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ABSTRACT

The paper uses a sample of 148 banks to examine the causes of the Japanese banking crisis in the 1990s. In addition, it looks at macro-economic backgrounds for the crisis. Important findings of the paper are the following. The major cause of the Japanese bad loans problem in the 1990s has been the speculative real estate related lending of the 1980s, and the volatile assets price movements that were mainly the result of monetary policy. In addition, the unfortunate combination of financial liberalization and the regulators' segmentation approach to the banking sector has aggravated the extent of speculation. The increasing absence of monitors of bank behavior under the Japanese safety net system may have played a role as well.

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1, Introduction

This paper carries out an analysis of the causes of the instability of the Japanese financial system in the 1990s. Its main analytical content is a cross-sectional regression analysis of the causes of bad loans using a sample of 148 large banks. In addition, we look at some of the macroeconomic backgrounds that led to the volatile assets price movements and in turn to speculative real estate lending by banks. The role bank regulation has played for aggravating the crisis is also discussed.

The crisis of the financial system in the 1990s has been unprecedented in the post war period. The ratio of officially estimated bad loans to total loans of the total banking sector stood at 5.1% as of March 1996. Segments of the banking industry such as credit cooperatives are, on average, almost bankrupt in the sense that bad loans are larger than their own capital and reserves.

The regulatory approach to the banking sector as well as the behavior of private financial institutions has come under serious criticism. The handling of the two credit cooperatives, Tokyo-Kyowa & Anzen, rather than paving the way for an orderly closure of insolvent banks, created the atmosphere of outrage against the use of taxpayers' money in the resolution of troubled financial institutions, culminating in the Jusen fiasco. The traditional regulatory approach that depended on cozy relationships between the regulators and private financial institutions have revealed many weaknesses as exemplified by the handling of the Daiwa case.

Despite all these talks about non-performing loans and their inappropriate handling by both the banks and the regulators, the number of banks closed has been very limited. At the time of the writing of this article, the number of closure is still slightly above ten since the end of 1994.[1] No

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[1] They are: Tokyo Kyowa, Anzen, Yuai, Kosumo, Kizu, Hukui-Ken-Daiichi, Osaka, Sanyo,

banks have yet been subject to an outright bank-run. All the deposits of the banks that have been closed have been protected. This surprisingly "nice" ex post performance of the banks is characteristic of the Japanese financial system and the regulatory approach and to a certain extent has been a cause of the bad loans problem as we shall argue in section 5.

In section 2, I briefly review the current state of the bad loans problem. In section 3, a statistical analysis of bad loans using individual bank data is carried out. The analysis is designed to estimate the importance of various possible causes of the banking crisis. In section 4, I turn to an analysis of the BOJ's monetary policy which has been at the root of the volatile movements in assets prices. Section 5 takes a look at the role played by the bank regulatory policy for aggravating the bad loans problem. Section 6 offers some concluding remarks.

2, The Bad Loan Problem as of 1996

Let us first briefly look at the current state of the bad loan problem. Table 1 summarizes the recently published information on the bad loans of the banking industry. Bad loans are about 5% of total loans and are spread over across all segments of the industry. The bad loans to total loans ratio (henceforth, the bad loans ratio) is highest for credit cooperatives. This accords with the fact that most of the resolutions attempts so far have involved credit cooperatives. The comparatively low bad loans ratio for agricultural banks and others probably reflects the resolution scheme for Jusen designed favorably to the agricultural banks.

Row 6 presents my estimates of reserve deficiencies, or loans yet to be disposed of. The amounts add up to 7.7 trillion yen, which is slightly lower than the Ministry of Finance (MOF)'s estimate of 8.3 trillion yen. The difference probably reflects differences in the assumption about the recoverability of collateral etc.

Kenmini-Daiwa (all) crecit cooperatives, and Hyogo and Taiheiyo.

Row 8 examines whether each segment of the industry has enough hidden reserves, i.e., unrealized capital gains on the securities to cover the reserve deficiencies. As can be seen, the banking industry as a whole has enough reserves. The Shinkin & Credit Cooperatives segments, however, do not have enough reserves. Row 9 shows the amount of own capital, and suggests that most of the segments of the industry are far from bankruptcy. The exception is the credit cooperatives for which all reserves and capital are barely enough to cover bad loans. Thus, this industry is almost insolvent on average.

Row 10 shows estimates of the number of individual banks insolvent in the sense that row 8 is negative. In order to arrive at row 8 for individual banks, I have assumed simply that 30% of the bad loans are recoverable by liquidating the collateral. Out of the top 149, only 5 banks are insolvent on this criterion. Row 11 and 12 check the robustness of this conclusion. In row 11 I assume that all bad loans are nonrecoverable. In row 12, I place the banks in a more serious situation. That is, bad loans are assumed to be underestimated by 30% (all assumed nonrecoverable), and that hidden reserves are 50% lower due to, for example, a fall in stock prices. In both cases the number of insolvency rises, but only marginally. Even in row 12 only about 15% of the banks are insolvent. In this sense the net asset position of the larger banks seem to be mostly positive. For smaller banks, however, the number of insolvency should be much larger except that we do not have data on individual banks to uncover this.

In sum, there are banks in a serious situation even among larger ones. A significant number of smaller banks seem to be nearly or already insolvent. However, the total amount of reserve deficiencies seems to be fairly small. A casual look at rows 6 through 12 suggest that the amount of public money necessary to close the insolvent banks without imposing losses on the depositors would be at most 2 or 3 trillion yen.[2]

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[2] More precisely, one needs to know the amount that corresponds to row 8 for each of the

Thus, the system as a whole seems all right at the moment, assuming that the estimates of the bad loans are not seriously biased downward and that assets prices will not go down significantly from the current levels.

