- The decision-making procedure on loans changed.
- Before 1952, the state-level banks made decisions in regionally specialized councils (Horstmann 1991). After the reforms, a more centralized structure took over.
- In comparison, no effect on large, non-opaque, or listed borrowers.

Municipalities Did Not Grow Faster

Employment growth	51-60	51-60	51-56	49-51	51-60
Treated bank branch	-0.013			0.019	-0.014
	(0.005)			(0.017)	(0.004)
Fraction of firms with a		-0.014			
treated rel. bank		(0.008)			
rel. banks					
Treated bank branch			-0.012		
not in NRW			(0.007)		
Treated bank branch			-0.004		
in NRW			(0.009)		
Observations	79	74	91	83	66
R^2	0.350	0.303	0.202	0.441	0.668
State & size & Ruhr FE	Yes	Yes	Yes	Yes	No
Detailed controls*zone FE	No	No	No	No	Yes

Detailed controls: growth 1949-51, quintiles of total emp, emp. shares of manufacturing, primary sector, public sector, war-time displaced.

Changes in Bank Operations

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- Additional results: no gains from diversification, internal capital markets, capital allocation, or synergies.

Private Benefits to Managers

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- Media mentions of the consolidating banks and managers increased.

- Salaries and media presence might explain why managers build corporate “empires” (Stein 2003).

Media Mentions of Banks and Managers

	30/06/1947 - 29/03/1952	30/03/1952 - 24/12/1956	25/12/1956 - 24/09/1961
Panel A: Der Spiegel (German weekly news magazine)			
Name of a treated bank	15	46	121
Name of a treated bank executive	6	12	20
The word "bank"	487	407	479
The word "Deutschland"	3,145	3,086	3,062
Panel B: Financial Times (British daily newspaper)			
Name of a treated bank	3	261	779
Name of a treated bank executive	2	36	143
The word "bank"	22,160	30,035	37,168
The word "Germany"	4,065	8,129	10,311

Conclusion

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- Increases in bank size did not generate improvements in the performance of banks and their borrowers, and even harmed some firms.
- Leading models argue that one big monopoly bank is efficient (e.g., Diamond 1984) and that there is a universally positive relationship between bank size, bank efficiency, and real growth.
- Changes in bank size operate through complex mechanisms. The postwar experience highlights that the beneficial mechanisms do not always outweigh the harmful effects.

Financial Figures of Banks

Banking group	Assets per bank (m. DM) pre-1952	Profit growth 1952-60	Profit efficiency ratio 1952	Profit efficiency ratio 1960	Non-int. cost / revenue (%) 1952	Non-int. cost / revenue (%) 1960
Deutsche (treated)	448.8	1.46	0.31	0.88	62.82	55.53
Dresdner (treated)	297.6	1.38	0.19	0.93	74.77	54.85
Commerz (treated)	212.8	1.62	0.23	0.89	72.47	57.15
Mean of nine untreated banks	330.2	1.64	0.29	0.91	65.24	50.82
Mean difference treated-untreated	-10.5	-0.16	-0.04	-0.01	4.79	5.03

Capital Flows

- Internal capital markets: If cross-state capital transfers became cheaper, more capital would have flown into states where capital was scarce (capital account surplus). But the effects were similar in surplus/deficit states.

- Internal capital markets: There was no change in the volatility and correlation of growth across firms and municipalities (Morgan et al. 2004).

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- Capital allocation: Firms that were newly added as relationship borrowers by the treated banks were not more likely to avoid liquidation, grow labor productivity, or raise employment after being added.

Firm Summary Statistics

	Obs	Avg	p10	p50	p90
			Non-Stock Firms		
Employment	1,800	559	91	344	1,017
Number of rel. banks	3,706	2.54	1	2	4
Rel. bank treated in 1952/57	3,706	0.69	0	1	1
Rel. bank treated in 1952	3,706	0.41	0	0	1
Employment growth 1951-56	1,521	0.04	-0.01	0.03	0.13
			Stock Corporations		
Employment	1,251	1,625	23	354	3,405
Number of rel. banks	2,188	3.18	1	3	6
Rel. bank treated in 1952/57	2,188	0.68	0	1	1
Rel. bank treated in 1952	2,188	0.46	0	0	1
Employment growth 1951-60	815	0.03	-0.03	0.03	0.09
Stock capital / assets	1,872	0.37	0.14	0.34	0.63
Bank debt / assets	1,208	0.10	0	0.06	0.23

Growth is the average annual symmetric growth rate.

