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Discussion Paper No. 2000-E-13

IMES

INSTITUTE FOR MONETARY AND ECONOMIC STUDIES

BANK OF JAPAN

C.P.O BOX 203 TOKYO

100-8630 JAPAN

IMES Discussion Paper Series 2000-E-13
May, 2000

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Abstract

This paper provides a very tentative review of the monetary and prudential policy responses to the post-bubble adjustments in Japan. The adjustments after the collapse of the bubble have been prolonged due to: (1) the rapid downward revision of the expected economic growth rate; (2) balance sheet adjustments on the part of firms; and (3) the malfunctioning of the financial intermediary system stemming from its non-performing asset problem. We use four yardsticks, Marshallian k, Taylor rule, equity yield spread and short-term real interest rate for assessing the monetary easing. The results are suggesting that the timing of policy reversal was swift and the magnitude of easing in the early phase could be viewed as broadly adequate for dealing with a normal business cycle. It is possible to argue that the effects of the bursting of the bubble might have not been sufficiently taken into account. It should be noted the outcome would not have differed greatly even if the drastic monetary easing that eventually took place had been decided at an earlier point in time without a fundamental cure of the non-performing asset problem. A considerable achievement of prudential policy in the period under review is that systemic risk was avoided with the cost being delay in establishing a legal framework for handling troubled financial institutions and in organizing a comprehensive safety net. As a result of this delay, it took a long time to deal with the non-performing asset problem. This, in turn, posed a serious drag on the economy. Our preliminary conclusion about the lesson we should draw from this experience is the importance for the Bank of Japan of identifying the precise impacts of shocks on the economy as well as their transmission mechanism promptly and thereby minimizing adjustment costs. It should also be conducive for the Bank to address actively structural issues that may influence the effectiveness of its policy measures.

This paper has been prepared for the ninth international conference on July 4-5, 2000, sponsored by the Institute for Monetary and Economic Studies, Bank of Japan, entitled "The Role of Monetary Policy Under Low Inflation." It is also a substantially revised draft of a preliminary paper in Japanese co-authored by Mahito Uchida, Shigenori Shiratsuka, and Naruki Mori, and submitted to the workshop on January 25, 2000, hosted by the Institute for Monetary and Economic Studies, the Bank of Japan. The authors acknowledge comments received at the workshop from discussants Professors Hiroshi Yoshikawa (Tokyo University) and Kazuo Ogawa (Osaka University), and other participants. Messrs. Michio Kitahara and Toyoichiro Shirota provided valuable assistance. The views expressed here are those of the authors and do not necessarily reflect the official views of either the Bank of Japan or the Institute for Monetary and Economic Studies.

Key words: Monetary Policy; Prudential Policy; Bursting of Bubble; Non-Performing Assets; Credit Channel; Management of Failure in Financial Institutions; Structural Problems

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I. Introduction

Some call the 1990s in Japan a "lost decade." Whether it was lost or not, Japan experienced severe recession as evidenced by average real annual GDP growth declining from 3.8 percent in the 1980s to 1.6 percent in the 1990s, and only 1 percent in the eight years 1992-99. Average growth of 1 percent is substantially lower than that of 3 percent for the same period in the US (Figure 1). In fact, among G7 countries, Japan's real GDP growth in the 1990s was next to lowest; compared with the 1980s it marked the largest decline (Table 1).

As of end-1999, while the economy had shown signs of improvement, clear signs of the self-sustained recovery of private demand had yet to be seen. It was the first experience in the post-World War II period that slackness has lasted for some ten years.

During the 1990s, various monetary and fiscal policy measures were effected to avoid deflation: the Bank of Japan (BOJ) successively cut short-term interest rates to virtually zero percent (Figure 2); and, as a result of the successive implementation of fiscal stimulus measures, the fiscal deficit became the largest among major industrial countries (Figure 3). The mere fact that Japan's economy has been stagnant for ten years despite these sizable monetary and fiscal stimuli seems to indicate that the slackness cannot be explained solely by the normal business cycle, but that some other deflationary factors also existed.

The purpose of this paper is to analyze the factors that contributed to this prolonged stagnation, and to attempt a very tentative evaluation of monetary and prudential policy responses in the post-bubble period.[1] The period subject to our analysis is mainly from February 1991, the peak of the *Heisei Boom*, to end-1999.[2]

It is legitimate, at least to some extent, to say that prolonged stagnancy was mainly due to the failure of not only firms and households but also the government and the entire social and economic framework adapting adequately to the large wave of changes, such as innovation in information and telecommunication technology and

[1] With respect to the bank regulatory responses to the bursting of the asset price bubble since 1991, Cargill, Hutchison, and Ito (1997) wrote that "the Ministry of Finance first adopted a 'forbearance policy,' allowing banks to hold non-performing loans without special write-offs in the hope that the economy and the real-estate market would recover quickly." In fact, many regard prudential policy of this period as forbearance. Although we cannot deny that, shortly after the bursting of the bubble, the authorities might have tried to buy time predicated on a rapid recovery of the economy, it would not be appropriate to assess policy responses to financial system problems during the whole 1990s solely as forbearance. In the absence an adequate safety net, it might have been necessary for the authorities to buy some time (e.g. the disposal of non-performing assets within a financial institution's income stream for a certain period) in trying to improving the safety net and dispose of non-performing assets simultaneously.

[2] According to the Economic Planning Agency, the economic expansion that started from November 1986 peaked in February 1991, was followed by a deceleration for 32 months until October 1993, and then expanded up to March 1997.

changes in global competition.[3] With respect to the troubles facing financial institutions, many have pointed out, rightly, that they were the result of banks' over-reliance on traditional banking business, the materialization of which had merely been temporarily postponed because of the emergence and expansion of the bubble economy. However, for arguing what were the most dominant factors behind the problems, we have to wait at least for some more years before the Japanese economy completes the post-bubble adjustments. It is certainly still premature to come to any definitive conclusion.

Notwithstanding what the essential factors were, it is hard to deny that the emergence and burst of the bubble played an important role in the economic fluctuation of this decade. Therefore, in this paper we focus on the policy responses to the shocks the burst of the bubble on real economic activity.

In doing so, however, we emphasize the following two points: (1) that policy decisions were inevitably based on a information set available at that time; and (2) that any policy assessments has to examine achievements as well as accompanying costs.

II. Japan's Economic Development in the 1990s

This section provides a brief review of the prolonged economic stagnation which took place in Japan in the 1990s. The main features of the decade were: (1) a substantial decline in asset prices; (2) prolonged low growth in real GDP; (3) low growth in monetary aggregates—the first negative year-on-year growth since the statistics began to be compiled—; and (4) a deterioration in the quality of firms' assets and the accumulation of non-performing loans in the banking sector.

In the following, we divide the decade into three sub-periods: (1) 1991-93, when Japan's economy slowed down, due mainly to a decline in business investment; (2) 1994-96, when the economy gained some breathing room with the aid of record fiscal stimulus measures and monetary easing, notwithstanding the effects of balance sheet adjustment and increased global competition; and (3) 1997-99 when the economy tumbled into recession again as a result of fiscal consolidation and the adverse effects of East Asian economic crises, accompanied by financial system instability stemming from the worsening non-performing asset problem in financial institutions.

A. The Economic Slowdown of 1991-93

Following the *Heisei* boom, recession continued for 32 months, the second longest such period since World War II. Stock adjustment of durable goods, housing, and capital stock all occurred simultaneously, with the resulting decline in final demand leading the economy into an inventory adjustment phase. These stock and inventory adjustments,

[3] Noguchi (1999) referred to (1) the development in Asian economies, (2) the progress of network technology, and (3) the aging population as structural problems which Japan faces, and noted that "problems that Japan's current economy faces are structural rather than cyclical."

together with the effects of the bursting of the asset price bubbles, induced a rapid decline in the growth of monetary aggregates.

1. Stock Adjustment in the Aftermath of the Bursting of the Asset Price Bubbles

It is hard to deny that it was the rise in interest rates—the official discount rate was set at its peak of 6 percent in August 1990—and the consequent bursting of the bubble which triggered the economic slowdown. Residential investment and business fixed investment by small and medium-sized enterprises, which were the final demand components most sensitive to changes in interest rates, started to slow down in spring 1991. In addition, a substantial inventory adjustment started around 1992 (Figure 4). During this phase, the adjustment process for durable goods, residential stock, and capital stock occurred almost simultaneously (Figure 5).

Another marked feature of this period was the fall in asset prices and the rapid decline in the growth of monetary aggregates. Stock prices, in terms of the Nikkei 225 (Figure 6), fell to ¥14,309 in August 1992, more than 60 percent below the peak of ¥38,915 it had recorded at end-December 1989. The Urban Land Price Index (commercial land in six major cities, Figure 7) continued to decline after hitting a peak in September 1990. Monetary aggregates (M2+CDs, Figure 8) recorded negative year-on-year growth in mid-1992 for the first time since the start of this statistical series in 1968, reflecting stagnant asset transactions under conditions of declining asset prices, and a reduction in the demand for funds owing to capital stock adjustment on the part of firms. The growth of monetary aggregates recovered slightly thereafter to about 1 percent toward the end of 1993, as bank lending to the public sector increased, reflecting various fiscal stimulus measures.

2. Monetary Easing and the Increase in Fiscal Expenditure

The BOJ reacted to the slowdown of the economy by reducing the official discount rate six times from July 1991 to February 1993, by a total of 3.5 percentage points (6.0 percent → 2.5 percent: Figure 2 above). On the fiscal policy front, three economic stimulus "packages," totaling ¥29.9 trillion, were implemented during 1992-93.

In response to these policy measures, residential investment started to recover from the beginning of 1993. However, business fixed investment remained flat (Figure 5 above), as the depth of the needed capital stock adjustment was amplified by euphoria about the expected upward shift in growth, which ended in a rather abrupt collapse. The effects of balance sheet adjustment were most pronounced among small and medium-sized manufacturers, which used to be highly sensitive to interest rate declines and whose business fixed investment had tended to recover prior to that of other sectors in previous monetary easing phases. In fact, the decline in real GDP growth during this

sub-period can be almost totally explained by the decline in business fixed investment (Table 2 above).

B. Temporary Economic Recovery in 1994-96

The Japanese economy experienced a temporary recovery in 1994-96, as business capital stock and inventory adjustments were almost complete. However, with land prices still declining, business firms maintained their balance sheet adjustments, and, on the part of financial institutions, non-performing asset problems came increasingly to the fore, eroding their capital base. It was also during this phase that *Jusen* companies (housing loan companies) and some bank-affiliated non-banks, which had lent aggressively in the bubble years to small and medium-sized firms that heavily invested in real estate, financing themselves by borrowings from banks and cooperative-type financial institutions, collapsed.

1. Recovery Endangered by Appreciation of the Yen and Increased Global Competition

In 1994, owing greatly to the effects of successive fiscal and monetary stimulus measures, the economy showed signs of a moderate recovery (according to the Economic Planning Agency <EPA>, the economy marked bottom in October 1993). Residential investment continued to increase and inventory adjustments were almost completed (Figure 4 and Figure 5). However, several factors prevented the upward movement from gaining momentum: land prices continued to slide; balance sheet adjustment at firms accelerated; and the higher yen forced manufacturing industry to review the location of their production bases from a global viewpoint.

