Do Japanese Banks Change Their Lending Behavior to Dull Industries? A Comparison with the Bubble Period

Kazumine Kondo

Department of Commerce, Aichi Gakuin University, Aichi, Japan
kondo@dpc.aichi-gakuin.ac.jp

ABSTRACT

This paper investigates whether Japanese banks have improved their lending behavior to the real estate industry, construction industry, and distributor-retailers, all of which it is believed have been recipients of additional lending even after the collapse of the bubble (known as "OIGASHI" in Japanese). Specifically, the relationship between the increase in the lending balances to those industries in the second half of the 1980s and the increase in the beginning of the 1990s is analyzed. Also, the relationship between the increase in the lending balances in the second half of the 1980s and the increase in recent years is examined. This paper finds that banks that actively lent to those industries during the bubble period were likely to continue financing those industries aggressively in the period after the collapse of the bubble, and that these same banks began to improve their lending behavior more recently.

I.   INTRODUCTION

Japanese banks must undergo drastic reforms in their management in order to solve several problems that were produced in the bubble period. Specifically, they have to dispose of bad loans and downsize in earnest. We would like to approach the question of whether they are actively working to resolve those problems.

First, many banks have restructured by cutting back on salaries, bonuses, and the number of executives and tellers (though whether the proper level of cuts has been made remains unknown). With regard to the restructuring of capital equipment, it has been demonstrated in previous studies that banks have reduced their branches in order to correct decisions they made during the bubble period (e.g., Yamori and Kondo (2002)).

Regarding the disposal of bad loans, four mega banks have attained their objective of decreasing the amount of bad loans by over half of the existing bad loans[1]. While the disposal of bad loans has reached these target levels due to the government initiatives in recent years, most banks hesitated to dispose of bad loans until a few years ago. Making additional loans to a particular industry or a company even though a previous loan is impossible to collect or highly unlikely to be collected is called "OIGASHI" in Japanese. It is widely believed that many banks postponed the disposal of bad loans by means of OIGASHI. In particular, previous studies have shown that it is widely believed that after the bubble period ended, many banks made additional loans to the real estate industry and construction industry, which were star industries in the bubble period but have slumped since the collapse of the bubble (e.g., Sasaki (2000), Sakuragawa (2002), Sugihara and Fueda (2002))[2].

The purpose of this paper is to clarify whether Japanese banks' lending behavior to the real estate industry, construction industry and distributor-retailers, which was believed to feature "OIGASHI" after the collapse of the bubble, has improved in recent years. In addition, this analysis will provide evidence on whether Japanese banks have reformed their management aggressively.

The remainder of this paper is organized as follows. In section II, the data and methodologies employed in this paper are explained. In section III, the empirical results are shown and the relationship between the lending behavior in the bubble period and that in recent years is considered. The final section provides a summary and conclusions.

II.   Methodology and Data

A.   Methodology

Kang and Stultz (2000), in a study of the Japanese stock market crash, proposed that if stock prices increased too much in the second half of the 1980s and the crash was a correction, then there should be a negative relationship between a firm's stock price increase in the second half of the 1980s and that in the 1990s. Yamori and Kondo (2002) applied this idea to the study of the branching behavior of Japanese banks. They analyzed the relationship between the increases in the number of bank branches in the

second half of the 1980s (in the bubble period) and those at the beginning of the 1990s (right after the collapse of the bubble). The relationship between the increases in the number of bank branches in the second half of the 1980s and those in the second half of the 1990s (recent years) was also examined. As a result, they found a positive relationship between the former pair of increases and a negative relationship between the latter pair.

In this paper, we use the model of Yamori and Kondo (2002) to examine whether Japanese banks have improved their practice of lending to the dull industries that are said to have received additional lending after the collapse of the bubble (a practice called "OIGASHI" in Japanese). More specifically, the following (1), (2) and (3) were estimated for the real estate industry, construction industry and distributor-retailers that slumped after the bubble period.

$$\text{Dif}0295_i = c_0 + c_1 \text{Dif}9085_i \tag{1}$$

$$\text{Dif}9590_i = c_0 + c_1 \text{Dif}9085_i \tag{2}$$

$$\text{Dif}0295_i = c_0 + c_1 \text{Dif}9590_i \tag{3}$$

$\text{Dif}9085_i$ refers to the difference between bank i's lending balances at the end of March 1990 and those at the end of March 1985. This variable shows bank i's increase in lending in the bubble period. $\text{Dif}9590_i$ and $\text{Dif}0295_i$ are calculated in the same way[3]. The former shows bank i's increase in lending in the period just after the collapse of the bubble and the latter shows the increase in lending in recent years.

