Financial Deregulation and Crisis:
An 'Agency-conflict' Case of Japan

by

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Abstract

The main focus of this paper is on the 'agency-conflict' during financial deregulations in the 1980s as the potential causality of Japanese banking crisis in the 1990s. Agency conflict is defined as the conflict of interest among the policy makers and agencies (e.g. banks) that arises as a combined effect of heteroschedasticity[1] of policy shifts at that time and the overall weaknesses of corporate governance of the Japanese banks. This paper theoretically and empirically tests the hypothesis that "agency-conflict" increases short-term profit and can be a potential cause of the subsequent crisis. First part of the theoretical model based on the *Bayesian Learning Model* explains how agency conflict can increase profit in brief and second part of the theory explains how banks can be vulnerable to crisis at the outset of the bubble. Moreover, the theoretical model is used as the basis of empirical analyses on the causes to the probability of banking crisis. The paper also provides discussion on a number of interrelated structural changes and agency-conflicting issues that occurred in the Japanese financial system. However, the analyses find that the 'agency-conflict' is significant to the probability of banking crisis.

Key words: Financial deregulations, agency conflict, banking crisis, and corporate governance.

JEL Classification Code: E44, E52, E61, G21, G28, O16

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[1] The word 'heteroschedasticty' is used to mean the variation in efficiency of policy changes. The term is well explained in the theoretical part in section 4.1.

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1. Introduction

The policy objective of any financial deregulations is to make a financial sector more competitive, profit oriented and to make capable to play the leading role as an intermediary of the economy. Usually countries take decision for deregulation in light of country's own needs as well as in compliance with socio-political aspects. Beyond the positive aspects of deregulation, can financial deregulation create financial crisis? If yes, when? The answer of these questions is explored in this paper from the Japanese experience in the 1990s.

Japanese financial system was predominantly bank-based and it was highly regulated before 1980. The banking system of that time was mainly known as 'Main Bank' system, where some enterprise groups cluster around a bank. Many of the activities of the Main bank system did not comply with the usual commercial banking concept. Rather, it is described as a convoy financial management, which is also a phenomenon of the Japanese oriental culture. There were financial and non-financial arrangements between banks and groups, as well as they were interlocked with shares. Moreover, banks enjoyed window guidance of Bank of Japan and some other subsidies from the government (see Ito, 1992; Suzuki, 1987).

While it was a high debate among the Japanese policy makers and pundits whether they should adopt complete competitive structure, or to leave some regulating elements that are consistent with the Japanese socio-cultural norms (e.g. convoy mechanism), the authority initially started deregulations in the mid-1970s with a view to reducing dependency of banks on corporate groups with some indispositions. Some other deregulations were namely, interest rate deregulation, downsizing interlocking shares, allowing banks to participate into the capital market etc. The 1980s was a decade of financial deregulations, but the pace and objective of

deregulations hampered substantially due to emergence and burst of the asset price bubble in the later half of the 1980s and subsequent banking crisis in the 1990s.

In the backdrop of Japanese banking crisis and economic stagnation in the 1990s, the behavior of the banks' has raised some issues that have made it necessary to rethink about the deregulation process of the Japanese financial system. The emergence and burst of the bubble economy in the late 1980s were mostly characterized by the commercial banks' aggressive behavior in credit extensions, relationship between banks and corporate groups, conflict of interest among the financial intermediaries and authorities etc. During the crisis, many banks (180 up to 2003 according to Deposit Insurance Corporation, Japan) and debtor companies failed, huge burden of NPL occurred, and macroeconomic consequences such as deflation, recession etc. prolonged. These issues give rise to curiosity regarding why the most successful banking system of the 1960s and the 1970s failed? Did the deregulatory measures create any conflict of interest in the financial system that has contributed to the failure of the banks?

Many researchers have already examined the causality of the banking crisis in Japan. Hossain (2004, 2005) mentioned that weak corporate governances of the Japanese banks are enough to explain the crisis in the 1990s, and the asset price bubble consequences of the late 1980s just accelerated the situation to an early crisis. Cargill (2000) provides a long list of the causes such as (1) highly regulated system as it was unable to adjust with the new environment after the deregulations started, (2) the BoJ created too much liquidity in the late 1980s, with low interest rates, and followed it by too abrupt a tightening of monetary policy and these policy failures led to wild fluctuations in asset prices, (3) the government was slow in responding to the problems in the financial system even after their existence was clear, (4) Japanese taxpayers provided little support for the government to use public funds to rescue the banking system, and finally (5) a lack of disclosure and transparency by banks and other financial institutions and regulators contributed to the delay in the response to the problems. The first causality of Japanese banking

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crisis described above by Cargill was also supported by Hoshi (2001). Ueda (2000) mainly blames the bubble and excessive real estate lending as the causality of crisis.

Hoshi (2001) and Hoshi and Kashyap (1999) mainly try to establish that slow and partial deregulations was the primary causality of crisis. The important question to the end: why was the financial deregulation slow and undirected? The answer of this question has not been explored adequately in the existing literature.

Going to the deep of the problem, this paper argues that the causality behind making the deregulations slow should be the causality of crisis. In the earlier stage of liberalization, mainly during the 1980s, variations in policies (can be measured in terms of time dispersion) were higher that makes the deregulations slow and left the outcome away from optimal as a result of conflict of interest among policy makers and beneficiaries which is termed in this paper as *'agency-conflict'*. Explaining different aspect of financial deregulations, this paper argues that 'agency-conflict' among the parties involved in the deregulation process were mainly responsible for 'heteroschedasticity in policy shifts' that might have potential impact on partial deregulations and subsequent crisis. Note that 'heteroschedasticity in policy' can be the outcome of conflict or mistake and vice-versa, and to some extent, 'heteroschedasticity in policy' and 'agency conflict' is substitute of each other. This argument is tested in this paper theoretically and empirically. However, no attempt has been made so far to highlight the potential impact of agency-conflict as a cause of delayed deregulations and subsequent crisis.

This paper outlines that the ongoing deregulations did not accompany the measures on time to (1) make the banks capable of doing business without depending on the big corporate groups, (2) improve the corporate governance of the banks that are able to handle the situation in a liberalized environment, and (3) prepare prudential regulations so that bank can not make any speculative decision. Moreover, policy makers' deliberate efforts to retain authority over the banks and other financial institutions helped not to take the measures on time that derailed the

system from being competitive. There was a contradiction in beliefs and signals from either side that created "agency-conflict", as a result, heteroschedasticity in policy shift made a room for moral hazard for the banks with the prevalence of weak corporate governance.

This paper highlights mainly two issues to explain the agency-conflict in financial deregulation process and crisis:

(1) Heteroschedasticity in policy shift: As mentioned above, liberalization started through financial deregulation in the mid-1970s without clear objective so far for which financial institutions could not be able to prepare properly for the changing situation. As a result, financial institutions could not cope with the situation instantly and indulged in some speculative behavior during the asset price bubble and monetary easing period of the later half of the 1980s. Again to curb down asset prices, some measures such as monetary tightening, and some restrictions on land transactions were undertaken to burst the bubble that finally made banks vulnerable to crisis. As the banks assets were secured by collateral assets, continuing plunge of asset prices with the authorities' intervention made the loans uncollectible, in turn, the crisis started from 1991. Since the undertaken measures led to some banking and economic crisis, both 'monetary and structural policy changes' and 'timing of implementation' pinpoint the heteroschedasticity in policy shifts.

The heteroschedasticity in policy shift mainly comes from the conflict between (1) fiscal vs. monetary authority, (2) authority vs. financial institutions, and (3) financial institutions vs. debtor companies like SMEs, real-estate companies etc. Moreover, ongoing financial deregulations reflect somewhat conflict with the Japanese society's norms, as the society believes on convoy mechanism, which might go against the competitiveness.

(2) Corporate Governance: From Hossain's (2005) study it is clear that weak corporate governance issues affect the profitability of the Japanese banks, as well as it might have effect on the failure of banks. The corporate governance system of Japanese banks is largely determined

by the bank-ownership structure, which limits the check-and-balance in the system substantially (IMF, 2000). Due to weak corporate governance the banks could not resist mistakes in policies; rather they tried to enjoy the fruits of mistakes. Therefore heteroschedasticity in policy might have spill over effect on the corporate governance of banks. However, low profitability generated from the main bank system forced banks to do speculative behavior during the 1980s comparatively in a more liberalized environment in absence of prudential regulations. By this way they acted as a channel for transmitting shocks to the economy. As the banks management have been familiar with the regulated system, they were not so efficient in exploiting more profitable lending opportunities in a comparatively liberalized economy. So they were not being able to judge the quality of assets, as well as it creates moral hazard problem.

This paper theoretically establishes that at an early stage of liberalization process some policies were undertaken on trial and error basis, and policy inefficiencies can be captured through the activities of the beneficiaries such as banks. The paper tests both theoretically and empirically that the agency conflict increase short-term profit for banks and make banks vulnerable to crisis with the presence of random shock like bubble. This is also important to note that the agency-conflict made the ongoing deregulations in the 1980s slow and partial as it is characterized by the conflict of monetary and fiscal policies, and the weak corporate governance of banks left the outcome away from optimal. Moreover, it explains the agency conflicting issues more systematically as well as it provides empirical illustrations by determining conflicting period, which is not readily available in existing literature.