New Relationships With Risky Firms

Outcome	Fraction of treated rel. banks in 1970			
Low volatility	-0.059	-0.058		
	(0.035)	(0.035)		
Low leverage ($\frac{Cap}{Assets} \geq 0.75$)			-0.087	-0.094
			(0.027)	(0.054)
Medium leverage ($0.75 > \frac{Cap}{Assets} \geq 0.25$)			0.027	0.029
			(0.033)	(0.031)
Observations	266	263	164	148
R^2	0.033	0.279	0.020	0.545
Opaque firm FE	Yes	Yes	Yes	Yes
Controls*zone FE	No	Yes	No	Yes
Sample	Firms without treated rel. bank in 1951			

Theoretical Benefits of Bigger Banks

- Increase in the number of borrowers of one bank $\rightarrow$ diversification $\rightarrow$ lower funding costs $\rightarrow$ Banking is a natural monopoly (Diamond 1984, Holtfrerich 1995). More
- Use of internal capital markets, with no need to settle through central bank (Adler 1949) $\rightarrow$ optimal when interbank markets are costly (Stein 1997), but may facilitate rent-seeking (Scharfstein & Stein 2000) More
- Larger capital base, large loans (Wolf 1994) $\rightarrow$ efficient when syndicates are costly More
- Spread out fixed costs, e.g., joint payments system, credit specialists, and legal experts (Horstmann 1991)

Back

Theoretical Costs of Bigger Banks

- Complex management, long hierarchies $\rightarrow$ Limited managerial resources imply increasing marginal costs (Williamson 1967, Cerasi & Daltung 2000, Horstmann 1991). More

- During the breakup, banks decided on loans independently in regional credit councils (Horstmann 1991). After the reforms, a more centralized structure took over. $\rightarrow$ Large organizations are less able to process soft information and deal with small firms (Stein 2002, Berger & Udell 2002, and Brickley et al. 2003). More

- Moral hazard (Freixas 1999, Dávila & Walther 2017) or agency problems (Rajan 2005, Kashyap et al. 2008) $\rightarrow$ excessive risk-taking More

- The reforms did not affect the number of banks operating in each state or the threat of new banks entering.

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Lower Funding Costs

- With fixed costs per borrower: more borrowers $\rightarrow$ diversification $\rightarrow$ lower funding costs (Diamond 1984, Boyd and Prescott 1986, Williamson 1986, Levine et al. 2016, Goetz et al. 2016). Banking is a natural monopoly.

- Reforms sharply increased the number of borrowers per institutions, so may lower funding costs.

- A similar argument made by treated bank managers (Holtfrerich 1995).

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Internal Capital Markets

- Internal capital markets are optimal when interbank markets are costly (Stein 1997).
- Banks use internal capital markets (Houston et al. 1997, Gilje et al. 2016, Cortés and Strahan 2017).
- During the breakup, the treated banks were allowed to hold interbank accounts, but had to settle their mutual balances through the central banking system, just like the other commercial banks (Adler 1949).

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Large Capital Base

- Allows spreading of fixed costs and funding large loans.
- Treated branch managers expressed concerns about high overhead costs from operating separate payment transactions systems and from employing specialized credit experts for each industry before the reforms (Horstmann 1991).
- During the breakup, the treated banks formed loan syndicates with other treated and untreated banks to fund large loans (Wolf 1994).

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More Complex Management

- Transmitting information in a large organization may be more costly (Williamson 1967).
- Funding costs may be higher for large organizations (Krasa and Villamil 1992a,b).
- Limited resources of managers may imply increasing marginal costs of lending (Cerasi and Daltung 2000).

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Processing Soft Information

- Models by Stein (2002), Berger and Udell (2002), and Brickley et al. (2003) imply large organizations are less able to collect and process soft information.