B.   Data

1.   Sources of Data

The sample banks in this paper satisfy the following two conditions. (1) The data on the lending balances of the industries being studied here at the end of March 1985 can be obtained in the reports on marketable securities (called "Yukasyoken Hokokusyo Soran" in Japanese). (2) The data on the lending balances of the industries being studied here at the end of March 2002 can be obtained. Because of the reorganizations that were begun around the second half of the 1990s, many large banks (and some regional banks (first-tier regional banks and second-tier regional banks)) used different organizational systems in March 1985 than in March 2002. Therefore, many of the sample banks in this paper are regional banks.

The sources of data are as follows. The data on the lending balances of each bank are generally quoted from the reports on marketable securities. However, the data that could not be obtained from the reports on marketable securities for 1985, 1990 and 1995 were obtained from the reports on companies (called "Kaisya Soran" in Japanese) because the reports on companies showed the same kinds of data until 1999. In addition, the data that could not be obtained from the reports on marketable securities for 2002 was obtained from the annual reports that each bank published.

2.   Summary of the Data

Figure 1 shows the transitions of the sums of the lending balances to the real estate industry, the construction industry and to distributor-retailers in 1985, 1990, 1995 and 2002. For this paper, we calculated the sum for each sample bank. In addition, we show descriptive statistics in Table 1.

Figure 1
The lending balances by industry (Unit: trillion Yen)
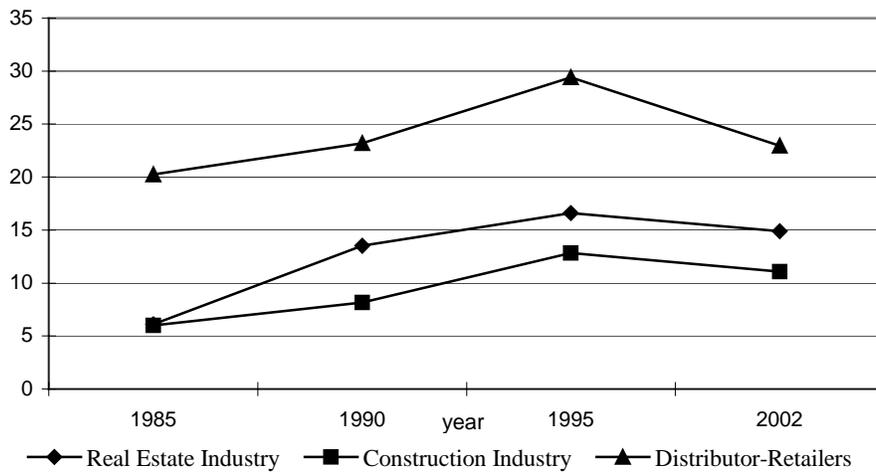
From these, we can see that both the sums and means of the lending balances in all three industries rose from 1990 to 1995. That is to say, banks increased their lending balances to dull industries in the first half of the 1990s (just after the collapse of the bubble). But both the sums and means of the lending balances in all of these industries decreased from 1995 to 2002. In particular, the sums of the lending balances to the real estate industry and to distributor-retailers dropped almost to the level they had been in 1990. From this, it can be concluded that lending to dull industries as a whole became restrained in the second half of the 1990s. However, it is not clear what specific types of banks improved their lending behavior in recent years. In the next section we attempt to clarify this.

Table 1
Descriptive statistics

Year	Mean	Std.Dev.	Maximum	Minimum
Real Estate Industry, Observations:71				
Year	Mean	Std.Dev.	Maximum	Minimum
1985	85.910	149.761	1045.874	8.423
1990	190.455	305.006	2212.487	22.997
1995	234.155	334.145	2374.955	21.757
2002	209.728	188.689	1143.764	35.269
Construction Industry, Observations:71				
Year	Mean	Std.Dev.	Maximum	Minimum
1985	84.368	53.941	281.837	17.578
1990	114.845	71.487	340.615	24.795
1995	180.861	115.195	596.516	30.053
2002	156.221	96.034	509.062	32.492
Distributor-retailers, Observations:72				
Year	Mean	Std.Dev.	Maximum	Minimum
1985	281.015	192.120	934.668	27.660
1990	322.035	251.791	1465.808	37.637
1995	408.429	291.366	1226.235	41.417
2002	318.918	200.262	905.610	37.804

Unit: billion Yen

III.   EMPIRICAL RESULTS

A. Basic Results

We estimated equations (1), (2) and (3) in Section II-A for the real estate industry, the construction industry and distributor-retailers using all of the bank data that could be obtained. The estimated results are from Tables 2 to 4.