The remainder of the paper is organized as follows: Section 2 describes structural changes in the Japanese financial system, Section 3 describes agency conflicting issues during the financial deregulations, corporate governance and profitability of the banks, also a theoretical model is developed in this section to explain how a bank can be vulnerable to crisis at the outset of the bubble. A theoretical framework is developed in Section 4 to understand how

heteroschedasticity in policy shifts leave room for gain in profit as well as how a bank can be vulnerable to crisis at the outset of the bubble. The model also provides a basis for further empirical analysis. Section 5 provides empirical results of Probit and VAR analysis, and Granger causality test and Section 6 concludes the paper.

2. Structural Changes in the Financial System of Japan

This section provides an overview of some interrelated structural changes that occurred during the 1980s and 1990s in the financial system of Japan.

The Main Bank System

The Japanese financial system is predominantly bank-based. Post-war Japanese financial system was highly regulated and banks were heavily dependent on BoJ's (Bank of Japan) subsidies (window guidance) and borrowings of enterprise groups. The characteristics of the Japanese model of financial system during post-war economic growth included high debt/equity ratios, greater reliance on bank loans than securities markets, closer relationship between banks and borrowers, extensive corporate cross-shareholding, greater guidance from the government in credit allocation etc. The system is well known as 'main bank' system.

It is evident from many research works that this 'main bank' system in Japan contributed greatly to the post-war economic growth of Japan although the varieties of functions played by the main bank were not usually associated with the concept of commercial banking. This type of Japanese banking system is characterized by clearly defined structural policy on the part of the government for stimulating and maintaining specialization among financial institutions, which has been termed as 'convoy system'[2] by some economists. It is noteworthy that Japanese structural policy was oriented toward particular concrete objectives rather than toward achieving

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[2] Suzuki Y. (1987) used the term 'convoy system' of management in describing the situation of the absence of destructive competition through interest rate control and other regulatory measures during high growth period of Japan.

maximum competition and leaving the results to the working of the free market (Wallich H. and Wallich M., 1976).

The main bank system had important historical antecedents as the pre-war banking system and industrial system (including Zaibatsu) evolved (Aoki and Patrick, 1994). There is a vast literature (for example, see Okabe (2001), Aoki et al. (1994) etc.) on how main bank system played a very important role in Japanese economy and financial system. The main banking system worked through both the financial and non-financial arrangements with the 'enterprise-groups'. This structure of Japanese banks might be the so-called "Industrial bank" (also available in Germany as House bank) rather than modern commercial bank. Unlike American and many other countries' banks, Japanese banks are allowed to own equity in other corporations. The shares of group member firms owned by banks form an important link in the interlocking structure of enterprise groups. In addition to interlocking shares, banks provide preferential loans and board members to the group affiliated firms. A group bank serves as a screening agent for the investment projects of the group firms and stands ready to lend funds whenever they are needed (Hoshi et al. 1991).

Highlights of main deregulations

Literature review shows that a policy shift toward a greater emphasis on competition was induced in the mid 1970s. Along other measures an effort has been made to make banks more profit-oriented by easing the dividend restrictions (Wallich, H. &Wallich, M., 1976). As a part of intensive and continuous effort to improve the competitive structure, the Certificates of deposit (CDs) became available in May 1979; Gensaki[3] transactions with CDs (unregulated interest rate) became increasingly popular, as there is no transaction tax on CDs. The Tegata[4] market, freed

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[3] The 'Gensaki market' means repurchase agreement market established in 1949 by securities houses. It became important in 1970 when FIs and large companies began to participate.
[4] The Tegata (bill discount) market is a short-term financing market for two-weeks to six-weeks. It was spun off from the call market in 1971.

from interest rate regulation also grew in the 1980s. During this period, restrictions on fund-raising in the securities market by firms were removed and major firms became less dependent on bank borrowing (Ito, 1992).

Some other deregulatory measures are worth mentioning. The interest rates for large-amount time deposits (LTDs) were deregulated in 1985, thus the share of these deposits in the money supply had been increased significantly. The lowering of the minimum deposit amount for money market certificates (MMCs) to 10 million yen in October 1987 made those certificates more popular among households. The Anti-Monopoly Law Reform of 1977 specified that all financial institutions were to reduce their share holdings from 10% to below 5% by December 1987, by this reform the policy of 1951 again revived. Although this law aimed at dissolution of cross-shareholding, but there is no limit about the total number of different stocks a bank can hold. By this law, a bank's holding of different stocks can exceed its total capital, which might have risk for the banking business. Since bank's money are the depositors short-term money, share holding in equity of its enterprise groups sometimes may create mismatch in maturity and loan portfolio.

After the collapse of the bubble in 1990, the important structural changes toward universal banking type system started by the Financial System Reform Act, 1992 (enforced in April, 1993) that allows banks to conduct trust businesses either through trust bank subsidiaries or by themselves and securities businesses through securities subsidiaries subject to the permission of the Prime Minister. The Financial System Reform Law of 1998 allows banks to conduct insurance businesses through subsidiaries from October, 2000. Since March 1998, banks can establish bank-holding companies that own a securities subsidiary. Banks have been allowed to sell investment trusts at their counter since December 1998. This policy shift toward universal banking was explained by Aoki et al. (1994) as- "the bad loans consequences of the bursting

bubble result in a weaker banking system that needs further deregulations, particularly permitting banks to engage in bond underwriting and related services more liberally".

Direction of financial deregulation; Emergence and burst of the bubble

The structural changes in the financial system have been started from the mid 1970s in the form of financial deregulations to increase the ability of the Japanese banking system to meet international competition. The deregulations also aimed at dissolution of cross-shareholding[5]. Many have attributed the significant financial liberalization that has taken place to the sharp increase in government budget deficits in the late 1970s and the resulting need to sell large amounts of government bonds (see Cargill and Royama, 1988).

These deregulations aimed at strengthening capital market, but it were without directions until 1990 in the sense that it neither showed its direction toward full competitiveness since some elements of the main bank regime were prevalent nor any other special type of banking by which bank can find any substitute of enterprise group. The decade of 1980 might be termed as undirected deregulations as like 'boat without sail'. Aoki et al. (1994) mentioned the banking system of that time as 'market-embedded main bank system' since some elements of the main bank system remained valid; these remaining elements, as I argue, actually created some heterogeneity in the market too. Untargeted liberalization, during transition from one regime to another, created many problems for the economy and the financial sector. Emergence and burst of the asset price bubble during 1988-90, prolonged banking crisis in the 1990s, huge non-performing loan, economic recession etc. are some of them. Finally the deregulations during the 1990s destined to the direction of universal banking.

The developments in regulatory frameworks after the collapse of the bubble (after 1990) and at the onset of banking crisis, allow banks to do business in the capital and risk market too.

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[5] The Anti Monopoly Law Reform, 1977 was one-step forward in reducing cross-shareholding. Okabe (2001) shows that cross-shareholding is gradually reducing in the Japanese financial system.

Under these regulatory frameworks, Japanese banks are given license to do conventional non-banking activities like lease financing, investment and merchant banking, underwriting, insurance business etc. Thus, these types of regulatory frameworks allow banks to expand their businesses in risk market (security and insurance), capital market (investment banking) as well as money market. This model follows **universal banking-**type system rather than modern commercial banking. Diagram-A1 in Appedix-1 clearly depicts the scope of today's banks' businesses.

Non-bank financial institutions (NBFIs), consumer-financing institutions, insurance companies etc. are mostly working as a subsidiary company of the banks. They are heavily dependent on banks for their funding, of course, the issue is beyond the scope of this paper. However, these deregulations opened up a wide range of business possibility to the banks that indicates a significant change in their structure compared to the structure before 1980.

3. Agency-Conflicting issues during financial deregulations

3.1 Heteroschedasticity in policy shift

This section provides a systematic description of the conflicting issues that might have impact on the Japanese banking crisis in the 1990s onward.

Fiscal vs. monetary policy

It is widely thought that lack of coordination in fiscal and monetary policy formulation made the situation in Japan worse in the late 1980s. Since monetary easing in the early 1980s helped in creating the bubble as well as a ground for banks speculative behavior, BoJ explained the action of monetary easing as an outcome of fiscal consolidation of the government in the first half of the bubble. If expansionary fiscal policy had been implemented at an earlier stage, the official discount rate would not have been reduced to 2.5% from 5% within one year in 1986-87. Again conflict is seen between these two authorities in their actions taken to burst the bubble. Early implementation of expansionary fiscal policy facilitated the monetary authority to pursue tight

monetary policy. Government's effort in curbing land price with monetary tightening helped the bubble burst earlier than expected in 1990 which made the banks and other institutions vulnerable to crisis. Especially the BoJ can not deny their responsibility for not considering banks' investment situation.

Another conflicting issue is interest rate hike during the bubble period. BoJ failed to make any convincing argument regarding this issue. To prevent the interest rate hike, many argued that monetary policy at that time needed to be conducted with the foreign exchange rate as target. In Japan, MoF is mainly responsible for foreign exchange intervention, and BoJ only conducts foreign exchange transactions as its agent. As a result, in some cases, foreign exchange interventions were not in effect in line with monetary policy (Okina et al., 2001).

Monetary Policy vs. Banks

The combined effect of half-hearted financial deregulations and downward pressure of profitability might have influenced the banks speculative behavior to increase their short-term profit during the asset price bubble. Monetary easing in the mid 1980s along with structural changes indulged banks to expand credit aggressively during the asset price bubble in the late 1980s.

