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## **Effects of bank consolidation promotion policy: Evaluating the Bank Law in 1927 Japan\***

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### **Abstract**

This paper investigates the impact of bank consolidations promoted by government policy, using data from prewar Japan, when the financial authorities promoted them by dint of the Bank Law in 1927. It finds that the policy-promoted consolidation had a positive effect on the deposit growth, especially during the period of a major financial crisis. On the other hands, it had a negative effect on the profitability, particularly, in case there was no dominant bank among the participants or more than two banks participated in the consolidation. The policy-promoted consolidation in such cases was likely to be accompanied by large organizational cost.

## **1.Introduction**

In recent years, there has been a wave of bank consolidations that has spread across the world. This phenomenon has been attracting the interest of researchers, financial authorities and those in the banking industry. In fact, bank consolidation has been one of the major issues that research into banking and finance has focused on. Research into bank consolidation progressed in the 1980s, examining the effects on efficiency and the market power of the banks that had participated in these consolidations, and in recent years the scope of the research has come to include wider issues, such as the effects on the financing of small and medium-sized companies and the systemic risk on the financial system. This research has great relevance, providing the financial authorities with the basis to judge whether a certain consolidation application should be approved or not. Meanwhile, there is another aspect of government intervention related to bank consolidation. That is, the government could play a role in promoting bank consolidations. Berger et al.(1999) argues that the government could promote the consolidation of banks which are faced with difficulties or a financial crisis, based on the case of the US Federal Deposit Insurance Corporation. In fact, the financial authorities of Asian countries have been promoting bank consolidations since the Asian Financial Crisis in 1997, and the Japanese government also has initiated a policy of promoting consolidations among regional financial institutions (Berger et al. 1999; Financial Service Agency, Japan 2002).

The idea underlying the consolidation promotion policy is that bank consolidations should reduce the insolvency risk through asset diversification (Shih 2003). There are a number of empirical studies which confirm a risk diversifying effect of bank consolidation whether directly or indirectly (Benston et al. 1995; Hughes et al. 1996,1999; Craig and Santos 1997; Demsetz and Strahan 1997; Saunders and Wilson, 1999, etc.). Also, the literature on the U.S. banking system during the 1920s and 1930s show that the branch banking system was benefited from diversifying credit risk (White, 1983, 1984; Calomiris, 1992, 1993; Wheelock, 1992, 1993; Mitchener, 2004). This result is considered to indicate the potential benefit of bank consolidation. In addition, White(1985) points out the possibility that the U.S. bank merger wave in 1919-1930 strengthened the banking industry through preventing from failures of small rural banks, as well as achieving economies of scale.

On the other hand, Shih (2003) points out the possibility that credit risk could increase in the event a sound bank merges with an unsound one. Also, most of empirical literatures suggest that bank consolidations do not significantly improve the performance and efficiency of the participant banks (Berger et al. 1999; Amel et al. 2002). If a voluntary consolidation does not enhance the performance of the participating banks, any performance enhancing effect of the consolidation promoted by the government policy is more questionable.

Although the effect of policy-promoted consolidation is not obvious, there have been no empirical studies that have directly examined the topic, to our knowledge. The first objective of this paper is 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 a sufficient number of observations of bank consolidations lacking, but it is also difficult to identify the consolidations promoted by government policy. In order to resolve this problem, we have used the data from prewar Japan. In prewar Japan, the government actively promoted bank consolidations in order to stabilize the financial system. As a result, numerous bank consolidations took place in the 1920s and 1930s (Goto 1991; Shiratori 2001; Okazaki and Sawada 2003). The central measure of the consolidation promotion policy was the Bank Law of 1927, which provides us with a valuable opportunity to evaluate the effects of the consolidation promotion policy. The Bank Law set the minimum capital of the bank, which many banks were unable to meet. At the same time, the government did not give its approval to banks to increase their capital on their own. Many small banks were obliged to merge with another bank or face liquidation. Hence, we can identify the bank consolidations promoted by government policy by referring to the capital of the participating banks<sup>1</sup>.

