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Effects of a bank consolidation promotion policy: Evaluating Bank Law in 1927 Japan[1]

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Abstract

This paper investigates the impact of bank consolidations promoted by government policy, using data from pre-war Japan when the Ministry of Finance promoted bank consolidations by dint of the Bank Law of 1927. It is found that policy-promoted consolidation had a positive effect on deposit growth, especially in the period when the financial system was unstable. On the other hand, it had a negative effect on profitability, particularly when there was no dominant bank among the participants or when more than two banks participated in the consolidation. Policy-promoted consolidation in such cases was likely to be accompanied by large organizational cost.

1.Introduction

In recent years, a wave of bank consolidations has spread across the world. According to Amel (2002), more than 8000 bank consolidations occurred globally between 1990 and 2001 and the total value of the deals reached about $1,800 billion. The number and amount of deals increased sharply towards the end of the period. In Japan, the reorganization of city banks through consolidations has progressed since the end of the 1990s, and has resulted in the formation of three major financial groups At the same time, consolidations between regional financial institutions have progressed rapidly. Actually, the number of Shinkin banks, small regional financial institutions, decreased by almost 30 % from 1991 to 2004, mainly due to consolidations.

It is notable that one of the major driving forces of the recent wave of bank consolidations has been government policy. For example, since the Asian Financial Crisis in 1997, the financial authorities of Asian countries have been promoting bank consolidations and the Japanese government initiated a policy of promoting consolidations among regional financial institutions on the grounds that this policy would contribute to the stabilization of the banking system (Berger et al. 1999; Financial Service Agency, Japan 2002, Shin, 2003).

Promotion of bank consolidations by the government is not a recent phenomenon. Kurgan-van (2001) shows that many of the governments of European countries, including Austria, Belgium and Germany, promoted bank consolidations when the financial system was exposed to banking crises in the 1920s and 1930s. Also, in 1920s and 1930s Japan, the government actively promoted bank consolidations in order to stabilize the financial system when the banking sector experienced repeated financial crises. Due to this policy, a number of bank consolidations occurred (Goto 1991; Shiratori 2001; Okazaki and Sawada 2003). The central measure used for the consolidation promotion policy was the Bank Law of 1927. In this paper, we explore the implications of bank consolidations promoted by government policy based on the Bank Law.

We have rich literature related to this topic. Actually, the recent wave of bank consolidations has attracted the interest of researchers and people in the financial authorities and banking industry. Bank consolidation has been one of the major topics of research in banking and finance. The main

research foci are the effect of consolidation on efficiency, the market power of the banks involved, small business lending, and the systemic risk of the financial system. With respect to the effects of bank consolidations on efficiency, there are a number of empirical studies that confirm the risk diversifying effect of bank consolidation, based on static and dynamic analyses (Benston et al. 1995; Hughes et al. 1996, 1999; Craig and Santos 1997; Demsetzs and Strahan 1997; Saunders and Wilson, 1999).   In this strand of the literature, it has been suggested that the government could play a role in promoting bank consolidations, especially when the banking system is destabilized. For example, Berger et al. (1999) argued that the government could promote the consolidation of banks that are faced with difficulties or a financial crisis, based on the case of the US Federal Deposit Insurance Corporation. The idea underlying the use of a consolidation promotion policy during a financial crisis is that bank consolidations would reduce the insolvency risk through asset diversification (Shih 2003).

Related to this, the literature on the U.S. banking system in the 1920s and 1930s shows that the branch banking system benefited from diversifying credit risk (White, 1983, 1984; Calomiris, 1992, 1993; Wheelcok, 1992,1993; Mitchener, 2005a). These results are considered to indicate the potential benefit of bank consolidation. Meanwhile, White (1985) pointed out the possibility that the wave of U.S. bank mergers in 1919-1930 strengthened the banking industry through preventing failures of small rural banks as well as through achieving economies of scale.

Recent research stresses another channel through which bank consolidation and branch banking could contribute to stabilization of the financial system. Carlson and Michener (2005b) confirmed that the expansion of statewide branch banking induced competition among banks and thereby removed weak and inefficient banks through failures, liquidations and consolidations in the U.S. in the 1920s, which consequently improved the stability of the banking system. In addition, Carlson and Michener (2005c) show an external effect of branch banking, using the data on California in the 1920s and 1930s. That is, many small unit banks were exposed to competition induced by the emergence of large branch banking institutions, in particular, the Bank of America, and those small unit banks were forced to make efforts to improve efficiency. Consequently, the

banks competing with the Bank of America were better able to survive the shock of the Great Depression.

On the other hand, most of the empirical literature suggests that bank consolidations do not significantly improve the performance or efficiency of the participating banks (Berger et al. 1999; Amel et al. 2002). If a voluntary consolidation does not enhance the performance of the participating banks, a performance enhancing effect of consolidation promoted by government policy is even more questionable, but to our knowledge there has been no empirical study that directly examines the issue. Hence, in this paper we intend to investigate the effects of policy-promoted consolidation on the stability of the financial system. A basic reason why research on the effects of policy-promoted consolidations has not progressed lies in data constraints. Not only are sufficient observations of bank consolidations lacking, but it is also difficult to identify consolidations promoted by government policy. In order to resolve this problem, we use data from pre-war Japan.

As stated above, in the 1920s and 1930s, the Japanese government promoted bank consolidations using a minimum capital regulation stipulated by the Bank Law. This case provides us with a valuable opportunity to evaluate the effects of the policy. The Bank Law set a minimum capital requirement for banks, which many banks did not meet. At the same time, the government did not allow any of these small banks to increase capital by itself. Consequently, many small banks were obliged to choose one of two alternatives, merge with another bank, or undergo liquidation. Hence, we identify bank consolidations promoted by government policy as those in which the capital of one of the participating banks was smaller than the minimum capital required by the Bank Law[2].

There is another advantage to using data from pre-war Japan. Not only did many bank consolidations occur, whether promoted by the policy or not, but these consolidations also took various patterns and comprehensive information on these patterns of consolidation is available. As the patterns of consolidation in general affect the cost of organizational adjustment, it is necessary to control for them in order to identify the effects of the consolidation promotion policy. Also, any difference in organizational adjustment costs between the various patterns of consolidation is interesting in itself.

The paper is organized as follows. Section 2 provides an overview of bank consolidations in pre-war Japan. Section 3 explains the data and methodology used in the analysis. In section 4, we analyze the effects of policy-promoted consolidation. Section 5 explores the effects of policy-promoted consolidation in more detail, combining these effects with information on consolidation patterns. Section 6 concludes the paper.

2. Financial crises, the Bank Law and bank consolidations

The structure of the banking industry in pre-war Japan was substantially different from what it has been in the post-war period. One of the major differences is that there were numerous banks in the pre-war period. This was basically because entry regulations were comparatively lax until the early twentieth century. The number of banks was as large as 2334 (1890 ordinary banks and 444 saving banks) in 1901, the peak year, and after that it started to decline due to market selection and the change in government policy. The turning point of the market structure of the banking industry was the financial crisis in 1901. Under the crisis, 50 banks were closed, faced with runs, more than 80 % of which were small banks with capital of less than two hundred thousand yen (Goto, 1968). Afterwards, the Ministry of Finance (MOF) adopted a policy whereby the scale of banking was enlarged. At first, the model for the MOF to aim for was the branch banking system of the U.K. In 1901, the MOF set a minimum paid-in capital amount (five hundred thousand yen) a new bank was required to have to enter the industry. While gradually raising the minimum capital amounts required by newcomers, the MOF requested that local governments promote bank consolidations in the 1910s.