The sufficiency of reserves for the banking system as a whole does not mean that the system is without problems. With bad loans correctly deducted, the capital ratio of many banks are quite low. Even with reserves to write off the bad loans, most of the bad loans are still on the balance sheet of the banks. That is, banks do not have much liquidity to extend new loans.

The use of public money has been approved in the diet only for closing credit cooperatives, while Table 1 suggests that there are larger banks that might get into trouble. In order to be prepared for these possibilities, the rate of contribution to the deposit insurance system has been drastically increased. People fear, however, that this may not be enough and the regulators may further tax relatively healthier banks to save the depositors of troubled banks as exemplified in the recent resolution scheme for Jusen. These problems hopefully will be discussed in other papers of this conference. I will briefly come back to the problems in section 5 and 6 in the discussion of the behavior of the regulators.

The role of real estate related loans for causing the bad loans problem has been widely pointed out. At the aggregate level, Figure 1 shows the movements of the ratio of loans to the real estate industry to total loans for six segments of the banking industry. Despite some differences between the sectors, the rough pattern is the same across the industry. The ratio started to go up in the early to mid 1980s, peaked in around 1990 and has not declined sharply since then. The exposure to the real estate industry is higher for long-term and trust banks.

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insolvent banks. Needless to say, the amount of public money necessary would go up if bad loans are underestimated. The bad loans numbers do not include those of the already closed credit cooperatives and of Taiheiyo bank. Also, the numbers do not include whatever public money that might become necessary in the future as a result of secondary losses for Jusen.

The relationship with the real estate loans and the bad loans problem can be easily inferred from Figure 2 that shows the movements of the price index for land for commercial use in 6 large cities. The increases in real estate loans in the mid to late 1980s correspond with sharp increases in land prices after the mid 1980s. The long period of large declines in land prices in the 1990s is consistent with the view that this has been the major cause of the bad loans problem. Incidentally, the chart shows that with the exception of the brief period around 1975, the 1990s were the only period in which land prices exhibited major downward tendencies in the post war period. Thus, there is some truth to the argument that large land price declines in the 1990s have been a totally unexpected shock.

3, A Microeconomic Analysis of the Causes of Bad Loans

The brief review of the bad loans problem in the last section suggests that real estate related loans and the volatile movements in land prices have been the major cause of the problem. Yet, the amount of bad loans varies widely from bank to bank. Figure 3 shows the bad loans ratio as of March 1996 for about 150 major and regional banks. For some, the ratio is close to 20%, while there are quite a few below 2%. Thus, it looks like one can exploit this information to obtain insights into the causes of the bad loans problem.

Unfortunately, balance sheet data on small banks such as Shinkin banks and credit cooperatives are not available on individual bank basis. Hence, the following analysis is based only on the data on the top 20 banks and regional banks.

A number of hypotheses have been advanced concerning the cause of the bad loans problem. Obviously, the most prominent is the one that emphasizes the role of real estate loans and land price movements.

Financial liberalization that has been steadily taking place since the late 1970s is sometimes claimed as a cause of the financial instability. Liberalization hit the securities markets first. Large nonfinancial firms that were the good customers of major banks started to leave banks and use the securities markets. The introduction of CDs in 1979 and the liberalization in time deposit interest rates that began in 1985 increased the cost of funds for banks and forced them to look for lending rates. An easy place to go was real estate related loans, where credit analysis was just a matter of forming an estimate of the future path of real estate prices and the expected return was high on the basis of the movements of real estate prices in the post war period.

Large banks also went to look for customers among smaller firms. This meant a loss of customers for smaller banks. Some of them increased real estate loans as well.

Inefficient or lax bank management is sometimes regarded as a cause of bad loans. This is certainly a reasonable argument[3], but is a bit stretched as a cause of an economy wide bad loans problem. One must argue that many banks became suddenly inefficient.

Some safety nets theoretically create moral hazard behavior and have been blamed as a cause of banking instability. This view is especially strong in the literature on the US banking crisis in the 1980s.

In the following, the balance sheet data on the top 148 banks are used to test some of these hypotheses. Given budget constraints on data collection, balance sheet data in only 1980, 1986 and 1990 (all as of the end of March) have been collected. Year 1980 has been selected since the liberalization of deposit rates started in 1979 with the introduction of CDs. 1986 is usually

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[3] Wheelock and Wilson (1995) find that the probability of bankruptcy was higher for inefficient banks in the banking crisis in Kansas during 1910-25.

regarded as the start of the "bubble" period.[4] 1990 corresponds with the peak of assets prices. The balance sheet data have been obtained from the Nikkei Needs Company Data Base.

I proceed in two steps. First, I check whether or not the bad loans ratio in 1996 is explained by real estate loans at their peak, i.e., in 1990 as should be the case if real estate loans are the prime cause of the bad loans. Second, if the answer to the first question is yes, I turn to the analysis of the question of what factors in previous years explain the amount of bad loans in 1990.

In Tables 2 regression results for the first step are presented. Equation 1 shows that real estate related loans in 1990 (RE90) exert significant effects on the bad loans ratio in 1996. The result also implies that the effect of real estate loans is larger for banks in areas with large land price declines between 1990 and 1996 (DEF). The land price data is from Chika-Kouji (Kokudo-Cho), and corresponds with the highest price data in the capital city in which the main office of sample banks are located. These results show clearly the role of real estate loans and land price movements for the bad loans problem. The share of collateral in the form of land (COLLA90) also helps explain the bad loans ratio. This effect can be either thought of as another mechanism by which land price movements have affected the performance of loans, or as representing the lack of credit analysis capability of banks.