As the economy entered the year 1995, a chain of events eroded public confidence: Great Hanshin-Awaji Earthquake, a large fall in stock prices, and the rapid appreciation of the yen (Figure 12: it reached a high on April 19 at 79.75 yen/dollar). In particular, the yen's appreciation, which came amidst a weak recovery in domestic final demand, severely damaged business sentiment, both directly and indirectly through the downward pressure on stock market.

In the meantime, concern over intensified deflationary pressure began to accumulate against the backdrop of weak prices (Figure 13). Wholesale prices declined due to a fall in import prices caused by the appreciation of the yen; even consumer price inflation (year-on-year basis) temporarily turned negative, reflecting an increase in low-priced imported manufactured goods from Asian countries.

2. Policy Responses to the Rapid Appreciation of the Yen

In such circumstances, the BOJ successively eased monetary conditions in 1995. The BOJ urged inter-bank interest rates to decline at end-March 1995 and reduced the official discount rate by 0.75 percentage points (from 1.75 percent to 1.00 percent) in April. The BOJ guided market interest rates further down in July and reduced the

official discount rate again, this time by 0.5 percentage points (from 1.0 percent to 0.5 percent).

The government, on its part, put forward consecutively in April and June two economic policy packages, both entitled "Emergency Measures for Yen Appreciation and the Economy" and chiefly containing measures to promote deregulation and imports. In addition, concerted foreign exchange market intervention was conducted in April in response to the G7 communiqué. Then, in September, the government launched another fiscal stimulus package of ¥14.2 trillion.

3. Permeation of Policy Effects and Temporary Rebound of the Economy

These additional policy measures by the government and the BOJ succeeded in getting the economy moving from the latter half of 1995 onward.

Notably, fixed investments of major manufacturing companies relating to personal computers and telecommunications items such as cellular phones and personal hand phones marked sizeable growth following deregulation (Table 2). Owing largely to this development, overall business fixed investment turned positive in 1995 for the first time since 1991 on a year-on-year basis.

Stock prices (Nikkei 225) rebounded strongly from mid-July onward and hit ¥20,000 by the end of the year. In 1996, public investment by the government as well as private demand, such as business fixed investment, private consumption, inventory accumulation and housing investment bolstered the economy, which posted high 5 percent real annual growth overall (Table 2).

A major reason for this recovery was the progress in adjustment of equipment stock and reductions in excess liabilities (mainly bank borrowings) at major firms that had taken place during 1991-93. Deregulation concerning telecommunications and large-scale retail operations that spurred investment in those industries also contributed to this recovery.[4] The effects of low interest rates and the increase in public investment became clearly felt in these improved business conditions.

Growth in monetary aggregates (M2+CDs), measured on a year-on-year basis, rose to 2-3 percent(Figure 8). Fund raising in capital markets (Figure 10) and bank lending (Figure 9) increased against the backdrop of the temporary recovery of business fixed investment from the latter half of 1995 to 1996, although major firms continued their efforts at financial restructuring (reducing interest-bearing liabilities). As business sentiment improved toward mid-1994, by when inventory and stock adjustments had been completed, the long-term interest rate (on the benchmark 10-year government bond) reached 4 percent; it declined thereafter to 2 percent in 1996, reflecting a decline in short-term interest rates (Figure 2).

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[4] In the mobile communications area, introduction of the outright sales of terminals in April 1994 resulted in a dramatic increase in subscribers. The Large-Scale Retail Store Law was amended in May 1994 allowing retailers to freely open outlets with a sales floor space of less than 1,000m².

4. The Disposal of Non-Performing Assets Including Loans to *Jusen* Companies and the Erosion of the Capital Base of Financial Institutions

As we turn our eyes to the financial system, the non-performing assets of financial institutions continued to increase as a whole during this period of temporary economic recovery (Figure 11). The asset value of small and medium-sized enterprises, which had financed their excessive investment in the bubble period by bank borrowings, fell further as the economy recovery was limited and land prices continued to decline; non-performing assets increased.

A typical example of excessive investment was seen at bank-affiliated non-banks and *jusen* companies that had aggressively financed high-risk real estate investments during the bubble years. The decision on how to dispose of the non-performing loans to *jusen* companies was delayed because it was a highly political matter as to what extent financial institutions affiliated with agricultural cooperatives (prefectural credit federations) should bear the cost of disposal. However, in December 1995 the cabinet finally approved the injection of some ¥685 billion of public funds (the *Jusen* Law was approved by the Diet in June 1996).

Non-banks affiliated to Hyogo Bank, a long-troubled regional bank, were liquidated, and many non-banks affiliated with other banks were restructured with support from their parent banks. A significant number of banks decided to book a loss, many for the first time, to settle accounts and drew on retained earnings or on their own capital at the end of fiscal 1995 (end-March 1996, Figure 15).

As these events were highlighted by the media, the serious state of the non-performing asset problem of Japanese financial institutions became widely recognized among the public. Distrust of bank disclosure grew rapidly, especially as the huge losses incurred by illegal trading and covered up by a rogue trader at Daiwa Bank's New York branch came to light. Distrust regarding the stability of Japan's financial system was even greater overseas, and the so-called Japan premium recorded a peak of 50 basis points in October 1995 (Figure 16).

It was at this juncture that the government introduced a package of measures for securing financial system stability. The Diet passed six bills relating to the financial stability in June 1996, including bills to liquidate the failed *jusen* companies and establish the Resolution and Collection Bank (a restructured institution of the Tokyo Kyodo Bank, which was originally established to deal with two credit cooperatives, Tokyo-Kyowa and Anzen) and the Housing Loan Administration Corporation.[5]

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[5] In June 1996, in addition to the so-called "three financial laws," the *Jusen* Law (The Law Concerning Special Packages for Promoting the Disposal of Claims and Debts of Specified Housing Loan Companies), the Law Concerning Special Packages for Suspending Prescription of Claims Owned by the Specified *Jusen*, and the Law to Amend the Agricultural and Fishery Cooperative Savings Insurance Law were all approved and enacted by the Diet. The "three financial laws" refer to: (1) the Law to Implement Measures for Ensuring the Sound Management of Financial Institutions, which aims at ensuring the

C. Developments from 1997 to End-1999

In 1997, the government changed its fiscal policy stance and moved toward fiscal consolidation, including an increase in consumption tax. Shortly after this move, Japan's economy was unfortunately affected by the East Asian financial crises and deflationary pressure stemming from financial system instability, and fell into a serious recession, with real GDP posting negative growth for five consecutive quarters from the fourth quarter of 1997 onward. In particular, against the backdrop of increased concern over financial system stability, consumer sentiment became cautious and the financial intermediary function further deteriorated, resulting in an additional adverse impact on business fixed investment.

Faced with this situation, the government shifted again to an expansionary fiscal policy from the beginning of 1998 onward and implemented comprehensive economic measures, including special tax reduction and an increase in public-sector investment. It also strengthened the capital base of banks by injecting public funds to restore financial system stability. With regard to monetary policy, the BOJ adopted a "zero interest rate policy" in February 1999. As the effects of these measures materialized, the economy finally ceased to decline around spring 1999 and started to show some signs of improvement toward the end of the year.

1. Serious Recession, Financial System Instability, and Fiscal Consolidation

The economy encountered various shocks in 1997.

First, with regard to fiscal policy, various measures for fiscal consolidation were implemented, based on the cabinet decision of December 1996. For example, the initial fiscal 1997 budget included tax increases such as a rise in consumption tax (from 3 percent to 5 percent), withdrawal of the special tax reduction, and reform of the medical insurance system (whereby the burden on the insured was increased from 10 percent to 20 percent). Second, in July 1997, the East Asian economic crisis began, triggered by the large devaluation of the Thai baht. Finally, several major Japanese financial institutions virtually collapsed in autumn, and the stability of financial system was brought into jeopardy.

Obviously, it had been foreseen that fiscal tightening would have negative effects such as the reaction of rush purchases prior to the increase in consumption tax, but the

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management soundness of financial institutions through such measures as intensive auditing in credit cooperative associations and introduction of prompt corrective action; (2) The Special Law Concerning Reorganization of Financial Institutions, which empowered the Financial Supervisory Agency to initiate bankruptcy procedures against troubled institutions, and also introduced a rehabilitation process for credit cooperative associations (in addition to conventional disposal processes such as the transfer of operations based on consensus among related parties <management, stockholders, and subscribers>); and (3) Law to Amend the Deposit Insurance Law, which improved payoff and established a credit purchasing system as well as introduced special fund assistance within a limited duration (five years from now) which enabled the Deposit Insurance Cooperation to protect all liabilities in excess of payoff costs.

consensus forecast among both policymakers and businesses was that these negative impacts should fade out by summer. In reality, however, the financial system instability triggered by the collapse of some financial institutions dampened households' confidence and the average propensity to consume declined, resulting in a substantial fall in consumption expenditure (Figure 17). In addition, Japan's exports declined, reflecting the East Asian crisis (Figure 18).

In 1998, the downward pressure acquired further momentum. Fixed investment of small and medium-sized non-manufacturers was substantially reduced (Figure 19), reflecting in the main the stagnant economy and the East Asian crisis; however, it cannot be denied that fall in the investment activities was aggravated by the non-performing asset problems of financial institutions, which caused a further deterioration in the functioning of the financial intermediation system.

This decline in final demand intensified inventory adjustment pressure, and production activity shrank significantly. The economy was thus caught in a vicious cycle (decline in demand → decline in production activity → decline in corporate profits and labor income → further decline in business fixed investment and private consumption), with real GDP recording negative growth for five consecutive quarters from the fourth quarter of 1997 onward (for the first time since the start of GDP statistics in 1955).

2. Policy Responses to the Recession

In 1998, however, the government decided to adopt an expansionary fiscal policy in response to the deteriorating economy.

Specifically, the government took successive measures deviating from its fiscal consolidation line, including (1) a ¥2 trillion special tax reduction in February, (2) the announcement of a ¥16 trillion total economic stimulus package in April, and (3) a revision of the Fiscal Structure Reform Law in June (enacted in November 1997), postponing the target year for a reduction in the fiscal deficit to fiscal 2005 (and temporarily freezing the law in December). In addition, the government introduced measures to encourage banks to lend to small and medium-sized companies such as the expansion of the special public loan-guarantee scheme in August. As the economic downturn did not come to a halt by autumn in spite of these measures, and as employment and income condition deteriorated further, the government drew up an additional ¥24 trillion emergency economic package.

The economy finally showed some gradual signs of ceasing to deteriorate towards the end of 1998, and real GDP growth (compared with previous quarter, seasonally adjusted) turned to post substantial positive growth of 1.5 percent in the first quarter of 1999. Then, in the spring of 1999, the financial system saw its stability restored to some extent, owing greatly to the injection of public funds into major financial institutions (in March 1999, the total that had been injected amounted to about ¥7.5

trillion for 15 major banks). In addition, residential investment rebounded in response to special tax cuts for mortgage holders.

The BOJ, for its part, reduced short-term interest rates in September 1998 (guiding the uncollateralized overnight call-loan rate down to 0.25 percent). Then, in February 1999, it encouraged a further reduction in short-term interest rates—the so-called "zero interest rate policy" (Figure 2). Such policy action was adopted in order to prevent an accumulation of deflationary pressures and a further deterioration in the economy.[6] To this end, the BOJ announced that it would "flexibly provide ample funds and encourage the uncollateralized overnight call rate to move as low as possible."[7] Furthermore, in April, the BOJ announced that it would commit itself to the zero interest rate policy "until deflationary concerns are dispelled," intending to stabilize market expectations regarding short-term interest rates from the overnight call rate to longer terms at low levels, thereby maximizing the effects of monetary easing.[8]

As the effects of these fiscal and monetary policy measures were diffused, the economy gradually improved toward the end of the year. However, this improvement was mainly due to public sector demand and external demand reflecting the recovery of Asian economies; we are yet to see clear signs of a sustained growth in private demand.

