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

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Abstract

In recent years, there has been a wave of bank consolidations that has spread across the world, and bank consolidation has been one of the major issues of the research on banking and finance. This paper explores the role of government in bank consolidations, using the data on prewar Japan. The data on prewar Japan are useful, because not only there were numerous bank consolidations, but also we can identify consolidations promoted by the government policy. The Bank Law of 1927 set the minimum capital criterion for banks, which came to be a powerful measure for the government to promote consolidations. In this paper, we identified policy-promoted consolidations referring to the minimum capital of the bank, and examined the effects of policy-promoted consolidations in comparison with other consolidations. It was confirmed 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. On the other hand, policy-promoted consolidations had negative aspects. They were accompanied by large organizational costs, and decreased bank profitability.

JEL Classification: G21, G34, N25
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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 (Hughes et al,1996,1999; Benston et al,1995; Craig and Santos,1997; Demsetzs and Strahan, 1997; Saunders and Wilson, 1999, etc.). 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 participant 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,1990;

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 always 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 participant banks.

There is another advantage of using data from prewar Japan. Not only did many bank consolidations take place, but these consolidations also took various pattern. Furthermore, comprehensive information is available on the different forms 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 forms. 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 basically 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 of 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*) issued by the Bank of Japan. From this source, we can obtain basic information on each bank consolidation, including the event date, the names of participant 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[1]. 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. Since, as mentioned in the 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 participant 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 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. There are 164 consolidation samples, in which 393 banks were involved[2]. Table 1 shows the number of consolidated and non-consolidated banks by year, where non-consolidated banks refer to those which did not participate in any consolidation in the period from year T-2 to year T+3. The consolidations are classified into the policy-promoted consolidations and the strategic consolidations, according to the definition stated

[1] The government promoted combination into a new bank if there was no sound and leading bank among the banks undergoing consolidation (Sugiyama, 1982).
[2] If we take a longer interval, we lose many consolidation samples.

above. Around 80% of the consolidations are 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 participant 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. Out-of-market consolidation refers to consolidation where there were no branch offices overlapping in the same market among the participant banks[3]. 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[4]. Arguably, the benefits of consolidation were potentially greater in this situation, because the consolidation not 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 (Hughes et al,1996,1999; Benston et al,1995; 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 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

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

[4] 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.

situation of the banking industry in prewar Japan, even in the 1920s and 1930s[5].

ROA has been used by a number of researchers 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 inconceivable that consolidations 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 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 OLS. We pool all the samples, using year dummies to control for the shocks common to the samples of the same year. Also, the heteroskedasticity-robust standard error by White (1980) is used to calculate statistical significance.

$$X_i = \beta_0 + \beta_1 CONS_i + \beta_2 LN(ASSET_i) + \beta_3 \Delta BRANCH_i + \beta_4 URBAN_i \qquad (1)$$

where the dependent variable X_i is the difference of ROA or deposit growth rate in the period from year T-1 to year T+2 orT+3[6]. For the value of a consolidated bank in year T-1, that of a pro-forma bank is used. 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. □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 deposit growth rate, the coefficient of □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 the dummy variable which equals 1, where the headquarters of the bank was located in an urban area, in the sense defined in Section3, and 0,

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

[6] 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

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 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.[7]

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 OLS estimation of Equation (1) with the deposit growth rate 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 consolidated banks could collect 6.5% more deposits than the non-consolidated banks. 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][funds flowing] from local to urban areas, as was pointed out by former studies. The coefficient of □BRANCH is, as expected, positive and statistically significant at the 1% level, indicating that branches played a significant role in collecting deposits[8]. 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

[7] 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.

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

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 magnitude 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.

In order to explore the reason for the positive effect of the consolidation on the deposit growth in more detail, we conducted a cross section 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, we can conclude that the consolidations promoted by the Bank Law mitigated the financial crisis.

Next, we examine the effect of the consolidation on bank profitability. Table 5 shows the results of OLS estimation of Equation (1) with the change of ROA 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[9]. 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[10]. On the other hand, the coefficient of □BRANCH is, contrary to our expectation, positive and statistically significant at the 1% level. 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.

Finally, 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.