In the 1920s, instability of the financial system became serious with many bank runs and failures. In 1920, one of the major banks in Yokohama, Nanaju-yon Bank, failed due to the collapse of a speculative bubble, which led to a nation-wide wave of bank runs. Consequently, 169 banks were faced with runs, out of which 21 banks were closed (Goto,1968). In 1922, Kochi-shogyo Bank was closed due to the failure of its connected borrower, Sadashichi Ishii, an influential speculator. The failure of Kochi-shogyo Bank caused a series of bank runs in the Tokyo, Kansai and Kyushu

areas. Furthermore, in 1923, a great earthquake hit the Tokyo and Yokohama areas, which brought the financial system to a standstill. The estimated property loss amounted to approximately 30% of GNP in 1922, according to the Bank of Japan (1933). Afterwards, many banks in the Tokyo and Yokohama areas suffered from bad loan problems. Finally, in 1927, the Finance Minster, Naoharu Kataoka, inadvertently mentioned the closure of the Tokyo Watanabe Bank, which precipitated the Showa Financial Crisis. This was the largest financial crisis in Japanese financial history. Major stock and commodity exchanges were shut down for three weeks. According to a report from the Ministry of Finance, the number of closed, nearly closed, and officially suspended banks reached 126 (Hoshi and Kashyap, 2001). A large shift of deposits from banks to the Postal Bureau occurred after the crisis.

The financial crises spurred the MOF to make drastic policy changes to reform the financial system. In September 1926, the MOF established the Financial System Research Council (Kin'yu Seido Chosakai) to examine measures for reforming the financial system (Bank of Japan 1983, pp.264-270). As the base of discussion there, the MOF proposed a draft to the Council, which aimed at i) increasing capital, ii) promoting prudential management, iii) protecting depositors, iv) improving supervision, v) preventing excess competition, and vi) promoting liquidation of non-performing banks. This draft summarizes the recognition shared by the financial authorities and the private financial circle of the problems in the financial system. That is, it was widely recognized that the market structure with numerous small banks, harsh competition among them, and unsound management were the basic reasons for the financial instability[3]. Unsound bank management was in reference to too small profit reserves, excess reliance on real estate for collaterals, and the unsound relationship between banks and non-banking companies, which was called an "organ bank" relationship. Many banks were connected with non-banking companies through personnel and capital ties and concentrated loans on those related companies (Kato 1957; Okazaki Sawada and Yokoyama 2005).

The Council examined the draft to prepare a report on the reform of ordinary banks. This report recommended that eighteen measures be taken and that the Bank Law be legislated to

implement them (Ogawa 1930 p.34, pp.70-78). Based on the report, the MOF proposed the Draft of the Bank Law to the Diet in 1927 to replace the Bank Act of 1890. The main points that were newly prescribed by the Bank Law were as follows. First, a bank should be a joint-stock company. Second, it should have capital of not less than one million yen in principal. If the headquarters of a bank was located in Tokyo or Osaka, the minimum capital requirement was two million yen, while it was five hundred thousand yen if the headquarters was located in a town or village with a population not larger than ten thousand. Third, a bank should not conduct any other business except closely related business, such as setting up and maintaining corporate bond trusts If a bank did not meet these criteria at the time of enactment, it should meet them within five years. And fourth, an executive director or a manager of a bank should not be an executive director or a manager of another company without the approval of the Minister of Finance (Bank of Japan 1983, pp.273-276).

It is notable that the first point, regulation of bank capital, gave the MOF a powerful measure for promoting bank consolidations. The MOF had made efforts to promote bank consolidations since the 1900s, especially since the early 1920s. When the Law was enacted in 1928, there were 1407 ordinary banks and 807 of these did not meet the minimum capital criterion. On the other hand, the MOF held the authority to approve any changes in bank capital required by the Bank Law,[4] and basically it did not allow a small bank to increase its capital by itself. Hence, small banks that did not meet the minimum capital criterion were obliged to choose from one of two alternatives, consolidation with other banks or liquidation.

The MOF expected bank consolidations to be an effective measure to resolve the problems of the Japanese financial system, not to mention the fact that bank consolidations would be effective in reforming the market structure, which consisted of numerous small banks. However, the MOF expected more. The MOF considered that bank consolidations would resolve the problems of bank management. First, the upscaling of banks through consolidations was supposed to increase the need for full-time managers, who were often lacking in small banks because there were scales of economy in employing full-time managers. Second, it was expected that consolidations would resolve the problem of the "organ bank" relationship (Shiratori 2001)[5]. Third, bank consolidations were

supposed to have the effect of diversifying bank assets (Ito 1995).

In promoting bank consolidations, the MOF gave priority to those between banks in the same regions, which implies that the MOF changed the policy from that of aiming at the British branch banking system. This was because local business circles and the Diet members representing them complained that consolidations between large urban banks and regional banks would cause transfers of funds from rural areas to urban areas (Shiratori 2000; Ogawa 1930, part 2, pp.259-268). The effect of the consolidation promotion policy, in particular the policy backed by the Bank Law, is reflected in Figure 1[6]. This shows the number of bank exits, classifying them into exits via consolidation and exits for other reasons, including failure. We can confirm that consolidations came to be the principal reason for bank exits from the late 1910s onwards. The number of bank exits due to consolidations reached a peak of 222 in 1928. Around 90% of the consolidations that occurred in the late 1920s and in the early 1930s were those whose participants were in the same regions, reflecting the above mentioned policy of the MOF.

3 Empirical Methodology

3.1 Data and samples

The basic samples used in the following analyses consist of all the consolidations of ordinary banks that occurred in the period from Jan. 1927 to Dec. 1932, when bank consolidations increased sharply due to the enactment of the Bank Law. The data source for the bank consolidations is *Ginko Jiko Geppo* (*Monthly Bank Affairs*), prepared by the Bank of Japan. From this source, we can obtain basic information on each bank consolidation, including the event date, the names of the participating banks, the prefectures where their head offices were located, the capital of the pre-consolidation and post-consolidation banks, and the form of consolidation. In this source, bank consolidations are classified into three forms, namely absorption, acquisition and combination into a new bank. Here, combination into a new bank refers to the form of consolidation where a new bank is established after all of the participants are dissolved.

The information on consolidation forms is useful because it allows us to infer the power

balance among the participants. According to Kin'yu Kenkyukai (1934), in a case where the power of the participant banks was nearly equal, they tended to combine into a new bank. On the other hand, when one bank dominated the other participants, absorption or acquisition tended to be the chosen path[7]. As *Ginko Jiko Geppo* distinguishes between the surviving banks and the exiting banks after the consolidation, we can easily identify the acquirer bank and the target bank in the absorption and acquisition consolidations.

The financial data for each bank was obtained from various issues of *Ginkokyoku Nenpo* (*Year Book of the Bank Bureau of the Ministry of Finance*), which covers all the ordinary banks in Japan. However, the information from this source is basically limited to balance sheet data and information on profit is censored at zero. That is, if the profit of a bank was negative, the negative value is not reported in this source. Hence, we supplemented information on profit, using the financial reports for each bank and *Ginko Tsushinroku* (*Bank Report*)[8]. Meanwhile, since the minimum capital set by the Bank Law depended on the location of the headquarters of a bank, as mentioned above, we compiled the addresses of the headquarters from *Ginko Soran* (*Handbook of Banks*). Also, this source provides us with the addresses of the branches of each bank, which we used to classify out-of-market and in-market consolidations. The information on the population of the city, town or village where the headquarters of each bank was located was obtained from *Nippon Teikoku Tokei Nenkan* (*Statistical Year Book of the Japanese Empire*). Combining this information with the minimum capital set by the Bank Law, we can determine whether each bank met the minimum capital criterion or not. We regard consolidation in which at least one participating bank did not meet the minimum capital criterion as a policy-promoted consolidation, while we regard consolidation where all the participants met the criterion as a strategic consolidation.

