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Restructuring and Forgiveness in Financial Crises D: The Japanese Financial Crisis of the 1990s¹

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Abstract

In November 1997 the Japanese government confronted a problem of enormous proportions when the turmoil that had been roiling the financial markets since the collapse of a real estate and stock market asset bubble in 1990 reached a crescendo with the failure of four major financial institutions in quick succession in the space of a month. Prior to these failures, the damage done by the collapsing bubble had seemed to be limited to certain segments of the financial landscape, and the government's response consisted largely of targeted intervention when necessary for clearly insolvent financial institutions, with a more comprehensive approach yet to be developed.

Yet with the November 1997 failures it was clear that the damage was not limited and that the crisis in the Japanese financial system was reaching a systemic stage. Given that the frameworks developed during the early stages of the financial crisis were not designed with such failures in mind, initial efforts to assist these more major financial institutions were organized on an ad hoc basis while Japanese authorities simultaneously worked on developing a new framework. Ultimately, two pieces of legislation were enacted that would provide much of this framework—an act allowing for the temporary nationalization of systemically important banks for purposes of restructuring them and an act earmarking additional funds for bank recapitalization.

¹ This case study is one of four Yale Program on Financial Stability (YPFS) case modules considering Restructuring and Forgiveness in Financial Crises. The others are:

- *Restructuring and Forgiveness in Financial Crises A: The Mexican Peso Crisis of 1994-95.*
- *Restructuring and Forgiveness in Financial Crises B: The Asian Crisis of 1997.*
- *Restructuring and Forgiveness in Financial Crises C: The Swedish Banking Crisis of 1990-94.*

Cases are available from the Journal of Financial Crises.

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1. Introduction

In November 1997 the Japanese government confronted a problem of enormous proportions when the turmoil that had been roiling the financial markets since the collapse of a real estate and stock market asset bubble in 1990 reached a crescendo with the failure of four major financial institutions in quick succession in the space of a month. Prior to these failures, the damage done by the collapsing bubble had seemed to be limited to certain segments of the financial landscape, and the government's response consisted largely of targeted intervention when necessary for clearly insolvent financial institutions, with a more comprehensive approach yet to be developed. During this period failures among credit cooperatives had been addressed by coupling a limited amount of public funds with collective contributions from private financial institutions to capitalize assuming banks to take over the sound assets and liabilities of the failed institutions. At about the same time, staggering levels of non-performing loans among the *jusen*, non-bank housing loan corporations established by banks, were addressed in a very limited way for several years until the problem became unavoidable and the *jusen* were shut down with taxpayers covering a portion of the losses.

Yet by 1997 it was clear that the damage was not limited and that the crisis in the Japanese financial system was reaching a systemic stage. In early November 1997, a mid-sized securities house named Sanyo Securities collapsed and had its operations halted under bankruptcy law, triggering a run in the interbank market. By the end of the month, three additional major financial institutions had also failed, including a much larger, more complex securities house named Yamaichi Securities. In a little more than six months, Long-Term Credit Bank of Japan (LTCB), a major bank with ¥26,000 billion⁴ in assets, was on the verge of collapse.

Given that the frameworks developed during the early stages of the financial crisis were not designed with such failures in mind, initial efforts to assist these more major financial institutions were organized on an ad hoc basis while Japanese authorities simultaneously worked on developing a new framework. The Bank of Japan provided unlimited liquidity support to Yamaichi Securities to ensure its orderly wind-down. Japan's national legislative body, the Diet, approved legislation earmarking public funds for bank recapitalization and an initial attempt at capital injections was made in March 1998. Ultimately, the collapse of LTCB prompted the enactment of two pieces of legislation that would provide much of the needed framework for dealing with failures on this scale—an act allowing for the temporary nationalization of systemically important banks for purposes of restructuring them (pursuant to which LTCB was nationalized in October 1998) and an act earmarking additional funds for bank recapitalization (pursuant to which a second, more successful round of capital injections was initiated in March 1999).

While the intervention of the Japanese government likely prevented the failures of institutions such as Yamaichi Securities and LTCB from having a more devastating impact on the financial system and broader economy and the March 1999 capital injections calmed the markets, the banking system remained undercapitalized until a macroeconomic recovery beginning in 2003 allowed banks to rebuild their capital. This persistent undercapitalization is what some point to as the most significant feature of the Japanese financial crisis.

⁴ From the collapse of the asset bubble in 1990 to the early 2000s, the Japanese yen fluctuated in value between nearly ¥160 per U.S. dollar and just over ¥80 per U.S. dollar. For purposes of converting sums given in yen to a U.S. dollar equivalent, dividing by 100 provides a rough and commonly used approximation.

According to this view, the undercapitalization of Japan's banks left them unwilling to further erode their capital by recognizing losses on non-performing loans. As a result, they continued lending to insolvent borrowers in a process known as "evergreening" or "zombie lending," thereby stunting economic growth into the 2000s and resulting in Japan's so-called "two lost decades." Yet an alternative view exists which focuses on demographic factors as the cause of Japan's slow growth in the 2000s.

The remainder of the case is organized as follows: Section 2 summarizes the conditions that resulted in the Japanese financial crisis of the 1990s. Section 3 discusses the initial, pre-crisis phase of the financial turmoil that ultimately resulted in a systemic crisis and the steps taken by Japanese authorities to address issues as they arose. Section 4 then provides a detailed analysis of the policy responses adopted by the Japanese government in reaction to the crisis reaching a systemic level. Finally, Section 5 discusses the results produced by the government's responses and what lessons can be drawn from the manner in which the Japanese financial crisis of the 1990s was resolved.

Questions

1. Was the liquidity support provided by the Bank of Japan to Yamaichi Securities necessary to prevent the Japanese financial crisis from having more devastating effects? Should Sanyo Securities have received the same support?
2. Even if the Bank of Japan's lending to Yamaichi Securities succeeded in preventing more devastating effects, was it problematic from the standpoint of delaying further regulatory action necessary to resolve the underlying crisis?
3. What does the Japanese experience suggest about the importance of lenders of last resort in financial crises?

2. Background of the Crisis

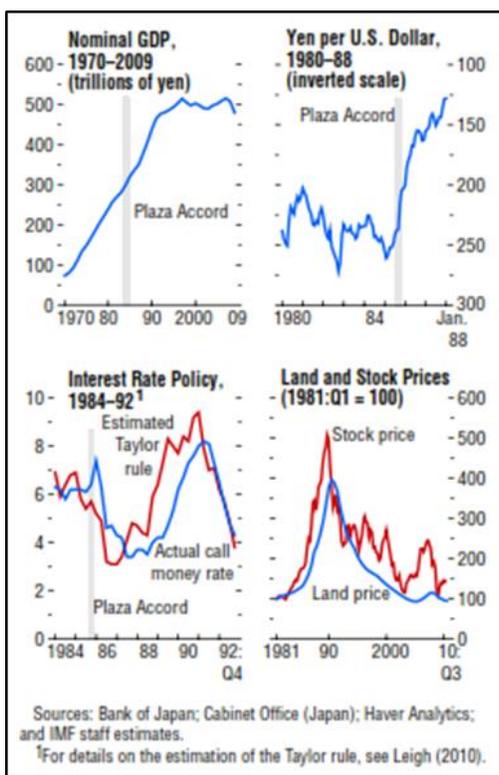
In the face of growing trade imbalances between the United States and other developed economies (Japan in particular) that had resulted in a U.S. current account deficit in excess of 3% of GDP, the finance ministers of the G-5 nations (France, Japan, the United Kingdom, the United States, and West Germany) met at the Plaza Hotel in New York in September 1985 to develop an agreement pursuant to which the countries would intervene in the currency market to devalue the dollar. A weaker dollar, it was hoped, would make U.S. exports more competitive in the global market and thereby stave off calls for protectionist measures. The Plaza Accord, signed on September 22, thus called for a "further orderly appreciation of the main non-dollar currencies against the dollar" (Plaza Accord 1985). As a result of the Accord, the Japanese yen appreciated from ¥239 per dollar in 1985 to approximately ¥135 per dollar by 1987 (Kokko and Suzuki 2009).

