The Effects of Lender of Last Resort on Financial Intermediation: Evidence from the Great Depression in Japan

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Motivation

–Fragility of Banks (or Banking System)

- Banks issue liquid liabilities (demand deposits) while holding illiquid assets (loans)
- Self-fulfilling bank run (Diamond and Dybvig 1983)
  - Depositors might fear that the other depositors would run on their bank
  - The bank is forced to liquidate illiquid assets rapidly at deep discount, which threatens its solvency
- Bank run can also be contagious if there are contractual linkages between banks (Allen and Gale, 2000)

Lender of Last Resort (LOLR)

- A central bank should act as the Lender of Last Resort (LOLR) to accommodate a sharp increase in liquidity demand
- The idea dates back to the 19th century with the seminal work of Thornton (1802) and Bagohet (1873).
- They both recognize that the central bank's liquidity provision, if credible, can ease depositors' concern about a potential run on their banks and eliminate their incentive to withdraw en masse.
- The Bank of England (BOE) acted as the LOLR, decisively and successfully, when it led a consortium of major banks in an effort to form a guarantee fund and rescue the Barings Bank in November of 1890

Empirical Analysis of LOLR

- It is an elusive topic to tackle
- A central bank's liquidity provision often targets weak banks (or weak banking systems) whose asset quality is questioned by investors
- Weak banks might have limited lending opportunity
- We cannot just examine the correlation between financial intermediation activities and the central bank's liquidity support.
- Moreover, if the central bank is fully committed to its obligation as the LOLR ex ante, then self-fulfilling bank runs are unlikely to materialize (and the central bank's liquidity assistance is unnecessary)
- It is difficult to establish the counterfactual scenario to the extent that the central bank's commitment is unobservable.

What our paper tries to do

- Examine whether LOLR policies mitigate financial contraction
- Use our institutional knowledge of how the Bank of Japan (BOJ) executed its LOLR policy during the Great Depression
- The BOJ assisted the financial system largely through those commercial banks with which it had long, established transaction relationships (Ishii, 1980, Okazaki, 2007, Shiratori, 2003).
- Even during the period of general financial tightness in the interwar period, the BOJ gave preferential access to its liquidity facility only for 20% of banks.
- During the Great Depression, nearly 90% of the BOJ's special loans were given to these banks
- The BOJ's lending policy gives quasi-experimental setting in which we compare the loan and deposit growth of these "BOJ correspondent banks" with that of the other banks

Related Papers I

- Grossman (1994) notes considerable cross-country heterogeneity in LOLR policies during the Great Depression
  - LOLR policies seems to have helped banking stability
- The Atlanta Fed exhibited its strong commitment to act as the LOLR, unlike the other Federal Reserve banks, during the Great Depression.
- Bank failure rate and unemployment rate in the Atlanta Fed District were significantly lower than those in the nearby districts because of the Atlanta Fed's aggressive lending policy (Richardson and Troost, 2009, Ziebarth, 2013, and Jalil, 2014).

Related Papers II

- Okazaki (2007) compiles the detailed bank-level data on BOJ's transactions relationship during 1925-1931.
  - About 20% of ordinary banks had transactions relationship with BOJ
  - BOJ correspondent banks had higher return on asset and higher equity ratio than non-correspondent banks
  - The BOJ correspondent banks were less likely to fail than non-correspondent banks if they were solvent.
- Akiyoshi (2006) examines the effect of bank runs on output growth during the Great Depression (by prefectural level data)
  - Bank runs had a negative effect on loan growth.
  - Loan growth had only limited effects on output growth

Financial Panic in 1931 and 1932

- Japan returned to the gold standard in January 1930 just when the Great Depression was underway in the US and elsewhere
- Even after it abondoned the gold standard, the BOJ maintained the high rate until March 1932 and lowered it only gradually
  - The BOJ remained concerned about currency stability
- A major bank panic struck the city of Nagoya in Aichi Prefecture in December 1931, leading to a wave of bank failures in the region through March 1932
- The Nagoya branch of the BOJ extended special loans to correspondent banks and in some cases even to non-correspondent banks as an extraordinary measures
- Bank panic affected the other prefectures as well
  - Chukyo area (Gifu, Shizuoka and Mie), Chubu(Yamanashi and Nagano), Tohoku area (Aomori and Iwate)

Bank-Level Data

- The BOJ's transactions relationship (Okazaki, 2007; Sawada, 2010)
  - A proxy for preferential access to the LOLR
  - Nihon Ginko Enkakushi『日本銀行沿革史』(the History of the Bank of Japan)
- Balance sheet data
  - Growth rate of deposits and loans
  - Calculate cash-to asset ratio, capital-to-asset ratio, return on assets
  - Ginkokyoku Nenpo『銀行局年報』(Yearbook of the Bank Bureau)
- The location of BOJ branches as well as that of each individual bank
  - Measure the geographical distance between them
  - Capture exogenous variation in access to the BOJ's liquidity provisions
  - Ginko Soran『銀行総覧』(Handbook of Banks)

Hypothesis

- To the extent that BOJ correspondent banks had better access to BOJ loans than the other banks, depositors are likely to have been less concerned about the liquidity condition of BOJ correspondent banks during the period of banking crisis (1931-1932).
- BOJ correspondent banks are more likely to have more loan growth during the period of banking crisis, as compared to the other banks.
- BOJ correspondent banks are less likely to be closed during the period of banking crisis, as compared to the other banks.