With structural changes, the 'monetary phenomenon' added up to make the situation more critical. In order to counter the recession due to the rapid appreciation of the yen after the Plaza Accord in 1985, the BoJ lowered discount rate five times as a part of monetary easing between 1986 and 1987. At that time, money supply increased more than 10% (Figure 1). During ongoing financial deregulations, growth of money supply and lowering discount rate at an extraordinary level creates a room for *moral hazard* for the banks.

Figure 1: Trend of call rate and discount rate
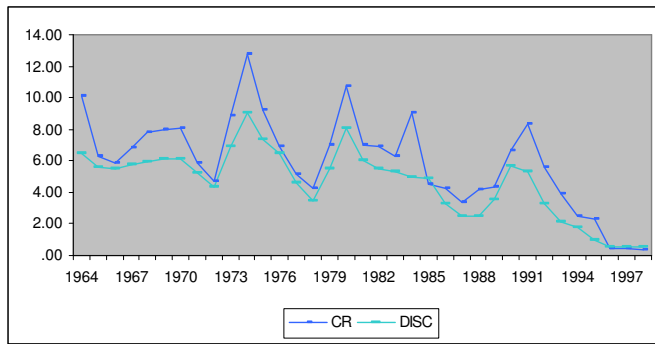
The commercial banks have taken this opportunity of protracted monetary easing and they started lending aggressively to the SMEs, NBFIs etc. to increase their short-term profit in absence of prudential banking regulations, as the deposits were backed by insurance. Also lower tax on holding of land and higher tax on transaction of land created demand and supply gap in the real estate sector that rapidly increased the price of assets. With these favorable situations, banks lent aggressively to the SMEs and contributed in creating the asset price bubble and transmitting the shocks to the economy after collapse of the bubble economy.

Here it is important to note the way the bubble was collapsed. As a part of BoJ's monetary tightening and government's effort to curb land prices, the bubble started to burst in the later part of 1990, asset prices started to fall sharply, many debtor companies became bankrupted, and creditor companies had a huge burden of non performing loan (accumulated direct write-offs stood around 9% of GDP in 1999; Okina et al., 2001). Up to 2003, 180 banks failed; most of them were Regional Tier II banks (relatively small-sized banks operate regionally). This prolonged nature of the crisis indicates that the crisis has not been stabilized yet.

With this backdrop it is relevant to ask the question- were the interventions of authorities to stop bubble correct? As the crisis continues from just after burst of the bubble, it is reasonable to repose some doubt on the appropriateness of the policies undertaken by the authorities. They did not consider or analyze the situations of the banks properly before taking actions to stop bubble.

It is hoped that if they would take the measures gradually, the shocks would have transmitted to the economy more softly.

Banks vs. Non-banks and other companies

With the advent of liberalization, market forces unleashed on the hitherto regulated environment. In this market upheaval, banks lost their big customers as they were shifted away from bank-borrowing toward other financing including retained profits, corporate bonds, securities holdings, international financial market etc. Due to decrease of the large firms' dependency on banks borrowing, banks shifted aggressively their mode of investment to the SMEs, NBFIs etc. for real estate businesses (Figure 2). Empirical analysis also supports this view.

The aggressive investment to the SME and other real-estate sector comes through a process of asymmetry of information and moral hazard problem. Therefore, burst of the asset price bubble in the early 1990 made many SME and real-estate company insolvent, creating a huge burden of NPL for the banks.

Figure 2: Growth of asset ratios over the years
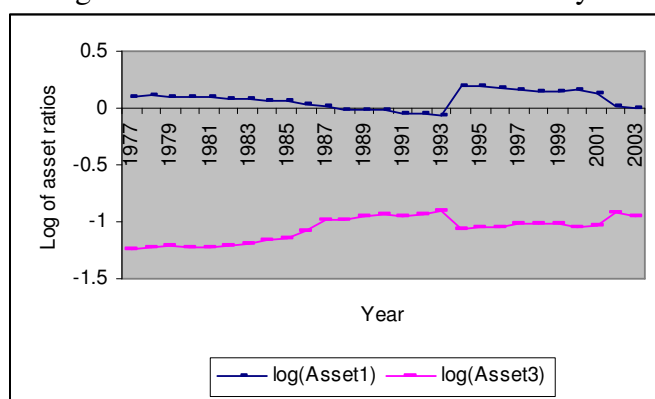
* Asset1 denote total ratio of total loans outstanding over total assets
while Asset3 denote the ratio of real estate loans outstanding over total loans outstanding.

Figure 2 clearly depicts the asset bubble situation where overall loan portfolio of banks changes with the changes of real estate loan in their portfolio.

Conflict with society's norm

It is widely known that Ministry of Finance (MOF) has been very deliberate in asserting authority over banks, merging banks, and controlling the system. Moreover, Japanese socio-cultural activities have been rooted in the form of 'group activities' or 'joint decision'; Zaibatsu, Keiretsu, and the main bank system were a reflection of this 'group' phenomenon. With the financial deregulations, is the authoritarian role of MOF shrinking or is the 'group phenomenon' of Japanese culture getting eliminated? It is interesting to note that the structural changes in the financial system can be explained by the two sides- industrial banking and universal banking[6], of the same coin 'convoy system'[7]. The forming of universal-type banking may validate authorities' expectation as another type of convoy system has been resurrected. Can the crisis therefore be called as 'self-fulfilling attack[8]'?

Therefore, by the undertaken deregulations, the financial system of Japan has not been made full competitive. It has been modified synchronizing with the characteristics of the Japanese society.

However, the big agency conflicting issues are summarized in Table A2 of Appendix-2 and the following figure (Figure 3) is drawn to identify the duration of conflict among the agencies. Category '**0**' (reduction of dependency of large corporate groups) and '**1**' (corporate governance) are completely overlapping and big conflict arises after 1983 when money supply grew with ongoing financial deregulations. The undertaken policies during 1983-89 somewhat conflicted

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[6] Universal banking includes investment services in addition to services related to savings and loans. This is more common in European countries but prohibited by law in the U.S.

[7] Although Rhodes J. R. (2003) focused on the demise of the 'convoy system' of financial regulation, the convoy system of financial management has again been revived by making banks as the center point of other non-bank financial institutions.

[8] Although this phenomenon is explained in the second generation models of currency crisis (for example, see Flood, Robert and Nancy Marion (1998)), we can explain the transition of Japanese financial system by this phenomenon in the sense that when action affected the market sentiment and started a crisis, it fulfills authority's intention to move to a new convoy system (universal banking).

with the category 0 and 1 of 1980-89 and therefore, the conflict period is roughly estimated as 1983-89.

Figure 3: Graphical presentation of conflict-period based on the conflict-issues described in Table A2 of Appendix-2.
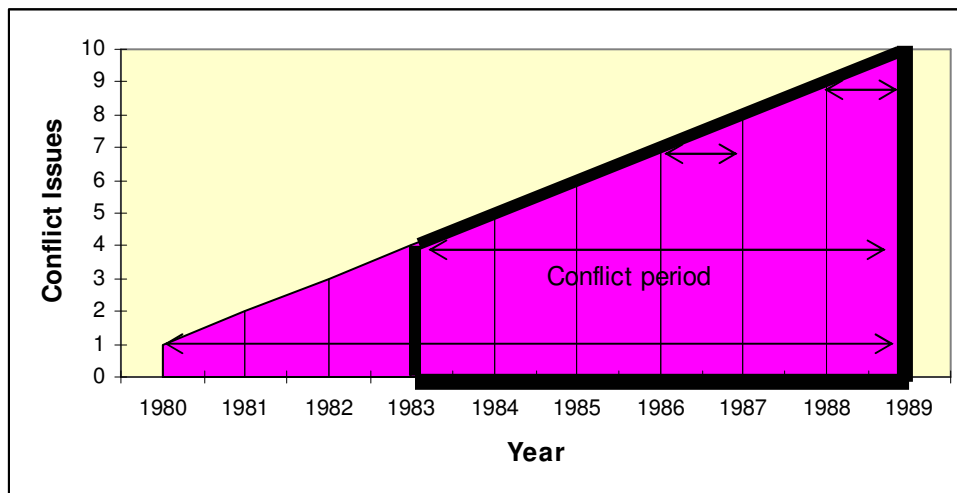
Note: 1. Arrow-lines indicate the issues that had conflict over the period.
2. The thick area indicates big conflicts as the issues 4, 7 and 9 had big conflict with the issues 0 and 1.

3.2 Corporate Governance and Japanese Banks' Profitability

The corporate governance issues seem very crucial for the Japanese banking system, as it is blamed largely for creating problem for the banks. One of the main important aspects of corporate governance of the Japanese banks is its ownership structure. A typical Japanese bank has four groups of shareholders: life insurance companies, corporate borrowers of the bank, bank employees and other banks. The lack of incentives for shareholders of banks and as employees constitute a big portion of the shareholders, there is reluctance in exercising their corporate governance power over the management. This issue can be a cause for low profitability of the Japanese banks, as the management is reluctant to increase profitability rather than increasing shares.

Table 1 demonstrates the ownership structure of the Japanese banks. Over time it is seen that the percentage of banks in which banks and insurance companies alone are the top 3-5 shareholders, are increasing. This development creates problem for the shareholders to exercise

their corporate governance power to the management. Therefore, the management of bank is reluctant to increase efficiency.