In the rest of the paper, we examine the effects of consolidation on bank performance by comparing the changes in performance from year T-1 to year T+2 and T+3, between the consolidated banks and the non-consolidated banks, where T refers to the event year when the consolidation occurred. In order to identify the consolidation effects clearly, we exclude banks that participated in multiple consolidations in the period from year T-2 to year T+3. After filtering out those samples

from all the consolidations in 1927-1932, 164 consolidation samples remain, in which 393 banks were involved[9]. Also, we chose control samples for each event year. The control samples corresponding to the consolidated banks in year T refer to those banks that did not participate in any consolidation in the period from year T-2 to year T+3. For example, the control samples of the event year 1927 are the banks that did not participate in any consolidation from 1925 to 1930. We compare these with the banks that were consolidated in 1927. Then, we construct (unbalanced) panel data, which consists of 2186 bank-event year observations.

Panel A of Table 1 shows the number of consolidations and control samples by event year. The consolidations are classified as policy-promoted consolidations and strategic consolidations, according to the definition stated above. Around 80% of the consolidations are classified as policy-promoted consolidations. In Panels B to E of Table 1, we further classify policy-promoted consolidations and strategic consolidations into subcategories according to a separate set of criteria. In Panel B we add the criterion of consolidation forms mentioned above, namely absorption, acquisition and combination into a new bank. The additional criterion in Panel C is the number of participating banks. It is notable that the ratio of one-to-one consolidation was substantially higher in strategic consolidations than in policy-promoted consolidations.

In Panel D, we add the criteria of in-market and out-of-market consolidation. Out-of-market consolidation refers to consolidation where there were no branch offices overlapping in the same market among the participating banks[10]. Over 75% of the total samples were in-market consolidations. It should be noted that the ratio of in-market consolidations was substantially higher in policy-promoted consolidations than in strategic consolidations, which is consistent with the fact that the government placed priority on regional consolidations. Finally, we add the criterion of the area where the headquarters was located after the consolidation. We distinguish between urban and rural areas. Urban areas refer to the prefectures of Tokyo, Kanagawa, Aichi, Kyoto, Osaka and Hyogo. The proportion of consolidations in rural areas was 75% of total samples.

3.2 Methodology

In measuring bank performance, we focus on the deposit growth rate and the return on total assets (ROA)[11]. The deposit growth rate is a performance measure closely related to the stability of the financial system. In pre-war Japan, depositors were wary of the risks associated with banks because there was no deposit insurance system. In fact, bank runs frequently occurred in the 1920s, including the Showa Financial Crisis in 1927[12]. Arguably, the benefits of consolidation were potentially greater in this situation because the consolidation not only increased the scale of the bank but also enabled the bank to diversify its assets more extensively, which in turn decreased the risk for the depositors (Benston et al. 1995; Hughes et al. 1996,1999; Craig and Santos 1997; Demsetzs and Strahan 1997; Saunders and Wilson 1999, etc.). On the other hand, Shih (2003) points out the possibility that when a relatively healthy bank merges with a weak one, the post-merger bank can be a proposition that is still more risky than the weak one. However, his argument is based on the assumption that the average credit risk of the two merging banks is extremely high, and this assumption cannot be applied to the situation of the banking industry in pre-war Japan, even in the 1920s and 1930s[13].

A number of researchers have used ROA to ascertain the effect of consolidation, but the results are mixed (Berger and Humphrey 1992; Cornett and Tehranian 1992; Linder and Crane 1992; Piloff 1996; Rodes 1998). In addition, many of our consolidation samples are policy-promoted ones, which were not always carried out as a result of strategic incentives. Hence, it is unlikely that consolidations in our samples would have a positive effect on ROA. One problem with ROA is that it reflects both market power and efficiency (Akhavein et al. 1997; Berger et al. 1999). Although ideally both the change in the profitability ratio and profit efficiency should be analyzed, we focus on the former due to data constraints. However, as stated below, we found that consolidations had a negative effect on ROA, which indicates that consolidations led to inefficiencies, and that this dominated the effect of increased market power, if any such increase occurred. In this sense, the problem of market power was not particularly serious.

In order to measure the effect of consolidation, we estimate equation (1) by pooled OLS with samples from all event years, using event year dummies to control for the shocks common to

the samples of the same event year group. Also, in calculating standard error, the heteroskedasticity-robust standard error by White (1980) is used.

$$\triangle X_{it} = \beta_0 + \beta_1 CONS_{it} + \beta_2 LN(ASSET_{it}) + \beta_3 \Delta BRANCH_{it} + \beta_4 URBAN_{it} + \varepsilon_{it} \qquad (1)$$

where i refers to the bank, and t refers to the event year group. The dependent variable $\triangle X_{it}$ is the difference in ROA or the deposit growth rate in the period from year T-1 to year T+2 or T+3[14]. For the value of a consolidated bank in year T-1, that of a pro-forma bank is used[15]. CONS is a dummy variable that equals 1 if the bank was a merged one, and 0, otherwise. We are especially interested in the coefficient of this variable. If the consolidation had a positive effect on bank performance, the coefficient is expected to be positive with respect to both dependent variables. LN(ASSET) is the natural log of the total assets in year T-1, and is expected to capture the economies of scale. $\triangle$ BRANCH denotes the change in the number of branches. In the case where the dependent variable is ROA, we expect this variable to capture the effect of restructuring inefficient branches since the government in principle prohibited the opening of new branches from the early 1920s. If effective restructuring was accomplished, the sign of this coefficient will be negative. With respect to the deposit growth rate, the coefficient of $\triangle$ BRANCH is expected to be positive because, in general, the correlation between ability to collect deposits and the number of branches is positive. URBAN is a dummy variable that equals 1 where the headquarters of the bank was located in an urban area, in the sense defined above, and 0, otherwise. In an equation where the deposit growth rate is the dependent variable, the coefficient of URBAN is expected to be positive, since it is known that there was a tendency for funds to flow from rural areas to urban areas after the 1900s (Okazaki 1993; Shiratori 2000).

Table 2 shows the basic statistics on the pre-consolidation banks. With respect to absorption and acquisition, we split samples into acquirer banks and target banks. According to the table, the acquirer banks were larger in terms of assets than the other banks. Also, the loan-deposit ratio (Loan/Deposits) of the acquirer banks was lower. On the other hand, the target banks and participants combined into new banks had relatively high ROA, which arguably reflects that those banks were more or less monopolistic in the segmented local markets.[16]

4 The effects of policy-promoted consolidation

In this section, we examine the effects of policy-promoted consolidation on bank performance as a way of revealing the effect of the Bank Law of 1927. Table 3 shows the result of panel regressions of equation (1) with the deposit growth rate from one year before the consolidation (T-1) to two or three years after the consolidation (T-2 or T-3) as the dependent variable. Columns 1 and 3 show the results of the performance change from T-1 to T+2, and Columns 2 and 4 show those from T-1 to T+3. According to Column 1, the coefficient of the consolidation dummy is positive and statistically significant at the 1% level. This implies that the deposit growth rate of the consolidated banks was 6.388% points higher that that of the non-consolidated banks in the period from T-1 to T+2. Since the sample period includes the Showa Financial Crisis in 1927 and the financial system did not have a deposit insurance system, the depositors were expected to be aware of any risks associated with the bank. The positive coefficient of the consolidation dummy is supposed to reflect the fact that the consolidation was seen by depositors as reducing credit risk. The coefficient of LN(ASSET) is also positive and statistically significant, which is consistent with our interpretation based on the risk-averse behavior of the depositors. URBAN has no significant impact on the deposit growth rate. Hence, there is no evidence of fund flight from rural to urban areas, as was pointed out by former studies. The coefficient of $\triangle$BRANCH is, as expected, positive and statistically significant at the 1% level, indicating that branches played a significant role in collecting deposits[17]. Column 2 shows the same result qualitatively as that in Column 1, whereas the magnitude and statistical significance of the coefficient of the consolidation dummy is slightly smaller, and the coefficient of LN(ASSET) is larger.

