Too Big to Fail: the Panic of 1927

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Abstract

The purpose of this paper is to explore whether the Bank of Japan provided the special loans for insolvent banks against the panic of 1927. This paper uses a cross-sectional data set consisting of observations on 1364 ordinary banks. The logit model regression at this paper provides each bank's estimated propensity to close. And the results of the tobit model regressions imply that supported banks had higher closure risk or occupied key positions in the local loan-markets and that the bank bailouts may have reflected political factors to some extent.

JEL Classification : G21, G28, N25.

Keywords : lender of last resort; too big to fail; bank bailouts; bank closure risk; the panic of 1927.

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Sudden crises of systemic illiquidity may trigger panics (Diamond and Dybvig 1983; Carlson 2005). In a normally functioning interbank market, the surplus liquidity in some banks can be transferred to illiquid banks. On the other hand, the panic may result in even solvent banks becoming illiquid since they cannot borrow from other banks. The lender of last resort (hereafter the LLR) has a role of emergency lending to illiquid banks (Bagehot 1873; Miron 1986; Bordo 1990). Since bank managers can take additional risks in such a rescue under skewed incentives, the LLR assistance is expected to refuse the moral hazard problem (Rochet and Tirole 1996; Goodhart and Huang 2005). Insolvent banks are more likely to fail due to depositors' discipline during the panic (Gorton 1985; Calomiris and Mason 2003a). If the LLR can target relatively solvent banks, the costs of a partial bailout could be much less than that of a system-wide bailout (Calomiris and Mason 2003b). However, the LLR may prevent insolvent banks from failing as the optimal choice if the authority regards that they occupy key positions in the banking system or if the number of bank failures is large (Freixas, *et al.* 2002; Acharya and Yorulmazer 2007). This time-inconsistency of the bank bailout policy is the "too big to fail" doctrine.[1]

In the period before the Second World War, the Bank of Japan had the transaction relationships with banks, which were influential in the local financial markets (Ishii 1980). When the Japan's banking system faced the depression, the Bank of Japan provided liquidity support for those customer banks (Ishii 1980; Okazaki 2006a).[2] Some argue that such bank bailouts during the period from the 1910s to the first half of the 1920s caused the moral hazard problems (Fukai 1941; Takahashi and Morigaki 1993; Teranishi 1999). Against the panic of 1927, the Bank of Japan avoided that bailout policy and organized the screening committee to select which banks to rescue (Takahashi and Morigaki 1993). Okazaki (2006a) emphasizes that the Bank of Japan bailed out sound banks during the 1920s and the 1930s. On the other hand, Ehiro (2000) finds that the Bank of Japan provided

[1] For example, Gup (2005) collects historical or cross-country comparisons.

[2] Kasuya (2001) surveys related literature.

the special loans for some closed banks against the panic of 1927 even though they were insolvent.

The purpose of this paper is to explore whether the Bank of Japan provided the special loans for insolvent banks against the panic of 1927. Using a cross-sectional data set consisting of observations on 1364 ordinary banks, this paper uses the basic idea of the propensity scoring approach.[3] The analysis is conducted on two levels. The first examines causes of bank closure during the panic period to estimate closure risk. 30 ordinary banks closed during the panic period 15 March from 25 April in 1927. The logit model regression provides the estimated propensity to close. This paper regards the estimated propensity score as bank closure risk. The second level of analysis is the tobit model regressions, which test the statistical relationship between bank closure risk and the provision of the special loans.

The contribution of this paper is to measure the too-big-to-fail doctrine in terms both of bank closure risk and of bank importance. Yabushita and Inoue (1993) find that financial indices, such as capital ratio (paid-in capital / total assets) or ROE (return on equity), can explain bank closure in 1927. Market discipline may have worked well. This paper retests causes of bank closure during the panic period and measures "to-fail." To measure "too-big," this paper also uses both bank-level information on the market share and prefecture-level information on votes of the election of 1928. Freixas, *et al.* (2002) interpret the too-big-to-fail doctrine as designed to rescue banks which occupy key positions in the banking system rather than banks simply with large size. Brown and Dinç (2005) explore regulatory interventions in emerging markets in the 1990s and point out that bank failures are due to the incentives of politicians.