Table 1: Percentage of banks in which banks and insurance companies alone are the top 3 and 5 shareholders

	1980		1990		2000	
	Top 3 (%)	**Top 5 (%)**	**Top 3 (%)**	**Top 5 (%)**	**Top 3 (%)**	**Top 5 (%)**
All Banks	41.94	20.43	55.08	34.75	53.27	31.78
Nationwide Banks	54.55	22.73	63.64	22.73	61.54	23.08
Regional Banks	38.03	19.72	53.12	37.5	52.13	32.98

Source: Yukashoken hokokusho (Company Annual Reports); Courtesy: Masaharu et al. (2004)

The Japanese banks were under downward pressure of profit during the heyday of the Japanese economy and got momentum after liberalization started. What we have discussed in the previous sections, undirected liberalization brought much frustration for the banks, moreover downward pressure of profit acted as catalyst to behave aggressively for increasing profit during the asset price bubble.

Figure-4: Japanese Banks Profitability during 1964-1998
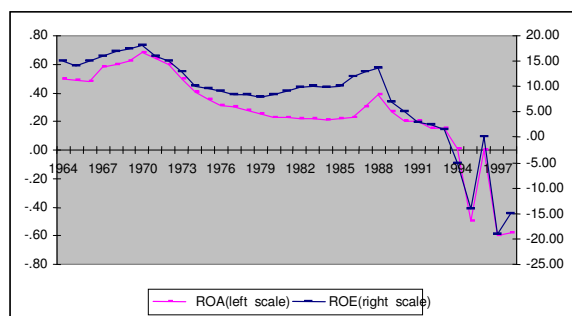
Figure-4 shows that the declining trend of profitability of Japanese banks continued from 1970 to 1998 except during the asset price bubble. In the main bank regime banks were enjoying window guidance and subsidies from BOJ and the government. Therefore, perhaps banks were not much aware about the profit because they were competing among themselves for market share rather than profit (Yoshino and Sakakibara, 2002), and they were backed by the corporate

group. Lending risk analysis could be biased due to the presence of directors of enterprise firms in banks (Table 2).

The following table demonstrates the economic size of the big six enterprise groups in 1987. Each enterprise group consisted at least 3 banks or insurance companies at that time.

Table-2: Structure of corporate governance of the big companies(**FY 1987**)

	No. of member firms		Average interlocking Shares	Average intra-group loans	Total assets (billion Yen)	Loan share[1] (**FY 1989**)	Board of directors share[2] (**FY1989**)
	Total	Bank / Insurance					
Mitsui	24	4	17.1	21.94	238,447	5.96	6.69
Mitsubishi	29	4	27.8	20.17	241,846	7.17	7.08
Sumitomo	20	4	24.22	24.53	153,202	6.75	6.58
Fuyo	29	4	15.61	18.20	322,798	6.03	9.38
Sanwa	44	3	16.47	18.51	377,622	7.30	8.97
Ikkan	47	5	12.49	11.18	466,250	4.44	12.44

Source: Toyo Keizai, Keiretsu Kigyo Soran, 1989; Ito T. (1992)
[1]Outstanding loans lent by group financial companies/ Total outstanding loans
[2]No. of directors sent from group companies/ Total outside board members.

There might have also possibility of window dressing[9] in bank's profit, if it is so, the actual profit of banks was lower than the reported one. Caves and Uekusa (1976, pp. 72-83) showed that group membership decline a firm's rate of profit; so does banks profit. The other finding is that group firms tend to make significantly higher interest rate than non-group firms. The authors also concluded that group bank enjoyed the fruits of maximizing the sum of group firms' profit.

With the pace of financial deregulation started in the mid 1970s, capital market became more open to the large firms and the large firms' dependency on banks' borrowing gradually became reduced, also the scope of cross-shareholding was shrinking (Okabe, 2001). As the banks lost their large corporate customers, they rushed to find new borrowers and projects. Moreover, banks were permitted to participate in short-term bond market partly from 1987. During the period, the situation compelled banks to think about the profitability for their survival and they

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[9]Bank sometimes manipulate their financial statements to show a inflated position of their performance by taking favor from their own enterprise group. This unfair means is termed as Window Dressing. It could be a very difficult task to get proper information on window dressing in Japan.

found themselves in the surface of tough reality. Protracted monetary easing after Plaza Accord in 1985 gave fuel in their effort of increasing short-term profit during the 1980s.

With other macroeconomic factors, the Postal Saving Scheme in Japan might have been contributing to the low profitability of banks as it creates somewhat distortion in the financial market by paying higher interest rate than bank. The deposit of Postal savings scheme stood at around 30% of the total bank deposits due to its favorable interest rate (Yoshino, 2000). For this reason, present Koizumi government takes the privatization of postal saving scheme in the top priority of agenda.

4. Theoretical Framework

4.1 Agency conflict increases short-term profit

How agency conflict can increase short-term profit of banks is explained in this section by modifying and extending the Bayesian Learning Model (for details, see Jovanovic and Nyarko, 1995).

Suppose there are some policy makers who produce n different decisions during a period of time as a process of financial deregulations. Each policy shifts are responded by the agents (e.g. banks); agent's reaction provides a signal to the policy makers and their learning process continue as a trial and error basis. What happens to the outcome due to heteroscedasticity in policy shift is the main focus of this theoretical framework.

Suppose the efficiency of the decision *j* can be perceived by the action of bank *i* (i =1,2,….) to increase profit at time t as

$$\xi_{jt} = A \prod_{j=1}^{n} \left[1 - \left(R_{it,j} - R_{it,j}^0 \right)^2 \right] \tag{1}$$

where R is the target profit and R^0 is the achieved one due to implementation of policy j=1,….,n. The mistakes in policies are compounded in this equation (1). The decision would be optimal if $R_t = R^0$. Here we assume that the deregulation process continues to make the system more competitive and profitable.

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Again assume that each policy shift leads to a new value of R:

$$R_{it,j} = x + \omega_{it,j},\tag{2}$$

where ω is a white noise *iid* normal random variable with mean zero and variance σ_ω^2. The disturbance ω represents transitory factors that affect the optimal decision.

Now,

$$E_t(R_{it,j}) = E(x) = R_{it,j}^0.\tag{3}$$

This follows that

$$\xi_{jt} = A\prod_j^n\left[1-\left(x-E(x)+\omega_{it,j}\right)^2\right].\tag{4}$$

If $\theta = E_j[x-E(x)]^2$ denote posterior variance over **x**, given information from the first j policy implementations, and if it follows normal distribution with variance σ_0^2, then applying Bayesian rule we have

$$\theta = \frac{\sigma_\omega^2\sigma_0^2}{\sigma_\omega^2+\sigma_0^2 j}.\tag{5}$$

Therefore, expected efficiency on j is

$$E_t\left(\xi_j\right) = A\left[1-\theta_j-\sigma_\omega^2\right]^n.\tag{6}$$

The equation (6) is known as so-called 'Learning curve'. And variance of ξ is

$$Var(\xi) = 2A^2\sigma_\omega^4\left[1+\frac{j\sigma_0^2}{\left(\sigma_\omega^2+j\sigma_0^2\right)}\right]\tag{7}$$

Our interest is on the variations of efficiency generated from heterogeneity of policy shifts that are reflected in banks profit, which we may call '*heteroschedasticity of policy shifts*'. This variation in ξ can be obtained by squared coefficient of variation (CV).

The squared coefficient of variation of ξ is

$$\Omega_{nt} = \left(1 + \sigma_v^2\right)^{n-1} - 1 \tag{8}$$

where σ_v^2 denote the squared CV for a single decision at time t.

Jovanovic and Nyarko show that σ_v^2 exhibits exponential properties (mostly Chi-square distribution), and for any intermediate value of j the variance is larger. As number of decisions increase, the outcome is becoming more efficient. Now substituting σ_v^2 in (8) we may predict about the general heteroschedasticity of policy shifts.

On this model assumption, we may define the profitability of banks as

$$R_{it} = \mu_{it} + \Omega_{nt} + \varepsilon_{it} \tag{9}$$

where μ denote fixed profit of banks, Ω denote heteroschedasticity of policy which brings gain in profit and ε_{it} denote shocks with $E(\varepsilon_{it}) = 0$.

The equation (9) is the basic outcome of my analysis. This equation says that heteroschedasticity in policy shifts in a process of structural changes might bring gain in profit for banks as well as some random shocks may appear which also bring gain in return for a short period of time. Since the heteroschedasticity in policy comes through the conflict of agencies, therefore, agency conflict increases short-term profit.

4.2 Banks become vulnerable to crisis at the outset of bubble

From previous model we see that heteroschedasticity in policy shift brings gain in profit for banks as well as it leaves room for random shocks like the bubble shocks. Therefore, below a model is developed to describe how a bank can be vulnerable to crisis after burst of the asset price bubble. This model captures both the policy inconsistency and weaknesses of corporate governance implicitly.

