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Lessons from Japan's Banking Crisis, 1991–2005

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Abstract: The Japanese government's response to the financial crisis in the 1990s was late, unprepared and insufficient; it failed to recognize the severity of the crisis, which developed slowly; faced no major domestic or external constraints; and lacked an adequate legal framework for bank resolution. Policy measures adopted after the 1997–1998 systemic crisis, supported by a newly established comprehensive framework for bank resolution, were more decisive. Banking sector problems were eventually resolved by a series of policies implemented from that period, together with an export-led economic recovery. Japan's experience suggests that it is vital for a government not only to recapitalize the banking system but also to provide banks with adequate incentives to dispose of troubled assets from their balance sheets, even if that required the government to mobilize regulatory measures to do so, as was done in Japan in 2002. Economic stagnation can cause new nonperforming loans to emerge rapidly, and deplete bank capital. If the authorities do not address the banking sector problem promptly, then the crisis will prolong and economic recovery will be substantially delayed.

JEL Classification: G01, G21, G28

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1. INTRODUCTION

Japan had a “lost decade.” The reason is that the authorities began to work on the banking sector problem seriously and decisively only after the country suffered from a systemic banking crisis in 1997–1998. While the crisis was eventually resolved, this process took about fifteen years after the bursting of Japan’s asset price bubbles. In fact, the crisis began in 1991, when a small commercial bank—which was insured by the Japanese government’s deposit insurance system—went into bankruptcy for the first time in post-war era Japan, and it ended in 2005 when the nonperforming loan (NPL) ratio of major banks declined to a level below the target set by the government.

In response to the outbreak of the severe financial crisis in the fall of 2008, the United States (US) implemented the Troubled Asset Relief Program (TARP)—its first phase (under Paulson) and the second phase (under Geithner), which included the stress tests of the 19 largest financial firms. Both a successful resolution of “toxic assets” and bank nonperforming loans (NPLs) and adequate capitalization of financial institutions are needed for credit flows to resume and for the economy to achieve a sustained recovery. European authorities have also adopted several measures of government intervention, such as guarantees of bank credits, bank recapitalization, and asset purchases, although they have yet to conduct comprehensive, harmonized stress tests of financial institutions.

The global financial crisis, which originated primarily in the US, proved to be highly contagious and had a rapid ripple effect across different market segments and countries. In sharp contrast with the Japanese banking crisis, the global nature of the current crisis has resulted in a collective sense of urgency and has led to prompt actions by governments worldwide. However, despite massive write-offs by banks, insurance companies, and other institutions to date, the full scale of the losses remains uncertain, as they depend on the timing and speed of the recovery of the real economy.

This paper attempts to present the lessons to be learned from Japan for combating a financial crisis. Japan’s experience illustrates that if policymakers underestimate the severity of the crisis, then there could be long-term consequences because of serious negative feedback loops between the financial sector and the real economy. One of the most important lessons derived from Japan’s experience is that if government action is delayed, the cost—including output lost—of dealing with a financial crisis could be significantly higher than if addressed promptly.

Although countries have different economic environments, the sequence of their policy responses to financial crises is similar. In many cases, financial crisis management starts with the central bank providing liquidity to banks, and then the government recapitalizing banks with public funds. For banks which heavily rely on wholesale funding, an interbank credit guarantee program is often introduced. Finally, after a detailed assessment of bank balance sheets, often the government introduces an asset purchase scheme.

Responding to the outbreak of the crisis in the summer of 2007, the US authorities initially focused on securitized financial products—including “toxic assets” related to subprime loans—and then shifted attention to bank loans as they were more closely related to the real economy. The experience shows that financial sector conditions—such as NPL ratios and capital bases—are affected by real economic conditions. At the same time, a weak, deteriorating financial sector inhibits healthy credit flows to households and firms, thereby worsening real economic conditions. Accordingly, early, decisive policy responses—based on objectively recognizing the scope of the crisis and establishing an appropriate resolution framework—must be made in order to minimize the negative impact of financial sector problems on the real economy and support the real sector recovery through encouraging a sufficient flow of credits to the real economy.

As Hoshi and Kashap (2008) stated, there is a remarkable similarity in policy responses between Japan's banking sector crisis and the recent US financial crisis. They argued that if the US bank recapitalization program was not meticulously planned, then the US appears to risk facing the same problems that crippled Japanese policymakers.

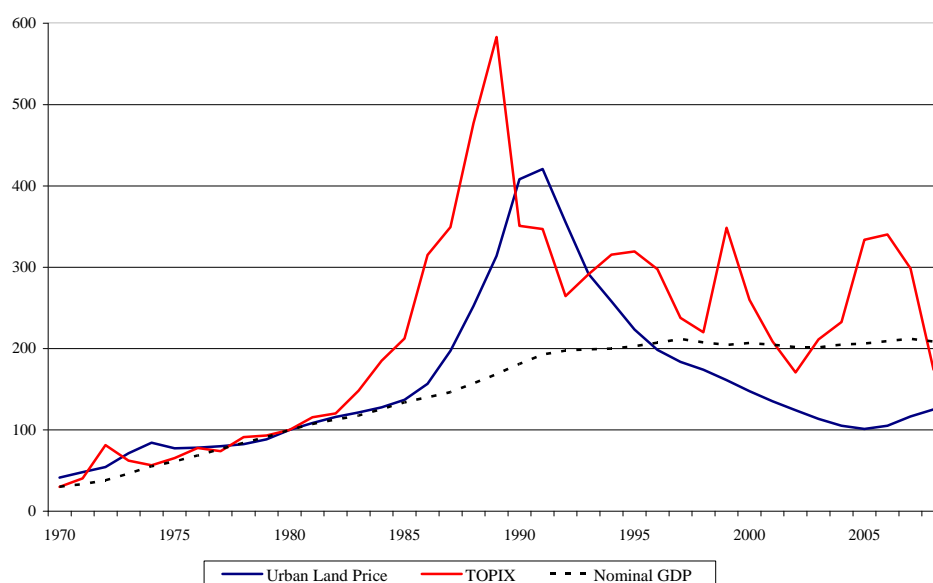
The organization of the paper is as follows. Section 2 describes the overall development of the Japanese banking crisis and policy responses from 1991 through 2005. Section 3 explains factors behind Japan's delayed policy responses and their economic consequences. Section 4 discusses the relevance of the lessons from Japan to the recent financial crisis, especially in the US. Section 5 briefly evaluates Japan's responses to the 2007–2009 turmoil in the light of its own experience in the 1990s. Section 6 provides our conclusion.

2. JAPAN'S BANKING CRISIS, 1991–2005

2.1 Causes of the Banking Crisis: Bursting of the Bubble

One of the direct causes of the banking crisis in Japan was the bursting of the asset price bubble in the period from the late 1980s to the early 1990s. After the 1985 Plaza Accord, Japan pursued expansionary fiscal and monetary policies to counter fears of recession brought about by the sharp appreciation of the yen. At the same time, a strong yen created a confidence and optimism in the future of the Japanese economy. This belief—supported by abundant liquidity and self-fulfilling expectations of ever rising prices of stocks and land—led to asset price bubbles. Stock and land prices peaked in December 1989 and March 1991, respectively, as shown in Figure 1.

Figure 1: Stock Price (TOPIX), Urban Land Price, and Nominal GDP (1980=100): 1970–2007



Note: TOPIX is the price index of the Tokyo Stock Exchange; GDP is gross domestic product.