3. Financial System Instability: the Collapse of Major Financial Institutions and Policy Responses

This period (1997-99) was characterized by the growing concern over financial system stability. In November 1997, as Sanyo Securities collapsed and this collapse was followed by the collapse of Hokkaido Takushoku Bank and Yamaichi Securities, the market was suddenly looking for the next candidate to fail, and concern over the loss of financial system stability and the possibility of systemic risk spread rapidly. A number of financial institutions came under severe attack: the rumor that they had incurred huge non-performing assets drove down their stock prices and triggered sizeable outflow of deposits. Moreover, the Japan premium rose close to 100 basis points, reflecting the

[6] In the announcement of February 12, 1999, the Bank referred to background economic and financial developments that prompted the policy change as "corporate and household sentiments remain cautious and private sector activities stagnant. … long-term interest rates have risen considerably, and the yen has been appreciating against the dollar."

[7] At the press conference on April 17,1999, BOJ Governor Hayami stated that "I understand that the Bank of Japan will continue with the current policy, which encourages the unsecured overnight call rate to move around virtually zero percent by providing ample funds, with paying due consideration to maintaining the proper functioning of the market until deflationary concerns subside."

[8] In the announcement of the Monetary Policy Meeting decisions up to September 21, 1999, the Bank's concern at the initial stage of the zero interest rate policy was stated in expressions such as "to avoid excessive volatility in the short-term financial markets" and "by paying due consideration to maintaining market function." At the Meeting on October 13, however, such expressions were excluded since it became inappropriate in accordance with the changes in financial market conditions. In addition, the guideline as a whole was changed to state more explicitly the meaning of and the intention behind the zero interest rate policy, as quoted in the text.

difficulty of fund-raising in overseas interbank markets, while some banks hastened to raise money to cover year-end funding (Figure 16).

In order to cope with this situation and contain the turmoil, the BOJ extended special loans to Hokkaido Takushoku Bank and Yamaichi Securities and provided, from late November onward (Figure 20), ample reserves in excess of the volume necessary for the banks to meet their legal reserve requirements.

Notwithstanding these efforts, financial institutions adopted a stringent attitude towards lending to firms in general, and towards lending to small and medium-sized enterprises in particular. Facing funding difficulties, the business condition of the latter naturally worsened rapidly (Figure 21). Corporate bankruptcies increased and fixed investments by small and medium-sized enterprises decreased. It became increasingly recognized that a decline in the financial intermediation function was hampering economic recovery.

This recognition brought again to the fore the importance of injecting public funds into financial institutions so as to correct their undercapitalized status, thus revitalizing their financial intermediation function. In March 1998 some ¥1.8 trillion in public funds was injected into 21 major banks. In October, public funds appropriated for financial system stabilization, based on the Financial Reconstruction Law and the Financial Function Early Strengthening Law, were increased to ¥60 trillion and an additional ¥7.5 trillion was injected into 15 major banks, followed by a ¥2.6 billion injection into four regional banks. In the meantime, the Long-Term Credit Bank of Japan and the Nippon Credit Bank, both suffering from huge non-performing assets, were placed under special public administration in accordance with the Financial Reconstruction Law in October and December 1998, respectively.

III. Mechanism behind the Prolonged Economic Stagnation after the Bursting of the Asset Price Bubble

The prolonged economic stagnation that occurred in the 1990s was the outcome of the interaction of various factors. Hayakawa (1999), for example, stresses the following four: (1) the existence of "non-performing assets" as an aftermath of the bursting of the asset price bubble; (2) a high household savings rate reflecting the rapid aging of the population and a decline in the fertility rate; (3) a decline in capital efficiency; and (4) low productivity in non-manufacturing industry.[9] The authors of this paper agree that the background to the prolonged economic stagnation in the 1990s was multifaceted, and that the negative impact of the asset bubble constituted only a part of this complex structure. In any event, it is obvious that it is premature at this moment to conclude

[9] For the details of each point, see Nakagawa (1999), Maeda and Yoshida (1999), Bank of Japan, Research Statistics Department (1999).

what the fundamental factors behind the prolonged economic stagnation were. We have to wait at least for some more years before the Japanese economy completes the post-bubble adjustments.

Nevertheless, even though it is too early to reach a firm conclusion regarding the identity of a fundamental factor behind the prolonged economic stagnation, there should be little doubt that the emergence, expansion, and subsequent bursting of the asset price bubble played a major role in determining business conditions in the 1990s. We therefore focus in this section on the role that "non-performing assets" played in prolonging the economic stagnation of the post-bubble years.

The working hypothesis regarding the adjustment mechanism of the bursting of the bubble to be examined here is as follows: (1) the impacts of the bursting of the bubble were amplified by the decline in expected growth rate, and malfunctioning of the financial system stemming from balance sheet adjustment in the non-financial sector and non-performing assets in the banking sector; (2) such amplified impacts prolonged the adjustment period, thus, aggravating the negative impacts on real economic activities.

A. Effects of Delayed Stock Adjustment

With regard to the recession after the bursting of the bubble, a commonly expressed argument is that excess accumulation of capital stock during the bubble period amplified the resultant adjustment pressure.

1. Decline in Expected Growth Rate and Required Stock Adjustment

Although the *Heisei* boom peaked in February 1991 according to the EPA's reference dates of the business cycle, real business fixed investment of manufacturing continued to grow in the second quarter of 1991; moreover, it was only in the third quarter of 1992 that investment in non-manufacturing industry reached its peak (Figure 5 above). At around the peak of the business cycle in 1990-91, capital stock was growing at 8 percent per annum, and the ratio of business fixed investment to nominal GDP moved up to around 20 percent (Figure 22), both the highest figures since the first Oil Crisis. It is a widely shared view that this surge in investment was based on high growth expectations, especially that at the micro-level, that is, entrepreneurs tended to believe that demand growth for *their* industry, at least, would remain high (Figure 23).

However, as these growth expectations were revised downwards (from close to 4 percent to barely above 2 percent: Figure 23 above), growth in capital stock, and the ratio of business fixed investment to nominal GDP declined remarkably. The fact that the capital utilization rate remained low throughout the stock adjustment period (Figure 24) suggests that the period during which adjustment pressure was apparent was prolonged by the excessive investment that occurred during the last stage of the bubble period.

2. Adjustment in Stock of Structures

One of the significant characteristics of the bubble period is that the expansion of capital stock appeared particularly in investment in structures (Bank of Japan, Research and Statistics Department [1997]). A typical example is the large increase of floor space in the Tokyo Metropolitan Area, triggered by the increase in demand for high-quality office buildings that took place in the late 1980s. Construction of a number of large office buildings with long building periods was begun in 1990-91, the very last years of the *Heisei* boom, prolonging the capital stock adjustment process that followed.[10]

B. Balance Sheet Adjustment and Deterioration of Financial Intermediation

The bursting of the bubble initiated not only capital stock adjustment but also balance sheet adjustments, as companies' assets lost their value and/or became non-performing. The other side of the same coin was the growth in the number of debtors who became unable to honor their debts. Thus non-performing assets became a serious problem for financial institutions and eroded their capital base. This means that the risk-taking capacity of the financial institutions deteriorated; in other words, the banks' financial intermediary function deteriorated. Difficulty in bank borrowing for small and medium-sized firms that have only limited access, if any, to capital markets became a significant hurdle for recovery in investment activity.

1. The Magnitude of the Non-Performing Asset Problem

It is often emphasized that what made Japan's non-performing asset problem worse was the aggressive lending behavior of its banks in real estate-related industries: real estate development, the construction industry and non-banks. Such aggressive lending was triggered by the rapid increase in the land prices, as well as by the slow and incomplete deregulation of the financial system in the 1980s.[11] True, rapid asset price inflation during and after the progress of financial liberalization have been observed elsewhere:

[10] Relating to this point, Yoshikawa and Kohara (1997) reported that construction in process in fixed assets, as a proxy for a large-scale fixed investment such as factory construction and other large building projects, increased remarkably in 1990-91. Based on such findings, they argued that complete adjustment of capital stock took a long time, since the lives of factories and buildings are longer than those of equipment.

[11] For example, Hoshi (2000) empirically examines the relevance of gradual and incomplete financial liberalization as one of the factors that caused the non-performing asset problem in Japan. In his study, it is shown that (1) the size of non-performing assets is largely attributable to the growth of real estate lending in the 1980s, and that (2) the growth of real estate lending was in turn caused by the experience of losing customers to capital markets.

cases in point are U.S. S&L and bank crises in the Nordic countries.[12] However, the magnitude of non-performing asset problems in Japan exceeded such experiences.

The upper panel of Figure 11 shows the movement of non-performing assets at major Japanese banks.[13] "Risk Management Loans" at end-March 1999 stood at ¥20.3 trillion (4.0 percent of nominal GDP), compared with ¥12.8 trillion (2.7 percent) in March 1993, notwithstanding the fact a large quantity of bad loans were written off.[14] Taking into account the latter, total amount of non-performing loans, i.e. risk management loans plus accumulated direct write-offs since fiscal 1992, reached ¥44.6 trillion (9.0 percent of nominal GDP) at end-March 1999, slightly above the level it had recorded at end-September 1999, or ¥44.3 trillion (8.9 percent). Although its growth has become marginal recently, the peak has yet to be confirmed.

Since the 1980s, the banking industry in many countries has experienced non-performing asset problems. For example, non-performing loans in the US (commercial banks insured by the Federal Deposit Insurance Corporation) increased in 1990-91, recording $117 billion (2.0 percent of nominal GDP) at the end of the second quarter of 1991 (Figure 25), and adding to that amount the sum of direct write-off since the last quarter of 1986, the accumulated amount of non-performing loans reached $251.2 billion (4.1 percent) .

Comparing the magnitude of non-performing asset problems across countries is difficult. However, is seems safe to conclude that Japan's non-performing loan problem was more serious than that experienced in the US.

2. The Malfunctioning of Financial Intermediation and its Macroeconomic Impact

The increase in non-performing assets in the banking sector exerted a considerable negative impact on macroeconomic activity through the deterioration of financial intermediation.

Recent literature on banking under conditions of asymmetric information provides a useful viewpoint from which to examine issues regarding the malfunctioning of financial intermediation.[15] The informational asymmetry between borrowers and lenders creates market imperfection by generating agency costs, which Bernanke and

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[12] Okumura (1999), for instance, referred to a conference paper authored by IMF economists, which pointed out the following three common factors behind the banking crises that coexisted in those countries under financial liberalization: (1) insufficient internal governance, such as weak discipline by the management within financial institutions; (2) weak market discipline, such as insufficient monitoring of financial institution management through market forces; (3) inadequacy of the financial regulation, supervision, and examination by the authorities.

[13] Major banks include City Banks, Long-term Credit Banks, and Trust Banks.

[14] "Risk Management Loans" include (1) loans to borrowers in legal bankruptcy, (2) past due loans in arrears by three months or more, and (3) restructured loans.

[15] For the standard analytical framework for discussing the macroeconomic effects of financial intermediation, see, for example, Chapter 6 of Freixas and Rochet (1997).