Basic econometric specification

- $\Delta Y_{it} = \beta_i + \beta_t + \gamma(BOJ_i)(Crisis_t) + \beta X_{it} + \varepsilon_{it}$

  - Subscript *i* and *t* denote bank and year, respectively
  - ΔY_{it} is loan growth or deposit growth
  - β_i and β_t denote bank-fixed effects and year-fixed effects, respectively
  - BOJ_i is a dummy variable for BOJ correspondence bank (as of 1928)
  - $Crisis_t$ is a dummy variable for the period of banking crisis (1931-1932)
  - X_{it} is a set of control variables.
  - Panel data consists of 1928-1932

Control Variables

- Measures of bank health/profitability
  - Capital-to-asset ratio, cash-to-asset ratio, and return on assets
  - Bank size (a natural log of assets)
  - These control variables are econometrically important to the extent that transactions relationship with BOJ might be positively related to the financial health and/or profitability of banks
- Prefecture-level variables
  - Rice output growth and manufacturing production growth
  - The ratio of raw silk production to total manufacturing production as of 1928 and interact with a dummy variable for the crisis period.
- Differentiate two different types of banks, banks that operate in large cities and the ones that operate in rural towns
  - Population density in the headquarter of each bank at the city/town-level and interact it with the crisis dummy.

IV specification

First stage regressions

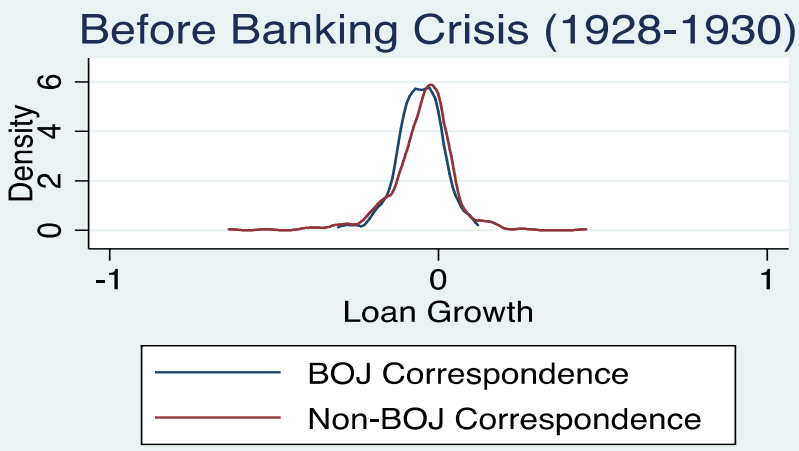
- $(BOJ_i)(Crisis_t) = \alpha_i + \alpha_t + \lambda(Distance_i)(Crisis_t) + \alpha X_{it} + u_{it}$

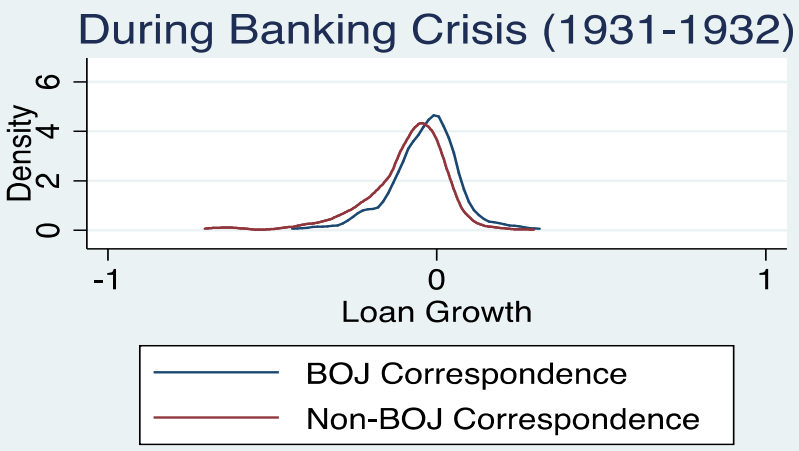
– $Distance_i$ is the distance between bank's headquarter and the nearest BOJ branch

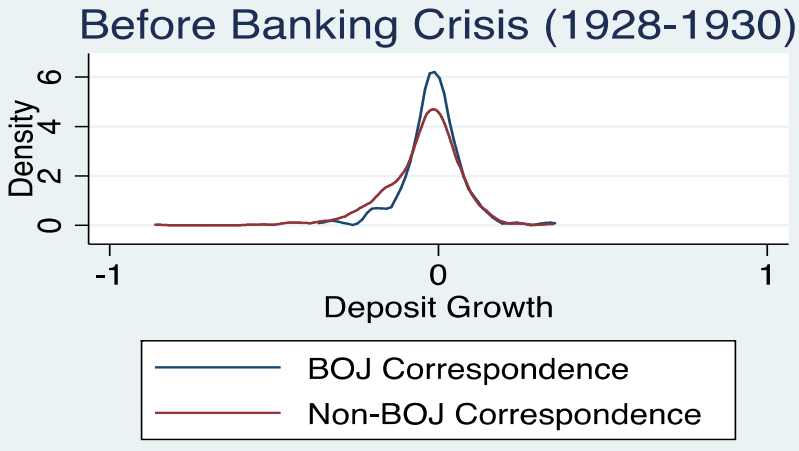
– One of the major considerations in the BOJ's decision when starting transactions relationship is the geographical proximity of banks to the BOJ(Ishii(1980))