The immediate impact of this appreciation was a sharp drop-off in Japanese export and GDP growth that had become apparent by early 1986 (International Monetary Fund 2011). This placed tremendous pressure on the Japanese government to respond, and it did so with expansive fiscal and monetary policies. These policies, coupled with the effects of financial deregulation that took place in the 1970s and early 1980s, resulted in an asset bubble. Between 1985 and 1989, both Japanese stock prices and urban land values tripled (International Monetary Fund 2011). Asset prices climbed so high that it was said that Japan's Imperial Palace and its grounds were worth more than all of the land in California (Kokko and Suzuki 2009).

An asset bubble of this magnitude was destined to pop eventually. In March 1990 the Ministry of Finance introduced the *Soryo Kisei* or Total Volume Restriction, guidance that sought to limit the amounts loaned to the real estate sector. Although the *Soryo Kisei* was non-binding administrative guidance rather than a mandatory rule, it had the effect of significantly curtailing real estate lending (Iwamoto 2006). At this same time, the Bank of Japan was repeatedly raising interest rates in an attempt to curb growing inflationary pressures, with the Official Discount Rate increasing from 2.5% in May 1989 to 6.0% in August 1990 (Nakaso 2001).

As indicated in Figure 1 below, once the Japanese asset bubble popped, stock and land prices fell nearly as quickly as they had risen. Within three years, stocks had lost 60% of their 1989 peak value (Caballero et. al. 2008). Land prices fell by approximately half (Ibid.). These developments would ultimately prove devastating to Japanese financial institutions given their heavy exposure to both the stock market (through equity holdings) and real estate (through loans to real estate developers and other loans secured by real estate).

Figure 1: Selected Japanese Macroeconomic Indicators



Source: International Monetary Fund 2011.

3. The Response to the Crisis—The Pre-Crisis Phase

Kokko and Suzuki have argued that Japan's status as a large exporter of capital meant that the bursting of its asset bubble did not result in an acute currency or liquidity crisis in the short-term (2009). And indeed, the years immediately following the end of the bubble

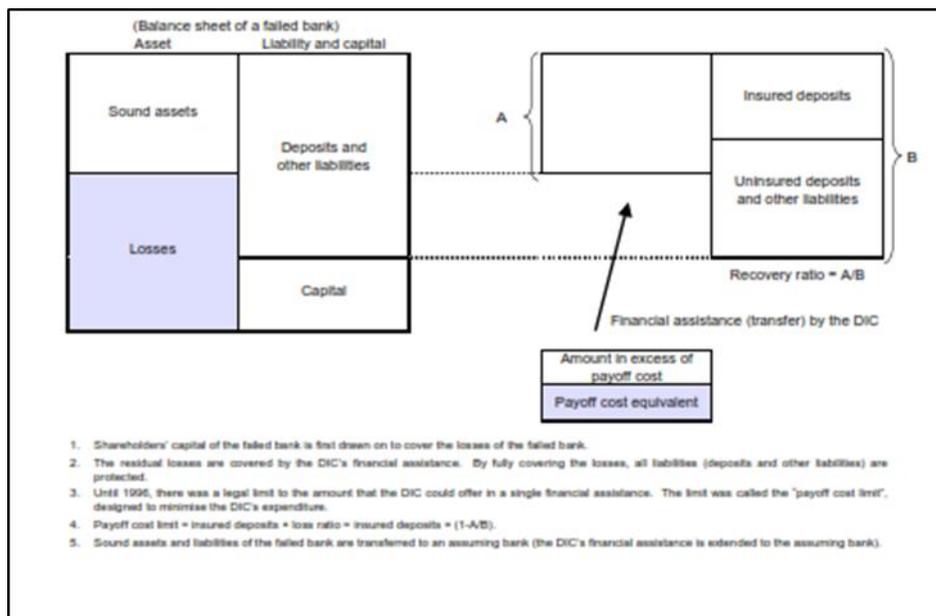
witnessed only some sporadic failures of relatively small institutions. These failures were dismissed as isolated incidents and of little systemic importance. Japan had experienced no major bank failures in the postwar period, and banks were heavily regulated by the Ministry of Finance and watched over by the Bank of Japan in its role as central bank⁵ (Nakaso 2001). The possibility for more major failures thus seemed remote. Furthermore, although economic growth slowed, it remained positive. This prompted the Japanese government to adopt a “wait-and-see” approach based on the belief that economic growth and asset prices would rebound, removing any threat to the financial system (Ibid.).

The Failure of the Credit Cooperatives

In December 1994, failures reached a more significant stage with the simultaneous collapse of Tokyo Kyowa Credit Association and Anzen Credit Association, two credit cooperatives with a combined ¥210 billion in deposits that were the first urban deposit-taking institutions to fail (Nakaso 2001). Tokyo Kyowa and Anzen had been poorly managed institutions, whose failure resulted in the resignation of two prominent politicians with inappropriate ties to the cooperatives and an investigation into allegations that the cooperatives had violated various financial regulations, including those designed to limit exposure to a single client (WuDunn 1995). Pursuant to a 1986 amendment to Japan’s Deposit Insurance Law, Japanese regulators were faced with two options in dealing with the cooperatives. The first was a traditional “payoff” approach in which the failed institution would be liquidated and depositors protected up to ¥10 million each by the Deposit Insurance Corporation (DIC). The second, “financial assistance” approach involved the transfer of the sound assets and liabilities of the failed institution to an assuming bank, with the DIC covering any losses from the failed institution that remained after wiping out shareholders’ capital. However, as explained below, there was initially a statutory limit to how much the DIC could cover in losses when opting for the financial assistance approach. See Figure 2 below for a visual depiction of the financial assistance approach.

⁵ Both the Ministry of Finance and Bank of Japan played important roles in designing the response of the Japanese government to the financial crisis. The Ministry of Finance as the ultimate “guardian of the banking system” had primary responsibility for certain aspects of the response including negotiating with the Japanese Diet.

Figure 2: Visual Depiction of Financial Assistance Approach



Source: Nakaso 2001.

Of these two options, the Japanese authorities elected the financial assistance approach, having concluded that requiring depositors to incur losses above the ¥10 million DIC limit might provoke runs against other financial institutions perceived as weak. Still, as Nakaso has argued, there were a number of obstacles to the deployment of the financial assistance approach to successfully rescue the failed cooperatives (2001). First, even with DIC involvement no other financial institution was willing to act in the role of assuming bank for the cooperatives' sound assets and liabilities. Second, Japanese law limited the amount of money the DIC could use for financial assistance to what it would have paid out under the payoff approach. This "payoff cost limit" could be calculated by determining the amount of insured deposits held by a failed institution and subtracting any remaining value of the firm that could be used to satisfy such deposits prior to relying on the DIC. For Tokyo Kyowa and Anzen, with ¥100 billion in combined losses, the payoff cost limit was lower than the total losses that would have to be covered as part of any rescue (Nakaso 2001). Thus, additional funds would be needed from some other source.

Ultimately, the Bank of Japan developed a rescue package consisting of the following elements:

1. The Bank of Japan and a group of private financial institutions would each contribute ¥20 billion as capital to establish a new bank named Tokyo Kyoudou Bank (TKB) to assume the sound assets and liabilities of the failed cooperatives;
2. Shareholders' capital would be used to cover the cooperatives' losses, with the DIC then providing financial assistance to TKB to cover remaining losses up to the amount of the payoff cost limit;

3. The private financial institutions would provide TKB with a low-interest loan to support its ongoing operations; and
4. The management of the cooperatives would be replaced.