Source: Tokyo Stock Exchange; Real-Estate Research Institute; and Economic and Social Research Institute (ESRI), Cabinet Office, Government of Japan, websites.

Against this background, there were basically three causes of the banking sector crisis in the 1990s. First, bank loans were overextended particularly in risky areas with inadequate supervision and regulation over banks during the bubble period. Specifically, loan portfolios were concentrated in property-related businesses such as construction, real estate, and nonbank financial services. As most of these loans were collateralized by land whose values

plummeted after the bubble burst, and cash flows were inadequate to repay the loans, these became nonperforming. Table 1 shows how bank portfolios were concentrated in these businesses.

Table 1: Bank Loans Outstanding by Industry: 1980 to 2005
(amounts in trillions of yen, % of total)

Calendar Year End	Total Bank Loans Outstanding						Total Bank Loans/ GDP
		Manufacturing	Construction, Financial, and Real -Estate			Household	
			Con- struction	Financial	Real- Estate		
1980	173.3	52.4	27.2	6.0	11.4	21.3	0.719
	(100.0%)	(30.3%)	(15.7%)	(3.5%)	(6.6%)	(12.3%)	
1985	275.1	67.4	60.2	20.5	23.5	28.6	0.850
	(100.0%)	(24.5%)	(21.9%)	(7.5%)	(8.6%)	(10.4%)	
1990	408.8	61.5	114.7	45.4	48.5	65.3	0.929
	(100.0%)	(15.0%)	(28.1%)	(11.1%)	(11.9%)	(16.0%)	
1995	512.7	75.2	149.4	54.9	62.3	85.4	1.039
	(100.0%)	(14.7%)	(29.1%)	(10.7%)	(12.1%)	(16.7%)	
2000	475.3	69.5	130.5	41.7	59.6	96.0	0.945
	(100.0%)	(14.6%)	(27.5%)	(8.8%)	(12.5%)	(20.2%)	
2005	398.9	48.1	104.7	34.8	53.2	109.9	0.795
	(100.0%)	(12.1%)	(26.2%)	(8.7%)	(13.3%)	(27.5%)	
Change from 1985 to1990	133.6 (100.0%)	-5.9 (-4.4%)	54.5 (40.8%)	24.9 (18.6%)	25.0 (18.7%)	36.7 (27.5%)	
Change from 1985 to1995	237.6 (100.0%)	7.8 (3.3%)	89.2 (37.5%)	34.4 (14.5%)	38.8 (16.3%)	56.8 (23.9%)	

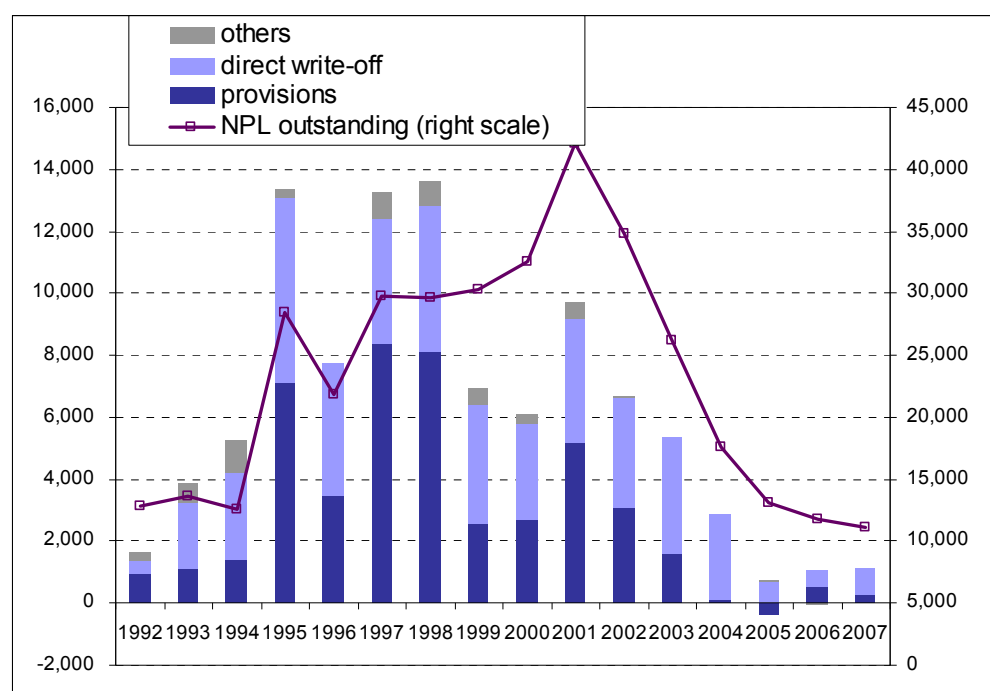
Note: Numbers in parentheses show the industry or category shares of total bank loans outstanding and their changes.

Source: Bank of Japan; and ESRI, Cabinet Office, Government of Japan, websites.

Second, banks were allowed to hold common stock on their balance sheet and had accumulated sizable unrealized capital gains, boosting their capital base. The bursting of the stock price bubble reduced these unrealized capital gains and eroded the value of capital reserves of many banks. The decline of their capital base damaged banks' ability to extend loans and take risks. In fact, the amount of bank loans outstanding declined from the peak in 1997 until the mid-2000s, despite government efforts to avoid a credit crunch, partly due to weak demand from industry for funds.

Third, the economic slowdown and price deflation in the 1990s also led to the growing levels of NPLs, especially in the late 1990s and the early 2000s. Figure 2 shows that the amount of outstanding bank NPLs reached a peak in March 2002. This phenomenon is important in the context of the recent large-scale recession worldwide. If macroeconomic policy is not well managed to support the real economy, then more loans will become nonperforming and NPL levels will increase. This could delay economic recovery as capital constrained banks tend to discourage credit growth. Hence, further capital enhancement would again be required.

Figure 2: Outstanding Nonperforming Loans (NPLs) and Losses on Disposal of NPLs (in billions of yen)



Note: Data are for the end of fiscal year. NPLs are “risk management loans” of all banks, whose definition is slightly different from NPLs based on the Financial Reconstruction Law. The numbers referred to in the text are based on the Financial Reconstruction Law, which became available from March 1999.

Source: Financial Services Agency, Government of Japan, website.

2.2 Lost Years (1991–1997)

The initial policy adopted by the Ministry of Finance (MOF) was intended to protect ailing banks through regulatory forbearance and other forms of support, while gaining time for a hoped for recovery of economic growth and asset prices. The failure of Toho Sogo Bank in 1991 was the first bank failure in the postwar period in Japan. In 1994 and 1995, failures of small financial institutions accelerated.¹ In 1995–1996, the government injected JPY680 billion to deal with *jusen*, specialized, nonbank housing loan companies. This policy was unpopular politically, and the government was heavily criticized for bailing out the nonbank financial institutions. As nonbank mortgage finance companies, *jusen* were less strictly regulated, and thus more aggressive in their lending to real estate-related small businesses than larger commercial banks during the bubble period. Large commercial banks, constrained by stricter oversight, essentially financed *jusen* and often exercised influence over their business.