- During the first phase of the breakup, each treated state-level bank decided on loan applications independently in regionally specialized credit councils (Horstmann 1991). After the reforms, a centralized structure took over.

- Soft information is important for opaque firms (small, young, low-collateral), e.g., for "character loans". Cross-sectional empirical evidence by Berger et al. (1995, 2005).

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Higher Risk-Taking

- Big banks may take excessive risks, due to moral hazard or agency problems.
- Moral hazard: Governments are more likely to bail out "too-big-to-fail" banks when they become insolvent (Freixas 1999, Dávila and Walther 2017).
- Agency problems: Monitoring of local bank managers is more difficult in big banks, leading to excessive risk-taking (Rajan 2005, Kashyap et al. 2008, Goetz et al. 2013).

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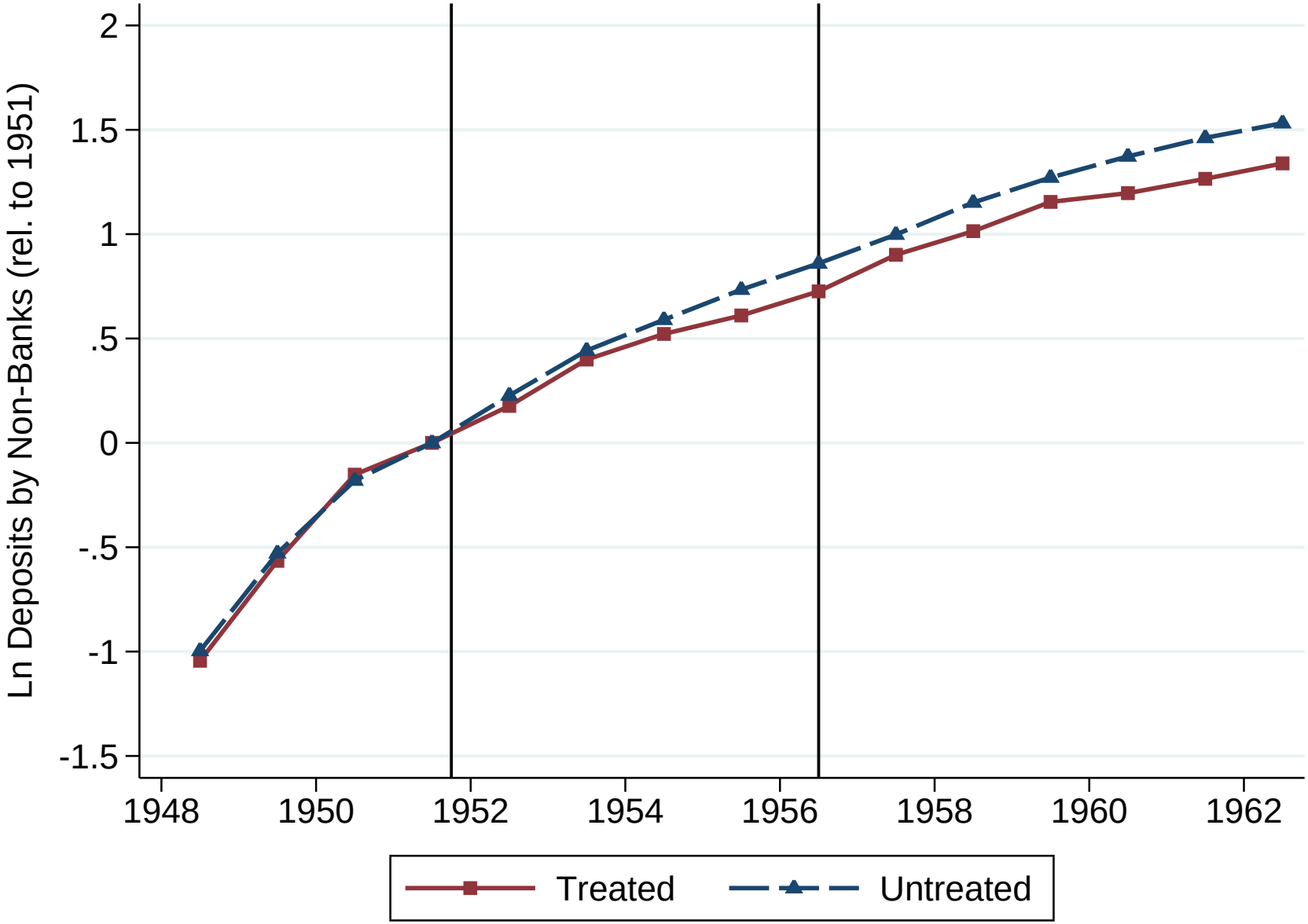
Deposits at the Treated Banks Grew More Slowly



