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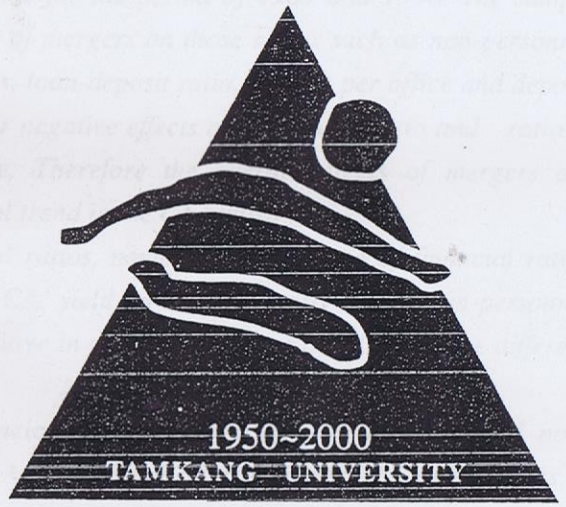

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Further Study on the Performance of Mergers among Credit Associations in Japan*

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ABSTRACT

The performance of 25 mergers among credit associations (CA) in Japan is examined by using 19 financial ratios for the period of 1983 and 1998. The sample shows that there are positive effects of mergers on those ratios such as non-personnel expenses ratio, income ratio after tax, loan-deposit ratio, deposit per office and deposit per association's member. But rather negative effects on net equity ratio and ratio of current expense to current income. Therefore the overall effects of mergers are considered to be positive as a general trend in the CA industry.

By using the relative financial ratios, namely the difference of financial ratios between merging and non-merging CA, yield on interest received and non-personnel expenses ratio have shown to be positive in the sample. These conclusions are different from the previous results.

General comparison of financial characteristics between merging and non-merging CA exhibits that merging CA show rather inferior financial characteristics to non-merging CA.

I. Introduction

Japanese Credit Associations (CA) are financial institutions created by the Credit Association Law of 1951. They are nonprofit cooperatives established to improve the mutual welfare of members. Their operations are limited to certain geographical areas as local financial institutions for small and medium-sized firms and the public. The CA may receive deposits from members and nonmembers but loans to nonmembers are restricted to be 20% or less of total loans. [See Adams (1972) and Hoshino (1988)]

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Following the enactment of the so-called "Two Financial Laws", namely the "Law on Reforming a Part of the Mutual Loan and Savings Banks and Credit Associations etc." and the "Law on Mergers and Conversions among Financial Institutions"1) in Japan on June 1, 1968, the number of mergers and conversions of small and medium-sized financial institutions has increased as shown in Table 1. There were 93 mergers among credit associations and 97 mergers among credit cooperatives2) during the period of 1968-96. For the period 1982 to 1988, there was only a merger among the same type of financial institutions between CA. On the contrary, there is a growing trend of mergers starting at the year of 1989 till the latest year in order to strengthen the financial base and survival facing prompt corrective action introduced by the Ministry of Finance of Japan from April 1, 1998. This reflects the intention to raise the efficiency of small and medium-sized financial institutions through mergers by the administrative authority, the Ministry of Finance of Japan.

However, there have been only a few empirical studies to measure the performance of mergers among small and medium-sized financial institutions in Japan.

The performance of mergers among CA in Japan investigated by Hoshino (1988). He found: 1) an upward trend of cost-related ratios such as expense ratio, personnel expenses ratio, non-personnel expenses ratio and total assets cost ratio after mergers, 2) gross earnings margin of deposit to loan, yield on total assets and gross earnings margin to total assets representing profitability decrease after mergers, indicating negative performance of mergers, and 3) deposit per office and deposit per association's member (productivity-related ratios) have positive effects of merger based on yearly analysis of before and after merger. Hoshino controlled for the outside effects of the financial structure of CA, by using relative financial ratios, namely the difference of ratios between merging CA and non-merging CA, and showed the negative effects of two ratios such as yield on loan and personnel expenses ratio, and the positive effects of two ratios, deposit per office and deposit per full-time officer and employee. Further, the general comparison of financial characteristics between merging CA and non-merging CA show that non-merging CA exhibit better ratio performance in terms of costs, profitability and productivity.

However, his analysis is based upon data for 13 merging CA that merged in 19713) and 13 paired non-merging CA in the same prefecture, which are only a part of 58 non-merging CA.