The capital ratio as measured simply by (own capital+loss provisions+unrealized capital gains) divided by total assets exerts a negative effect on the bad loans ratio. One interpretation of this is that banks with higher capital are less inclined to carry out moral hazard type behavior.[5] There is some evidence that the bad loans ratio is larger for smaller firms. The city banks dummy is significant. Bank management efficiency as measured by the return on capital has no effect.

Equation 2 decomposes real estate related loans in 1990 into those in 1986(RE86) and the

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[4] See, for example, Ueda (1990).

[5] Horiuchi & Shimizu (1996) have found a similar effect.

increases between 1986 and 1990(dRE). Both are significant, although the effect of the former is estimated to be larger.

Figure 4 uses Equation 2 to show the contribution of the real estate related loans and land price movements to the bad loans ratio. The simulated path in the figure shows the effects of the RL86, DRL and DEF variables. As can be seen, the simulated path tracks fairly well, if not all of, the movements in the actual bad loans ratio. Thus, the combination of the increasing real estate loans toward 1990 and land price declines since then have been the major determinant of the bad loans problem.

The above first step does not quite reveal the root cause of the bad loans problem. One needs to explain why banks increased real estate loans in the late 1980s. In table 3 estimation results of the regression equations explaining RL90 are shown.

Equation 1 in the table shows the following. Real estate loans in 1990 are higher for banks with already many real estate loans in 1980 (RL80), for banks in areas with large land price increases between 1986 and 1990 (INF), for banks with lower share of loans to small companies in 1986 (SMALL86), and for banks with lower share of non real estate related loans in total assets in 1986 (NONRL86).

The interpretation of the first two variables should be straightforward. The significance of SMALL86 and NONRL86 probably means that banks that did not have a good customer base among small firms or non real estate sectors had to make real estate loans in the late 1980s. This accords well with the hypothesis that financial deregulation forced some banks to expand real estate loans.

Equation 2 adds another deregulation variable. ID90-ID80 is the increase in the average deposit rate between 1980 and 1990, and is meant to capture the effect of deposit rate

deregulation on real estate loans. This variable in strongly significant.[6]

The results presented in Table 3 are somewhat mixed. It shows, on the one hand, that real estate loans expanded in the 1980s because of land price increases. But at the same time, the effects of financial liberalization seem to have been working in the sense that banks that lost traditional customers and faced higher cost of funds increased real estate loans.

In order to come to grips with the quantitative significance of the volatile land price movements, the following simulation has been carried out. Assume that land prices moved after 1986 in exactly the same way as CPI, which has been very stable. The resulting land price inflation rate has been substituted into the INF term of equation 1 of Table 3. Then, the simulated RL90 variable in turn has been substituted into Eq1 of Table 1 along with the assumed value of the DEF variable. This procedure resulted in an average bad loans ratio of about 3% against the actual average of about 4% in the sample.

Consequently, the direct impact on bad loans of the volatile land price movements is estimated to be only 1 percentage point out of four. However, one has to be careful in interpreting such a result. First, the remaining terms such as the financial liberalization variables would not have exerted strong impacts on the bad loans or real estate loans without the movements in land prices. Second, the regressions are cross-section regressions and are not designed to explain increases in the bad loans ratio over some period. In fact, the land price related variables together explain about two thirds of the cross sectional variation in the dependent variable (in the standard deviation sense) in each of the regressions.

Let us therefore provisionally conclude that the most important cause of the bad loans problem is speculative real estate related loans and the volatile land price movements, but that the

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[6] The number of banks in the sample is smaller in Table 3 than in Table 2. This is because some of the independent variables are unavailable for the excluded banks.

effects of financial liberalization are non-negligible.

4, Macroeconomic Backgrounds

I now turn to the discussion of the factors that led to the volatile movements in assets prices, including real estate prices. Naturally, here I focus mostly on monetary policy.[7]

Why did land prices go up so sharply in the late 1980s? Were the increases in land prices a bubble? These are inherently difficult questions. Fundamental determinants of land prices are: rents, the interest rate, and risk premium. Even if the first two do not fully explain land price movements, one can always come up with an argument that risk premium declines were a cause of price increases. This problem is especially serious given the lack of adequate theory on risk premium.

Notwithstanding the above difficulties about estimating the fair value of land, Table 4 presents the results of one such exercise. [8] It uses data on prices, and rents of the land and offices held by top seven real estate companies listed on the Tokyo stock exchange. Given data on rents, interest rates and land prices, one can estimate the risk premium required by these real estate companies using the standard present value formula for land prices.

The result is somewhat striking. Despite the sharp increase in the land price/rentals ratio in the late 1980s, the risk premium did not decline in the period. Rather, it went up a little bit. Thus, one can explain the rise in land prices in the late 1980s without invoking the bubble argument. [9] The major cause of the price rise is, of course, the decline in interest rates. Hence, one has to

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[7] This section is based on Ueda (1993) and Ueda (1995).

[8] This is based on the analysis in Ch.6 of Ueda (1993b)

[9] This is not correct for stock prices. See Ueda (1990).

analyze why monetary policy was so expansionary in the late 1980s.

During the last couple of decades, the movements of Japanese macro-variables showed the following salient pattern. In periods of, or slightly after, a large current account surplus, assets prices such as real estate and stock prices went up sharply, followed by strong growth of the real sector of the economy. That is, GDP. And then, the current account surplus declined and the yen depreciated for a while.

The key to this correlation has been the BOJ's monetary policy. That is, the most important feature of the BOJ's policy over the last 20 years has been its close relationship with the current account and the exchange rate, despite the adoption of the flexible rate system.

Let us look at the this more carefully in Figure 5. The figure shows the current account/ GDP ratio (NX/GDP), minus one times the share of investment in GDP (I*(-1)/GDP), the rate of increase in Nikkei 225 (DOW) and the rate of increase in Yen against the dollar (E-rate) since 1970. It also shows the timing of shifts in monetary policy. An "L" stands for the first lowering of the discount rate after a period of tight monetary policy. A "T" stands for the first increase in the discount rate after a period of loose monetary policy. An exception is early 1986, when an L appears after an L, because there was no tightening in the sense of discount rate increases in-between.