The results at this paper imply that the Bank of Japan bailed out banks with higher closure risk. These insolvent banks occupied key positions in the local loan-markets. The bank of Japan may have rescued borrowers of them rather than depositors. And the bailout policy may have reflected political concerns to some

[3] Rosenbaum and Rubin (1983) provide the idea of the propensity scoring approach.

extent. Supported banks were too-big-to-fail.

The first section below summarizes historical background. Then Section 2 presents information on methodology and data used in this paper. Empirical results are presented in Section 3. Section 4 discusses implications of this work. Section 5 concludes the paper.

1. Historical Background

1.1 The Banking System in the 1920s

As shown in Table 1, real gross value-added of the Japan's banking sector decreased during the period from 1924 to 1928 while real GNP was increasing. The banking sector in the 1920s faced serious depression due to the bad-loan problems. The value of bad loans which was outstanding in the end of 1926 reached 201 in millions yen (54.1% of gross value-added of the banking sector).[4]

Three factors caused a large amount of bad loans. First, the Great Earthquake of 1923 damaged banks in the urban areas. Second, connected lending caused in poor performance of loan portfolios (Kato 1957; Okazaki, *et al.* 2005). The third factor is the moral hazard due to emergency lending by the Bank of Japan (Teranishi 1989; Takahashi and Morigaki 1993).

The Bank Law of 1928 has two main reforms. First, the minimum capital requirement was increased substantially. The government regarded that financial difficulties in small-sized banks had caused the inefficiency of the banking system during the 1920s (Asai 2000). The Bank Law gave banks five years to reach a minimum capital level of one million yen.[5] Table 2 shows the annual data of the number of ordinary banks in the first column and the number of the average size of bank capital in the second column. During the 1920s, the number of banks decreased sharply, and the average size was increasing. Decreasing of the number of banks was caused by bank closure due to bank runs or by the government

[4] Using commerce-services deflator estimated by Ohkawa, *et al.* (1974, Table 31).

[5] A minimum capital level of banks in Tokyo or Osaka was two millions yen.

promotion of bank consolidation.

The second reform is that bank directors were prohibited to engage in other business. Director interlocking between banks and firms resulted in most banks becoming insolvent (Kato 1957; Okazaki, *et al.* 2005). The prohibition of bank director interlocking aimed to prevent banks from continuing connected lending, which caused poor performance of bank portfolios.

The prudential policy was incomplete before the Bank Law.[6] Deposit rate regulation did not work well, and entry regulation was less strict (Teranishi 1991). The deposit insurance system had no legal foundation until GHQ reforms during the second half of the 1940s (Ehiro 2000; Asai 2000).

1.2 The Panic of 1927

Two waves of bank runs occurred in the spring of 1927. On 14 March, the Finance Minister, Kataoka Naoharu, made an ill-advised remark during the debate on the bad-loan problem. On the following day, newspapers printed his remark. The news triggered the first wave of bank runs.

The second impact was more serious. While leakage of poor performance of loan portfolios triggered the first wave, liquidity concerns triggered the second panic (Korenaga, *et al.* 2001). The Bank of Taiwan, which aimed to develop the Taiwanese economy, had also faced to the bad-loans problem due to connected lending. The main customer went bankrupt. The interbank markets became confused since most of call loans to the Bank of Taiwan were recovered suddenly.

The Ministry of Finance permitted closure of the Bank of Taiwan on 18 April.[7] This news triggered the second wave of bank runs. Even big five banks, Mitsui,

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[6] Hoshi and Kashyap (2001) explain the history of the modern financial system in Japan.

[7] The government sought the approval of the Privy Council to obtain an emergency imperial order to rescue the Bank of Taiwan. However, on 17 April, the Privy Council refused to sanction the order for the sake of resignation of the Cabinet.

Mitsubishi, Sumitomo, Yasuda and Dai-ichi, faced bank runs.[8] Jugo bank closed on 21 April. Since the Ministry of the Imperial Household had the deposit account at Jugo bank, The news was also the critical impact (the Bank of Japan 1983).

