

The Causes of Japan's Financial Crisis

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Abstract

Japan's financial system, and especially its banking system, today are in substantial trouble, epitomized by the bad loan problems. This paper provides an overview of the major causes of the current banking mess. Fundamental forces include the transformation of the Japanese economy in the mid-1970s from one of excess investment demand to excess savings surplus, and with successful growth the development of a number of strong, increasingly companies. The paper briefly discusses four major causes that were particularly important: failure to create a prudential regulatory system as deregulation proceeded; the creation and then bursting of the stock and real estate market bubbles; globalization; and the high rate of financial innovation. A series of five major macroeconomic policy mistakes are identified as retarding the recovery of the economy, and indeed the late 1996 policy errors led to the 1987-98 recession. Japan's 1990s poor economic performance has made the banking problems more severe and costly, as hopes were dashed that the economic recovery would reduce the bad loan adjustment process.

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Introduction

A mere decade ago Japan's financial system, and especially its banking system, was not only the largest but the strongest in the world. Nine of the world's top ten banks in asset size were Japanese; the Big Four Japanese securities companies were the world's largest; and its life and casualty insurance companies were likewise huge. Banks had ample, low cost, deposit funds and the highest credit ratings. The largest were expanding their international operations vigorously, and did 34 percent of the world's international lending business, more than banks domiciled in any other country.

Today presents a completely different picture. Japan's financial system is weak and in disarray. Banks no longer rank among the world's top ten, and their credit ratings have declined dramatically. Two of Japan's top 21 banks have already collapsed, as has one of the Big Four securities companies, and a mid-sized life insurance company. This is not only unprecedented in Japan's postwar history, until the 1990's it was unthinkable.

This paper focuses primarily upon the problems of the Japanese banking, though the analysis applies in many respects to the securities and insurance industries as well. It does not consider Japan's fiscal mess: its budget deficits, tax system, government fiscal and loan programs, or the special account debts that cannot be serviced. This is a comprehensive overview rather than a detailed

analysis of specific issues or topics. It provides the groundwork for this conference by addressing two themes: the 'postwar' financial system and its implications; and causes of the current banking difficulties.

The objectives of any financial system in a market based economy are threefold: the safety of the system in order to prevent bank runs and monetary panics; its effectiveness in mobilizing savings and allocating them to productive, efficient uses, by financial intermediation through banks or capital (stock and bond) markets; and efficiency in the provision of financial services, best achieved in a highly competitive system. These objectives can be in conflict, depending on how the system is organized and what constitute the rules of the game. The achievement of these objectives depends on the overall economic environment, including the level of economic development, the degree of competition, and the extent of global financial market integration.

In designing the postwar financial system, the regulatory authorities, essentially the Ministry of Finance, always placed great emphasis on system safety, and maintained or built upon the wartime bank-based financial system.

The 'Postwar' Financial System

The basic characteristics of the financial system in the era of rapid growth until the mid-1970's are well known.¹ It was essentially a bank-based system, with deliberately underdeveloped stock and bond markets. Risk-averse savers had few alternatives to holding savings deposits; and rapidly growing corporations had to rely heavily on bank loans to finance their extraordinarily high rates of fixed investment. The structure of banks was stable and classes of bank were segmented by function and size of customer. Deposit-taking institutions included city banks, long-term credit banks, and trust banks, which together comprised the Big Banks, lending mainly to large corporations; and local or regional banks, mutual savings banks, and credit associations and cooperatives, lending mainly to medium and small businesses and individuals.² The system was also stable in that there was no new entry, and virtually no failures or other exits; the few failures were of small,

badly managed, inconsequential institutions which were readily and rapidly absorbed by larger banks.

In effect, the essence of the regulatory regime was to guarantee that banks would not fail, so their management, stockholders and depositors were protected. This was achieved by interest rate controls, with wide spreads between deposit and loan rates, so that all financial institutions made profits. Moreover, a 'convoy' system was maintained whereby the assets of all banks grew at about the same rate, and their relative ranking did not change over time. In this system interest rate competition was not allowed and other forms of competition were muted. Moreover, it was the responsibility of the strong to take care of the weak. Should a troubled small financial institution have to be merged into a larger one, any losses were more than offset by the franchise value of the branches thus acquired.

The system was based on close, symbiotic relationships between the powerful Ministry of Finance and the big banks, securities companies, and insurance companies. These collusive arrangements were based on the leadership of the Ministry of Finance through administrative guidance, price setting, protection, and restriction of competitive impulses. Accordingly, it was a system of implicit guarantees against losses for banks and depositors.