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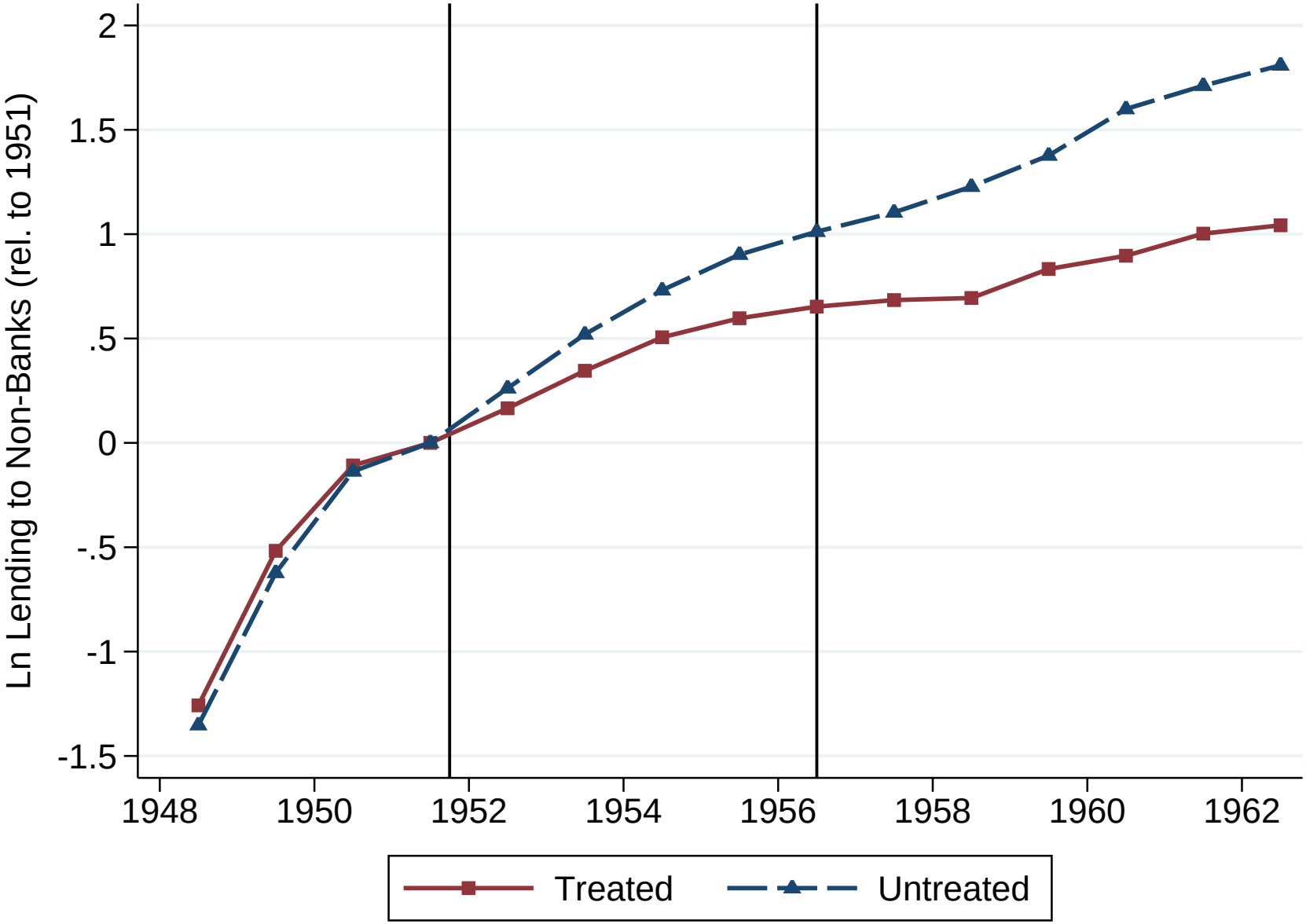
Lending With All Other Banks in Control Group