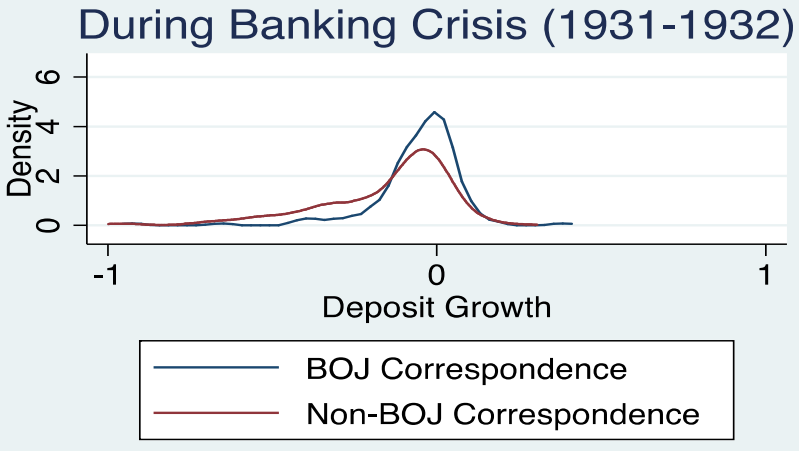
–BOJ was likely to minimize the transaction cost associated with cash delivery as well as information collection