Notably, the group of private financial institutions that participated in this rescue plan consisted of virtually all major Japanese financial firms. Introducing a new collective contribution technique that came to be described as the *hougachou* approach, Japanese authorities persuaded the firms to participate to prevent a broader collapse of the financial system that might harm the firms' own interests as well (Nakaso 2001).

Also new was the use of Bank of Japan funds to make a capital contribution to a financial institution, in this case TKB. In establishing the Bank of Japan as the lender of last resort, Article 25 of the Bank of Japan Law authorized the Bank to provide not only liquidity support, but also risk capital. Historically, however, the Bank of Japan had made sparing use of its Article 25 authority and only to provide liquidity support as it did when it lent funds to securities houses during a stock market crash in 1965 (The New York Times 1994). The rescue of Tokyo Kyowa and Anzen represented the first instance in which the Bank of Japan provided capital. Perhaps as a result, the episode met with heavy criticism from the media, who felt the rescue contradicted an October 1994 speech by Bank of Japan Governor Yasushi Mieno in which he asserted that it was necessary for the health of the financial system to allow institutions that deserved to fail to fail (Nakaso 2001).

Despite this criticism, the *hougachou* approach coupled with liquidity support and/or capital contributions from the Bank of Japan continued to be the method employed to address two additional bank failures that occurred shortly after Tokyo Kyowa and Anzen collapsed—Cosmo Credit Cooperative in July 1995 and Hyogo Bank in August 1995. But August 1995 also witnessed a further failure, one whose size would prevent the *hougachou* approach from being used. Kizu Credit Cooperative collapsed with losses that were estimated to be more than ¥1,000 billion, an amount deemed too large for private financial institutions to help meet in light of all that they had already been asked to contribute.

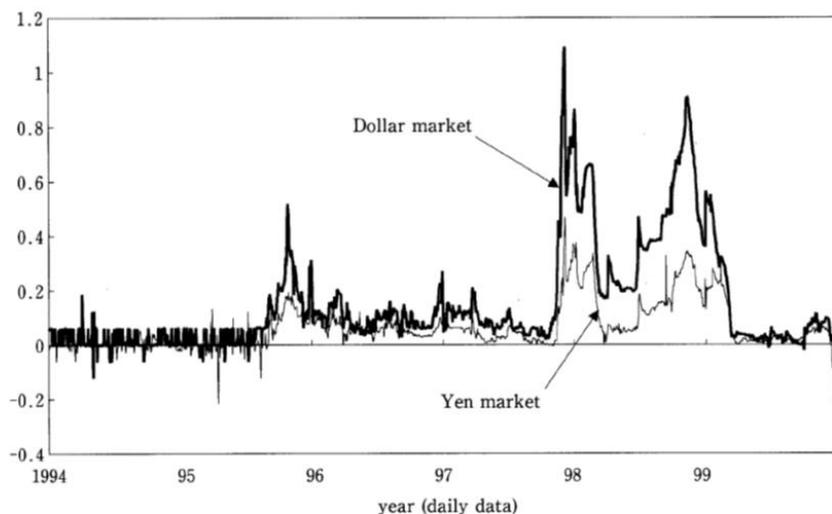
As a result, Kizu's failure added urgency to discussions that had already begun in June about revising the Deposit Insurance Law to, among other things, lift the payoff cost limit (Nakaso 2001). In June 1996 the Japanese Diet amended the Deposit Insurance Law to:

1. Temporarily lift the payoff cost limit until March 2001;
2. Increase the insurance premiums on insured deposits from 0.012% to 0.084%, increasing expected annual revenue to ¥460 billion; and
3. Reorganize TKB into the Resolution and Collection Bank (RCB) with the broader mandate of assuming failed credit cooperatives for which no private assuming bank could be found and purchasing non-performing loans from failed credit cooperatives to make them more attractive to private assuming banks.

This decision to lift the payoff cost limit has been described as a *de facto* policy of guaranteeing all deposits (Hoshi and Kashyap 2008). Notably, however, the focus of these reforms remained the failure of credit cooperatives, with the size of the DIC's fund based on an assumption that smaller institutions would continue to fail at about the same rate as they had in the previous few years (Nakaso 2001). Japanese regulators did not yet see the failure of larger banks as a possibility. Yet the market was growing increasingly concerned. As shown in Figure 3 below, a further impact of the failures of Cosmo, Hyogo, and Kizu was the emergence of the "Japan premium," an additional amount Japanese financial institutions had

to pay for interbank loans as compared with counterparts in the U.S. and Europe (Fukao 2000).

Figure 3: Difference in Interbank Borrowing Costs for Japanese and Non-Japanese Banks, 1994-2000



Note: Japan premium=(3-month TIBOR rate)-(3-month LIBOR rate).
Source: Fukao, Mitsuhiro ed., *Empirical Analysis of Financial Recession*, Nihon Keizai Shimbun Sha, 2000, (in Japanese), p.146.

Source: Fukao 2000.

The Failure of the *Jusen*

The turmoil in the Japanese financial markets also manifested itself among the *jusen*, non-bank housing loan corporations established by banks in the 1970s to provide home mortgages. With deregulation in the 1980s, the *jusen* faced increased competition in the home mortgage market and branched out into lending to real estate developers. This trend intensified as the boom in land values made such lending seem increasingly attractive.

The *jusen* lacked experience in commercial lending, however, and when the asset bubble burst they suffered devastating losses. By 1991 the *jusen's* non-performing loans reached ¥4,600 billion, or 38% of all *jusen* loans outstanding (Hoshi and Kashyap 2008). Given that the failure of the *jusen* could harm the broader financial system, the Ministry of Finance and the *jusen's* founder banks organized limited rescue plans in 1991 and 1993 involving loan concessions, interest rate reductions, new loan support, and cost-cutting measures. These steps proved unsuccessful, and by 1995 non-performing loans had ballooned to 75% of all loans outstanding with 60% deemed unrecoverable (Ibid.).

In the summer of 1995, the Ministry of Finance conducted an examination of the *jusen* and determined that their losses totaled ¥6,410 billion (Nakaso 2001). As this was an amount that the founder banks would be unable to cover themselves, the Ministry of Finance approached the Japanese Diet with a plan that called for taxpayers to fund a portion of the

losses. After fierce debate, the Diet approved a plan that allocated the *jusen* losses among the founding banks, agricultural cooperatives that had lent to the *jusen*, other lenders to the *jusen*, and taxpayers as follows:

- Founding banks: ¥3,500 billion
- Agriculture co-ops: ¥530 billion
- Other lenders: ¥1,700 billion
- Taxpayers: ¥680 billion

Additionally, the Bank of Japan provided ¥100 billion toward the capital of the newly created Housing Loan Administration Corporation (HLAC), an asset management company established to assume the sound assets of the *jusen* (Nakaso 2001).

Hoshi and Kashyap have highlighted two ways in which the *jusen* episode was particularly significant in the context of the larger Japanese financial crisis. First, they have identified it as a stark illustration of the policy of “wait-and-see” regulatory forbearance that they believe characterized much of Japan’s response, especially in the early years of the crisis. They note that while the *jusen* were clearly in serious trouble by 1991, it was not until 1996 that they were ultimately liquidated (Hoshi and Kashyap 2004). Second, they have argued that the taxpayer money used to cover the *jusen* losses, while relatively small in amount, represented a repudiation of earlier government promises not to devote taxpayer funds to the problem. They believe that the public outrage that resulted rendered the government extremely hesitant to request additional government funds during later stages of the crisis (Hoshi and Kashyap 2008). As Nakaso has noted, this outrage may have been heightened by the fact that the *jusen* were non-depository institutions whose existence and activities the Japanese public may not have been able to connect with their daily lives (2001).