There is another advantage of using data from prewar Japan. Not only many bank consolidations

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<sup>1</sup> Teranishi(2004) investigates the relation between bank lending and bank consolidation after the enactment of 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 consolidation effect. Since his analysis is based on pooled prefecture-level data, neither can he compare between the consolidated banks and the control samples, nor capture the dynamic effect in the period from the pre-consolidation year to the post-consolidation year.

occurred, but these consolidations also took various pattern. Furthermore, comprehensive information is available on the different patterns of consolidation. As the pattern of consolidation, in general, has an influence on the cost of organizational adjustment, it is necessary to control for it to identify the effects of the consolidation promotion policy. Also, differences in the organizational adjustment cost as determined by the pattern of consolidation is in itself an interesting research topic. In this paper, we analyze how the pattern of consolidation influenced bank performance.

The paper is organized as follows. Section 2 provides an overview of the process of bank consolidations in prewar Japan. In section 3, we explain the data and methodology. Section 4 analyzes the effects of policy-promoted consolidation. In section 5, we analyze the effects of policy-promoted consolidation in more detail, combining the information on the consolidation pattern. Section 6 concludes the paper.

## **2. Bank consolidation in prewar Japan: An overview**

The structure of the banking industry in prewar Japan was substantially different from what it became in the postwar period. One of the major differences was the existence of numerous banks. This was because entry regulations had been comparatively lax until the early twentieth century. As a result, bank exits frequently occurred through failures and consolidations. 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 failures and consolidations.

The increase of bank consolidations since the early twentieth century was due to the consolidation promotion policy of the government. The government recognized that the market structure with many small banks was harmful to the stability of the financial system, and launched its consolidation promotion policy, aiming to emulate the branch banking system of the UK. In 1901, the government set the minimum paid-in capital (50 thousand yen) for a new bank to enter the industry. While the government gradually raised the minimum capital required for a newcomer, it requested local governments to promote bank consolidations.

In the 1920s, the government stepped up implementation of the consolidation promotion policy,

moving away from the UK branch banking system model. Specifically, in this period, the government placed a higher priority on consolidation between banks in the same region. This policy shift reflected the criticism leveled by local business circles that the large urban banks which acquired regional banks, transferred funds from rural to urban areas (Shiratori 2000). In 1923, the Ministry of Finance announced “The Policy on the Bank Regulation,” which stated that the establishment of a new bank or bank branch would not be approved in principle, and that bank consolidation would instead be promoted. In 1924, the Ministry of Finance again requested regional governments to promote bank consolidations in the same region. Figure 1 shows the number of bank exits, classifying them into exits by consolidation and those that exited for other reasons including failure. We can confirm that consolidation came to be the principal reason for bank exits in the late 1910s.

As mentioned above, the Bank Law of 1927 provided the government with a powerful means of promoting bank consolidations. According to the law, a bank should have capital not less than one million yen in principle, and an existing bank whose capital was smaller than the minimum criterion was required to meet this requirement within five years. If the headquarters of the bank was located in Tokyo or Osaka, the minimum capital was two million yen, while it was five hundred thousand yen if the headquarters was located in a town or village whose population was not larger than ten thousand. Out of 1407 ordinary banks, 807 banks did not meet this criterion in 1928, when the Law was enacted, and the government did not give its approval to these banks increasing their capital on their own. Hence, the affected banks were obliged to consolidate with another bank or face liquidation. At the same time, the Ministry of Finance increased the number of bank inspectors from six to eighteen, and gave them the responsibility of promoting bank consolidations in collaboration with regional business associations (Goto 1968; Ito 2002). As shown in Figure 1, the number of bank exits due to consolidations reached a peak of 222 in 1928. Around 90% of the consolidations which occurred in the late 1920s and early 1930s were in the same regions, reflecting government policy.

### 3 Empirical Methodology

#### 3.1 Data and samples

The basic samples used in the following analyses are the consolidations of ordinary banks which occurred in the period from Jan. 1927 to Dec. 1932, when bank consolidations sharply increased due to the proclamation of the Bank Law. The data source for the bank consolidations is *Ginko Jiko Geppo* (*Monthly Bank Affairs*) drawn up by the Bank of Japan. From this source, we can obtain basic information on each bank consolidation, including the event date, the names of participating banks, the prefectures where their head offices were located, the capital of pre-consolidation banks 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 the consolidation forms is useful because it allows us to infer the power balance among the participants. According to Kin'yu Kenkyukai (1934), in the case where the power of the participant banks was nearly equal, they tended to choose 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<sup>2</sup>. 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.

