Association of Japanese Business Studies (AJBS)

PROCEEDINGS

Fifth Annual Meeting
January 3-4, 1992
Denver, Colorado

Host:

Institute for International Business (IIB)
College of Business and Administration
University of Colorado at Denver

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1991 - 1992

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Edited by:

Edwin Duerr
San Francisco State University

Manuel G. Serapio, Jr.
University of Colorado at Denver

PREFACE

The 1992 Association of Japanese Business Studies (AJBS) Proceedings represents a valuable contribution by over three dozen scholars and business practitioners to the study of Japanese business. The Proceedings features a collection of papers covering a wide array of topics on Japanese business: Japanese direct investment, human resource management in Japanese firms, Japanese financial markets, marketing in Japan and marketing strategies of Japanese firms, cross-cultural negotiation, and technology, research and development, to name just a few.

The papers in this Proceedings were selected through a competitive peer review process by over fifty reviewers. In all, we received over sixty papers and panel proposals. We would like to thank all those who responded to our call for papers. A special thanks also goes to those who served as reviewers.

The AJBS is very fortunate to have the Institute for International Business (IIB) at the College of Business and Administration, CU-Denver, as host of the Fifth Annual Meeting. We would like to thank Managing Director Donald Stevens and Dean Gary Kochenberger for their support.

The publication of this Proceedings was made possible through a grant by the IIB and its sponsors: the U.S. Department of Education, Nomura Capital Management North America, The Northern Trust Company, Mitsui USA Foundation and the Samsonite Corporation. We greatly appreciate the support of these organizations.

Manuel G. Serapio, Jr.
Program Host Chair and
Proceedings
Co-Editor

Edwin Duerr
Program Chair and
Proceedings
Co-Editor

FOREWORD

The Institute for International Business (IIB) at the College of Business and Administration at the University of Colorado at Denver is pleased to host the Fifth Annual Meeting of the Association of Japanese Business Studies (AJBS). On behalf of the membership of the IIB and the University of Colorado at Denver, I would like to welcome you to Denver, Colorado, and wish you a productive and enjoyable meeting.

The Institute for International Business was established in 1988 to promote competency in international management education and research, facilitate the exchange of ideas among scholars, executives and policy makers, and conduct and disseminate research on global business issues.

Hosting the AJBS meeting underscores both the importance of Japan and its role as a global economic leader, and the need to bring together scholars and executives to discuss and debate issues as they are developing in the global marketplace.

I would like to thank Dr. John Buechner, Chancellor of the University of Colorado at Denver, and Dr. Gary Kochenberger, Interim Dean of the College of Business at CU-Denver, for their support of the Institute for International Business and for making it possible for us to host this important meeting.

Special thanks are also in order for the following IIB sponsors who have helped us host this meeting: Nomura Capital Management North America, The Northern Trust Company, Mitsui USA Foundation, Samsonite Corporation, U.S. Department of Education and The Japan America Society of Colorado.

Finally, I would like to thank the AJBS and its membership for giving us the opportunity to be your host.

Donald L. Stevens, Ph.D.
Managing Director, Institute for International Business and Assistant Vice Chancellor of Academic Affairs

TABLE OF CONTENTS

Page

PREFACE ii

FOREWORD ii

FROM THE AJBS PRESIDENT iii

JAPANESE DIRECT INVESTMENT

Japanese Direct Investment in U.S. Manufacturing
Donald H. Dalton and Phyllis A. Genther 1

Japanese Direct Investment in the United States:
Understanding the Role of Keiretsu
Douglas Woodward 9

Japanese Direct Investment in U.S. Electronics:
Implications for U.S. Technology Development
Phyllis A. Genther and Donald H. Dalton 18

BANKING AND FINANCE

Competing in Japan: Strategy and Performance of
Foreign Banks in the 1980's
Terry Ursacki and Ilan Vertinsky 26

European Strategies of Japanese Banks
Marjorie Chan 34

The Structure of the Financial Futures Industry in Japan
Yu-Min Chou 41

An Analysis of Mergers Among Credit Associations
in Japan: An Extended Version
Yasuo Hoshino 47

MANAGEMENT

Cross-Cultural Human Resource Development: Focusing
on Japanese Manufacturing Firms in Central Japan
and the Central States of America
Mitsuru Wakabayashi and George B. Graen 55

Strong Corporate Culture as a Barrier to Change: the
Experience of a Japanese Steelmaker
Leonard Lynn 64

Organizational Strategy, Top Management Team
Composition and Firm Performance
Margarethe F. Wiersema and Allan Bird 72