The development of the main bank system in many respects epitomized the stereotype of large bank-big business relationships, though in practice given the industrial structure, most of the banking system's credit was lent to medium-sized and smaller businesses. The main bank system overcame severe problems of inadequate information and difficulties in analyzing the many new projects embodied in the process of rapid postwar economic development.³ The main bank monitored its main industrial clients, established and maintained defacto lending syndicates to them, and had a special responsibility to step in and provide financial and managerial assistance in times of trouble. While all Big Banks had some main bank clients, the major main banks were Mitsubishi, Sumitomo, Mitsui, Fuji, Sanwa and Dai-ichi-Kangyo, notably with relationships with their respective

keiretsu members, and the Industrial Bank of Japan, with a wide range of main bank relationships.

This postwar system was very safe and it carried out its financial intermediation role well, but it was not very efficient. Savers bore most of the costs because of low interest rates on their deposits and lack of alternative financial instruments. They correctly perceived, however, that their savings were fueling the process of rapid growth, and their reward was in wage increases, not interest yields on savings.

The postwar system could not last forever. As companies and banks thrived and grew much larger, they became stronger and more independent and many chafed under the restrictions of the system. The most important cause of the demise of the system however, occurred in the mid-1970's, when Japanese growth slowed and Japan shifted from being an economy in which private investment demand outstripped private saving to one in which ex ante private saving became greater than ex ante private investment.

This shift is fundamental in understanding the performance and macroeconomic policies of the last 20 plus years. Japan has been and is a demand – deficient economy, in which private saving continues to be larger than private investment demand. This change has dramatically affected the financial system and especially the banking system, and fundamentally undermined the highly regulated and controlled stable postwar financial system. The supply of funds suddenly become ample, interest rates declined, and pressures for a system of market-based interest rates became irresistible.

Accordingly, the Ministry of Finance came under increasing pressure to deregulate the financial system: to allow market-determined interest-rates, the creation of new financial instruments, development of a vigorous, competitive bond market, the breaking down of market segregation, and in general increased competition for all financial institutions and in all financial markets. However, the deregulation process has been steady but very gradual, beginning in the late 1970's

and still continuing. A great deal of progress had been made by the early 1990's, and currently the 'Big Bang' of comprehensive financial reform, announced in late 1996 and due to result in completely 'free, fair, and open' financial markets by March 2001, is supposed to bring about the final stage of deregulation. While there are likely to remain a few unresolved issues, notably the postal savings system, for the most part this final deregulation process is proceeding on schedule.

In other words, Japan has been moving to a competitive, market-based system of banking and capital markets. Financial institutions are now under great pressure to cut costs, increase efficiency, and develop new financial products in order to compete. The new environment creates new kinds of risks, with new opportunities and dangers to taking risk, including interest rate risk for assets and liabilities, exchange rate risk, and credit risk since companies are also in a more competitive environment.

The ways in which the Ministry of Finance has handled, or mishandled, this long-run deregulation process and the concomitant changes in financial markets laid the groundwork for the current banking and financial mess.

Basic Causes of Current Banking Difficulties

Japan's current banking difficulties, which indeed have persisted since the early 1990's, developed over a considerable period of time, with a number of forces at work. Four causes were particularly important. They were failure to create a prudential regulatory system, the creation and then bursting of the stock and real estate market bubbles, globalization, and the high rate of financial innovation.

Before considering the causes, however, it is important to define the nature and extent of the problem. While Japanese banks have a number of problems, the fundamental problem is that the banking system has a huge amount of actual and potential non-performing (ie. bad) loans relative to its capitalization and bad loan reserves. Moreover, this problem has festered and worsened throughout the 1990s. The harsh reality is that every Big Bank and indeed most other deposit-taking

institutions have had serious bad loan difficulties. These range from loans to companies that have gone bankrupt; non-performing loans in which interest and principal payments are unpaid and substantially past due; loans which have been restructured at highly preferential, extraordinarily low interest rates; and loans which are currently being serviced but future payments are in doubt. Banks lending in urban areas, particularly Tokyo and Osaka, have been the most hard hit. In contrast regional banks in rural areas to which the real estate speculative mania did not spread have had minor losses, and are now the strongest banks in Japan.

