Merger of Major Banks from the EVA Standpoint*

Kazushi Kan

Belongs to the IT System Promotion Dept. of Sumitomo Mitsui Trust Bank, Limited
Former researcher, Policy Research Institute, Ministry of Finance

Taro Ohno

The Lecturer of the Department of Economics, Management and Information Science of Onomichi City University
Former Senior Research Fellow, Policy Research Institute, Ministry of Finance

Abstract

In this paper, I have reviewed the past 20 years (from FY1989 to FY2008) of performance of the major banks in Japan and the impact of mergers of the banks from the viewpoint of EVA (Economic Value Added), one of the management indices.

As a result of my analysis, I first found that the EVA of the entire industry has been continuously negative except for around the middle of 2000s (from FY2005 to FY2007), which means the banking sector has not earned as much profit as expected by their shareholders up to this point. Also, although many major banks implemented mergers around the year 2000, not all the mergers have achieved successful result so far from the perspectives of EVA improvement. Based also on the result of empirical analysis, one of the important factors which contributed to the positive impact of merger is increase in loan market share, and it was proven that the higher loan market share the bank has acquired after the merger, the higher EVA it has achieved.

Key Words: EVA, Bank, Merger

JEL classification: G21, G34

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I. Introduction

The Japanese banking industry has changed their style significantly after the burst of bubble economy. As far as major banks are concerned, although there were as many as 23 major commercial banks, trust banks, and long-term credit banks in the bubble period in Japan, restructuring of banking industry advanced rapidly after the announcement of the managerial integration of Dai-Ichi Kangyo Bank, Fuji Bank, and the Industrial Bank of Japan (current Mizuho Financial Group) in August 1999, with the background of international restructuring of banking sector and problems of domestic non-performing loans which were becoming more and more serious. Many people must be interested in how such merger or managerial integration affected the management of the banks.

Then EVA® (Economic Value Added)[1], has been getting attention as a new indicator to measure company management. EVA is an indicator which was developed by Stern Stewart & Co., the US consulting firm, and has been increasing its popularity in Japan since the latter half of the 1990s as a method to judge and improve company's business management practices. In this paper, I have focused on EVA and tried to analyze positive impact of mergers of banks using this indicator. Specifically, I focused on the trend of performance of major 13 banks (major commercial banks, trust banks, and long-term credit banks) for the past 20 years (from FY1989 to FY2008) and evaluate the impact of the mergers of banks.

Evaluation of mergers of course must be made in a comprehensive manner based on the factors such as profitability, efficiency, size, and healthiness of business. In this paper, however, I expressed my opinion only based on one of the indicators which is EVA, and I hope I can present new aspect of evaluation on this matter. I think it is particularly meaningful to measure the impact of merger of banks by using EVA, if I do it based on the result of studies performed in the past. The studies on the impact of mergers performed in Japanese financial industry include the ones performed by Tachibanaki and Haneda (1999), Kobayashi (2003), Okada (2007), Sakai, Tsuru, and Hosono (2009), and Hosono, Tsuru, and Sakai (2009). The subject of the study by Tachibanaki and Haneda (1999) was mergers of 5 major commercial banks occurred between 1967 and 1996, and it concluded that the mergers have produced little positive impact according to the evaluation based on such factors as financing cost, stock prices, profitability, and productivity. Kobayashi (2003) analyzed the merger of 6 major banks announced from 1997-1999 and measured the stock market's response to the merger and managerial integration, and also studied on the nature of merger and effect on other banks. He found, based on his research, that two major mergers in which large-scale major commercial banks were involved had a big impact on the stock prices of other major commercial banks and trust banks. Okada (2007) analyzed the mergers of major commercial banks occurred from

[1] EVA is a registered trade mark of Stern Stewart & Co. The symbol of trademark is omitted after this.

1989 to 2000 to review changes in profitability and efficiency as well as reaction of the stock and credit derivatives markets, and presented that although a merger does not contribute to the improvement of profitability and efficiency, it had certain positive impact such as increase in stock prices and lower possibility of bankruptcy. Sakai, et al. (2009) analyzed Shinkin Bank (credit union)' s mergers that occurred from 1984 to 2002 to review both the causes for and the positive impact of the mergers. As for the positive impact of the merger, it was confirmed that the profitability increased in the latter half of the 1990s due to improved efficiency of business environment and increase in market share. Also, Hosono et al. (2009) analyzed mergers of major banks, regional banks, and Shinkin Banks to review both causes for and positive impact of the merger. It was confirmed that, in regard to the positive impact of the mergers of major banks, it took significant amount of time for banks to achieve benefit of a merger both in terms of revenue and expenses, and they tended to apply stricter criteria for evaluation of bad loans after the merger[2].

Based on the results of the studies stated above, it can be said that major banks in Japan have not achieved clear increase in their revenue after their merger, but this conclusion may depend on the nature of analysis. The nature of analysis presented in this paper is, first (as stated above), I used EVA for the analysis, as opposed to historical researches that mainly used ROA and ROE as indicators to measure revenue. The EVA used in this paper is a level-index, and therefore it makes it possible to measure the size of revenue. Actually, the reasons for the mergers of Japanese major banks that occurred one after another around 2000 were to increase their corporate strength required for write-off of bad loans and to increase the size of the company to increase international competitiveness. It is therefore considered to be meaningful to review EVA which is focused on the size of revenue. Second, in this paper, I have analyzed positive impact of merger which is reflected on EVA of each bank. Naturally, some banks experienced positive impact and some did not, and the time on which the positive impact became apparent differs according to the bank. Therefore, the right approach seems to be that the banks which have experienced the positive impact of merger are selected first, and then the factors which made this possible are identified.

Structure-wise, in the Section II, I will explain what is EVA, and then present the trend of EVA of the entire major bank industry in Japan for the past 20 years. In the Section III, I will

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[2] These researches on the impact of merger can be classified into three types, if categorized according to the type of analytical method. The first method is to recognize changes before and after the merger, by using the approach similar to the Difference-in-difference method. Tachibanaki and Haneda (1999) used this method for calculating cost of capital, while Sakai et. al (2009) and Hosono et. al (2009) used this for ROA, Expense Ratio, and Bad Loan Ratio. The second method is the use of event study approach. Tachibanaki and Haneda (1999), Kobayashi (2003), and Okada (2007) used this method to measure abnormal returns of stock prices at the point of merger. The third method is simply to make a graph of the trend of indicators. Tachibanaki and Haneda (1999) used this for ROA and ROE, and Okada (2007) used this for ROA in reviewing changes before and after the merger.

review the trend of EVA for each bank for the past 20 years. At the same time, I try to identify the factors which realized positive impact by checking if the positive impact of a merger is reflected into the EVA. In the Section IV, I will use a regression analysis to analyze the positive impact of a merger based on the insights I learned from the Section III. The conclusion of my analysis is stated in the Section V.

II. EVA

II-1. Characteristics of EVA

EVA is an indicator developed by the Stern Stewart & CO., the consulting company of the U.S., and is increasingly used by the companies in Japan as well as in the States and Europe as an indicator for judgment of their own business performance and matters that require improvement[3]. It is also used in the banking industry.

Although the original purpose of EVA is to use it as an indicator to identify what is required to improve business performance of the own company, it is also useful in comparing strength of various companies.

EVA has two major characteristics; first, it presents the difference between the revenue earned by the company's (main) business and the profit desired by the investors, by subtracting cost of capital from the profit (operating profit and current profit). Second, it focuses on the amount of profit the company achieved through their main business, and the net value it generated, with the adjustment on the profit. While cash flow and residual profit is calculated based on net profit, EVA is based on operating profit or current profit and therefore variation of extraordinary gain and loss are eliminated. Also, by using the adjustment items (as explained in the Section II-2), increase/decrease in profit (unreal profit) which was generated by application of financial system is adjusted. After eliminating ups and downs caused by the factors other than main business, and further subtracting cost of capital, how much profit is generated by the main business of the company is measured against the level of profit desired by the investors. This is EVA.

Therefore, EVA is a profit which remains even after the profit desired by the shareholder is subtracted, which is therefore excess profit. If a company (or business) is achieving higher profit than expected by the shareholders, EVA is positive. On the other hand, if the profit achieved by the company is lower than what is expected by the shareholders, EVA is negative. Therefore, even if the EVA is negative, it does not necessarily mean the company's business situation is deteriorating. It must be noted that positive/negative figure of EVA is different from

3 According to Ito (2001), companies such as Sony, Kao, HOYA, Panasonic Electric Works (now merged into Panasonic), TDK, Panasonic, and Orix has introduced EVA.

net profit/loss reported in the customer's financial statement.

EVA is useful in evaluating the corporate value by an absolute number. It can compensate the disadvantages of the analysis of corporate value using the profit ratio such as ROA. The disadvantages include:

(1) The profit ratio can increase significantly by reducing the amount of total capital.
(2) Companies not so large and focusing on highly profitable business tend to present higher profit ratio as compared to larger companies operating variety of businesses

On the other hand, EVA has its own disadvantages.

(1) Adjustment items are not fixed, and therefore tend to be arbitrary
(2) Calculation of the cost of capital tend to be arbitrary

In this paper, I have responded to these issues as follows. As to the first point, as explained in the Section II-2, I have adopted minimally required adjustment items (two items), and for the second point, I have used the same capital cost (rate) for all banks.

II-2. EVA calculation

In this paper, I have calculated EVA of the so-called major banks (major commercial banks, major trust banks, and long-term credit banks) for each year from FY1989 to FY2008, by using the following (1)

$$\text{EVA} = \text{NOPAT} - \text{Invested Capital} \times \text{Cost of Capital} \tag{1}$$

$$\text{NOPAT} = \text{Current Profit} - \text{Tax} \pm \text{Adjustment Items}$$

$$\text{Cost of Capital} = \text{Risk Free Rate} + \beta * \text{Risk Premium of Equity}$$

In calculating EVA of banks, there are some points that must be noted. First, NOPAT (operating profit after tax) is calculated based on operating profit in EVA analysis of ordinary companies. On the other hand, in terms of banks, their source of income is the difference between interest on loans and interest on deposits (i.e. debt), so the "operating profit" does not appear in their financial statements and the "current profit" is the profit they earn from their main business. Therefore, I have used the amount calculated by subtracting tax from the current profit as NOPAT.

Second, for ordinary companies, the cost of capital is calculated by multiplying the cost of capital (which is weighted average of equity and debt) by the difference between total assets and current assets. However, in the case of banks, interest paid on debt is included in current expense, so the profit has already been subtracted when the current profit is calculated. Therefore, in this paper, I have used the capital cost rate applied only to equity for cost of capital, by assuming shareholders' equity as invested capital. Also, as the amount of invested capital at the beginning of the year is used in ordinary calculation of EVA, the amount at the end of the previous fiscal year is used in my analysis.

Further, adjustment is made on the values calculated as NOPAT. As the profit reported on the financial statement has conservative nature in order to satisfy the requirements of the applicable financial standards, profit and expenses that have not actually generated are included. For example, even when credit loss has not been realized, reserves for bad loans must be booked when financial performance of company's debtor deteriorated, which increases the amount of expense on the financial statement. Also, when the debtor's credit standing is improved, reversal is made which results in profit on the financial statement. Also, if tax effect accounting is applied, profit or loss may be generated from the accounting perspectives even when there is no actual cash flow due to the difference between the accounting system and tax system. There are not profits or losses generated by actual operation of the company. EVA shows the result of business management of the financial year more accurately, and change in profit and loss which are not directly related to business activities of the company performed in the year but reported due to the accounting standards is not reflected into the figure. For adjustment, I have used only two adjustment items used by Fraker (2006) that are the following:

(1) In order to disregard changes in profit caused by provision or reversal of reserves for bad loans, calculate the profit only based on actual credit losses. To be specific, add the "Increase in reserves for bad loans = Reserves for bad loans at the end of the current year – Reserves for bad loans at the end of the previous year" to the current profit.
(2) In order to eliminate the effect of tax effect accounting, recognize only the amount of taxes actually paid as "tax". To be specific, use the "Payment of corporate income tax", one of the items of "cash flow from operations" (For the period 1989 to 1998, during which no cash flow statement exists, amount reported as "Tax" in the company's balance sheet is used).

Incidentally, in order to analyze how profit is generated by each bank, I have classified NOPAT into three portions that are "Tax", "Operating Expenses" (that are mainly personnel costs and lease fees of real estate and buildings), and other parts that mainly consist of profit from difference in interest rates and commissions/fees ("Current Profit + Operating Expenses + Increase in Reserves for Bad Loans", hereinafter the "Profit from Financial Resources"). Then, the adjusted EVA is calculated by the following (2).

EVA
= NOPAT – Invested Capital * Cost of Capital
= Current Profit + Increase in Reserves for Bad Loans – Tax
– Invested Capital * Cost of Capital
= (Current Profit + Operating Expenses + Increase in Reserves for Bad Loans)
– Operating Expenses – Tax - Invested Capital * Cost of Capital)
= Profit from Financial Resources – Operating Expenses – Tax
– Invested Capital * Cost of Capital (2)

In the following sections of this paper, I have used the calculation formula presented as (2) (the 5th formula above).

II-3. Data

The data about each bank's performance from FY1989 to FY2008 are based on the balance sheets, income statements, and cash flow statements published for each bank by the Japan Bankers Association[4].

As consolidated financial statements did not exist up until 2005 and no figures were available for shareholders' equity, the total amount stated in the section "equity" is used for this period. As for risk free rate, the interest on 10-year Japanese government bond (average of the values as of the end of each month for each year) is used, while β was set as 1.15 and 4% was applied as risk premium rate.