The figure reveals clearly that all these variables are closely related. The following interpretation of the relationships can be provided. A current account surplus causes an appreciation of the yen. It also worsens trade conflicts with foreign economies. The presumption has been that an appreciation of the yen exerts a strong deflationary impact on the economy. The public calls for measures to increase aggregate demand and reverse the trend of the exchange rate. Foreign governments also ask for an expansionary macro-policy. For these reasons, interest rates are lowered, leading to increases in asset prices and, with a lag, to a rise in investment and a

worsening of the current account. Though land prices are not shown in the figure, they have movede in line with stock prices as can be seen from Figure 2. There is, of course, the question why the BOJ wants to expand if one of the policy targets is to create a wosening of the current account. It could be that a monetary expansion leads to a worsening of the current account through expansion of domestic demand, which outweighs the effect of exchange rate depreciation. The figure shows that the above pattern has been repeated four times in the last 25 years, exactly following the cycle in the current account.

The late 1980s were no exception. The BOJ decreased the discount rate for five consecutive times starting early in 1986 and created a sharp inflation of assets prices.

The period of loose monetary policy went on for too long for at least four reasons. First, goods prices were not increasing. Second, in late 1987, there was the Black Monday. Third, the MOF is reported to have put pressure on the BOJ not to tighten under the name of international policy coordination.[10] Fourth, the MOF still had the memory of large budget deficits of the late 1970s and early 1980s and was reluctant to carry out strong fiscal expansion.

The monetary tightening started only in 1989. The delay of perhaps a year of so caused the increases in assets prices in 1988 & 1989 and made the assets prices declines in the 1990s sharper than otherwise. Interestingly, the rate of inflation in land prices shown in Figure 2 indicates a temporary drop in the rate of inflation in 1988 and resurgence in 1989.

It is hard to determine whether the BOJ would have behaved differently in the absence of intervention by the MOF and others.[11] But the excess volatility in monetary policy seems to have

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[10] See,for example, Funabashi (1988) and an excerpt from there in Ueda (1993).

[11] In the early 1970s pressures to maintain an expansionary stance came from the then prime minister Tanaka.

been the cause of volatile assets price movements and in turn the bad loans problem.

5, The Bank Regulatory Policy and the Bad Loans Problem

To what extent are the bank regulators to be blamed for the bad loans problem? There are certain senses in which the existing set of regulations or the regulatory approach has aggravated the problem.

Bank Inspection , Disclosure and Forbearance

The large bad loans ratio for the credit cooperatives industry is an indication of the lower expertise in bank insepection among local governments who are the supervisors of the industry. Poor inspection and/or lack of disclosure, however, has also been a problem among larger banks. For example, Hyogo reported that its ratio of bad loans to total loans was 2%, or 60.9 billion yen in absolute amount. When its bailout package was announced in August 1995, loans to bankrupt borrowers were announced to be 790 billion yen, more than ten times the March number.

Regulatory forbearance has also been a problem. The seriousness of the Jusen industry had already been realized in 1993. The regulators and the mother banks had met and come out with a package that was essentially one of wait and see. In the case of Cosmo that was closed in July 1995 with bad loans of 353.8 billion yen (70% of total loans), the Tokyo metropolitan government had found that 38.5% of loans were non-performing in its inspection in 1992. The government found that the bad loans ratio went up to 49.7% in 1993, but had not done anything substantive to the cooperative. All these stories are similar to those in other countries and point to the need of more strict bank supervision.

Safety Nets

As Herring (1996) notes, many serious financial instabilities are caused by large low

frequency shocks that are hard to predict in advance. During the post war period, there seems to have been the following implicit contract between the regulators and private banks. Private banks take responsibility in individual loan items they make. They have, however, sometimes cooperated with government's policies, for example, industrial policy. In return, they have sought the help of the government in case of major difficulties, i.e., large low frequency negative shocks. This may be an optimal risk sharing arrangement between the government and the private sector ,but seems to have added to the bad loans problem in the 1980s for the reason to be discussed below.

Put differently, the most important safety net system in this country has not been the deposit insurance system, but the public's confidence in the MOF and the BOJ' ability to avoid a major instability in the financial system. If a bank goes under, the regulators have come up with a rescue scheme in which a healthier bank takes over the troubled bank. The management of the troubled bank may be punished in one way or another, but the depositors have not taken any losses. This policy has been maintained in the recent crisis as well.

Under 100% guarantee of safety of deposits in this sense, depositors lose incentives to monitor bank behavior. [12] In the past, tight regulations on the behavior of banks played a role of a substitute for monitoring by depositors. With financial liberalization, the system has increasingly lost monitors of bank behavior.

Against such a background, land prices started to increase, if as a result of loose monetary policy. With liberalization, banks were free to increase real estate loans. Banks knew that others in the industry were also expanding real estate related loans. They perhaps thought that in the event of a major decline in land prices, all banks would be hit hard , necessitating a rescue operation by the government. Though hard to prove, such a moral hazard type behavior seems to

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[12] However, shifts of deposits out of smaller banks into larger banks and postal savings have been observed recently.

have aggravated the problem.

Segmentation of the Banking Industry

A major component of the Japanese regulatory approach to the financial system has been the segmentation of the system by the type of services provided by banks. Thus, long-term and short-term banking have been separated. Trust banking services have been provided by trust banks with only a few exceptions. Smaller banks are encouraged to lend to small businesses.