BOJ Correspondent Banks vs. Non-BOJ Correspondent Banks









Locations of BOJ branches, correspondent banks and Non-correspondent banks

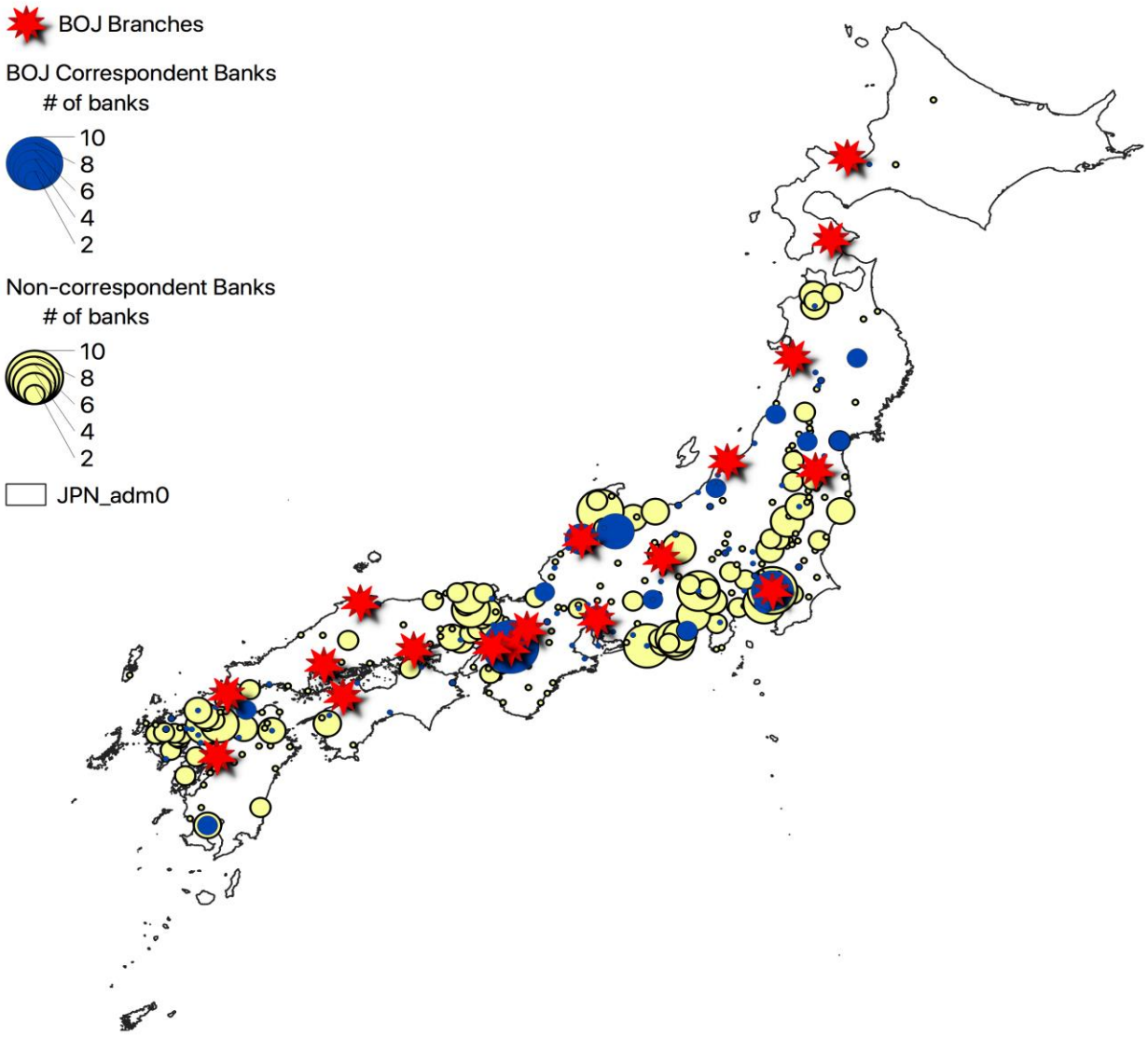


Table 1: Impacts of Lender of Last Resort on Loan and Deposit Growth

VARIABLES	(1) Loan Growth	(2) Deposit Growth	(3) Loan Growth	(4) Deposit Growth	(5) Loan Growth	(6) Deposit Growth	(7) Loan Growth	(8) Deposit Growth	(9) Loan Growth	(10) Deposit Growth
(Banking Crisis)*(BOJ Correspondence)	0.0638***	0.0632***	0.0726***	0.0617***	0.0722***	0.0616***	0.0734***	0.0450**	0.0757***	0.0516**
	(0.0120)	(0.0152)	(0.0124)	(0.0148)	(0.0125)	(0.0149)	(0.0191)	(0.0216)	(0.0189)	(0.0211)
ln(Assets)			-0.155***	-0.126***	-0.157***	-0.127***	-0.161***	-0.131***	-0.160***	-0.127***
			(0.0357)	(0.0346)	(0.0359)	(0.0346)	(0.0375)	(0.0355)	(0.0387)	(0.0370)
Return on Assets			0.119	0.336	0.120	0.337	0.0771	0.306	0.0461	0.235
			(0.155)	(0.320)	(0.151)	(0.318)	(0.149)	(0.314)	(0.149)	(0.302)
Capital-to-Asset Ratio			0.0640	-0.0163	0.0651	-0.0161	0.0670	-0.0161	0.0680	-0.0142
			(0.0483)	(0.0690)	(0.0482)	(0.0690)	(0.0492)	(0.0682)	(0.0497)	(0.0673)
Cash-to-Asset Ratio			0.872***	0.0565	0.877***	0.0643	0.891***	-0.0590	0.904***	-0.0296
			(0.229)	(0.256)	(0.230)	(0.254)	(0.242)	(0.278)	(0.242)	(0.274)
Industrial Output Growth					0.0463*	0.0194	0.0473*	0.0241	0.0483*	0.0272
					(0.0268)	(0.0321)	(0.0269)	(0.0320)	(0.0271)	(0.0322)
Rice Output Growth					-0.0529	-0.0490	-0.0531	-0.0448	-0.0491	-0.0350
					(0.0352)	(0.0465)	(0.0351)	(0.0467)	(0.0352)	(0.0475)
(Banking Crisis)*(ln(Assets))							0.000776	0.00834	-0.00390	-0.00187
							(0.00641)	(0.00753)	(0.00706)	(0.00810)
(Banking Crisis)*(Return on Assets)							0.342	0.278	0.298	0.165
							(0.277)	(0.337)	(0.279)	(0.335)
(Banking Crisis)*(Capital-to-Asset Ratio)							-0.00402	0.0290	-0.00210	0.0357
							(0.0427)	(0.0592)	(0.0437)	(0.0598)
(Banking Crisis)*(Cash-to-Asset Ratio)							-0.0586	0.315	-0.114	0.193
							(0.372)	(0.233)	(0.374)	(0.237)
(Banking Crisis)(silk / total manufacturing in 1928)									-0.0598**	-0.146***
									(0.0287)	(0.0391)
(Banking Crisis)*(Population density)									0.00207	0.00393
									(0.00219)	(0.00244)
Constant	-0.0439***	0.0351***	2.187***	1.886***	2.199***	1.899***	2.269***	1.963***	2.244***	1.909***
	(0.00583)	(0.00613)	(0.529)	(0.515)	(0.533)	(0.514)	(0.558)	(0.529)	(0.575)	(0.551)
Observations	2,737	2,737	2,610	2,610	2,610	2,610	2,610	2,610	2,610	2,610
R-squared	0.025	0.187	0.079	0.209	0.081	0.210	0.082	0.212	0.085	0.223
Number of bank	654	654	646	646	646	646	646	646	646	646

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2: Impacts of Lender of Last Resort on Loan and Deposit Growth (IV Specification)