Consider a bank can lend or borrow money at rate

$$1 + r = E_t \left[\frac{D_{t+1} + P_{t+1}}{P_t} \right] \text{ at period t.} \tag{10}$$

Where r: interest rate,

        P: the price of the assets,

        D: return or dividends obtained from the invested assets,

For maximizing profit, the equilibrium condition holds at

$$P_t = E_t \left[\frac{D_{t+1} + P_{t+1}}{1+r} \right].$$ (11)

Now substituting $P_{t+1} = E_t \left[\frac{D_{t+2} + P_{t+2}}{1+r} \right]$ and repeating the process, we get

$$P_t = \sum_{\tau=1}^{\infty} \frac{1}{(1+r)^\tau} E_t D_{t+\tau} + \lim_{\tau \to \infty} \frac{1}{(1+r)^\tau} E_t P_{t+\tau}$$

$$\Rightarrow P_t = \sum_{\tau=1}^{\infty} \frac{1}{(1+r)^\tau} E_t D_{t+\tau} + b_t = \frac{D_t}{r} + b_t ; \text{ where } b_t \text{ is a bubble term.}$$ (12)

After burst of the asset price bubble $b_t=0$, and a bank's return for the period t can be expressed as

$$R_{t,i} = E_t \left[R_{t+1,i} \right] + \int_{t=0}^{\infty} \overline{R}_{t,i} \, \pi_t (\bullet) dt$$ (13)

$$= Expected\ return + Expected\ loss$$

Here for simplicity, we may assume that the loss $\overline{R}_{t,i}$ of the bank i is constant over time t, and

$\pi_t (\bullet)$ denotes the probability density function that describes probability of failure of a bank at t

which can be expressed as an exponential function such as

$$\pi_t (\bullet) = e^{-\lambda t}, \lambda \geq 0$$
$$= 0, \lambda < 0.$$

Now solving (13), we find

$$R_{t,i} = E_t (R_{t+1,i}) + \frac{\overline{R}_{t,i}}{\lambda}$$ (14)
$$\Rightarrow \lambda \left(R_{t,i} - E_t (R_{t+1,i}) \right) = \overline{R}_{t,i}$$

Assume that $E_t (R_{t+1,i}) = R_i*$ which is the balanced return[10] for a bank i. Therefore, the equation

(14) takes the form

$$\lambda \left(R_{t,i} - R^* \right) = \overline{R}_{t,i}$$ (15)

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[10] Empirically the balanced return should be the long-term equilibrium return for a banking system.

Equation (15) describes that loss of a bank is proportional to the deviation between current return after burst of the bubble and the balanced return. Hence λ is estimated as

$$\hat{\lambda} = \frac{\overline{R}_{t,i}}{\left(R_{t,i} - R*\right)}$$

(16)

Therefore, as bank return (or loss) is a function of other factors such as industry-related as well as macroeconomic factors, λ implicitly gives the estimates of parameter of failure of a bank. From (16), we may derive the following propositions:

(1) If a bank behaves speculative during the bubble to increase return, there is possibility to decline its profit after burst of the bubble. In that case, $R_{t,i} < R*$. Since $\overline{R}_{t,i}$ is negative, then $\lambda > 0$. That is there is a positive probability of failure;

(2) If a bank does not behave speculative, but still its profitability lies below $R*$ it will have positive probability of failure. This situation can be explained by the fact that banks management is not efficient in exploring profitable lending opportunity; and

(3) If a banks $R_{t,i} \geq R*$, then $\pi(\bullet) = 0$. Therefore, $R_{t,i} = E_t (R_{t+1,i})$.

Again, we may define $\overline{R}_{t,i} = -(R_0 - R*)$ where R_0 is the initial return of a bank. Then from (13) we may write without loss of generality,

$$R_{t,i} = R* + \overline{R}_{t,i} * e^{-\hat{\lambda}t}$$
$$\Rightarrow (R_{t,i} - R*) = -(R_0 - R*)e^{-\hat{\lambda}t}$$

(17)

The equation (17) gives the speed of convergence of a bank's return to $R*$. R moves toward $R*$ at a speed approximately proportional to its distance from $R*$ and growth rate of $R_{t,i}-R*$ would be approximately equal to λ.

This model may provide a basis for empirical analysis of banking crisis. A relevant empirical methodology may be the hazards model to analyze the determinants of crisis as Hossain (2004, 2005) applied. In this paper, Probit model is applied where response variable is defined explicitly on the basis of this theoretical framework.

5. Empirical Methods and Results

5.1 Probit Analysis

We estimate the probability of banking sector distress in Japan using a multivariate Probit model over the period 1977-2003. Semi-annual data are used.

A bank's profitability can be expressed as

$$R_{it} = \beta' x_t + u_t \quad \forall t \tag{9}$$

On the basis of the theoretical framework developed in Section 4, an indicator of banking crisis can be defined as

$$y_t = \begin{cases} 1, \text{if } R_t < R^* \\ 0, otherwise \end{cases} \tag{10}$$

where R* represents the balanced return of banks. Therefore y_i = 1 represents low profitability or in other words, some probability of bank failure according to equation (16).

For simplicity of analysis, we assume that R_t represents the return on asset/equity (ROA/ROE) of banks for a specific period of time *t* and R* is defined as the average return for the period 1970-1979 which can be representative of the long-run equilibrium return as banks enjoyed good financial situation during this period, as well as mostly the same return ratio they achieved during the bubble period (see Figure-4). Nonetheless, to decide long-run equilibrium return ratio is quiet a difficult task; it must be based on the judicious understanding of the researchers on the problems.

To get maximum-likelihood estimates, the likelihood function of the Probit model is defined as

$$\ln L = \sum_j \left[y_j \ln \Phi(\beta' x_j) + (1 - y_j) \ln(1 - \Phi(\beta' x_j)) \right] \tag{11}$$

where $\Phi(.)$ is the standard normal distribution.

Assessing marginal effect of agency conflict

To see the effect of agency-conflict on the probability of failure of bank, we need to estimate the changes in probability by simulations. The problem is that the coefficient of Probit in likelihood function does not represent changes in probabilities.

The marginal changes in the probability is

$$\frac{\partial E(y)}{\partial x} = \phi(\beta'x)\beta$$

$$and \ \frac{\partial E(y)}{\partial x} = \phi(\beta'\overline{x})\beta, \ evaluated \ at \ means. \tag{12}$$

Now the changes in probability of bank failure with the presence/absence of agency-conflict can be estimated as

$Pr \ (y_i = 1| \ x_i = 1) - Pr \ (y_i = 1| \ x_i = 0) = \phi(\beta'\overleftarrow{x}_1)\beta - \phi(\beta'\overleftarrow{x}_0)\beta$, at means.

The changes in probability for the effect of other variables can also be estimated in the same manner.

Variables and Data

Semi-annual data of domestically licensed banks from Bank of Japan's CD-ROM for the period 1977-2003 are used. Probit estimates are based on the availability of data of different variables.

Agency-conflict variable

An indicator variable is defined to indicate the agency problems and conflict of interest based on the criteria described in Table A2 of Appendix-2 and Figure 2. As the big conflicts arose during 1983-1989, the variable of interest takes 1 for this whole period and 0 for rest of the period. Although this is very difficult to assess the agency-conflict accurately, it is hoped that this variable could be able to capture the features of the most conflicting period in the financial system of Japan. According to the assumptions of theories developed in Section 4.1, the coefficient of agency conflict should have negative sign on y.

Institutional and Industry-related Variables

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Some other institutional and industry-related variables are used such as moral hazard, management and operating efficiency ratio, real-estate credit growth (REL ratio: Real estate loan outstanding/Total asset), growth of investment & security of banks as a proxy for liberalization, and capital adequacy requirements. Two corporate governance variables that indicate management efficiency are defined by two ratios: (i) I/E: interest income/interest expense and (ii) ME: operating expense/net income.

The moral hazard variable is defined as an interaction of explicit deposit insurance and financial liberalization following Hutchison and McDill, 1998. It takes on a value of unity when both financial liberalization and explicit deposit insurance are observed during the specific period, and zero otherwise. In Japan, deposit insurance law was enacted in 1971. Since main deregulations came into effect in 1980 and banks started to extend credit aggressively with favorable high money supply growth, the moral hazard variable takes 1 for the period 1981-1990 (as banks did not have much incentive to extend credit aggressively after 1990) and 0 for rest of the period.

Macroeconomic variables

The macroeconomic variables are: real GDP growth, inflation, discount rate and difference in call rate and discount rate (interest differential). Money supply growth is not used as it creates distortions in probit estimation.

The limited dependent variable *y* is defined on the basis of ROA (return on asset). ROA is defined as: Profit for the term (sum of city, regional, regional II, long term credit and trust bank)/Total asset minus acceptance and guarantees. On the basis of the theoretical framework developed in section 4, the banking distress variable is explicitly defined as

$$y_i = \begin{cases} 1, \text{ if } ROA < 0.25 \\ 0, \text{ otherwise} \end{cases} \text{; where ROA*=0.25 is obtained from the average ROA of the period}$$

1970-1980. This is chosen as a balanced return because during this period, banks ROA was

mostly stable around this figure and banks return was clustering near this figure during the bubble period in the 1980s too. Therefore y_i represents low profitability, which in turn implies some probability of banking crisis.

Results:

Table 3 reports the probit equation estimation results for two alternative model specifications. Since moral hazard and agency conflict are highly correlated, these two variables are estimated separately. The estimated coefficients, robust standard errors, the number of observations, pseudo R^2 and the percentage of crisis episodes that are correctly predicted for each model are reported.

The results indicate that I/E, ME, growth of investment & security, moral hazard and agency conflict are statistically significant. REL ratio and capital reserve ratio are found significant in second model specification. Corporate governance problems (I/E and ME) and moral hazard problem increase the likelihood of banking crisis. Growth of investment and securities decreases the likelihood of banking crisis. As a part of financial liberalization, banks participation in securities market increased significantly from the late 1980s, which helped banks to raise their profit. But the policy was expected to implement more early, which might prevent from subsequent crisis.