Regulatory Forbearance?

If there is broad consensus that Japan’s efforts in handling the financial crisis, especially early on, were marked by targeted interventions when necessary for clearly insolvent financial institutions rather than a more comprehensive approach to solving the underlying problems, there is no universal agreement on the reasons why this was so. Some have argued that the Japanese government engaged in a policy of regulatory forbearance, pursuant to which it intended to provide the time for problems to be worked out gradually without creating a panic by disclosing the true extent of the crisis. As noted above, Hoshi and Kashyap have cited the *jusen* as a prime example of this type of forbearance (2004). Yet there is an alternative view that sees the slow development of a comprehensive approach not as a deliberate policy choice, but as the product of a combination of factors including:

- a. A lack of a framework for handling a crisis of this magnitude;
- b. A lack of resources (e.g., experienced staff) for handling a crisis of this magnitude;
- c. A lack of popular support for the type of taxpayer-funded intervention that would be required as part of a comprehensive approach; and
- d. A lack of consensus even within the government about the severity of the impact of the non-performing loan problem on the macroeconomy.

Nakaso, for example, has argued that at the outset of the crisis the government did not have the expertise or policy tools to address the outbreak of a major financial panic (2001). Proponents of this viewpoint argue that the above factors are interrelated, and that certain factors may have played a greater or lesser role at different stages of the crisis. For instance, the lack of consensus even within the government about the severity of the impact of the non-performing loan problem on the macroeconomy was especially pronounced in the early 1990s before gradually becoming less significant.

4. The Response to the Crisis—The Acute Crisis Phase

By 1997 the same non-performing loan problems that had felled the credit cooperatives and the *jusen* began to threaten the existence of more major financial institutions. The Asian Financial Crisis⁶ that began with the July 1997 collapse of the Thai baht, while not a direct cause of these problems, helped make a serious financial situation more difficult to sustain (Nakamura 2002). Given that, as noted above, the existing framework for dealing with failed institutions using the DIC's fund was not designed with the failure of a large bank in mind, early efforts to assist these more major financial institutions were organized on an ad hoc basis while Japanese authorities simultaneously worked on developing a new framework.

The Bailout of Nippon Credit Bank

In 1997 Nippon Credit Bank (NCB) was an internationally active bank with approximately ¥15,000 billion in assets, making it the smallest of Japan's three long-term credit banks (the Industrial Bank of Japan and the Long-Term Credit Bank of Japan being the other two) (Nakaso 2001). Due to its heavy real estate exposure, NCB began to experience severe funding difficulties and ratings downgrades as observers became increasingly worried about the effect of non-performing loans on more major financial institutions. An initial effort to assist NCB with Ministry-of-Finance-organized capital injections from NCB's existing shareholders and the other two long-term credit banks proved insufficient. On April 1, 1997, NCB announced a new restructuring plan that provided for ¥290.6 billion in new capital—¥210.6 billion from private sources and ¥80 billion from the Bank of Japan using the New Financial Stabilization Fund, a ¥100 billion vehicle created in the wake of the *jusen* problem to provide capital to ailing institutions. This capital injection enabled NCB to weather the immediate crisis, but as discussed in more detail below, continued asset deterioration ultimately resulted in NCB being nationalized in December 1998.

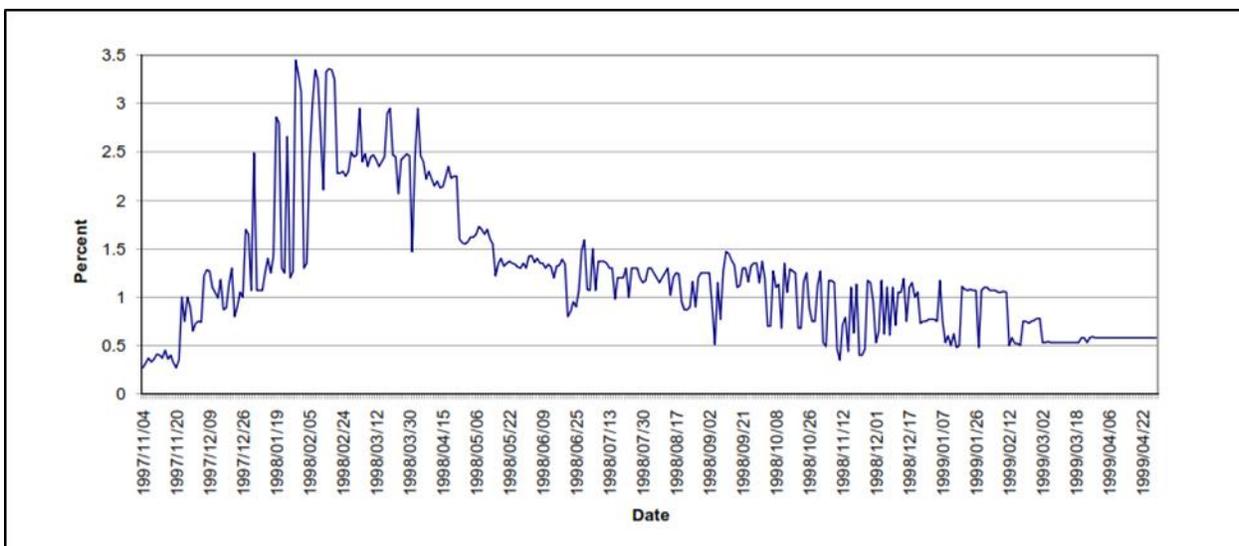
The November 1997 Collapse

After the temporary stabilization of NCB, the Japanese financial crisis reached a crescendo when in November 1997 four major institutions failed in quick succession. First to fall was Sanyo Securities, a mid-size securities house with approximately ¥2,700 billion in client assets (Nasako 2001). Faced with the failure of Sanyo, the Ministry of Finance and the Bank of Japan concluded that the systemic implications of the failure would be limited and allowed the firm to collapse. On November 3rd Sanyo filed a bankruptcy petition that triggered a suspension of its business under bankruptcy law. This suspension caused Sanyo to default on the repayment of money it had borrowed in the interbank market, the first such default in Japan's history. While the amount of the default was relatively modest at ¥8.3 billion, the unprecedented nature of the step sparked a run in the interbank market as participants

⁶ For more on the Asian Financial Crisis, see Rhee and Metrick. 2015.

began to digest the significance in the days following the collapse (Ibid.). Many banks ceased lending in the interbank market and deposited the funds with the Bank of Japan instead. As indicated in Figure 4 below, this produced spikes in interbank interest rates that caused a significant widening of the spread between the lowest rate charged for overnight lending to the most creditworthy banks and the highest rate charged for overnight lending to the least creditworthy banks (Hoshi and Kashyap 2008).

Figure 4: Spread Between the Maximum and Minimum Overnight Call Rate in the Interbank Market



Source: Hoshi and Kashyap 2008.

Funding difficulties developed in both the yen and dollar markets. Foreign banks that received yen from Japanese banks pursuant to currency swaps refrained from recycling the yen back into the interbank market because of default fears. In order to prevent the interbank market from drying up completely, the Bank of Japan provided extensive liquidity (reaching as high as ¥22,000 billion in December 1997) in the form of purchases of eligible bills, repo, and bilateral lending to banks against eligible collateral. It also worked to address the excessive yen liquidity among foreign banks by drawing bills for sale (Nasako 2001).