The Kenseikai Party Cabinet resigned due to the responsibility for closure of the Bank of Taiwan, and the Seiyukai Party Cabinet was organized.[9] Takahashi Korekiyo, the new Finance Minister, imposed moratorium from 22 April to 12 May to prevent the panic from expanding. The Ministry of Finance permitted closure of 30 ordinary banks during the panic period from 15 March to 25 April. Then the panic ended.

On 8 May, the Bills on the Special Loans by the Bank of Japan passed the Diet. The bills have three main points: the special loans were provided with bill discount within a year; the Bank of Japan could demand compensation for losses from the government within 500 millions yen; and the 10 year term of redemption. The average of the interest rate of the special loans was 3% while the discount rate in 1927 was 5.4% (Bank of Japan 1983). The interest rates of the special loans were too low to prevent supported banks from taking additional risks (Takahashi and Morigaki 1993).

As Ishii (1999) explains, the Bank of Japan tended to provide the special loans for banks with transactions with the Bank of Japan during the first half of the twentieth century. However, the government ordinance allowed banks with no record of transactions with the Bank of Japan to be provided the special loans (Takahashi and Morigaki 1993).

Inoue Junnosuke was installed as the governor of the Bank of Japan on 10 May. He recognized that the special loans against the Great Earthquake of 1923 had caused some moral hazard issues, and he organized the screening committee to

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[8] Ishii (2001) finds evidence that the headquarters of Mitsui, Mitsubishi, Sumitomo and of Dai-ichi in Tokyo faced bank runs.

[9] Nakamura (1988) explains political concerns on the Bank of Taiwan.

select banks.[10]

The total amount of the special loans reached 762 millions yen. The Bank of Japan bailed out 103 ordinary banks, which included 14 closed banks. The total amount of the special loans provided for 14 closed banks reached 284 millions yen. The government established the Bank Relations and Supervision Department in the Bank of Japan to refuse the moral hazard problem. However, some of the special loans against the panic of 1927 became the bad-loans of the Bank of Japan (Matsuzaki 1928). The Bank of Japan could not collect over 52 millions yen of them even in 1952 (Ehiro 2000).

2. Methodology and Data

2.1 Estimation Methodology

This paper uses the propensity scoring approach to test whether the Bank of Japan provided the special loans for insolvent banks against the panic of 1927. The analysis is conducted on two levels; the logit model regression and the tobit model regression. First, to estimate bank closure risk, this paper fits the following logit:

$$P\left(CL_i = 1 \middle| X\right)_i = \phi_1\left[Fundamentals_i, Gdp_j\right] \quad (1).$$

Subscript *i* indicates the i-th bank and subscript *j* indicates the j-th prefecture. The dependent latent variable CL_i equals 1 if the bank closed during the panic period from 15 March to 25 April, otherwise 0.[11]

In the equation (1), the explanatory variable $Fundamentals_i$ indicates bank fundamentals. This paper uses three financial indices; Capital-deposit ratio, ROE (return on equity), and scale. Capital-deposit ratio is (capital + accumulated fund) / (capital + accumulated fund + deposits). This index can imply two aspects. One is

[10] Fukai Eigo, who was installed the governor of the Bank of Japan in 1935, reminisced this episode in his memoirs (Fukai 1941, pp.215-234).

[11] The probits by Yabushita and Inoue (1993) include the dependent variable, which equals 1 if the bank closed in 1927. This paper excludes the cases of bank closure during the ordinary period.

bank solvency, the ability of paying deposits. The other is the weakness of absorbing deposits. If capital-deposit ratio is negative significant, this paper regards that it can express an aspect of bank solvency. ROE is measured as profit by capital. The probit regression by Yabushita and Inoue (1993) shows that these two financial indices can explain bank closure in 1927. Scale is log (capital + accumulated fund + deposits). And Gdp_j is per capita GDP of the j-th prefecture in which the main office of the bank was located. This variable is included to control the local economic conditions. And results of the logit (1) provide the estimated propensity, $P(CL_i=1 \mid X)_i$, which indicates bank closure risk in terms of fundamentals.