Table 1 Number of Mergers among Small and Medium-sized Financial Institutions after 1968

Type	Total	Year 1968	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
Mergers among same type of financial institutions																	
Mutual Loan and Savings Banks	1				1												
Credit Associations	93	1	10	7	13	2		8	4	2	1	1	3	1	4		
Credit Cooperatives	97	1	3	1	4	5	5	4	2		1	4	2	5	2	4	2
Subtotal	191	2	13	8	18	7	5	12	6	2	2	5	5	6	6	4	2
Mergers among different type of institutions	52	1	7	5	2	10	6	2	1	1	2	1	0	0	0	0	0
Total of Mergers	243	3	20	13	20	17	11	14	7	3	4	6	5	6	6	4	2

Type	Year 84	85	86	87	88	89	90	91	92	93	94	95	96
Mergers among same type of financial institutions													
Credit Associations			1			1	3	7	4	5	7	3	5
Credit Cooperatives	3	2	2	4	12	3	6	8	3	4	5		
Subtotal	3	2	3	4	12	4	9	15	7	9	12	3	5
Mergers among different type of institutions	1	1	1	0	1	0	0	3	2	2	1	1	1
Total of Mergers	4	3	4	4	13	4	9	18	9	11	13	4	6

Kinyu Nenpou Hensyu Iinkai (Editorial Board of Financial Annual Report) (1998)

Thus, this paper tries to expand the sample to 25 out of 27 mergers during the period of fiscal year 1990 to 1994 by deleting those CA which merged more than once in order to avoid biases, and by partly including those mergers among more than two CA. See Appendix II for the list of mergers studied.

Nineteen financial ratios defined in Appendix I were used to compare the financial characteristics of CA by using annual data4) for 7 years before and 4 years after mergers. The study period is from 1983 to 1998. The source of the accounting data is Kinyu Tosho Consultant Sha (1999).

This paper is organized into several sections. Section II describes the data, and presents five null hypotheses and the approach employed. In section Ⅲ, comparative analyses of merging and non-merging CA before and after mergers are presented using t tests, and F tests and discriminant analysis. In Section IV, relative financial ratios are defined and analysis is performed to compare the two groups.

II. Data, Hypotheses and Approach

Corresponding to each merging CA, a non-merging CA with nearly same amount of deposit in each prefecture or metropolitan area is chosen in order to make a pair comparison. Nineteen financial ratios are compiled for the years between 1983 and 1998 to measure the effects among CA in the two groups. The pre-merger ratio is computed by taking the sum of each variable over the merging and merged CA.

A comparative ratio analysis as illustrated in Graph I is employed to analyze five comparisons:

1. merging CA (acquiring and acquired CA combined before mergers) before and after mergers: (1) and (2) on Graph I;
2. non-merging CA before and after the year of mergers of the matching CA: (3) and (4);
3. merging and non-merging CA before mergers: (1) and (3);
4. merging and non-merging CA after mergers: (2) and (4); and
5. overall merging CA and non-merging CA: (5) and (6).

The five null hypotheses are that there is no financial differences between each pair of groups using both univariate and multivariate analysis.

Comparison 1 shows the effects of mergers but may also include changes in financial position due to factors other than mergers. Comparison 2 presents changes due to factors other than mergers. Comparison 3 indicates whether there are differences in the values of the financial ratios between those CA which subsequently merge and those that do not prior to any

effects of mergers. Likewise, comparison 4 shows the effect of mergers, as well as the differences in financial ratios between merging and non-merging CA including the effects of the original differences between the two groups before mergers. Comparison 5 examines financial differences between merging and non-merging CA.

Ⅲ. The Performance of Mergers

Mean values and standard deviations of the financial ratios of merging and non-merging CA before and after mergers are provided in Table 2. When both merging and non-merging CA have significant differences in their means before and after mergers, or when both have no differences before and after mergers, then no change of financial position from before and after merger is obtained, i.e., no change caused by the merger.

By comparing the results obtained in column (A) corresponding to (1)-(2) and (B) corresponding to(3)-(4) of Graph I, means of three ratios have statistically significant differences and only with respect to merging CA before and after mergers. The tax ratio (7) decreases after merger for merging CA with a statistically significant difference at the 10 % level in Column (A). But no significant difference for non-merging CA in Column (B) is found, indicating positive performance of merger. Two ratios of them such as (14) loan-deposit ratio and (15) ratio of current expense to current income increase after merger for merging CA with statistically significant differences in Column (A). The former exhibits positive performance of merger, and the latter negative performance. The net equity ratio (13) for non-merging CA has means of 6.27% vs. 6.64 % before and after merger with a statistical significance at the 10% level, indicating negative performance of merger. There are no other meaningful results on means to show the differences among (A) and (B).