VARIABLES	(1) Loan Growth	(2) Deposit Growth	(3) Loan Growth	(4) Deposit Growth	(5) Loan Growth	(6) Deposit Growth	(7) Loan Growth	(8) Deposit Growth	(9) Loan Growth	(10) Deposit Growth
(Banking Crisis)*(BOJ Correspondence)	0.238***	0.221**	0.200***	0.298***	0.199***	0.301***	0.459***	0.737***	0.416**	0.627***
	(0.0565)	(0.110)	(0.0508)	(0.0644)	(0.0510)	(0.0660)	(0.178)	(0.257)	(0.173)	(0.242)
ln(Assets)			-0.156***	-0.126***	-0.157***	-0.128***	-0.140***	-0.0922**	-0.142***	-0.0973**
			(0.0373)	(0.0366)	(0.0375)	(0.0365)	(0.0390)	(0.0419)	(0.0407)	(0.0423)
Return on Assets			-0.0235	0.0709	-0.0221	0.0685	-0.0228	0.127	-0.0484	0.0750
			(0.154)	(0.318)	(0.151)	(0.317)	(0.165)	(0.372)	(0.161)	(0.342)
Capital-to-Asset Ratio			0.0906*	0.0332	0.0913*	0.0334	0.111**	0.0625	0.105**	0.0485
			(0.0517)	(0.0678)	(0.0517)	(0.0678)	(0.0535)	(0.0744)	(0.0535)	(0.0712)
Cash-to-Asset Ratio			0.939***	0.181	0.945***	0.193	1.084***	0.288	1.064***	0.241
			(0.232)	(0.260)	(0.234)	(0.259)	(0.262)	(0.320)	(0.260)	(0.308)
Industrial Output Growth					0.0399	0.00723	0.0292	-0.00831	0.0367	0.00756
					(0.0261)	(0.0305)	(0.0286)	(0.0374)	(0.0283)	(0.0356)
Rice Output Growth					-0.0577*	-0.0580	-0.104**	-0.135**	-0.0899**	-0.104
					(0.0351)	(0.0502)	(0.0422)	(0.0682)	(0.0403)	(0.0640)
(Banking Crisis)*(ln(Assets))							-0.0802**	-0.137**	-0.0723**	-0.118**
							(0.0383)	(0.0550)	(0.0363)	(0.0497)
(Banking Crisis)*(Return on Assets)							0.182	-0.00819	0.0973	-0.173
							(0.360)	(0.441)	(0.358)	(0.425)
(Banking Crisis)*(Capital-to-Asset Ratio)							-0.115	-0.170	-0.0864	-0.107
							(0.0741)	(0.105)	(0.0680)	(0.0914)
(Banking Crisis)*(Cash-to-Asset Ratio)							-0.254	-0.0357	-0.270	-0.0710
							(0.304)	(0.389)	(0.302)	(0.346)
(Banking Crisis)(silk / total manufacturing in 1928)									-0.112**	-0.234***
									(0.0448)	(0.0650)
(Banking Crisis)*(Population density)									-0.00146	-0.00204
									(0.00310)	(0.00432)
Observations	2,728	2,728	2,589	2,589	2,589	2,589	2,589	2,589	2,589	2,589
R-squared	-0.051	0.146	0.036	0.114	0.038	0.112	-0.137	-0.239	-0.081	-0.083
Number of bank	645	645	625	625	625	625	625	625	625	625
First Stage F Statistic	6.230	6.230	54.87	54.87	54.23	54.23	11.64	11.64	11.13	11.13

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Probability of closure in 1931 and 1932

- $Prob(Closure_i) = \alpha + \gamma(BOJ_i) + \beta X_i + \varepsilon_i$

  - Sample banks: Bank existed at the end of 1930
  - *Closure* is a dummy variable for closures during 1931–32
  - List of bank closures are obtained from Shindo(1987)
  - X_i denotes control variables whose values are at the end of 1930
  - Estimation : Probit model and Bivariate probit model