Gertler (1995) called the external financing premium. The size of this premium depends on the borrowers' financial position. The amount of bank lending, and thus the investment decisions of firms in general, and of bank-dependent small and medium-sized firms in particular, are very sensitive to their financial positions.[16]

Based on this theoretical argument, we summarize Japan's experience in the 1990s as follows. First, in the companies sector, the decline in asset prices lowered the net worth of firms and raised agency costs with regard to their external financing. Second, in the banking sector, the continuous land price slide and prolonged economic stagnation amplified their non-performing asset problem and weakened their financial intermediary function, with the resultant credit crunch imposing an additional hindrance to business investment.

The results of the existing studies tend to support the view that: First, the decline in asset prices restricted firms' investment behavior throughout the 1990s, by causing a deterioration in their balance sheet and net worth, magnifying agency costs, and thus aggravating their credit constraint (Gibson [1997], Suzuki and Ogawa [1997], and Ogawa and Kitasaka [1998]);[17] Second, major banks began to attach greater importance in the post-bubble period to the profitability of loans to non-manufacturing and small and medium-sized manufacturers, reflecting the increase in agency cost as a result of the decline in asset prices (Ogawa an Kitasaka [2000]); Third, especially since the fall of 1997 when concern over the stability of the financial system mounted, non-performing assets eroded banks' capital bases and aggravated the malfunctioning of financial intermediation, which appeared as a credit crunch (Horiye [1999], Motonishi and Yoshikawa [1999]).[18]

To sum up, the decreased functioning of financial intermediation restrained business fixed investment throughout the 1990s, to some extent. Such effects have manifested themselves in a particularly noticeable way since 1997.

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[16] Bernanke, Gertler and Gilchrist (1996) refer to the amplification mechanism of initial shocks through changes in credit market conditions as the "financial accelerator." Changes in cash flow and asset prices arise from cyclical movements in firms' net worth, affecting agency costs and thus credit conditions, and then affecting firms' investment behavior.

[17] In particular, the effects of the malfunctioning of financial intermediation appear asymmetrically between large firms and small and medium-sized firms, reflecting the difference in degree of bank-dependence. Empirical studies that focus on the asymmetric effects resulting from differences in firm size indicate that credit constraints became more serious in the small and medium-sized firms, which find it more difficult to gain access to capital markets and are thus highly dependent on bank lending.

[18] Motonishi and Yoshikawa (1999) estimate the effect of financial factors, using the BOJ's Tankan diffusion index of bank lending attitudes as a its proxy for business fixed investment by non-manufacturing and small and medium-sized firms, and argue that business fixed investment and real GDP are lowered by 10 percentage points and 1.6 percentage points, respectively.

IV. Monetary Policy Responses

We now turn to the very tentative evaluation of monetary policy responses to developments in the 1990s. In evaluating the validity of policy responses, we think it is of utmost importance to weigh what was (or was not) achieved against the explicit and potential costs, as well as to examine the political and social environment policymakers had to face. This is even more the case because the period under review was a most unusual one in that it occurred in the midst of a collapse of the bubble economy.

We first examine the timing of policy change, then the tempo and scale of monetary easing.

A. What Monetary Policy Achieved

An obvious achievement of monetary policy during the years under consideration is that while Japan was faced with a tremendous decline in asset prices, which came close to that experienced in the US during the Great Depression, the CPI has so far remained stable. In other words, a rapid and self-sustaining price decline known as deflation, as was experienced in the US during the Great Depression (Figure 26), has been successfully avoided.

In fact, as a result of the BOJ's historically unprecedented accommodative monetary policy, interest rates in Japan have recently declined more rapidly and to a lower level than in the US during the Great Depression (Figure 28). There is no doubt that this policy contributed considerably to the prevention of monetary contraction and deflation as was experienced in the US during the Great Depression (Figure 26). However, it is also obvious that Japanese economy has remained stagnant for a long time. Was monetary policy responsible for this long-lasting economic slump, and if so, to what extent?

Growth of monetary aggregates (M2+CDs) cannot answer this question. True, it has remained low, and it has recently been hovering at around 2.5 percent per annum.[19] However, as a result of the BOJ's accommodative monetary easing, it has risen, slowly but steadily, while real annual GDP growth remained virtually flat at around 1 percent.

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[19] The characteristics of economic stagnation during this period have been clearly observed in the contributing factors for monetary aggregates. In this regard, Shirakawa (2000) stated as follows:

> "Looking at the change in the assets of financial institutions corresponding to the above increase in money supply, their loans to the private sector have grown only 6 percent, significantly lower than the 62 percent increase in their credit (bond purchases, etc.) to the government. Needless to say, reductions in interest rates by the BOJ will not automatically lead to an increase in money supply unless financial institutions respond to such rate cuts. Money supply will only grow if financial institutions engage in credit creation activities in response to declines in interest rates, i.e., making loans to firms after appropriate assessment of their borrowing plans, and also investing in securities. A small increase in loans to the private sector, which is in sharp contrast to credit extended to the government, vividly illustrates that financial institutions have had few profitable lending opportunities given their risk taking capacity."

We have to examine in somewhat more detail the adequacy of the timing of policy reversal, and the speed and size of monetary easing.

B. Was Monetary Reversal to Easing Delayed?

The first move towards monetary relaxation after the bursting of the asset price bubble was the official discount rate cut in July 1991 (6.0 → 5.5 percent). Critics of the BOJ argue, with the benefit of hindsight, that this move was "too late and too timid" and failed to prevent an "overkill" of the economy. In the following, we examine whether the timing of that monetary policy change, i.e. the switch from a tight to an easy monetary policy, was appropriate. Then we examine the tempo and magnitude of policy responses.

1. Timing

The BOJ's first step toward monetary easing was the cut in the official discount rate from 6 to 5.5 percent in July 1991, which was followed by four successive cuts that brought the rate down to 3.25 percent by 1992. The official discount rate was thus reduced by a total of 2.75 percentage points in a period of one year.

How should we evaluate the adequacy of the timing of policy reversal? The Japanese economy had marked a peak in February 1991, according to the reference dates of business cycles that the EPA set retroactively.[20] CPI inflation had peaked in the first quarter of 1991 (when consumer prices increased by 3.2 percent from a year earlier), and kept rising by more than 3 percent per year until the third quarter of 1991. We have also to take into account that the Gulf War had just ended in February 1991, and its lagged impact on prices was not yet certain.

Against this background, it should be fair to conclude that it is difficult to make a strong case against the timing of the policy reversal, especially taking into account the time lag with which macroeconomic indicators became available to policymakers.

2. The Speed and Magnitude of Monetary Easing

How, then, about the tempo and magnitude of monetary relaxation? In the following, we will try to tackle this harder question basing ourselves on four criteria: monetary aggregates, so-called "Taylor rule," equity yield spread, and real short-term interest rates.

d. a. Monetary Aggregates

As Okina (1993) pointed out, judgment on the growth rates of monetary aggregates should differ depending on whether the preceding phase was a normal situation, or a

[20] The committee on defining the reference date of business cycles tentatively set a peak at April 1991 in November 1993, then they finalized a peak at February 1991 in July 1996.

period of excess supply. In this context, we have to bear in mind that M2+CDs had shown double-digit growth rates in the late 1980s.

We therefore focus on the Marshallian k (the inverse of the velocity of monetary aggregates) —i.e. the ratio of monetary aggregates to nominal GDP—in terms of both M2+CDs and the monetary base, and compare its movement with the historical trend computed for the period of 1970-86 (Figure 27)[21].

Marshallian k in terms of M2+CDs started to exceed its historical trend (excess in monetary aggregates) from 1987, when the growth rate of M2+CDs reached double digits. The upward deviation peaked in 1990. While k started to decline rapidly soon after the collapse of the asset price bubble, deviation from the trend has remained constant since end-1992. Thus the Marshallian k in terms of M2+CDs had been consistently exceeding the historical trend.

Marshallian k in terms of monetary base, similar to that of M2+CDs, showed significant upward deviation from its historical trend during the bubble era, and peaked in 1990. Then, following a temporary contraction of upward deviations up to 1992, the deviation began to widen further due to the growth in demand for banknotes, which is a major component of the monetary base, reflecting the decline in opportunity cost of holding cash balances.

It is difficult to argue by using these charts that the volume of monetary aggregates was insufficient;[22] on the contrary, ample liquidity was provided.[23]

The fact that the upward deviation from its trend of the Marshallian k in terms of monetary base has expanded steadily since 1992, while that in terms of M2+CDs remained unchanged from 1992 to 1996 and temporarily declined to trend level in 1997 seems to indicate that the increase in monetary base failed to exert a positive effect due to the malfunctioning of the financial intermediation system.[24]

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[21] Series of monetary base is adjusted for the impact of changes in reserve requirement rates.

[22] However, as we point out in footnote 19, the change in the assets of financial institutions corresponding to the increase in monetary aggregates came mainly from increased holding of the Japanese government bonds, while their loans to the private sector were stagnant. In this sense, the effects of balance sheet adjustments were significant, and the impact of the increase in monetary aggregates was dampened.

[23] Looking at the diffusion index of the lending attitudes of financial institutions, which is a rather subjective judgmental indicator, it turned to an accommodative direction soon after the transition to a policy of monetary easing. Finical conditions for firms were not so tight, except for the period from the fall of 1997 to 1998, when the impact of the credit crunch was accentuated.

[24] It should be noted that the decline in the money multiplier in 1999 mainly reflects the excess monetary base under the zero interest rate policy that reduced the opportunity cost of holding excess reserves. In fact, although the financial crisis was accentuated in 1997-98, such concerns subsided in 1999 as a result of the fact that the Japanese government adopted a reactive policy, including an increased infusion of public funds.

e. b. Taylor Rule

We now examine the speed and size of the reduction in short-term interest rates with reference to the second criterion, the policy reaction function based on the Taylor rule (Taylor [1993]).[25]

We compare the movements of the call rate with that of the target rate, which is derived using Taylor-rule policy reaction function, starting from the second quarter of 1991, when the call rate peaked (Figure 29).[26] We assumed two types of parameters in applying the Taylor rule: one lays similar weights on both the inflation rate and GDP gap (the parameters for the inflation rate and GDP gap are 1.5 and 1.0, respectively), the other much greater weight to the inflation rate than on the GDP gap (2.0 and 0.3).[27] We also assume the two formulas of the Taylor rule, i.e. both with and without interest rate smoothing (partial and perfect adjustment mechanisms), where the adjustment parameter of the former is assumed to be 0.85.

The call rate declined approximately six percentage points from the second quarter of 1991 to the first quarter of 1994. During the same period, target rates derived from the Taylor rule declined six to eight percentage points, according to the model. The pace of decline in the target rate was faster in the case in which similar weights were applied to the inflation rate and the GDP gap. In general, the deviations between call rate and estimated target rate remained relatively limited.

The results suggest that we may rate monetary policy as having responded properly to external shocks on inflation and GDP as captured by the Taylor rule.

f. c.Equity Yield Spread

The third criterion is the movement of equity yield spread relative to that of the interest rates.

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[25] Meyer (2000) emphasized that the Taylor rule is an attractive and simple guidepost for the conduct of a discretionary monetary policy, because it "responds directly to deviations from the Federal Reserve's objectives–price stability and an equilibrium utilization rate" as well as because "it incorporates a preemptive response to inflation" and "is closely aligned both with the objectives of monetary policy and with the model that governs inflation dynamics." However, it should be noted that one important assumption for the Taylor rule is that the potential growth rate remains unchanged, and this assumption might not always hold. In fact, Orphanides *et al*. (1999) pointed out that measurement errors in the GDP gap, stemming from *ex post* revision of the statistics, are so large that policy judgment could be different if real-time data were used instead of the *ex post* revised data. Although, the impacts of measurement errors in the GDP gaps are not examined in Japan, the *ex post* policy evaluation based on Taylor rule is not free from this kind of criticism based on hindsight.