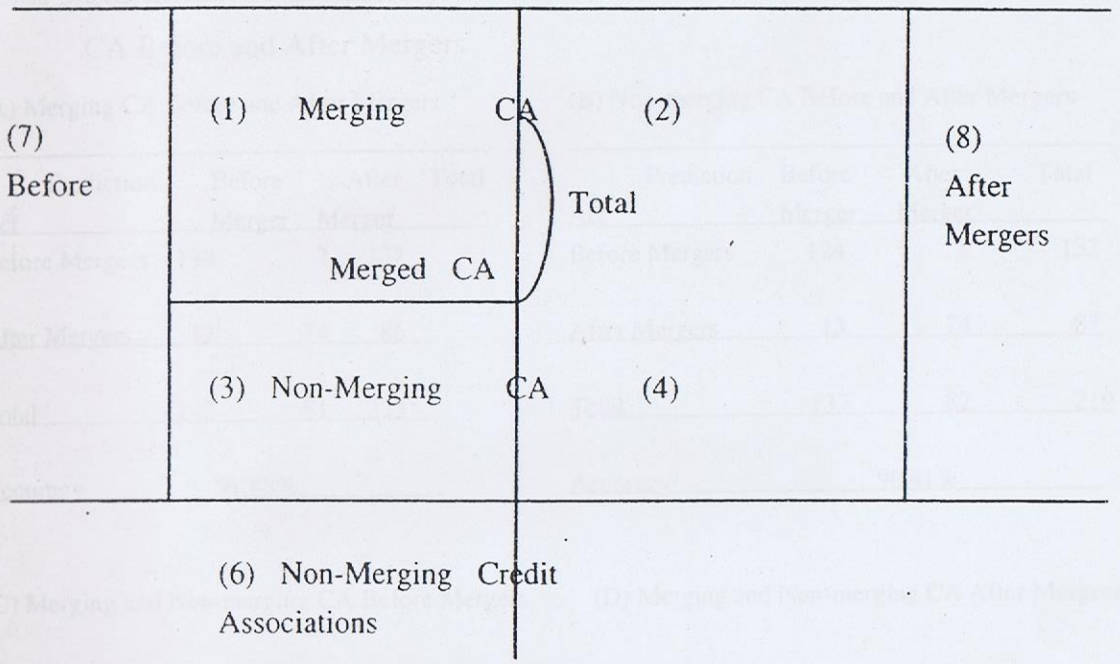
By comparing standard deviations, there are two groups of ratios. One of them increases standard deviations with statistically significant differences after merger for merging CA. They are (4) expense ratio, (5) personnel expenses ratio, (6) non-personnel expenses ratio, (7) tax ratio, which means a stabilizing effect of merger. The other group are (1) yield on interest received, (8) deposit-cost ratio,(9) gross earnings margin of deposits to loans, (13) net equity ratio, (14) loan-deposit ratio, which have higher standard deviations with statistically significant differences after merger for merging CA. They have a destabilizing effect of merger. The remaining two ratios such as gross earnings margin to total assets (12) and income ratio after tax (16) have significant differences in their standard deviations before and after merger of non-merging CA. They are higher values after merger of non-merging CA, indicating stabilizing effect of merger.