Table 3: Impacts of Lender of Last Resort on bank closures

	(1)	(2)	(3)	(4)	(5)		(6)		(7)		(8)	
	Probit	Probit	Probit	Probit	Bivariate probit		Bivariate probit		Bivariate probit		Bivariate probit	
VARIABLES	Closure	Closure	Closure	Closure	Closure	BOJ	Closure	BOJ	Closure	BOJ	Closure	BOJ
BOJ Correspondence	-0.343*	-0.555***	-0.491**	-0.478**	-1.158***		-1.263***		-1.361***		-1.409***	
	(0.206)	(0.208)	(0.209)	(0.215)	(0.297)		(0.308)		(0.367)		(0.414)	
ln(Assets)	0.0886**	0.141***	0.0726	0.139**	0.241***	0.910***	0.278***	0.973***	0.259***	1.108***	0.325***	1.084***
	(0.0450)	(0.0470)	(0.0572)	(0.0628)	(0.0644)	(0.0650)	(0.0672)	(0.0694)	(0.0880)	(0.0824)	(0.0939)	(0.0855)
Return on Assets			-4.076	-3.743					-4.079	5.607***	-3.695	6.122***
			(2.773)	(2.921)					(2.935)	(2.080)	(3.054)	(2.034)
Capital-to-Asset Ratio			-0.534	-0.575					-0.402	1.011***	-0.428	0.942***
			(0.382)	(0.420)					(0.379)	(0.170)	(0.412)	(0.184)
Cash-to-Asset Ratio			-0.102	0.0971					0.243	0.625	0.465	0.464
			(1.909)	(2.088)					(1.946)	(2.255)	(2.133)	(2.301)
Silk-dependent area		0.571***	0.572***	0.554***			0.663***	0.790***	0.689***	0.807***	0.687***	0.834***
		(0.122)	(0.126)	(0.136)			(0.118)	(0.152)	(0.121)	(0.154)	(0.134)	(0.161)
Population density				-0.0528**							-0.0368	0.0556***
				(0.0266)							(0.0263)	(0.0214)
Industrial Output Growth				-2.290**							-2.288**	-1.153
				(1.123)							(1.125)	(1.202)
Rice Output Growth				-3.269***							-2.909**	1.090
				(1.243)							(1.206)	(1.746)
Distance to Nearest BOJ						-0.00964***		-0.0116***		-0.0135***		-0.0118***
						(0.00190)		(0.00205)		(0.00216)		(0.00227)
Constant	-2.456***	-3.465***	-2.181**	-3.044***	-4.459***	-14.05***	-5.330***	-15.28***	-4.776***	-17.67***	-5.680***	-17.63***
	(0.635)	(0.678)	(0.895)	(0.961)	(0.872)	(1.010)	(0.924)	(1.091)	(1.265)	(1.296)	(1.356)	(1.357)
Average marginal effects of BOJ correspondence	-0.0638*	-0.0992***	-0.0891**	-0.0837**	-0.234***		-0.241***		-0.268***		-0.270***	
	(0.0383)	(0.0375)	(0.0382)	(0.0379)	(0.0693)		(0.0681)		(0.0851)		(0.0953)	
Observations	777	777	726	726	777		777		726		726	
pseudo-R-squared	0.00747	0.0457	0.0532	0.0864								
rho					0.586		0.535		0.663		0.706	
Murphy's GF test					-		-		7.558		9.606	
p-value					-		-		0.579		0.383	
Hosmer-Lemeshow's GF test					15.92		16.97		26.57		13.59	
p-value					0.774		0.713		0.185		0.886	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Concluding Remarks

- This paper uses a historical episode from Japan in order to examine the impact of LOLR policy on financial intermediation
- Preferential access to the BOJ's provision of liquidity made a large difference in terms to mitigating financial contraction
- It also decreased the probability of closure in the crisis period.
- These empirical patterns are robust even after controlling for the financial health of banks and proxies for local economic conditions and after instrumenting it with the geographical proximity to the nearest BOJ branch
- Our results are consistent with the view that:
  - LOLR policies act as an effective backstop for liquidity shortage
  - Financial contraction that the Japanese economy experienced during the Great Depression would likely have been lessened, had the BOJ taken less selective approach.

Appendix

Financial crises in 1920s and 1930s

year	All banks	Ordinary banks	Closed banks	Closure rate	Deposit growth rate	Postal saving growth rate	Total loans by the BOJ (outstanding)	Special loans (outstanding)
1920	1987	1326	n.a.	–	1.4%	19.5%	158.6	–
1921	1967	1331	n.a.	–	10.6%	1.8%	298.0	–
1922	1945	1799	16	0.81%	21.0%	10.4%	344.1	–
1923	1840	1701	18	0.93%	0.1%	13.8%	641.3	133.5
1924	1765	1629	13	0.71%	3.7%	−0.1%	523.7	144.8
1925	1670	1537	9	0.51%	7.8%	3.2%	463.9	148.0
1926	1544	1420	8	0.48%	5.2%	7.4%	517.9	159.0
1927	1396	1283	44	2.85%	−1.6%	30.5%	815.2	402.9
1928	1131	1031	20	1.43%	3.4%	13.9%	761.1	649.4
1929	976	881	8	0.71%	−0.4%	18.1%	649.6	598.1
1930	872	782	27	2.77%	−6.0%	13.4%	688.4	585.4
1931	771	683	71	8.14%	−5.4%	12.8%	882.7	575.7
1932	625	538	20	2.59%	0.6%	−1.6%	632.0	565.6
1933	601	516	3	0.48%	6.0%	5.3%	707.0	552.4
1934	563	484	0	0.00%	7.1%	5.0%	712.8	529.8
1935	545	466	2	0.36%	5.4%	5.5%	661.6	498.1

Source: Goto(1970) and the Bank of Japan(1969)

Note: The unit of the BOJ loans is one million yen

More Data

- Prefecture-level controls
  - Rice output from Teikoku Toukei Nenkan『帝国統計年鑑』(Statistical Yearbook of the Empire of Japan).
  - Manufacturing production data from Kogyo Tokei 50 Nen Shi『工業統計50年史』(50 Year History of Manufacturing Census).
  - The data on raw silk production are drawn from Kojo Tokei Hyo『工場統計表』(Manufacturing Census)
- The city/town-level data on population density
  - Kokusei Chosa Hokoku『国勢調査報告』(Report on the Population Census) and Zenkoku Shichoson betsu Menseki Shirabe『全国市町村別面積調』(Census of Land Area by City-Town- Village).

LOLR loans from BOJ in 1920s and 1930s

- Emergency loans from the BOJ were called “Special Loans”

–According to the three special laws (1923 and 1927)

–Loans provided at the discretion of the BOJ (Honko-guchi)

- Special loans did not need the due process and conditions that would normally have to meet
- 95% of the special loans based on the special law of 1927 were provided to the BOJ correspondent banks (Ishii 1980 and Okazaki 2007).