5 Patterns of consolidation and bank performance.

In the previous section, we confirmed that policy-promoted consolidation had a positive effect on the deposit growth rate, and that it had a negative effect on ROA, which suggests that some inefficiencies occurred. 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/mergers of equals), (2) the number of participant banks, and (3) in-market consolidations/out-of-market consolidations. Then, we split

[9] Since we did not include the banks which exited through failures and dissolutions, in estimating Equation (1), it is possible that the estimation results are affected by the sample selection bias. Therefore, we also estimated the sample selection model by the maximum likelihood method, where the explanatory variables of selection equation are reserve deposit ratio, loan deposit ratio, capital deposit ratio, log of assets, year dummy and area dummy. According to the sample selection estimation, the bank consolidation still had a positive impact on the growth rate of deposits. Also the coefficient of CONS is larger in magnitude and statistically more significant, compared with the OLS estimation. On the other hand, as for the change of ROA, the coefficient of CONS is still negative and slightly larger in absolute value. Moreover, when we use two step method by Heckman (1979), the results are not varied qualitatively in comparison with the OLS estimation.

[10] 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.

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 participant and leadership is lacking[11]. 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[12]. (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 columns 1 through 6, the dependent variable is the change of ROA. 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, the coefficients of absorbing consolidations and mergers of equals are positive in most cases, although they are not statistically significant. 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

[11] 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.

[12]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 thorough a consolidation of three large banks.

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 the absolute value and statistical significance are markedly higher in the latter. 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 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 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. Arguably, the different effects of in-market consolidation reflect the difference in restructuring of the branch network. Actually, although not reported, we confirmed that the coefficient of the interaction terms between CONS and □BRANCH was negative and statistically significant when we estimated equation (1) by adding this variable. Furthermore, while 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 consolidations. Hence, we can say that in the case of policy-promoted consolidation, effective restructuring of the branches failed to occur.

The same analyses can be performed regarding deposit growth rate, but here we focus only on the criterion for in-market and out-of-market consolidations. This is because whereas this classification is directly related to the risk of insolvency through a diversification of the loan portfolio, the form of consolidation and the number of participants appears to have no direct relevance. Columns 7 and 8 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.

6 Concluding Remarks

In prewar Japan, the banking industry was composed of many small banks, which led to unstable financial systems. 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 was 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 happened 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 participant banks had operated in the same market. From these results, we can conclude 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 accompanied by large organizational costs, and decreased bank profitability.

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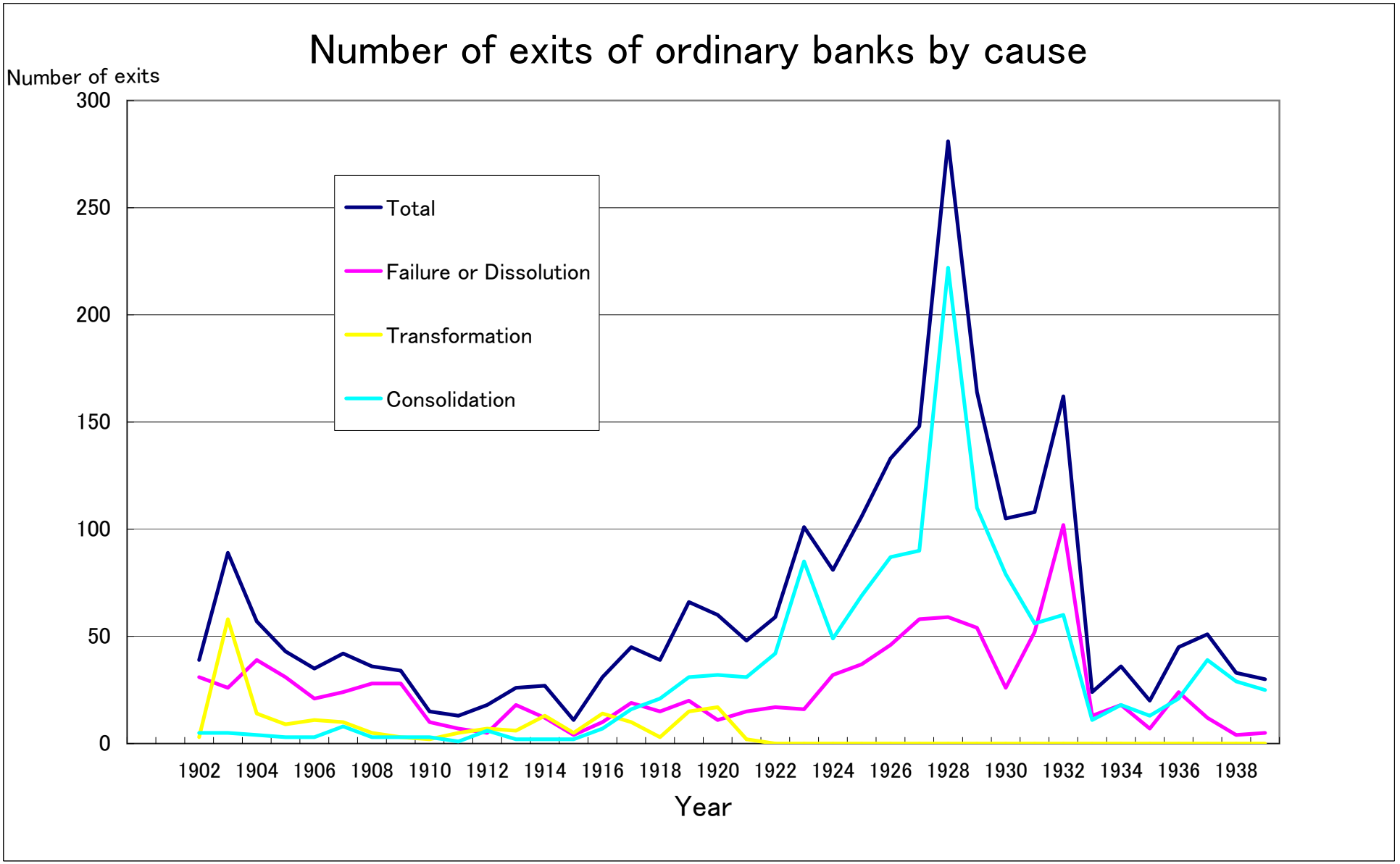
Number of exits of ordinary banks by cause
Number of exits
300
250
200
150
100
50
0
Total
Failure or Dissolution
Transformation
Consolidation
1902
1904
1906
1908
1910
1912
1914
1916
1918
1920
1922
1924
1926
1928
1930
1932
1934
1936
1938
Year