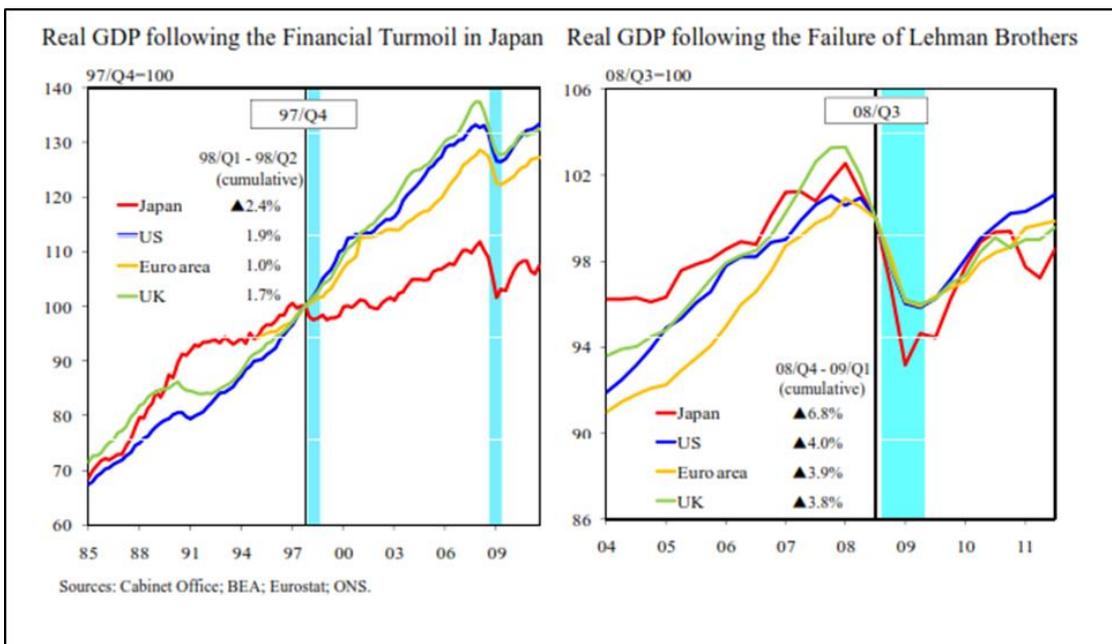
Two weeks after the collapse of Sanyo, Hokkaido Takushoku Bank (HTB) lost the ability to borrow in the interbank market and could no longer continue in operation without intervention (Hoshi and Kashyap 2008). With ¥9,500 billion in assets, HTB was a major bank with a dominant role in the local economy of Hokkaido (Nakaso 2001). Accordingly, the Bank of Japan considered it imperative to allow HTB to continue providing financial services until an assuming bank could be found to take over HTB's sound assets and liabilities. An earlier attempt to merge HTB with Hokkaido Bank had failed in September 1997 over concerns about the extent of HTB's non-performing loans, and the Bank of Japan worked to find an alternate assuming bank. Ultimately, a small regional bank approximately one-fifth the size of HTB agreed to act as assuming bank with the Bank of Japan providing as much as ¥2,600 billion in liquidity support to finance massive deposit outflows (Ibid.).

The next week, Yamaichi Securities, one of the four largest securities houses in Japan with client assets of ¥22,000 billion and banking subsidiaries across Europe, collapsed after it was revealed to have more than ¥200 billion in off-the-books liabilities (Nakaso 2001). With the interbank market already reeling from the failure of the much smaller and simpler Sanyo Securities, the Bank of Japan concluded that a default by Yamaichi could have a catastrophic effect on domestic and global markets given the size and complexity of the firm. Accordingly, rather than halting Yamaichi's operations immediately pursuant to bankruptcy law as had been done in the case of Sanyo, Japanese authorities organized an orderly wind-down that would enable the firm to continue its operations to settle existing contracts.

Given that Yamaichi could no longer fund itself in the market, this required liquidity support from the government. While the Bank of Japan had the authority under Article 25 to provide liquidity support to a non-bank securities house to prevent financial instability, such a move was considered extraordinary for two reasons. First, under normal circumstances the failure of a securities house would be seen as having little systemic importance (Nakaso 2001). Second, it was not clear at the time whether Yamaichi Securities was solvent or insolvent, and therefore whether the Bank of Japan would ultimately be able to recover its liquidity support (Shirakawa 2012). As a securities house, Yamaichi was outside the deposit insurance framework, leaving the Bank of Japan no recourse to the DIC.

Ultimately, the Bank of Japan agreed to provide unlimited liquidity to Yamaichi (with some assurances from the Ministry of Finance that the Bank of Japan could use funds from a retail investors security fund to recover losses if Yamaichi proved insolvent). Yamaichi required immediate liquidity support of ¥800 billion, an amount that grew to ¥1,200 billion at its peak in December 1997 (Nakaso 2001). By committing to provide unlimited liquidity support, the Bank of Japan essentially replaced counterparties' exposure to Yamaichi with exposure to the Bank of Japan, thereby avoiding any significant systemic impacts from Yamaichi's collapse. As shown in Figure 5 below, following the collapse there was no sharp decline in economic activity in Japan or globally, a situation some have compared favorably to the global meltdown following the collapse of Lehman Brothers (Shirakawa 2012).

Figure 5: Real GDP Following Collapse of Yamaichi Versus Real GDP Following Collapse of Lehman



Source: Shirakawa 2012.

Notwithstanding this success in limiting the fallout of Yamaichi's failure through an orderly wind-down, Yamaichi's financial condition continued to deteriorate, and in June 1999 the firm was declared bankrupt with losses of approximately ¥160 billion (Nakaso 2001).

The fourth and final major failure of November 1997 occurred with the November 26th announcement that Tokuyo City Bank (TCB) had collapsed. While TCB was only a regional bank, its demise following the failures that had already occurred was a major psychological blow, and a run soon developed on other regional banks. November 26, 1997, has been described as "probably the day that Japan's financial system was closest to a systemic collapse" (Nakaso 2001). In response, the Finance Minister and the Governor of the Bank of Japan issued a joint statement reiterating their commitment to maintaining the stability of the financial system and confirming that all deposits were protected, with the Bank of Japan ready to provide liquidity support to ensure smooth withdrawals of funds.

Financial Function Stabilization Act

Following the string of failures in November 1997, the need to inject additional capital into the Japanese banking system was evident. In February 1998 following intense debate, the Diet enacted the Financial Function Stabilization Act (FFSA), which made ¥30,000 billion in public funds available for maintaining financial stability. ¥17,000 billion of this amount was earmarked for protecting depositors of failed banks, while ¥13,000 billion was designated for bank recapitalization (Hoshi and Kashyap 2008).

Banks initially declined to participate in the recapitalization process made possible by the FFSA. One potential concern was the risk of stigma, with any banks applying for recapitalization possibly signaling to the market that they were weaker than the market realized. A second possible concern was that any recapitalization would give the government securities senior to the claims of existing securities holders (Hoshi and Kashyap 2008).

Regardless of each institution's individual motivation for being reluctant to participate, ultimately the major banks could only be convinced to take part in recapitalization if they received identical amounts. In March 1998 eight of the nine largest banks in Japan each received ¥100 billion in capital, while the ninth received ¥99 billion. This ¥100 billion figure was equal to the maximum amount of capital that the healthiest bank, Bank of Tokyo Mitsubishi, was willing to ask for, with the result that what the other banks received was in many cases much less than what was needed (Hoshi and Kashyap 2008).

In total, 21 banks received a combined ¥1,800 billion in capital as part of this injection. As outlined in Figure 6 below, the majority of these banks received the capital in the form of subordinated debt with interest rates tied to the perceived health of the borrower. A smaller group of institutions received the capital in the form of preferred shares convertible into common shares.