This policy of segmentation, when coupled with liberalization in other fields such as developments of the securities markets, have created serious difficulties for some banks. For example, long-term credit and trust banks lost large borrowers to the bonds and equities markets and in a sense were forced into real estate related loans. City banks aggressively sought customers among smaller firms and individuals. This has forced some of the smaller banks and Jusen to extend commercial real estate loans. Statistical evidence consistent with such an interpretation has been presented in section 3 above.

Admittedly, the above discussion suggests that segmentation is not complete. Within each segment, however, banks have developed expertise and cannot easily accumulate different types of expertise when the one they own becomes obsolete.

6, Concluding Remarks

The major cause of the bad loans problem in Japan in the 1990s has been the speculative real estate related lendings of the 1980s, and the volatile assets price movements that were mainly the result of monetary policy. In addition, the unfortunate combination of financial liberalization and the segmentation approach to the banking sector has aggravated the extent of speculation. The increasing absence of monitors of bank behavior under the Japanese safety net system may have played a role.

Given that the mistake made by the BOJ in the late 1980s seems to have been due to outside intervention, the current discussion on the desirability of the BOJ's increased independence or improved coordination between monetary policy and other policies is timely and important.

The traditional lines of segmentation between various branches of the banking industry are now obsolete. However, financial liberalization must be accompanied by necessary skills to operate in a deregulated environment. The lesson we can learn from the current banking crisis is that the way, speed, order of liberalization are difficult choice variables.

Finally, in any event, we would have to move to a system with safety nets in which the force of market mechanism plays a more important role. Unfortunately, the public money necessary to close the already insolvent financial institutions has been hard to come by. Instead, healthier banks have been taxed. Thus, the resolution of the troubled banks and of Jusen carried out in the last year and a half seems to be slowing down the pace of transition.

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Table 1, The Bad Loans Problem as of March 1996

	TOP 20	REGIONAL	SHINKIN BANKS	CREDIT COOP.	AGRIC. COOP. & OTHERS
①# OF BANKS	20	129	416	366	?
②TOTAL ASSETS	757	272	109	27	124
③BAD LOANS	21.9	6.5	3.2	2.1	1.0
④% OF LOANS	5.6	3.4	4.6	11.8	2.4
⑤ LOAN LOSS PROVISIONS	10.3	2.9	1.0	0.2	0.6
⑥ RESERVE DEFICIENCY	4.2	1.4	1.0	1.1	0
⑦ HIDDEN RESERVES	18.6	6.3	0.5	0	0.9
⑧=⑦-⑥	14.4	4.9	-0.5	-1.1	0.9
⑨CAPITAL	17.3	10.8	5.7	1.1	?
⑩ # OF INSOLVENT BANKS,I	0	5	?	?	?
⑪ II	2	9	?	?	?
⑫ III	3	15	?	?	?

- ⑥=(Loans to bankrupt borrowers+past due loans)*.63+Loans to Jusen+(restructured loans-loans to Jusen)*0.5*0.63 - ⑤.
- ⑩ = # of banks for which ⑧-⑨ is negative. The level of ⑧ is simply estimated by (total Bad Loans)*0.7.
- ⑪ = the same as ⑩ except that all bad loans are assumed to be unrecoverable.
- ⑫ = the same as ⑩ except that bad loans are assumed to be underestimated by 30% and that hidden reserves are 50% lower.
- Numbers other than # of banks and per cent of loans are in trillions of yen.

Table 4 Estimation of Risk Premium Required on Investment in Real Estate

	1960-69	1970-79	1980-85	1986-89
land price/rental	20.0	19.3	15.3	31.5
inverse of above	5.0	5.4	6.6	3.3
interest rate	7.7	7.3	7.4	4.2
inflation of rents	9.8	10.0	6.5	10.3
risk premium	7.1	8.1	5.7	9.4

Notes: 1, Rows 2-5 are in %.

2, The interest rate is the call rate.

3, The table if from Ueda (1993), p.161.

TABLE 2: EXPLAINING THE BAD LOANS RATIO

	RL90	RL90*DEF		COLLA90	SIZE90	SMALL90	PROFIT90	CAP90	DLONG	DCITY	DTRUST	DREGII	Rsquared
EQ1	20.9	2.7		5.25	-4.62	0.962	-0.00532	-0.452	2.48	4.22	2.08	-0.156	0.597
	5.68	*1.68*		*2.78*	*-1.55*	*0.392*	*-0.0906*	*-1.75*	*1.36*	*2.95*	*1.61*	*-0.324*	
	RL86	DRL	DEF										
EQ2	29.7	12	0.749	4.22	-4.04	0.0627	-0.0233	-0.469	2.29	3.34	1.57	-0.532	0.618
	7.64	*2.35*	*1.79*	*2.23*	*-1.35*	*0.0258*	*-0.401*	*-1.86*	*1.18*	*2.3*	*1.24*	*-1.07*	

Notes: 1, The dependent variable is the bad loans ratio.
2,The number of banks in the sample is 148 for both equations.
3,Data definitions:
RL90(86):The share of loans to real estate,construction and finanical industries in total loans as of March 1990 (1986).
DRL:RL90-RL86.
DEF:The rate of deflation of land prices in the capital city of the prefecture where the main office of bank is located, between Jan. 1990 and Jan. 1996.
COLLA90:The share of loan collateral in the form of land in March 1990.
SMALL90:The share of loans to small companies in total loans .
PROFIT90:The rate of return on capital.
CAP90:The ratio of (own capital+loan loss provisions+hidden reserves) to total assets.
DLONG:Dummy for long-term credit banks.
DCITY:Dummy for city banks.
DTRUST:Dummy for trust banks.
DREGII:Dummy for second tier regional banks.
4, The equations include a constant, not shown for simplicity.
5,The numbers in italics are T-statistics.