Managing Cultural Diversity in Japanese-American
Teams: A Research Agenda for Organizational
Behavior in a Global Context
Terri A. Scandura 79

Creating Firm-Specific Human Capital in the Large
Japanese Firm
Paul R. Johnson 86

Innovation in Japanese Business Structure: the
G-FORM Organization
Douglas N. Ross 90

AN ANALYSIS OF MERGERS AMONG CREDIT ASSOCIATIONS IN JAPAN :AN EXTENDED VERSION

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ABSTRACT

In order to examine the performance of 27 mergers among Japanese Credit Associations (CAs) during the period of 1971 and 1981, we compared the statistically significant differences of 19 financial ratios before and after merger, and differences of the matching non-merging CAs for the years 1966 and 1986.

There are mixed effects of mergers among cost related ratios and profitability related ratios. The sample was divided into two groups, one group of 12 mergers in 1971 and another group of 15 mergers for the period of 1972 and 1986. The group of 12 mergers in 1971 have a negative effect on profitability and cost related ratios. The 15 mergers samples have expense related ratios that indicates a positive effect by mergers.

By using the relative financial ratio, namely the difference of financial ratios between merging and non-merging CAs, net equity ratio has been shown to be negative with the full sample. Gross earnings margin to total assets and net equity ratio have a negative effect with the 12 merger samples and net equity ratio is negative with 15 merger samples.

General comparison of financial characteristics between merging and non-merging CAs shows that merging CAs are financially inferior to non-merging CAs.

I INTRODUCTION

Japanese Credit Associations (CAs) are financial institutions created by the Credit Association Law of 1951. They are nonprofit cooperatives established to improve the mutual welfare of members. Members subscribe to capital and must be resident of, small and medium-sized firms, or employees working in a certain local district. The CAs may receive deposits from members and nonmembers but, loans to nonmembers are restricted to be 20% or less of total loans. (See Adams[1] and Yoshino[27])

*This research is conducted with an assistance of Grant-in-Aid for Scientific Research provided by the Ministry of Education, Science and Culture of Japan (Kakenhi General Study C). The author would like to thank Professor Richard H. Pettway at the University of Missouri-Columbia for comments on this paper. However, the author alone is responsible for any remaining errors.

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. There were 60 mergers among credit associations and 72 mergers among credit cooperatives [2] for the period of 1968-89.This reflects the intention to raise the efficiency of small and medium-sized financial institution through mergers by the administrative authority of the Ministry of Finance of Japan.

However, there have been few empirical studies to measure the performance of mergers among small and medium-sized financial institutions in Japan. The performance of mergers among CAs in Japan has been investigated by Hoshino [5]. 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 merger, and 3) deposit per office and deposit per associations 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 CAs, by using the relative financial ratios; namely, difference of ratios between merging CAs and non-merging CAs, 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, general comparison of financial characteristics between merging CAs and non-merging CAs by Hoshino shows

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 different types of financial institutions.

2 The Credit Co-operatives, as well as agricultural Co-operatives are treated more strictly as cooperative associations, in which both deposits and loans to nonmembers are restricted within 20% of total loans.

that merging CAs exhibit better ratio performance in terms of costs, profitability and productivity. However, his analysis is based upon those data of 13 merging CAs merged in 1971[3] which is only a part of 58 merging CAs, and paired non-merging CAs in each prefecture. Thus, this paper expands the sample to 27 out of 39 mergers during the periods of 1971 and 1981 and deletes those CAs which merged more than once. This was done to avoid biases. See APPENDIX for a list of mergers studied.

Nineteen financial ratios are used to compare the financial characteristics of CAs by using annual data[4] for 5 years before and after mergers. The study period is from 1966 to 1986. The source of the accounting data is Kinyu Tosho Consultant Sha [13].

The paper is organized into several sections. Section II describes data, and presents five null hypotheses and approaches employed. In section III, comparative analysis of merging and non-merging CAs before and after five years are presented using t tests, F tests and discriminant analysis. In section IV, the same approach is employed for sub-samples from section III. Relative financial ratios are defined and analysis is performed to compare the two groups in section V.

II DATA, HYPOTHESES ABD APPROACH

Corresponding to each merging CA, a nonmerging CA with nearly the 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 1966 and 1986 to measure the effects among CAs in the two groups. The added figures of each original financial variable between merging and merged CAs are used to make the financial ratios of CAs before mergers.