The negative sign of the agency-conflict is correct according to our theoretical assumptions. Agency conflicts are assumed to have occurred during 1983-89 when banks had been able to increase their profit by speculation, and took advantages of inefficient deregulations. So it shows negative sign to the response of low profitability. This speculative behavior of banks finally contributed to the crisis in the 1990s. Therefore, the variable agency conflict correctly predicts the crisis.

Table 3: Determinants of probability of banking sector distress

Determinants of banking sector distress	Probit Estimates (1982-2000)	
	(1)	(2)
Inflation	-0.10722(0.08894)	-0.0090(0.0693)
Discount rate	1.0775(1.2452)	-1.2056(0.8304)
REL ratio	-167.7431(242.77)	-401.414**(183.27)
I/E	43.1607**(17.9415)	70.9444**(31.9059)
ME	0.0364**(0.0157)	0.0625**(0.03178)
Interest differential	-3.1691(2.1678)	2.5117(2.0526)
Real GDP growth	0.16904(0.6549)	0.2422(0.3645)
Capital reserve requirement	1.1439(4.7671)	-6.8736*(4.0748)
Growth of investment & security	-0.6191***(0.1942)	-0.3415***(0.1161)
Moral Hazard	4.7023*** (1.6946)	--
Agency conflict	--	-5.4952**(2.4206)
Constant	-45.9440(30.9408)	-56.3081(38.3978)
Observations	37	37
Pseudo R^2	0.73	0.71
Percent correctly predicted	94.74	97.37

Note: *,**,*** denote 10%, 5% and 1% level of significance respectively. Robust standard errors are in parentheses.

Macroeconomic variables are not found significant to the low profitability or to the probability of banking failure. However, moral hazard and agency conflict variables capture the effect of growth of money supply and other policy distortions during the period (Table 3).

Marginal Changes in probability of banking distress

Table 4: Marginal probability changes for moral hazard and agency conflict

	Marginal probability
Agency conflict	Pr ($\hat{y}$ | x_i = 1) - Pr ($\hat{y}$ | x_i = 0) = $\phi(\beta'\overleftarrow{x}_1)\beta - \phi(\beta'\overleftarrow{x}_0)\beta = 0.12$
Moral hazard	Pr ($\hat{y}$ | x_j = 1) - Pr ($\hat{y}$ | x_j = 0) = $\phi(\beta'\overleftarrow{x}_1)\beta - \phi(\beta'\overleftarrow{x}_0)\beta = 0.07$

Table 4 demonstrates that with the existing definition of agency conflict and moral hazard, there is 12% and 7% more likely to occur banking distress due to the presence of agency-conflict and moral hazard respectively.

5.2 Vector Auto Regressive (VAR) Analysis

The VAR analysis has been performed to see the effect of policy changes on banks behavior and to examine whether that changes induce banks to do speculative behavior during the bubble period. Semi-annual data from 1977-2004 has been used for the domestically licensed banks.

Unrestricted VAR analysis has been performed to see the impulse responses of variables[11]. The variables that are considered: Banks credit growth (LOANGR), Growth of investment and securities of banks (INVGR), Consumer price index (CPI, 1990=100), Growth of money Supply (MONEYSUPPLY), BoJ's Discount rate (DISC_RATE), Growth rate of GDP (GDP), Growth of interest rate (GINT), Agency Conflict (ACONFLICT), Moral Hazard (MORAL_HAZ), Real Effective Exchange Rate Appreciation (EX_Appreciation), and Banks Profitability (Y) defined in section 5.1.

However, I construct several panels of VAR following Sims (1980, 1986, 1992) since VAR approach sometimes quiet helpful in examining the relationships among a set of economic variables although there are many criticisms on VAR. Consider

$$Vy_t = \Sigma B_i(L_i y_t) + e_t$$

where y_t denote the vector of endogenous variables, the matrices V and B_i being conformable with y-vector; $L_i y_t$ denote the ith-lagged y-variable. The VAR is estimated with its reduced form as

$$y_t = \Sigma V^{-1} B_i(L_i y_t) + \varepsilon_i; \quad \varepsilon_t = V^{-1} e_t.$$

From the estimated VAR, I study the 'innovations accounting' that is the impulse responses of different variables on one standard deviation for examining structural system.

As the ordering of the variables is important in VAR analysis, following Sims (1992) and empirical analysis of Ford et al. (2003), I placed the policy variables (e.g. monetary policy

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[11] Although there is subtle evidence of cointigration but I found that the implied order of Vector Error Correction (VEC) model is not the appropriate method here from which we may extract impulse responses. As Canova (1995) mentioned that even when the data are non-stationary there is no requirement to transform the VAR into VEC for meaningful inferences.

variables) at first and than the non-policy variables such as GDP, CPI, LOANGR etc. If the correlations between the variables are negligible, that is if $|\rho_{ij}| < 0.2$, then ordering is immaterial. But this is not the case in this study.

The Phillips-Perron test and the Breusch-Godfrey LM tests have been used to test serial correlation. Dickey-Fullar test has been used for testing unit root process. Since most of the variables are considered as growth rate, these follows $I(0)$ processes and a few render $I(1)$ process that is the first difference is necessary to become stationary.

Figure 5 displays the impulse responses of bank credit growth to different policy shocks such as growth of money supply, discount rate, growth of interest rate and real effective exchange rate appreciation. Solid lines represent point estimates while dashed-lines denote plus-2 and minus-2 standard deviation innovations. It is seen that money supply growth and exchange rate had negligible impact on banks credit extensions. But discount rate and interest rate show increasing effect on bank credit extensions.

Figure 6 displays impulse response of CPI, ROA, GDP growth and investment growth to bank credit shocks. All these variables respond strongly to bank credit expansions. This is consistent with the view that bank expanded their credits to real estate business and SME market in the 1980s due to pressure of low profit. Moreover, it is also consistent that changes in investment and securities were caused by changes in bank credit, where deregulations came into effect with the access of banks to short-term bond market in the late 1980s.

Figure 7 displays impulse response of bank low profitability (Y) to money supply, discount rate, increase of interest rate and exchange rate appreciation. Although growth of money supply shows some cyclical variations, other variables remain flat to the low profitability of banks. Therefore, it is interesting to make comments that monetary policy had negligible impact on banks low profitability. This finding is consistent with Hossain's (2005) finding that banks low profitability is mainly generated from weak corporate governance and other problems. So it is

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important to investigate the impact of agency conflict and moral hazard issues that arise from the policy inconsistencies.

Figure 8 displays that impulse response of bank low profitability (Y) to agency conflict and moral hazard is negative. This is consistent with our proposition that these two issues created room for banks to make speculation to increase profit during the 1980s. Therefore as it is expected, these two variables showed negative variations with low profitability.

Figure 9 displays strong and positive impulse response of credit growth to agency conflict and moral hazard. This is also consistent with the argument that moral hazard and agency conflict help bank to expand credit aggressively in the 1980s, which ultimately made banks vulnerable to crisis. In one hand, due to lack of prudential regulations, ongoing financial deregulations created moral hazard problem, and on the other hand, policy inconsistencies created conflict of interest among the respective agencies. Both the problems induced banks to behave aggressively which ultimately contributed to the prolonged banking crisis in Japan.

Figure-5: Impulse Response of bank credit growth to money supply, discount rate, growth of interest rate and exchange rate appreciation innovations

Response to Cholesky One S.D. Innovations ± 2 S.E.
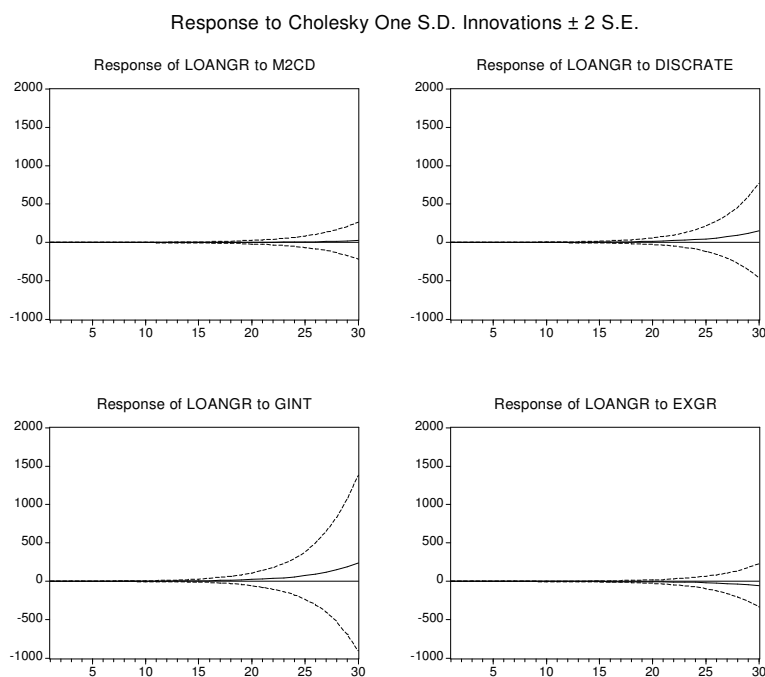
Figure-6: Impulse Response of CPI, ROA, GDP growth rate, growth of interest rate to banks credit extensions

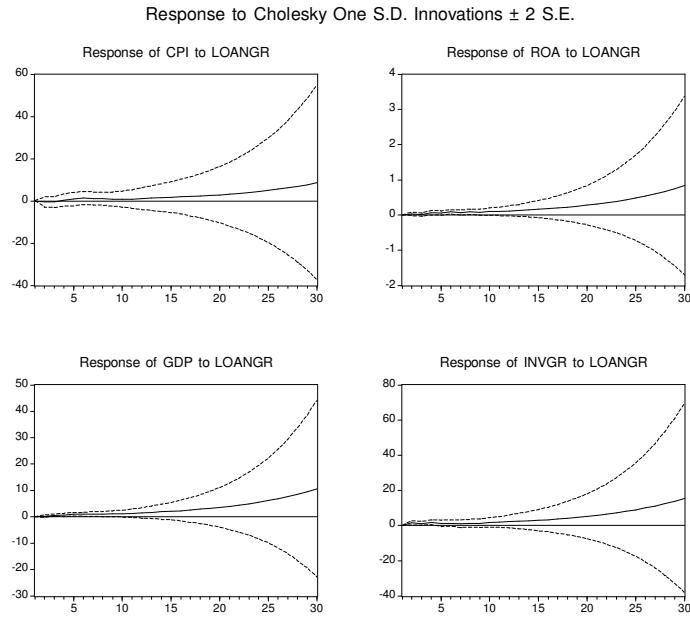Response to Cholesky One S.D. Innovations ± 2 S.E.