Table 2
Estimation results for the real estate industry, N=71

	$Dif\ 0295_i$		$Dif\ 9590_i$		$Dif\ 0295_i$
Constant	83163.8	Constant	23612.4	Constant	5400.7
	(4.559)***		(3.355)***		(0.170)
$Dif\ 9085_i$	-1.029	$Dif\ 9085_i$	0.192	$Dif\ 9590_i$	-0.683
	(-11.237)***		(5.437)***		(-1.582)
$Adj\text{-}R^2$	0.642	$Adj\text{-}R^2$	0.290	$Adj\text{-}R^2$	0.021

The numbers in parentheses are t-values. *** means significant at the 1% level, ** means significant at the 5% level and * means significant at the 10% level. N equals the number of samples.

Table 3

Estimation results for the construction industry, N=71

	Dif 0295$_i$		Dif 9590$_i$		Dif 0295$_i$
Constant	-4875.1	Constant	34328.5	Constant	4252.6
	(0.730)		(4.699)***		(0.608)
Dif 9085$_i$	-0.649	Dif 9085$_i$	1.040	Dif 9590$_i$	-0.438
	(-3.978)***		(5.827)***		(-5.16)***
Adj-R^2	0.175	Adj-R^2	0.320	Adj-R^2	0.268

The numbers in parentheses are t-values. *** means significant at the 1% level, ** means significant at the 5% level and * means significant at the 10% level. N equals the number of samples.

Table 4

Estimation results for distributor-retailers, N=72

	Dif 0295$_i$		Dif 9590$_i$		Dif 0295$_i$
Constant	-43247.7	Constant	82410.1	Constant	-45297.9
	(-2.793)***		(9.250)***		(-1.479)
Dif 9085$_i$	-1.128	Dif 9085$_i$	0.097	Dif 9590$_i$	-0.512
	(-7.886)***		(1.180)		(-1.855)*
Adj-R^2	0.463	Adj-R^2	0.006	Adj-R^2	0.033

The numbers in parentheses are t-values. *** means significant at the 1% level, ** means significant at the 5% level and * means significant at the 10% level. N equals the number of samples.

In the case of the real estate industry, Dif 9085$_i$ in the second estimation (the estimation result of equation (2) in Section II-A) is positive and significant at the 1% level. This means that banks that had actively lent money to the real estate industry in the bubble period continued to finance that industry (which had fallen into a slump) immediately after the collapse of the bubble. In contrast, Dif 9085$_i$ in the first estimation (the estimation result of equation (1) in Section II-A) is negative and significant at the 1% level. That is, the banks that lent the real estate industry huge money in the bubble period were more likely to improve their lending behavior in recent years[4].

In the case of the construction industry, the first estimation and the second estimation show qualitatively the same results as for the real estate industry. In the third estimation, Dif 9590$_i$ is also negative and significant at the 1% level.

In the case of distributor-retailers, the first estimation result is qualitatively the same as for the real estate industry and construction industry. In the second estimation, Dif 9085$_i$ is insignificant but has a positive sign as in the cases of the real estate industry and the construction industry.

These results show that the additional lending to dull industries that was said to be done OIGASHI after the bubble period was actively continued just after the collapse of the bubble, but that behavior has been improved in recent years. These conclusions

are consistent with those of Yamori and Kondo (2002), who found that the branching behavior of Japanese banks just after the collapse of the bubble was largely the same as that of the bubble period (in other words, after the collapse of the bubble the banks did not appear to improve the behavior that was prevalent in the bubble period) but banks that were actively increasing their numbers of branches in the bubble period were likely to decrease them in more recent years. That is, we can conclude that Japanese banks' branching behavior and lending behavior to the three dull industries have just recently begun to improve.

B. Robustness Analysis

In this section, we confirm the robustness of the results from the former section, by using the dummy variables. The reason why this test is performed is to check whether we can get the same result as in the former section even when the qualitative variables are introduced.

We defined the dummy variables in the following manner. If (bank i's) $Dif9085_i$ is above the mean, $Dum9085_i = 1$; if $Dif9085_i$ equals the mean $Dum9085_i = 0$, if $Dif9085_i$ is below the mean $Dum9085_i = -1$. We used the variables $Dum9590_i$ and $Dum0295_i$ in the same way. The estimation results are shown in Tables 5 to 7.