The unpopularity of *jusen* intervention discouraged the MOF from pursuing policies to use public funds to address bank balance sheet problems. The government did make efforts to contain the emerging difficulty in the banking sector without using public funds. In June 1996, the deposit insurance system was strengthened through a major amendment of the Deposit Insurance Law including a temporary suspension of limits on deposit protection—at first, until March 2001, then extended to 2002, and after another amendment in 2002, eventually until March 2005—(thereby introducing a blanket guarantee of bank deposits), and an increase in the insurance premium from 0.012% to 0.084% of total deposits outstanding. These efforts were mainly targeted at problems of credit cooperatives rather than for major banks.

¹ A chronology of developments in the crisis and policy responses is given in the Appendix.

Economic growth had slowed down sharply in 1992–1994 following the bursting of the asset price bubble. Growth began to resume in 1995–1997, but the adoption of tight fiscal policy and the outbreak of the Asian financial crisis sent the economy back to recession. This fueled the banking crisis in Japan, which became acute in late 1997, affecting large financial institutions and major banks. Stagnant economic conditions and falling asset prices intensified market pressures, leading to the 1997–1998 systemic banking crisis. The pressure exerted by the crisis forced the government to take much more decisive action than in the earlier years. In the fall of 1997, Yamaichi Securities, one of the four largest security houses, collapsed and a medium-sized one, Sanyo Securities, also failed. These security houses were not able to obtain short-term funding in the Japanese interbank market due to their heightened risks as judged by market participants. Hokkaido Takushoku Bank, a city bank, became unable to raise funds in the interbank market and had to announce its discontinuation of business operations in November 1997. Subsequently, the premium for offshore foreign-currency interbank loans extended to Japanese banks by foreign banks, called the “Japan premium”, surged from the fall of 1997 through the spring of 1999.²

2.3 Decisive Policy Action (1998–2001)

The government announced in December 1997 that up to JPY30 trillion of public funds would be made available to the Deposit Insurance Corporation of Japan (DICJ) by March 1998—comprised of JPY13 trillion to bolster bank balance sheets and JPY17 trillion to strengthen the deposit insurance system.³ Public funds were augmented to a total of JPY60 trillion—more than 12% of gross domestic product (GDP)—at DICJ for financial support for banks in October 1998.⁴

Public funds totaling JPY1.8 trillion were injected to the 21 major banks in March 1998 to help banks meet the required capital adequacy standards. Nevertheless, the government had to intervene in two major banks, the Long-Term Credit Bank of Japan (LTCB) and Nippon Credit Bank (NCB) which were temporarily nationalized in October and December 1998, respectively. Both banks had problems with mismanagement in their loan portfolio during the bubble period and thereafter. Their shares were acquired by DICJ with zero value and, after the restructuring of their assets, they were put on sale to the private sector. In order to induce buyers, the government guaranteed all assets of LTCB at the sales date for three years if they went bad (a “put” option), while NCB was sold without such support.⁵

It turned out that JPY1.8 trillion was not enough to fully recapitalize the ailing banking system. As a result, JPY7.5 trillion more of public funds were injected into 15 banks in March 1999. The second recapitalization operation encouraged private sector-driven capitalization and thus improved banks’ capital adequacy ratios and addressed bank NPL problems. By the spring of 1999, banking sector stability was largely restored and the “Japan premium” narrowed substantially.

The authorities had long refused to recognize the full extent of bank NPLs. However, the 1997–1998 crisis forced the authorities to assess the solvency and soundness of the balance sheets of individual banks. The bank regulatory agency, together with the Bank of Japan, identified the total amount of NPLs of all banks to be JPY34 trillion, including JPY22 trillion for major banks, as of March 1999. However, these inspections were based solely on

² See Nakaso (2001) for detailed accounts of the banking sector crisis and distress in the 1990s, particularly as viewed from the Bank of Japan’s perspectives. See also Kawai (2005). Hoshi and Kashap (2008) describe this process in 1997 and 1998 in more detail.

³ To put these measures in place, the Financial Function Stabilization Act was enacted in February 1998.

⁴ These measures were enabled by the Financial Function Early Strengthening Act.

⁵ In March 2000, the Long-term Credit Bank of Japan returned to the private sector as Shinsei Bank and in September 2000 Nippon Credit Bank was sold to a private investment consortium.

banks' own assessments of NPL classifications and levels, and doubts about the reliability of these figures were rampant.

The financial regulatory authority released an authorized inspection manual in 1999 and directed banks to adopt the stricter asset classification of NPLs in this manual. However, there were large discrepancies between inspectors' calculations of NPL levels and bank self-assessments. Table 2 shows that in 2000 and 2001, the government calculations indicated that banks underreported NPLs by 25% to 37%, and underestimated needed provisions and write-offs by 30% to 50%. This implied that at the time of bank recapitalization in 1998 and 1999, the exact scale of capital shortage was not accurately recognized by the authorities.

Table 2: Major Banks' Self-assessments and the Authority's Inspection

2A. Nonperforming Loans (in billions of yen)

Fiscal Year	Number of Banks Inspected	Self-assessment (a)	FSA Inspection (b)	Difference (c) = (b) – (a)	Ratio (c)/(a) (%)
2000	8	15,763	21,634	5,870	37.2
2001	10	28,587	35,857	7,270	25.4
2002	11	37,081	39,909	2,828	7.6
2003	11	33,551	35,395	1,844	5.5
2004	7	20,511	23,027	2,516	12.3

Note: The total amount of NPLs equals the sum of loans classified as II ~ IV, while loans classified as I are performing loans.

Source: Financial Services Agency, Government of Japan, website.

2B. Write-offs and Provisions (in billions of yen)

Fiscal Year	Number of Banks Inspected	Self-assessment (a)	FSA inspection (b)	Difference (c) = (b) – (a)	Ratio (c)/(a) (%)
2000	8	4,975	6,479	1,504	30.2
2001	10	8,049	12,105	4,056	50.4
2002	11	11,826	13,056	1,230	10.4
2003	11	11,211	12,672	1,461	13.0
2004	7	8,497	10,012	1,514	17.8

Note: The total amount of provisions is based on the total amount of loans and the sum of direct write-offs and loss provisions.

Source: Financial Services Agency, Government of Japan, website.

2.4 Recovery Phase (2002–2005)

In 2001 the Financial Services Agency (FSA), established in 2000,⁶ launched a special inspection of bank loans for the second half of fiscal year 2001. The inspection was limited to

⁶ Several steps were taken to revamp the Japanese supervisory and regulatory system. First, the Financial Supervisory Agency was created in June 1998, taking over the functions of supervision and inspection of the financial system from the Ministry of Finance (MOF). The MOF retained the function of policy planning and created a new Financial System Planning Bureau by consolidating the policy planning functions of the Banking and Securities Bureaus. Second, in December 1998, the Financial Reconstruction Commission (FRC) was established as a parent body of the Financial Supervisory Agency taking over oversight of the financial industry. Third, in July 2000, the Financial Services Agency (FSA) was established, merging the Financial Supervisory Agency and the Financial System Planning Bureau of the MOF. This completed the transfer of supervision, inspection, and policy planning functions from the MOF to an independent regulatory agency, which oversees banking, securities and insurance. Finally, in January 2001, the FRC was abolished in conjunction with the

loans to large borrowers whose market indicators, such as share prices and credit ratings, had deteriorated rapidly, and where the exposure of each bank was high.