II-4. Trend of EVA of the entire major banks

The Graph 1 shows the trend of EVA of the entire major banks. It shows that performance of the banks significantly changes in accordance with economic climate of Japan. At the beginning of Heisei era (1989 and some following years), business performance of banks deteriorated in line with the declined economic climate of Japan after the burst of bubble economy. Also, the EVA plummeted in 1998 when the financial crisis occurred due to bankruptcies of several major financial institutions, and in 2002 after the burst of IT bubble economy. On the other hand, they were reporting high profit in 2005 to 2007, in the midst of economic boom worldwide. Still, it can be said that the EVA of the entire banking sector was generally negative. This shows that the banking industry was not able to achieve the profits as expected by their shareholders. Part of the reasons for this situation, of course, are long-term

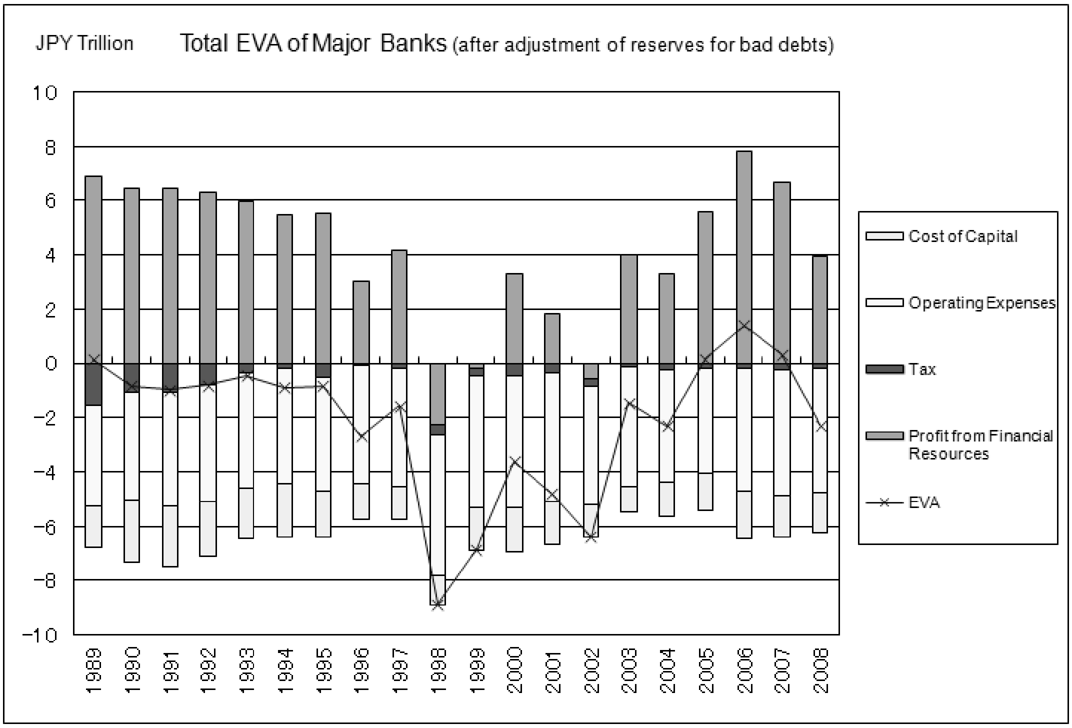
[4] Data are available on the Japan Bankers Association's website (http://www.zenginkyo.or.jp/stats/year2_02/index.html) or (for the years not available on the website) presented in the paper "Analysis on the Financial Statements of Japanese Banks".

economic slump and lower interest income due to prolonged super low interest policy of the government.

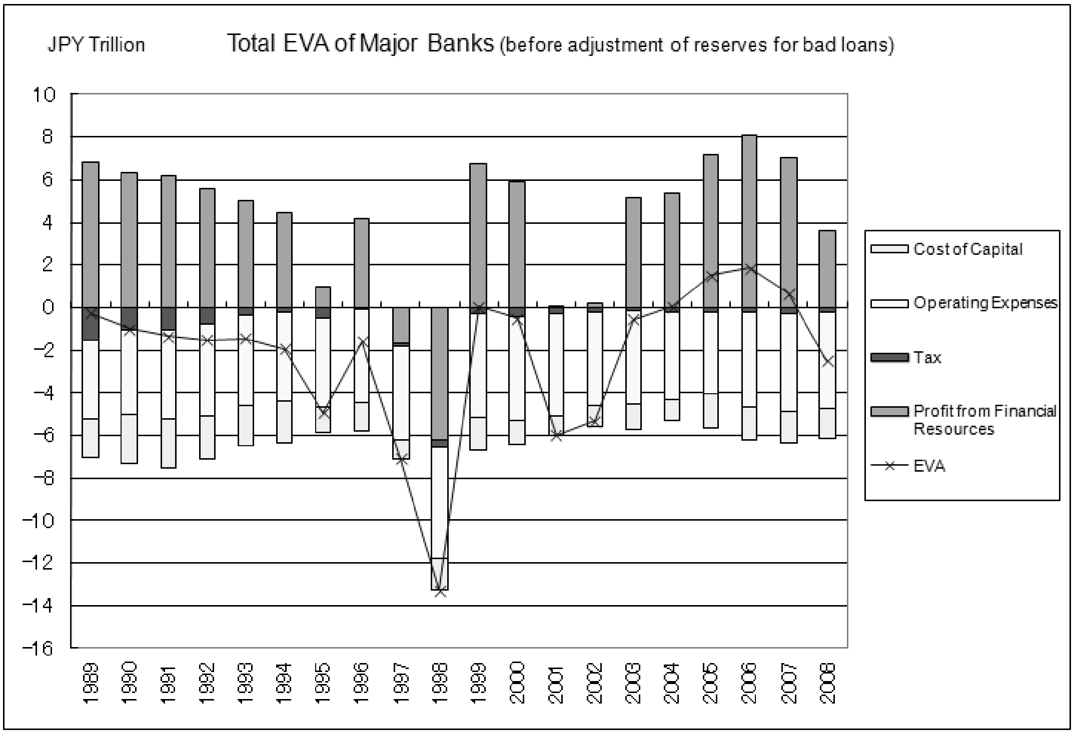
In terms of the specific items constituting EVA, the amounts of "Cost of Capital" and "Operating Expenses" are not very high throughout the period. Larger amount of "Tax" is paid in economic boom as compared to the period of slowdown, which means Tax has played a role of shock absorber to some extent. On the other hand, "Profit from Financial Resources" has fluctuated much, being the biggest factor in EVA fluctuation.

I also would like to confirm the importance of adjusting the impact of bad loan reserve in calculating banks' EVA (among the two adjustment items mentioned). Graph 2 shows the trend of EVA without adjustment of reserves for bad loans. If you compare Graph 1 and 2, you must notice that Profit from Financial Resources in Graph 2 (before adjustment) were high in 1999 and 2000 due to reversal of reserves for bad loans. On the other hand, in Graph 1 (after adjustment), as a result of the adjustment of Profit from Financial Resources, fluctuation of EVA was more moderate than that of Graph 2. This shows that net profit of the financial statement of banks in 1999 and 2000 was pushed up by the gain produced by reversal of reserves for bad loans. Also, such adjustment can reduce the impact on profit by the accounting standards applied.

Graph 1. Total EVA of Major Banks (after adjustment of reserves for bad loans)



Graph 2. Total EVA of Major Banks (before adjustment of reserves for bad loans)



III. Trend of EVA of Each Bank

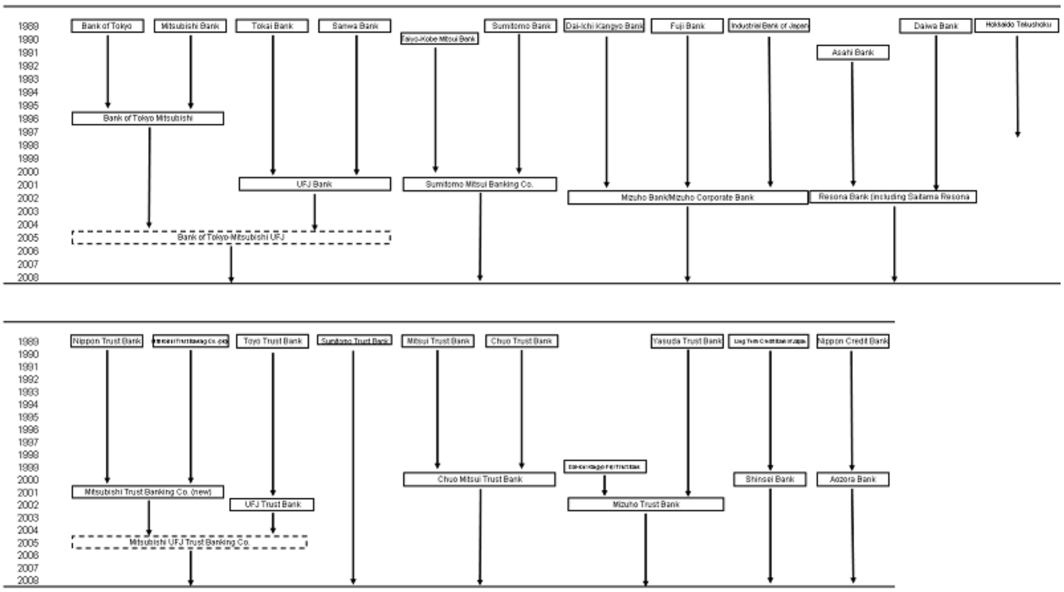
In this section, I have analyzed the trend of EVA of major 13 banks (consisting of major commercial banks, trust banks, and long-term credit banks)[5]. I have also reviewed the trend of Expense Ratio, Bad Loan Ratio, Loan Market Share, and Deposit Market Share, to analyze their relations with EVA.

In regard to the method of calculating each indicator, the “Expense Raio” is calculated by

5 The 13 banks are, the Bank of Tokyo Mitsubishi (former Mitsubishi Bank and Bank of Tokyo), the UFJ Bank (former Sanwa Bank and Tokai Bank), the Sumitomo Mitsui Banking Corporation (former Sumitomo Bank and Sakura Bank), the Mizuho Bank and Mizuho Corporate Bank (former Dai-Ichi Kangyo Bank, Fuji Bank, and the Industrial Bank of Japan), the Resona Bank (the Daiwa Bank and Asahi Bank), the Hokkaido Takushoku Bank, the Mitsubishi Trust & Banking Corporation (former Mitsubishi Trust & Banking Corporation and Nippon Trust Bank), the UFJ Trust Bank (former Toyo Trust Bank), the Sumitomo Trust Bank, the Chuo Mitsui Trust Bank (former Mitsui Trust Bank and Chuo Trust Bank), the Mizuho Trust Bank (former Yasuda Trust Bank and Dai-Ichi Kangyo Fuji Trust Bank), the Shinsei Bank (former Long-Term Credit Bank of Japan), and the Aozora Bank (former Nippon Credit Bank). In analyzing the impact of merger in this paper, I focused on only one merger made by each bank, and therefore analysis of the Bank of Tokyo-Mitsubishi UFJ and the Mitsubishi UFJ Trust and Banking Corporation are not included in the scope of this paper. The values before merger is the total of those of banks merged.

dividing operating expenses by ordinary revenue. The "Bad Loan Ratio" is claculated by dividing the amount of bad loans disclosed under SESC (Securities and Exchange Surveillance Commission) standards by total amount of loans[6]. Further, the "Loan Market Share" was calculated by dividing loans provided by the bank by the total amount of loans provided by major banks, and the "Deposit Market Share" was calculated by dividing deposits made with the bank by the total amount of deposits made (with the major banks). The deposits here consist of deposits recorded in the balance sheet, negotiable deposits, and receivables (i.e. the total amount sourced from retail and corporate customers of the bank). These indicators are all based on the data of balance sheets and income statements of each bank disclosed on the website of Japan Bankers Association.

Table 1. Mergers of Major Banks (Major Commercial Banks, Trust Banks, and Long-term Credit Banks)



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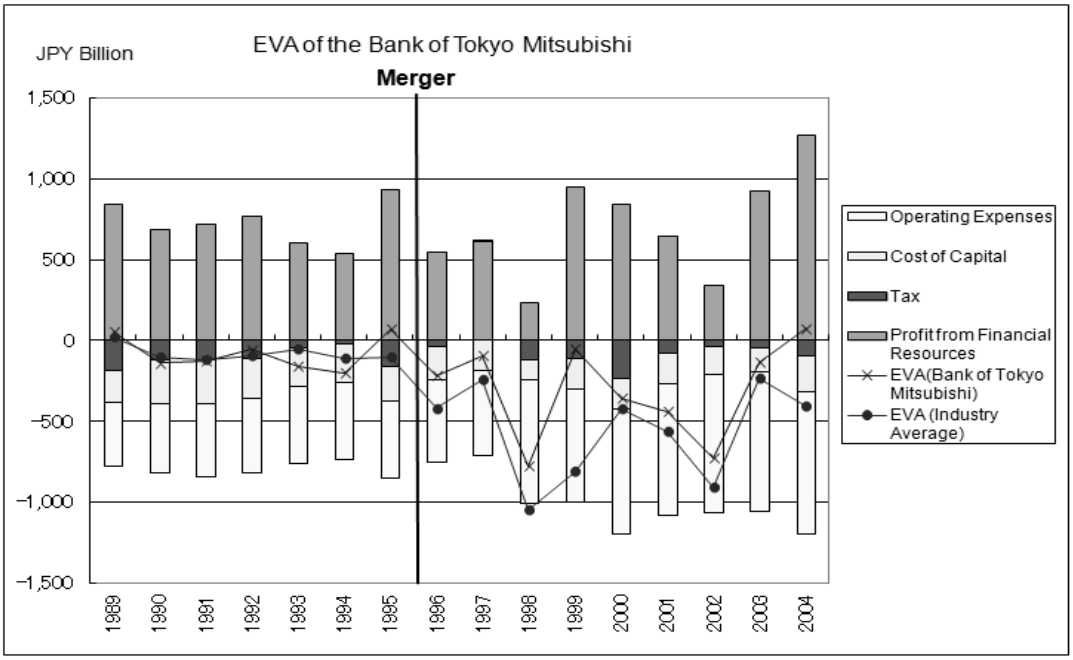
[6] Definition of "bad loans disclosed under the SESC standards" has changed frequently. In the period from 1992 to 1994, the subjects of disclosure were only "the amount of uncollectible loans" and "the amount of delinquent loans", which were added by "the amount of delinquent loans for 3 months or longer" in 1995, and further added by "the amount of rescheduled loans" in 1996, and therefore 4 types of bad loans must be reported currently. Also, with the introduction of Financial Reconstruction Program around 2002 which imposed stricter standards on bad loans, the Bad Loan Ratio of major banks increased significantly in that period

III-1. The Bank of Tokyo Mitsubishi (former Mitsubishi Bank and Bank of Tokyo)

While the banks' EVA was close to the industry average before the merger[7], the EVA after the merger has been above the industry average continuously. The EVA of the Bank of Tokyo Mitsubishi did not deteriorate after the merger and the bank recorded net profit which is a little bit higher than the average, and EVA has always been above the average. The Profit from Financial Resources have always been positive also.