Figure 6: Terms for the March 1998 Capital Injection

(¥ billion)											
	S&P Rating	Total Funds	Preferred shares					Subordinated debt/loans			
			Type	Amount	dividend rate	Conversion start date	Forced conversion date	Type	Amount	yield for 5 years	yield after 6th year
City banks											
Dai-ichi Kangyo	BBB+	99	CPS	99	0.75	7/1/1998	8/1/2005				
Fuji	BBB+	100						SDP	100	L+1.10	L+2.60
Sakura	BBB	100						SDP	100	L+1.20	L+2.70
Sanwa	A-	100						SD10	100	L+0.55	L+1.25
Sumitomo	A-	100						SDP	100	L+0.90	L+2.40
Tokyo Mitsubishi	A	100						SDP	100	L+0.90	L+2.40
Asahi	BBB+	100						SLP	100	L+1.00	L+2.50
Daiwa	BBB-	100						SLP	100	L+2.70	L+2.70
Tokai	BBB+	100						SDP	100	L+0.90	L+2.40
Long-term Credit bank											
Industrial Bank of Japan	A-	100						SD10	100	L+0.55	L+1.25
LTCB of Japan	BBB-	177.6	CPS	130	1.00	10/1/1998	4/1/2008	SLP	46.6	L+2.45	L+3.95
Nippon Credit Bank	NR	60	CPS	60	1.00	10/1/1998	4/1/2018				
Trust banks											
Mitsubishi Trust	A-	50						SDP	50	L+1.10	L+2.60
Sumitomo Trust	A-	100						SDP	100	L+1.10	L+2.60
Mitsui Trust	BBB+	100						SDP	100	L+1.45	L+2.95
Chuo Trust	NR	60	CPS	32	2.50	7/1/1998	8/1/2018	SLP	28	L+2.45	L+3.95
Toyo Trust	NR	50						SDP	50	L+1.10	L+2.60
Regional Bank											
Bank of Yokohama	BBB	20						SLP	20	L+1.10	L+2.60
Hokuriku Bank	NR	20						SLP	20	L+2.45	L+3.95
Ashikaga Bank	NR	30						SDP	30	L+2.95	L+4.45

Notes. S&P Rating shows the rating of the bank's long-term debt given by Standard & Poor's as of March 1998. We thank Kaoru Hosono for sharing the rating data. Total Funds show the total amount of public capital injected into each bank. If preferred shares were used for injection, the type of preferred shares (convertible or not), the amount purchased, the dividend rate, the date when the government can start converting preferred shares into common shares (if convertible), and the date after which the government has to convert the preferred shares into common shares (if convertible), under the columns beneath the heading "Preferred shares." If subordinated debt or a subordinated loan was used, the type of subordinated debt (bond or loan and maturity), the amount purchased, the interest rate for the first five years, and the interest rate after the first five years, under the columns beneath the heading "Subordinated debt/loans." L: 6-month yen LIBOR, CPS: Convertible Preferred Shares, SDP: Perpetual Subordinated Debt, SLP: Perpetual Subordinated Loan, SD10: 10-year Subordinated Debt.

Source: Hoshi and Kashyap 2008.

The Nationalization of Long-Term Capital Bank of Japan

While the March 1998 capital injection had the effect of temporarily calming the markets, the injection was soon seen as being too little and of insufficient quality given the use of Tier 2 subordinated debt (Nakaso 2001). And by June 1998, one of the banks that had received a capital injection, the Long-Term Capital Bank of Japan (LTCB), was on the verge of collapse. With ¥26,000 billion in assets and a derivatives book with ¥50,000 billion in notional value outstanding, LTCB was seen by Japanese authorities as posing major systemic issues (Ibid.). After an attempt to recuse the bank by merging it with Sumitomo Trust Bank failed when the latter remained doubtful about the extent of LTCB's non-performing loans, authorities began to pursue an orderly wind-down with the objective of ultimately selling what remained to a private buyer.

No framework existed at the time for the wind-down of such a large and complex institution. As a result, in October 1998 the Diet enacted the Financial Revitalization Act, under which the government could temporarily nationalize a failing systemically important bank for purposes of restructuring it. In October, this authority was used to nationalize LTCB. Management was replaced, bad loans were removed, and losses were covered first by shareholders and then by the DIC. The Bank of Japan provided liquidity support to enable continued operations in an amount that peaked at ¥3,700 billion in November 1998 (Nakaso 2001). In February 2000, LTCB was purchased by a U.S. investment group for ¥1 billion. The purchaser also injected ¥120 billion in new capital, with the government providing ¥240 billion (Hoshi and Kashyap 2008).

In December 1998 the Financial Revitalization Act was again invoked, this time to nationalize NCB. As part of this process, it was concluded that NCB was insolvent and that its shares were worthless. The ¥290.6 billion in capital injected into NCB as part of its 1997 bailout (including ¥80 billion in Bank of Japan funds) had thus been completely wiped out. NCB was eventually sold to a group of investors led by Softbank for ¥1 billion. The investors added ¥100 billion in new capital, with the government providing ¥260 billion (Hoshi and Kashyap 2008).

The Prompt Recapitalization Act

In addition to the Financial Revitalization Act, the collapse of LTCB resulted in the introduction of a second piece of legislation—the Prompt Recapitalization Act (PRA). The PRA replaced the framework established by the FFSA with ¥60,000 billion in public funds allocated as follows: ¥25,000 billion for recapitalization, ¥18,000 billion for the nationalization of failed banks, and ¥17,000 billion for depositor protection in the event of failed banks (Hoshi and Kashyap 2008). Under the PRA, the Japanese government launched a second round of widespread capital injections in March 1999.

Unlike the first capital injections in March 1998, this round of injections was preceded by an in-depth examination of banks by the newly created Financial Reconstruction Commission (FRC). Specifically, the FRC adjusted banks' reported capital figures to correct for unrealized losses from securities holdings and for under-reserving for potential loan losses to arrive at a more accurate picture of the banks' capital needs. As shown in Figure 7 below, the fifteen major banks that applied for capital in March 1999 had unrealized losses on securities holdings of ¥2,700 billion and were under-reserved by ¥9,000 billion (Nakaso 2001). This ¥11,700 billion capital hole was overcome with ¥7,500 billion in public funds under the PRA, ¥2,100 billion in private capital, and net core operating profits of ¥2,500 billion.

Figure 7: March 1999 Capital Injection

Capital Injection to major Japanese banks¹ (March 1999)		
<i>(in ¥ billion)</i>		
Potential losses	Capital Injection	Net core operating profit²
	Private funds	2,150
Unrealised capital losses from securities holdings	Public funds	7,459
-2,678	of which	2,536
Potential loan losses	(preferred stocks)	
-9,044	(6,159)	
	(subordinated instruments)	
	(1,300)	
Total	9,609	2,536
Notes:		
1. Major banks: Sakura, Dai-ichi Kangyo, Fuji, Sumitomo, Sanwa, Tokai, Asahi, Daiwa, IBJ, Mitsubishi Trust, Sumitomo Trust, Mitsui Trust, Toyo Trust, Chuo Trust and Yokohama.		
2. Net core operating profit equals net operating profit (before transfer to general loan-loss reserves and before write-offs for trust accounts) minus profits earned from bond-related transactions.		

Source: Nakaso 2001.

As illustrated in Figure 8 below, also unlike the first capital injection, the March 1999 recapitalization was accomplished primarily via preferred shares rather than subordinated debt (Hoshi and Kashyap 2008).