Over time the disclosed amounts of bad loans have increased until recently, even after write-offs. Private estimates of actual bad loans have been substantially greater than the amounts announced by the banks and the Ministry of Finance.⁴ In fall 1997 the Ministry of Finance shocked the world with its estimate of the bad and troubled loan problem – some ¥76.7 trillion, triple previous estimates, and 12 percent of total bank loans and credits, 12 percent of loans of Big Banks, ten percent of regional banks, and 14 percent of second-tier banks. However, this reflected the new inclusion in the definition of bad loans a category of loans currently being serviced but in potential future danger. A Bank of Japan study estimated that over a three year period about 84 percent of such loans continued to be serviced, but of course future estimates depend upon corporate borrower performance, in turn dependent upon the overall performance of the economy.

In practice, the actual amount of bank bad loans has been ambiguous, for a combination of definitional, measurement, and disclosure reasons. Most data are on a parent bank basis, but when their various real estate financing and other non-bank financed institutions are included on a consolidated basis, the estimates are often far different. Only in 1997 did regional banks and credit associations first disclose their bad loans. Over time the definition of bad loans has become more comprehensive and clear, now approaching the U. S. SEC definition. However, each bank estimates its own bad loan situation. The presumption is that the estimates of stronger banks are closer to reality than those of weaker banks. When weak banks have in fact collapsed, subsequent audits have revealed that the actual

bad loan situation was far worse than the banks had announced even a short time earlier.

Three facts are important. First, most loans – good, doubtful, and bad – have some form of collateral backing them, frequently real estate. The key issue is the disposal value of the collateral. The actual losses banks have taken and will take are substantially less than the estimates of bank bad loans bandied about. Second, it has been very difficult for tax and legal reasons for a bank to actually write off a loan as bad. Most of the ‘write-offs’ are in the form of provisioning – increased allocations of profits and capital to bank loan loss reserves. Third, while small until 1995, over time the cumulative amount of actual write-offs has been huge and impressive. The 21 Big Banks between 1992 and 1998 wrote off ¥42.02 trillion, most (68.5 percent) in the last three years and ¥12.14 trillion (28.9 percent) in the last year alone.⁵ This was financed from operations profits, realized capital gains on securities holdings, and modest capital account transfers. The immensity of this write-off is apparent in comparison with the amount of capital these banks had at their peak (March 1994) of ¥22.15 trillion.

Bad loans and their write-offs are directly related to a bank’s capital. Banks engaging in international operations, with overseas subsidiaries and branches, have been subject to the Bank of International Settlements (B.I.S.) 8 percent capital adequacy requirement, a serious constraint during much of the 1990’s. As capital was used to write off bad loans, banks had to raise more capital (difficult and expensive); reduce total assets; or shift their asset portfolio risk mix away from loans to government bonds. Banks doing only domestic business – credit associations and cooperatives, second-tier regional banks, and some of the first-tier regional banks – are subject to only a 4 percent capital requirement. In reality, both the 8 percent and 4 percent requirements are unusually low in international comparison; bank capital adequacy remains an issue for the future.

Failure to Create Prudential Regulatory System

The first cause of the banking crisis was the fact that deregulation took place without the creation of an effective system of prudential regulation and supervision to replace the ‘postwar’ system of regulated interest rates, convoys, and constrained competition which provided safety to the system. Deregulation generates competition. Banks lost their guaranteed profits, market niches, and the franchise value of deposit-collecting branches. Banks had to adjust to the challenges as well as opportunities of an increasingly risky environment, yet their capital bases were small. This created a situation of moral hazard, in which banks took on greater risk in the expectation that if they suffered losses the Ministry of Finance would bail them out. This was particularly true of the Big Banks, assumed to be too large to be allowed to fail.

Since the deregulatory process was gradual, it took a long time for the Ministry of Finance to realize it simply could not, and more importantly, should not guarantee all banks against failure.⁶ In the mid-1990’s the Ministry of Finance realized that even depositors might no longer feel completely safe. While deposits were insured up to ¥10 million by the Deposit Insurance Corporation (DIC), the insurance fees charged banks were very low and the DIC reserves minuscule. They could be, and in fact were, soon depleted by several small banking institution failures.