Table 2 Comparison of Merging and Non-merging Credit Associations

	(A) Merging credit associations		(B) Non-merging credit associations		(C) Before merger		(D) After merger		(E) General comparison	
Financial ratio	Before merger	After merger	Before merger	After merger	Merging credit assoc.	Non-merging credit assoc.	Merging credit assoc.	Non-mergin gcredit assoc.	Mergin g credit assoc.	Non-merging credit assoc.
1. Yield on interest	4.91 c	2.75	5.01 c	2.37	4.91	5.01	2.75	2.37	4.08	3.96
received	1.13 a	2.88	1.49	1.68	1.13	1.49	2.88	1.68	2.25	2.03
2. Yield on interest	3.46 c	1.70	3.58 c	1.69	3.46	3.58	1.70	1.69	2.78	2.83
Paid	0.72 c	1.21	0.70 c	1.21	0.72	0.70	1.21	1.21	1.27	1.31
3. Yield on loan	6.61 c	4.50	6.66 c	4.57	6.61	6.66	4.50	4.57	5.80	5.83
	0.79 c	1.19	0.80 c	1.32	0.79	0.80	1.19	1.32	1.41	1.46
4. Expense ratio	2.28 c	1.87	2.30 b	1.90	2.28	2.30	1.87	1.90	2.12	2.14
	0.40 a	0.26	1.40	0.30	0.40	1.40	0.26	0.30	0.41	1.12
5. Personnel	1.49 c	1.20	1.57 a	1.22	1.49	1.57	1.20	1.22	1.38	1.43
expenses atio	0.32 a	0.22	1.37	0.20	0.32	1.37	0.22 a	0.20	0.32	1.08
6. Non-personnel	0.74 c	0.63	0.68 b	0.64	0.74 c	0.68	0.63	0.64	0.69 a	0.67
expenses ratio	0.12 a	0.09	0.12	0.13	0.12	0.12	0.09	0.13	0.12	0.12
7. Tax ratio	0.06 *	0.04	0.05	0.04	0.06	0.05	0.04 *	0.03	0.05 *	0.04
	0.06 *	0.04	0.06	0.01	0.06	0.06	0.04	0.01	0.05 *	0.04
8. Deposit-cost	5.74 c	3.57	5.87 c	3.59	5.74	5.87	3.57	3.59	4.90	4.97
ratio	0.84 c	1.22	1.63	1.22	0.84	1.63	1.22	1.22	1.46	1.86
9. Gross earnings	0.87	0.93	0.79	0.98	0.87	0.79	0.93	0.98	0.89	0.86
margin of	0.36 *	0.53	1.37	0.44	0.36	1.37	0.53	0.44	0.44	1.10
deposits to loans										
10. Yield on total	6.14 c	4.23	6.24 c	4.20	6.14	6.24	4.23	4.20	5.40	5.43
assets	0.76 c	1.19	0.70 c	1.09	0.76	0.70	1.19	1.09	1.33	1.33
11. Total assets cost	5.55 c	3.92	5.57 c	3.78	5.55	5.57	3.92	3.78	4.92	4.86
ratio	0.69 c	1.17	0.71 c	1.07	0.69	0.71	1.17	1.07	1.20	1.23
12. Gross earnings	0.59 c	0.31	0.66 c	0.41	0.59 a	0.66	0.31 *	0.41	0.48 a	0.56
margin to total	0.29	0.39	0.28 *	0.33	0.29	0.28	0.39	0.33	0.36	0.32
assets										
13. Net equity ratio	6.11	6.16	6.27 *	6.64	6.11	6.27	6.16 *	6.64	6.13 a	6.42
	1.04 c	1.58	1.31	1.69	1.04 a	1.31	1.58	1.69	1.27	1.48
14. Loan-deposit	71.23 *	73.04	70.78	69.60	71.23	70.78	73.04 b	69.60	71.93 a	70.31
ratio	6.41 *	8.30	8.68	8.17	6.41 a	8.68	8.30	8.17	7.23 *	8.48
15. Ratio of current	90.43 *	92.74	89.33	90.02	90.43 a	89.33	92.74 *	90.02	91.32 b	89.60
expense to	4.56 *	10.30	4.55 c	7.80	4.56	4.55	10.30	7.80	7.39	6.04
current income		*								
16. Income ratio	11.53 c	7.68	12.45 b	9.49	11.53 *	12.45	7.68	9.49	10.05 *	11.27
after tax	3.75	8.98	4.09 *	11.53	3.75	4.09	8.98	11.53	6.56	8.04
17. Deposit per	7489 c	10114	7690 c	9124	7489	7690	10114 *	9124	8502	8260
office	2607	3533	3020	3122	2607 a	3020	3533	3122	3253	3134
18. Deposit per	3809 c	6403	3906 c	5395	3809	3906	6403	5395	4809	4498
full-time officer	1024 *	6482	980 a	823	1024	980	6482 *	823	4282	1174
and employee										
19. Deposit per	866 c	1074	932 c	1125	866 *	932	1074	1125	946 a	1009
association's	338	292	308	341	338	308	292	341	336	334
member										

1) For each cell, upper figures are means, and lower figures are standard deviations.
2) Statistically significant at 10 percent level: *, 5 percent level: a, 1 percent level: b, 0.1 percent level: c.
3) Units: Columns 1-16 percent; 17, million yen; 18, ten thousands yen; 19, thousands yen.