Table 5
Estimation results for the real estate industry, N=71

	$Dum0295_i$		$Dum9590_i$		$Dum0295_i$
Constant	0.532	Constant	-0.145	Constant	0.535
	(5.342)***		(-1.200)		(6.025)***
$Dum9085_i$	-0.232	$Dum9085_i$	0.345	$Dum9590_i$	-0.335
	(-2.332)**		(2.855)***		(-3.772)***
Adj-R^2	0.060	Adj-R^2	0.093	Adj-R^2	0.159

The numbers in parentheses are t-values. *** means significant at the 1% level, ** means significant at the 5% level and * means significant at the 10% level. N equals the number of samples.

Table 6
Estimation results for the construction industry, N=71

	$Dum0295_i$		$Dum9590_i$		$Dum0295_i$
Constant	0.146	Constant	-0.268	Constant	0.094
	(1.362)		(-2.577)**		(0.831)
$Dum9085_i$	-0.454	$Dum9085_i$	0.421	$Dum9590_i$	-0.457
	(-4.231)***		(4.058)***		(-4.058)***
Adj-R^2	0.194	Adj-R^2	0.181	Adj-R^2	0.181

The numbers in parentheses are t-values. *** means significant at the 1% level, ** means significant at the 5% level and * means significant at the 10% level. N equals the number of samples.

Table 7
Estimation results for distributor-retailers, N=72

	$Dum0295_i$		$Dum9590_i$		$Dum0295_i$
Constant	0.233	Constant	-0.213	Constant	0.190
	(2.008)**		(-1.803)*		(1.822)*
$Dum9085_i$	-0.277	$Dum9085_i$	0.256	$Dum9590_i$	-0.470
	(-2.382)**		(2.171)**		(-4.509)***
Adj-R^2	0.062	Adj-R^2	0.050	Adj-R^2	0.214

The numbers in parentheses are t-values. *** means significant at the 1% level, ** means significant at the 5% level and * means significant at the 10% level. N equals the number of samples.

In these estimations, the results are qualitatively the same as the basic results in terms of both significance and the conditions of the signs, except that $Dum9085_i$ in the second estimation result for distributor-retailers is significant at the 5% level. These results confirm the robustness of the results in the previous section[5].

IV.   CONCLUSIONS

In this paper, we investigated whether Japanese banks have improved their management behaviors since the bubble period by focusing on their lending behavior to dull industries that were said to be lent additional money (i.e., OIGASHI) after the collapse of the bubble[6]. As a result, we found that banks which actively lent to the real estate industry, the construction industry and to distributor-retailers during the bubble period were likely to continue financing those industries aggressively soon after the collapse of the bubble. But it was also demonstrated that banks that actively lent to those industries in the bubble period began to improve their lending behavior in recent years. Yamori and Kondo (2002) also concluded that the same trend could be seen in the branching behavior of banks. Judging from these results, it is possible to say that Japanese banks had very negative attitudes to the reconstruction of their management in the period just after the collapse of the bubble. However, we can appreciate that they have tried to improve those negative behaviors in recent years.

It is important to note that the conclusions reached in this paper apply only to the sample banks studied. About 130 banks are members of the Japanese Bankers Association (if only main member banks are counted). However, we had to restrict our study to sample banks that satisfy the following two conditions: (1) The data on industrial lending balances at the end of March 1985 could be obtained from the reports on marketable securities and the reports on companies. (2) The organizational structures at the end of March 2002 were the same as those at the end of March 1985. These limitations must be noted as we interpret the estimated results in this paper.

As mentioned above, we appreciate that Japanese banks have recently begun to wrestle with the reconstruction of their management. The author does not think that these reforms are extensive enough. The fact that many unstable factors remain in the

Japanese banking system cannot be denied. Japanese banks therefore need to go ahead with further drastic management reforms and not be content with the present situation[7].

ENDNOTES

1. The four mega banks include Tokyo Mitsubishi Bank, Mitsui Sumitomo Bank, UFJ Bank and Mizuho Bank.
2. Sasaki (2000), in an analysis using the data from 1990 to 1997, points out that there is a possibility that all the bank industries (i.e., city banks, long term credit banks, trust banks, first-tier regional banks, and second-tier regional banks) engaged in OIGASHI with respect to the construction industry. Sakuragawa(2002) states that there is a possibility that OIGASHI had been engaged in with respect to the real estate industry since 1992 as a result of an analysis using samples from large bank industries (i.e., city banks, long term credit banks, and trust banks). Berglöf and Roland(1997) prove that soft budget constraints can theoretically persist and even coexist with credit crunches.
3. In $\text{Dif}\,0295_i$ 02 refers to 2002.
4. We estimated equation (1) and (3) in section II-A using $\text{Dif}\,0095_i$ instead of $\text{Dif}\,0295_i$ (In other words, we used the data from 2000 rather than the data from 2002). The results are as follows.

$$\text{Dif}\,0095_i = -43378 + 0.278\,\text{Dif}\,9085_i$$
$$(-1.223)\quad(3.127)$$
$$\text{Dif}\,0095_i = -27745.3 + 0.356\,\text{Dif}\,9590_i$$
$$(-0.790)\quad(2.481)$$

Judging from these results, the banks that lent the real estate industry money aggressively in the bubble period ($\text{Dif}\,9085_i$) and right after the collapse of the bubble ($\text{Dif}\,9590_i$) only began a few years ago to decrease the amounts that they lent to this industry.