The second level of the analysis is to estimate the following tobit model:

$$LLR_i = \max\left(0, \alpha + \beta_1 Ms_i + \beta_2 Ele_j + \beta_3 P\left(CL_i = 1 \middle| X\right)_i + \beta_4 Gdp_j + \varepsilon_i\right) \quad (2).$$

Subscript i indicates the i-th bank and subscript j indicates the j-th prefecture. And ε_i is the error term.

The censored variable LLR_i, which is (the amount of the special loans for the i-th Bank) / (capital+fund), denotes the LLR assistance normalized by capital size.[12] The provision and the amount of the special loans were decided after the panic ended.

Ms_i denotes the market share of the i-th bank. This paper uses two variables as Ms_i ; Ds_i, which is (deposits of the i-th bank) / (the total amount of deposits of banks in the j-th prefecture), and Ls_i, which is (loans of the i-th bank) / (the total amount of loans of banks in the j-th prefecture).

Ele_j, is the variable on the Lower House Election of 1928. This variable is included to test the relationship between political background and the LLR assistance. Since the males over 25 years old could acquire universal suffrage in 1925, the election of 1928 is the first popular election in the Japanese modern history. As the variable Ele_j, this paper uses $Seiyu_j$ *or* Min_j, which were the voting percentages of the Seiyukai Party or of the Minseito Party in the j-th prefecture,

[12] This paper also regresses the tobit models using the amount of the special loans as the censored variable. Results are similar to reports in this paper.

respectively. In June of 1927, the Kenseikau Party changed its name into the Minseito Party.

$P(CL_i=1|X)_i$, which is the estimated propensity to close, denotes bank closure risk. And Gdp_j is the control variable as in the logit model (1).

2.2 Data Availability

The data for capital, deposits and profit are from "the 51st. Annual Report" of the Banking Department at the Ministry of Finance at the end of 1926. This paper uses log (per capita income tax of each prefecture) as the proxy of Gdp_j, per capita GDP of each prefecture. The data source of per capita income tax is "the 47th. Statistical Yearbook" of the Cabinet Statistical Bureau. The data source of the percentage of votes is "the List of the 16th. Lower House election" by the Lower House Secretariat. The Bank of Japan (1969, pp.168–529) provides data on closed banks, which were permitted by the Ministry of Finance. The number of closed ordinary banks is 30. The Bank of Japan (1962) summarizes data for the special loans against the panic of 1927. The number of supported bank is 103. While "The 51st. Annual Report" reveals financial data for 1402 ordinary banks, this paper excludes extraordinary observations; some were located in the exceptive region (Hokkaido Okinawa, Sakhalin and Taiwan); some had the extraordinary values of deposit (0 or nearly 0); and some closed or were merged before 15 March are excluded. This paper uses 1364 observations.

Table 3 shows summary statistics for the explanatory variables; means, standard deviations, and minimum and maximum values. The minimum value of ROE (return on equity) is 0 since the data available from the Ministry of Finance archives are censored at zero. That is, even when a bank's ROE (return on equity) was negative, the analysis has only the value 0. The minimum value of Ds, which is (deposits in thousands of yen of the i-th bank) / (the total amount of deposits of banks in the j-th prefecture), equals 0.000000483. And the minimum value of *LLR*, which is (the special loans for the i-th Bank) / (capital+fund), equals 0.

3. Results

3.1 Bank Closure Risk

Table 4 reports results of the logit model regression on causes of bank closure during the panic period. The estimated coefficient of capital-deposit ratio is negative significant. This implies that this index express solvency rather than the weakness of the ability of absorbing deposits. The estimated coefficient of ROE (return on equity) is also negative significant. Solvency and profitability can explain bank closure. The results here are consistent with the probit model regressions by Yabushita and Inoue (1993). Uninsured depositors' discipline worked well during the panic period.

The estimated coefficient of scale is positive significant. This implies that larger banks faced closure risk during the panic. The estimated coefficient of Per capita income tax is also positive significant. Teranishi (1999) points out that the panic of 1927 may have damaged middle-sized and large-sized banks in the urban area. This explanation is consistent with the results here.