[26] Since we compare the cumulative reduction in interest rates from the second quarter of 1991, our simulation results are unaffected by the parameter assumptions in the Taylor rule, such as those of equilibrium real short-term interest rate and target inflation rate.

[27] Parameters for the Taylor rule are taken from Kimura and Tanemura (2000) and Bernanke and Gertler (1999). However, it should be noted the later estimation is conducted with monthly data, thus it employs the deviation of the index of industrial production from its trend instead of the GDP gap.

An important mechanism that brought the asset price bubble to an end is that the process by which a decline in expected growth adjusted for risk premium, caused by either a lower expected growth rate or a higher risk premium, or both, has effects similar to those of a rise in interest rates: both lower expected growth rate and higher risk premium raise the effective cost of funds even though nominal interest rates remain unchanged.

Against the backdrop of extremely bullish sentiment during the bubble expansion period, a marginal increase in interest rates did not much alter private expectations regarding the future course of the economy. In order to have some meaningful impact in such a situation, any rise in interest rates had to be large enough to influence private expectations. On the contrary, even if the initial impact of a rise in interest rates was insignificant, it would start "biting" seriously once private expectations were reversed, since the original impact of higher interest rates would become amplified by the effect of revised growth expectations.

The equity yield spread provides a useful proxy for private expectations regarding economic growth (Figure 30).[28] It widened even after the monetary policy stance was tightened in 1989; it was only in the fall of 1990 that the yield showed the first signs of contraction. The spread shrank rather rapidly thereafter: it had declined by two percentage points by the end of 1990, and by a further two percentage points after monetary policy moved towards easing in July 1991.

It is thus possible to argue that the speed and magnitude of monetary easing up to 1992 was broadly in line with this movement of the equity yield spread. That is, the official discount rate was lowered five times to 3.25 percent from 6 percent by 2.75 percent points during the period from July 1991 to July 1992.

However, one may also point out that the equity yield spread had declined by 2 percentage points prior to the shift in expansionary policy. In light of the aforementioned view, it is possible to argue that the effect of higher interest rates becomes amplified when public expectations are revised downwards. Thus, it might be the case that a sharper rate cut was required after July 1991, when the monetary policy stance was reversed towards easing.

g. Real Short-Term Interest Rate

As a fourth yardstick, we compare, as suggested by Blinder (1998), real short-term interest rates with a benchmark, or "neutral," real interest rate which we obtained from long-run historical data.

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[28] As Okina, Shirakawa, and Shiratsuka (2000) point out regarding the period of expansion of the asset price bubble, it is not important to decompose the effects of the lower expected growth rate and of the increased risk premium, since both affect asset prices in the same direction so that asset prices will decline.

As the neutral real short-term interest rate, we chose the average *ex post* real interest rate, that is the official discount rate minus realized year-on-year consumer price inflation during the period 1883-1986.[29] We obtained a neutral real short-term interest rate of 2.85 percent by excluding as extraordinary the period around World War II, and 1.72 percent if we exclude the observations when of real interest rate exceeding 10 percent in absolute terms (i.e. over 10 percent or under minus 10 percent). In the following evaluation, we assume that the "true" neutral real short-term rate should lie somewhere between these two estimates.

Real short-term rates remained relatively high at around 5 percent after the bursting of the bubble (Figure 31), but they gradually began to fall after July 1991, when the government's monetary policy stance was reversed, and declined to around 4 percent by end-1991. It then accelerated on its downward trend and by mid-1992 was fluctuating at around 2 percent, or approximately the lower bound of the "neutral rate zone." Real short-term interest rates continued to fall; from late-1993 to mid-1994 they remained well below the neutral rate zone. Real rates briefly rose to the lower bound of neutral rate zone in early 1995, but again fell sharply to 0.5 percent, reflecting the monetary easing adopted to cope with the rapid yen appreciation that occurred during the first half of 1995.

In retrospect, this movement of real short-term interest rates could be interpreted as follows. The real interest rate had to be kept 2 percentage points above the neutral rate for more than one and half years in order to offset the inflationary pressure of the *Heisei* boom. Such a high real rate was, then, adjusted smoothly to the neutral level along with the transition to easy monetary policy in mid-1991. However, the downward movement of the real interest rate slowed down thereafter. Moreover, during mid-1994 and early 1995, real short-term interest rates instead moved upwards to the neutral level, since the inflation rate went down while nominal interest rate was flat.

As non-performing loan problems in US financial institutions came to the fore and the credit crunch became serious, the Fed left the real short-term rate below the neutral rate from end-1991 to mid-1994; especially in the first half of 1993 it was about zero or even negative (Figure 32). Such US experience, if compared with that of Japan, might suggest that in order to cope with deflationary pressure amplified by the collapse of asset price bubbles some additional monetary stimulus would have been useful.

h. e.Evaluation of Policy Reactions: a Tentative Summary

Let us sum up the discussion on the evaluation of policy reaction based on our four criteria. The results are rather mixed.

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[29] Before the 1980s, deposit and loan rates were linked to the official discount rate under the system of regulated interest rates. Therefore, the historical series of the official discount rate could be reasonably used as a benchmark for evaluating the call rate that was the central policy instrument in the 1990s under conditions of liberalized financial markets.

First, the movements of monetary aggregates hardly suggest that the volume of monetary aggregates was insufficient if compared with the level of nominal GDP at that time. We may also argue quite safely on the results of Taylor-type reaction function that the speed and size of monetary easing were broadly adequate in the light of the then prevailing business conditions and inflation indicators. It seems appropriate to say that the reaction of monetary policy was rather swift to the extent it was taken against the background of a normal business contraction with stock adjustments, in spite of economic and social environment at that time that made it difficult to reverse the policy direction toward monetary easing. However, looking at the equity yield spread, it is not impossible to argue that the degree of monetary easing was insufficient for offsetting the initial shock of the burst of the bubble before the reversal of monetary policy. In addition, an examination of the real short-term interest rate might suggest its decline was not sufficient for coping with the balance-sheet adjustment pressures that became evident later on.

C. Summary of the Tentative Evaluation

Based on the above analysis, we will summarize our very tentative evaluation of monetary policy responses after the bursting of the bubble.

1. Evaluation of the Monetary Policy Response

First, in summary, what our analysis above suggests is that: (1) the timing of policy reversal was swift; (2) with the benefit of hindsight, however, it is possible to argue that the degree of monetary easing corresponded to an economic setback in an ordinary stock adjustment phase, but not necessarily in an extraordinary recession; in other words, the negative effects of the collapse that later became evident may have been underestimated at that time.

Some caveats are in order here. Our appraisal depends on some mechanical application of simple yardsticks; thus there are limitations in evaluating the adequacy of policy decisions based solely on real-time information. Any bubble can only be identified for certain as a bubble after it has definitely burst. It is close to impossible to foresee with any precision in the early stages of the crash the magnitude of adjustment pressure it will bring forth.

In addition, we have to take into account that public sentiment against the asset price bubble, and the desire for "bubble-busting" that then existed, formed a social background against which it was difficult to pursue an even more drastic monetary easing.[30] The BOJ is not, and should not be a dictator. It is a central bank in a

[30] For example, the former BOJ Governor Mieno, who took his office in December 1989 and proceeded with monetary tightening from the start, was named "Heisei's Oni-Hei" by a well-known critic. *Oni-Hei* was the nickname for Heizoh Hasegawa, who was Chief of the security police during the 1780-90s in the *Edo* period . A gang of thieves in those days was afraid of him, since he enforced crackdowns against

democracy, which is not able to pursue a policy without some degree of understanding and support from the general public.

Our conclusion is, therefore, that the monetary easing that was implemented in the aftermath of the bursting of the asset price bubble should, especially if the then social sentiment prevailing is carefully taken into account, be assessed as broadly adequate as a response to the economic setback in a normal stock adjustment cycle.

However, in order to draw lessons for future central banking, we felt it useful to extract factors that might have been underestimated in the real-time decision-making process, but, with the aid of hindsight, were of importance in foreseeing the precise magnitude of the adjustment pressure. We focus in what follows on the negative effects of balance sheet adjustment, the magnitude of which seems not have been recognized in its entirety in the early phase of the recession.

2. Delayed Recognition of Balance Sheet Adjustment

In retrospect, it is possible to point out several misperceptions about the mechanism of balance sheet adjustment at the time.

First, it was not correctly recognized that while "debts always remain, assets may become lost." This was partly because the vast majority of people, including policymakers, believed, up to a certain point in time, that "asset prices, even if they decline now, will recover in due course."[31] Second, it was not correctly understood what kind of mechanism might be triggered when asset prices decline while the nominal value of debt is held constant.[32]

A possible explanation of this lack of understanding may have been something that could be called tacit dominance of the "zero-sum fallacy," i.e. that capital gain and loss should offset each other, and thus be neutral with regard to economic activity as a whole. A capital gain, even if it is unrealized, corresponds to an increase in net worth. However, once such capital gain has stimulated expenditure—via the wealth effect on consumption—or has been used for aggressive capital investment with debt-financing, and these expenditures turn out to be "excessive" *ex post*, or in plain words, wasted, the

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them as a devil, or "*Oni*" . This episode clearly indicates that the public felt that "bubble-busting" was a right-minded act even from an ethical viewpoint.

[31] For example, Nishimura (1999) recollects: "Even the unprecedented land price decline in 1974 subsequent to 'the Plan for Remodeling the Japanese Archipelago' continued for just a year and was limited to five percent. When we observed a sign of land price decline in September 1991, most people believed that land prices would soon recover, recollecting their experience of 'the Plan for Remodeling the Japanese Archipelago.'"

[32] In the early 1990s when credit crunch was a big issue of debate in the U.S., it seemed that even the FRB lagged behind in recognizing the mechanism of balance sheet adjustment. In fact, although FRB cut the interest rate by quarter basis points in January 1991, subsequent to the previous cut in the end-1990 by quarter basis points, growth rate of bank asset remained at just one percent. However, FRB Chairman Greenspan begun to emphasize the impacts of balance sheet mechanism in fall of 1991, by using a metaphor of "fifty mile per hour headwinds." For the details of the situation at that time, see, for example, Beckner (1996).

subsequent decline in asset prices will end up as "negative-sum," not "zero-sum." This comes close to what happened in Japan in the last two decades.

It may also not have been well recognized that the adjustment cost of the bursting of the asset price bubble may increase as the adjustment process is prolonged. Since the bursting of a bubble occurs as a consequence of the emergence and expansion of that bubble beforehand, some kinds of adjustment are inevitable. However, the policy implications might differ depending on whether one believes that "adjustment costs are constant" regardless of policy responses, or, instead, supposes that adjustment costs may increase as policy are delayed, because non-performing assets will pile up due to the deterioration in business conditions. In the latter case, speed of decision and implementation of policy reactions also matters, even if the same policy packages are established.