Distance to the Nearest BOJ branch

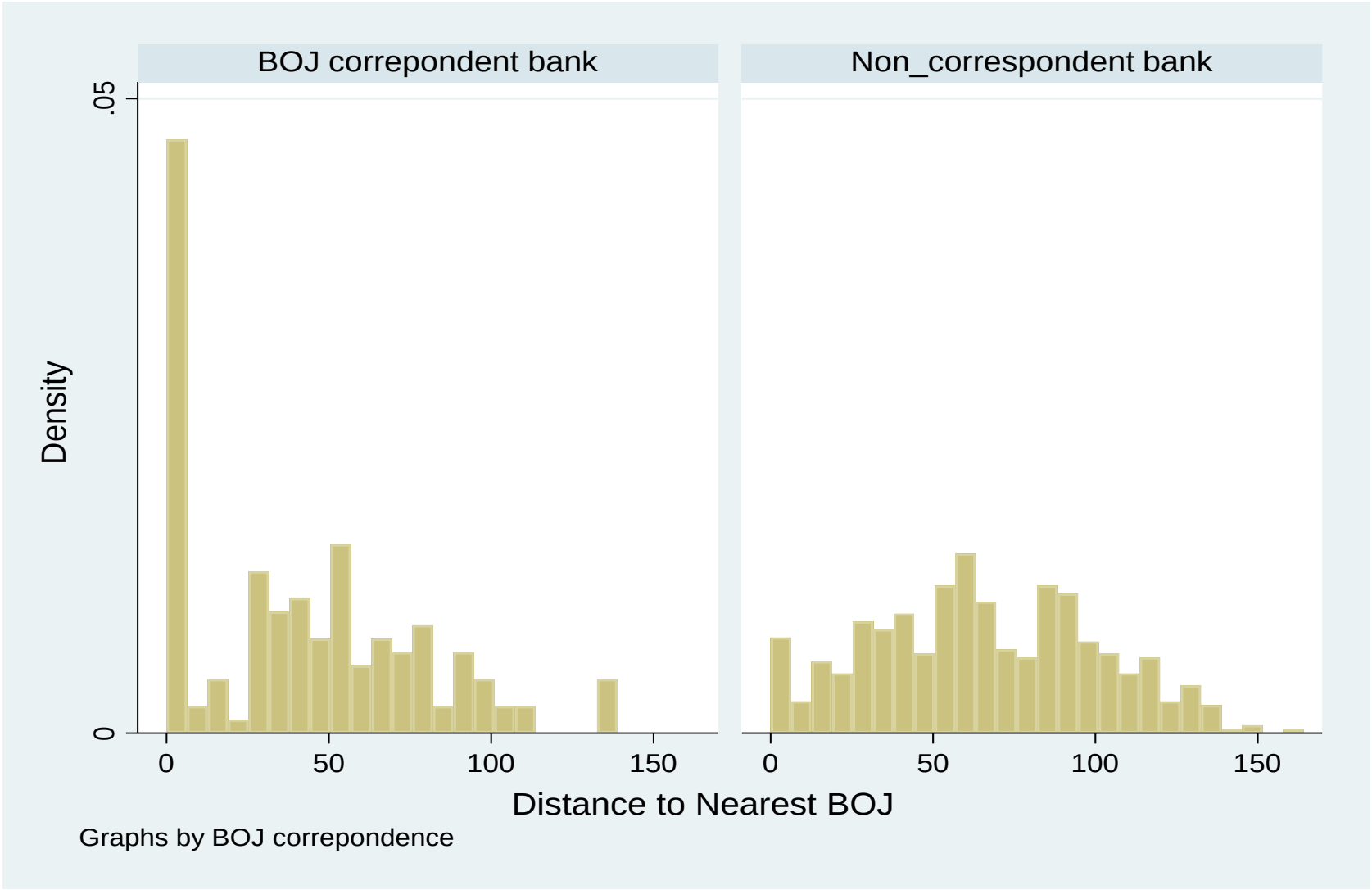


Table 4: Impacts of Lender of Last Resort on bank closures by silk-dependence

	Silk-dependent area			Independent area		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Closure	Closure	Closure	Closure	Closure	Closure
BOJ Correspondence	-0.216	-0.130	-0.0690	-1.517***	-1.490***	-1.479***
	(0.268)	(0.266)	(0.284)	(0.502)	(0.503)	(0.522)
ln(Assets)	0.114	0.0281	0.117	0.206***	0.176**	0.230***
	(0.0723)	(0.0830)	(0.0905)	(0.0637)	(0.0792)	(0.0888)
Return on Assets		-2.776	-2.106		-6.861	-6.840
		(3.099)	(3.662)		(4.930)	(5.162)
Capital-to-Asset Ratio		-0.724	-0.657		-0.146	-0.0969
		(0.548)	(0.615)		(0.310)	(0.331)
Cash-to-Asset Ratio		-1.954	-0.222		0.919	1.041
		(3.290)	(3.397)		(2.224)	(2.416)
Population density			-0.0555			-0.0529
			(0.0451)			(0.0348)
Industrial Output Growth			-4.022**			0.744
			(1.928)			(1.471)
Rice Output Growth			-9.202***			-3.090**
			(2.726)			(1.462)
Constant	-2.599***	-0.952	-2.218	-4.336***	-3.708***	-4.378***
	(1.006)	(1.290)	(1.401)	(0.920)	(1.221)	(1.349)
Average marginal effects of BOJ correspondence	-0.0520	-0.0315	-0.0155	-0.193***	-0.194***	-0.186***
	(0.0644)	(0.0644)	(0.0636)	(0.0665)	(0.0677)	(0.0685)
Observations	338	319	319	439	407	407
pseudo-R-squared	0.00887	0.0180	0.0884	0.0641	0.0766	0.102