Figure 8: Terms for the March 1999 Capital Injection

	S&P Rating	Total Funds	Preferred shares					Subordinated debt/loans				
			Type	Amount	dividend rate	Conversion start date	Forced conversion date	Type	Amount	yield	yield after step-up	step-up date
City banks												
Dai-ichi Kangyo	BBB	900	CPS	200	0.41	8/1/2004	8/1/2006	SD10	100	L+0.75	L+1.25	4/1/2004
			CPS	200	0.70	8/1/2005	8/1/2008	SD11	100	L+0.75	L+1.25	4/1/2005
			NCPS	300	2.38							
Fuji	BBB+	1,000	CPS	250	0.40	10/1/2004	2/1/2009	SDP	200	L+0.65	L+1.35	4/1/2004
			CPS	250	0.55	10/1/2006	2/1/2011				L+2.15	4/1/2009
			NCPS	300	2.10							
Sakura	BBB	800	CPS	800	1.37	10/1/2002	10/1/2009					
Sanwa	BBB+	700	CPS	600	0.53	7/1/2001	8/1/2008	SDP	100	L+0.34	L+1.34	10/1/2004
Sumitomo	BBB+	501	CPS	201	0.35	5/1/2002	2/27/2009					
			CPS	300	0.95	8/1/2005	2/27/2009					
Asahi	BBB+	500	CPS	300	1.15	7/1/2002	12/1/2009	SLP	100	L+1.04	L+2.54	4/1/2009
			CPS	100	1.48	7/1/2003	12/1/2014					
Daiwa	BB+	408	CPS	408	1.06	6/30/1999	4/1/2009					
Tokai	BBB-	600	CPS	300	0.93	7/1/2002	3/31/2009					
			CPS	300	0.97	7/1/2003	3/31/2009					
Long-Term Credit Industrial Bank of Japan	BBB+	600	CPS	175	0.43	7/1/2003	9/1/2009	SDP	250	L+0.98	L+1.48	4/1/2004
			CPS	175	1.40	9/1/2003	9/1/2009					
Trust banks												
Mitsubishi Trust	BBB	300	CPS	200	0.81	7/31/2003	8/1/2008	SDP	100	L+1.75	L+2.25	4/1/2004
Sumitomo Trust	BBB	200	CPS	100	0.76	4/1/2001	3/31/2009	SD12	100	L+1.53	L+2.03	4/1/2006
Mitsui Trust	BBB-	400	CPS	250.3	1.25	7/1/1999	8/1/2009	SLP	150	L+1.49	L+1.99	3/31/2004
Chuo Trust	NR	150	CPS	150	0.90	7/1/1999	8/1/2009					
Toyo Trust	NR	200	CPS	200	1.15	7/1/1999	8/1/2009					
Regional Bank Bank of Yokohama	BBB	200	CPS	70	1.13	8/1/2001	7/31/2009	SDP	50	L+1.65	L+2.15	4/1/2004
			CPS	30	1.89	8/1/2004	7/31/2009	SL10	50	L+1.07	L+1.57	4/1/2004

Notes. S&P Rating shows the rating of the bank's long-term debt given by Standard & Poor's as of March 1999. We thank Kaoru Hosono for sharing the rating data. Total Funds show the total amount of public capital injected into each bank. If preferred shares were used for injection, the type of preferred shares (convertible or not), the amount purchased, the dividend rate, the date when the government can start converting preferred shares into common shares (if convertible), and the date after which the government has to convert the preferred shares into common shares (if convertible), under the columns beneath the heading "Preferred shares." If subordinated debt or a subordinated loan was used, the type of subordinated debt (bond or loan and maturity), the amount purchased, the interest rate before the step-up date, the interest rate after the step-up date, and the step-up date, under the columns beneath the heading "Subordinated debt/loans." L: 6-month yen LIBOR, CPS: Convertible Preferred Shares, NCPS: Non-convertible preferred shares, SDP: Perpetual Subordinated Debt, SLP: Perpetual Subordinated Loan, SDn: n-year Subordinated Debt.

Source: Hoshi and Kashyap 2008.

The Takenaka Plan and the Industrial Revitalization Corporation of Japan

The March 1999 capital injections succeeded in calming the markets. As illustrated in Figure 3 above, the Japan premium (the additional amount Japanese financial institutions had to pay for interbank loans as compared with counterparts in the U.S. and Europe) had largely disappeared by April 1999. However, with banks' bad assets continuing to deteriorate as Japan remained in recession, a capital shortage soon reemerged. The negative interplay between financial instability and an economic downturn thus produced fresh losses that made capital sufficiency something of a moving target (Shirakawa 2009).

Adding to this were concerns about what was being included in the banks' reported capital figures. Specifically, many banks were including deferred tax assets—tax deductions that could only be used if the banks returned to profitability within a five-year timeframe—in their capital calculations. If the banks did not return to profitability during this timeframe, these deductions would go unused and make no actual contribution to capital. Relatedly, many believed that banks were overstating the quality of their loans and therefore setting aside inadequate reserves for losses on non-performing loans. Higher reserves that more accurately reflected the non-performing loans that would go unrecovered would have had the effect of reducing the banks' stated capital.

As shown in Figure 9 below, after adjusting for these deferred tax assets and estimated under-reserving for non-performing loans, the ¥30,200 billion of core capital reported by Japanese banks became ¥12,800 billion in capital (Hoshi and Kashyap 2008). With bank assets of ¥756,100 billion and capital held by government of ¥7,200 billion, the Japanese banking system as of March 2002 had capital equal to less than 2% of assets which included almost no private capital.

Figure 9: Capital in the Japanese Banking System

(¥ Trillion)							
Date	Official Core capital	Deferred Tax Assets	Estimated Under-reserving	Modified Capital	Capital held by the government	Bank Assets	Capital Gap
	A	B	C	D=A-B-C	E	F	G=0.03*F-D
Mar-96	27.9	0.0	NA	27.9	0.0	846.5	-2.5
Mar-97	28.5	0.0	15.0	13.5	0.0	856.0	12.2
Mar-98	24.3	0.0	4.9	19.4	0.3	848.0	6.0
Mar-99	33.7	8.4	4.0	21.3	6.3	759.7	1.5
Mar-00	35.6	8.2	5.8	21.6	6.9	737.2	0.5
Mar-01	37.6	7.1	7.5	23.0	7.1	804.3	1.1
Mar-02	30.2	10.6	6.8	12.8	7.2	756.1	9.9
Mar-03	24.8	10.6	5.4	8.8	7.3	746.3	13.6
Mar-04	29.0	7.2	5.7	16.1	8.9	746.7	6.3
Mar-05	31.4	5.7	6.9	18.8	8.1	745.9	3.6
Mar-06	37.3	2.3	8.3	26.7	5.2	766.9	-3.7
Mar-07	40.0	1.3	9.4	29.4	3.5	761.1	-6.5
Mar-08	34.8	3.6	10.2	21.0	3.1	780.7	2.4

Source: Assets and core capital are from the Bank of Japan for all domestically licensed banks. Deferred tax and under-reserving estimates are from Fukao (2008) based on "Analysis of Bank Financial Statements," various issues and securities reports for individual banks.

Note: Core capital, sometimes referred to as Tier I capital, includes equity capital, capital reserves and other items shown in Table 3. Deferred Tax Assets are credits against future taxes that are counted in core capital. As described in the text, Estimated Under-reserving is the difference between adequate reserves for losses estimated by Fukao and actual loan loss reserves. Fukao estimates the adequate reserves as the sum of 100% of Category IV (uncollectible) loans, 70% of Category III (doubtful) loans, 20% of Category II (special attention) loans, and 1% of Category I (normal) loans. Capital held by the government is the value of equity owned by the government. Bank assets are total assets. Modified capital and the capital gap are computed as indicated. Fukao also estimates that prior to 2001 there were substantial unrealized portfolio gains that could have been available as capital. The after tax amounts he reports from 1996 to 2000 are 12.8, 6.7, 3.1, 2.6 and 6.1 trillion yen respectively.