To guarantee basic system safety the Ministry of Finance and government have taken three actions. First, in summer 1995 the Ministry of Finance announced that *all* deposits would be guaranteed until March 31, 2001. However, no specific funds were earmarked to support this pledge. The Ministry of Finance (MoF) believed its announcement effects were sufficient to ensure credibility. Second, deposit insurance fees were sharply increased, up to U.S. levels. This generated new DIC income and reserves, but the amounts were sufficient only to handle two or three small bank failures annually, not more. Third, in February 1998 the government enacted its ¥30 trillion bank bail-out package, of which ¥17 trillion is

to cover the guarantee on deposits in excess of ¥10 million until 2001. Thus, a credible safety net for depositors was finally established.

However, MoF has been much slower in imposing disclosure, capital strengthening, and other prudential regulations. Its supervisory capabilities appeared so weak they were hived off in June 1998 to the newly established Financial Supervisory Agency directly under the Cabinet Secretariat. The reluctance of MoF to move more rapidly in the 1990's to impose a system of prudential regulation was probably because it did not understand fully the implications of deregulation. After all, deregulation undermined the old convoy system, and made traditional MoF modes of action now seem counterproductive. MoF persisted nonetheless in attempting to defend an inefficient, uncompetitive, and outmoded system.

Bursting Bubbles and Macroeconomic Police Mistakes

The second, and indeed most obvious, cause of the banking mess was first the creation in the late 1980's and then the bursting of the stock market and real estate bubbles in the early 1990's. The basic causes of the bubbles included macro mismanagement; widespread belief that, based on the entire postwar experience, land prices would never decline for any sustained period so real estate was excellent collateral; bank and related non-bank financial intermediaries, with ample, even excess, funds rushing into the financing of urban land and real estate projects; and, finally, this process creating a high degree of speculative excess in both real estate and stock markets. Much of this story is familiar, and does not need to be repeated here.⁷

However, macroeconomic policy mismanagement deserves special attention, since Japan's poor economic performance during the 1990's has made the bank bad loan problem worse over time, and has made it more difficult to resolve the ongoing banking and financial mess. Between 1988 and 1998 the Japanese government (ie. the Ministry of Finance) made five major macroeconomic policy mistakes. While both fiscal and monetary policy instruments were involved, the

Bank of Japan was subservient to, rather than autonomous from, the Ministry of Finance.

There were two dimensions to these policy mistakes. One was the size, timing, and degree of commitment when the authorities undertook demand stimulus or restraint. The other was the growing imbalance between the use of fiscal policy and monetary policy. Because the MoF's fiscal policy ever since 1980 was single-minded pursuit of budget deficit reduction and budget surplus creation, the responsibility for compensatory macro policy fell heavily and excessively on the use of monetary policy instruments.

In 1986 when, following the sharp decline in the price of oil, the yen appreciated more than expected and economic growth slowed more than desired, the sole policy response was monetary stimulus. Interest rates were reduced to postwar lows and money supply was expanded, while the MoF persisted in its efforts to reduce the budget deficits of the 1970's. That policy succeeded in accelerating economic growth. The problem is that the policy was continued for too long, at the least fueling and some would argue creating the stock and real estate bubbles of 1988-90. That was the first macroeconomic mistake. In 1989, the Bank of Japan finally began to raise interest rates sharply in a series of steps, puncturing the bubbles, and leading to eventual economic growth slowdown, and then stagnation.

The second mistake was in not easing monetary policy *and* fiscal policy sooner and more forcefully in the early 1990's, in 1992-3. The authorities saw the downturn as primarily a business cycle. They underestimated both the cumulative effect of structural problems, and the lasting and profound effects of the huge ongoing decline in asset values. The prevailing perception was that, as in the past, the downturn would be relatively short-lived and economic recovery and growth would occur readily.

The third mistake was to rely excessively on easy monetary policy in the mid-1990's, so that interest rates since 1995 have been at incredibly and

undesirably low levels. This extreme imbalance between fiscal and monetary policy has virtually shackled the latter, making it very difficult to stimulate demand. While the extraordinarily low interest rates have helped banks and borrowers, in effect they simply postponed the resolution of the bad loan and corporate bankruptcy problems, but at high economic and political costs. The low interest rate policy has generated an excessively weak yen. Savers have been deeply dissatisfied, and are increasingly seeking higher yields in foreign assets. Returns on pension funds have been seriously inadequate, so that virtually all pension programs are substantially underfunded. And, once interest rates do rise to a more normal level, the prices of government bonds and similar financial assets will drop, imposing huge capital losses on holders. (Government bonds are probably Japan's most risky financial asset in the intermediate term.)