This process resulted in the large scale reclassification of loans to 149 companies; a quarter of the “normal” or “need attention” loans examined were reclassified to bad loans—“bankrupt” or “in danger of bankruptcy” loans. The increased regulatory pressure led to a dramatic change in loan classifications by the banks in 2002, with the value of NPLs of all banks rising by more than 25% from JPY33.6 trillion at fiscal year-end 2000 to JPY43.2 trillion at fiscal year-end 2001. The FSA conducted a second round of special inspections in 2003 that covered loans to 167 borrowers—of which 142 had been examined in the first round of special inspections in fiscal year 2001—at 11 major banks that totaled JPY14.4 trillion.

As a result of the stringent FSA inspection of bank loan quality, an enhanced and extensive policy package, Program for Financial Revival (PFR), was introduced in October 2002. PFR was intended to accelerate bank loan restructuring through a decisive three-pronged strategy:

- Reduce the amount of equities held by banks to a level equal to 100% of Tier-1 capital by September 2006.
- Strengthen the classifying of and provisioning for nonperforming loans through measures such as new inspections of major banks, harmonization of loan classification for large borrowers across banks, and disclosure of the gap between major banks’ self-assessment of problem loans and FSA assessments.
- Remove 50% of banks’ new NPLs within one year and 80% within two years, with a target of halving the ratio of major banks’ NPLs by March 2005 from the 8.4% March 2002 level. (No quantitative target was set for regional banks.)

As a result, loan classification and loan loss provisioning were strengthened, beginning with the fiscal year 2003 measures to improve the classification of loans to large businesses.

As a part of comprehensive efforts to revitalize the banking system and the economy, the government established a new asset management company, the Industrial Revitalization Corporation of Japan (IRCJ) in April 2003. IRCJ focused on higher quality NPLs—classified as those that “need special attention”—extended to larger firms than did the then existing Resolution and Collection Corporation (RCC), a government-owned asset management company which bought assets from failed banks.⁷ The objective of IRCJ was designed to promote the restructuring of relatively large and troubled, but viable, firms by purchasing their loans from secondary banks, leaving the main bank and IRCJ as the only major creditors. IRCJ was expected to promote “structural reform” of the Japanese economy by enabling troubled large firms to revive.

Another policy to restore bank balance sheets to health, introduced as part of PFR, was to force all banks to reduce their holdings of equities to a level equal to 100% of its Tier-1 capital by September 2006. For the enforcement of this policy, the government set up a new institution, Banks’ Shareholdings Purchase Corporation (BSPC), in January 2002 to buy the stocks held by banks. BSPC purchased about JPY1.6 trillion of stocks from banks by 2006. The Bank of Japan also purchased stocks from banks, as part of “quantitative easing” under the zero interest rate policy, and the total amount bought by the Bank of Japan reached approximately JPY2 trillion between 2002 and 2004.

overall reorganization of the central government ministries, and the FSA became an external agency of the Cabinet Office, absorbing the crisis response function of the FRC.

⁷ The government had created the RCC, an asset management company which was a fully owned subsidiary of DICJ, in 1999 by merging the Resolution and Collection Bank (RCB) and the Housing Loan Administration Corporation (HLAC), both created in 1996. The RCC was essentially a collection company that purchased, from failed institutions and mortgage lenders (*jusen*), collateralized NPLs, classified as “in danger of bankruptcy” or “bankrupt,” focusing on smaller, nonviable firms.

With the mix of the policy measures to resolve the banking sector problems, the NPL ratio for the major banks went down to 2.9% by March 2005, at which point the government announced that the prolonged NPL problems had ended. Japan's economy returned to a full-fledged recovery path supported by global economic expansion starting in 2004.

2.5 Costs of Resolving the Banking Crisis

Japanese banks incurred cumulative losses—inclusive of net costs of provisions for loans and direct write-offs—of some JPY96 trillion between fiscal year 1992 and fiscal year 2004. It was only after 2003 that the functioning of the banking system began to improve.

The authorities deployed a total of JPY47.1 trillion into the banking system through DICJ, composed of monetary grants (JPY18.9 trillion), capital injections (JPY12.4 trillion), asset purchases (JPY9.8 trillion), and other measures (JPY6.0 trillion). Of the public funds deployed, only JPY25.1 trillion was recovered, or approximately 50% of the total spent, as of September 2008 (see Table 3). Monetary grants were made for the orderly closure of failed banks, which included the costs of blanket deposit guarantees. Of the total amount of monetary grants (JPY18.9 trillion), JPY10.4 trillion was not recovered and hence was paid by taxpayers, with the remainder to be covered by bank premiums paid to DICJ. Most of the costs associated with asset purchases and capital injections were recovered by 2008. Three megabanks, Mitsubishi UFJ Financial Group (FG), Mizuho FG, and Sumitomo Mitsui FG, had repaid all of public funds injected into them for recapitalization by 2006. The authorities incurred other costs resulting from the asset price guarantee that was provided to the purchasers of failed institutions.

Table 3: Status of DICJ's Financial Assistance and Recovery (September 2008)
(in trillions of yen)

Financial Assistance Items	Financial Assistance Implemented (A)	Cumulative Amount of Recoveries, etc. (B)	Net (A-B)
(1) Monetary grants	18.9	--	(10.4*)
(2) Purchase of assets	9.8	9.7	0.1
(3) Capital injection	12.4	10.5	1.9
FY 1997–2001	10.4	--	--
2002–2006	2.0	--	--
(4) Other	6.0	4.9	1.1
Of which lending to banks under special crisis management	4.2	4.2	0.0

Note: JPY10.4 trillion of monetary grants were financed by issuing special government bonds, thus ultimately by taxpayers.

Source: Deposit Insurance Corporation of Japan, website.

The overall costs to the economy were not limited to such unrecovered public funds. The opportunity costs to the Japanese economy were huge due to the decade long economic stagnation. The cumulative output that was lost in the three years after the outbreak of the 1997 banking crisis could be as large as 18% of GDP (Laeven and Valencia, 2008). Furthermore, trust in the banking sector was severely damaged. The diminishment of the established Japanese banking network and business opportunities abroad, particularly in Asia, in the precrisis period was equally important. Positive results from Japan's banking crisis include the complete revamping of the supervisory and regulatory structure for the finance sector, establishing the FSA as a more credible, independent, and integrated agency, and creating a healthier banking system in Japan.

3. LESSONS FROM JAPAN'S BANKING CRISIS

3.1 Reasons for the Delay in Decisive Action

There are several reasons for the delay in crafting and implementing decisive policy action. First, the initial approach adopted in 1991–1997 was based on the expectation that a resumption of economic growth would restore the financial health of banks and their client borrowers. Land prices were also expected to bottom out soon and resume rising again. The asset price bubble experienced in the late 1980s was the first in post-war Japanese history, and thus it took time to even recognize the situation as a bubble. It was in 1993 that the government provided the detailed analysis that characterized the event as a “bubble” in its white paper on the economy. Until the bursting of the bubble, a strong belief—called the “land myth”—had prevailed, that land prices would never decline.

Once the bursting of the asset price bubble began to damage bank balance sheets, there was still a delay among policymakers in recognizing the severity of the impacts of the asset price collapse on bank NPLs and of bank NPLs on the real economy. It was only after the economy faced a systemic banking crisis in 1997–1998 that the authorities began to take decisive measures as described in the previous section. Until then, the authorities had underestimated the seriousness of the impact of the declining real estate prices on financial institutions and macroeconomic conditions, and the powerful “adverse feedback loops” between the financial sector and the real economy. As a result, lingering fears about the solvency of banks, which eventually proved founded, persisted in the market.