(5) Merging Credit Associations



Graph I

Table 2, column (C) shows a comparison of (1)-(3), of Graph I, namely a comparison of merging and non-merging CA before mergers, and column (D), a comparison of (2)-(4), a comparison of merging and non-merging CA after mergers. In comparing (C) and (D), three ratios, (6) non-personnel expenses ratio, (16) income ratio after tax, and (19) deposit per association's member, are shown to have statistically significant differences in their means before mergers (C), but not after mergers (D). They are 0.74% vs. 0.68%, 11.53% vs.12.45%, and 866 vs. 932 thousands yen for each of merging and non-merging CA before mergers. However, they lose superiority after merger. Relatively speaking, these results indicate merging CA obtained financial superiority to non-merging CA after merger. Thus, positive performance of merger is indicated by those ratios. Further, (14) loan-deposit ratio and (17) deposit per office after merger have statistically significant differences only after merger and are higher for merging CA, indicating positive performance of merger. However, (7) tax ratio is higher for merging CA after merger and (13) net equity ratio is higher for non-merging CA after merger with significant differences, meaning negative performance of merger upon those ratios. As for tax ratio, neutral effect is shown due to contradicting performance between (A), (B) and (C), (D).

Column (E) of Table 2 exhibits a general comparison of financial characteristics between merging and non-merging CA corresponding to (5)-(6) of Graph I. There are five ratios with statistically significant differences with superior financial characteristics for non-merging CA. They are (6) non-personnel expenses ratio (0.69% vs.0.67%), (7) tax ratio with means of 0.05% vs. 0.04%, (12) gross earnings margin to total assets (0.48% vs. 0.56%), (13) net equity ratio (6.13% vs. 6.42%), (15) ratio of current expense to current income (91.32% vs. 89.60%), (16) income ratio after tax (10.05% vs. 11.27%), and (19) deposit per association's member (946 vs. 1009 thousands yen). However, (14) loan-deposit ratio (71.93% vs. 70.31%) shows financial inferiority of non-merging CA.

As a whole, non-merging CA exhibits superiority financially to merging CA.

Table 3 shows the result of classification and accuracy obtained by discriminant analysis based on the same data previously used. The accuracy of merging CA before and after mergers is 91.48% (A), which is slightly higher than the accuracy 90.41% (B) of corresponding non-merging CA before and after mergers, indicating that there is a strong influence by outside effects rather than merger upon accuracy. Moreover, the classification accuracy between merging and non-merging CA before mergers, 62.08% is higher than after mergers (60.69%), indicating the effect of mergers makes less different financially between merging and non-merging CA.

The data given in part (E) shows the general comparison between merging and non-merging CA, in which classification accuracy is 61.99%.

IV. Analysis by the Relative Financial Ratios

The relative financial ratios are compiled from the differences in absolute financial ratios between merging and non-merging CA as follows.

$$d_{ijk} = M_{ijk} - N_{ijk}$$

d_{ijk}: relative financial ratio k (k = 1, ... , 19) of i (i= 1, ... , 25) CA at the jth (j = 1983, ... , 1998) year

M_{ijk}: financial ratio k of i merging CA at the jth year

N_{ijk}: corresponding financial ratio k of i non-merging CA at the jth year

Table 3 Classification and Accuracy of Discrimination between Merging and Non-merging CA Before and After Mergers

(A) Merging CA Before and After Mergers

Act \ Prediction	Before Merger	After Merger	Total
Before Mergers	130	7	137
After Mergers	12	74	86
Total	142	81	223
Accuracy	91.48%		

(B) Non-merging CA Before and After Mergers

Act \ Prediction	Before Merger	After Merger	Total
Before Mergers	124	8	132
After Mergers	13	74	87
Total	137	82	219
Accuracy	90.41%		

(C) Merging and Non-merging CA Before Mergers

Act \ Prediction	Merging CA	Non-merg. CA	Total
Merging CA	83	54	137
Non-merging CA	48	84	132
Total	131	138	269
Accuracy	62.08%		

(D) Merging and Non-merging CA After Mergers

Act \ Prediction	Merging CA	Non-merg. CA	Total
Merging CA	58	28	86
Non-merging CA	40	47	87
Total	98	75	173
Accuracy	60.69%		

(E) Merging CA and Non-merging CA

Act \ Prediction	Merging CA	Non-merg. CA	Total
Merging CA	139	84	223
Non-merging CA	84	135	219
Total	223	219	442
Accuracy	61.99%		