In Columns 3 and 4, we split the consolidation samples into policy-promoted consolidations and strategic ones in order to identify the effect of the consolidation promotion policy. These results show that while the coefficient of the policy-promoted consolidation dummy is positive and statistically significant, that of strategic consolidation is positive but not significant. Moreover, the magnitudes of these coefficients are larger in the former than in the latter. Hence, we can say that the

deposit growth rate went up, particularly in cases where consolidation was promoted by government policy.

In order to explore the reasons for the positive effect of consolidation on deposit growth in more detail, we conducted a cross sectional analysis. That is, we estimated equation (1) by event year. The result where the performance change was measured from one year before the consolidation to one year after the consolidation is shown in Panel A. Panels B and C show the results where the performance change was measured from one year before the consolidation to two and three years after the consolidation, respectively. According to these panels, the consolidations in 1927, when the Showa Financial Crisis occurred, had a strong positive effect on the deposit growth rate. Those banks that consolidated in 1927 collected over 20% more deposits than the non-consolidated banks. Also, the consolidations in 1928 had a positive effect on deposit growth, although it was relatively small. On the other hand, the consolidations that occurred in the period from 1929 to 1932 had no statistically significant effect. In other words, the positive effect of consolidation on deposit growth was observed only in the period when the financial system was especially unstable. This can be interpreted as being the risk-averse behavior of depositors that was spurred by the financial crisis and thus gave a premium to the consolidation. While not reported, we estimated equation (1) using a policy promotion consolidation dummy and strategic consolidation dummy with respect to the years 1927 and 1928 to confirm that the positive effect was especially large for policy-promoted consolidation.

One interpretation of the larger effect of policy-promoted consolidation is that policy-promoted consolidation aimed at rescuing financially distressed banks. Actually, comparing the average loan-deposit ratio between acquiring banks and acquired banks with respect to whether they were participants in policy-promoted consolidations, we find that the ratio of the former was 1.19, while that of the latter was 1.51. In other words, the liquidity position of the acquired banks was extremely bad. On the other hand, with respect to strategic consolidations, the average loan-deposit ratio of the acquiring banks was 1.00, while that of the acquired banks was 1.18, indicating that the liquidity position of the acquired banks was not so bad. Hence, we can infer that

strategic consolidations rarely contributed to the rescue of financially distressed banks. In addition, according to Goto (1991), in order to rescue small and weak banks, the Ministry of Finance actively coordinated consolidations collaborating with bank managers and leading figures of local business circles. In summary, it is likely that the consolidations promoted by the Bank Law mitigated the financial crisis.

Next, we examine the effect of consolidation on bank profitability. Panel A of Table 5 shows the results of panel regressions of Equation (1) with change in ROA from one year before the consolidation (T-1) to two or three years after the consolidation (T-2 or T-3) as the dependent variable. As shown in Columns 1 and 2, the consolidation dummy is negative and statistically significant, which means that consolidation had a negative effect on bank profitability. Since, as stated above, consolidation would more or less increase market power, the negative effect suggests that consolidation was accompanied by inefficiencies. This is not surprising, because most of the literature on bank consolidations in the 1980s and 1990s rejects any significantly positive effect of consolidations on profitability and efficiency (Berger et al. 1999; Amel et al. 2002).

Meanwhile, LN(ASSET) and URBAN had a positive effect on ROA[18]. On the other hand, the coefficient of △BRANCH is, contrary to our expectation, positive. It is possible that those banks whose profitability declined were obliged to decrease their number of branches, however, the positive effect of restructuring branch networks was not large enough to offset that correlation.

In the same way as for the analysis of deposit growth rate (Table3), we focus on the effect of policy-promoted consolidation on ROA. As shown in Columns 3 and 4, the coefficient of the policy-promoted consolidation dummy is negative and statistically significant. On the other hand, that of the strategic consolidation dummy is positive, although it is not significant. These results imply that we can attribute the negative effect of the consolidation on ROA to policy-promoted consolidation.

Finally, we have to mention that the number of observations is smaller by 212 (9.7%), compared to the analysis of the deposit growth rate, because we eliminated banks whose information on negative profit was not available from our samples[19]. Hence, it is possible that the estimation

results in Table 5 are affected by sample selection bias. Therefore, we re-estimated equation (2) with the sample selection model by using the maximum likelihood (ML) method, where the selection equation consists of variables explaining the cross sectional differences in bank profits[20]. The estimated results are shown in Panel B of Table 5. We can confirm that the results are not substantially different when compared to those of Panel A[21][22].

5 Consolidation patterns and bank performance

In the previous section, we confirmed that policy-promoted consolidation had a positive effect on deposit growth rate and that it had a negative effect on ROA, which suggests that some inefficiencies occurred. In this section, we investigate the causes of these results in more detail. For this purpose, we focus on three patterns of consolidation that are relevant to bank performance. That is, (1) the form of consolidation absorbing consolidations vs. mergers of equals, (2) the number of participating banks, and (3) in-market consolidations vs. out-of-market consolidations. Then, we split policy-promoted and strategic consolidation into sub-categories based on these patterns.

(1) The form of consolidation. Integration of different organizations is generally accompanied by coordination costs. The magnitude of the cost is likely to depend on the form of the consolidation. Berger et al. (1999) point out that the reason why cost efficiency was not improved by the consolidations in the 1980s was that the gains from the consolidation were offset by such coordination costs as difficulties in managing large organizations, conflicts between different corporate cultures, and problems in integrating systems. Compared with an absorbing consolidation, coordination costs are expected to be higher in the case of mergers of equals, because in the latter situation a dominant participant and leadership is lacking[23][24]. Here, we regard absorptions and acquisitions as described in *Ginko Jiko Geppo* as absorbing consolidations, and regard combination into a new bank as a merger of equals.

(2) The number of participants (one-to-one consolidation versus consolidation with more than two participants). In general, the more participants there are, the more difficult it is to integrate organizations[25]. (3) In-market consolidation versus out-of-market consolidation. It has been pointed

out that geographic expansion of the business area and branch network reduces the risk of bank insolvency (Hughes et al., 1999). On the other hand, it is likely that in-market consolidation may enhance profitability through restructuring inefficient branches and increasing market power (Berger and Humphrey, 1992 etc.).

Combining the criteria (1)-(3) with the classification distinguishing between policy-promoted consolidations and strategic consolidations, we arrive at twelve subcategories of consolidation patterns. We estimated equation (1), using a dummy variable that denotes each consolidation pattern subcategory. Table 6 shows the estimated results. In Panel A, the dependent variable is the change in ROA[26]. In Columns 1 and 2, we classify each of the policy-promoted consolidations and strategic consolidations as either absorbing consolidations or mergers of equals. With respect to policy-promoted consolidations, while both coefficients of absorbing consolidations and mergers of equals are negative, the latter is larger in absolute value and the statistical significance is relatively high. With respect to strategic consolidations, both coefficients of absorbing consolidations and mergers of equals are different from zero, although the coefficient is positive in the case of absorbing consolidations. These results indicate that it was policy-promoted consolidations and mergers of equals that suffered from a deterioration in profitability.

In Columns 3 and 4, we focus on criterion (2) as well as on the criterion for policy-promoted/strategic consolidations. With respect to policy-promoted consolidations, both coefficients of one-to-one consolidations and consolidations with more than two participants are negative and statistically significant. But, the absolute value of the latter case is approximately twice as large as that of the former case. On the other hand, with respect to strategic consolidations, neither of the coefficients is statistically significant.

It should be noted that policy-promoted consolidations did not always hurt profitability. Policy-promoted consolidations damaged profitability especially in cases where there was no dominant participant, or where more than two banks participated in the consolidation. On the other hand, with respect to strategic consolidations, there is no evidence that profitability declined for this form of consolidation. One possible interpretation of these results is as follows. Some of the

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policy-promoted consolidations were carried out with the aim of getting over the immediate crisis but lacked a strategic vision for the new organization. Hence, after the consolidation, the merged banks suffered from the various organizational problems mentioned above. Also, these problems were especially serious where there was no dominant participant, or where more than two banks participated in the consolidation.