Second, despite the long stagnation of the real economy in the early 1990s, there was no significant domestic pressure (due to high savings, low inflation, relatively low levels of unemployment, no fiscal crisis, and no social unrest) nor external constraints (due to large foreign exchange reserves, a large net external asset position, no capital flight, no balance of payments difficulty, and no currency crisis) which otherwise could have prompted the government to accelerate the resolution of banking sector problems. Possessing enough fiscal space allowed the government to resort to Keynesian fiscal policy in order to support aggregate demand and help insolvent corporations survive, particularly in the construction sector. If domestic and external constraints had bound the government, then it would have been forced to address the crisis earlier and more decisively.⁸

Third, the crisis itself had developed slowly and gradually, because the problem was confined to bank loans, and the accounting and disclosure standards were slow to reflect a change in economic value. There were indeed imperfections in accounting and disclosure standards, which enabled financial institutions to avoid recognizing loan losses. Partly because of this, banks were insufficiently incentivized to promptly address the NPL problem. Nonetheless, the government could have sent a clear message encouraging the quick write-off of troubled assets through either tax incentives or other devices. Rather, a forbearance policy was introduced, allowing banks to report the costs, rather than the market price, of equities and real estate assets on their balance sheets, which may well have further postponed taking decisive actions.

Fourth, the authorities lacked the legal framework to resolve troubled, large financial institutions, which fuelled their delay in adequately addressing problems at these institutions. In order to ensure the timely resolution of troubled financial institutions, it is crucial that the authorities possess a legal framework for resolution, specified operational procedures, and sufficient funds to cover capital shortages. It was only in 1998, after a series of failures of large financial institutions, that the full-fledged safety net framework was put in place.

It is also important to be prepared for crisis situations by revising bankruptcy and foreclosure laws, because often the effective disposal of troubled assets requires the resolution and

⁸ See Kawai (2005).

restructuring of the borrower firms. In addition, it is critical to convince the politicians how important it is to contain the problem at an early stage, particularly when a policy package involves public funds.

3.2 Lessons from Japan's Experience: Banking Sector Policy Issues

To contain a systemic banking sector crisis, comprehensive policy measures should be designed and implemented, including rigorously assessing major banks' balance sheets, removing NPLs from them, and recapitalizing such banks. These measures should ideally be based on providing appropriate incentives for private banks, but market-based incentives may not be available under severely stressed market conditions. Sometimes instituting quantitative guidelines and/or regulatory mandates is necessary to force banks to undertake decisive actions.

Four lessons can be learned from Japan's banking crisis experience. First, in order to address a banking crisis properly, prompt action to gauge the exact amount of loan losses is a critical initial step, although this is not an easy task. In many cases, problems arising from insufficient liquidity and high risk aversion obscure the intrinsic value of the troubled assets. Assets are regarded as troubled either because of the expected loss of future cash flows or the sudden loss of liquidity on the part of borrowers. While economic conditions may dictate that the loss of future cash flows may not be recovered, the liquidity value may at least partly be recovered once normal access to markets is restored. Practice may dictate revising estimates as the crisis develops. If the crisis is global, then international financial institutions may estimate the total amount of loss; the national authority also should undertake this task for the purpose of designing recapitalization and other policies.

In the 1990s, there were no well-functioning markets for credit risk products that might provide a good measure of the market price of credit risk. From the time of the bursting of asset price bubbles in Japan, the extent of deterioration in bank asset quality posed the greatest uncertainty. The regulators did not even clearly define NPLs until 1998 when financial reconstruction schemes and prompt corrective measures were introduced. Today, a system for timely disclosure of NPL levels is in place; however, some ambiguity about the valuation of disclosed bank assets still exists when the market is under severe stress. This is especially true for newly introduced innovative products.

Second, a government recapitalization operation that involves taxpayer funds is the most direct policy measure to contain the acute phase of market turmoil.⁹ Public recapitalization can be effective if the size of the operation exceeds a certain threshold. In the case of Japan, the first capital injection of JPY1.8 trillion in March 1998 was considered to be very meager as compared to the total amount of NPLs, which amounted to JPY22 trillion at that time. With hindsight, the second capital injection, of JPY7.5 trillion, made in March 1999 was more effective. Table 4 shows the relative importance of government capital injections in maintaining sufficient capital adequacy levels for banks.¹⁰

⁹ The decision whether to recapitalize a troubled bank or consider it as a failed institution crucially depends on the viability of the business conducted by that particular bank.

¹⁰ As indicated earlier, most of the public funds allocated to banks were recovered by 2008.

Table 4: Role of Public Funds for Major Banks (in trillions of yen)

End of FY	1992	93	94	95	96	97	98	99	00	01	02	03	04	05
Capital raised (A+B)	0.0	0.0	0.2	0.1	0.8	2.1	9.3	0.0	0.0	0.2	1.8	2.0	1.3	0.1
Public funds (A)	-	-	-	-	-	1.5	7.3	-	-	-	-	2.0	-	-
Market Placement(B)	0.0	0.0	0.2	0.1	0.8	0.6	2.0	0.0	0.0	0.2	1.8	0.0	1.3	0.1
Capital adequacy ratio (%)	9.3	9.8	9.0	9.2	9.1	9.6	12.0	12.3	11.7	10.8	9.4	11.1	11.6	12.2

Source: Sato (2007).

In undertaking these recapitalization operations, a strict examination of bank assets was needed, and so the Financial Reconstruction Commission examined the state of banking sector health. However, its reports to the National Diet were unsatisfactory, as they failed to reveal the state of bank balance sheets. As a result, uncertainty about the magnitude of possible loan losses and NPLs added turmoil to markets.

In theory, a strict asset assessment should be conducted before recapitalization operations. However, in reality, assessments are generally not conducted beforehand, because of the rapid pace of market developments. Furthermore, as observed in Japan, it requires months, if not years, for the authorities to fully assess banks' balance sheets. Even recently in the US, the process of stress-testing required several months. When the market is under extreme stress, the resultant urgency may not allow adequate time for extensively scrutinizing bank books before undertaking recapitalization operations.

In addition, in a democracy, bank recapitalization often requires parliamentary approval. So the success and speed of the operation depend on how well politicians understand the problem and are willing to support it.