Table 4 presents the comparison of these relative financial ratios from one year up to five years before and after mergers with 25 samples of mergers. There are two ratios, yield on interest received (1), and non-personnel expenses ratio (6), means of which are statistically different. The yield on interest received (1) are -0.30% vs. 0.42% and -0.22 vs. 0.39% for merging and non-merging CA with significant differences at the 10% level three and four years before and after mergers respectively. These figures are lower before merger and the same trend can be observed in the other three comparisons without significant differences. This indicates a positive effect of mergers. The non-personnel expenses ratio (6) gave a significant difference at the 5% level only five years before and after merger with the values of 0.06% vs. -0.02% before and after mergers. This shows also a positive effect of mergers.

By comparing standard deviations, there are only two ratios with significant differences between before and after merger. They are yield of interest received (1) with significant differences of four years (2.09% vs. 2.02%) and five years (2.05%vs. 1.99%) at the 10% level before and after merger, and deposit per full-time officer and employee (18) with only five years (1735 vs. 6628 ten thousands yen) at the 10% level before and after merger.

V. Conclusions

The sample (25 mergers) shows that there are positive effects of mergers on those ratios such as (6) non-personnel expenses ratio, (14) loan-deposit ratio, (16) income ratio after tax, (17) deposit per office and (19) deposit per association's member. But rather negative effects on (13) net equity ratio and (15) ratio of current expense to current income. Therefore the overall effects of mergers are considered to be positive as a general trend in the CA industry.

By using the relative financial ratios, namely the difference of financial ratios between merging and non-merging CA, yield on interest received (1) and non-personnel expenses ratio (6) have shown to be positive in the sample.

These conclusions are different from the previous results provided by Hoshino (1988).

General comparison of financial characteristics between merging and non-merging CA exhibits that merging CA show rather inferior financial characteristics to non-merging CA.

As far as the registration and administrative guidance to facilitate mergers by the Ministry of Finance of Japan are concerned, findings here support its policy moderately, to the general belief that bureaucracy is to help and encourage private initiative. [See Ballon (1988)]