In Columns 5 and 6, we focus on criterion (3) as well as on the criterion for policy-promoted/strategic consolidations. With respect to policy-promoted consolidations, in-market consolidations had an especially large negative effect on profitability. On the other hand, strategic and in-market consolidations did not have a significant negative effect on profitability. One possible interpretation of these results is that in-market consolidations, by definition, had many overlapping braches, which made bank profitability worse because effective restructuring of these branches failed to occur. In particular, policy-promoted consolidations were unlikely to have detailed plans to restructure the branch network in advance[27]. Furthermore, it is interesting that the coefficient of strategic and out-of-market consolidation is positive and statistically significant. This result indicates that bank consolidation could also play an important role as a measure of entry into a new market, considering the government principally prohibited new branches from being opened.

The same analyses can be performed regarding the deposit growth rate in panel B of Table 6. Here, we are especially interested in the criterion for in-market and out-of-market consolidations because this criterion is expected to be directly related to the risk for depositors, as explained above. Columns 5 and 6 show the estimated results. All of the consolidation dummies have positive coefficients, but the magnitude and statistical significance differ markedly among the four patterns. In particular, in the case of policy-promoted and out-of-market consolidations, the magnitude of the coefficient is large. Thus, the banks that underwent this form of consolidation gathered over 10% more deposits than the non-merged banks. This result, namely that out-of-market consolidation had an especially large positive effect on deposit growth, is consistent with the risk averse behavior of depositors.

Although the form of consolidation and the number of participants is not considered to be

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directly related to depositor risk, we also checked these effects and indicate the estimated results in Columns 1 through 4. It is confirmed that the policy-promoted and merger of equals and policy-promoted and one-to-one consolidation subcategories have a strong positive effect on deposit growth rate, indicating that not all policy-promoted consolidation has a strongly positive effect on the deposit growth rate.

6 Concluding Remarks

In pre-war Japan, the banking industry was composed of numerous small banks, which led to instability of the financial system. In this situation, the Ministry of Finance promoted bank consolidations based on a minimum capital criterion for banks set by the Bank Law of 1927. After the Law was enacted in 1928, bank consolidations surged. This event provides us with a valuable opportunity to explore the effects of the consolidation promotion policy.

In this paper, we identified bank consolidations that occurred as a result of government policy by referring to the minimum capital of the bank and examined the effects of policy-promoted consolidations in comparison with other consolidations. It is confirmed that policy-promoted consolidations had a substantial positive effect on deposit growth. In addition, the positive effect was especially large in 1927 and 1928, when the financial system was faced with a major crisis. On the other hand, with respect to profitability, policy-promoted consolidations had a negative effect, especially in cases where many banks were involved in the consolidation, where there was no dominant participant, or where the participating banks had operated in the same market. From these results, we can infer the possibility that policy-promoted consolidations mitigated the financial crisis by enhancing the ability of the bank to collect deposits, under the condition that the financial system was exposed to serious negative shocks. However, we should also acknowledge the negative aspects of policy-promoted consolidations. They were likely to be accompanied by large organizational costs and lowered bank profitability. Finally, it should be noted that our research only focused on short-term effects, namely those that emerged three years after the consolidation. At the moment, it is difficult to capture long-term effect due to data restriction. Exploring long-term effects remains an

aim of future research.

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[2] Teranishi (2004) investigates the relationship between bank lending and bank consolidation after the Bank Law of 1927. However, his study does not capture the policy effect directly for the following reasons. First, it does not identify whether each consolidation was promoted by the Bank Law or not. Second, it does not use the appropriate method to capture the consolidation effect, since his analysis is based on pooled prefecture-level data. Therefore, he cannot make a comparison between a consolidated bank and a control sample, nor can he capture the dynamic effects in the

period ranging from the pre-consolidation year to the post-consolidation year.

[3] "Waga Kuni Futsu Ginko Seido no Kaizen ni kansuru Gutaiteki Hosaku" "Concrete measures for Improving the Ordinary Bank System in Japan" by the members of the Preparing Committee for the Financial System Research Council (Ogawa 1930, part1, pp.11-13); The Research Bureau of the Bank of Japan, "Sekai Senso Shurogo niokeru Honpo Zaikai Doyo Shi," (History of the Disturbances of the Japanese Economy after the First World War) (Bank of Japan 1958).

[4] This authority was inherited from the Bank Act of 1890.

[5] See footnote 24 for details.

[6] In 1923, the MOF announced "The Policy on Bank Regulation," which stated that the establishment of a new bank or a new bank branch would not be approved in principle, and that bank consolidations would be promoted. Also, in 1924, the MOF requested regional governments to promote bank consolidations in the same region. When the Bank Law was enacted, the MOF increased the number of bank inspectors from six to eighteen and instructed them to promote bank consolidations in collaboration with regional business circles (Goto 1968; Ito 2002).

[7] The government promoted combination into a new bank if there was no sound and leading bank among the banks undergoing consolidation (Sugiyama 1982).

[8] Not all of the data censored at zero can be covered by those additive sources. Hence, in the analysis of profitability (Tables 5, 6), we eliminate those banks whose information on negative profit is not available from our samples. We discuss the selection bias from this sample selection in the next section.

[9] If we take a longer interval, we lose many consolidation samples.

[10] The unit of a market here is a city or a county.

[11] We cannot get an accurate value of total assets because the account of net borrowings from the BOJ and other banks was unrecorded in *Ginkokyoku Nenpo*. However, it is expected that this will not matter because it is pointed out by Wang (2004) that this account was relatively small.

[12] Yabushita and Inoue (1993) established that if a bank was in poor financial condition, this increased the probability of closure during the Showa Financial Crisis in 1927, and argued that selection through the market mechanism worked efficiently and that there was no self-fulfilling run on the banks. On the other hand, Korenaga et al. (2001) split the period of the Showa Financial Crisis into two sub-periods, and confirmed that while in the first sub-period there were no self-fulfilling runs, the bank runs in the second sub-period were self-fulfilling.

[13] He supported the assumption upon which his model was based, pointing out that even in late 1998 the non-performing loan ratio at Indonesian banks was still 50-100%.

[14] Since consolidations were often accompanied by asset reevaluation, we adjust the assets of the post-consolidation bank in the following way. $ASSET_{T+i}^* = ASSET_{T-1} + (ASSET_{T+i} - ASSET_T), i = 2,3$

[15] The value of the pro-forma bank indicates the sum of the balance sheets of participating banks.

[16] Imuta (1976) and Teranish (1982) pointed out that while small-sized banks had market power in segmented country areas to some extent, medium-sized banks were frequently exposed to competition with large banks in urban areas.

[17] Based on the deposit and loan data of Mitsubishi Bank by branch, Okazaki (2002) shows that the increase in the number of branches in the 1920s and 1930s contributed to the increase of deposits.

[18] The fact that bank scale had a positive effect on ROA indicates the potential benefit of consolidations. Since, in our estimation, the value of a pro-forma bank is used with respect to the merged banks, the scale effect of the consolidation is controlled for. We also estimated equation (1) using the average value of assets of participant banks instead of a pro-forma value. In this case, as expected, the consolidation had a greater positive effect on the deposit growth rate and a smaller negative effect on ROA.

[19] See footnote 8. The excluded observations include 12 consolidation samples (8 policy-promoted consolidations and 4 strategic ones).

[20] The number of branches may explain cross sectional differences in bank profits. However, we exclude this variable from the selection equation because it is highly correlated with LN(ASSET). But, the estimated results were not changed greatly, even if we included the number of branches in the selection equation.

[21] We also estimated the sample selection model using the two-step method by Heckman (1979). However, the estimated results are the same as those found using the maximum likelihood (ML) method (Panel B of Table5).