Figure-7: Impulse Response of banks low profitability shocks to money supply, discount rate, growth of interest rate and exchange rate appreciation innovations

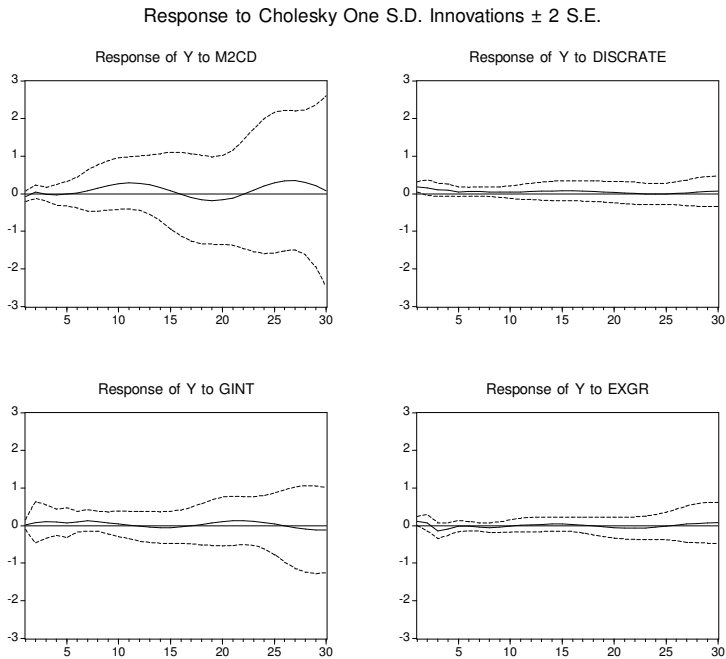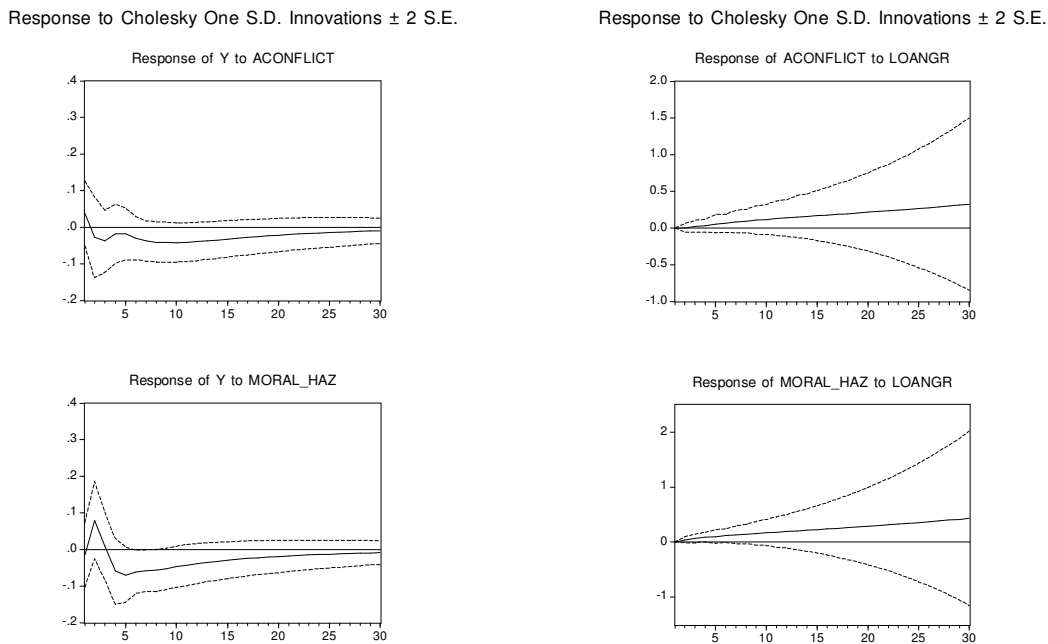Response to Cholesky One S.D. Innovations ± 2 S.E.

Figure-8: Impulse Response of bank low profitability to moral hazard and agency conflict   Table 9: Response of agency conflict and moral hazard to bank credit growth

Response to Cholesky One S.D. Innovations ± 2 S.E.   Response to Cholesky One S.D. Innovations ± 2 S.E.

Response of Y to ACONFLICT   Response of ACONFLICT to LOANGR

Response of Y to MORAL_HAZ   Response of MORAL_HAZ to LOANGR

5.3 Granger Causality Test

The Granger causality test has been performed to identify the determinants of low profitability of banks. The variables used are: log of asset (LASSET) as a proxy for size, call rate minus discount rate (DINT), interest income/interest expense (I/E) and operating efficiency (ME2) as a proxy for management efficiency as well as a proxy for preferential loan, growth of money supply (M2CD), growth of land price index (LPIND), net interest margin (PM), uncollateralized call rate (CR), discount rate (DR), and GDP growth (GDP) rate.

In Table 5, the hypothesis that changes in other variables do not Granger-cause the low profitability (Y) is tested. Results show that all the corporate governance and institutional variables such as I/E, bank size (LASSET), interest differential (DINT, proxy for preferential loan), operating and management efficiency (ME), real estate and overall loan growth (RELOANGR and LOANGR), growth of investment and securities (INVGR, a proxy for financial deregulations), and agency conflict and moral hazard have found significant determinants of bank low profitability varying from 1% to 6% level of significance. On the other

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hand, among the monetary and macro variables, only household savings rate, discount rate and collateralized call rate, are found highly significant to the detainments of low profitability. money supply and GDP growth rate have been found as significant at around 10% level of significance. The results are consistent with Probit estimates except the significance of DINT and DR.

Table 5: Granger-causality tests
(Hypotheis tested: Changes in other variables do not Granger-cause the changes in Y)

Variables	F-statistic	Probability	Lags	# observations
Corporate governance/ Institutional variables				
I/E[+]	4.73	0.03	2	--
LASSET	2.54	0.04	7	42
DINT	3.50	0.02	4	45
ME[+]	7.34	0.00	2	--
Reloangr	2.79	0.03	7	41
Loangr	3.05	0.02	8	41
Invgr	2.40	0.05	9	38
Aconflict	2.84	0.06	2	47
Moral Hazard	5.05	0.01	2	47
Monetary/Macro variables				
M2CD	2.72	0.08	2	47
LPIND[+]	3.29	0.13	7	--
PM[+]	0.61	0.13	7	--
HHSR[+]	2.48	0.00	2	--
GDP	2.25	0.11	2	44
DR	3.28	0.02	5	42
CR	3.45	0.01	5	44

Note: 1. + indicates yearly data are used on the basis of availability and suitability of data;

6. Summaries and Conclusion

This paper analyzes the "agency-conflict" of the 1980s as a potential cause of Japanese banking crisis in the subsequent decades of the 1990s and the early 2000s. The issue brings renewed interest in the policy evaluation process of the then ongoing financial deregulations of the 1980s. Although much have been said about the policy inconsistencies of that period, it was not streamlined as potential cause of subsequent crisis. This paper provides much emphasis on "agency-conflict" because it encompasses all the major three influential views on the causality of crisis: slow and undirected financial deregulation, monetary policy inconsistency and corporate governance of banks. Moreover, the causality of crisis is of great concern as the crisis has not stabilized completely yet because the recent failure occurred in 2003 and a big banking holding

company UFJ has planned to be merged with another big bank holding company Tokyo-Mitsubishi group in 2005 due to financial problems.

The determinants of banking crisis have been analyzed in many papers, but the agency conflict that made the financial deregulations delayed and derailed, is addressed in this paper for the first time with theoretical and empirical illustration that it might have significant effect on the subsequent crisis. This paper argues that the agency conflict i.e. conflict of interest among the agencies, e.g. fiscal and monetary authorities, financial intermediaries, debtor companies etc. during the ongoing deregulation process in the 1980s had aroused due to heteroschedasticity in policy shifts and weak corporate governance of banks.

The theoretical model that is developed in this paper explains the inefficiencies of policies during early stage of liberalization process, and how a bank can be vulnerable to crisis at the outset of the asset price bubble. This model is used as the basis of empirical analyses to identify the causality of "probability of crisis" by the Probit model, as well as VAR analysis and Granger causality tests. The model would be helpful to outline similar types of further empirical analyses.