A comparative ratio analysis as illustrated in GRAPH I is employed to analyze 5 comparisons:

1. merging CAs (acquiring and acqurired CAs combined before mergers) before mergers and merging CAs after mergers: (1) and (2) on GRAPH I;
2. comparable non-merging CAs before and after the year of mergers of acquiring CAs: (3) and (4);
3. merging CAs, and non-merging CAs before mergers: (1) and (3);
4. merging CAs after mergers, and non-merging CAs after mergers: (2) and (4); and
5. overall merging CAs, and non-merging CAs: (5) and (6).

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[3] There were some criticisms that Hoshino [5] investigated only mergers occurred in 1971 aimed at saving those unsound CAs.

[4] For CAs and Credit Co-operatives in Japan, only annual data are readily available, not semi-annual data like for stock-listed corporations.

The five null hypotheses established for testing are that there are 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 other factors, such as general economic performance and internal growth.

Comparison 2 presents changes due to factors other than megers. Comparison 3 indicates whether there are differences in the value of the financial ratios between those CAs 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 including the differences in financial ratios between merging and non-merging CAs before mergers. Comparison 5 gives general comparisons of the financial ratios between merging and non-merging CAs including the effects of mergers and also describes the original differences between the two groups before mergers.

III THE PERFORMANCE OF MERGERS - A BIGGER SAMPLE -

Means values and standard deviations of financial ratios of merging and non-merging CAs before and after mergers are provided in TABLE I. When both merging and non-merging CAs 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 positions from before merger to after merger is obtained, i.e. no change caused by merger. If either of them has significant differences before and after mergers, mergers are considered to have caused the differences.

GRAPH I

(5) Merging CAs

(7) Before Mergers	(1) Acquired CAs + Merged CAs	(2) Total	(8) After Mergers
	(3) Non-Merging CAs	(4)	

(6) Non-Merging CAs

Year of Mergers

By comparing the results obtained in Column (A) corresponding (1) - (2) and (B) corresponding (3) - (4) of GRAPH I, only one ratio, (1) yield of interest received has a statistically significant difference on its means with respect to only non-merging CAs before and after mergers. They are 5.66% vs. 6.07% in column (B) for non-merging CAs with a significant difference at the 5% level before and after mergers, respectively. However, for merging CAs, they are 5.59% vs. 6.08% in column (A) without significant difference, which do not have so much differences for each of them with the non-

TABLE I A COMPARISON OF MERGING AND NON-MERGING CAS BEFORE AND AFTER MERGERS (27 Samples)

Merging and Non-merging CAs before and after Mergers		(A) Merging CAs		(B) Non-merg. CAs		(C) Before Merger		(D) After Merger		(E) General Comparison	
Financial ratios	Stat.	Bef. Mergers	Aft.	Bef. Mergers	Aft.	Merg. CAs	Non-Merg.	Merg. CAs	Non-Merg.	Merg. CAs	Non-Merg.
(1) Yield of In-	Mean	5.59	6.08	5.66 a	6.07	5.59	5.66	6.08	6.07	5.84	5.87
terest recived	S.D.	3.10 c	1.30	1.43	1.22	3.10 c	1.43	1.30	1.22	2.38 c	1.34
(4) Expense ratio	Mean	2.62	2.68	2.47	2.63	2.62 c	2.47	2.68	2.63	2.65	2.55
ratio	S.D.	0.40	0.40	0.40 c	1.22	0.40 c	0.40	0.40 c	1.22	0.40 c	0.91
(5) Personnel	Mean	1.61 c	1.85	1.49 b	1.81	1.61 c	1.49	1.85	1.81	1.73	1.65
expenses ratio	S.D.	0.29	0.31	0.28 c	1.20	0.29	0.28	0.31 c	1.20	0.32 c	0.89
(6) Non-personnel	Mean	0.68 b	0.74	0.63 c	0.72	0.68 a	0.63	0.74	0.72	0.71 a	0.67
expenses ratio	S.D.	0.19 a	0.16	0.18	0.17	0.19	0.18	0.16	0.17	0.18	0.18
(8) Deposit-cost	Mean	6.35 c	6.85	6.17 b	6.82	6.35 a	6.17	6.85	6.82	6.60	0.50
ratio	S.D.	0.75	0.77	0.68 c	1.36	0.75	0.68	0.77 c	1.36	0.80 c	1.12
(12) Gro. ear. mar	Mean	1.11 b	0.84	1.26 c	0.98	1.11	1.26	0.84 c	0.98	0.97 c	1.12
to total assets	S.D.	0.95 c	0.29	0.30	0.32	0.95 c	0.30	0.29	0.32	0.71 c	0.34
(15) Ratio of cur	Mean	83.63 c	88.06	81.55 c	86.21	83.70	81.55	88.06 c	86.21	85.88 b	83.90
exp. to income	S.D.	14.37 c	3.90	3.94	4.08	14.37 c	3.94	3.90	40.8	10.72 c	4.63
(16) Income ratio	Mean	15.09 c	12.38	16.31 c	13.18	15.09 a	16.31	12.38	13.18	13.73 a	14.73
after tax	S.D.	3.63 b	4.76	4.15 c	5.51	3.63	4.15	4.76	5.51	4.44 a	5.12
(17) Deposit per	Mean	2,175 c	3,854	2,693 c	4,452	2,175 a	2,693	3,854 b	4,452	3,018 c	3,583
Office	S.D.	1,710 a	2,162	2,074	2,373	1,740 a	2,074	2,162	2,372	2,120 a	2,394
Classification Accuracy by Discriminant Analysis		85.13 %		85.17%		64.02 %		69.03 %		64.66 %	