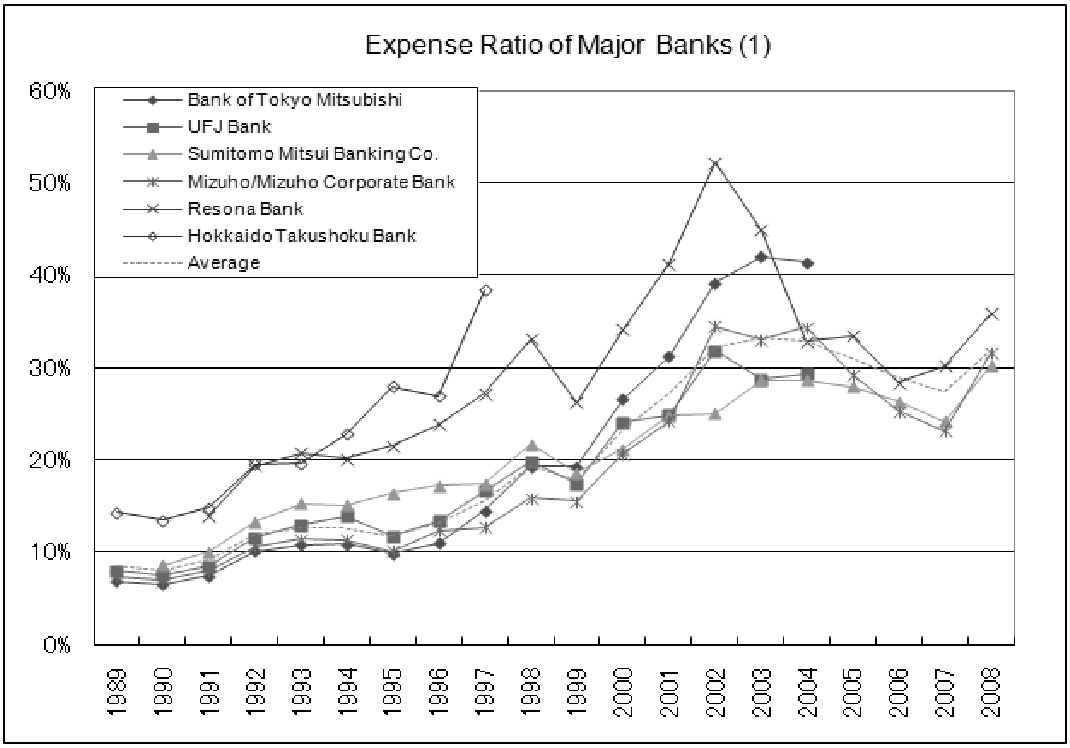
On the other hand, the Expense Ratio has increased since the merger, and has been higher than the industry average since 1999. The Bad Loan Ratio has always been below industry average. Also, as compared to the industry average which peaked in 2001 and then lowered, the Bad Loan Ratio of the Bank of Tokyo Mitsubishi peaked before that (in 2000) and then has continued to decline. The Loan Market Share increased rapidly after the merger, since 2000. The Deposit Market Share is moving in the same way as Loan Market Share – it was generally stable before the merger, but picked up after the merger, in the period from 2000 to 2004 in particular.

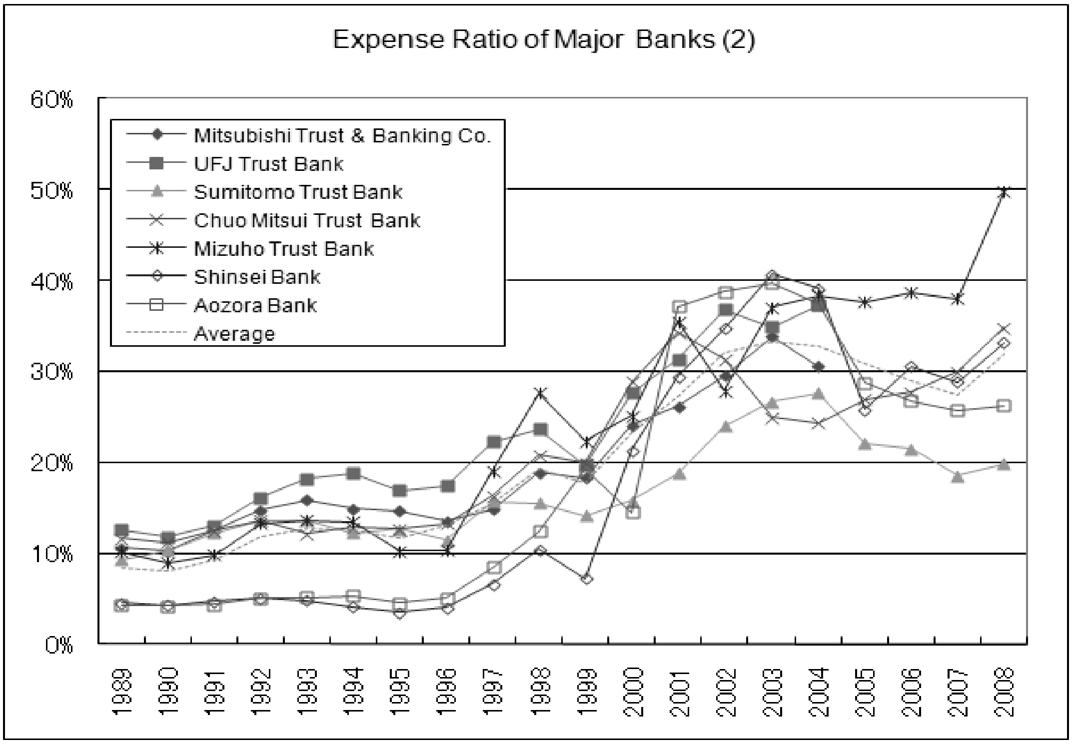
Graph 3. EVA of the Bank of Tokyo Mitsubishi



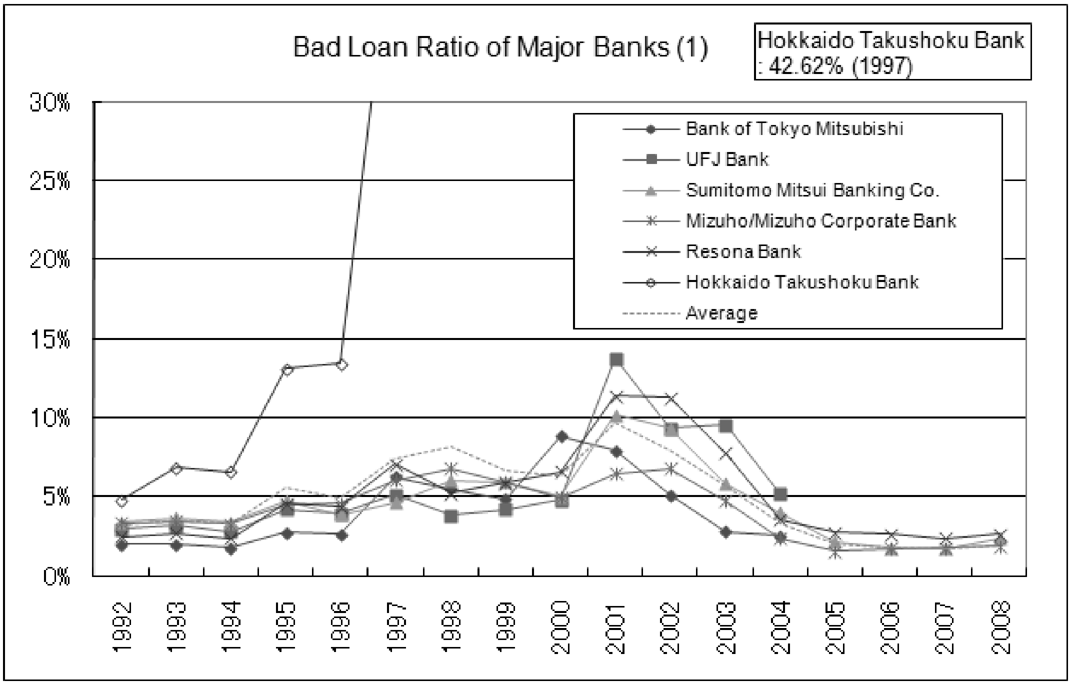
7 In this paper, the "EVA (Industry Average)" is calculated by multiplying the total EVA of the industry by the shareholders' equity % of the bank (i.e. shareholders' equity of the bank/the total shareholder's equity of industry) to reflect the size of the bank. This applies to the analysis of all banks made in this paper.