[22] Our estimation results may also be exposed to another selection bias since we did not include banks that exited through failures and dissolutions in estimating Equation (1). Thus, we estimated the same sample selection models as above, supplementing the data for the end of year T-2 for banks exiting from the market from T-1 to T+3. The estimated impact of consolidation remains statistically significant with respect to both dependent variables (deposit growth rate and change in ROA).

[23] According to Sugiyama (1982), since the banks established through combination into a new bank were faced with difficulties in determining new directors, they frequently invited outsiders to take up the position.

[24] Moreover, as was expected by the government, if a small bank became one of the branches of a large bank as a result of an absorbing consolidation, it is supposed that any unsound loans from the acquired bank to its related firm would be reduced due to the discipline of the large bank. Actually, Okazaki, Sawada and Wang (2005) confirmed that the absorbing consolidation had an effect of excluding unsound relationships of acquired banks with non-banking companies, based on data on director interlocking in pre-war Japan.

[25]Sanwa Bank (1974) describes the internal conflicts that Sanwa Bank suffered immediately following the consolidation in 1933. Sanwa Bank, the predecessor to UFJ Bank, was established through a consolidation of three large banks.

[26] We also estimated these models with the sample selection model shown in the previous section. It was confirmed that the results were not greatly changed by sample selection bias.

[27] The number of branches for policy-promoted consolidations decreased by 0.86 (1.16) on average two (three) years after the consolidation, it decreased by 3.27 (3.41) for strategic consolidations.

Fig.1 Number of bank exits from market by cause

Number of exits
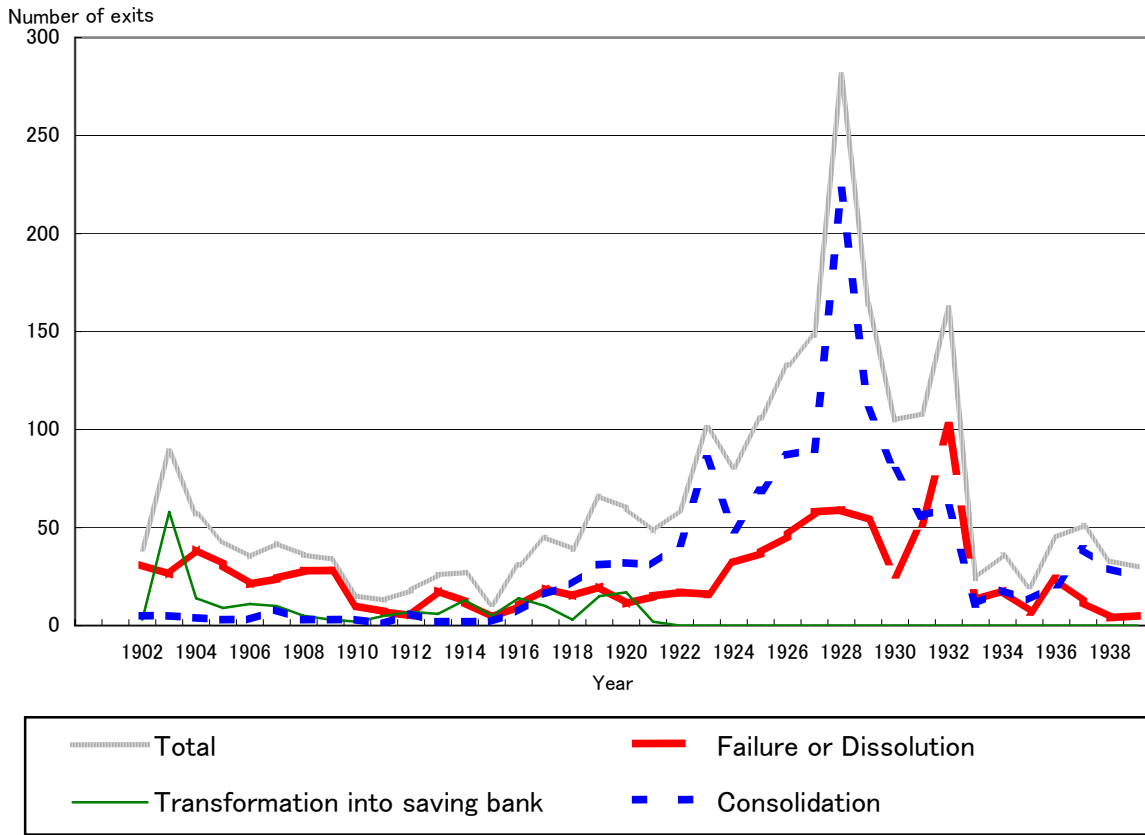
Source: Goto, *Honpo*, Table 33, 52, 98, 136, 156.

Table1 Sample description

Panel A: Number of samples by event year

| | Number of consolidations | | | |
Event Year	All	Policy-promoted	Strategic	Control samples (Non-consolidated)
1927	26	21	5	474
1928	41	30	11	389
1929	31	25	6	260
1930	18	11	7	275
1931	22	20	2	296
1932	26	21	5	328
Total	164	128	36	2022

Panel B: Form of consolidation

Form	Absorption	Acquisition	Combination into a new bank
Policy-promoted	35	50	43
Strategic	13	14	9
Total	48	64	52

Panel C: Number of participants

Number of participants	2	3	4	5	More than 5
Policy-promoted	96	19	3	6	4
Strategic	33	2	1	0	0
Total	129	21	4	6	4

Panel D: In-market versus Out-of-market

	In-market	Out-of-market
Policy-promoted	102	26
Strategic	22	14
Total	124	40

Panel E: Urban area versus Rural area

Location	Urban	Rural
Policy-promoted	32	96
Strategic	8	28
Total	40	124

Table2 Basic Statistics on pre-consolidation banks

	Acquirer banks	Target banks	Participants in combination into a new one	Control samples (Non-consolidated)
Total assets (1000yen)				
Mean	42695.54	3912.19	2085.59	14122.24
Median	4631.06	854.34	1523.47	2606.55
Std.dv.	161416.70	13986.97	2154.03	84291.87
Deposits (1000 yen)				
Mean	21347.77	1956.09	1042.79	7058.12
Median	2315.53	427.17	761.74	1303.27
Std.dv.	80708.35	6993.49	1077.02	42107.38
Loans/Deposits				
Mean	1.15	1.44	1.45	1.39
Median	1.08	1.14	1.24	1.13
Std.dv.	0.52	1.15	1.38	2.50
Return on assets (%)				
Mean	3.69	4.86	4.53	3.80
Median	3.03	3.69	4.16	3.12
Std.dv.	2.71	7.33	3.83	4.22
Number of branches				
Mean	7.88	1.65	1.84	4.20
Median	3.00	0.00	1.00	2.00
Std.dv.	15.59	3.12	2.72	8.12
Operating Area				
Urban Area (%)	28.6	27.8	12.8	24.6
Rural Area (%)	71.4	72.2	87.2	75.4
Number of banks	112	133	148	2022

Table 3 Effect of consolidation on deposit growth

Dependent variable	Deposit growth rate from T−1 to T+2 or T+3			
Window	[T−1, T+2] [1]	[T−1, T+3] [2]	[T−1, T+2] [3]	[T−1, T+3] [4]
CONS	6.3884 a (2.3446)	5.0485 c (2.75)		
Policy−promoted consolidation			7.2883 a (2.6431)	5.3867 c (3.17)
Strategic consolidation			3.0331 (4.4263)	3.7888 (4.6223)
LN(ASSET)	1.7269 b (0.7014)	3.4457 a (0.7468)	1.7601 b (0.7024)	3.4586 a (0.7482)
URBAN	−0.6769 (2.5832)	−1.9882 (2.7015)	−0.709 (2.5854)	−2.0003 (2.7037)
⊿BRANCH	2.9804 a (0.5046)	3.5025 a (0.52)	2.9679 a (0.5062)	3.4991 a (0.5226)
INTERCEPT	−23.2484 b (10.1996)	−57.304 a (10.9756)	−23.719 b (10.2117)	−57.4877 a (10.9954)
Event Year Dummy	Yes	Yes	Yes	Yes
R2	0.063	0.057	0.063	0.057
NOB (consolidated/other)	164/2022	164/2022	164/2022	164/2022