Table 3 EXPLAINING REAL ESTATE LOANS

		RL80	INF	SIZE86	SMALL86	RETURN86	CAP86	NONRL86		DLONG	DCITY	DTRUST	DREGII	Rsquared
EQ1		0.95	0.027	0.0332	-0.113	-0.00211	-0.0012	-0.281		0.0193	-0.0843	0.131	-0.0117	0.753
	143	*8.24*	*3.12*	*0.235*	*-2.32*	*-0.876*	*-0.191*	*-2.68*		*0.39*	*-2.58*	*4.05*	*-0.929*	
									ID90-ID80					
EQ2		0.98	0.0151	0.00624	-0.0776	-0.00236	-0.00479	-0.318	0.0376		-0.113		-0.00609	0.709
	129	*8.26*	*1.62*	*0.44*	*-1.61*	*-0.917*	*-0.732*	*-2.92*	*3.31*		*-3.32*		*-0.46*	

Notes: 1,The dependent variable is RL90.
2, The numbers below the equation number are # of banks in the sample.
3, Data definitions:
INF:The rate of inflation of commercial land prices of the capital city where the main office of bank is located, between Jan. 1986 and Jan.1990.
NONRL86:The share of non-real estate related loans in total assets as of March 1986.
ID90-ID80: Increase in average deposit rates between March 1980 & March 1990.
Other definitions are the same as in Table 2 except CAP86 does not include hidden reserves.

Figure 1:Share of Real Estate Loans

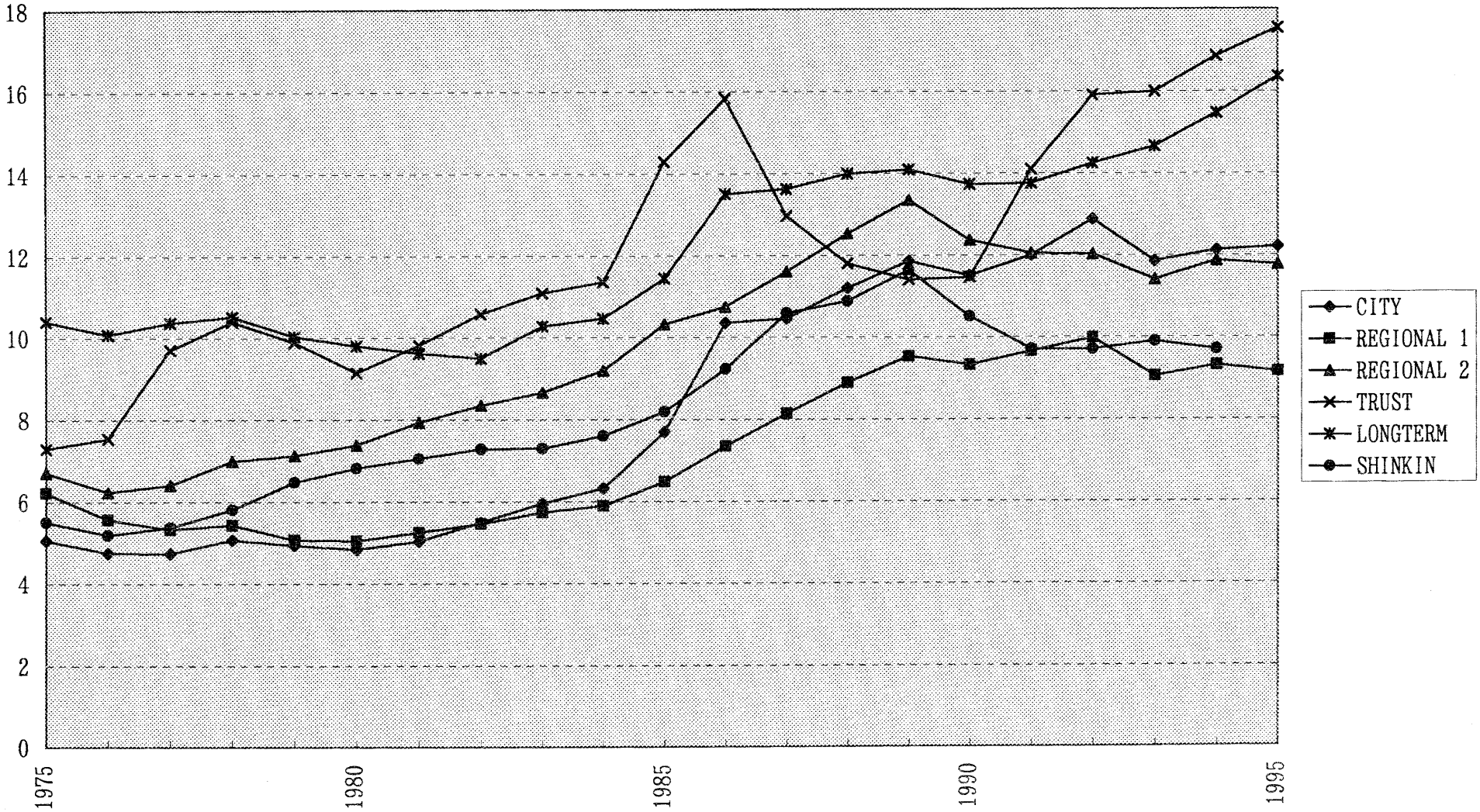
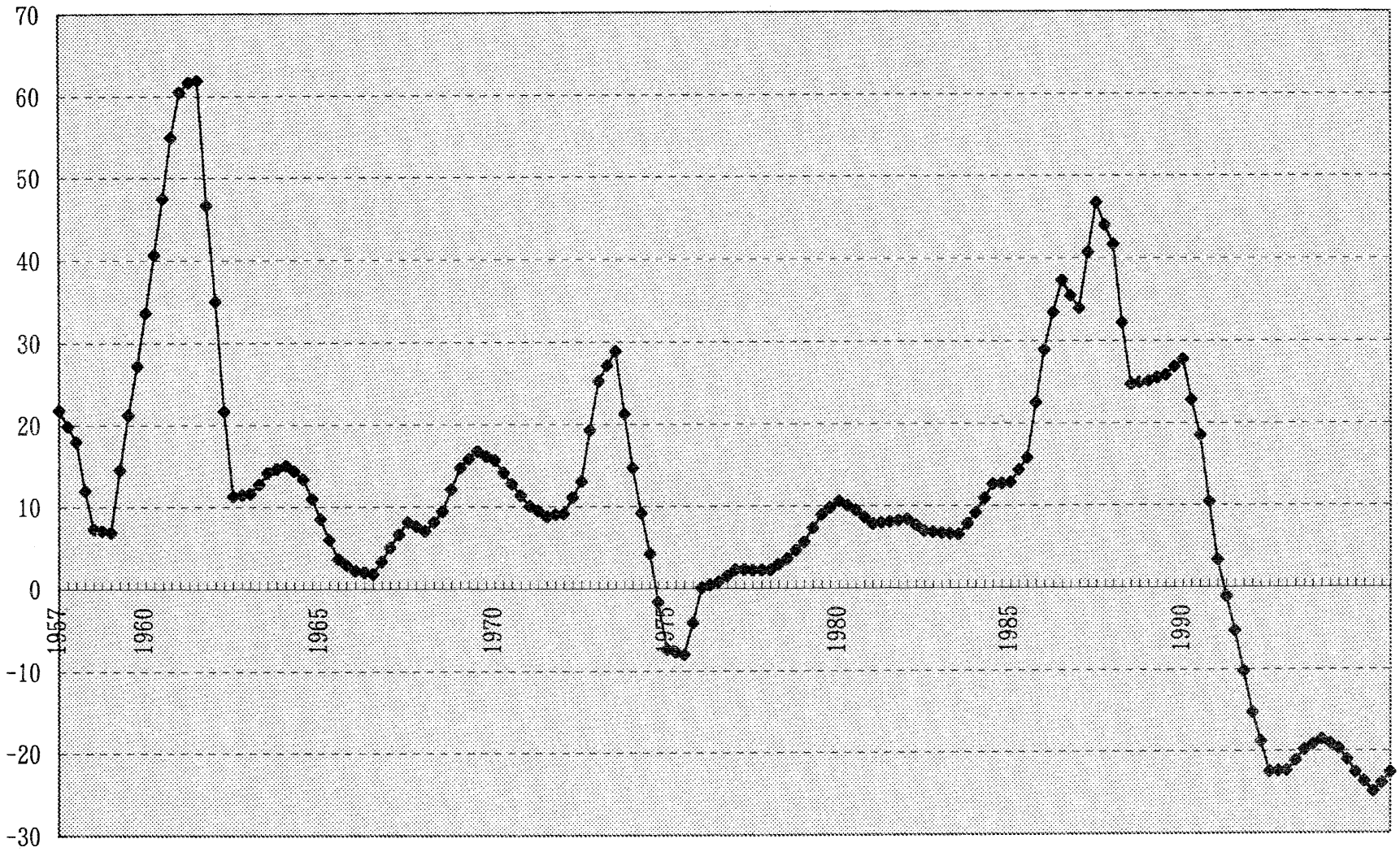