The analysis indicates that "agency-conflict" as the outcome of counteracts between 'heteroschedasticity in policy shift' and 'weak corporate governance' was crucial for the Japanese banking crisis. Empirical results also show that macroeconomic factors have little impact on the crisis; rather the industry-related and institutional factors have been more significant to the crisis. Corporate governance and agency conflict have been found significant to the probability of crisis. This finding can be thought of as an extension of Hossain's (2005) findings.

The findings provide a suggestion that if the financial deregulations are not carried out carefully, it may create agency-conflict in the financial sector, as well as it may create a ground for financial crisis too. It also suggests that the financial deregulations were needed to be accompanied with some necessary measures to (i) make the banks capable of doing business

without depending on the big corporate groups, that is banks were being able to participate in securities business at the very beginning of deregulation, (ii) to improve the corporate governance of the banks that are able to handle the situation in a liberalized environment, and (iii) prepare prudential regulations so that bank can not make any speculative decision. The findings would be instructive to similar types of financial system that opt for financial deregulations.

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APPEDIX-1

Diagram-A1: Banks' Scope of Businesses
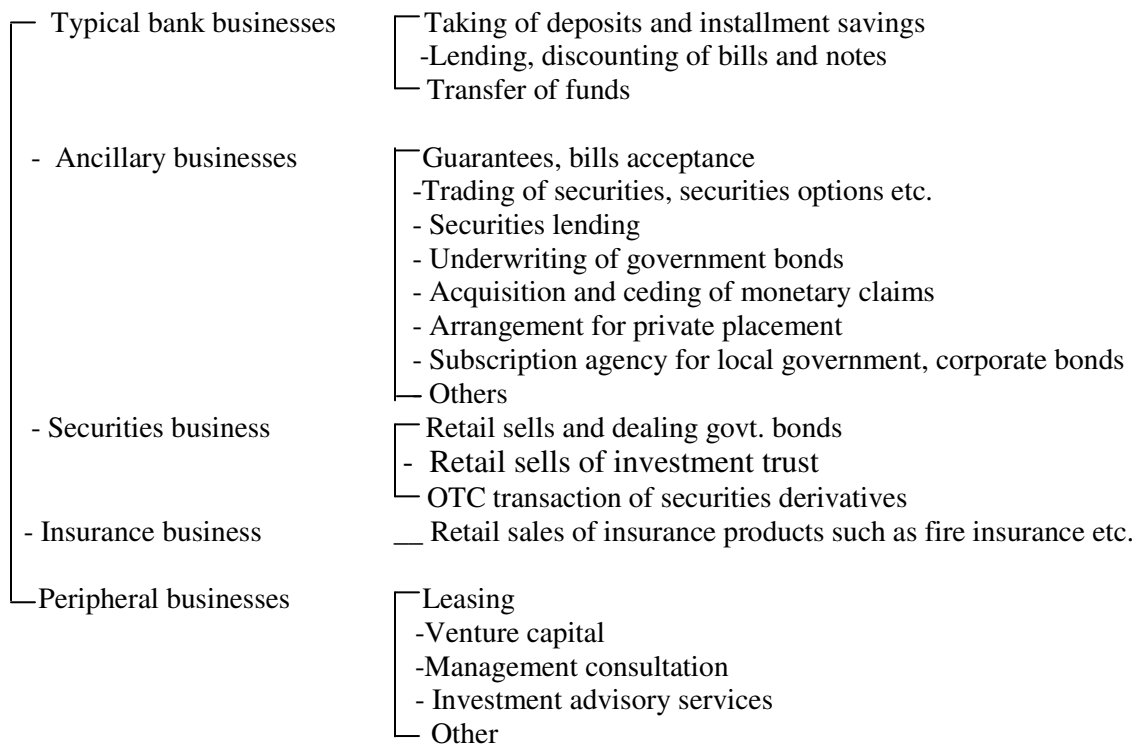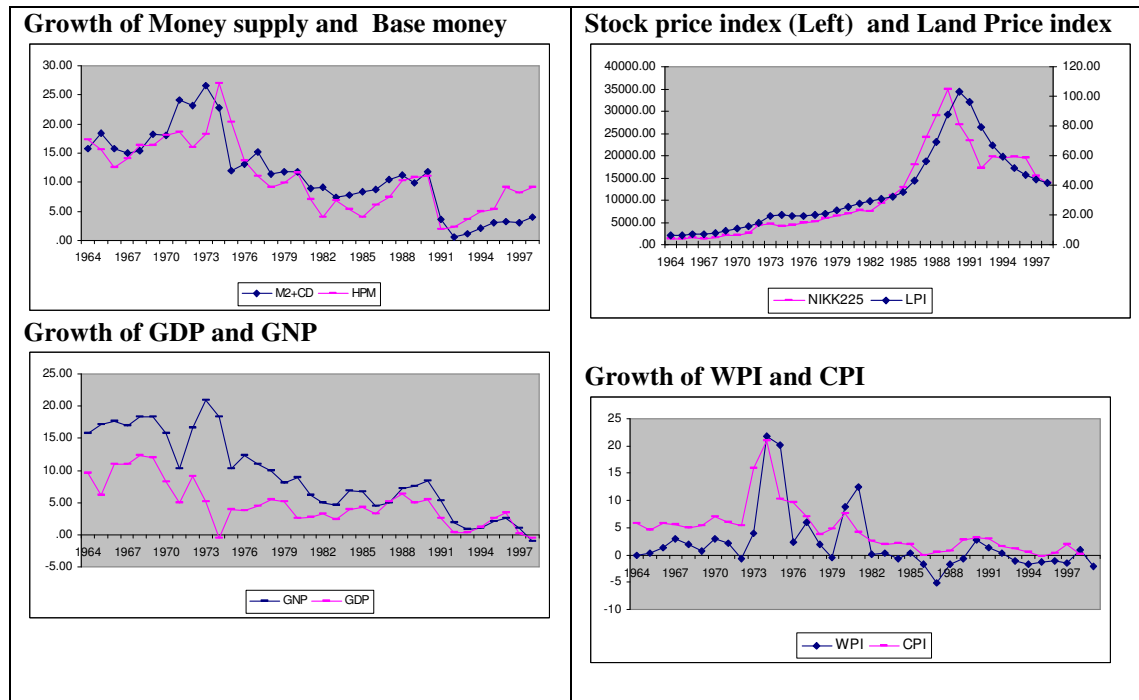(Source: Japanese Bankers Association-JBA)

Typical bank businesses
- Taking of deposits and installment savings
- Lending, discounting of bills and notes
- Transfer of funds

- Ancillary businesses
- Guarantees, bills acceptance
- Trading of securities, securities options etc.
- Securities lending
- Underwriting of government bonds
- Acquisition and ceding of monetary claims
- Arrangement for private placement
- Subscription agency for local government, corporate bonds
- Others

- Securities business
- Retail sells and dealing govt. bonds
- Retail sells of investment trust
- OTC transaction of securities derivatives

- Insurance business
- Retail sales of insurance products such as fire insurance etc.

Peripheral businesses
- Leasing
- Venture capital
- Management consultation
- Investment advisory services
- Other

Figure-A1: Different indicators of the Japanese economy during 1964-2003

APPENDIX-2

Table A2: Agency conflicting issues

# of Conflict	Events	Conflicted with	Conflicting period	Response by banks	Comments	Conflict
0 (Reduction of dependency on corporate groups)	Removal of restrictions for corporations on fund raising in securities market: 1980- onward. *Objective*: To decrease dependency on banks	Banking institutions are allowed to participate in short-term government bond market from 1987 (6-month bond) and 1989 (3-month bond) [*As a compensation to reduced dependency of large corporate groups*]	**1980-87/89** Banks did not find any alternative source of profit with decrease of large corporate groups dependency on bank during this period	Credit extensions to Real Estate and SME market aggressively	Lack of prudential regulations help them to make a room for moral hazard	Conflict of interest between banks and large corporate groups
1 (Deregulation of shareholding/ Corporate governance)	Interlocking shares needed to be reduced to 5% by 1987.	Still shareholding are significantly prevalent; employee-shareholders and non-bank shareholders have less influence on bank management	**1980-89**	Aggressive credit extensions, Management was not efficient to anticipate asset price fluctuations and to find alternative	Weak corporate governance	Conflict for policy inconsistensy

				mode of investment		
2-3			**1981-82**			
4 (Monetary policy inconsistency)	Money supply (M2+CD) started to increase during 1983-89	Interest rate decrease (1983-85)(1988-89)	**1983-89**	Credit extension to SMEs and Real Estate: the asset price bubble in 1988-89	During financial deregulation, the growth rate of money supply might be a misleading signal	Time Conflict with fiscal authority regarding fiscal expansion; time conflict with implementation of monetary policy
5			1983-85			
6 (Monetary Easing vs Fiscal Policy)	Monetary easing (discount rate lowered from 5% to 2.5%): 1986-87	Fiscal expansion as well as banks Corporate governance	**1986-87**	Credit extensions aggressively	Asset price bubble started to emerge	Conflict of monetary policy with fiscal and exchange rate policy
7			**1987-88**		Bubble created	
8 (Monetary tightening)	Discount rate increased 1988-89	Early expansion of fiscal policy vs. monetary policy	**1988-89**	Bankruptcy of creditor and debtor companies	Bubble burst in 1990	Conflict of interest among financial intermediaries

Note: The issues are discussed in detail in Section 3.