   Actually, Sugihara and Fueda (2002) estimated a banks' short-term lending functions by separating the sample period into two periods, namely from FY 1992 to FY 1997 and from FY 1998 to FY 2000. They revealed that the additional amounts that were lent in the latter period were lighter than those in the former. So their results also suggested the possibility that the lending behavior of banks to the real estate industry improved just recently, as demonstrated in the present paper.

   In addition, Tsuru (2001) showed by panel data analysis, using the data from 1994 to 1998, that the capital ratio has negative effects on growth in loans to the real estate industry and positive effects on growth in loans to the manufacturing industry, and they concluded that soft budget constraints existed in loans to the real estate industry in this period. But by doing the cross-sectional analysis from 1995 to 1998, they found that the negative effects of the capital ratio are getting smaller, and they concluded that soft budget constraints are becoming weaker due to the regulatory and supervisory reforms in the banking system, etc. This result also suggests the possibility that the lending behavior of banks to the real estate

industry improved in recent years.

5. The differences in the lending balances (= Dif) of large banks are too large. So to confirm whether the basic results are unduly affected by these values, we also estimate equations (1), (2) and (3) in Section II-A excluding the data from large banks. These results are also qualitatively the same as those in the previous section.

6. In addition to OIGASHI, credit crunches for small and medium-sized enterprises caused by the existence of bad loans were also serious problems in Japan. The disposal of bad loans has occurred in recent years in Japan (especially in four mega banks). However, to control the amounts of bad loans and brisk up the lending to small and medium-sized enterprises in the future, Japanese banks have to select high credit rating borrowers and lend to them. Strengthening the credit scoring system is considered to be one way to achieve this goal. Frame et al. (2001) investigated the effects of the credit scoring system in the United States and found that credit scoring increases the portfolio share of small-business loans.

7. The Japanese government has actively deregulated financial markets in recent years. The results of this strategy will be interesting to watch, as Krol and Svorny (1996) and Carow and Herson (1998) have concluded that deregulation has positive effects on the stock prices of bank holding companies and regional economies. The case of the United States might be worth watching as the Japanese government moves forward with reforms in the financial markets.

REFERENCES

Berglöf, E., and G. Roland, 1997, "Soft budget constraint and credit crunches in financial transition," *European Economic Review*, No.41, pp. 807-817.

Carow, K.A., and R.A. Herson, 1998, "The Interstate Banking and Branching Efficiency Act of 1994: A Wealth Event for Acquisition Target," *Journal of Banking and Finance*, Vol.22, pp. 175-196.

Frame,W.S., A. Srinivasan, and L. Woosley, 2001, "The Effect of Credit Scoring on Small-Business Lending," *Journal of Money, Credit, and Banking*, pp.813-825.

Kang, Jun-Koo, and R.M. Stults, 2000, "Do Banking Shocks affect Borrowing Firm Performance? An analysis of Japanese Experience," *Journal of Business*, Vol.73, pp. 1-23.

Krol, R., and S. Svorny, 1996, "The Effect of the Bank Regulatory Environment on State Economic Activity,"*Regional Science and Urban Economies*, Vol.26, pp. 531-541.

Sakuragawa, M., 2002, *Economical Analysis of Financial Crises*, Tokyo University Press.(in Japanese)

Sasaki, Y., 2000, "The Regulation of Capital-asset Rates and the Effect of Bad Loans on Bank Lending," in Uzawa, H., and M. Hanazaki(eds.), *Economics of Financial Systems*, Tokyo University Press.(in Japanese)

Sugihara, S. and I. Fueda, 2002, "Bad Loans and Additional Lending to Less Profitable Industries in Japan," *JCER Economic Journal*, No.44.(in Japanese)

Tsuru, K., 2001, "The Choice of Lending Patterns by Japanese Banks during the 1980s

and 1990s: The Causes and Consequences of a Real Estate Lending Boom," *IMES Discussion Paper Series*, 2001-E-8.

Yamori, N., and K. Kondo, 2002, "How did Japanese Banks Make Cutbacks in the 1990's?," *International Journal of Business*, Vol.7, pp. 75-81.