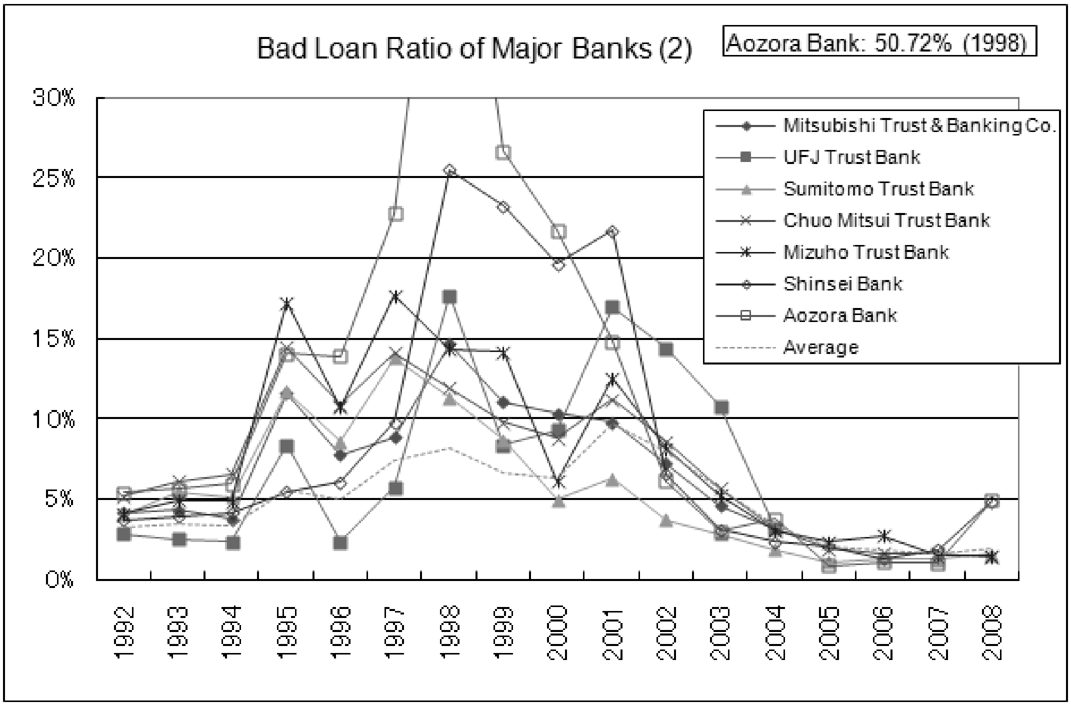
Graph 4. Expense Ratio of Major Banks



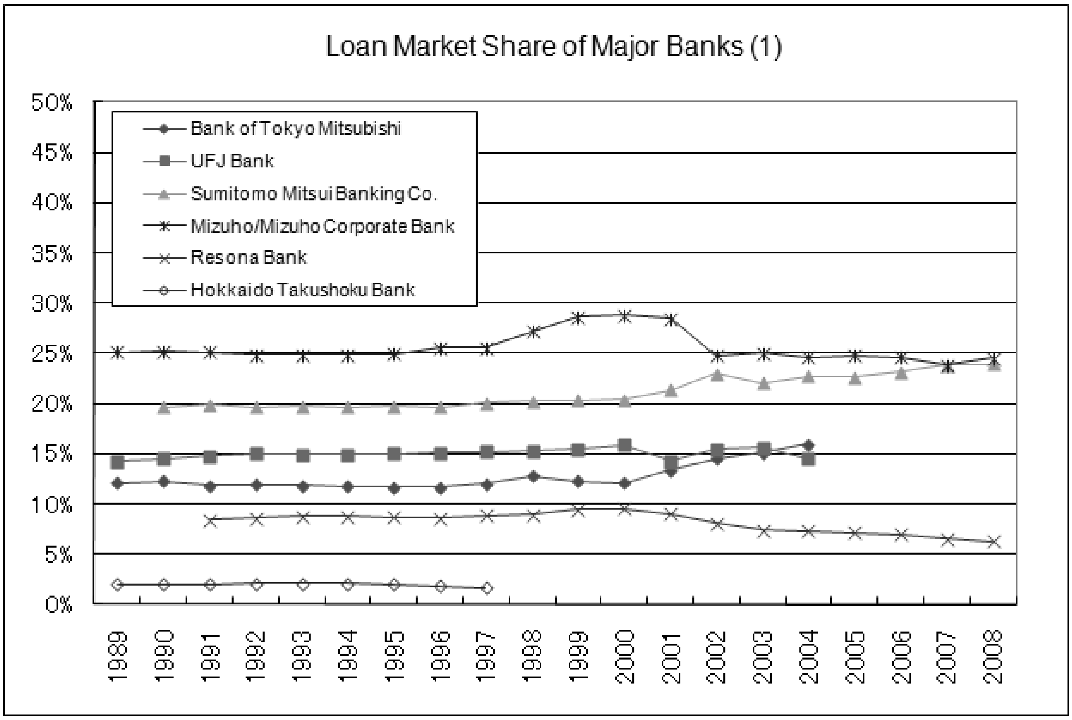


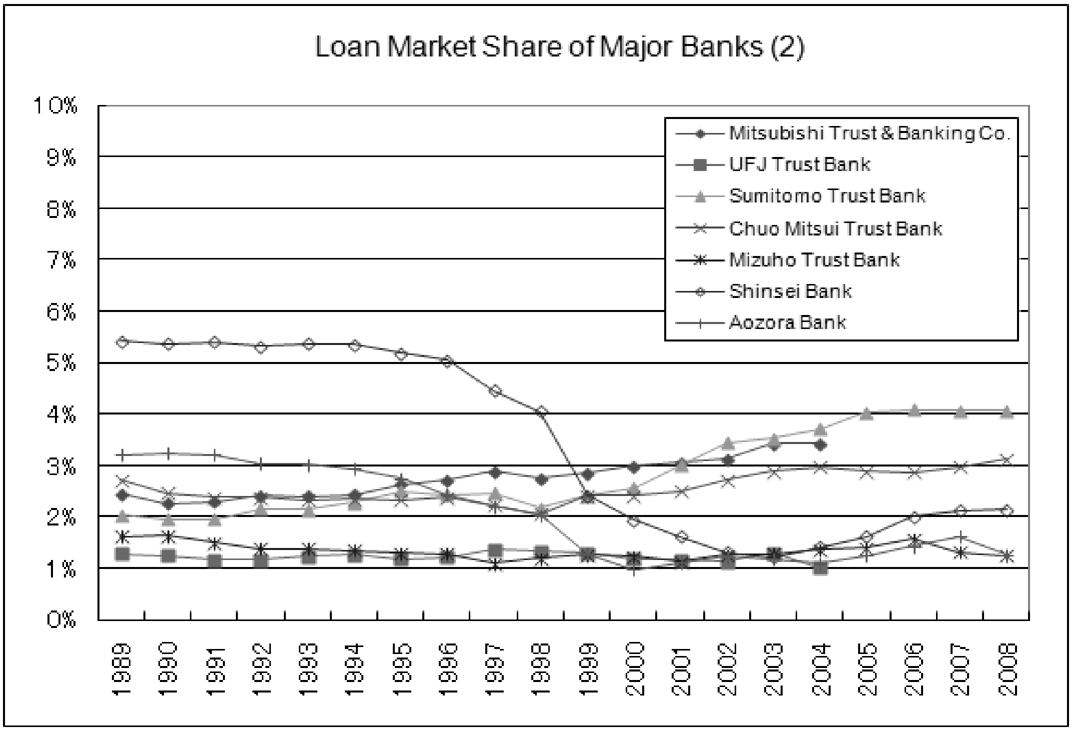
Graph 5. Bad Loan Ratio of Major Banks



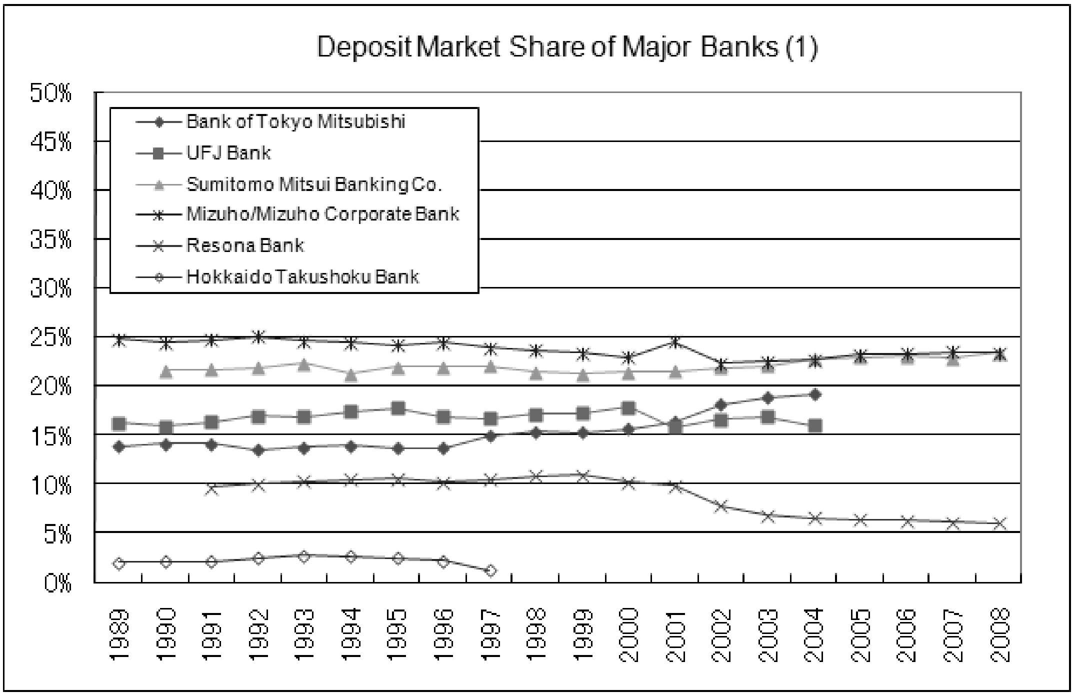


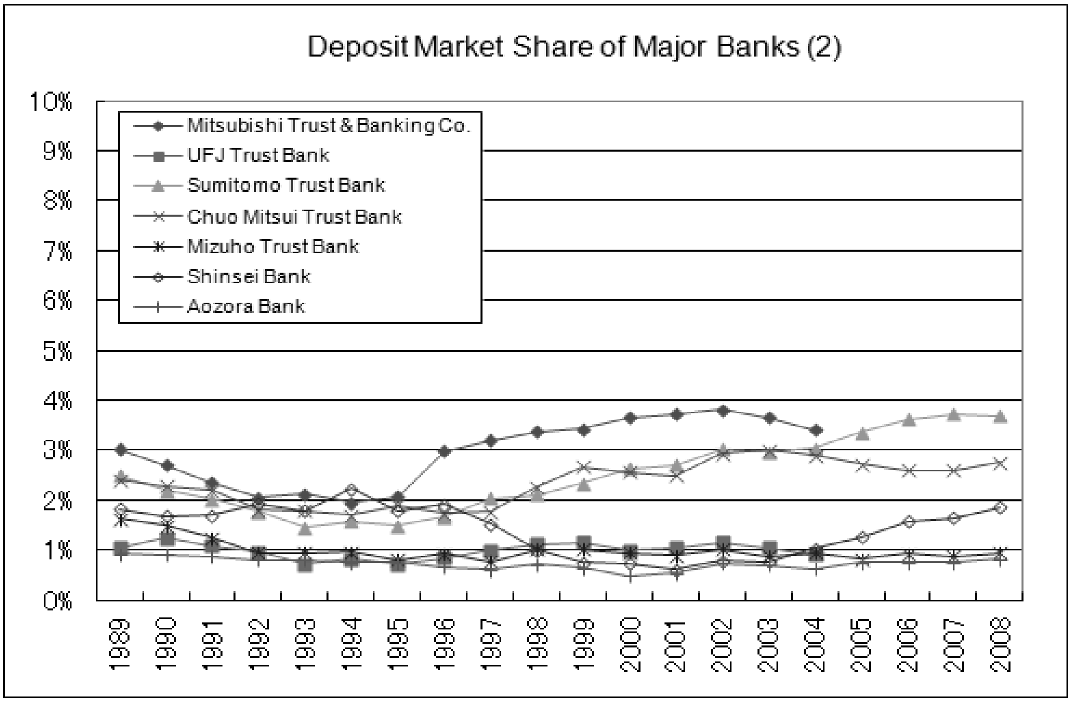
Graph 6. Loan Market Share of Major Banks





Graph 7. Deposit Market Share of Major Banks



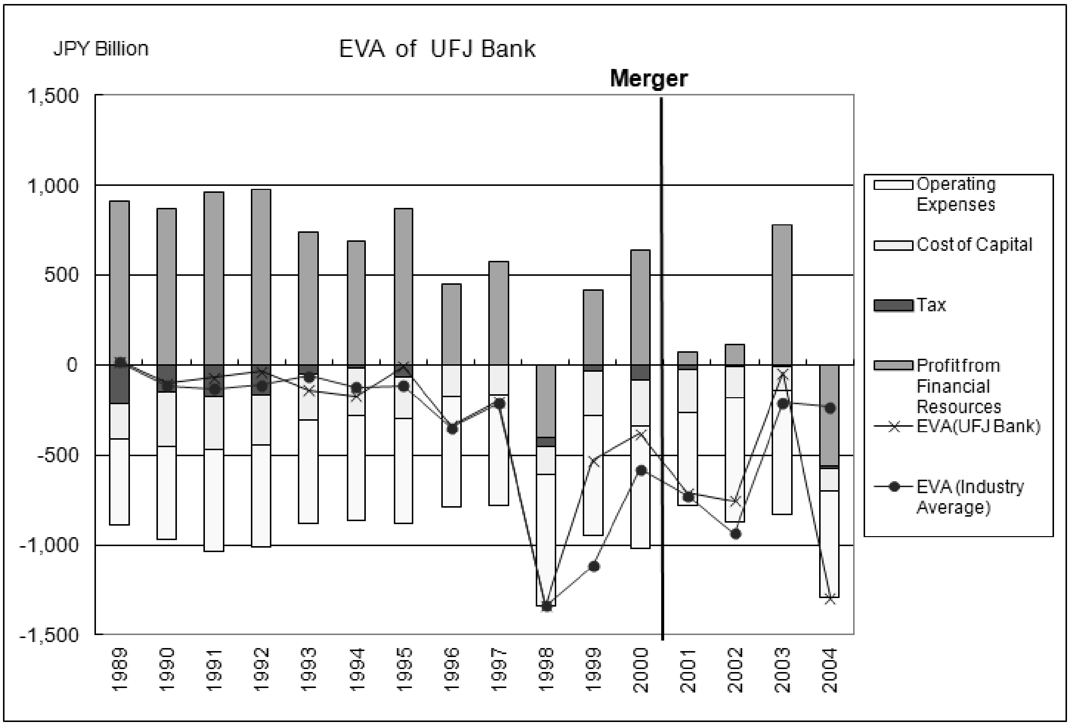


III-2. The UFJ Bank (former Sanwa Bank and Tokai Bank)

The trend of EVA shows that the Profit from Financial Resources did not grow much from 1996 (before merger) to 2004 (after merger) (in and after 1998 in particular). As a result of that, EVA was negative throughout the period, while it was close to the industry average.

The Expense Ratio has not been very high and had been close to the industry average from 1989 to 2002, both in the periods before and after the merger. In 2003 and 2004, it was lower than the average. Although the Bad Loan Ratio was lower than the industry average before the merger, it increased significantly around the time of merger (2000-2001) and then lowered towards 2004. The Loan Market Share and Deposit Market Share have been stable through the analysis period, both before and after the merger.

Graph 8. EVA of UFJ Bank

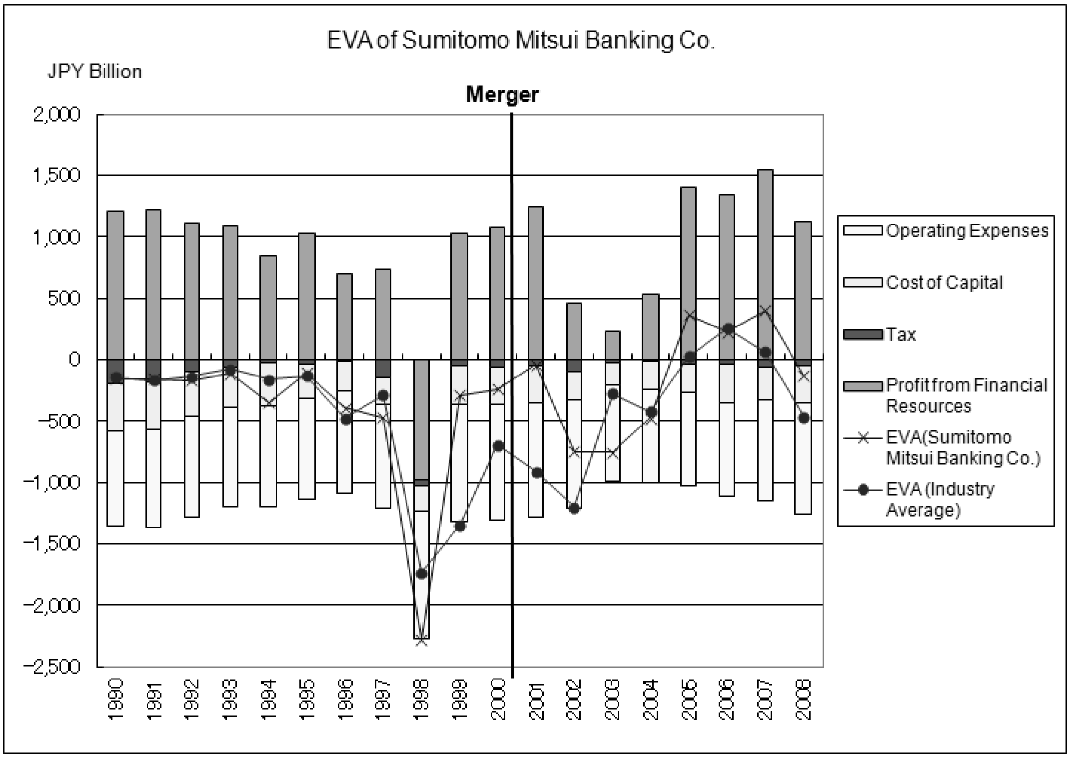


III-3. Sumitomo Mitsui Banking Corporation (former Sumitomo Bank and Sakura Bank)

The EVA of the bank plunged in 1998 (before the merger), but achieved higher level than the industry average from 1999 to 2001. Also, although the EVA of the industry average was only positive in 2006, the bank maintained it above zero for three consecutive years from 2005 to 2007. After the merger, the bank has never experienced negative Profit from Financial Resources, which means that the bank has maintained a good level of profit.

The Expense Ratio has been lower than the industry average since the merger, which is a good thing. Although the Bad Loan Ratio increased significantly in 2001 (the year of merger), it has lowered to the same extent as industry average. Both the Loan Market Share and Deposit Market Share have increased since the merger.

Graph 9. EVA of Sumitomo Mitsui Banking Corporation



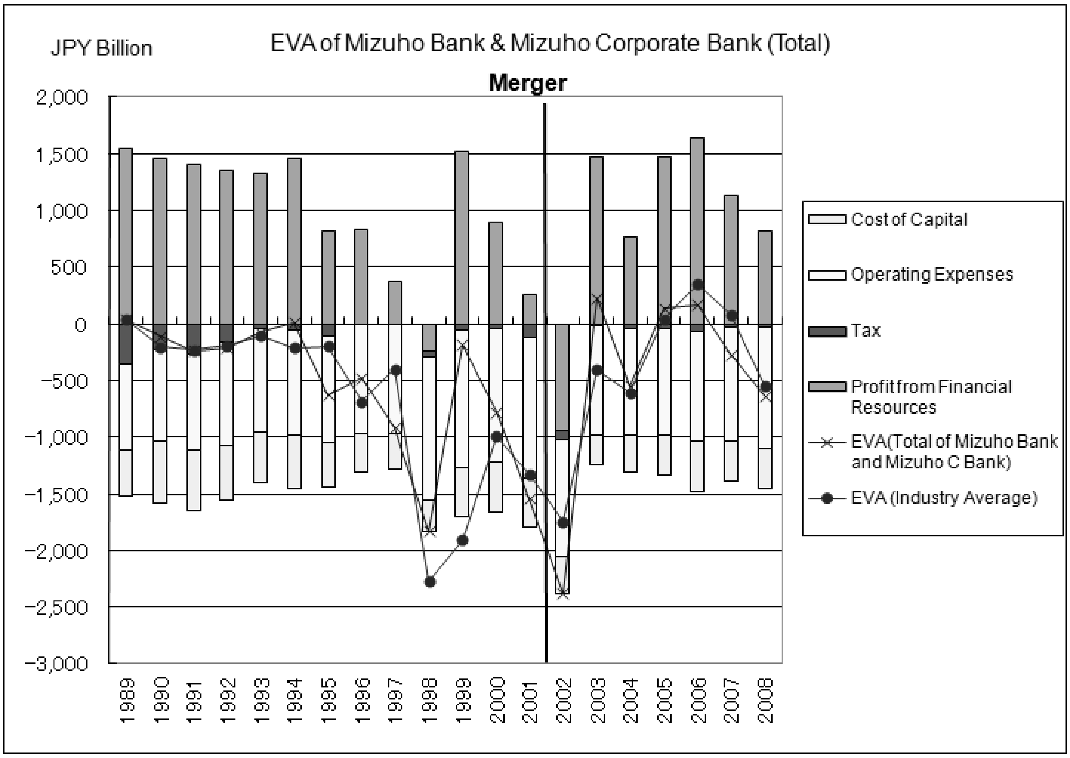
III-4. Mizuho Bank and Mizuho Corporate Bank (former Dai-Ichi Kangyo Bank, Fuji Bank, and the Industrial Bank of Japan),

As the transactions with large corporations were transferred to Mizuho Corporate Bank in this merger, the total figures of Mizuho Bank and Mizuho Corporate Bank have been reviewed here.