1) a, significant at 5% level, b, 1% level and c, 0.1% level.
2) S.D. is standard deviation. A unit of (17) is millon yen, the rest are %.

merging CAs. There are no other meaningful results to show the differences among (A) and (B).

TABLE I, column (C) shows a comparison of (1) - (3), of GRAPH I, namely a comparison of merging and non-merging CAs before mergers, and column (D), a comparison of (2) - (4), a comparison of merging and non-merging CAs after mergers. By comparing (C) and (D), four ratios, expense ratio (4), personnel expenses ratio (5), nonpersonnel expenses ratio (6) and deposit-cost ratio (8) are shown to have statistically significant differences on their means only before mergers (C), not after mergers (D). They are 2.62% vs. 2.47%, 1.61% vs. 1.49%, 0.68% vs.0.63% and 6.35% vs. 6.17% for each of merging and non-merging CA before mergers. These results indicate a higher burden of cost for merging CAs before mergers. But no differences after mergers is given. Thus, positive performance of mergers are provided by those ratios.

The gross earnings margin to total assets (12) are 1.11% vs. 1.26% before mergers on its means for merging CAs (A) and non-merging CAs (B), and 0.84% vs. 0.98% after mergers with a statistically significant difference at the 0.1% level. The ratio of current expense to current income (15) has 83.70% vs.81.55% before mergers and 88.06% vs.86.21% after mergers with a statistically significant difference at the 0.1% level. These facts indicate that non-merging CAs improve their financial characteristics after mergers. This illustrates negative performance of mergers.

The income ratio after tax (16) are 15.09% vs. 16.31% for merging and non-merging CAs before mergers with statistically significant difference. The non-merging CAs are superior before mergers. However, after mergers both are reduced to 12.38% vs. 13.18% and are not significantly different. The reduction is less for merging CAs with respect to income ratio after tax, indicating rather a positive effect of merger.

TABLE II A COMPARISON OF MERGING AND NON-MERGING CAS BEFORE AND AFTER MERGERS (12 Samples)

Merging and Non-merging CAs before and after Mergers		(A) Merging CAs		(B) Non-merg. CAs		(C) Before Merger		(D) After Merger		(E) General Comparison	
Financial ratios	Stat.	Bef. Mergers	Aft.	Bef. Mergers	Aft.	Merg. CAs	Non-Merg.	Merg. CAs	Non-Merg.	Merg. CAs	Non-Merg.
(5) Personnel	Mean	1.55 c	1.92	1.42 c	1.75	1.55 b	1.42	1.92 b	1.75	1.74 c	1.59
expenses ratio	S.D.	0.31	0.33	0.23	0.24	0.31 a	0.23	0.41	0.24	0.37	0.29
(9) Gro. ear. mar.	Mean	1.80 c	1.28	1.95 c	1.45	1.80	1.95	1.28 a	1.45	1.54 a	1.69
of depo. to loan	S.D.	0.56 c	0.32	0.67 c	0.40	0.56	0.67	0.32	0.40	0.53	0.60
(12) Gro.ear. mar.	Mean	1.37 c	0.97	1.43 c	1.15	1.37	1.43	0.97 c	1.15	1.17 b	1.28
to total assets	S.D.	0.19	0.21	0.19 c	0.31	0.19	0.19	0.21 b	0.31	0.28	0.29
(14) Loan-deposit	Mean	85.62 c	81.17	82.99	80.57	85.62	82.99	81.17	80.57	83.38	87.75
ratio	S.D.	5.28	4.89	8.66 c	5.49	5.28 c	8.66	4.84	5.49	5.52	7.28
(15) Ratio of cur.	Mean	79.92 c	86.40	79.18 c	84.19	79.92	79.18	86.40 c	84.19	83.19 b	81.75
exp. to income	S.D.	2.53	2.63	2.33 c	3.93	2.53	2.33	2.63	3.93	4.15	4.10
(16) Income ratio	Mean	15.54	15.23	17.24	17.28	15.54 a	17.24	15.23 b	17.28	15.38 c	17.26
after tax	S.D.	3.51 c	3.90	4.30	4.29	3.51	4.32	3.90	4.28	3.70	4.28