3. What Monetary Policy Alone Cannot Do

However, it is difficult to imagine that the outcome would have differed greatly even if the drastic monetary easing that eventually took place had been decided at an earlier point in time. Monetary easing alone would not have been able to make things much better without having devised a fundamental cure for the non-performing asset problem, which was hindering the smooth functioning of financial intermediation, as the deviation between monetary base and M2+CDs indicates. As described earlier in this paper, the magnitude of the non-performing asset problem in the aftermath of the bursting of the bubble was unprecedented. If one takes into account the significant role this problem played in prolonging the stagnation, it seems obvious that there was a limit to the extent to which monetary policy would have been capable of stimulating the economy on its own. What the US experience in the early 1990s tells us is that the disposal of non-performing assets played a role as important in supporting the economy as the monetary easing that pushed the short-term interest rate down to zero.

As we examine in detail in the next chapter, it was considered in Japan that the cost of pursuing a fundamental cure for the non-performing asset problem in a phase of recession would have been enormous, and, as a result, both the government and the BOJ decided to implement a series of fiscal and monetary stimulus measures, which they considered easier to enforce in the short run. In retrospect, one can say that Japan has opted to absorb the impacts of the shock, with the aid of macroeconomic policy and prudential policy, over a lengthy period. Any assessment of this choice, however, has to take carefully into account, first, whether or not it would have been possible to accelerate the adjustment process, and second, what were the costs and benefits of prolonging the adjustment phase.[33]

[33] It should be noted that macroeconomic policy possessed some aspect of "buying-time" to hide the gravity of the non-performing asset problem, making it possible for regulatory authorities to gain time.

V. Prudential Policy Responses

As we indicated at the end of Chapter IV, to understand the background of Japan's stagnant economy in the 1990s, it is not enough to consider the monetary policy responses, but prudential policy also has to be examined. In Japan, prudential policy has been conducted by the co-operation between the financial supervisory authority and the BOJ. In this paper, the "financial supervisory authority" mainly refers to the Ministry of Finance. From June 1998 onward, it refers to the Financial Supervisory Agency and the Ministry of Finance.[34]

A. What Prudential Policy Achieved

The BOJ's prudential policy has been criticized from various viewpoints. The most important of such criticisms is that the BOJ is responsible for the huge costs entailed in resolving the non-performing asset problem of financial institutions, because it chose a buy-time policy, in co-operation with the financial supervisory authority, in order not to let the problem materialize at an earlier stage

It should be noted, however, that the BOJ's ultimate goal in its prudential policy is to maintain the stability of the financial system. Considering the importance of preventing systemic risk in fulfilling this mission, it should be counted as a significant achievement that the materialization of systemic risk in the form of a contagious bank run (or collapse of the financial system) has been avoided, in spite of the lack of a comprehensive safety net and established bankruptcy procedures to handle with institutions in trouble. This helped, in conjunction with monetary easing, to prevent the Japanese economy from being trapped in a serious deflationary spiral. In assessing prudential policy we should always bear in mind what other alternative measure were available, and at what potential cost.

B. Non-Performing Loans and Prudential Policy

An important issue in discussing the costs incurred by the non-performing asset problem in Japan is the length of time it took to resolve it.

The fundamental reason why it took a long time to deal with the problem was the delay in introducing bankruptcy procedures to be applied to institutions that got into trouble, and in constructing a comprehensive safety net to enable problems to be tackled according to their severity. In fact, for a long time burden-sharing within a financial sector grouping had been virtually the only measure available to the authorities for resolving the problems of failed financial institutions (For details of the incidents that

[34] Some financial institutions other than banks, such as credit cooperatives and federational credit associations, are supervised by the local government or the Ministry of Agriculture, Forestry and Fisheries.

occurred and the measures taken with regard to financial system stability, please refer to Table 3).[35] A host of factors are offered as having formed the background to the delay in constructing the bankruptcy procedures comprehensive safety net.[36] As we will illustrate in the following sections, various factors were intertwined and made the problem complex and difficult to deal with.

1. Why the Settlement of the Problems of Failed Financial Institutions was Prolonged

No matter whether losses incurred by a failed institution are imposed on large depositors and investors, or the money of the depositors and investors is totally protected by some comprehensive safety net, it is close to impossible to obtain public support for closing banks without the disclosure of the whole picture of the true state of the non-performing asset problem and banks' business conditions.

On the other hand, given that a huge amount of non-performing assets already existed and bankruptcy procedures against troubled institutions and comprehensive safety net were not established, disclosing information on the problem might have aroused serious concern over the financial system, and may thus have triggered a systemic crisis. Suppose that a bank becomes unable to keep itself alive on its own. In such a situation, the financial supervisory authority, if it wishes to avoid a systemic crisis, is left with the sole option of providing the troubled institution with enough liquidity to buy time. The bought time is used for the bank to make provision against non-performing assets with its operational profits and the gains realized from its securities holdings, or to find someone willing to take over the bank that is in trouble, with or without public financial support. This comes close to what happened in Japan.

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[35] A standard criticism against the way problemed banks were dealt with after the bursting of the bubble is typically indicated in Shimizu and Horiuchi (1997): financial liberalization reduced the 'franchise value' of banks (banks' unreproducible illiquid assets, such as the long-term relationship between banks and their depositors and borrowers whose value can be maintained only if they are a going concern) so that the banks could not find an economically rational incentive to rescue or merge troubled financial institutions but the financial supervisory authority did not stop relying on burden-sharing among financial institutions. While this view has some relevancy, the authors of this paper believe that the underlying reason was the delay in introducing bankruptcy procedures for troubled institutions and in constructing a comprehensive safety net.

[36] For example, Yoshitomi (1998) (pp.136-137) pointed out that there was a kind of implicit consensus among bank management, the financial supervisory authority and politicians, all of whom had an incentive to shirk their responsibility, on the postponement of settlement of the non-performing loan problem. In other words, bank management, the financial supervisory authority, and politicians all had an incentive to postpone an injection of taxpayers' money into the banking sector, which was a necessary measure for depositor protection as well as for an early settlement of banking system instability, for fear of being blamed for it: (1) banks' management would be blamed for their mismanagement and be requested to restructure; (2) the financial supervisory authority would be blamed for insufficient monitoring; (3) politicians would be criticized for having used taxpayers' money to rescue the banks. There are other points to be criticized, including a conflict of interest within the Ministry of Finance between the financial regulatory function and the government budgeting and taxing authority that are both

During this process, information on the magnitude of the non-performing asset problem and the soundness of individual banks and the banking sector as a whole was kept within limited circles, including the financial supervisory authority and the Bank of Japan; disclosure to the public occurred only gradually. Naturally, market discipline could not work effectively in that situation. Even a bank on the verge of bankruptcy would not come under the pressure of market forces, such as a drastic decline in its stock price or a downgrading of its credit worthiness, or difficulty in meeting its funding needs. Since financial institutions were able to maintain their operations as far as they were managing to meet their funding needs, what was then predominant was something like a state of fallacious stability. Without sufficient information, there existed no strong criticism of this situation.

This fallacious state of stability made it possible to prevent systemic crisis. At the same time, however, it considerably weakened the momentum needed for establishing bankruptcy procedures for institutions in trouble and for constructing a comprehensive safety net. It was the very success of buying time that forced the authorities to buy more time, and thus the whole process of handling the non-performing asset problem was prolonged.[37]

2. The Buy Time Policy and the Dominating View regarding Economic Recovery and the Development of Asset Prices

A natural and legitimate criticism that arises here is that the financial supervisory authority should have organized the framework required for coping with the problem much earlier. The reality was that up to a certain point both the financial supervisory authority and management of financial institutions seemed to have expected the economy and land prices to recover before long. If that were the case, the non-performing asset problem would have been fixed without any special treatment. In

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the responsibility of that one ministry, and the government's underestimation of the increase in non-performing loans that had occurred due to the non-repayment of interest on existing loans.

[37] Of course, the financial assistance function of the Deposit Insurance Corporation, which was introduced when the Deposit Insurance Law was revised in July 1986, could have been implemented, and it was actually applied when the troubled Toho Sogo Bank was merged with Iyo Bank in 1992. However, financial assistance was conditional on the merger and on the passing of a special resolution at the shareholders' meetings of both the closing bank and the assuming bank, so a lack of flexibility restricted implementation of this function. Because of this limitation, it could only be used as a component of the total package that was agreed by the banks that assist or rescue the failing bank, or involved loss-sharing within the industry. In particular, the Deposit Insurance Corporation's financial assistance function was restricted to situations in which the bridge bank was available and its assistance was limited to the payoff cost, both of which seemed to be definitive limitations restricting the implementation of this function. The Deposit Insurance Law was amended in June 1996 to enable the Corporation to extend financial assistance to cases that involved sums that exceeded payoff costs; in order to in order to finance the additional cost, the deposit insurance premium was increased. At the same time, the framework of depositors' protection afforded by public funds was also introduced, but only for cases of failure of credit cooperatives. However, the depositor protection framework that dealt with failed banks still faced limitations such as the Deposit Insurance Corporation's weak financial condition and the continuing lack of bankruptcy procedures for banks.

particular, land price was the key element that decided the volume of non-performing assets, since small and medium-sized enterprises and non-bank financial institutions had heavily invested in real estate with the money borrowed from banks during the speculative bubble years.

To be fair, it should be pointed out here that the authorities and the bankers were not alone in expecting an early recovery in economic activity and asset prices. In fact, their expectation was broadly shared in the early phase of asset deflation.[38] The "myth of ever-rising land prices," which had dominated the bubble economy, survived in the sense that for a fairly long time after the bursting of the bubble it was still widely believed that land prices would recover once the necessary adjustment phase was over.

3. Costs and Benefits of the Buy-Time Policy

When it became quite clear that the expectation of recovery in land prices was a fallacy, the main purpose of the buy-time policy changed. Its aim was now to secure enough time for bringing realistic bankruptcy procedures to be applied to troubled financial institutions into law and establishing a reasonably comprehensive safety net. In retrospect, these goals were not realized until after the collapse of some major financial institutions had brought us to the brink of a systemic crisis.[39]

How should we interpret this sober fact? It is possible to argue that some broad public consensus needed for establishing a comprehensive safety including the injection of public funds into financial institutions would never have been attained without a quasi-crisis such as the one that actually occurred after the collapse of major financial institutions. If one inclines to this view, the conclusion is that the benefit of buying time was rather limited.

However, it is also possible to present an alternative interpretation. The financial supervisory authority and the BOJ, while adopting a buy-time policy, had liquidated a number of failed financial institutions, albeit mostly relatively small ones, without causing a systemic crisis. The experience they accumulated in this process helped them considerably in containing the financial turmoil that erupted in the aftermath of the failure of major institutions to the limited proportions of a quasi-crisis, and prevented its deterioration into a real crisis.

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[38] In the preface to the *White Paper* on the development of the Japanese Economy in the fiscal year 1991 (published in July 1992), it was said that the impact of bursting of the bubble economy was not so great, so the economy would recover in the latter half of 1992 because of the restructuring of the enterprises and accommodative economic policies.

[39] Cargill, Hutchison, and Ito (1997) claimed that the first turning point away from the buy-time policy was the resolution of the problems of the Tokyo Kyowa and Anzen Credit Cooperatives in December 1994, which involved the establishment of Tokyo Kyodo Bank. Supposing that this is the case, it means that it still required more three years to realize a fundamental change in prudential policy, namely the injection of the taxpayers' money into the banking industry, and it was decided after collapse of the major financial institutions.

It is obviously premature at this point to side definitely with either of these two views, and aver whether there was any benefit in buying time or not.