Table 5 shows that summary statistics both for CL and for Propensity estimated by the logit model in Table 4; means, standard deviations, and minimum and maximum values. The mean value of the estimated propensity to close equals that of CL. The minimum value of estimated propensity to close is 0.00000000000007, exactly. The maximum value of the estimated propensity to close is 0.296. Since the propensity scores are from the logit model, they are between 0 and 1.

3.2 The LLR Assistance

Table 6 reveals the results of the tobit model regressions. Ds is not a significant variable. On the other hand, the estimated coefficients of Ls are positive significant both in Panel A and in B. The estimated coefficients of Min are positive. And the estimated coefficients of Propensity are positive significant both in Panel A and in B (20.080 and 19.534, respectively). The results here imply that the Bank of Japan provided liquidity support for insolvent banks against the panic of 1927.

Ehiro (2000) argues that the bailout policy against the panic of 1927 dealt with demands of small businesses that were damaged due to bank closure. This

argument is consistent with the results at this paper. The Bank of Japan concerned bank importance in the local loan-markets. The bailout policy against the panic of 1927 may have included the aspects of the industrial policy.[13]

4. Discussion

4.1 Political Factors

As shown in Table 7, this paper tests other tobits using the cross-terms: Ls*Propensity in Panel A and Min*Propensity in B, respectively. The cross-term Ls*Propensity is not significant. On the other hand, the estimated coefficient of Min*Propensity is negative significant. This implies that the effect of Min may have been substitute to that of Propensity. Is there any relationship between solvency and the political background?

Since the first half of the 1920s, the Seiyukai Party promoted bank consolidation in the local financial markets.[14] This paper points out that the bank with the political back ground of the Seiyukai Party may have been relatively solvent. Table 8 reveals the results of the logit model regressions, which show the statistical relationship between bank closure and the prefecture-level variables, Seiyu and Min. While Min is not significant, Seiyu is negative significant.[15]

The bank bailouts policy could include two alternatives: liquidity support or promoting bank consolidation. Since the Seiyukai Party could adopt the latter resort, the Bank of Japan gave priority in liquidity support to banks with the background of the Minseito party.

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[13] Ishii (1999) emphasizes that the special loans by the Bank of Japan promoted not only the local economic growth but also income inequality among prefectures.

[14] The Seiyukai Party meaned to prevent large banks in the urban area from acquiring local smal-sized banks in rural areas. See Shiratori (2000).

[15] This paper regresses the logit model (1) including politics variables. They are not significant while other fundamentals are still significant.

4.2 Shouwa Bank

Inoue Junnosuke, the governor of the Bank of Japan, suggested the establishment of a new bank, Shouwa Bank, in order to reorganize some closed banks. The establishment of Shouwa bank may have been a model for the contemporary bridge banks. It was aimed to prevent sound corporations from losing financial support. The headquarters of 4 big banks, Mitusi, Mitsubishi, Yasuda and Dai-ichi, held meetings in July and decided to reorganize 6 closed banks into a new bank; Nakai, Nakazawa, Hachijushi, Murai, Kuki, and Oumi. 5 banks except Kuki were provided the special loans. The interest rate of the special loans for them was 2% (the Bank of Japan 1969, p.367). It did not include penalty-premium since discount rate in 1927 was 5.4% (Bank of Japan 1983). Yamazaki (2000) explains that Shouwa bank became solvent during the 1930s. Bailing out these 6 banks succeeded in rescuing some sound corporations. The Bank of Japan dealt with demands of small businesses of these banks.

Table 9 shows lists of closed banks, the prefecture where the main office of the bank located, closure date and the estimated propensity score. Nakai, Nakazawa, Hachijushi, Murai, and Oumi had much higher closure risk while they were provided the special loans. Kuki, which was not provided, had lower closure risk. Some branches of Nakai Bank was located in Saitama prefecture. Kuki Bank may have been suffered form its contagion (the Bank of Japan 1969, p.409). The Bank of Japan provided financial support not for a sound bank, Kuki, but for 5 unsound banks to organize Shouwa Bank, a bridge bank. 13.4% of the total special loans were provided for it.