The trend of EVA is similar to that of industry average before and after the merger, but it is more volatile than the average. Although the companies' EVA was exceeded the industry average in 2003 (the second year from the merger), it has fallen below the average in the recent years (2006-2008).

The Expense Ratio has been below the industry average in general, both before and after the merger (except for 2002 and 2004). The Bad Loan Ratio is also at the same level as industry average or a little bit lower before and after the merger. The Loan Market Share increased towards the year of merger, but it plunged after the merger and remains stable after that. The Deposit Market Share also plunged after it went up towards the time of merger.

Graph 10. EVA of Mizuho Bank & Mizuho Corporate Bank (Total)

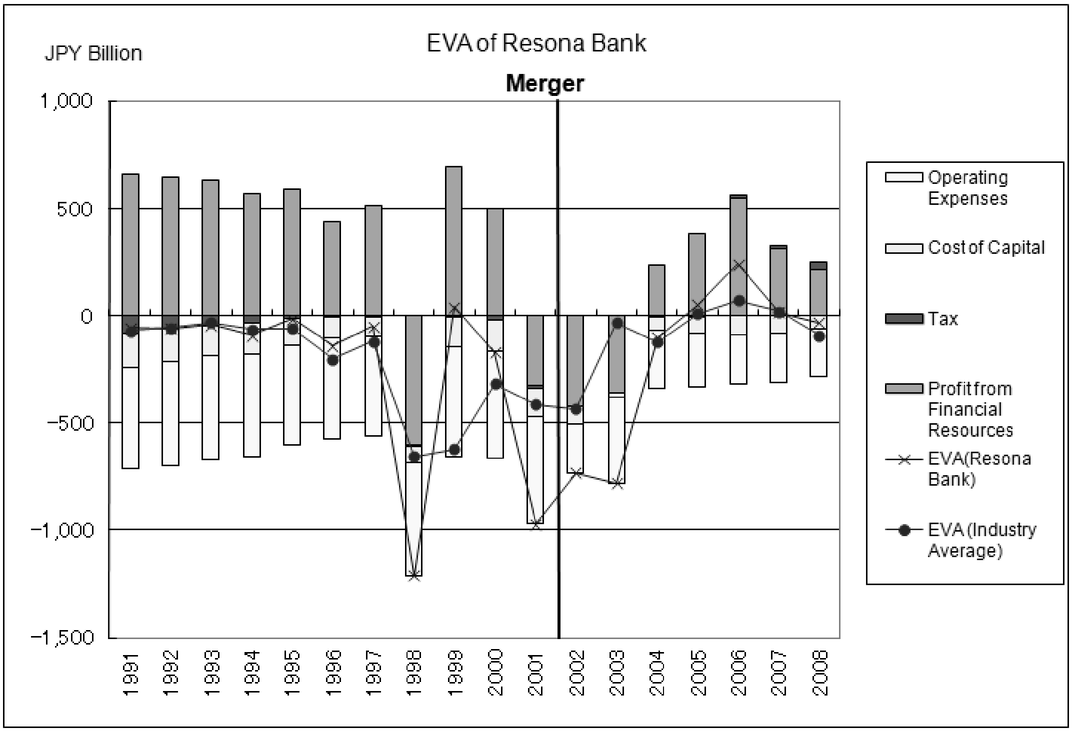


III-5. Resona Bank (former Daiwa Bank and Asahi Bank)

The EVA of the bank was much lower than the industry average in 1998 (before merger) and in 2001-2003 (around the merger). In these years, the Profit from Financial Resources was also negative. On the other hand, it has been above the industry average since 2004, the third year from the merger.

While the Expense Ratio was above the industry average both before and after the merger, but it suddenly deteriorated in 2002 and it has been on the same level as industry average since 2004. The Bad Loan Ratio was higher than the industry average from 2001 to 2003 (around the merger), but it started to go down in 2002 and it has been just above the industry average since 2004. Both the Loan Market Share and Deposit Market Share were going up before the merger, but they are on the declining trend since 1999-2000.

Graph 11. EVA of Resona Bank

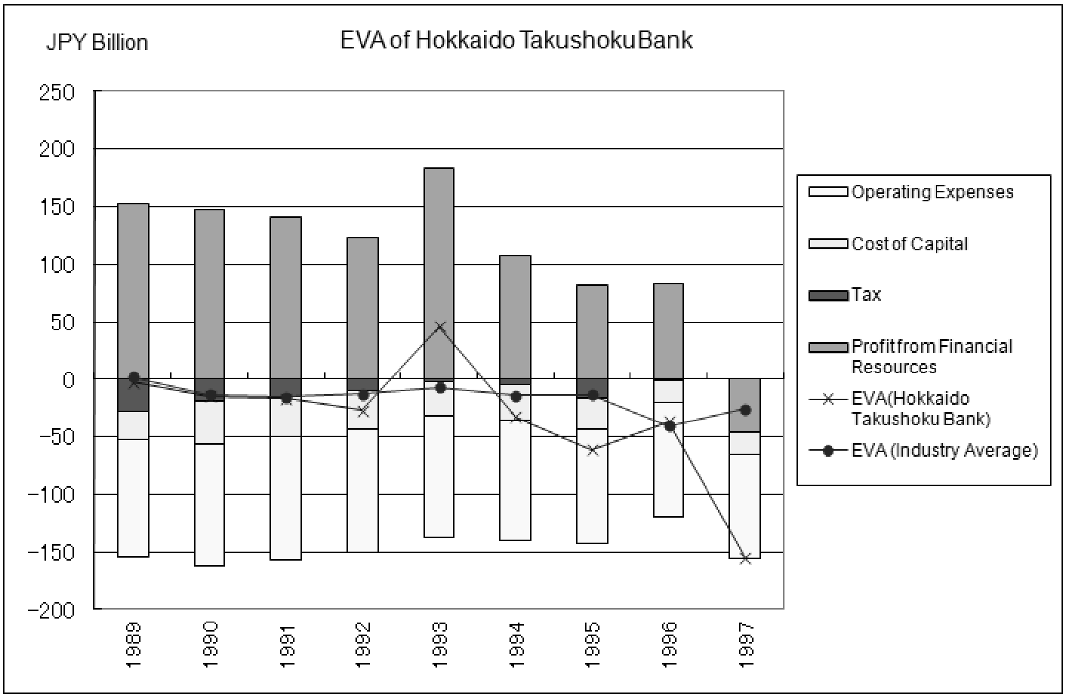


III-6. Hokkaido Takushoku Bank

The Bank's EVA has declined with gradual decline of Profit from Financial Resources since 1989.

The Expense Ratio was above the industry average before, but it went up significantly after 1993. The reason is reduced ordinary income (denominator) rather than increase in operating expenses (numerator) (actually, the operating expenses during this period reduced slightly). The Bad Loan Ratio was above the industry average before, and it started to increase significantly since 1995. On the other hand, although there was no dramatic change in the Loan Market Share and the Deposit Market Share, they slightly reduced since around 1994.

Graph 12. EVA of Hokkaido Takushoku Bank



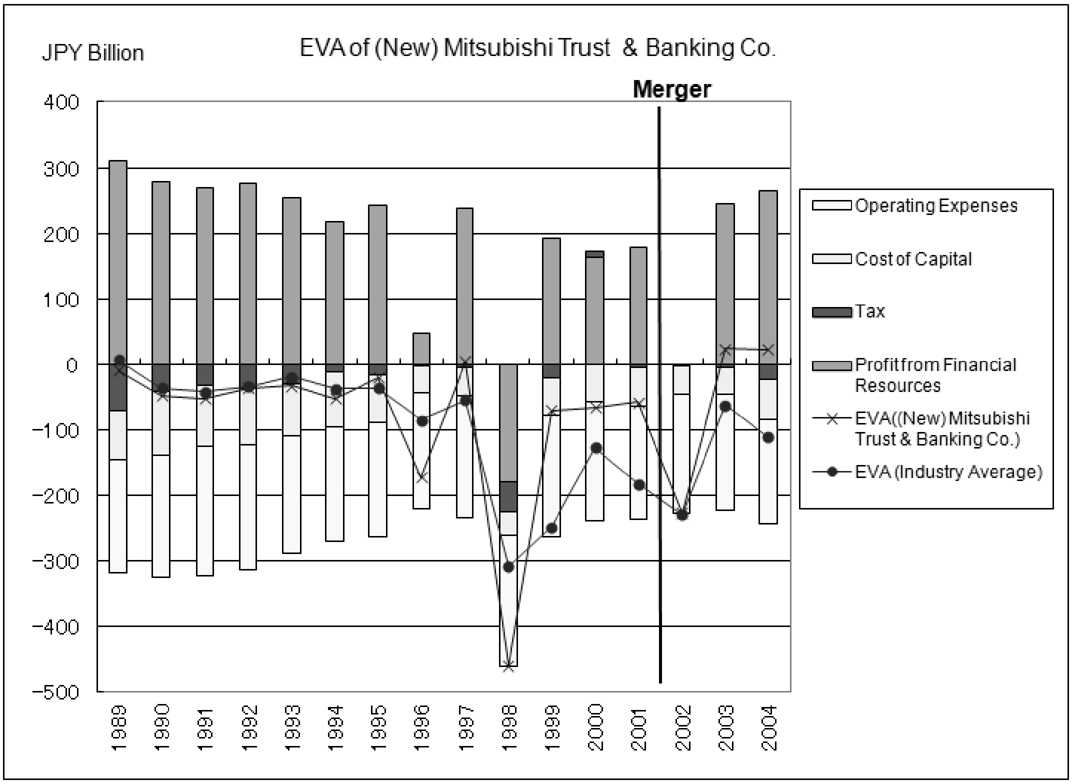
III-7. The (New) Mitsubishi Trust & Banking Corporation ((former) Mitsubishi Trust & Banking Corporation and Nippon Trust Bank)[8]

The bank's EVA has been above the industry average since 1999, both before and after the merger. Also, the Profit from Financial Resources have been maintained at high level except for several years (1996, 1998, and 2002) and no significant drop of EVA has been witnessed.

The Expense Ratio has been at the same level as or a little lower than the industry average since 1996. Although the Bad Loan Ratio was higher than the industry average before the merger, it has been at the same level as the industry average after the merger. The Loan Market Share and the Deposit Market Share both went up since the latter half of the 1990s.

[8] In order to differentiate the Mitsubishi Trust and Banking Corporation before and after the merger with Nippon Trust Bank, the one before the merger is called (former) Mitsubishi Trust and Banking Corporation and the one after the merger is called (new) Mitsubishi Trust and Banking Corporation in this paper.

Graph 13. EVA of the (New) Mitsubishi Trust and Banking Corporation

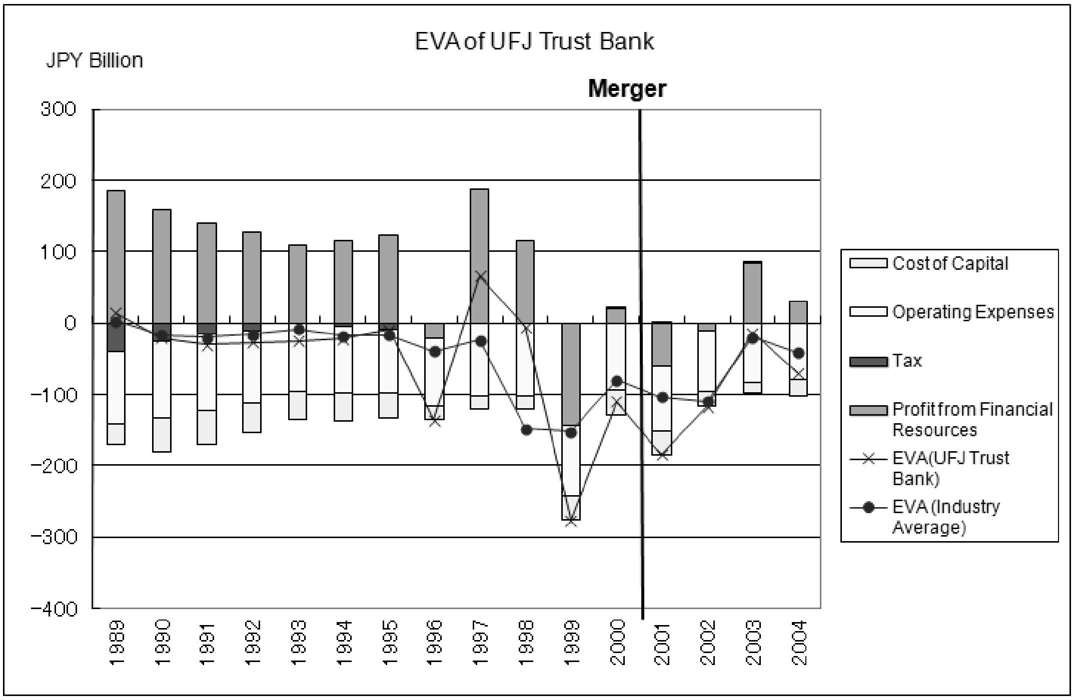


III-8. UFJ Trust Bank (former Toyo Trust Bank)

The Bank's EVA has been lower than the industry average since 1999, both before and after the merger. The main reason seems to be low Profit from Financial Resources, etc., and it is often negative.

The Expense Ratio has always been above the industry average. The Bad Loan Ratio was also high in many years, and went up significantly in 1998 and 2001. However, it suddenly went down after increase, making the overall trend very volatile. The bank has maintained relatively stable level of Loan Market Share and Domestic Market Share.

Graph 14. EVA of UFJ Trust Bank

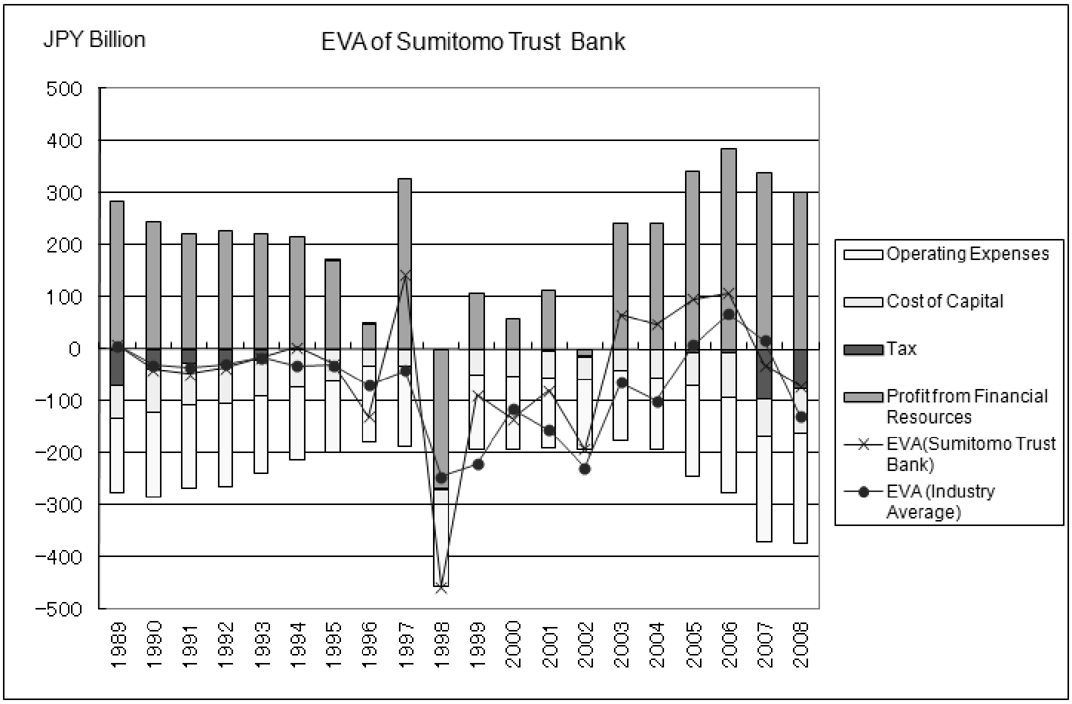


III-9. Sumitomo Trust Bank

The Bank's EVA was almost at the same level as the industry average in 1990s, but remained higher than the industry average in 2000s in general. It was significantly higher than the industry average from 2003 to 2006 in particular.