1) a, significant at 5% level, b, 1% level and c, 0.1% level.
2) S.D. is standard deviation. Unit = %.

The column (E) of TABLE I exhibits a general comparison of financial characteristics between merging and non-merging CAs corresponding to (5) - (6) of GRAPH I. There are five ratios which have statistically significant differences in mean value. They are ratio (6) nonpersonnel expenses ratio 0.71% vs. 0.67% for merging and non-merging CAs, ratio (12) gross earnings margin to total assets, 0.97% vs. 1.12%; ratio (15) current expense to current income, 85.88% vs. 83.90%, ratio (16) income ratio after tax, 13.73% vs. 14.73% and ratio (17) deposit per office, Y 3,018 million vs. Y 3,583 million, all of which show financial superiority of non-merging CAs.

The lowest raw of TABLE I shows the result of classification accuracy obtained by discriminant analysis based on the same data. The accuracy of merging CAs before and after mergers is 85.13% (A), which is slightly lower than the accuracy 85.17% (B) of corresponding non-merging CAs before and after mergers, indicating a reducing effect of discrimination by merger. However, the classification accuracy between merging and non-merging CAs before mergers, 64.02% is lower than after mergers (69.03%), indicating the presence of merger effects. The data given in part (E) shows the general comparison between merging and non-merging CAs, in which classification accuracy is 64.66%.

IV THE PERFORMANCE OF MERGERS - DIVISION OF SAMPLE -

In the previous section, analysis of 27 mergers including mergers among three or four CAs, and as well as two CAs occurred during the period of 1971 and 1981, there may be some biases by the different years of mergers. Therefore, the 27 mergers are divided into two groups, 12 mergers occurred in only 1971 and another 15 mergers spreading over the period of 11 years, in order to examine biases by the different year of mergers.

TABLE II exhibits a comparison of merging CAs and non-merging CAs before and after mergers with 12 cases. By comparing (A) of merging CAs and (B) of non-merging CAs before and after mergers, there is only one ratio with a statistically significant difference. The loan-deposit ratio (14) are 85.62% vs. 81.17% with a significant difference at the 0.1% level for merging CAs and 82.99% vs. 80.57% for non-merging CAs before and after mergers, respectively. This indicates that this ratio declines after mergers, or a negative effect of mergers.

As for standard deviations of this ratio, no significant difference is obtained for merging CAs and a significant difference for non-merging CAs with values of 8.66% vs. 5.49% before and after mergers. This means, relatively speaking, a rather unstabilizing effect of mergers upon this ratio. However, ratio of current expense to current income (15) shows rather stabilizing effect of mergers with significant difference for non-merging CAs. Thus, no definite

TABLE III A COMPARISON OF MERGING AND NON-MERGING CAS BEFORE AND AFTER MERGERS (15 Samples)