Table 4 Comparative Analysis by Relative Financial Ratios

	One year		Two years		Three years		Four years		Five years	
Financial ratio	Before	After	Before	After	Before	After	Before	After	Before	After
1. Yield on interest Received	-0.03	0.51	-0.28	0.51	-0.30	* 0.42	-0.22	* 0.39	-0.11	0.34
	2.32	3.22	2.14	3.22	2.12	2.21	2.09	* 2.02	2.05	* 1.99
2. Yield on interest paid	-0.17	-0.05	-0.13	-0.05	-0.11	-0.00	-0.07	-0.01	-0.03	-0.16
	1.25	1.32	1.11	1.32	1.06	0.92	1.08	0.84	1.11	0.82
3. Yield on loan	-0.28	-0.27	-0.15	-0.27	-0.11	-0.08	-0.00	-0.05	0.07	-0.12
	2.16	1.96	1.94	1.96	1.95	1.60	2.08	1.49	2.20	1.53
4. Expense ratio	0.01	-0.05	0.07	-0.05	0.07	0.03	0.09	0.02	0.12	-0.04
	0.59	0.70	0.61	0.70	0.65	0.61	0.72	0.56	0.79	0.65
5. Personnel expenses ratio	-0.01	-0.03	0.03	-0.03	0.03	0.01	0.04	0.00	0.05	-0.03
	0.40	0.46	0.41	0.46	0.44	0.42	0.49	0.39	0.53	0.44
6. Non-personnel expenses ratio	0.01	-0.02	0.02	-0.02	0.03	0.00	0.04	0.00	0.06	a -0.02
	0.19	0.25	0.20	0.25	0.20	0.21	0.23	0.20	0.25	0.23
7. Tax ratio	0.01	0.00	0.15	0.00	0.01	0.01	0.01	0.01	0.01	0.00
	0.04	0.02	0.07	0.02	0.07	0.04	0.06	0.04	0.06	0.04
8. Deposit-cost ratio	-0.16	-0.10	-0.07	-0.05	-0.04	0.02	0.03	0.01	0.09	-0.06
	1.81	1.88	1.66	1.58	1.65	1.44	1.73	1.32	1.84	1.35
9. Gross earnings margin of	-0.13	-0.17	-0.08	-0.12	-0.06	-0.10	-0.03	-0.06	-0.02	-0.06
deposits to loans	0.58	0.97	0.52	0.75	0.51	0.66	0.51	0.69	0.51	0.67
10. Yield on total assets	-0.22	-0.03	-0.15	0.01	-0.15	0.08	-0.06	0.06	-0.01	-0.01
	2.12	2.23	1.89	1.91	1.98	1.73	2.01	1.59	2.16	1.64
11. Total assets cost ratio	-0.11	0.11	-0.74	0.10	-0.06	0.15	0.03	0.16	0.08	0.09
	1.92	2.12	1.71	1.86	1.70	1.68	1.81	1.60	1.90	1.62
12. Gross earnings margin to	-0.11	-0.14	-0.07	-0.09	-0.09	-0.07	-0.09	-0.10	-0.08	-0.10
total assets	0.46	0.35	0.43	0.43	0.41	0.40	0.40	0.48	0.44	0.48
13. Net equity ratio	-0.30	-1.01	-0.37	-0.79	-0.35	-0.42	-0.22	-0.42	-0.12	-0.54
	2.14	2.79	2.11	2.59	2.20	2.70	2.35	2.66	2.47	2.68
14. Loan-deposit ratio	0.45	-0.64	1.51	1.59	1.77	3.69	2.20	3.59	2.65	2.52
	23.77	27.13	23.41	24.98	24.71	23.53	26.51	21.74	27.56	22.73
15. Ratio of current expense to	1.69	-0.54	1.02	0.48	1.31	2.05	2.67	2.81	3.25	1.60
current income	27.28	32.12	26.29	30.12	27.54	28.27	30.24	27.31	31.37	28.49
16. Income ratio after tax	-0.77	1.29	-0.52	0.44	-0.79	-0.27	-1.05	-1.47	-0.89	-18.84
	6.13	16.14	5.78	12.08	5.70	11.35	5.90	14.75	6.50	14.60
17. Deposit per office	328	504	209	419	125	703	159	864	4876	5451
	5065	6546	4858	5873	4908	5521	4936	5346	495	574
18. Deposit per full-time officer	86	2269	-47	1212	-17	998	11	923	24	903
and employee	1866	11998	1740	8580	1725	7380	1756	6762	1735	* 6628
19. Deposit per association's	-82	-135	-413	-1044	-531	-744	-430	-621	-366	-618
member	537	565	5897	5393	5675	5151	5647	4832	5542	4902

1) For each cell, upper figures are means, and lower figures are standard deviations.

2) Statistically significant at 10 percent level: *, 5 percent level: a.

3) Units: Columns 1-16 percent; 17, million yen; 18, ten thousands yen; 19, thousands yen.

4) For five years comparison, only 18 out of 25 samples have financial data available.

On May 24, 1990, the President Kasahara of the National Association of Credit Associations stressed the need to establish 1) a strong business bases in order to strengthen the competitive power of credit associations, as the most important objective, 2) "tie-ups and mergers among CA" and 3) "policies of improving the image of CA". [See Nihon Kinyu Tsushinsha (1990b)]

Japanese financial institutions are facing a growing threat of increasing competition both of home and abroad due to the deregulation of financial industry. If mergers are intended to avoid future possible bankruptcies according to the theory "too big to fail", they are the best and the quickest way to achieve bigger size. It seems to us that there is a general belief such as "the bigger the better" in Japan. Therefore, when management do not expect strong internal rivalries after mergers, they pursue mergers to prevent bankruptcies with support from local government and the Ministry of Finance of Japan.

However, after the collapse of the bubble economy around 1990, banking institutions' management of bad debt became a serious issue, causing several bankruptcies of financial institutions in Japan. The Government of Japan decided to take temporary emergency measures for protecting depositors and stabilizing the financial system. To restore confidence in the nation's financial system and prevent the total economy from falling into a crisis, one of the measures is to strengthen the Deposit Insurance Corporation of Japan through the use of public funds and to expand the functions of the Resolution & Collection Bank which will be able to take over failed financial institutions.5)