The financial data of each bank are obtained from various issues of *Ginkokyoku Nenpo* (*Year Book of the Bank Bureau of the Ministry of Finance*), which covers all the banks in Japan. However, the information from this source is basically limited to balance sheet data. Furthermore, information on profit in this source is censored at zero. That is to say, if profit of a bank was negative, the negative value is reported in this source. Hence, we supplemented information on profit, using individual financial reports of banks and *Ginko Tsushinroku* (*Bank Records*)<sup>3</sup>. Since, as mentioned in the

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<sup>2</sup> The government promoted combination into a new bank, if there was no sound and leading bank among the banks undergoing consolidation (Sugiyama 1982).

<sup>3</sup> Not all of the data censored at zero can be covered by those additive sources. Hence, in the analysis



previous section, the minimum capital set by the Bank Law depended on the location of the headquarters of the bank, we compiled the addresses of the headquarters from *Ginko Soran (The Comprehensive List of Banks)*. Also, this source provides us with the address of each branch of each bank, which was used to classify out-of-market and in-market consolidation. On the other hand, 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 and the minimum capital set by the Bank Law, we can discriminate whether each bank met the minimum capital criterion or not. We regard a consolidation which involved at least one participating bank not meeting the minimum capital criterion as a policy-promoted consolidation, and a 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 the bank performance by comparing the change in performance from year T-1 to year T+2 and T+3, between the consolidated banks and the non-consolidated banks, where T is the event year when the consolidation occurred. In order to identify the consolidation effects clearly, we exclude banks which participated in multiple consolidations in the period from year T-2 to year T+3. After selecting samples from all events of consolidations in 1927-1932, there are 164 consolidation samples, in which 393 banks were involved<sup>4</sup>. Also, we choose control samples for each event year. The control samples correspondent to the consolidated banks in year T, refer to the banks which 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 which did not participated in any consolidation from 1925 to 1930. We compare them with the banks consolidated in 1927. Then, we construct (unbalanced) panel data which consists of 2186 bank-event year observations. Table 1 shows the number of consolidations and control samples by event year. The consolidations are classified into the policy-promoted consolidations and the strategic consolidations, according to the definition stated above. Around 80% of the consolidations are

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of profitability (Table 5,6), we eliminate those banks whose information on negative profit is not available, from our samples. With respect to the selection bias from this sample selection, we discuss the next section.

<sup>4</sup> If we take a longer interval, we lose many consolidation samples.

classified as policy-promoted consolidations.

In Panel B to E of Table 1, we classify policy-promoted consolidations and strategic consolidations into subcategories according to a separate set of criteria. In Panel B we add the criteria for 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 remarkable that the ratio of one-to-one consolidation was substantially higher in the strategic consolidations than in the policy-promoted consolidations. In panel D, we add the criteria of in-market and out-of-market consolidation. An out-of-market consolidation refers to a consolidation where there were no branch offices overlapping in the same market among the participating banks<sup>5</sup>. 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 the policy-promoted consolidations than in the 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 assets (ROA). The deposit growth rate is a performance measure closely related to the stability of the financial system. In prewar 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, which was the largest financial crisis in prewar Japan<sup>6</sup>. Arguably, the benefits of consolidation were potentially greater in this situation, because the consolidation not

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<sup>5</sup> The unit of a market here is a city or a county.

<sup>6</sup> 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 the selection through market mechanism worked efficiently and 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 was no self-fulfilling runs, the bank runs in the second sub-period were self-fulfilling.

only led to larger banks, but it also enabled the bank to diversify its assets more extensively, which in turn decreased the risk to depositors (Benston et al. 1995; Hughes et al. 1996,1999; Craig and Santos 1997; Demsetz 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 more risky proposition 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 prewar Japan, even in the 1920s and 1930s<sup>7</sup>.

A number of researchers have used ROA to examine 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 (Akhavain 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 it dominated the effect of increased market power, if any. In this sense, the problem of market power was not particularly serious.