Merging and Non-merging CAs before and after Mergers		(A) Merging CAs		(B) Non-merg. CAs		(C) Before Merger		(D) After Merger		(E) General Comparison	
Financial ratios	Stat.	Bef. Mergers	Aft.	Bef. Mergers	Aft.	Merg. CAs	Non-Merg.	Merg. CAs	Non-Merg.	Merg. CAs	Non-Merg.
(4) Expense ratio	Mean	2.54	2.63	2.41	2.71	2.54 a	2.41	2.63	2.71	2.58	2.56
ratio	S.D.	0.36	0.39	0.42 c	1.59	0.36	0.42	0.39 c	1.59	0.38 c	1.17
(5) Personnel	Mean	1.66 c	1.79	1.55	1.85	1.66 a	1.55	1.79	1.85	1.72	1.70
expenses ratio	S.D.	0.27	0.28	0.30 c	1.58	0.27	0.30	0.28 c	1.58	0.28 c	1.14
(6) Non-personnel	Mean	0.69 a	0.75	0.66 c	0.76	0.69	0.66	0.75	0.76	0.72	0.71
expenses ratio	S.D.	0.17	0.16	0.20 c	0.12	0.17	0.20	0.16 a	0.12	0.17	0.17
(11) Total assets	Mean	5.84	6.15	5.65 c	6.07	5.84	5.65	6.16	6.07	6.00	5.86
cost ratio	S.D.	1.34 c	0.68	0.66	0.56	1.34 c	0.66	0.68	0.56	1.07 c	0.65
(12) Gro. ear. mar	Mean	0.90	0.73	1.14 c	0.85	0.90	1.14	0.73 a	0.85	0.82 a	0.99
to total assets	S.D.	1.23 c	0.30	0.30	0.25	1.23 c	0.30	0.30	0.25	0.89 c	0.31
(15) Ratio of cur	Mean	86.67	89.38	83.29 c	87.77	86.67	83.29	89.38	87.77	88.02 a	85.53
exp. to income	S.D.	18.61 c	4.25	3.98	3.49	18.61 c	3.98	4.25	3.49	13.52 c	4.36
(17) Deposit per	Mean	3,205 c	5,091	3,974 c	5,894	3,205 b	3,974	5,091 a	5,894	4,148 c	4,934
Office	S.D.	1,569	1,806	1,851	2,071	1,570	1,850	1,806	2,071	1,934	2,182

1) a, significant at 5% level, b, 1% level and c, 0.1% level.
2) S.D. is standard deviation. A unit of (17) is millon yen, the rest are %.

conclusion is drawn on stabilizing effects of mergers upon financial ratios.

By comparing (C) of merging and non-merging CAs before mergers and (D) of merging and non-merging CAs after mergers, there are three ratios such as gross earnings margin of deposit to loans (9), gross earnings margin to total assets (12), ratio of current expense to current income (15) with statistically significant difference between merging and non-merging CAs after mergers. They are 1.28% vs. 1.45%, 0.97% vs. 1.15%, and 86.40% vs. 84.19% for merging and non-merging CAs. This indicates a negative effect of mergers.

Column (E) of TABLE II shows five ratios with statistically significant differences in their means. They are personnel expenses ratio (5), 1.74% vs. 1.59% for merging and non-merging CAs, gross earnings margin of deposit to loan (9), 1.54% vs. 1.69%, grossl earnings margin to total assets (12), 1.17% vs. 1.28%, ratio of current expense to current income (15), 83.19% vs. 81.75% and income ratio after tax (16), 15.38% vs. 17.26%. These show superiority of financial characteristics of non-merging CAs.

The analysis of 15 mergers that occurred during 1972 and 1981 is analyzed by the same approach with the result presented in TABLE III. By comparing (A) and (B), personnel expenses ratio (6) has 1.66% vs. 1.79% with a statistically significant difference before and after mergers for merging CAs, not for non-merging CAs. This shows the inferiority for merging CAs after mergers.

However, total assets cost ratio (11) are 5.65% vs. 6.07%, gross earnings margin to total assets (12) are 1.14% vs. 0.85% and ratio of current expense to current income (15) are 83.29% vs. 87.77%. All of which have statistically significant difference only for non-merging CAs (B), This indicates relative inferiority of non-merging CAs. That is, relative positive effect of mergers from these ratios.

By comparing (C) before mergers and (D) after mergers, expense ratio (4) and personnel expenses ratio (5) a significant difference occurs before mergers. They are 2.54% vs. 2.41% and 1.66% vs. 1.55%, showing declining or inferiority of nonmerging CAs after mergers. That is, a positive effect of mergers. But, gross earnings margin to total assets (12) comparisons are 0.73% vs. 0.85% for merging and non-merging CAs after mergers. These are significantly different, indicating a relative negative effect of mergers. To sum up, there is a rather positive effect of mergers on cost related ratios.

Column (E) shows a general comparison of merging and non-merging CAs. Gross earnings margin to total assets (12), 0.82% vs. 0.99%, ratio of

TABLE IV A YEARLY COMPARISON OF MERGING AND NON-MERGING CAS BEFORE AND AFTER MERGERS (27 Samples)