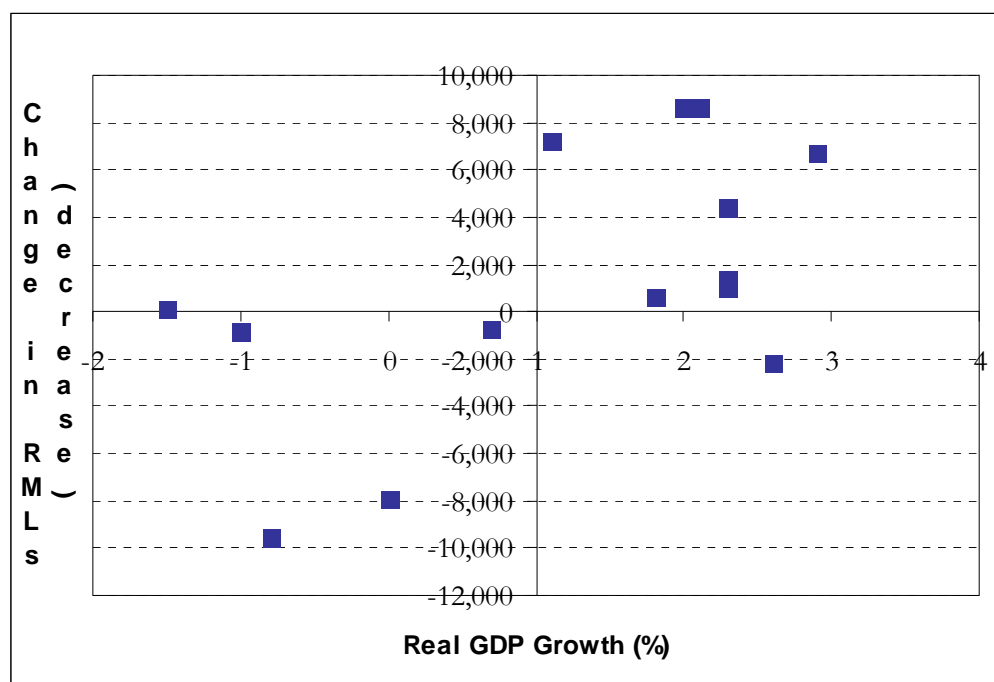
Third, the removal of impaired assets from banks' balance sheets is essential to the restoration of bank health. A government initiative to purchase bank assets is often necessary to restructure bank balance sheets during a crisis, as when markets lose their ability to determine prices, the government is better able to maintain flexibility in timing and so could realize higher values for those troubled assets. To share the upside benefits, one of the possible approaches is to simultaneously purchase impaired assets from, and the preferred stocks of, the troubled but viable institutions. To the extent that the troubled banks restore their financial health, taxpayer funds could be retrieved either by higher asset prices or by dividends. This illustrates a complementary role of recapitalization and asset purchases.

The pricing rule makes it difficult to design an effective public asset purchase program. If the purchase price set by a government-sponsored asset management company is too low, then no bank would be willing to sell. If the purchase price is too high, then the program involves a transfer of taxpayer funds to banks which made bad decisions.

In Japan, initially the Resolution and Collection Corporation (RCC) purchased assets from failed banks and, beginning in October 1998, from solvent banks as well. The total value of its purchases between October 1998 and March 2005 was JPY353 billion, with a book value of JPY4 trillion. According to Hoshi and Kashap (2008), Japan's experience with asset management was, at best, mixed because of its contracts limitation and the small scale of operations. They argue that, most importantly, the purchase of NPLs did not fix the capital shortage problem, as the size of asset purchases was not large enough to restore sufficient capital adequacy ratios. The RCC's utility can be found in its provision of an opportunity for banks to remove troubled assets from their balance sheets even in the absence of demand in the market.

Fourth, economic stagnation can cause new NPLs to emerge rapidly, and deplete bank capital. As discussed by Fukao (2007), capital injections without economic recovery are not effective. Even if the initial market turmoil is contained through providing liquidity and recapitalizing banks, banking sector troubles could recur without the recovery of the real economy. Figure 3 shows the relationship between real GDP growth and changes in the outstanding amount of NPLs— as measured by the size of “risk management” assets of all banks—on an annual basis. In years when GDP grew less than 1%, the outstanding NPLs rose, and in years when GDP grew more than 1%, NPLs declined except in FY2000, the only year in the lower right quadrant.

Figure 3: Real GDP Growth and NPLs (FY1993–FY2007)



Note: RML means risk management loans. The horizontal axis measures real GDP growth (%), while the vertical axis measures changes (decreases) in the amount of risk management loans (NPLs) of all banks in billion yen. Because of the change in the definition of aggregation of NPLs of all banks, the data of FY1995 is excluded.

Source: Financial Services Agency; and ESRI, Cabinet Office, websites.

This suggests that macroeconomic policy plays an important role in support of economic activity, which could both minimize future losses of banks and encourage the flow of risk funds into the capital markets.

4. RELEVANCE OF JAPAN’S LESSON TO THE US FINANCIAL CRISIS

4.1 Similarities and Differences between the US and Japanese Crises

There are remarkable similarities between Japan’s banking crisis in the 1990s and the 2007–2009 financial crisis in the US, although the ways the two crises developed are significantly different. The rapid evolution of the US financial crisis sharply contrasts with the lingering Japanese NPL problem and its resolution process. Policies were deployed in a similar order in both crises, but the period over which they were deployed differed considerably. Capital injections were the first step, followed by asset purchases using public funds, and then a strict examination of bank assets or stress-testing.

In the US case, although the Board of Governors of the Federal Reserve System introduced various measures to support market liquidity during 2007 and 2008, the first important step in using public funds was taken in October 2008—a package of US\$700 billion aimed at restructuring troubled institutions, of which US\$250 billion were set aside for capital injections. All major financial institutions were involved in this recapitalization program.

The collapse of Lehman Brothers in September 2008 highlighted the uncertainty that prevailed in the financial markets. In addition to Lehman's collapse, there were other financial shocks, including the bailouts of two government-sponsored enterprises (Fannie Mae and Freddie Mac) and American International Group, and upheavals at Merrill Lynch among others. The impact was not confined to the US markets; it spread to major financial markets globally.

Similarities in the development of the crises include: (1) the formation and bursting of an asset price bubble, which caused debt levels to expand too much and then subsequently drop under pressure for deleveraging; (2) extensive damage to the quality of bank assets caused by a collapse of real estate prices, and (3) failure of large financial institutions—Yamaichi and two long-term credit banks in Japan, and Lehman Brothers and other highly-leveraged institutions in the US.

The two crises are quite different in some aspects as summarized in Table 5. First, in the Japanese case, bank loans—particularly loans to the corporate sector that were backed by real estate collateral—were the major problem in the financial sector, while the share price collapse also damaged bank balance sheets. In the recent US crisis, securitization played a critical role in amplifying the crisis among a wide range of global financial institutions. In the US deleveraging is required for households, whereas in Japan this was required for firms.

Table 5: Differences between the US and Japanese Crises

	Japan	US
Products	Loans collateralized by real estate → problem developed slowly	Mortgage loans and securitized products → forced the US government to react quickly
Accounting	Annual/conventional	Quarterly/mark-to-market
Deleveraging	Required for firms	Required for households
Local or Global	Purely domestic	Spread rapidly to the global markets

Source: Authors.

Second, the causes of the failures of financial institutions are different. In the US, in addition to investments in “toxic assets,” failed institutions turned out to be extremely vulnerable due to their heavy reliance on wholesale funding. In this sense liquidity and counterparty risk played a critical role in destabilizing the short-term funding market. In contrast, Japanese financial institutions had fundamental problems in their business strategies and asset management, and liquidity shortages triggered their failures. Yamaichi Securities committed misconduct in the management of their clients' assets, and the two failed long-term credit banks were engaged in excessive lending activities not only to the domestic real estate sector but to overseas resort projects, rendering them unable to fund in the wholesale market.

Third, there was a difference in accounting practices in the two countries. Japanese accounting and disclosure rules during its crisis period resulted in financial statements that were slow to reflect economic reality and incomplete in doing so. In the ongoing US crisis, in contrast, financial statements are released quarterly and are based on mark-to-market valuations. Although this practice has the advantage of reducing the uncertainty involved in

the valuation of assets and financial health of banks, it tends to reflect market overreaction under extreme stress. When no reliable data are available as a result of a severe liquidity crunch, the market often temporarily misprices or excessively undervalues assets.