The fourth macro policy mistake has been in the way fiscal stimulus through supplementary budgets in the mid-1990's was applied: too little, too late, and most important, too grudgingly.⁸ Policy stimulus is supposed to inspire confidence in businessmen and consumers. However, each policy package, especially the tax cut component, was presented as temporary, and incorporated offsetting policies which made ambiguous the stimulative signal that was supposedly being sent. Moreover, the credibility of each fiscal stimulus package was undermined both by the exaggerated statements concerning the real amount of stimulus – the real water, to use the Japanese phrase – and by the focus on public works construction that has become increasingly unproductive – roads, railroads, bridges to nowhere. It was not until the supplementary budget in fall 1995 that fiscal stimulus finally became effective, generating a good recovery, with 3.4 percent GDP growth, in fiscal 1996.

The fifth macroeconomic policy mistake was the government decision in late 1996, beguiled by excessively optimistic economic forecasts for 1997 and beyond, to shift its top policy priority 180 degrees from sustaining economy recovery to tackling the long-run, structural problem of budget deficit reduction. While the concern was appropriate, the timing was far too early. The policy error had two

major components. The first was to shift the 1997 budget to severe fiscal restraint from 1996 budget ease, reducing demand generation by as much as 2 percentage points of GDP. This was done by increasing the consumption tax from 3 to 5 percent, ending the ¥2 trillion temporary personal income tax cut, and raising medical care and other user fees. The second error was to enact a fiscal structure reform law which stipulated steady annual decreases in future government budget deficits and in the issuance of deficit financing government bonds.

Rather than continuing the recovery, in 1997 Japan's economy stalled and then went into decline. GDP shrank by 0.7 percent, and by year end the economy was in recession (defined as two consecutive quarters of negative growth). The fiscal structure reform law shackled Prime Minister Hashimoto's government politically; if he were to admit it was a mistake his own position was at risk. Accordingly, even as economic conditions were obviously worsening at the beginning of 1998, his government had first to pass a restrictive 1998 budget in order to comply with the law before it could – at long last – announce in April 1998 the huge supplementary budget of ¥16.6 trillion (about ¥12 trillion in real demand-generating expenditures and tax cuts), and to pass it in June 1998 in an extended Diet session.

The Japanese economy has been the victim of these macroeconomic policy errors throughout the 1990's. On the one hand the MoF (Banking Bureau) depended upon the restoration of economic growth to halt and reverse the continuing declines in urban real estate prices, to convert marginal bank loans into good rather than bad, and otherwise to ease the handling of the persistent, immense bad loan problem. On the other hand the MoF (Budget and Tax Bureau) persistently pursued budget deficit reducing measures which thwarted economic recovery.

Effects of Globalization

The third cause of the ongoing banking mess is what is vaguely denoted by the word 'globalization'. This refers to changes both in the world political and

economic environment and in Japan's now major position in the world economy. From the perspective of Japan's financial system several elements are particularly important.

First, since Japan is now a large country – in the terminology of economists – its economic and financial policies are subject to reactive foreign pressures from the United States, the European Community, the G-7, and others. Second, Japan has become the world's largest creditor nation as its persistent current account surpluses has had to be invested abroad. Japanese banks, insurance companies, and other financial institutions actively engaged in foreign lending and portfolio investment, thereby exposing themselves to major foreign exchange risks. As the yen appreciated, the cumulative losses were huge, almost on the same order of magnitude as the financial system's domestic bad loan losses. Third, the flourishing of a free global capital market — the Euro-market — provided Japanese large creditworthy companies with inexpensive bond and equity alternatives to loans from Japanese banks. The MoF could not stop that offshore financing process. Fourth, continuing deregulation, particularly the Big Bang, has made it attractive for foreign banks, investment banks, securities companies, mutual funds, insurance companies and asset management companies to compete in the Japanese home market, on Japan's hitherto restricted, sacrosanct turf.

Financial Technology Innovation

The fourth cause of the current financial mess is the high rate of innovation in finance. This now includes a wide range of sophisticated high tech derivatives, complex trading technologies, and changes in scale and organization for the efficient management of financial services. This wave of innovation has been accomplished mainly by American banks, investment banks and other financial institutions, with some significant European players as well. While highly sophisticated financial products are primarily for very large financial and industrial corporations, new technologies are important in retail financial services markets as

well, such as ATMs and the development and marketing of investment trusts (mutual funds).