In order to measure the effect of the consolidation, we estimate equation (1) by pooled OLS with samples of all event year, 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 heteroscedasticity-robust standard error by White (1980) is used.

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

where  $i$  refers to the bank, and  $t$  refers to the event year group. The dependent variable  $\Delta X_{it}$  is the

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<sup>7</sup> 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%.

difference of ROA or deposit growth rate in the period from year T-1 to year T+2 or T+3<sup>8</sup>. For the value of a consolidated bank in year T-1, that of a pro-forma bank is used<sup>9</sup>. CONS is the dummy variable which 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 the 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. ΔBRANCH 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 deposit growth rate, the coefficient of ΔBRANCH is expected to be positive, because, in general, the correlation between ability to collect deposits and the number of branches is positive. URBAN is the dummy variable which equals 1, where the headquarters of the bank was located in an urban area, in the sense defined above and 0, otherwise. In the 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 the samples into the 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 who combined into a new bank had relatively high ROA, which arguably reflects that those banks were more or less monopolistic in the segmented local markets.<sup>10</sup>

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<sup>8</sup> Since consolidations were often accompanied by asset reevaluation, we adjust the assets of the post-consolidation bank in the following way.  $ASSET_{T+i}^* = ASSET_{T-1} + (ASSET_{T+i} - ASSET_T)$ ,  $i = 2,3$

<sup>9</sup> The value of pro-forma bank indicates the sum of balance sheet in participating banks.

<sup>10</sup> 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.

#### 4 The effects of policy-promoted consolidation

In this section, we examine the effects of the 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. Column 1 and 3 show the results of the performance change from T-1 to T+2, and column 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. It implies that the deposit growth rate of the consolidated banks was 6.388% points higher than 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 arguably reflects 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  $\Delta$ BRANCH is, as expected, positive and statistically significant at the 1% level, indicating that branches played a significant role in collecting deposits<sup>11</sup>. 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 column 3 and 4, we split the consolidations into policy-promoted consolidations and strategic ones in order to identify the effect of consolidation promotion policy. These results show that while the coefficient of the policy-promoted consolidation dummy is positive and statistically significant, that of the strategic consolidation is positive but not significant. Moreover, the magnitudes of these coefficients are larger in the former than those in the latter. Hence, we can say that the deposit growth rate went up, particularly when the consolidation was promoted by government policy.

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<sup>11</sup> Based on the deposit and loan data of Mitsubishi Bank by branch, Okazaki (2002) shows that the increase of the branches in the 1920s and 1930s contributed to the increase of deposits.

In order to explore the reason for the positive effect of the consolidation on the 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. Panel 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 which 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 which occurred in the period from 1929 to 1932 had no statistically significant effect. In other words, the positive effect of the consolidation on the 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 which 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 the policy-promoted consolidation is that the policy-promoted consolidation aimed at rescuing financially distressed banks. Actually, comparing the average loan deposit ratio between the acquiring banks and the acquired banks with respect to the 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 the consolidation on bank profitability. Panel A of Table 5 shows the results of panel regressions of Equation (1) with the change of 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 the consolidation had a negative effect on bank profitability. Since, as stated above, the consolidation would more or less increase market power, the negative effect suggests that the consolidation was accompanied by inefficiencies. This is not surprising, because most of the literature on the bank consolidations in the 1980s and 1990s reject 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<sup>12</sup>. On the other hand, the coefficient of  $\square$ BRANCH is, contrary to our expectation, positive. It is possible that those banks whose profitability declined were obliged to decrease the number of branches, however, the positive effect of restructuring branch networks was not large enough to offset that correlation.

In the same way as the analysis of deposit growth rate (Table3), we focus on the effect of the policy-promoted consolidation on ROA. As shown in column 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 deposit growth rate, because we eliminated the banks whose information on negative profit is not available, from our samples<sup>13</sup>. Hence, it is possible that the estimation results in Table 5 are affected by sample selection bias. Then, we re-estimated equation (2) with sample selection model

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<sup>12</sup> The fact that the 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.