4.3 Time-Inconsistency of the Bailout Policy

Okazaki (2006a) emphasizes that, during the interwar period, the Bank of Japan bailed out relatively solvent banks. The argument can be still consistent with implications of the results at this paper. Acharya and Yorulmazer (2007) provides the theoretical framework on time-inconsistency of bank bailout policies: if the number of bank closure is large, the LLR bails out closed banks, whereas if the

number of bank closure is small, closed banks are not rescued by the LLR but acquired by surviving banks. Since the panic of 1927 was the serious impact, the Bank of Japan may have rescued insolvent banks.

5. Conclusion

This paper measures the "too big to fail" doctrine against the panic of 1927. The results imply that supported banks had higher closure risk or occupied key positions in the local loan-markets and that the bank bailouts may have reflected political concerns to some extent. The bank of Japan succeeded in targeting to rescue insolvent banks against the panic of 1927.

When the LLR target relatively insolvent banks, the costs of a system-wide bailout could be much more than that of a partial bailout. However, the Bank of Japan had the ways of reducing the costs. The establishment of a bridge bank, Shouwa Bank, may be one of them. And, as Ishii (1980) and Okazaki (2006a) explain, the Bank of Japan had the transaction relationships with much of supported banks. Okazaki (2006b) points out that such relationships may have provided information on supported insolvent banks. The costs of refusing the moral hazard problems may have been reduced to some extent after the panic of 1927, or under the Bank Law of 1928. Exploring the costs of bank regulation after the panic may prove fruitful grounds for further studies.

Table 1 *Gross Value Added of the Banking Sector in Millions of Yen (1934-1936 prices): the 1920s*

year	Real GVA of the Banking Sector	Real GNP
1921	486	12153
1922	416	11831
1923	457	11292
1924	433	11659
1925	390	12332
1926	372	12424
1927	348	12843
1928	345	13673
1929	348	13735
1930	232	13882

Source: Hijikata (1933), Ohkawa, *et al.* (1974)

Table 2 *The Number of Ordinary Banks and the Average Size*

year	The Number of Ordinary Banks	The Average Size of Capital of Ordinary Banks (in Thousands of Yen)
1922	1799	1315
1923	1701	1440
1924	1629	1499
1925	1537	1569
1926	1420	1680
1927	1283	1848
1928	1031	2118
1929	881	2467
1930	782	2602
1931	683	2859

Source: Goto (1970)

Table 3 *Summary Statistics*

The data set is comprised of 1364 ordinary banks in the end of 1926. Capital-deposit ratio is (capital + accumulated fund) / (capital + accumulated fund + deposits) . ROE (return on equity) is measured as profit by capital. *Scale* is log (capital + accumulated fund + deposits). P*er capita income tax* is measured as the natural log of per capita income tax of each prefecture where the main office was located. Ds is (deposits of the i-th bank) / (the total amount of deposits of banks in the j-th prefecture). Ls is (loans of the i-th bank) / (the total amount of laons of banks in the j-th prefecture). Seiyu or Min denote the voting percentages of the Seiyukai Party or of the Minseito Party in the Lower House election of 1928, respectively. And LLR is (the amount of the special loans for the i-th Bank) / (capital + accumulated fund).

	Mean	Std. dev.	Min.	Max.
Capital-deposit ratio	0.395	0.194	0.008	0.996
ROE (return on equity)	0.118	0.117	0.000	2.706
Scale	14.350	1.500	10.118	20.520
Per capita income tax	4.990	0.475	4.354	6.144
Ds	0.071	0.326	0.000	6.107
Ls	0.033	0.078	0.000	0.956
Seiyu	0.434	0.105	0.154	0.755
Min	0.420	0.086	0.222	0.728
LLR	0.059	0.407	0.000	7.194

Table 4 *Results of the Logit Model Regressions: Causes of Bank Closure*

The data set is comprised of 1364 ordinary banks in the end of 1926. The results of the logit model regression are shown; estimated coefficients, robust standard errors, and significant levels (p-values). The dependent variable CL equals 1 if the bank closed during the panic period from 15 March to 25 April, otherwise 0. *Capital-deposit ratio is* (capital + accumulated fund) / (capital + accumulated fund + deposits) . *ROE* (return on equity) is measured as profit by capital. *Scale* is log (capital + accumulated fund + deposits). And p*er capita income tax* is log (the per capita income tax of the j-th prefecture in millions yen). Wald test is chi-squares of the Wald test. Observed P. is the percent of total number of closed banks.