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Panic area(silk-dependent area) analyses

- $\Delta Y_{it} = \beta_i + \beta_t + \gamma(BOJ_i)(Crisis_t) + \delta(BOJ_i)(Silk_j)(Crisis_t) + + \mu(Silk_j)(Crisis_t) + \beta X_{it} + \varepsilon_{it}$

$Silk_{jt}$ is a dummy variable for silk dependent areas (as of 1928)

Four types of banks can be compared:

(1)BOJ correspondence banks in non-panic areas ([γ])

(2)Non- correspondence banks in non-panic areas (base sample)

(3)BOJ correspondence banks in panic areas ([γ]+[δ]+[μ])

(4)Non-correspondence bank in panic areas ([μ])

Table 5 Silk-dependent area and loan(deposit) growth

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Loan Growth	Deposit Growth	Loan Growth	Deposit Growth	Loan Growth	Deposit Growth	Loan Growth	Deposit Growth
(Banking Crisis)*(Silk-dependent area)*(BOJ correspondence)	-0.0312	-0.0428	-0.0479*	-0.0463	-0.0486*	-0.0432	-0.0443*	-0.0345
	(0.0246)	(0.0314)	(0.0256)	(0.0312)	(0.0259)	(0.0312)	(0.0263)	(0.0315)
(Banking Crisis)*(BOJ Correspondence)	0.0843***	0.0863***	0.0936***	0.0828***	0.0970***	0.0701***	0.0928***	0.0613***
	(0.0150)	(0.0164)	(0.0150)	(0.0162)	(0.0211)	(0.0227)	(0.0212)	(0.0223)
(Banking Crisis)*(Silk-dependent area)	0.00295	-0.00496	0.00911	-0.00953	0.00931	-0.00707	0.0107	-0.00418
	(0.0141)	(0.0189)	(0.0142)	(0.0190)	(0.0146)	(0.0191)	(0.0147)	(0.0191)
ln(Assets)	-0.159***	-0.0874**	-0.154***	-0.126***	-0.161***	-0.130***	-0.160***	-0.128***
	(0.0343)	(0.0347)	(0.0356)	(0.0347)	(0.0373)	(0.0354)	(0.0374)	(0.0353)
Return on Assets			0.129	0.323	0.0835	0.303	0.0774	0.290
			(0.160)	(0.322)	(0.151)	(0.316)	(0.151)	(0.315)
Capital-to-Asset Ratio			0.0653	-0.0145	0.0692	-0.0149	0.0698	-0.0138
			(0.0480)	(0.0693)	(0.0490)	(0.0686)	(0.0491)	(0.0681)
Cash-to-Asset Ratio			0.887***	0.0672	0.907***	-0.0434	0.913***	-0.0320
			(0.229)	(0.255)	(0.241)	(0.277)	(0.240)	(0.275)
Industrial Output Growth					0.0467*	0.0261	0.0453*	0.0231
					(0.0269)	(0.0319)	(0.0270)	(0.0319)
Rice Output Growth					-0.0512	-0.0387	-0.0517	-0.0399
					(0.0354)	(0.0475)	(0.0354)	(0.0477)
(Banking Crisis)*(ln(Assets))					-0.000353	0.00585	-0.00213	0.00217
					(0.00635)	(0.00750)	(0.00698)	(0.00818)
(Banking Crisis)*(Return on Assets)					0.359	0.269	0.369	0.291
					(0.277)	(0.339)	(0.276)	(0.340)
(Banking Crisis)*(Capital-to-Asset Ratio)					-0.00869	0.0266	-0.0122	0.0194
					(0.0431)	(0.0591)	(0.0438)	(0.0598)
(Banking Crisis)*(Cash-to-Asset Ratio)					-0.0658	0.298	-0.0860	0.257
					(0.368)	(0.232)	(0.372)	(0.240)
(Banking Crisis)*(Population density)							0.00194	0.00401
							(0.00226)	(0.00257)
Constant	2.304***	1.325***	2.171***	1.890***	2.256***	1.949***	2.243***	1.923***
	(0.505)	(0.511)	(0.529)	(0.517)	(0.554)	(0.528)	(0.556)	(0.526)
Observations	2,737	2,737	2,610	2,610	2,610	2,610	2,610	2,610
R-squared	0.062	0.195	0.080	0.211	0.084	0.213	0.084	0.214
Number of bank	654	654	646	646	646	646	646	646

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1