Japanese banks have been organizationally and institutionally unable to learn, absorb and implement many of these new technologies sufficiently rapidly to be able to compete in such markets with foreign institutions. These technologies require specialists, not generalists, so the traditional Japanese management system of job rotation and seniority-based wages undermine the development and retention of specialists. The productivity and profitability of transactions – based wholesale financial markets are directly and quickly measurable, and excellent specialists are paid extraordinarily well. The most capable Japanese are frequently hired away by foreign firms applying their systems of performance-based huge bonuses but without job security.

A few major financial institutions have adjusted to these market realities, at least in foreign operations, but not most. For example, Nomura Securities Company's New York operations were highly profitable in 1996, and its London operations in 1997. Both were run by non-Japanese, and the top bonuses of the highest performing specialists were more than \$20 million.

Concluding Comments

The discussion in the previous section suggests basic reasons why Japan's severe banking problems have persisted so long. Here I recapitulate.

First was the mistaken belief in the early-mid 1990's that the economy would rebound quickly from what was perceived to be little more than a cyclical downturn, and again the mistaken belief in late 1996 that recovery was so firmly entrenched that the fiscal priority could immediately return to budget deficit reduction. If the economy and especially real estate prices had indeed turned up, then adjustment would have been easier and perhaps less costly, so a policy of waiting it out was attractive, but turned out to be mistaken. Not surprisingly this

led to a series of macroeconomic policy mistakes: too little stimulus, too great a reliance on monetary relative to fiscal stimulus.

Second, as a consequence, MoF initially decided and the banks readily agreed to simply wait out the bad loan problems until economic growth was restored. It was not until 1995 that banks seriously started disclosing and writing off bad loans. And it was not until recently that they reduced dividend rates, halted annual increases in wages and bonus, or began to reduce the number of employees significantly despite earlier attrition opportunities. In a remarkable statement in 1995, *Nikkeiren* (The Federation of Employers Associations) acidly noted that bank manager salaries were 24 percent higher than those in comparable positions in industry, and urged that banks reduce the disparity before taxpayers monies (government funds) be used to bail them out of their difficulties. The widespread sense among the public that banks were not making any significant sacrifices has made it difficult for the political leadership to commit government funds to handle what came to be an increasingly obvious need to bail out the banks if the system were not to fall into chaos.

Third, the economy continued to grow only very slowly, averaging about 1 percent annually since 1991; more ordinary loans became doubtful, and more doubtful loans became bad. Businesses could not generate cash flows for interest payments much less loan repayments. Moreover, urban commercial real estate prices continued to decline, are now some 70 percent or so below their peak, and may only in mid 1998 be reaching the bottom. Office space, very tight in 1990, became super abundant by 1995, as projects were completed. Rents declined precipitously, exacerbated by the custom that most leases are for a maximum of only two years. Many speculative projects, such as golf courses, have been only partially constructed and may never be completed. Nonetheless, banks and other holders of real estate, directly or as collateral, have refrained from selling, apparently in hopes the market would bottom out soon as well as the fear that if they sell real estate prices will fall even further.

This series of mis-estimations of Japanese economic performance, which delayed and thereby worsened Japan's financial crisis, have created the current crisis in Japanese financial institutions and markets. Only since early 1998 has the government begun to seriously address these needs for financial reform and begun to provide the public funding that is essential.

Endnotes

1. Standard references on the postwar period include Suzuki (1985 and 1987), Feldman (1986), Cargill and Royama (1988), Rosenbluth (1989), FAIR (1991), and Cargill, Hutchison, and Ito (1997).
2. There were 11 city banks, three long-term credit banks, and seven trust banks, a total of 21 Big Banks. With the merger of Bank of Tokyo and Mitsubishi Bank and the failure of Hokkaido Takushoku Bank the city banks were reduced to nine. The de facto absorption of Nippon Trust Bank by Mitsubishi Bank means that the Big Banks as of summer 1998 are counted as 18 or 19.
3. For a description and analysis of the main bank system, particularly in the high growth era, see Aoki and Patrick (1994).
4. The literature estimates of the evolving amounts of bad loans is substantial; see, for example, Ohara (1996), Marsh and Paul (1996), and Waterhouse (1997-98).
5. See Waterhouse (1998a).
6. Stephen Vogel (1996) has well analyzed the slow, near-haphazard process of MoF policymaking.
7. See Cargill, Hutchison and Ito (1997) Hartcher (1997), and Wood (1992)
8. See the careful, thorough, econometric analysis of McKibbin (1996).

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