Financial ratios	Stat.	1 Year			2 Years			3 Years			4 Years			5 Years		
(7) Tax ratio	Mean	-0.00		-0.01	0.00		-0.01	0.00		-0.01	0.00		-0.01	-0.01		-0.00
	S.D.	0.18	c	0.07	0.17	c	0.07	0.15	c	0.06	0.14	c	0.07	0.14	c	0.06
(10) Yield on	Mean	0.40		0.37	0.42		0.15	0.34		0.09	0.26		0.05	0.17		0.04
total assets	S.D.	1.95		1.81	1.92	a	1.38	1.77	c	1.18	1.56	c	1.06	1.56	c	0.98
(12) Gro. ear. mar	Mean	-0.02		-0.10	0.02		-0.12	0.00		-0.11	-0.02	a	-0.12	-0.11		-0.13
to total assets	S.D.	0.45		0.41	0.44		0.31	0.41		0.38	0.38		0.37	1.00	c	0.36
(13) Net equity	Mean	0.27		-0.03	0.38		-0.29	0.32	c	-0.41	0.28	c	-0.48	0.22	c	-0.51
ratio	S.D.	2.00		2.10	1.84		1.71	1.72		1.52	1.52		1.41	1.63	a	1.34
(14) Loan-deposit	Mean	4.87		5.17	5.92		2.67	5.48		1.68	4.09		1.13	2.75		0.91
ratio	S.D.	25.22		23.60	24.93	a	17.99	23.37	c	15.72	20.64	c	14.59	20.44	c	13.86
(19) Deposit per	Mean	-315		-200	-318		-285	-288		-327	-264		-354	-263		-354
exp. to income	S.D.	1,174		1,510	1,076	a	1,518	1,005	c	1,549	940	c	1,571	901	c	1,617
Classification Accuracy by Discriminant Analysis		68.52 %			62.04%			67.28 %			68.06 %			67.41 %		

1) a, significant at 5% level, b, 1% level and c, 0.1% level.
2) S.D. is standard deviation. A unit of (19) is thousand yen, the rest are %.

current expense to current income (15), 88.02% vs. 85.53%, and deposit per office (17), Y 4,148 million vs. Y 4,934 million, have statistically significant differences. They indicate superiority of financial characteristics of non-merging CAs.

V ANALYSIS BY THE RELATIVE FINANCIAL RATIOS

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

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

d_{ijk} : relative financial ratio k (k = 1, ... , 19) of (i = 1,...,27) CA at the jth (j = 1966,...,1986)

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

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

TABLE IV presents the comparison of these relative financial ratios from one year up to five years before and after mergers with 27 samples of mergers. There are two ratios, gross earnings margin to total assets (12) and net equity ratio (13) and they are statistically different. The gross earnings margin to total assets (12) are -0.02% vs. -0.12% for merging and non-merging CAs with a significant difference at 5% level four years before and after mergers. This is lower after mergers and the same trend can be observed in the other four comparisons without significant differences. This indicates rather negative effect of mergers. The net equity ratio (13) gave significant differences three, four and five years before and after mergers with the values of 0.32% vs. -0.41%, 0.28% vs. -0.48% and 0.22% vs. -0.51%, respectively before and after mergers. This means negative effects of mergers.

As far as the standard deviations are concerned, tax ratio (7) has lower values after mergers with statistically significant differences for all comparisons from one to five years showing stabilizing effect of mergers. Same stabilizing effect is observed in cases of yield on total assets (10) and loan-deposit ratio (14) with statistically significant differences from two to five years comparisons. Conversely, deposit per association's member (19) has destabilizing effect by mergers with significant differences from two to five years comparisons.

The lowest row of TABLE IV presents the classification accuracy of discrimination from one to five years before and after mergers by the relative financial ratios. The highest accuracy 68.52% is obtained one year before and after mergers and the lowest; 62.04% two years before and after mergers. This supports the previous results provided by the univariate analysis.

VI CONCLUSION

The bigger sample (27 mergers) shows that there are positive effects of mergers on those cost

related ratios such as expense ratio, personnel expenses ratio, non-personnel expenses ratio, and deposit-cost ratio, but negative effect on ratio of current expense to current income and gross earnings margin to total assets. But a rather positive effect on income ratio after tax was found. Therefore mixed effect of mergers, as a general trend, could be observed those upon financial ratios.

By dividing a bigger sample into two groups, one group of 12 mergers occurred in 1971 and another group of 15 mergers spreading for the period 1972 and 1986. The group of 12 mergers in 1971 has a negative effect of mergers on loan-deposit ratio, gross earnings margin of deposit to loan, gross earnings margin to total assets and ratio of current expense to current income. The 15 mergers samples have expense ratio, personnel expenses ratio, total assets cost ratio and ratio of current expense to current income as positively effected by mergers.

By using the relative financial ratio, namely the difference of financial ratios between merging and non-merging CAs, net equity ratio has been shown to be negative with full samples, gross earnings margin to total assets and net equity ratio have negative effect with the 12 merger samples and net equity ratio are negative with 15 merger samples. These conclusions support previous results provided by Hoshino [5]. However, there are some ratios showing positive effects depending on the data period analyzed.