Footnotes

1) The first law is to cope with internationalization and improve the efficiency of small and medium-sized financial institutions in Japan. The second permits and promotes financial reorganization, mergers and conversions in order to raise efficiency not only among the same type, but also among the different types of financial institutions.
2) The credit cooperatives, as well as agricultural cooperatives are treated more strictly as cooperative associations, in which both deposits and loans to nonmembers are restricted to less than 20% of total loans. [See Yoshino(1989)]
3) There were some criticisms that Hoshino(1988) investigated only mergers that occurred in 1971, which were aimed at saving those CA.
4) For CA and credit co-operatives in Japan, only annual data are readily available, not semi-annual data like for stock listed corporations.
5) A provisional translation of "Outline of the Emergency Measures to Stabilize the Financial System" is available on the home page of the Ministry of Finance. (http://www.mof.go.jp)

Appendix I

Financial Ratios Analyzed

1. Yield of interest received = interest received / deposit x 100
2. Yield of interest paid = interest paid / deposit x 100
3. Yield on loan = interest on loan / loans x 100
4. Expense ratio = (personnel expenses + non-personnel expenses + tax) / deposit x 100
5. Personnel expenses ratio = personnel expenses / deposit x 100
6. Non-personnel expenses ratio = non-personnel expenses / deposit x 100
7. Tax ratio = tax / deposit x 100
8. Deposit-cost ratio = yield of interest paid + expense ratio
9. Gross earnings margin of deposit to loan = yield on loan - cost of deposit ratio
10. Yield on total assets = recurring profit / total assets x 100
11. Total assets cost ratio = ordinary expenditure / total assets x 100
12. Gross earnings margin to total assets = yield on total assets - total assets cost ratio
13. Net equity ratio = equity / amounts of accounts of members x 100
14. Loan-deposit ratio = loan /deposit x 100
15. Ratio of current expense to current income = current expense / current income
16. Income ratio after tax = current income after tax / account of members x 100
17. Deposit per office = deposit / number of offices
18. Deposit per full-time officer and employee = deposit / number of officers and employees
19. Deposit per association's member = deposit / number of members of association

Appendix II

A List of Merging and Non-merging CA for the period between 1990 and 1994 (fiscal year)

Prefecture	Merging CA: Merged CA	Period of Merger	CA after Merger	Non-merging CA
1 Toyama	Shinkawa Shinbashi	4/1/90	Shinkawa-shinbashi	Tonami
2 Hiroshima	Kure Kurechuo	4/1/90	Kure	Miyajima
3 Tokyo	Kanda Kandashoko	10/1/90	Kanda	Showa
4 Yamaguchi	Yanai Tokuyama Kudamatsu	4/1/91	Higashi-yamaguchi	Yamaguchi
5 Fukui	Maruoka Mikuni	10/7/91	Fukuichuo	Sabae
6 Kanagawa	Miura Fujisawa	9/7/91	Miura-Fujisawa	hiratsuka
7 Hokkaido	Hokkai Oshamanbe	9/17/91	Hokkai	Sorachi
8 Tokyo	Daido Kyouei	2/3/92	Seikyo	Takinogawa
9 Gunma	Kamige Jyoumou	3/1/92	Kiryu	Takasaki
10 Tokyo	Shibuya Toho	4/6/92	Heisei	Nikko
11 Oita	Beppu Funai	6/1/92	Oitamirai	Oita
12 Kanagawa	Odawara Ashigara	9/28/92	Sagami	Chunan
13 Fukushima	Banyou Taira	10/12/92	Himawari	Koriyama
14 Tokyo	Toubu Sankou	4/5/93	Toubu	Arakawa
15 Wakayama	Kishu Wakayama	11/1/93	Kinokuni	Shingu

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Prefecture	Merging CA: Merged CA	Period of Merger	CA after Merger	Non-merging CA
16 Hiroshima	Shobara Miyoshi	11/1/93	Hiroshima-midori	Tojyo
17 Kyoto	Fushimi Nishijin	11/1/93	Kyotomiyama	Minamikyoto
18 Gunma	Kiryuchuo Maebashi	2/1/94	Gunmachuo	Kanra
19 Osaka	Kyujyo Toyonaka Osaka-shokusan	4/18/94	Suito	Settu
20 Chiba	Ichikawa-toukastu Jyuto	5/30/94	Tokyobei	Chiba
21 Hyogo	Kansai Nishinomiya	7/12/94	Kansai-nishinomiya	Tanyou
22 Okayama	Okayama-shimin Saidaiji	8/1/94	Okayama-shimin	Mizushima
23 Oita	Nakatsu Showa	10/17/94	Nakatsu	Saeki
24 Hiroshima	Mihara Onomichi	11/7/94	Kamome	Otake
25 Akita	Choukai Yajima	2/6/95	Ugo	Gojome

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