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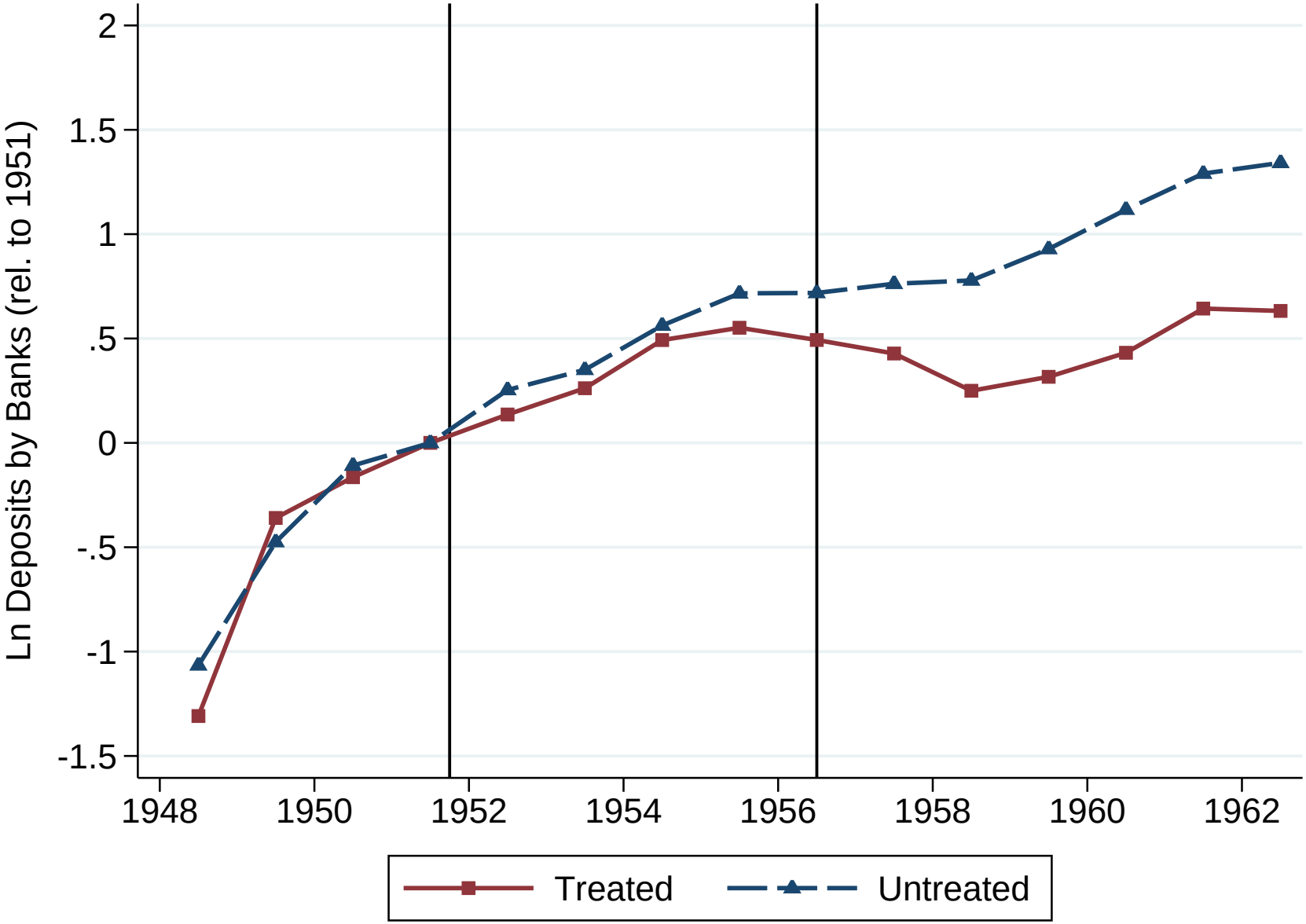
Interbank Deposits at the Treated Banks Fall