Notes: Significance at 1%,5% and 10% level are denoted by ″a″ ″b″ and ″c″.
The figures in parentheses are robust standard errors.
Significance levels are reported for two−tail tests.
Variables: See appendix

Table4 Cross sectional analysis

Panel A: Performance change from T−1 to T+1
Dependent variable: Deposit growth rate

Event year (T)	1927	1928	1929	1930	1931	1932
CONS	20.2501 a	10.6177 b	1.678	1.8323	5.9071	−1.5532
	(4.4009)	(4.8975)	(3.3161)	(3.7497)	(5.9379)	(4.3401)
LN(ASSET)	−0.2703	−2.873	−0.401	0.558	1.0987	2.7285 c
	(1.5624)	(2.6361)	(1.4724)	(1.2998)	(1.0527)	(1.2834)
URBAN	0.784	12.9143	−2.1243	2.3552	−2.1675	−2.1029
	(4.2555)	(12.8087)	(3.3616)	(2.965)	(3.2172)	(3.5142)
△BRANCH	0.4943	3.1031 a	2.6027 a	3.3218 a	1.0727	2.8303
	(1.1883)	(0.7729)	(0.5145)	(0.4534)	(0.7383)	(1.7648)
INTERCEPT	5.7985	42.4992	1.4481	−25.7888	−37.4093 b	−50.8864 b
	(22.1121)	(38.1374)	(22.1272)	(19.7086)	(15.8675)	(19.1716)
R2	0.014	0.018	0.06	0.069	0.024	0.055
NOB (consolidated/other)	26/474	41/389	31/260	18/275	22/296	26/328

Panel B: Performance change from T−1 to T+2
Dependent variable: Deposit growth rate

Event year (T)	1927	1928	1929	1930	1931	1932
CONS	25.3345 a	12.0555 b	1.5768	2.9697	5.8086	−3.2334
	(5.8598)	(5.1231)	(4.3158)	(4.9235)	(6.5922)	(4.6242)
LN(ASSET)	0.1877	−1.2378	−0.5337	2.5944 c	2.8789 b	6.1098 a
	(1.5867)	(2.1424)	(1.5388)	(1.5171)	(1.338)	(1.5689)
URBAN	−3.6949	6.4451	0.9599	0.1511	−4.1259	−3.4349
	(4.764)	(10.1796)	(3.772)	(3.6248)	(3.7899)	(4.1279)
△BRANCH	1.5476	3.1438 a	2.4576 a	3.5232 a	3.2848 b	4.0848 b
	(1.0436)	(0.8324)	(0.5058)	(0.4868)	(1.3285)	(1.69)
INTERCEPT	−1.9117	9.3925	−6.0031	−59.7214 b	−57.1077 a	−95.4181 a
	(22.4874)	(31.3836)	(23.0249)	(23.0983)	(20.1615)	(23.0336)
R2	0.022	0.018	0.045	0.079	0.084	0.122
NOB (consolidated/other)	26/474	41/389	31/260	18/275	22/296	26/328

Panel C: Performance change from T−1 to T+3
Dependent variable: Deposit growth rate

Event year (T)	1927	1928	1929	1930	1931	1932
CONS	22.0166 a	9.5279	−0.4428	5.9659	5.168	−4.6843
	(7.6152)	(6.4004)	(4.9593)	(6.2549)	(7.5685)	(4.9778)
LN(ASSET)	1.1722	0.7235	2.091	3.8512 b	5.7957 a	7.3843 a
	(1.71)	(2.0187)	(1.7121)	(1.8649)	(1.5524)	(1.9119)
URBAN	−5.3442	7.4951	−1.4835	−2.6494	−5.4994	−5.8325
	(4.9892)	(10.3075)	(4.4597)	(4.2317)	(4.4987)	(4.6038)
△BRANCH	1.9347 b	2.7135 a	3.0682 a	4.6971 a	4.2788 a	4.859 b
	(0.8868)	(0.638)	(0.836)	(0.706)	(1.3857)	(1.9196)
INTERCEPT	−25.5295	−30.1874	−48.4047 c	−73.0008 b	−95.4664 a	−107.885 a
	(24.4846)	(29.5389)	(25.5697)	(28.3436)	(23.1868)	(28.044)
R2	0.022	0.014	0.055	0.103	0.113	0.127
NOB (consolidated/other)	26/474	41/389	31/260	18/275	22/296	26/328

Notes: Significance at 1%,5% and 10% level are denoted by ″a″ ″b″ and ″c″.
　　　　The figures in parentheses are robust standard errors.
　　　　Significance levels are reported for two-tail tests.
Variables: See appendix

Table 5 Effect of consolidation on ROA

Panel A Baseline estimation

Dependent variable	Change of ROA from T−1 to T+2 or T+3			
Window	[T−1, T+2]	[T−1, T+3]	[T−1, T+2]	[T−1, T+3]
	[1]	[2]	[3]	[4]
CONS	−0.4144 b	−0.4836 b		
	(0.1904)	(0.2434)		
Policy-promoted consolidation			−0.5856 a	−0.6524 b
			(0.204)	(0.2697)
Strategic consolidation			0.2696	0.1885
			(0.3145)	(0.3648)
LN(ASSET)	0.2403 a	0.248 a	0.2332 a	0.2407 a
	(0.0744)	(0.0699)	(0.0753)	(0.0707)
URBAN	0.491 a	0.5567 a	0.4964 a	0.5622 a
	(0.1794)	(0.1779)	(0.1792)	(0.1777)
△BRANCH	0.0625 b	0.0595	0.0663 b	0.0621
	(0.0308)	(0.0466)	(0.0311)	(0.047)
INTERCEPT	−5.0544 a	−5.5628 a	−4.9521 a	−5.4582 a
	(1.1012)	(1.0593)	(1.1129)	(1.0701)
Event Year Dummy	Yes	Yes	Yes	Yes
R2	0.05	0.08	0.051	0.081
NOB (consolidated/other)	152/1822	152/1822	152/1822	152/1822

Panel B Adjusting sample selection bias

Dependent variable	Change of ROA from T−1 to T+2 or T+3			
Window	[T−1, T+2]	[T−1, T+3]	[T−1, T+2]	[T−1, T+3]
	[1]	[2]	[3]	[4]
CONS	−0.4121 b	−0.5109 b		
	(0.1894)	(0.2349)		
Policy-promoted consolidation			−0.656 a	−0.6509 b
			(0.2063)	(0.2686)
Strategic consolidation			0.1973	0.1899
			(0.3195)	(0.3631)
LN(ASSET)	0.2416 a	0.2325 a	0.1947 b	0.2415 a
	(0.0748)	(0.0809)	(0.0844)	(0.0709)
URBAN	0.4912 a	0.5559 a	0.5021 a	0.5623 a
	(0.179)	(0.1779)	(0.1827)	(0.1773)
△BRANCH	0.0625 b	0.0578	0.058 c	0.0621
	(0.0307)	(0.0437)	(0.0305)	(0.0468)
INTERCEPT	−5.0906 a	−5.1521 a	−3.9698 a	−5.4807 a
	(1.1121)	(1.4027)	(1.3089)	(1.0779)
(Selection model)				
CONS	0.1168	0.1071	0.0562	0.117
	(0.1538)	(0.1547)	(0.1434)	(0.1538)
LN(ASSET)	0.0654 b	0.0613 c	0.0495	0.0654 b
	(0.0321)	(0.0363)	(0.0418)	(0.0321)
URBAN	0.012	0.0221	0.0495	0.0119
	(0.086)	(0.095)	(0.0873)	(0.086)
INTERCEPT	0.2414	0.3012	0.4242	0.2423
	(0.4597)	(0.513)	(0.5742)	(0.4596)
rho	−0.2597	0.0229	−0.5600	0.0149
(p−value)	0.2002	0.6396	0.0373 b	0.5015
Event Year Dummy	Yes	Yes	Yes	Yes
likelihood	−5856.74	−5770.75	−5845.09	−5770.12
NOB	2186	2186	2186	2186
Censored	212	212	212	212