Although the Expense Ratio was a little bit higher than the industry average in the early half of the 1990s, it's been always below the industry average since 1998. While the industry average of Bad Loan Ratio recorded the highest percentage in 2001, that of Sumitomo Trust Bank peaked in 1997 and significantly lowered since 1998 and has been lower than the industry average since 2000. The Loan Market Share started to increase since the beginning of 1990s, and went up significantly from 1998. The Deposit Market Share dropped in the early half of the 1990s but it has continued to rise since the middle of the decade.

Graph 15. EVA of Sumitomo Trust Bank

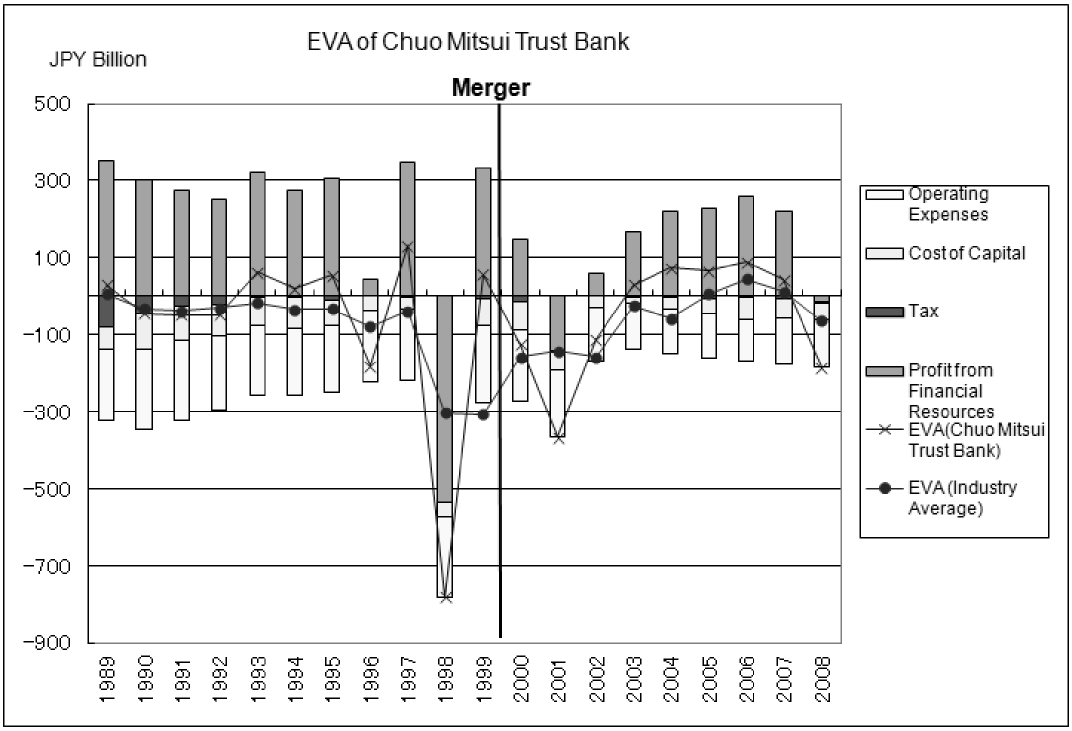


III-10. Chuo Mitsui Trust Bank (former Mitsui Trust Bank and Chuo Trust Bank),

The bank's EVA was relatively volatile before the merger and going up and below the industry average frequently. After the merger, although it was significantly lower than the industry average in 2002 and 2008, it was higher than the industry average from 2003 to 2007 with the positive figure.

The Expense Ratio was always above the industry average in 1990s but it started to go down from 2001 and had been below the industry average from 2003 to 2006. After that, it again went up and was above the industry average in 2007 and 2008. The Bad Loan Ratio had always been higher than the industry average in 1990s, but it started to go down in 2001, which is the same trend as the industry average, and has kept the same level as the industry average since 2003. Both the Loan Market Share and the Deposit Market Share declined in the early half of the 1990s, but have continued to rise since the middle of the decade.

Graph 16. EVA of Chuo Mitsui Trust Bank

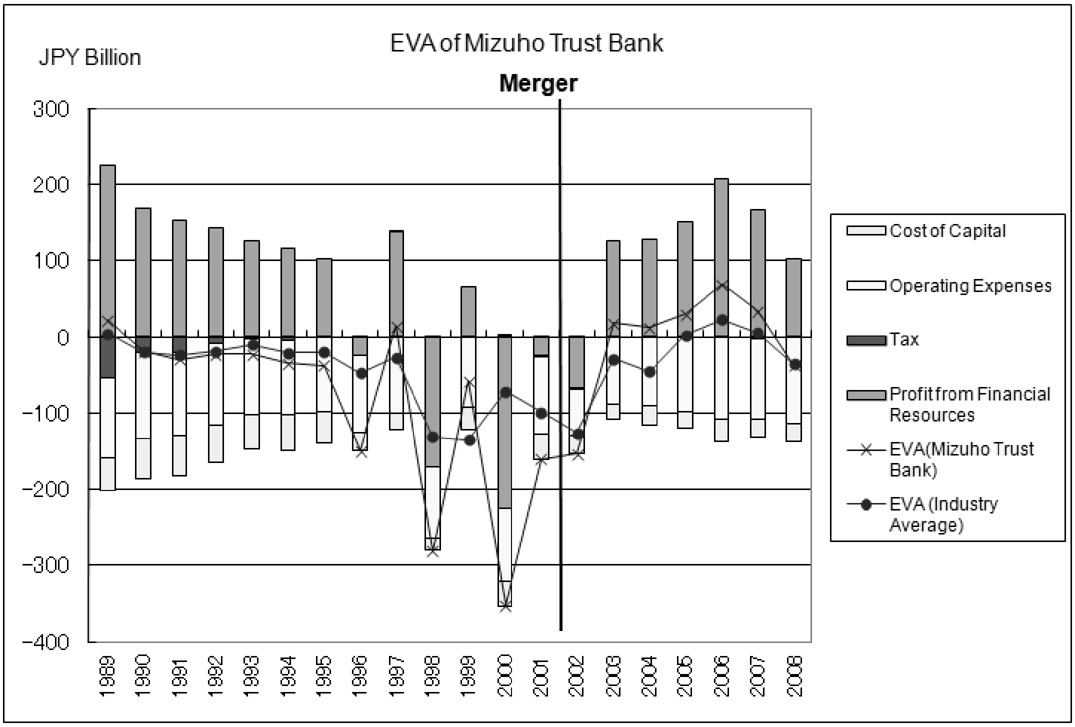


III-11. Mizuho Trust Bank (former Yasuda Trust Bank and Dai-Ichi Kangyo Fuji Trust Bank)

The bank's EVA was at the same level of the industry average in the early half of the 1990s, but it went below the industry average in many years reflecting the lower Profit from Financial Resources in the latter half of the 1990s. However, it went up after that and remained at a higher level than the industry average after the merger, from 2003 to 2007.

The Expense Ratio was at the same level as the industry average in the early half of the 1990s before the merger, but it went up significantly in the mid-1990s and has remained higher than the industry average after that. The Bad Loan Ratio had been at the same level as the industry average in the early half of the 1990s, but it also increased dramatically in the mid-1990s and continued to be higher than the industry average after that. However, it started to go down from 2001 in the same way as the industry average, and has remained at the same level as the industry average since 2002-2003. The Loan Market Share and the Deposit Market Share have been relatively stable.

Graph 17. EVA of Mizuho Trust Bank



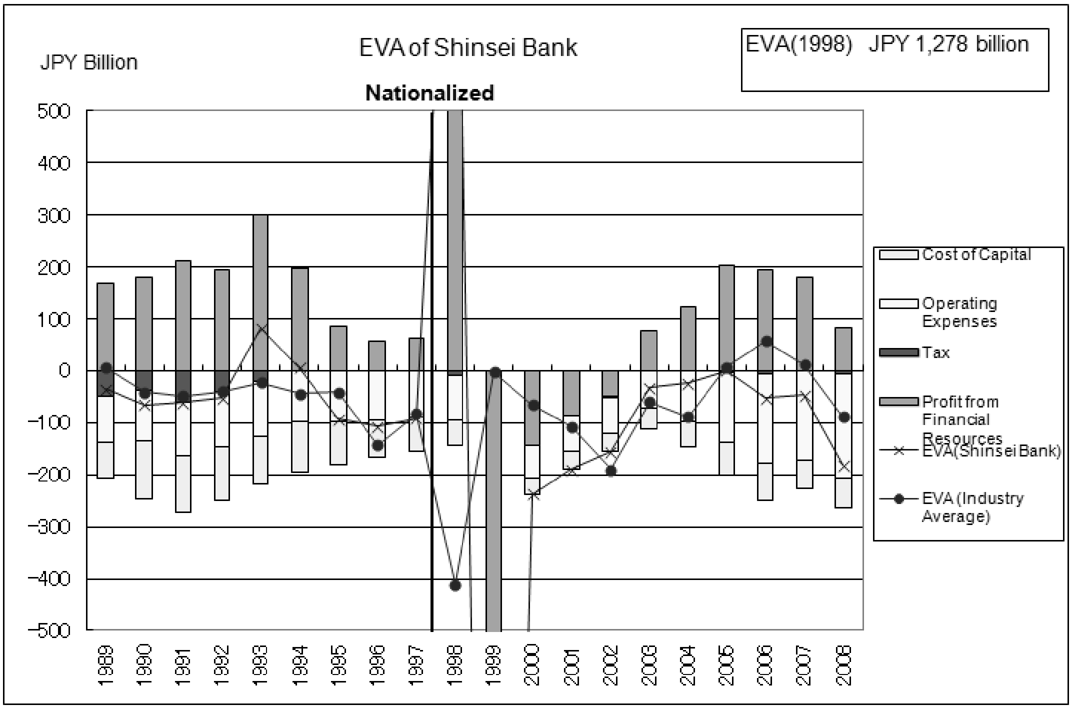
III-12. Shinsei Bank (former Long-Term Credit Bank of Japan),

When looking at the trend of EVA, the Profit from Financial Resources declined from 1994, before the bank was nationalized. After the nationalization, the EVA exceeded the industry average from 2002 to 2004 with gradual recovery of the Profit from Financial Resources. However, the EVA is on the declining trend since 2005 due to increase in Operating Expenses[9].

The Expense Ratio was lower than the industry average in the early half of the 1990s, but it has significantly increased since the latter half of the 1990s due to declined ordinary revenue. Although the Bad Loan Ratio was at the same level as the industry average in 1990s, it went up significantly in 1997 and 1998. It decreased sharply in 2002 however, and has stayed at the same level as industry average after that. Although the Loan Market Share and Deposit Market Share declined significantly towards the end of 1990s, they have continued to grow since 2002-2003, after the nationalization.

9 As EVA of Shinsei Bank and Aozora Bank have changed significantly after the nationalization, and therefore certain adjustments are considered to be needed. However, for the purpose of equal comparison between the banks, I decided to apply the simple and common adjustment items whenever possible to all banks. I will review how I can perform the adjustment for nationalized banks in the future.

Graph 18. EVA of Shinsei Bank

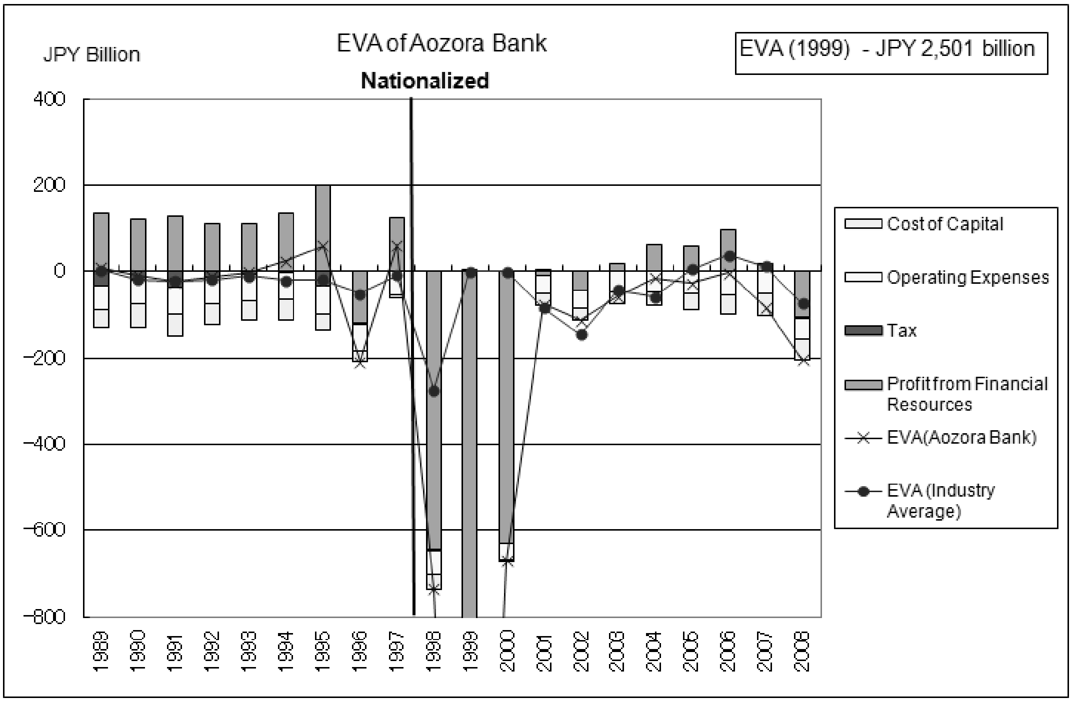


III-13. Aozora Bank (former Nippon Credit Bank)

The EVA of the bank hovered around the industry average in the early half of the 1990s. It plummeted below zero in 1998-2000, just after the nationalization of the bank, but gradually improved from 2001 to 2006. Due to the decline of Profit from Financial Resources, the EVA has reduced in 2006-2008.