<sup>13</sup> See note 2. The excluded observations includes 12 consolidation samples (8 policy-promoted consolidations and 4 strategic ones).

by the maximum likelihood (ML) method whose selection equation consists of the variables explaining cross sectional difference of bank profit<sup>14</sup>. The estimated results are shown in Panel B of Table 5. We can confirm that the results are not changed substantially compared to those of Panel A<sup>1516</sup>.

## **5 Patterns of consolidation and bank performance.**

In the previous section, we confirmed that the policy-promoted consolidation had a positive effect on the deposit growth rate, and that it had a negative effect on ROA, which suggests that the policy-promoted consolidation brought about some inefficiencies. In this section, we investigate what caused these results in more detail. For this purpose, we focus on the three patterns of consolidation that are relevant to bank performance. That is, (1) the forms 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) points out that the reason why cost efficiency was not improved by the consolidations in the 1980s was that the gains of 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

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<sup>14</sup> The number of branches may explain cross sectional difference of bank profit. However, we exclude this variable in 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 selection equation.

<sup>15</sup> We also estimated the sample selection model using two-step method by Heckman (1979). However, the estimated results are quite same with those of the maximum likelihood (ML) method (Panel B of Table5).

<sup>16</sup> Our estimation results may be also exposed to another selection bias, since we did not include the banks which exited through failures and dissolutions, in estimating Equation (1). Hence, we estimated the same sample selection models as above, supplementing the data of the end of year T-2 on banks exiting from 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 the change of ROA).



participant and leadership is lacking<sup>17</sup>. Here, we regard absorptions and acquisitions as described in *Ginko Jiko Geppo* as absorbing consolidations, and regard the 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<sup>18</sup>. (3) In-market consolidation versus out-of-market consolidation. It has been pointed 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 the strategic consolidations, we arrive at twelve subcategories of consolidation patterns. We estimate equation (1), using the dummy variable which denotes each consolidation pattern subcategory. Table 6 shows the estimated results. In Panel A, the dependent variable is the change of ROA<sup>19</sup>. In columns 1 and 2, we classify each of the policy-promoted consolidations and strategic consolidations into 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 the policy-promoted 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

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<sup>17</sup> According to Sugiyama(1982), since the banks established through a combination into a new bank were faced with difficulties in determining new directors, they frequently invited outsiders.

<sup>18</sup>Sanwa Bank (1974) describes the internal conflicts which 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.

<sup>19</sup> We also estimated these models with sample selection model as shown in previous section, It was confirmed that the results did not changed greatly by sample selection bias.

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 hands, 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 the 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 policy-promoted consolidations were carried out with the aim of getting over the immediate crisis but lacked a strategic vision regarding 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 the bank profitability worse because effective restructuring of these branches failed to occur. Especially, policy-promoted consolidations were unlikely to have the detailed plan of restructuring branch network in advance<sup>20</sup>. 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 of new market, considering that government principally prohibited new branching.

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<sup>20</sup> The number of the branches for policy-promoted consolidations decreased by 0.86 (1.16) on average by two (three) years after the consolidation, it decreased by 3.27 (3.41) for strategic one.

The same analyses can be performed regarding 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 of 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. Namely, the banks that underwent this form of consolidation gathered over 10% more deposits than the non-merged banks. This result that out-of-market consolidation had an especially large positive effect on the 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 directly related to the risk of depositors, we also check these effects and indicate the estimated results in column 1 through 4. It is confirmed that the subcategory of policy-promoted and merger of equals and that of policy-promoted and one-to-one consolidation have a strong positive effect on deposit growth rate, indicating that not all policy-promoted consolidation have a strongly positive effect on the deposit growth rate.

## **6 Concluding Remarks**

In prewar Japan, the banking industry was composed of many small banks, which led to unstable financial system. The Ministry of Finance promoted bank consolidations based on the minimum capital criterion for banks set by the Bank Law of 1927. After the Law was enacted in 1928, there occurred a surge of bank consolidations. 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 the case 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 cannot deny 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 focused on only the short run effect, the effect which emerged by three years after the consolidation. At this moment it is difficult to capture the long-run effect due to the data constraint. Exploring the long run effect remains for future research.