Figure 2:The Rate of Increase in Land Price



FAIR2.XLS

Figure 3: The Bad Loans Ratio

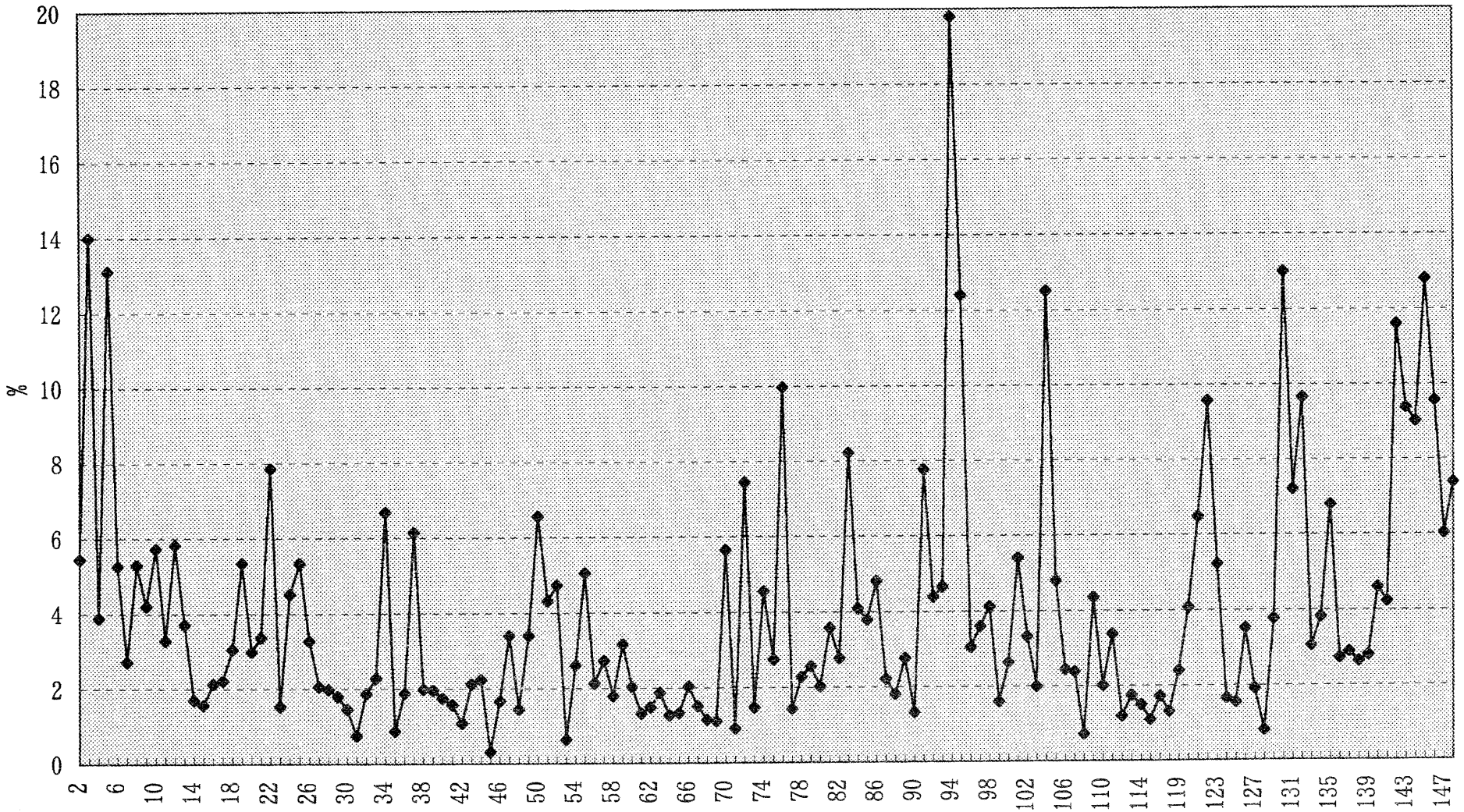


Figure 4:Explanatory Power of Real Estate Loan Related Variables

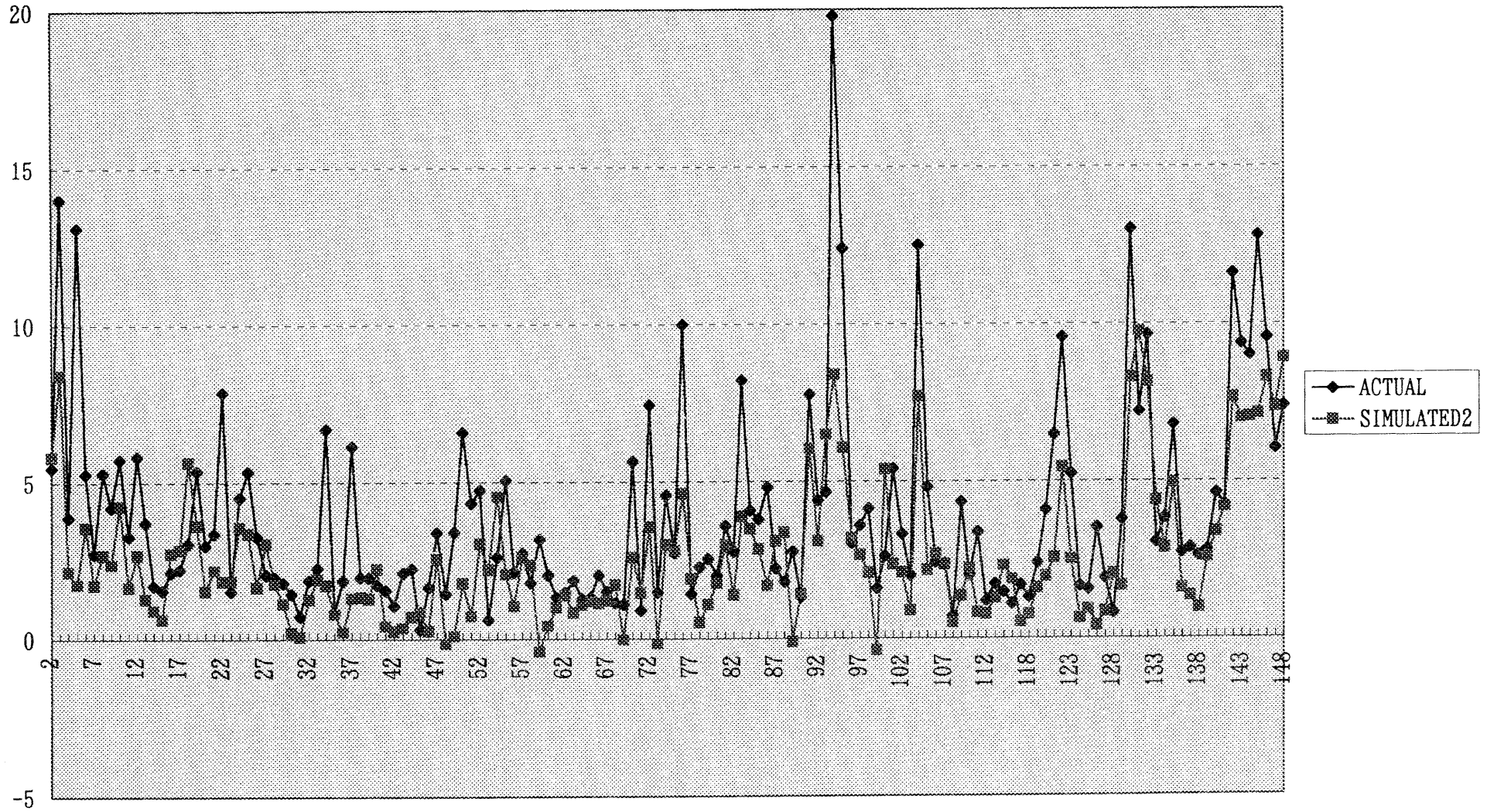


Figure 5:Monetary Policy and Macro Fluctuations in Japan