Table1 Sample description

Panel A: The number of samples by year

	The number of consolidations			
	All	Policy-promoted	Strategic	Non-consolidated
1927	26	21	5	476
1928	41	30	11	391
1929	31	25	6	260
1930	18	11	7	275
1931	22	20	2	296
1932	26	21	5	328
Total	164	128	36	2026

Panel B: The form of consolidation

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

Panel C: The number of banks participating in a consolidation

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

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

Panel E: Urban area versus Local area

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

Table2 Basic Statistics

	Acquirer banks	Target banks	Participants in combination into a new one	Non-consolidated banks
Total assets (1000yen)				
Mean	42695.54	3912.19	2085.59	14840.49
Median	4631.06	854.34	1523.47	2620.76
Std.dv.	161416.70	13986.97	2154.03	87121.75
Deposits (1000 yen)				
Mean	21347.77	1956.09	1042.79	7420.25
Median	2315.53	427.17	761.74	1310.38
Std.dv.	80708.35	6993.49	1077.02	43560.88
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	3.12	4.55	3.93	3.22
Median	2.20	2.75	3.08	2.20
Std.dv.	2.71	7.33	3.83	4.21
Number of branches				
Mean	7.88	1.65	1.84	4.24
Median	3.00	0.00	1.00	2.00
Std.dv.	15.59	3.12	2.72	8.18
Operating Area				
Urban Area (%)	28.6	27.8	12.8	24.6
Local Area (%)	71.4	72.2	87.2	75.4
Number of banks	112	133	148	2026

Table 3 The effect of consolidation on the deposit growth rate

	Dependent variable：Deposit growth rate			
	[T+2]	[T+3]	[T+2]	[T+3]
	[1]	[2]	[3]	[4]
CONS	6.4645 a	5.1176 c		
	(2.3456)	(2.7517)		
Policy-promoted			7.3239 a	5.4155 c
			(2.6425)	(3.1711)
Strategic			3.2598	4.0081
			(4.4344)	(4.6248)
LN(ASSET)	1.5334 b	3.2675 a	1.5647 b	3.2787 a
	(0.7293)	(0.7754)	(0.7306)	(0.7773)
URBAN	−0.4448	−1.7571	−0.4751	−1.7677
	(2.5967)	(2.7137)	(2.5991)	(2.7162)
⊿BRANCH	2.9607 a	3.4836 a	2.9488 a	3.4807 a
	(0.5038)	(0.5194)	(0.5056)	(0.5221)
INTERCEPT	−20.3366 c	−54.7549 a	−20.78 c	−54.9142 a
	(10.6311)	(11.4122)	(10.6488)	(11.4374)
Year Dummy	Yes	Yes	Yes	Yes
R2	0.063	0.056	0.063	0.056
NOB	2190	2190	2190	2190