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Fig.1 Number of bank exits from market by cause

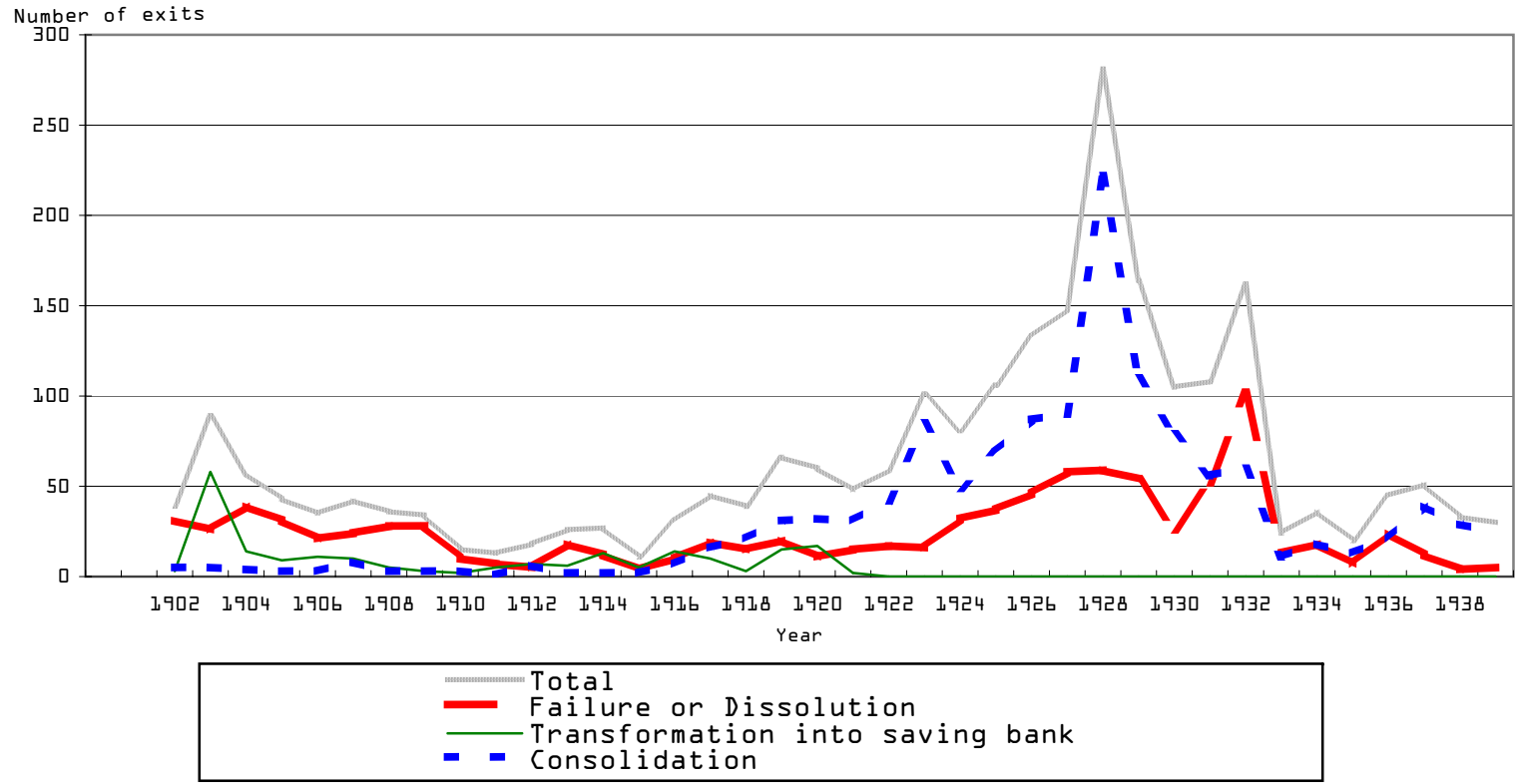


Table1 Sample description

Panel A: Number of samples by event year

Event Year	Number of consolidations			Control samples (Non-consolidated)
	All	Policy- promoted	Strategic	
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 Window	Deposit growth rate from T-1 to T+2 or T+3			
	[T-1, T+2]	[T-1, T+3]	[T-1, T+2]	[T-1, T+3]
	[1]	[2]	[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)
ΔBRANCH	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)	-57.3043 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