The Expense Ratio was lower than the industry average in the early half of the 1990s, but increased rapidly in the latter half of the 1990s due to the lower ordinary revenue. It went down sharply in 2005 and since then it has been lower than the industry average. The Bad Loan Ratio rapidly increased in the mid-1990s and once exceeded 50%, but it again went down with the reduction of the balance of bad loans. The Loan Market Share has been going down since the 1990s, showing significant decline in the latter half of the decade. The Deposit Market Share has slightly declined since the 1990s but it’s been increasing slightly since 2005.

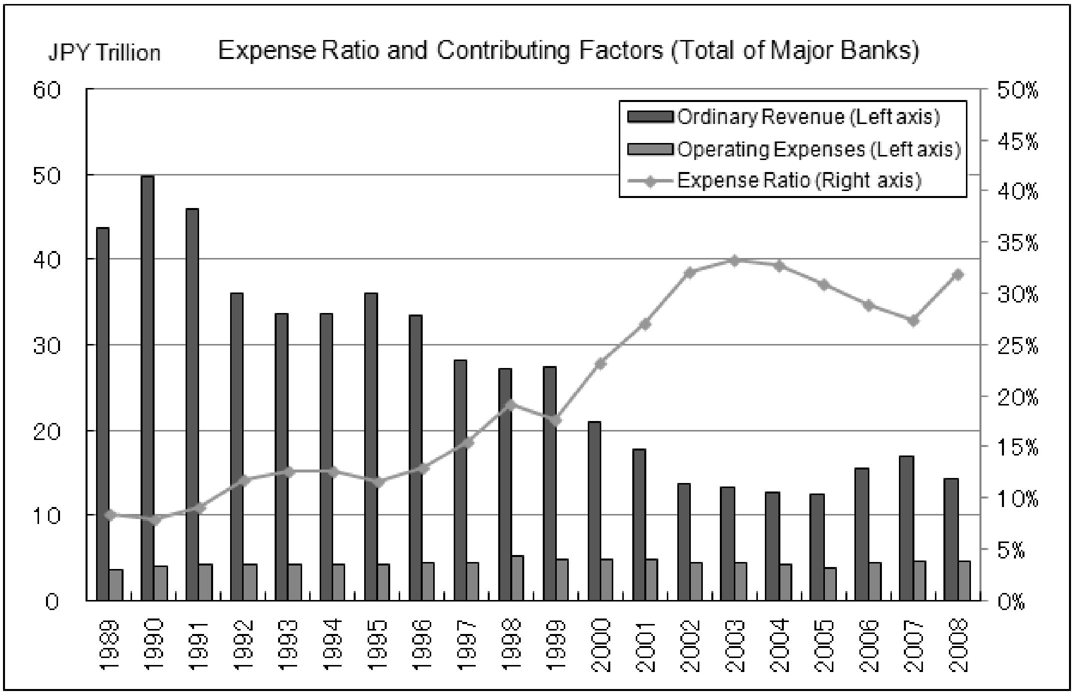
Graph19. EVA of Aozora Bank



III-14. Summary

Based on the EVA of each bank and trend of other indicators, I would like to point out the following. First, as shown by the breakdown of the factors which constitute EVA, the Operating Expenses have not changed much and therefore their impact on EVA has been relatively small. Second, based on the analysis of EVA and its relations with other indicators, there is a possibility that the Loan Market Share may have impact on EVA. For Example, the Bank of Tokyo Mitsubishi and the Sumitomo Mitsui Banking Corporation have increased their Loan Market Shares after the merger, and have attained high level of EVA also. Third, there are still cases in which a bank can achieve high EVA, even though its Expense Ratio is high. High Expense Ratio is often considered to be a sign of inefficient business management, but it is not always the case in terms of EVA. For example the Bank of Tokyo Mitsubishi has high Expense Rate, but still its EVA is high. On the other hand, Resona Bank has reduced the Expense Ratio but its EVA is not very high. Incidentally, as shown in Graph 20, the Expense Ratio has generally increased in the entire banking industry for the past 20 years. This is because the banks' ordinary revenue reduced while there was no major change in operating expenses. It is generally said that decline of ordinary revenue of the banks are due to lower debt by corporations which means smaller amount of loans provided by banks, but actually the loan interest rate (i.e. interest on loans divided by the loan balance) has been reducing at higher speed than the total amount of loans. Therefore, lower interest rates have contributed to the decline in the revenue of banks more than the balance of loans itself.

Graph 20. Expense Ratio and Contributing Factors (Total of Major Banks)



Also, the trend of EVA before and after the merger shows that the banks which achieved positive impact by merger have experienced increase in EVA from the 4th or 5th year from the merger. The bank of Tokyo Mitsubishi, Sumitomo Mitsui Banking Corporation and Chuo Mitsui Trust Bank are among those companies[10].

Considering the above, there seem to be several types of situations which contribute to increase in EVA. The first situation is that a bank is financially healthy and has relatively small amount of bad loans, and therefore both loans and deposits have increased after the merger. In this example, as a result that relatively large amount of resources were spent on banking activities as compared to other banks, and deposits concentrated on the banks with lower amount of bad loans, the amount of bank's deposits increased and this allowed increase in loans. The Bank of Tokyo Mitsubishi and Sumitomo Mitsui Trust Bank are among such examples. The second situation is that the bank had relatively aggressive lending strategy which increased the amount of bad loans during the period of economic slowdown, but their performance

[10] Hosono (2009) also pointed out that the positive impact of mergers started to appear after several years from the merger.

continued to improve in the economic boom years supported by its strong banking capabilities. The Sumitomo Mitsui Banking Corporation and Chuo Mitsui Trust Bank are among these examples. The third situation is that a trust bank's performance was improved after it joined a certain financial group. Its EVA increased without much increase in loan. The reason for this is considered to be that the collaboration with the commercial bank(s) which belongs to the same financial group in their banking activities helped the trust bank improve its performance. The Mitsubishi Trust & Banking Corporation, Mizuho Trust Bank, and UFJ Trust Bank are among these examples.

III-15. Impact of merger

Next, I would like to review the impact of merger through the comparison of EVA before and after a merger (the EVA before the merger is a total of EVAs of the banks merged). To be specific, I would like to confirm if EVA increased after the merger, as compared to that before the merger. Incidentally, I used the average of the EVA for the period before and after the merger respectively for comparison. Also, to eliminate the impact by economic environment, difference with the industry average was used. Detailed analysis on the positive impact of mergers on EVA is described in Section IV, which is based on the regression analysis.

In the Table 2, the "Bank EVA" means the EVA (average of the applicable period) of each bank. Then the "Industry Average EVA" is the number calculated by multiplying the "average EVA of major banks" by the "percentage of shareholders' equity of the bank to the total shareholders' equity of major banks" (for the same period for which the "Bank EVA" was calculated). And the "Difference" means the difference between the "Bank EVA" and "Industry Average EVA" – if the difference is positive, the bank's EVA is higher than Industry Average EVA, and if it is negative, it means the bank's EVA is lower. For example, the total EVA of Sumitomo Bank and Sakura Bank (before merger) was –JPY 429.6 billion, while the Industry Average EVA (after the adjustment according to the size of equity) for the same period was –JPY 488.3 billion. Therefore, the total EVA of Sumitomo Bank and Sakura Bank was greater than the Industry Average EVA by JPY 58.7 billion. On the other hand, the EVA of Sumitomo Mitsui Banking Corporation after the merger was –JPY 146.3 billion, while the Industry Average EVA (after the adjustment according to the size of equity) was –JPY 367.3 billion. The EVA of the Sumitomo Mitsui Banking Corporation was higher than the Industry Average EVA by JPY 221.0 billion. The difference enhanced after the merger also.

According to the comparison of "Bank EVA" and "Industry Average EVA", the banks whose EVA improved after the merger (i.e. the difference between the "Bank EVA" and "Industry Average EVA" increased) include the Bank of Tokyo Mitsubishi, Sumitomo Mitsui Banking Corporation, Mitsubishi Trust & Banking, Mizuho Trust Bank, and UFJ Trust Bank. The EVA of Sumitomo Mitsui Banking Corporation was already higher than the industry average even before the merger, and the difference grew and its EVA is further above the average after the merger. On the other hand, although the EVA of Bank of Tokyo Mitsubishi was lower than the industry average before the merger, it was improved and has been above the industry average after the merger. There is a possibility that EVA of Mitsubishi Trust & Banking, Mizuho Trust Bank, and UFJ Trust Bank increased thanks to the participation in their respective financial group. However, the difference between the "Bank EVA" and "Industry Average EVA" reduced after the merger at the UFJ Bank, Resona Bank, Mizuho Bank, Mizuho Corporate Bank, and Chuo Mitsui Trust Bank. In the cases of UFJ Bank and Mizuho Bank/Mizuho Corporate Bank, in particular, their EVA were above the industry average before the merger but it is now below the average. As stated above, even in the mergers of major banks, the impact of the merger varies according to the banks[11].

Table 2. EVA Comparison – Before vs. After Merger

JPY Million

Before Merger				
Bank	Period	Bank EVA	Industry Average EVA	Difference
Sakura Bank & Sumitomo Bank	1990～2000	-429637.0	-488331.4	58694.4
Bank of Tokyo & Mitsubishi Bank	1989～1995	-80383.2	-81167.7	784.5
Tokai Bank & Sanwa Bank	1989～2000	-273019.6	-351213.5	78194.0
Daiwa Bank & Asahi Bank	1991～2001	-252549.7	-238242.6	-14307.2
Dai-Ichi Kangyo Bank, Fuji Bank, and the Industrial Bank of Japan	1989～2001	-532765.2	-667197.0	134431.8
(Former) Mitsubishi Trust & Banking Co. & Nippon Trust Banl	1989～2000	-84114.3	-84666.0	551.6
Chuo Trust Bank & Mitsui Trust Bank	1989～1999	-68716.2	-82869.9	14153.7
Yasuda Trust Bank and Dai-Ichi Kangyo Fuji Trust Bank	1989～2001	-87208.9	-47807.2	-39401.7
Toyo Trust Bank	1989～2000	-48819.9	-45110.2	-3709.7

After Merger				
Bank	Period	Bank EVA	Industry Average EVA	Difference
Sumitomo Mitsui Banking Co.	2001～2008	-146339.0	-367363.3	221024.4
Bank of Tokyo Mitsubishi	1996～2004	-305334.7	-561822.9	256488.2
UFJ Bank	2001～2004	-699694.1	-525680.5	-174013.6
Resona Bank	2002～2008	-192348.8	-83487.0	-108861.8
Mizuho Bank & Mizuho Corporate Bank	2002～2008	-470530.4	-403397.0	-67133.4
(New) Mitsubishi Trust & Banking Co.	2001～2004	-58769.8	-145738.3	86968.5
Chuo Mitsui Trust Bank	2000～2008	-54780.6	-61139.7	6359.1
Mizuho Trust Bank	2002～2008	-3967.7	-29419.3	25451.6
UFJ Trust Bank	2001～2004	-54780.6	-69116.4	14335.8

[11] In this paper, I simply compared the average EVA of the periods before and after the merger. Therefore, please note that the result of evaluation may change according to the length of period adopted. For example, in the case of Resona Bank, I have calculated the average of 7 years after the merger (2001-2008), and the EVA of Resona after the merger is below the industry average by greater margin than before the merger. However, as Resona Bank's EVA exceeded the industry average in the 4th year from the merger and remained as such after that, the result of analysis may be different if longer years (after merger) are applied

IV. Empirical Analysis

IV-1. Estimation model, variables and sign conditions, and data

In the previous section, I have only focused on the changes in EVA and compared the level of EVA before and after the merger. However, as there are many factors which affect EVA, it is considered to be necessary to control such effects in reviewing the impact of mergers. In this section, I have reviewed the impact of merger by using the regression analysis[12].

The explained variables here are EVA (after adjustment of reserves for bad loans). The type of data is panel data, cross-section classification is 13 major banks in Japan, and the period is 20 years from FY1989 to FY2008. The estimation model below is used, with the focus on the existence of fixed effect in each bank.

$$y_{it} = \sum_{k} \alpha_k \ x_{k,it} + \mu_i + u_{it} \tag{3}$$

In the calculation formula above, "y_{it}" is an explained variable, "$x_{k,it}$" is an explanatory variable, "α_k" is a coefficient, "μ_i" is a fixed effect, "u_{it}"is a disturbance term, "i" is a bank, and "t" is year. This estimation of fixed effect is made under this estimation model.

For the explanatory variables, I used the variables each explain revenue, expense, size, and healthiness of the bank. For the revenue side, "Interest on Loan" and "Interest on Deposit" are used. First, the higher the "Interest on Loan" is, the larger the EVA is, as the bank's revenue increases (the sign condition is positive). On the other hand, the higher the "Interest on Deposit" is, the lower the EVA is, as the bank's revenue decreases (the sign condition is negative). In regard to the expenses, I used the "Operating Expenses" and the "Expense Ratio". The larger the "Operating Expenses" are, the lower the EVA is, due to decrease in revenue (the sign condition is negative). Similarly, the higher the "Expense Ratio" is, the lower the EVA is (the sign condition is negative). As for the size of the bank, I used the "Total Assets (logarithmic value)". Normally, the bigger the size of bank is, the higher the EVA is considered to be (the sign condition is positive). Regarding the healthiness of the bank, I used the "amount of bad loans disclosed under SESC (Securities and Exchange Surveillance Commission) standards" and the "Bad Loan Ratio". The higher the "Amount of Bad Loans Disclosed under

[12] In this paper, I have analyzed the following 8 banks as a subject of merger: the Sumitomo Mitsui Banking Corporation (former Sumitomo Bank and Sakura Bank), the Bank of Tokyo Mitsubishi (former Mitsubishi Bank and Bank of Tokyo), the UFJ Bank (former Sanwa Bank and Tokai Bank), the Resona Bank (the Daiwa Bank and Asahi Bank), the Mizuho Bank and Mizuho Corporate Bank (former Dai-Ichi Kangyo Bank, Fuji Bank, and the Industrial Bank of Japan), the Chuo Mitsui Trust Bank (former Mitsui Trust Bank and Chuo Trust Bank), the Mitsubishi Trust & Banking Corporation (former Mitsubishi Trust & Banking Corporation and Nippon Trust Bank), and the Mizuho Trust Bank (former Yasuda Trust Bank and Dai-Ichi Kangyo Fuji Trust Bank).