Notes:
Significance at 1%,5% and 11% level are denoted by "a" "b" and "c".
The figures in parentheses are robust standard errors.
Significance levels are reported for two−tail tests.
Event year dummies are included in both primary and selection equation as for sample selection model.
Variables: See appendix

Table6 Consolidation pattern and bank performance

Panel A: Change of ROA

Dependent variable	Change of ROA from T−1 to T+2 or T+3					
Window	[T−1, T+2]	[T−1, T+3]	[T−1, T+2]	[T−1, T+3]	[T−1, T+2]	[T−1, T+3]
	[1]	[2]	[3]	[4]	[5]	[6]
(Consolidation pattern dummy)						
Policy-promoted & Absorbing	−0.3545	−0.3058				
	(0.241)	(0.3106)				
Policy-promoted & Merger of equals	−1.0123 a	−1.2947 a				
	(0.3142)	(0.4482)				
Strategic & Absorbing	0.3521	0.4168				
	(0.3274)	(0.3352)				
Strategic & Merger of equals	−0.0876	−0.8016				
	(0.7035)	(0.9961)				
Policy-promoted & One-to-one			−0.4157 b	−0.5276 c		
			(0.2021)	(0.2786)		
Policy-promoted & More than two			−1.0769 b	−1.0137 c		
			(0.4644)	(0.6052)		
Strategic & One-to-one			0.2979	0.2493		
			(0.3339)	(0.386)		
Strategic & More than two			−0.2613	−0.7863		
			(0.1846)	(0.6936)		
Policy-promoted & In-market					−0.677 a	−0.7707 b
					(0.2347)	(0.3228)
Policy-promoted & Out-of-market					−0.2175	−0.1779
					(0.2713)	(0.2674)
Strategic & In-market					−0.2833	−0.4427
					(0.308)	(0.3883)
Strategic & Out-of-market					0.982 b	1.0021 b
					(0.4769)	(0.5086)
LN(ASSET)	0.2301 a	0.2351 a	0.2325 a	0.24 a	0.2301 a	0.2368 a
	(0.0754)	(0.0706)	(0.0752)	(0.0706)	(0.0753)	(0.0706)
URBAN	0.4908 a	0.5521 a	0.4922 a	0.5584 a	0.4936 a	0.5588 a
	(0.1792)	(0.1773)	(0.1795)	(0.1782)	(0.1793)	(0.1779)
△BRANCH	0.0644 b	0.0583	0.064 b	0.0606	0.0646 b	0.0599
	(0.0315)	(0.0474)	(0.0319)	(0.0479)	(0.0311)	(0.047)
INTERCEPT	−0.4654 b	−0.4305 c	−0.4558 b	−0.4186 c	−0.4729 b	−0.4384 c
	(0.2153)	(0.2314)	(0.2159)	(0.2321)	(0.2157)	(0.2317)
Event Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.052	0.082	0.052	0.081	0.052	0.082
NOB (consolidated/other)	152/1822	152/1822	152/1822	152/1822	152/1822	152/1822

Notes: Significance at 1%,5% and 10% level are denoted by "a" "b" and "c".The figures in parentheses are robust standard errors   Significance levels are reported for two-tail tests. As for variables, see appendix.

Table6 Consolidation pattern and bank performance

Panel B: Deposit Growth Rate

Dependent Variable	Deposit Growth Rate					
Window	[T−1, T+2] [1]	[T−1, T+3] [2]	[T−1, T+2] [3]	[T−1, T+3] [4]	[T−1, T+2] [5]	[T−1, T+3] [6]
(Consolidation pattern dummy)						
Policy-promoted & Absorbing	6.5964 b	3.4242				
	(3.1262)	(3.6891)				
Policy-promoted & Merger of equals	8.6484 b	9.2367 c				
	(4.3406)	(5.4936)				
Strategic & Absorbing	6.1367	4.8949				
	(4.895)	(5.1322)				
Strategic & Merger of equals	−6.316	0.4293				
	(8.0399)	(9.0183)				
Policy-promoted & One-to-one			8.1472 a	5.5468 c		
			(2.786)	(3.3151)		
Policy-promoted & More than two			4.7074	4.9003		
			(5.7016)	(7.2049)		
Strategic & One-to-one			2.6516	4.1971		
			(4.516)	(4.7283)		
Strategic & More than two			6.8589	−0.7592		
			(17.7359)	(17.3092)		
Policy-promoted & In-market					6.3 b	2.5138
					(2.6765)	(3.2515)
Policy-promoted & Out-of-market					11.1973	16.7353 b
					(6.8589)	(7.8209)
Strategic & In-market					3.1567	4.6471
					(4.6701)	(5.126)
Strategic & Out-of-market					2.8501	2.4778
					(8.1657)	(8.0936)
LN(ASSET)	1.7466 b	3.4722 a	1.7558 b	3.4594 a	1.7434 b	3.4101 a
	(0.7036)	(0.7502)	(0.7029)	(0.7486)	(0.7053)	(0.7514)
URBAN	−0.7506	−1.9893	−0.7182	−2.012	−0.7296	−2.0584
	(2.5889)	(2.7079)	(2.5847)	(2.703)	(2.588)	(2.7061)
△BRANCH	2.9552 a	3.5022 a	2.9557 a	3.4994 a	2.9609 a	3.4792 a
	(0.5023)	(0.5196)	(0.5047)	(0.5192)	(0.5067)	(0.5233)
INTERCEPT	−23.5082 b	−57.6983 a	−23.656 b	−57.5 a	−23.456 b	−56.726 a
	(10.2302)	(11.0269)	(10.2186)	(11)	(10.2579)	(11.0469)
Event Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.063	0.057	0.063	0.057	0.063	0.058
NOB (consolidated/other)	164/2022	164/2022	164/2022	164/2022	164/2022	164/2022

Notes: Significance at 1%,5% and 10% level are denoted by ″a″ ″b″ and ″c″.The figures in parentheses are robust standard errors   Significance levels are reported for two-tail tests. As for variables, see appendix.

Appendix Definition of variables

Panel A Basic Variables

Variable	Explanation
Deposit growth rate	Deposit growth rate from year T−1 to year T+2 or T+3.
Change of ROA	Change of the ratio of profit to total assets from year T−1 to year T+2 or T+3, where the profit is the profit of the second half of the fiscal year, multiplied by two. The value of total assets in year T+2 or T+3 is modified according to footnote 26.
ASSET	Book value of capital plus total deposits. Capital equals to the sum of paid−in capital, reserved fund and the profit.
△BRANCH	Change of the number of branches from year T−1 to year T+2 or yearT+3.
CONS	Dummy variable which equals 1, if the bank was consolidated one, and 0, otherwise.
URBAN	Dummy variable which equals 1, if the bank's head office was located in Tokyo, Kanagawa, Aichi, Osaka, Kyoto, or Hyogo prefecture, and 0, otherwise.

Panel B Consolidation pattern dummy

Each consolidation pattern dummy is a variable which equals 1, if the consolidation satisfied each of the following condition, and 0 otherwise.

Policy−promoted	At least one participant bank did not meet the minimum capital criterion set by the Bank Law in 1927.
Strategic	All participants met the minimum capital criterion set by the Bank Law in 1927.
Absorbing	The form of the consolidation was an absorption or an acquisition.
Merger of equals	The form of the consolidation was a combination into a new one.
One−to−one	The number of the participants was two.
More than two	The number of the participants was more than two.
Out−of−market	None of head offices or branch offices of the participants overlapped in the same city or country.
In−market	At least one head office or branch office, overlapped in the same city or country.