	Estimated coefficient	Robust standard error	Significant level
Capital-deposit ratio	-2.701	0.968	0.005
ROE (return on equity)	-10.553	3.314	0.001
Scale	0.249	0.082	0.002
Per capita income tax	0.939	0.330	0.004
Intercept	-10.387	2.437	0.000
Log likelihood	-126.0		
Pseudo R-square	0.126		
Wald test (p-value)	41.48 (0.000)		
Observed P.	0.022		
Observations at CL = 1	30		

Table 5 *Summary Statistics for the Estimated Propensity*

CL equals 1 if the bank closed during the panic period from 15 March to 25 April, otherwise 0. Propensity is the propensity score estimated by the logit model regression in Table 4.

	Mean	Std. dev.	Min.	Max.
CL	0.022	0.147	0.000	1.000
Propensity	0.022	0.031	0.000	0.296

Table 6 *Results of the Tobit Model Regressions: the LLR Assistance*

The data set is comprised of 1364 ordinary banks in the end of 1926. The results of the tobit model regression are shown; estimated coefficients, standard errors, and significant levels (p-values). The dependent variable LLR is (the amount of the special loans for the i-th Bank) / (capital+fund). Ds is (deposits of the i-th bank) / (the total amount of deposits of banks in the j-th prefecture). Seiyu or Min denote the voting percentages of the Seiyukai Party or of the Minseito Party in the Lower House election of 1928, respectively. Propensity is the propensity scores estimated in Table 4. Per capita income tax is log (the per capita income tax of the j-th prefecture in millions yen). Ls is (loans of the i-th bank) / (the total amount of loans of banks in the j-th prefecture).

Panel A: Using All Variables			
	Estimated coefficient	Standard error	Significant level
Ds	-7.089	5.691	0.213
Ls	10.896	5.817	0.061
Seiyu	1.111	1.510	0.462
Min	3.033	1.636	0.064
Propensity	20.080	3.627	0.000
Per capita income tax	-0.651	0.338	0.054
Intercept	-2.237	2.427	0.357
Log likelihood	-419.3		
Pseudo R-square	0.083		
Observations at LLR > 0	103		
Panel B: Without Ds and Seiyu			
	Estimated coefficient	Standard error	Significant level
Ls	3.765	1.026	0.000
Min	2.289	1.168	0.050
Propensity	19.534	3.571	0.000
Per capita income tax	-0.754	0.301	0.013
Intercept	-0.891	1.485	0.548
Log likelihood	-420.4		
Pseudo R-square	0.081		
Observations at LLR > 0	103		

Table 7 *Results of the Tobit Model Regressions: Includng the Cross-Term*

The data set is comprised of 1364 ordinary banks in the end of 1926. The results of the logit model regression are shown; estimated coefficients, robust standard errors, and significant levels (p-values). The dependent variable LLR is (the amount of the special loans for the i-th Bank) / (capital+fund). Ds is (deposits of the i-th bank) / (the total amount of deposits of banks in the j-th prefecture). Min denotes the percentage of votes obtained by the Minseito Party in the Lower House election of 1928. Propensity is estimated by the logit model regression in Table 4. Per capita income tax is log (the per capita income tax of the j-th prefecture in millions yen). Ls is (loans of the i-th bank) / (the total amount of loans of banks in the j-th prefecture).