What about the cost of buying time? In a narrow sense, this can be measured as the increase in the costs entailed in dealing with the non-performing asset problem. In order to tackle this aspect, we have to explore how, for example, land prices would have moved if the non-performing asset problem had been settled and the financial intermediation function revitalized earlier.[40] Such an exploration is beyond the scope of this paper.

The cost, in a broader sense, is the negative impact of the non-performing asset problem on the economy. It could hardly be possible to deny that this cost had any significant effect, since it is quite obvious that the delay in revitalizing the financial intermediary function hampered recovery of the economy.

However, here we are faced again with a legitimate counter-argument. How would that cost compare with the damage a systemic crisis, the realization of which was circumvented in the end, might have caused? We have to confess that weighing the balance between the cost of delay in economic recovery and the cost of meltdown of the financial system is far beyond the ability of the authors of this paper, at least for the time being.

4. The Bank of Japan and the Buy-Time Policy

As regards the buy-time policy, the BOJ has been faced with the strong criticism that the bank had more information on the business conditions of financial institutions than the financial supervisory authority and should therefore have sent cautionary messages regarding the severity of the banks' non-performing loan problem at an early stage, even though the financial supervisory authority hesitated to do so.[41]

If the central bank had made public its own judgment prior to the supervisory authority, it would have caused some temporary friction but may have contributed to an earlier establishment of the necessary framework. In fact, Governor Hayami's warning in October 1998 that the capital ratios of 19 major Japanese banks were as low as the danger level actually contributed to the decision to inject public money into the banks under the Financial Function Early Strengthening Law.[42]

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[40] If an early settlement could have prevented the increase in non-performing assets caused by worsening financial and business conditions of the debtors, and thus have limited the continuous decline in land prices, then that would imply that the costs in a narrow sense incurred by the buy-time policy were quite high.

[41] For example, see Yamawaki (1998).

[42] The *Nikkei* (morning newspaper on October 6, 1998) article quoted an article in the *New York Times* (daily newspaper on October 5, 1998), in which it was said that Governor Hayami of the BOJ participated in an unofficial meeting between Finance Minister Miyazawa and Treasury Secretary Rubin (FED Chairman Greenspan also took part in the meeting) prior to the Group of Seven official meeting held in Washington DC in early October 1998, and that Governor Hayami explained that "the capital ratios of 19 major Japanese banks were as low as the danger level." Since this article led to a widening of the Japan

However, this is a rather delicate matter. It is also possible that this kind of central bank warning might have aroused excessive fear in the financial markets, and caused a panic reaction similar to that which was observed on Black Monday in October 1987, or even worse, have triggered a series of bank runs. In the aforementioned episode, Governor Hayami was taking a risk, quite legitimately, in order to urge an early capital injection to ensure the revitalization of the financial intermediation system; but he was heavily criticized that time. Panic in the financial system has a self-fulfilling nature. Even though warnings by the central bank are meant to accelerate the restoration of soundness of the financial system, there is always a considerable risk that it might make it difficult to avoid systemic risk, once the message is taken inappropriately. Should this fear materialize, the stakes are enormously high, especially if the safety net is not comprehensive enough to deal with imminent problems.

The inaction the BOJ chose could be interpreted to mean that it did not seek for a "best outcome if successful, however with high risk," but opted for a solution which could achieve only a "sub-optimal outcome but with relatively low risk."[43] In other words, the BOJ had judged that the potential systemic risk damage would outweigh the costs entailed by delayed economic recovery under the buy-time policy.

VI. Lessons

This section is a very preliminary attempt to evaluate the BOJ's monetary and prudential policies in the aftermath of the collapse of the bubble economy, and draw some lessons for future monetary and prudential policies.

The timing of policy reversal toward monetary easing was relatively swift, although the magnitude of initial easing was enough to offset a standard recession, not

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premium in the Eurodollar market and temporarily made the Japanese banks' foreign currency funding difficult, Governor Hayami was criticized: for instance, the chairman of the Japanese Bankers' Association said, "The Governor made a imprudent comment, even though it is true." In response to this criticism, Governor Hayami answered in the Diet session of October 7 that it was a misleading quotation based on a misunderstanding. He also explained that his comment on the banks' capital accounts was misunderstood as a comment on their capital ratios. Later, in the Governor's regular press conference of October 15, he reflected on the bill of Financial Function Early Strengthening Law drafted by the Liberal Democratic Party, which provided capital injection scheme of public funds, and said, "None of the banks is sufficiently capitalized. Hence, I wish the banks altogether would give a positive response to the scheme and apply for the scheme given by the Government that appropriates public funds for strengthening the banks' capital accounts."

[43] In the meantime, the BOJ took extraordinary measures for a central bank, including the provision of money involving credit risk similar to the capital supplied for the resolution of the problems of financial institutions. These measures later resulted in the imposition of losses on the BOJ, which is a point which should be considered in assessing the BOJ's policy response. One possible assessment is that this was inevitable for the BOJ in fulfilling its mission of avoiding materialization of systemic risk, given that bankruptcy procedures to deal with troubled institutions and a comprehensive safety net did not exist. Another claim is that the BOJ should have tried to make such a warning as mentioned above before it had been forced to respond by providing its money. This ends up with the question of how far the BOJ could commit itself to take risks when facing the possibility of materialization of the system risk.

an extraordinary post-bubble recession. The following accommodative monetary policy was historically unprecedented, and succeeded in avoiding the kind of deflationary spiral that occurred in the US in the 1930s.[44] However, when we review the post-bubble period as a whole, it is also true that the process of recovery in business conditions was still far from being satisfactory. It has taken a long time to dispose of the overhang of debt in the non-financial sector, which is the other side of the same coin of the accumulation of non-performing assets in the financial sector.

So what lessons can be learned? The first is that a central bank should, with great caution, recognize the importance of various pressures which tend to amplify ordinary business cycle movements. And when it does recognize some significant extraordinary pressures it should flexibly consider the need for additional action to mitigate them. Taking account of the fact that the non-performing asset problem hindered the smooth functioning of the financial intermediation system and thus prolonged economic stagnation, an even more accommodative stance might have been put into effect if we had been more confident earlier about the macro-economic implication of this problem.

Monetary easing of this nature can be characterized as a policy designed to "buy time", that is, to buy time until the structural policy bears fruit. In fact, when it lowered the official discount rate to 0.5 percent in September 1995, the Policy Board issued a statement stressing that such monetary easing would only be effective if it were accompanied by structural policies such as deregulation. It can not be emphasized too much that monetary policy may succeed in buying time for the necessary adjustments, but it cannot substitute for structural reform itself.

By easing monetary conditions aggressively and playing the role as lender of last resort to support the financial system in a decisive manner, the BOJ no doubt averted both deflation and financial panic, but at the cost of dampening the restructuring efforts of Japanese corporations and financial institutions. The fact that it did not take leading actions to disclose to the public the problems of the financial sector in its entirety contributed to insufficient support for legislative initiatives and budget outlays in response to bank failures. Moreover, mitigating immediate risks reduced incentives on the part of regulatory authority to adopt ultimate solutions. The BOJ was faced with an enormous dilemma.

In this regard, the second possible lesson concerns the importance of how the central bank should address such structural problems. In fact, most of the structural problems are "predetermined" for the central bank in the short-run, as are non-performing loan and government debt problems. However, from a somewhat longer perspective, it may be possible for a central bank to take some meaningful initiatives and to work on the parties concerned. It seems to be conducive for the central bank to participate more actively in the process of designing economic systems and working on

[44] Okina (1999) and McKinnon (1999) are based on this viewpoint.

the allocation of policy instruments to improve the effectiveness of macroeconomic policy as a whole.[45]

Take prudential policy, for example. Kane (1993) points out that the basic principles to minimize the cost of buying time for regulatory authority are as follows. First, to improve incentives for the regulatory authority, the consequences of regulatory choice must be made transparent enough for outsiders to monitor. Second, to this end, it is necessary to limit the responsibilities of the regulatory authority to monitoring and minimizing the systemic risk spread over the financial system as a whole.[46] Two issues emerge immediately from these arguments. First, an attempt should be made to make more efficient use of the disciplinary effect that market pressure provides in containing the excessive risk-taking behavior of financial institutions, and to design an incentive-compatible system to complement this market discipline.[47] Second, once the present exceptional state is overcome—i.e. when exceptional measures including the full guarantee of all the depositors at the expense of public funds become unnecessary—the public safety net should seek to minimize the coverage as long as systemic risk can be avoided.[48]

An immediate issue is how to evaluate the government decision to postpone the start of "pay-off" for one year, i.e. from April 2001 to 2002. Is that really necessary now that a quite comprehensive safety net has been provided, and there is growing understanding among the general public about the gravity of and nature of the non-performing asset problem? Since it will take some more time before the non-performing asset problem is fully solved, we should intensify positive discussion on how to restore the health of financial system as early as possible.

Japan's experience in the 1990s underlines the importance for the BOJ of participating actively in addressing structural problems, and of seeking better and more prompt understanding of the effects of shocks, including structural ones, on the

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[45] For the discussion on monetary policy and structural problems, see Yamaguchi (1999) and Shirakawa (2000).

[46] In Japan, as Fukao (1998) pointed out, procedures in financial accounting employ the acquisition cost method, lagging to introduce market value information into financial reporting and leading to an insufficient disclosure of management information. In addition, cross-share holding between corporations and banks limit the cost of capital, dampening incentives for managers to improve efficiency in corporate management. This led to a lack of corporate governance mechanism through capital markets, forming one of the factors that provoked instability in the financial system.

[47] For example, if we narrow the extent of coverage of the safety net, creditors other than small-scale depositors covered by the deposit insurance would have to share risks of bank failure, promoting incentives to monitor bank management. In this context, it is very important to consider the expansion of disclosure by banks themselves and the proper conduct of prompt corrective action.

[48] Bhattacharya, Boot, and Thakor (1998), which comprehensively surveys the recent development of theoretical and empirical literature, points out the pros and cons of a public safety net as follows. On the one hand, the fragility inherent in the banking system as a liquidity provider requires a public safety net such as government deposit insurance and a central bank's lender of last resort function. On the other hand, however, such a public safety net has numerous costs in terms of the distortion of the asset portfolio choices of banks, lowering their efficiency.

economy. The authors hope that this paper has made some contribution in fostering such efforts.

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Table 1: Average Annual Growth Rates of Real GDP by decade

Percent

	1970s	1980s	1990s
Japan	5.2	3.8	1.6
U.S.	3.2	2.7	2.6
Germany	3.2	1.8	1.6
France	3.7	2.3	1.7
U.K.	2.4	2.4	1.8
Italy	3.7	2.4	1.3
Canada	4.4	2.9	2.0

Notes: 1. When calculating the average annual growth rates of the 1990s, data for 1999 are estimated by OECD, except for Japan, where the data are based on the quick estimates published by the Economic Planning Agency.

2. Real GDP of Germany is that of West Germany until 1991 and that of unified Germany from 1992 onward, i.e. comparison is made with aggregate East and West German GDP in 1991.