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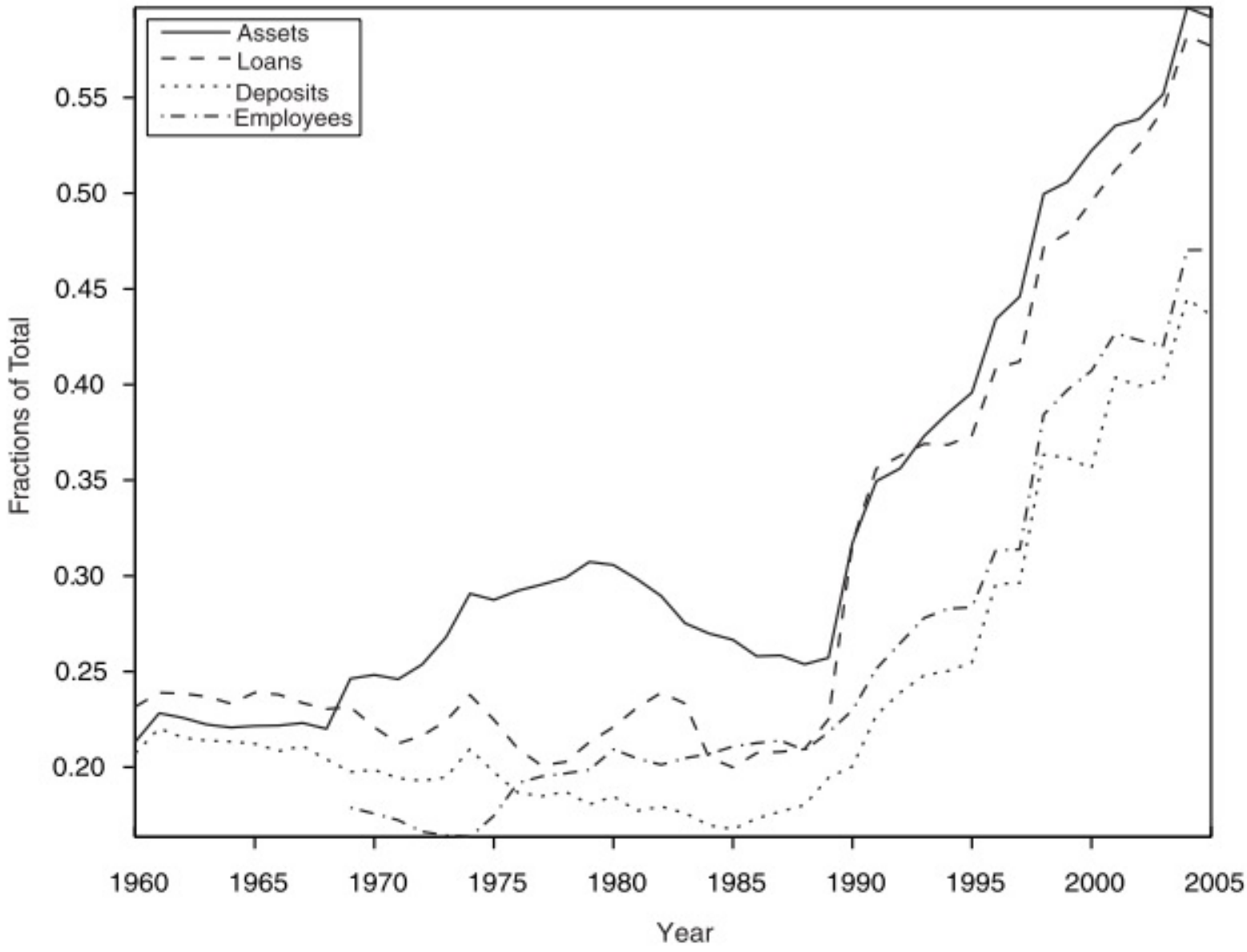
Market Share of the 10 Biggest Banks in the US (McCord & Prescott 2014)



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