4.2 Deepening of the US Financial Crisis

In May 2009, the US Federal Reserve released the results of the Supervisory Capital Assessment Program (SCAP) regarding the capital held by 19 largest US bank holding companies (BHC). The targets set by the supervisors were a Tier-1 risk-based ratio in excess of 6% at year-end 2010 and a Tier-1 common capital risk-based ratio in excess of 4% at year-end 2010. Any BHC needing to augment its capital buffer would be required to develop a detailed capital plan to be approved by its primary supervisor over the next 30 days and implement that plan in the next six months.

The results of the SCAP suggested that if the economy were to track a more adverse scenario, losses at the 19 BHCs during 2009 and 2010 could be US\$600 billion. Out of this, US\$445 billion would come from losses on accrual loan portfolios, particularly from residential mortgages and other consumer-related loans. After taking account of these losses, revenues and requirements for reserve building, in the aggregate, the 10 BHCs out of the 19 examined would have to add US\$185 billion to their capital base in order to reach the target SCAP capital ratios at the end of 2010. The vast majority of this US\$185 billion would come from a shortfall in Tier-1 common capital.¹¹

A number of BHCs have either completed, or contracted for, asset sales or restructured existing capital instruments since the end of 2008, and thus, additional capital needed to meet the SCAP targets was estimated to be US\$75 billion. This figure may be the minimum since many economists including the International Monetary Fund (IMF) indicate that a larger amount of capital is required to restore the US banks' capital base.

As of April 2009, the IMF suggested that the total amount of asset write-downs could reach around US\$4 trillion globally (IMF 2009), about two-thirds of which would be incurred by banks. The amounts of capital needed to reduce leverage ratios to 17 and 25 were estimated at US\$275 and US\$500 billion, respectively, for US banks depending on the scenario.¹² A year later, Global Financial Stability Report of the IMF stated that capital ratios of aggregate banking systems in the US have improved (IMF 2010). However, some segments of banking systems such as regional banks and government-sponsored enterprises remain poorly capitalized and face significant downside risks.

Depending on the recovery of the US real economy, there is still a possibility that the US banking system remains undercapitalized, with numerous insolvent banks. Clearly a more robust banking system requires more capital and robust loan loss reserves added to the capital cushion. Until impaired assets are disposed of and removed from bank balance sheets and the banking system is adequately recapitalized, credit flows are likely to be restricted.

4.3 Measures Ahead

Based on the SCAP, banks are moving to raise capital and/or repay the public funds injected, depending on the individual result of the stress test. At present, there are several concerns that merit careful consideration.

¹¹ Among the 10 BHCs, Citigroup was required to add the largest amount of additional capital, US\$92.6 billion, and the Bank of America followed with as much as US\$46.5 billion.

¹² The first scenario assumed that the leverage ratio, measured as tangible common equity (TCE) over tangible assets (TA), returned to levels prevailing before the crisis (4%). In this case, capital injection would have to be some US\$275 billion for US banks. The second scenario assumed a return of leverage to levels of mid-1990s (6%), in which case US banks would be required to raise additional capital of US\$500 billion.

First, the impact of the adverse feedback loop between the financial sector and the real economy could be underestimated, which could add to the severity of the crisis. Although the worst is over in the US economy, with the large household debt being reduced through higher savings, given that housing prices are still not recovering, and unemployment rates are expected to remain high, there is a significant risk that bank NPLs will continue to expand. This would make it difficult for banks to expand credit flows to households and corporations at a healthy pace.

Second, with the much improved accounting and disclosure standards compared with those of Japan in the 1990s, authorities are in a better position to address this problem now. The composition of NPLs at US and European financial institutions is now shifting to the traditional loans on the banking book such as lending to commercial real estate. Effective measures to clean up banks' balance sheets still have to be implemented.

The private-public investment program (PPIP) under the second phase of TARP has been criticized in popular press by reputable analysts, including Paul Krugman, Jeffrey Sachs, and Joseph Stiglitz. One of the reputed problems with PPIP is that banks with "toxic assets" may not have sufficient incentives to sell them to investors. The institutions do not have to accept the bid, and they will do so only when the bid is higher than what they think the assets are worth. So the result is that many banks may not wish to remove "toxic assets" from their balance sheets. If banks are not willing to sell such assets, the government may have to step in by forcing banks to reduce troubled assets to a certain level within a given time period, as Japan's Program for Financial Revival did in October 2002. PPIP did not work effectively and, as a result, was effectively abandoned.

5. JAPAN'S RESPONSE TO THE RECENT FINANCIAL CRISIS

Until the fall of 2008, Japanese banks were not affected seriously by the US financial turmoil because they invested relatively small amounts of their portfolios in subprime-related financial products. Rather, they were more seriously affected by capital losses arising from their equity shareholdings as stock prices declined sharply due to the eruption of the global financial crisis. Table 6 shows the impacts of price declines in subprime-related assets and equities on banks' balance sheets. Despite the efforts to reduce the amount of cross-holdings of shares on banks' balance sheets, Japanese banks are still exposed to the volatility caused by equity shareholdings. A decisive measure should be implemented to end banks' shareholdings as such instability repeatedly affects the banking sector. To enhance the resiliency of their capital base, megabanks decided to raise funds more promptly than in the 1990s through the issuance of subordinated bonds, preferred stock, and common shares.

Table 6: Impacts of Subprime-related Assets and Equities on Japanese Banks
6A. Exposures to Subprime-related Products (in billions of yen)

	as of Dec. 2007			as of Dec. 2008		
	Book Value	Valuation Profits/Losses	Realized Profits/Losses ^(b)	Book Value	Valuation Profits/Losses	Realized Profits/Losses ^(b)
Major banks, etc.^(a)	1,388	-143	-399	496	-119	-842
Total	1,519	-158	-442	565	-134	-919

6B. Equities Shareholdings (in billions of yen)

	as of Dec. 2007			as of Dec. 2008	
	Valuation profits for equity holdings	Tier 1 Capital ^(c)	Operating Profits from Core Businesses ^(c)	Valuation profits for equity holdings	Change from December 2007
Major banks, etc.^(a)	6,344	25,987	3,499	111	-6,233
Total	10,093	50,071	6,093	450	-9,643

Note: (a) "Major banks, etc." include major banks, Norinchukin Bank, Shinsei Bank, Aozora Bank, Citibank Japan, banks of a new type, foreign trust banks, and others.

(b) Realized losses are cumulative figures from April 1, 2007.

(c) These figures are for fiscal year 2007, ending in March 2008.

Source: Financial Services Agency, Government of Japan, website.

Japan continued to record negative growth, year-over-year, from the second quarter of 2008 through the fourth quarter of 2009. With the contraction of the US economy, the Japanese economy experienced an extraordinarily sharp drop in exports of high-value added manufacturing products—such as automobiles, electronic appliances, machinery and other goods—starting in the fourth quarter of 2008. As a result, Japan saw an unprecedented decline in real economic growth; the economy contracted at an average rate of 6.6% in the first three quarters of 2009 over the same quarters of the previous year. The economic slowdown was associated with a plunge in stock prices, and thus, large losses in bank equity portfolios. Such capital losses and the resultant deterioration of credit quality of bank borrowers severely affected banking profits. All three megabanks, Mitsubishi UFJ, Mizuho, and Sumitomo Mitsui reported net losses in their financial statements on a consolidated group basis for fiscal year 2008, which ended in March 2009. Currently, their NPL ratios remain below 2% and their capital adequacy ratios exceed 10%, but there is a significant risk that they could face a capital shortage.