Table 4 □ 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 (4.4009)	10.6177 b (4.8975)	1.678 (3.3161)	1.8323 (3.7497)	5.9071 (5.9379)	-1.5532 (4.3401)
LN(ASSET)	-0.2703 (1.5624)	-2.873 (2.6361)	-0.401 (1.4724)	0.558 (1.2998)	1.0987 (1.0527)	2.7285 c (1.2834)
URBAN	0.784 (4.2555)	12.9143 (12.8087)	-2.1243 (3.3616)	2.3552 (2.965)	-2.1675 (3.2172)	-2.1029 (3.5142)
ΔBRANCH	0.4943 (1.1883)	3.1031 a (0.7729)	2.6027 a (0.5145)	3.3218 a (0.4534)	1.0727 (0.7383)	2.8303 (1.7648)
INTERCEPT	5.7985 (22.1121)	42.4992 (38.1374)	1.4481 (22.1272)	-25.7888 (19.7086)	-37.4093 b (15.8675)	-50.8864 b (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 (5.8598)	12.0555 b (5.1231)	1.5768 (4.3158)	2.9697 (4.9235)	5.8086 (6.5922)	-3.2334 (4.6242)
LN(ASSET)	0.1877 (1.5867)	-1.2378 (2.1424)	-0.5337 (1.5388)	2.5944 c (1.5171)	2.8789 b (1.338)	6.1098 a (1.5689)
URBAN	-3.6949 (4.764)	6.4451 (10.1796)	0.9599 (3.772)	0.1511 (3.6248)	-4.1259 (3.7899)	-3.4349 (4.1279)
ΔBRANCH	1.5476 (1.0436)	3.1438 a (0.8324)	2.4576 a (0.5058)	3.5232 a (0.4868)	3.2848 b (1.3285)	4.0848 b (1.69)
INTERCEPT	-1.9117 (22.4874)	9.3925 (31.3836)	-6.0031 (23.0249)	-59.7214 b (23.0983)	-57.1077 a (20.1615)	-95.4181 a (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 (7.6152)	9.5279 (6.4004)	-0.4428 (4.9593)	5.9659 (6.2549)	5.168 (7.5685)	-4.6843 (4.9778)
LN(ASSET)	1.1722 (1.71)	0.7235 (2.0187)	2.091 (1.7121)	3.8512 b (1.8649)	5.7957 a (1.5524)	7.3843 a (1.9119)
URBAN	-5.3442 (4.9892)	7.4951 (10.3075)	-1.4835 (4.4597)	-2.6494 (4.2317)	-5.4994 (4.4987)	-5.8325 (4.6038)
ΔBRANCH	1.9347 b (0.8868)	2.7135 a (0.638)	3.0682 a (0.836)	4.6971 a (0.706)	4.2788 a (1.3857)	4.859 b (1.9196)
INTERCEPT	-25.5295 (24.4846)	-30.1874 (29.5389)	-48.4047 c (25.5697)	-73.0008 b (28.3436)	-95.4664 a (23.1868)	-107.8846 a (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 Window	Change of ROA from T-1 to T+2 or T+3			
	[T-1, T+2]	[T-1, T+3]	[T-1, T+2]	[T-1, T+3]
	[1]	[2]	[3]	[4]
CONS	-0.4144 b (0.1904)	-0.4836 b (0.2434)		
Policy-promoted consolidation			-0.5856 a (0.204)	-0.6524 b (0.2697)
Strategic consolidation			0.2696 (0.3145)	0.1885 (0.3648)
LN(ASSET)	0.2403 a (0.0744)	0.248 a (0.0699)	0.2332 a (0.0753)	0.2407 a (0.0707)
URBAN	0.491 a (0.1794)	0.5567 a (0.1779)	0.4964 a (0.1792)	0.5622 a (0.1777)
ΔBRANCH	0.0625 b (0.0308)	0.0595 (0.0466)	0.0663 b (0.0311)	0.0621 (0.047)
INTERCEPT	-5.0544 a (1.1012)	-5.5628 a (1.0593)	-4.9521 a (1.1129)	-5.4582 a (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 Window	Change of ROA from T-1 to T+2 or T+3			
	[T-1, T+2]	[T-1, T+3]	[T-1, T+2]	[T-1, T+3]
	[1]	[2]	[3]	[4]
CONS	-0.4121 b (0.1894)	-0.5109 b (0.2349)		
Policy-promoted consolidation			-0.656 a (0.2063)	-0.6509 b (0.2686)
Strategic consolidation			0.1973 (0.3195)	0.1899 (0.3631)
LN(ASSET)	0.2416 a (0.0748)	0.2325 a (0.0809)	0.1947 b (0.0844)	0.2415 a (0.0709)
URBAN	0.4912 a (0.179)	0.5559 a (0.1779)	0.5021 a (0.1827)	0.5623 a (0.1773)
ΔBRANCH	0.0625 b (0.0307)	0.0578 (0.0437)	0.058 c (0.0305)	0.0621 (0.0468)
INTERCEPT	-5.0906 a (1.1121)	-5.1521 a (1.4027)	-3.9698 a (1.3089)	-5.4807 a (1.0779)
(Selection model)				
CONS	0.1168 (0.1538)	0.1071 (0.1547)	0.0562 (0.1434)	0.117 (0.1538)
LN(ASSET)	0.0654 b (0.0321)	0.0613 c (0.0363)	0.0495 (0.0418)	0.0654 b (0.0321)
URBAN	0.012 (0.086)	0.0221 (0.095)	0.0495 (0.0873)	0.0119 (0.086)
INTERCEPT	0.2414 (0.4597)	0.3012 (0.513)	0.4242 (0.5742)	0.2423 (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	-5770.753	-5845.085	-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