Panel A: Using the Cross-Term Ls*Propensity

	Estimated coefficient	Standard error	Significant level
Ls	5.648	1.752	0.001
Min	2.027	1.179	0.086
Propensity	22.323	4.196	0.000
Ls*Propensity	-48.263	36.122	0.182
Per capita income tax	-0.789	0.304	0.010
Intercept	-0.677	1.495	0.651
Log likelihood	-419.5		
Pseudo R-square	0.083		
Observations at LD > 1	103		

Panel B: Using the Cross-Term Min*Propensity

	Estimated coefficient	Standard error	Significant level
Ls	2.935	1.065	0.006
Min	5.809	1.787	0.001
Propensity	100.062	30.281	0.001
Min*Propensity	-173.793	64.294	0.007
Per capita income tax	-0.736	0.298	0.014
Intercept	-2.541	1.604	0.113
Log likelihood	-416.6		
Pseudo R-square	0.089		
Observations at LD > 1	103		

Table 8 Bank Closure and Political Concerns

The data set is comprised of 1364 ordinary banks in the end of 1926. The results of the logit model regression are shown; estimated coefficients, robust standard errors, and significant levels (p-values). The dependent variable CL equals 1 if the bank closed during the panic period from 15 March to 25 April, otherwise 0. Propensity is the propensity scores estimated in Table 4. Seiyu or Min denote the voting percentages of the Seiyukai Party or of the Minseito Party in the Lower House election of 1928, respectively. Observed P. is the percent of total number of closed banks.

Panel A: Bank closure and the Seiyukai Party

	Estimated coefficient	Robust standard error	Significant level
Seiyu	-4.452	1.800	0.013
Intercept	-1.971	0.717	0.006
Log likelihood	-140.8		
Pseudo R-square	0.024		
Observed P.	0.022		
Observations at CL = 1	30		

Panel B: Bank Closure and the Minseito Party

	Estimated coefficient	Robust standard error	Significant level
Min	-1.280	1.738	0.461
Intercept	-3.263	0.738	0.000
Log likelihood	-126.0		
Pseudo R-square	0.126		
Observed P.	0.022		
Observations at CL = 1	30		

Table 9 *The List of Closed Banks*

Table shows names of closed banks, the prefecture where the main office of the bank located, closure date and the estimated propensity scores. Propensity is estimated by the logit model regressions in Table 4, respectively. If the bank was provided the special loans by the Bank of Japan, "Yes" is shown in the column "Provided." If the bank transferred its business to Shouwa Bank, the bridge bank, "Yes" is shown in the column "Shouwa Bank."

Bank Name	Prefecture	Date	Propensity	Provided	Shouwa Bank
Tokyo Watanabe	Tokyo	03/15	0.080		
Nakai	Tokyo	03/19	0.189	Yes	Yes
Yamashiro	Kyoto	03/22	0.036		
Nakazawa	Tokyo	03/22	0.114	Yes	Yes
Hachijushi	Tokyo	03/22	0.146	Yes	Yes
Murai	Tokyo	03/22	0.212	Yes	Yes
Souda	Kanagawa	03/22	0.097	Yes	
Kuki	Saitama	03/22	0.007		Yes
Asanuma	Gifu	03/23	0.039		
Sousen	Kyoto	03/23	0.018		
Soeda	Fukuoka	03/24	0.014		
Toukatsu	Chiba	03/31	0.020	Yes	
Dai-Rokujugo	Hyogo	04/08	0.063	Yes	
Kurate	Fukuoka	04/13	0.025	Yes	
Kurita	Shiga	04/15	0.023	Yes	
Oumi	Osaka	04/18	0.228	Yes	Yes
Gamou	Shiga	04/19	0.035		
Sen'you	Osaka	04/19	0.033		
Ashina	Hiroshima	04/19	0.022		
Hiroshima Sangyo	Hiroshima	04/20	0.007		
Moji	Fukuoka	04/20	0.008		
Nishi Ehara	Okayama	04/20	0.031	Yes	
Takeda Waribiki	Tokyo	04/21	0.039		
Taishou	Tokyo	04/21	0.090	Yes	
Jugo	Tokyo	04/21	0.246	Yes	
Akashi Shoukou	Hyogo	04/21	0.028		
Shikano	Yamaguchi	04/23	0.021		
Kasen	Osaka	04/25	0.068	Yes	
Wakasa	Fukui	04/25	0.010		
Uozumi	Hyogo	04/25	0.025		

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