In December 2008, the government enacted a law that enabled capital injections to be made.¹³ By March 2009, three regional banks applied to the authorities to obtain capital. In the capital markets, firms had found it difficult to raise funds by issuing bonds or commercial paper (CP) immediately following the collapse of Lehman Brothers. As a result, the government implemented measures such as guarantee programs for exporters, and the Bank of Japan had begun to purchase CP. To date, these measures have been effective in mitigating a serious shortage of liquidity and stabilizing the financial market.

The restructuring of the financial sector in the US has affected Japanese banks and brokers and dealers. Nomura purchased Lehman Brothers' operations in Europe, the Middle East and Asia, which turned out to be a costly affair as reflected in their 2008 financial results. Mitsubishi UFJ acquired around 20% of JPMorgan Chase. Sumitomo Mitsui bought a Japanese subsidiary of Citigroup.

¹³ The law related to past capital injections had been terminated in March 2008.

The long-term fundamental quandary of Japanese banks is that their earning power is not adequate enough to cover credit costs. It is widely acknowledged that the lending margins of Japanese banks remained low both before and after the asset price bubble. While this concern apparently led them to purchase some stakes in US banks and brokers and dealers, the challenge for Japanese banks is to develop a long-term management strategy that can enhance profitability.

6. CONCLUSION

The Japanese government failed to tackle the banking sector problem in the 1990s in a prompt and decisive manner because the crisis was slow to develop, its severity was underestimated, growth expectations were too optimistic, no major domestic and external pressure existed, and a legal framework for resolving distressed banks was lacking.

Following the 1997–1998 systemic crisis, the authorities became much more aggressive in addressing problems. They established a comprehensive framework for bank resolution, which involved the following measures: (1) public capitalization of weak but viable banks; (2) temporary nationalization of non-viable banks; (3) tighter loan classification through stringent “special inspections”, (4) aggressive NPL reduction through a regulatory program; and (5) creating new institutions for corporate debt restructuring.

Acknowledging the extent and depth of the bank balance sheet problem, as a source of potential loan losses, is the first step toward resolving a banking crisis. Once the government estimates the size of the crisis, prompt action to recapitalize the banks that are viable but under-capitalized is an effective measure to restore market confidence and stabilize the banking system. The next step is to remove impaired assets from bank balance sheets. This often requires an institution, like a government-funded asset management company, to purchase such troubled assets. Therefore, recapitalization and asset purchases can be mutually complementary measures to restore a resilient capital base and banking sector health. A well-designed policy combination could minimize taxpayers’ costs.

To resolve the financial crisis, the US government needs to induce banks to remove NPLs from their balance sheets. To do so may require the government to devise new, adequate incentives to banks—or to resort to regulatory measures, as was done in Japan in 2002—so that banks dispose of NPLs. Otherwise it would be difficult to restore healthy flows of credit to households and firms.

Causal links can work both ways; a financial crisis damages the real economy, and the worsening of the real economy can also create new NPLs and may eventually deplete bank capital. Essentially, deterioration of the real economy can lead to another round of financial crisis, which can further damage the real economy. If the authorities do not address the banking sector problem promptly, then the crisis may prolong, and a full-fledged economic recovery will be significantly delayed. This could result in a “lost decade” for the economy.

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APPENDIX

Table A1. Chronology of the Japanese Authorities' Policy Responses During the Banking Crisis, 1991–2005

	Financial Sector Development and Economic Policy	Regulatory Framework	Deposit Protection	BOJ Emergency Loans, Capital Injection, Nationalization	Purchase of NPL, etc.
1991 ~ 1992	An insured bank failed for the first time Bank of Japan (BOJ) monetary policy easing Fiscal stimulus policy undertaken Several small and medium-sized financial institutions failed		Deposits above insurance limit were protected by contributions from other financial institutions, local government, etc.	Prime Minister Miyazawa's proposal to inject public funds into banks encountered criticism from mass media, etc.	MOF estimate of NPLs of largest 21 banks was JPY12.3 trillion
1993 ~ 1994					Corporate Credit Purchase Company (CCPC) established by the Bankers Association, to purchase banks' bad assets
1995	2 credit cooperatives failed in Tokyo		MOF declared blanket guarantee of deposits for 5 years		Tokyo Kyodo Bank established by BOJ to take over assets and liabilities of 2 failed credit cooperatives in Tokyo.
1996	7 nonbank mortgage lenders, <i>jusen</i> , went bankrupt		Deposit Insurance Law amended to provide legal backing for blanket guarantee of deposits	Public funds used to resolve the <i>jusen</i> problem, which provoked a public backlash	Resolution and Collection Bank (RCB) was established from Tokyo Kyodo Bank Housing Loan Administration Corporation (HLAC) created by DIC to resolve <i>jusen</i>
1997	Sanyo Securities in legal restructuring procedure Hokkaido Takushoku Bank failed Yamaichi Securities (the fourth largest securities firm) began voluntary liquidation "Japan Premium" emerged			BOJ's provision of emergency loans to Yamaichi Securities.	
1998	Bank of Japan Law introduced to make BOJ independent Long-Term Credit Bank and Nippon Credit Bank failed Financial Big Bang implemented	Financial Supervisory Agency created to take over from Ministry of Finance (MOF) the supervision and inspection functions of the financial system Financial Reconstruction Commission (FRC) established as a parent body of Financial Supervisory Agency	Government authorized to use JPY30 trillion of public money to bail out banks and protect depositors Deposit Insurance Law amended to allow use of public fund for blanket guarantee of deposits	Public fund injected to major 21 banks, totaling JPY1.8 trillion, but unable to stabilize the market Diet's passage of the Financial Revitalization Law (a strong and usable bankruptcy law for banks) and the Bank Recapitalization Act (a law for public capital injection) Nationalization of Long-term Credit Bank and Nippon Credit Bank	Emergency Measures Law for Financial System Revitalization enacted RCB purchased NPL from non-failed financial institutions.
1999	"Japan Premium" diminished partly because of the second capital injection			Public fund injected to major 15 banks, totaling JPY7.5 trillion Sale of Long-Term Credit Bank of Japan	The Resolution and Collection Corporation (RCC) formed by merging RCB and HLAC; NPLs purchased at JPY353 billion (book value: JPY4 trillion)
2000		Financial Services Agency (FSA) launched	Systemic Risk Exception introduced to the Deposit Insurance Law	Sale of Nippon Credit Bank	Civil Rehabilitation Law introduced
2001		Abolition of FRC and establishment of FSA as an external agency of the Cabinet Office			The Bankers Association and the Federation of Industries agreed to a code of conduct for debt forgiveness (INSOL)
2002	BOJ purchase of equities held by commercial banks at market prices				Program for Financial Revival (PFR), FSA set a target to have NPLs by March 2005
2003	BOJ purchase of asset backed securities and commercial papers from banks Resona Bank became undercapitalized Ashikaga Bank failed		Full protection of the payment and settlement account as a permanent measure	Capital injection of JPY2 trillion to Resona Bank Nationalization of Ashikaga Bank	Industrial Revitalization Corporation (IRCJ, debt restructuring of large firms) established
2005			Blanket guarantee of deposits lifted		Halving of NPLs achieved

Source: Authors.