Source: Hoshi and Kashyap 2008.

In September 2002 Heizo Takenaka took over the Financial Services Agency (FSA), the body that replaced the FRC. As head of Japan's financial reform efforts, Takenaka launched a plan to end the non-performing loan problem at major Japanese banks. This plan consisted of six measures:

1. More rigorous evaluation of assets using discounted expected cash flows or market prices of non-performing loans;
2. Monitoring of cross-bank consistency in classifying loans to large debtors;
3. Publication of discrepancies between banks' self-evaluations and the FSA's evaluations;
4. Injection of public funds if necessary;
5. Prohibition of unrealistically large deferred tax assets; and
6. Imposition of business improvement orders on underachieving banks (Hoshi and Kashyap 2008).

At about the same time as the Takenaka Plan was being implemented, a shift occurred in the Japanese government's approach to distressed borrowers. In the early years of the crisis, the asset management companies established by the Japanese government to take on non-performing loans had functioned as little more than warehouses for such loans, with no attempt to return them to the private sector or restructure the loans and rehabilitate the borrowers to address the source of the problem (Hoshi and Kashyap 2008). In April 2003 the Industrial Revitalization Corporation of Japan (IRCJ) was created to purchase non-performing loans from secondary lenders and work with primary lenders to reorganize the borrowers to restore their health. Similarly, the Resolution and Collection Corporation (RCC), created in 1999 through a merger of the two existing asset management companies HLAC and RCB, began to place greater emphasis on reorganizing borrowers. By 2008, IRCJ and RCC restructured over ¥10,000 billion in debt from over 600 borrowers (Ibid.).

5. The Outcome of the Response and Lessons Learned

Beginning in 2003, strong growth in Japanese exports to countries including China and the U.S. helped spark a macroeconomic recovery that provided the conditions for Japanese banks to finally rebuild their capital. Fueling this growth was the emergence in 2005 of what is known as the "yen carry trade," transactions in which investors borrowed yen-denominated funds in Japan at little cost because of the Bank of Japan's policy of zero and near-zero interest rates and then used the funds to invest in foreign assets in countries where interest rates were higher. As investors sold yen for foreign currencies, the resultant pressure caused the yen to weaken significantly. This made Japanese exports more attractive, resulting in an export boom. This trend continued until Summer 2007 and the emergence of the global financial crisis, when increased uncertainty and falling interest rates in other countries caused the unwinding of the yen carry trade and a corresponding appreciation in the value of the yen.

Between 2003 and 2007 the official core capital of Japanese banks grew by more than ¥15,000 billion, from ¥24,800 billion to ¥40,000 billion. Driving this increase were higher

retained earnings (¥9,000 billion) and capital gains on stock portfolios (¥8,100 billion), each of which were made possible by an improved economy (Hoshi and Kashyap 2008). Per Figure 9 above, given the reduced reliance on deferred tax assets, even after making the necessary adjustments to the official capital figure Japanese banks' modified capital was ¥29,400 billion against assets of ¥761,100 billion, for a capital surplus of almost ¥6,600 billion based on a 3% leverage ratio.

As outlined above, the development of a comprehensive approach to the financial crisis by the Japanese government was a long time in coming, whether because of a deliberate policy of regulatory forbearance as some have argued or because the government lacked, at least initially, the framework, resources, popular support, and internal consensus necessary to address a crisis of that magnitude as others have pointed out. At the same time, however, Japanese authorities did take decisive steps to ensure the orderly resolution of key financial institutions such as Yamaichi Securities and Long-Term Credit Bank of Japan whose disorganized collapse may have resulted in even greater damage to the financial system and the broader economy. Furthermore, the Bank of Japan adopted several unorthodox policies to stimulate the economy, including the introduction of zero interest rates, a commitment to maintaining zero interest rates and quantitative easing. It is noteworthy that the largest decline in GDP that Japan experienced during its financial crisis was -1.9% in the first quarter of 1998, and that even at the height of the financial crisis in 1997-98 the level of real GDP remained higher than the average level of 1989 at the peak of the asset bubble (Shirakawa 2010).

Yet the Japanese financial system itself suffered considerably. Between 1992 and 2005 Japanese banks wrote off a total of approximately ¥96,000 billion in loans or roughly 19% of GDP (Hoshi and Kashyap 2008). Japanese banks posted ten consecutive years of net operating losses, stretching from 1993 to 2002 (Fukao 2009). Perhaps most critically, the banks remained undercapitalized until the mid-2000s.

It is in this undercapitalization that some see the most significant economic impact of the Japanese financial crisis. According to this view, the undercapitalization of Japan's banks left them unwilling to further erode their capital by recognizing losses on non-performing loans. As a result, they continued lending to insolvent borrowers in a process known as "evergreening" or "zombie lending" (Caballero et. al. 2008; Hoshi and Kashyap 2008). Furthermore, some have argued that banks receiving capital injections were pressured to make loans to poorly performing small and medium enterprises (Hoshi and Kashyap 2008). The misallocation of credit that resulted from these two sources is argued to have resulted in economic stagnation that continued into the 2000s, making the 1990s and 2000s what some have termed Japan's "two lost decades."

Japan's economy did indeed experience extremely low growth during these twenty years, averaging 1.5% in real terms in the 1990s and 0.6% in real terms in the 2000s (Shirakawa 2012). However, demographics may have played a crucial role in the stagnation of the 2000s, with Japan's population rapidly aging. Despite Japan's slow growth, its average real GDP growth rate per capita was about the same as those of other developed nations and its real GDP growth rate per working-age population was the highest among such nations (Ibid.).

With the emergence of the global financial crisis of 2007-09, financial regulators, scholars, and others began revisiting the Japanese financial crisis of the 1990s to determine what lessons could be learned from Japan's experience. While the fact that the Japanese banking sector in the 1990s differed from the major financial systems that have evolved since then in certain key respects (for instance, Japanese banks in the 1990s were still primarily engaged in the traditional banking business of taking in deposits and making loans) cautions against applying these lessons too directly, the principles underlying these lessons could well be of

interest in addressing future systemic events. Among the lessons that have been identified by those who have studied the Japanese financial crisis are:

1. A failure to diagnose and disclose the full extent of the difficulties facing each individual financial institution can hamper efforts to assist by scaring off potential merger partners and investors leery of unknown bad assets, producing recapitalization efforts that are too small, delaying the introduction of a comprehensive safety net, etc. (Hoshi and Kashyap 2008; Nakaso 2001; Shirakawa 2009);
2. Recapitalization without macroeconomic recovery is unlikely to be sufficient (Fukao 2009; Hoshi and Kashyap 2008);
3. Similarly, recapitalization without addressing non-performing loans and other balance sheet uncertainties is unlikely to be sufficient (Hoshi and Kashyap 2008; Shirakawa 2009);
4. Allowing banks to operate with insufficient capital can make them unwilling to recognize losses, and the steps they take to avoid doing so could further damage their capital position as well as the broader economy (Caballero et. al. 2008; Hoshi and Kashyap 2008);
5. Non-performing loans purchased by asset management companies need to be actively managed to prevent further deterioration in value, with the restructuring of loans and the rehabilitation of the borrowers necessary to address the source of the non-performing loan problem (Hoshi and Kashyap 2008); and
6. Policies, including nationalization, that promote an orderly winding-down of financial institutions that cannot continue in operation can limit the spillover effect of a collapse on the rest of the financial markets and on the broader economy (Hoshi and Kashyap 2008; Shirakawa 2009; Shirakawa 2012).

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