Table 6 □ Consolidation pattern and bank performance

## Panel A: Change of ROA

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

Table 6 □ Consolidation pattern and bank performance

Panel B: Deposit Growth Rate						
Window	Dependent Variable					
	[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	6.5964 b (3.1262)	3.4242 (3.6891)				
Policy-promoted & Merger of equals	8.6484 b (4.3406)	9.2367 c (5.4936)				
Strategic & Absorbing	6.1367 (4.895)	4.8949 (5.1322)				
Strategic & Merger of equals	-6.316 (8.0399)	0.4293 (9.0183)				
Policy-promoted & One-to-one			8.1472 a (2.786)	5.5468 c (3.3151)		
Policy-promoted & More than two			4.7074 (5.7016)	4.9003 (7.2049)		
Strategic & One-to-one			2.6516 (4.516)	4.1971 (4.7283)		
Strategic & More than two			6.8589 (17.7359)	-0.7592 (17.3092)		
Policy-promoted & In-market					6.3 b (2.6765)	2.5138 (3.2515)
Policy-promoted & Out-of-market					11.1973 (6.8589)	16.7353 b (7.8209)
Strategic & In-market					3.1567 (4.6701)	4.6471 (5.126)
Strategic & Out-of-market					2.8501 (8.1657)	2.4778 (8.0936)
LN(ASSET)	1.7466 b (0.7036)	3.4722 a (0.7502)	1.7558 b (0.7029)	3.4594 a (0.7486)	1.7434 b (0.7053)	3.4101 a (0.7514)
URBAN	-0.7506 (2.5889)	-1.9893 (2.7079)	-0.7182 (2.5847)	-2.012 (2.703)	-0.7296 (2.588)	-2.0584 (2.7061)
ΔBRANCH	2.9552 a (0.5023)	3.5022 a (0.5196)	2.9557 a (0.5047)	3.4994 a (0.5192)	2.9609 a (0.5067)	3.4792 a (0.5233)
INTERCEPT	-23.5082 b (10.2302)	-57.6983 a (11.0269)	-23.6563 b (10.2186)	-57.5001 a (11)	-23.4558 b (10.2579)	-56.7263 a (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 7.
ASSET	Book value of capital plus total deposits. Capital equals to the sum of paid-in capital, reserved fund and the profit.
$\Delta$ BRANCH	Change of the number of branches from year T-1 to year T+2 or year T+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.