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 section analysis

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

Event year	1927	1928	1929	1930	1931	1932
CONS	20.5917 a	10.723 b	1.689	1.8222	5.8914	−1.6177
	(4.379)	(4.9021)	(3.3154)	(3.7501)	(5.9415)	(4.3417)
LN(ASSET)	−0.814	−2.9069	−0.4027	0.5548	1.0977	2.4456 c
	(1.7611)	(2.6384)	(1.474)	(1.3002)	(1.0533)	(1.3181)
URBAN	1.4494	12.783	−2.1232	2.3568	−2.1663	−1.8755
	(4.3863)	(12.7198)	(3.3614)	(2.965)	(3.2169)	(3.537)
⊿BRANCH	0.4403	3.0911 a	2.6026 a	3.3213 a	1.0727	2.8001
	(1.1713)	(0.7659)	(0.5145)	(0.4533)	(0.7383)	(1.7596)
INTERCEPT	13.4999	42.9768	1.4718	−25.7427	−37.3946 b	−46.7147 b
	(24.8742)	(38.175)	(22.1504)	(19.7141)	(15.8754)	(19.6279)
R2	0.014	0.018	0.06	0.069	0.024	0.053
OBS	502	432	291	293	318	354

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

Event year	1927	1928	1929	1930	1931	1932
CONS	25.6906 a	12.0803 b	1.5914	2.9193	5.7672	−3.3345
	(5.8534)	(5.1195)	(4.3156)	(4.9254)	(6.5966)	(4.6199)
LN(ASSET)	−0.3998	−1.2498	−0.5358	2.5921 c	2.8769 b	5.762 a
	(1.7988)	(2.1373)	(1.5403)	(1.5177)	(1.3386)	(1.6061)
URBAN	−2.8271	6.3104	0.9614	0.1516	−4.123	−3.1327
	(4.901)	(10.1021)	(3.7719)	(3.6248)	(3.7896)	(4.1566)
⊿BRANCH	1.4994	3.1366 a	2.4574 a	3.5227 a	3.2845 b	4.0419 b
	(1.0405)	(0.8275)	(0.5058)	(0.4868)	(1.3284)	(1.6825)
INTERCEPT	6.4065	9.5858	−5.972	−59.6871 b	−57.0786 a	−90.33 a
	(25.4307)	(31.3189)	(23.0461)	(23.1061)	(20.1702)	(23.5263)
R2	0.021	0.018	0.045	0.079	0.084	0.118
OBS	502	432	291	293	318	354

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

Event year	1927	1928	1929	1930	1931	1932
CONS	22.4447 a	9.5161	−0.495	5.891	5.0844	−4.8026
	(7.5987)	(6.3902)	(4.9618)	(6.2576)	(7.5741)	(4.9754)
LN(ASSET)	0.6784	0.7208	2.089	3.848 b	5.7934 a	7.0045 a
	(1.9245)	(2.0119)	(1.7141)	(1.8654)	(1.5529)	(1.9428)
URBAN	−4.5712	7.426	−1.4809	−2.6489	−5.4947	−5.4969
	(5.1095)	(10.2262)	(4.4597)	(4.2317)	(4.4983)	(4.6322)
⊿BRANCH	1.895 b	2.7101 a	3.0681 a	4.6964 a	4.2785 a	4.8119 b
	(0.8857)	(0.6344)	(0.8361)	(0.7059)	(1.3857)	(1.9112)
INTERCEPT	−18.671	−30.1387	−48.3763 c	−72.955 b	−95.4318 a	−102.334 a
	(27.4256)	(29.4519)	(25.5996)	(28.3521)	(23.195)	(28.4497)
R2	0.021	0.014	0.055	0.103	0.113	0.123
OBS	502	432	291	293	318	354

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 The effect of consolidation on the change of ROA