SESC Standards" is, the lower the EVA is, as credit loss occurs when default happens, which lead to lower profit (the sign condition is negative). Similarly, the higher the "Bad Loan Ratio" is, the lower the EVA is (the sign condition is negative). In addition to the above, as it is estimated from the analysis made in the previous section that the Loan Market Share has impact on EVA, I have added the "Loan Market Share" and the "Deposit Market Share" as variables. Incidentally, the previous years' values were used as explanatory variables for the above.

On the other hand, in measuring the impact of mergers, I created several "Merger Dummies". First, I created "Merger Dummy (year of merger and after that)" as variable which is always "1" in and after the year of merger. Second, I created "Merger Dummy (year of merger)" as variable which is "1" only in the year of merger. Third, I created "Merger Dummy (n years after the merger)". For example, "Merger Dummy (1 year after the merger)" is "1" only in the year following the merger year (1 year after the merger). Therefore, the "Merger Dummy (n years after the merger)" is a variable which is "1" only in the n^{th} year from the merger.

Further, in order to eliminate the common shock of the year such as economic factors, I have used the "Time Dummy" also.

Lastly, about data used for each variable, I used the same values as used in the previous section for "EVA", "Expense Ratio", "Bad Loan Ratio", "Loan Market Share", and "Deposit Market Share". Regarding the variables "Interest on Loan", "Interest on Deposit", "Operating Expenses", "Total Assets", and the "Amount of Bad Loans Disclosed under SESC Standards", the actual amounts (in JPY million) are used. Those figures are all based on the balance sheets and income statements of each bank disclosed on the website of Japan Bankers Association. The Table 3 shows the descriptive statistics values of variables.

Table 3. Descriptive Statistics Values

Variable	Observed Value	Average	Standard Error	Minimum Value	Maximum Value
EVA	230	-186899.5	439904.7	-2913417.0	1278257.0
Interest on Loans (previous year)	217	949377.8	1231604.0	40067.0	6787615.0
Interest on Deposits (previous year)	217	598765.7	1083343.0	4737.0	6638998.0
Operating Expenses (previous year)	217	344729.9	323981.4	39579.0	1271530.0
Expense Ratio (previous year)	217	0.1958	0.1013	0.0349	0.5213
Total Assets (logarithmic value, previous year)	217	17.0981	1.0455	15.3790	18.9635
Bad Loans Disclosed under SESC Standards (previous year)	197	1247892.0	1401751.0	0.0	6484367.0
Bad Loan Ratio (previous year)	197	0.0644	0.0614	0.0000	0.5072
Loan Market Share(previous year)	217	0.0795	0.0821	0.0096	0.2880
Deposit Market Share (previous year)	217	0.0791	0.0841	0.0059	0.2862
Merger Dummy (year of merger and after that)	230	0.2565	0.4377	0	1
Merger Dummy (year of merger)	230	0.0391	0.1943	0	1
Merger Dummy (1 year after the merger)	230	0.0391	0.1943	0	1
Merger Dummy (2 years after the merger)	230	0.0391	0.1943	0	1
Merger Dummy (3 years after the merger)	230	0.0391	0.1943	0	1
Merger Dummy (4 years after the merger)	230	0.0261	0.1597	0	1
Merger Dummy (5 years after the merger)	230	0.0261	0.1597	0	1
Merger Dummy (6 years after the merger)	230	0.0261	0.1597	0	1
Merger Dummy (7 years after the merger)	230	0.0130	0.1137	0	1
Merger Dummy (8 years after the merger)	230	0.0087	0.0930	0	1

IV-2. Results of estimate

The Table 4-5 shows the result of estimate. If based on the estimation formula 1, “Interest on Loan”, “Interest on Deposit”, “Expense Ratio”, “Amount of Bad Loans Disclosed under SESC Standards”, and “Bad Loan Ratio” all satisfy the sign conditions. Among them, “Interest on Loan”, “Interest on Deposit”, “Amount of Bad Loans Disclosed under SESC Standards”, and “Bad Loan Ratio” are significant coefficients, which means revenue and healthiness have impact on EVA. On the other hand, “Operating Expenses” “Expense Ratio” and “Total Assets” are not significant, meaning that the amount of expenses and size of the bank do not have much impact on EVA. Further, “Loan Market Share” has statistically significant impact in a negative direction and “Deposit Market Share” has statistically significant impact in a positive direction.

Now I would like to check the impact of mergers. When I estimated the impact by using the “Merger Dummy (year of merger and after that)”, I didn’t see any significant result (Estimation Formula 2). I then made an analysis by using the “Merger Dummy (in the year of merger)” and the “Merger Dummy (n years after the merger)”, by assuming that impact of mergers may take few years to appear. As a result of that, the coefficient of the “Merger Dummy (year of merger)” was negative, which means it reduces EVA at the point of merger. However, it is not proven as statistically significant impact. On the other hand, the coefficients of “Merger Dummy (n years after the merger)” were all positive, meaning they are increasing EVA. The “Merger Dummy (5 years after the merger)” was significant in particular (Estimation Formula 3). Based on these results, it is estimated that impact of a merger on EVA is negative in the first year, but then turns positive and achieves statistically significant positive impact around the 5th year of the merger.

These estimates are average impact on the banks realized by mergers themselves in the entire industry. However, the fact is, some banks experienced higher EVA after the merger (or, has realized positive impact of the merger already) while others don’t (or, positive impact of the merger has yet to be realized). Therefore, I decided to analyze the causes that contributed to increase in EVA. I used cross terms of each explanatory variable and “Merger Dummy (year of merger and after that)” in this analysis. In other words, I analyzed what kind of factors influenced increase in EVA, in addition to the event of merger itself. Therefore, I focused on the coefficient of the cross terms here (Estimation Formula 4). As a result of that, it was found that the cross term with the “Loan Market Share” was statistically significant in a positive direction. It means, the higher Loan Market Share the bank acquired after the merger, the higher their EVA growth was. This result supports the insights obtained in the previous section. On the other hand, the cross term with the “Deposit Market Share” was negative and statistically significant. In means, increasing the bank’s Deposit Market Share alone actually reduced EVA. The cross term with “Bad Loan Ratio” was negative and the banks who could reduce the percentage increased EVA, but it was not statistically significant. The fact (that statistically significant results were not observed) does not necessarily mean that disposal of bad loans has not contributed to EVA improvement at all. Rather, it means progress in disposal of bad loans itself does not lead "directly" to increase in EVA. When I consider the positive impact of "Loan Market Share" presented in the previous section, it may be interpreted that the banks can increase EVA only if they can increase their loan portfolio and enhance the source of revenue after disposal of bad loans.

Also, the cross term with "Operating Expenses" was significant in a negative direction, meaning that the larger cost savings the bank could achieve after the merger, the higher EVA the can enjoy. On the other hand, the cross term with "Expense Ratio" was significant in a positive direction, which means the higher the Expense Ratio of the bank after the merger is, the higher EVA it can achieve. The result of analysis on Expense Ratio here is consistent with the insights obtained in the previous section, but it is a little bit complicated when it is used for measurement of positive impact of a merger. If you look at the Expense Ratio of the entire industry in and after the 1990s, while there has been no major change in the amount of operating expenses (numerator of the Expense Ratio), ordinary revenue (denominator of the Expense Ratio) of the banks reduced sharply and as a result the Expense Ratio increased significantly from 1990 to around 2004. This happened with the background of lower interest rates after the burst of bubble economy, which caused significant reduction of interest on loans, that is the banks' ordinary revenue. As stated in the previous section, the increase in Expense Ratio was experienced even by the Bank of Tokyo Mitsubishi, which increased its EVA after the merger. Therefore, the fact that the cross term of "Expense Ratio" was positive seems to show the increasing trend of the Expense Ratio of the entire banking industry.

Table 4. Result of Estimation

Variable	(1)		(2)		(3)	
	Explained Variable: EVA					
Interest on Loans (previous year)	0.3156	**	0.3050	**	0.2932	*
	2.31		2.31		2.10	
Interest on Deposits (previous year)	-0.3649	**	-0.3403	**	-0.3191	*
	-2.37		-2.38		-2.17	
Operating Expenses (previous year)	0.0043		0.1632		0.3584	
	0.01		0.45		1.00	
Expense Ratio (previous year)	-8.43E+05		-8.81E+05		-9.73E+05	
	-0.89		-0.96		-1.17	
Total Assets (logarithmic value, previous year)	-6.55E+04		-1.41E+05		-1.93E+05	
	-0.29		-0.53		-0.78	
Bad Loans Disclosed under SESC Standards (previous year)	-0.2544	***	-0.2548	***	-0.2656	***
	-3.70		-3.66		-3.82	
Bad Loan Ratio (previous year)	-1.96E+06	**	-2.10E+06	**	-2.25E+06	**
	-2.52		-2.72		-2.51	
Loan Market Share(previous year)	-1.31E+07	*	-1.19E+07	*	-1.14E+07	*
	-2.14		-1.89		-1.83	
Deposit Market Share (previous year)	9.63E+06	*	8.72E+06	*	8.87E+06	*
	2.18		2.07		1.81	
Merger Dummy (year of merger and after that)			1.49E+05			
			1.40			
Merger Dummy (year of merger)					-5.59E+04	
					-0.34	
Merger Dummy (1 year after the merger)					3.37E+05	
					1.33	
Merger Dummy (2 years after the merger)					3.11E+05	
					1.77	
Merger Dummy (3 years after the merger)					1.64E+05	
					1.52	
Merger Dummy (4 years after the merger)					2.94E+05	
					1.74	
Merger Dummy (5 years after the merger)					2.20E+05	*
					1.97	
Merger Dummy (6 years after the merger)					2.04E+05	
					1.50	
Merger Dummy (7 years after the merger)					2.09E+05	
					1.40	
Merger Dummy (8 years after the merger)					3.28E+05	
					1.64	
Constant Term	1.59E+06		2.89E+06		3.69E+06	
	0.44		0.68		0.93	
# of Observed Values	197		197		197	
R-squared (within)	0.479		0.485		0.504	
Method for Estimation	Fixed Effect		Fixed Effect		Fixed Effect	
Time Dummy	○		○		○	

(Note 1) Values in the upper row are coefficients, and those in the lower row are t values. Values with *** are the coefficients that are statistically significant with 1% rejection region, those with ** are significant with 5% rejection region, and those with * are significant with 10% rejection region.

(Note 2) For Value t, the robust standard error is used.

Table 5. Result of Estimation

	Explained Variable: EVA			
Variable	(2)		(4)	
Interest on Loans (previous year)	0.3050 2.31	**	0.3582 1.68	
Interest on Deposits (previous year)	-0.3403 -2.38	**	-0.2385 -1.07	
Operating Expenses (previous year)	0.1632 0.45		3.5678 2.51	**
Expense Ratio (previous year)	-8.81E+05 -0.96		-2.34E+06 -2.4200	**
Total Assets (logarithmic value, previous year)	-1.41E+05 -0.53		-3.06E+05 -1.34	
Bad Loans Disclosed under SESC Standards (previous year)	-0.2548 -3.66	***	-0.3574 -1.89	*
Bad Loan Ratio (previous year)	-2.10E+06 -2.72	**	-2.34E+06 -2.1000	*
Loan Market Share(previous year)	-1.19E+07 -1.89		-3.09E+07 -2.97	**
Deposit Market Share (previous year)	8.72E+06 2.07	*	1.86E+07 2.15	*
Merger Dummy (year of merger and after that)	1.49E+05 1.40		-7.59E+06 -1.54	
Interest on Loans*Merger (year of merger and after that)			-0.7413 -1.37	
Interest on Deposits*Merger (year of merger and after that)			0.3458 0.78	
Operating Expenses*Merger (year of merger and after that)			-3.3761 -1.8400	*
Expense Ratio*Merger (year of merger and after that)			2.59E+06 1.88	*
Total Assets*Merger (year of merger and after that)			4.49E+05 1.47	
Bad Loans Disclosed under SESC Standards*Merger (year of merger and after that)			0.1449 0.8500	
Bad Loan Ratio*Merger (year of merger and after that)			-1.77E+05 -0.07	
Loan Market Share*Merger (year of merger and after that)			3.51E+07 2.2	**
Deposit Market Share*Merger (year of merger and after that)			-2.34E+07 -1.9500	*
Constant Term	2.89E+06 0.68		5.31E+06 1.3900	
# of Observed Values	197		197	
R-squared (within)	0.485		0.563	
Method for Estimation	Fixed Effect		Fixed Effect	
Time Dummy	○		○	

(Note 1) Values in the upper row are coefficients, and those in the lower row are t values. Values with *** are the coefficients that are statistically significant with 1% rejection region, those with ** are significant with 5% rejection region, and those with * are significant with 10% rejection region.

(Note 2) For Value t, the robust standard error is used.

V. Conclusion

In this paper, I reviewed the past twenty years' performance of major banks in Japan and analyzed the impact of their mergers. I think some of the perspectives I presented as a result of the analyses are useful. First, I was able to evaluate the profit of each bank more on real terms (by eliminating excessive fluctuations caused by application of accounting standards) through adjustment of reserves for bad loans in particular. Second, I was able to compare the difference in the impact of merger between banks by tracking the trend of EVA of each bank.

Through the analysis, I first found that the EVA of the entire banking industry has been negative continuously except for the mid-2000s (from 2005 to 2007), which means the banking industry has not achieved as much profit as expected by their shareholders.

I then analyzed, with the trend of EVA and other indicators of each bank, the changes of EVA and the indicator values before and after the merger. As a result, I found that although many major banks worked aggressively on the merger with other bank(s) around the year 2000, not all of these mergers brought about success so far from the perspectives of EVA improvement. According to my analysis of the situation of the banks which have shown the signs of positive impact of the merger, one of the success factors was increase in Loan Market Share, and it was found that the banks which could increase their Loan Market Share after merger tended to increase their EVA.

Based on these insights, I performed a regression analysis to verify the impact of mergers. The first thing I confirmed by the analysis was that although positive impact of mergers on EVA did not appear immediately after the merger, they gradually contributed to the growth of EVA and achieved statistically significant impact around the 5th year in particular. Also as stated above, it was verified by the empirical analysis that the higher Loan Market Share the bank has acquired after the merger, the higher EVA it achieved.

On the other hand, the analysis presented in this paper seems to have some future challenges. First, I used only the amount of reserves for bad loans and tax-effect accounting as adjustment factors of EVA. However, EVA could have many other adjustment items, such as amortization of goodwill and research and development expenses. Therefore, there is still room for improvement in making the EVA-based analysis closer to reality with additional adjustment items. Second, it has not passed a long time since the mergers analyzed in this paper were performed. For example, although 7 years have passed since the merger of Resona Bank and that of Mizuho Bank, it's been only 4 years in the case of UFJ Bank. Considering that the result of empirical analysis shows that positive impact of a merger tends to appear from the 5th year or so, it is desirable to analyze the longer-year period in evaluating positive impact of a merger. It may be necessary to verify the impact of mergers once again in the future, when longer years have passed since the banks experienced their merger.

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