General comparison of financial characteristics between merging and non-merging CAs does not give any fundamental change to the result obtained before, that is, merging CAs show rather inferior financial characteristics to non-merging CAs.

As far as the legislation and administrative guidance to facilitate mergers by the Ministry of Finance are concerned, the results of this study do not support its policy at all, contrary to the general belief that bureaucracy is to help and encourage private initiative. (See Ballon [2]).

On May 24, 1990, the president Kasahara of the National Association of Credit Associations stressed the need to establish (1) the strong business basis in order to strengthen the competitive power of credit associations, as the most important subject and (2) to progress "tie-ups and mergers among CAs" and (3) "policies of improving the image of CAs". (See Nihon Kinyu Tsushinsha [19]). What he expects from the CAs merger might not actually happen as it is contrary to the findings in this paper.

Japanese financial institutions are facing the growing threat of increasing competition both at home and abroad by the deregulation of the financial industry. If mergers intend to avoid future possible bankruptcies by believing in the theory "too big to fail", mergers are the best and quickest way to achieve bigger size. It seems that there is a general belief that "the bigger the better" in Japan. Therefore, when management does not expect strong internal rivalries after mergers, they pursue mergers to gain size and to prevent bankruptcies. These actions appears to have the support from local government and the Ministry of Finance of Japan

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APPENDIX

A LIST OF MERGING AND NON-MERGING CREDIT ASSOCIATIONS

Prefecture	Merging, Merged CAs	Period of Merger	CAs after Merger	Non-Merging CAs
(1) Shizuoka	Hamana			
	Hikisa	4/1/71	Ensyu	Fujinomiya
(2) Fukuoka	Fukuoka			
	Fukuhiro	4/1/71	Fukuoka	Onga
(3) Fukuoka	Iizuka			
	Miyata	4/1/71	Iizuka	Wakamatsu
(4) Shizuoka	Fuji			
	Yoshihara	4/1/71	Fuji	Kakegawa
(5) Gifu	Gifu			
	Ena	6/1/71	Gifu	Ogaki
(6) Aomori	Hikizen			
	Kuroishi	7/1/71	Touou	Tsugaru
(7) Fukuoka	Ogura, Kita-		Shinkita-	Kitskyushu-
	kyushuChuo	10/1/71	kyushu	Yahata
	Karita			
(8) Ishikawa	Ishikawa			
	Komatsu	10/1/71	Hokuriku	Noto
	Mikawa			
(9) Shimane	Unnan			
	Matsue	10/1/71	Simane	Kouzu
(10) Fukui	Oono			
	Katsuyama	10/1/71	Echizen	Takeu
(11)Kumamoto	Minamata		Kumamoto-	
	Ariake	11/1/71	Chuo	Kumamoto
(12) Ehime	Niihama			
	Iyo-Mishima	2/1/72	Touyo	Uwajima
(13) Hiro-	Mihara			
shima	Kouchi	4/1/74	Mihara	Tomo
(14) Fukuoka	Kurume			
	Yame	8/1/74	Chikugo	Moji
(15) Fuku-	Konahama			
shima	Ueda	8/1/74	Banyo	Sugagawa
(16) Kochi	Kochi			
	Aki	10/1/74	Kochi	Hata
(17) Osaka	Sanwa			
	Sumiyoshi	4/1/75	Sanwa	Eiwa
(18) Hyogo	Akashi, Miki			
	Kanko	4/1/75	Nissh	Himeji
(19) Tokyo	Hikari			
	Taiyo	6/2/75	Taiyo	Shiba
(20) Nara	Kouriyama			
	Narashi	9/1/75	Nara	Nara-Chuo
(21) Waka-	Minoshima			
yama	Kainan	1/4/77	Nankai	Asabuki
(22) Kagawa	Marugame			
	Tadotsu	6/1/78	Sanuki	Kannonji
	Kotohira			
(23) Gifu	Tajimi, Gitou			
	Toki, Tsu	4/1/79	Tounou	Seinou
(24) Osaka	Maioka			
	Higashi-	11/1/79	Hanna	OsakaChuo
	Osaka			
(25) Osaka	Toyo			
	Fukuri	10/1/81	Toyo	Settsu
(26) Osaka	Kishiwada			
	IzumiOtsu			
	Haruki	10/1/81	Sensyu	OsakaKosei
(27) Toyama	Himi			
	Fushiki	12/1/81	Himi-fushiki	Kamiichi
Total	60		27	27