	Dependent variable : Change of ROA			
	[T+2]	[T+3]	[T+2]	[T+3]
	[1]	[2]	[3]	[4]
CONS	−0.3719 b	−0.3198 c		
	(0.1452)	(0.1714)		
Policy-promoted			−0.5035 a	−0.4266 b
			(0.1683)	(0.2024)
Strategic			0.1187	0.0779
			(0.1975)	(0.2244)
LN(ASSET)	0.1712 a	0.2226 a	0.1664 a	0.2185 a
	(0.0475)	(0.0512)	(0.0478)	(0.0514)
URBAN	0.4132 a	0.5155 a	0.4178 a	0.5193 a
	(0.1442)	(0.1436)	(0.1443)	(0.1436)
⊿BRANCH	0.0492 a	0.052 a	0.051 a	0.0531 a
	(0.0114)	(0.0118)	(0.0117)	(0.012)
INTERCEPT	−4.0982 a	−5.2499 a	−4.0304 a	−5.1928 a
	(0.7159)	(0.7829)	(0.7197)	(0.7867)
Year Dummy	Yes	Yes	Yes	Yes
R2	0.083	0.111	0.083	0.111
OBS	2190	2190	2190	2190

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

Table6 Consolidation pattern and bank performance

Dependent Variable	Change of ROA						Deposit growth rate	
	[T+2]	[T+3]	[T+2]	[T+3]	[T+2]	[T+3]	[T+2]	[T+3]
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
(Consolidation pattern dummy)								
Policy-promoted * Absorbing	−0.3313	−0.2406						
	(0.202)	(0.2601)						
Policy-promoted * Merger of equals	−0.8411 a	−0.7915 a						
	(0.2735)	(0.2826)						
Strategic * Absorbing	0.1274	0.1334						
	(0.2024)	(0.2103)						
Strategic * Merger of equals	0.095	−0.0857						
	(0.4774)	(0.6108)						
Policy-promoted * One-to-one			−0.3135 c	−0.2817				
			(0.1741)	(0.2133)				
Policy-promoted * More than two			−1.0758 a	−0.8642 c				
			(0.3797)	(0.4607)				
Strategic * One-to-one			0.1362	0.1465				
			(0.2117)	(0.234)				
Strategic * More than two			−0.147	−0.7332				
			(0.1582)	(0.4715)				
Policy-promoted * In-market					−0.6222 a	−0.5424 b	6.3108 b	2.5193
					(0.1964)	(0.242)	(2.6753)	(3.2522)
Policy-promoted * Out-of-market					−0.0324	0.0325	11.3318 c	16.8571 b
					(0.2335)	(0.2352)	(6.8556)	(7.8187)
Strategic * In-market					−0.123	−0.1841	3.3332	4.8059
					(0.2202)	(0.2496)	(4.6869)	(5.1222)
Strategic * Out-of-market					0.5021	0.4939	3.1554	2.7901
					(0.3243)	(0.3781)	(8.1582)	(8.0972)
LN(ASSET)	0.1646 a	0.2161 a	0.1661 a	0.2182 a	0.1635 a	0.2154 a	1.5477 b	3.2306 a
	(0.0479)	(0.0516)	(0.0478)	(0.0515)	(0.0478)	(0.0515)	(0.7335)	(0.7804)
URBAN	0.4151 a	0.5156 a	0.4136 a	0.515 a	0.4146 a	0.5161 a	−0.4966	−1.8269
	(0.1444)	(0.1436)	(0.1445)	(0.144)	(0.1444)	(0.1439)	(2.6017)	(2.7185)
⊿BRANCH	0.0503 a	0.052 a	0.0492 a	0.0518 a	0.0498 a	0.0519 a	2.9415 a	3.4606 a
	(0.0119)	(0.0122)	(0.012)	(0.0122)	(0.0117)	(0.012)	(0.5061)	(0.5228)
INTERCEPT	−4.0014 a	−5.1549 a	−4.025 a	−5.1878 a	−3.985 a	−5.1452 a	−20.5126 c	−54.1569 a
	(0.7214)	(0.7894)	(0.7199)	(0.7869)	(0.7206)	(0.7882)	(10.6943)	(11.4871)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.084	0.111	0.084	0.112	0.084	0.112	0.063	0.057
OBS	2190	2190	2190	2190	2190	2190	2190	2190

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: The definition of variables

Panel A Basic variables

Variable	
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 6.
ASSET	Book value of capital plus total deposits. Capital equals to the sum of paid−in capital, reserved fund and 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 dummies

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 absorption or acquisition.
Merger of equals	The form of the consolidation was 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 the head offices or branch offices of the participants overlapped in the same city or county.
In−market	At least one head office or branch office overlapped in the same city or county.