Sources: Economic Planning Agency, *National Income Statistics*; OECD, *Main Economic Indicators*, *National Accounts*, *Economic Outlook*

Table 2: Contribution to year-on-year changes in Real GDP by Component

	CY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	GDP(y/y change, %)	5.1	3.8	1.0	0.3	0.6	1.5	5.0	1.6	-2.5	0.3
Contribution by component (%)	Private consumption	2.6	1.5	1.2	0.7	1.1	1.2	1.7	0.3	-0.3	0.7
	Residential investment	0.3	-0.5	-0.3	0.1	0.4	-0.3	0.7	-0.9	-0.6	0.1
	Business fixed investament	2.0	1.2	-1.1	-1.9	-0.9	0.8	1.8	1.5	-1.4	-1.0
	Private inventory	-0.2	0.3	-0.5	-0.1	-0.3	0.2	0.4	0.1	-0.6	0.1
	Government consumption	0.2	0.1	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1
	Public investment	0.3	0.3	1.0	1.2	0.2	0.1	0.8	-0.9	-0.2	0.6
	Net exports	0.0	0.9	0.6	0.2	-0.3	-0.8	-0.5	1.4	0.5	-0.3
	Exports	0.7	0.6	0.5	0.2	0.5	0.6	0.8	1.4	-0.3	0.3
	Imports (-)	-0.8	0.3	0.1	0.0	-0.8	-1.4	-1.3	-0.1	0.9	-0.6

Source: Economic Planning Agency, *National Income Statistics*

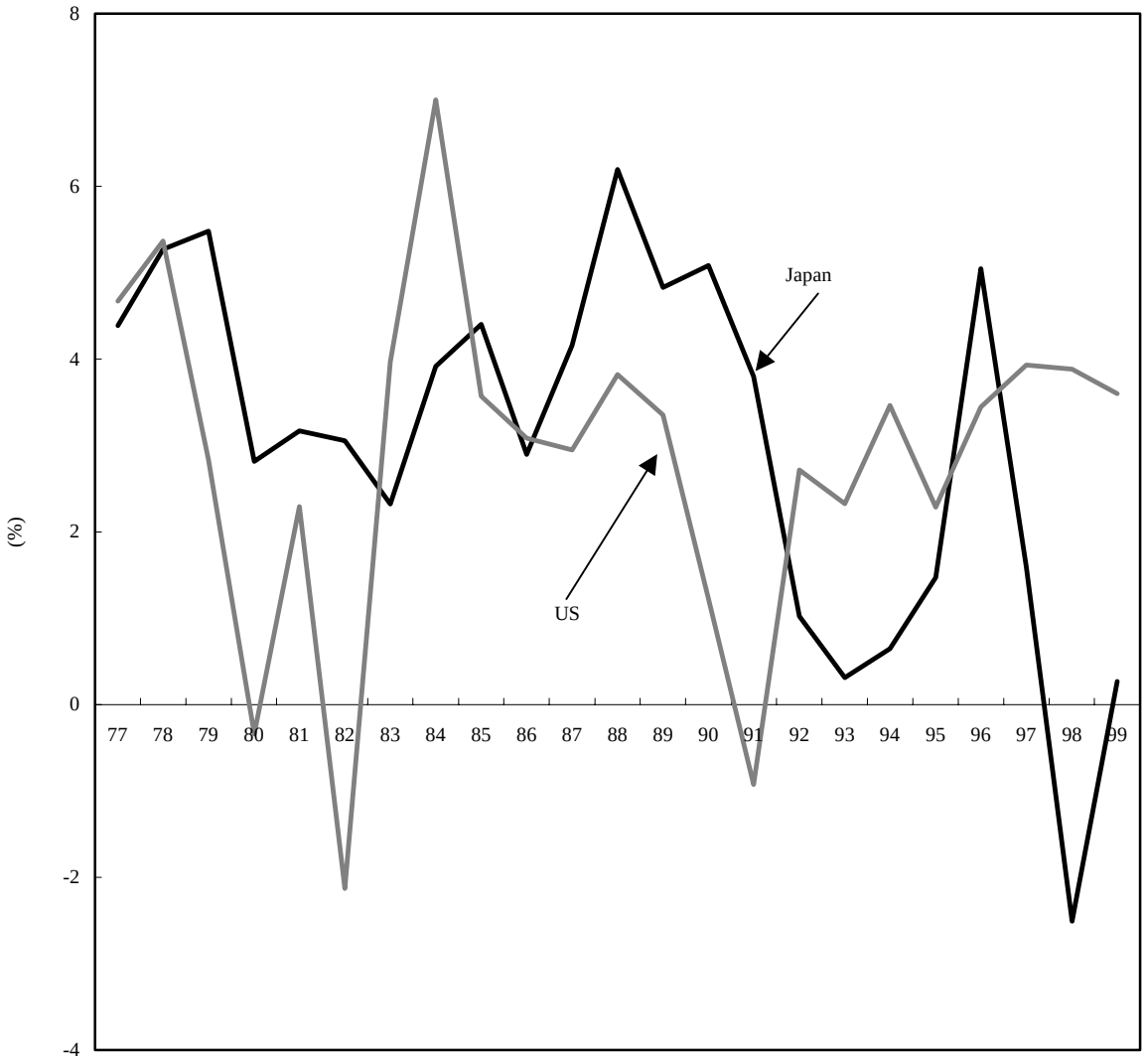
Table 3: Chronology of events that affected the stability of the financial system

Year	Month	Main Events
1971	July	The Deposit Insurance Corporation (DIC) was established under the provisions of the Deposit Insurance Law (DIL, brought into effect in April 1971).
1986	July	The DIL was amended to include 'financial assistance.'
1992	April	The DIC extended financial assistance (loans) for the first time to Iyo Bank in order to facilitate its merger with the failed Toho Sogo Bank.
	October	Financial assistance (in the form of grants) was provided for the first time to Sanwa Bank in order to facilitate its acquisition of the failed Toyo Shinkin Bank.
1994	December	The Tokyo Metropolitan Government announced the resolution plan of Tokyo Kyowa and Anzen Credit Cooperatives.
1995	January	Tokyo Kyodo Bank was established to take over the assets and liabilities of the Tokyo Kyowa and Anzen Credit Cooperatives.
	June	The Ministry of Finance issued a report entitled "Reorganizing the Japanese Financial System."(The report disclosed that the estimated outstanding of non-performing loans <the total of loans to borrowers in legal bankruptcy, past due loans, and restructured loans> of the deposit-taking financial institutions at the end of March 1995 was about ¥40 trillion) The three ruling coalition parties (Liberal Democratic, Social Democratic, and *Sakigake*) set up a joint task force that aimed at resolving the non-performing loan problem of the Housing Loans Companies (*jusen*).
	July	The Tokyo Metropolitan Government ordered the Cosmo Credit Cooperative to suspend its business, except for the repayment of deposits.
	August	The Osaka Prefectural Government ordered Kizu Credit Cooperative to suspend its business, except for repayment of deposits. Hyogo Bank was liquidated: its assets (except for non-performing loans) and liabilities were transferred to Midori Bank, which was newly founded by shareholder banks and local firms and received grants from the DIC.
	September	Daiwa Bank was discovered to have covered up the loss of nearly $1.1 billion incurred by a rogue trader in the New York branch.
	November	Daiwa Bank accepted the New York State Government's order to close down its operations in the U.S. (Most of its operations were assumed by Sumitomo Bank.)
	December	The Cabinet decided on concrete measures to address the *jusen* problem. The Financial System Research Council released its recommendations on "Measures for Stabilization of the Financial System."
1996	June	The Diet passed six laws promoting stability of the financial system: the *jusen* Law (The Law Concerning Special Packages for Promoting Disposal of Claims and Debts of Specified Housing Loan Companies); the Law Concerning Special Packages for Suspending the Prescription of Claims Owned by the Specified *jusen*; the Law to Amend the Deposit Insurance Law; The Special Law Concerning the Reorganization of Financial Institutions; the Law to Implement Measures for Ensuring the Sound Management of Financial Institutions; and the Law to Amend the Agricultural and Fishery Cooperative Savings Insurance Law. Special financial assistance was introduced as a temporary measure to protect all the depositors of the failed banks until the end of March 2001. The regulations concerning the Resolutions and Collection Bank were provided. The Ministry of Finance decided to introduce the Prompt Corrective Action in April 1998. The general premium rate of the deposit insurance was raised from 0.012% to 0.048% (of the total balance of all deposits), and the special insurance premium (0.036%) was temporarily introduced.
	July	The Housing Loan Administration Corporation was established.
	September	The Tokyo Kyodo Bank was restructured into the Resolution and Collection Bank. An incorporated association, the New Financial Stabilization Fund, was established.
	November	Ministry of Finance ordered Hanwa Bank to suspend its business, except for the repayment of deposits. Prime Minister Hashimoto announced a deregulation package for reforming the Japanese financial system, the so-called "Japanese Big Bang."

Year	Month	Main Events
1997	April	A restructuring plan for the Nippon Credit Bank was announced: it includes (a) the purchase of newly issued shares by its shareholder banks, (b) a swap of its subordinated debentures held by insurance companies for shares, and (c) underwriting of preferred stocks by the New Financial Stabilization Fund.
	July	The government published a detailed plan of the Japanese Big Bang.
	November	Sanyo Securities filed for corporate reorganization under the Corporate Reorganization Law; a default of call loans occurred for the first time since WWII. Hokkaido Takushoku Bank failed; the Yamaichi Securities Company announced that it was to close down voluntarily; Tokuyo City Bank failed.
	December	The DIL was revised to allow the DIC to provide financial assistance to (a) a merger that does not involve failed financial institutions and (b) a consolidation between two or more failed financial institutions.
1998	February	A Law to Amend the DIL was enacted to provide public funds totaling ¥17 trillion to the DIC for the resolution of the problems of financial institutions in difficulties. The Law Concerning Emergency Measures for Financial Stabilization was enacted; The Financial Crisis Management Examination Board was established within the DIC. Public funds worth ¥30 trillion in total were appropriated for financial system stabilization.
	March	The Financial Crisis Management Examination Board approved the injection of a total of ¥1.8 trillion of public funds to recapitalize 21 banks by purchasing preferred stocks and subordinated debentures. The Land Revaluation Law was enacted. (This temporary legislation was valid only for fiscal years 1998 and 1999.)
	April	The Prompt Corrective Action was implemented. The new Bank of Japan Law and revised Foreign Exchange and Foreign Trade Control Law came into force.
	June	Four laws implementing the Japanese Big Bang were approved by the Diet. The Financial Supervisory Agency was established.
	July	The Government and ruling coalition parties published “The Total Plan of Financial Reconstruction.”
	October	Enactment of the financial reconstruction legislation: the Law on Emergency Measures for Stabilizing the Financial Function; the Financial Functioning Early Strengthening Law; the Law to Amend the DIL; the Servicer Law; Two laws simplifying public auction procedures; the Law concerning temporary measures to facilitate the transfer of assets backed by revolving collateral. A special public administration scheme was introduced; the outstanding total of public funds appropriated for the purpose of financial system stabilization was increased to ¥60 trillion. The Financial Crisis Management Examination Board was abolished. The Long-term Credit Bank was placed under special public administration under the terms of the Financial Reconstruction Law.
	December	Nippon Credit Bank was placed under special public administration under the terms of the Financial Reconstruction Law. The Financial Reconstruction Commission was established.
1999	January	The guidelines for the work of the Financial Reconstruction Commission were approved.
	March	Financial Reconstruction Commission approved the injection of public funds (about ¥7.5 trillion in total) into major fifteen banks to reinforce their capital positions.
	September	Financial Reconstruction Commission approved the injection of public funds (¥2.6 billion in total) into four regional banks to reinforce their capital positions.
	December	The three ruling coalition parties agreed to postpone the termination of special financial assistance until the end of March 2002. (It was originally due to cease at the end of March 2001). Finance Minister Miyazawa publicly stated that the total amount of public funds appropriated for financial system stabilization would be raised to ¥70 trillion.

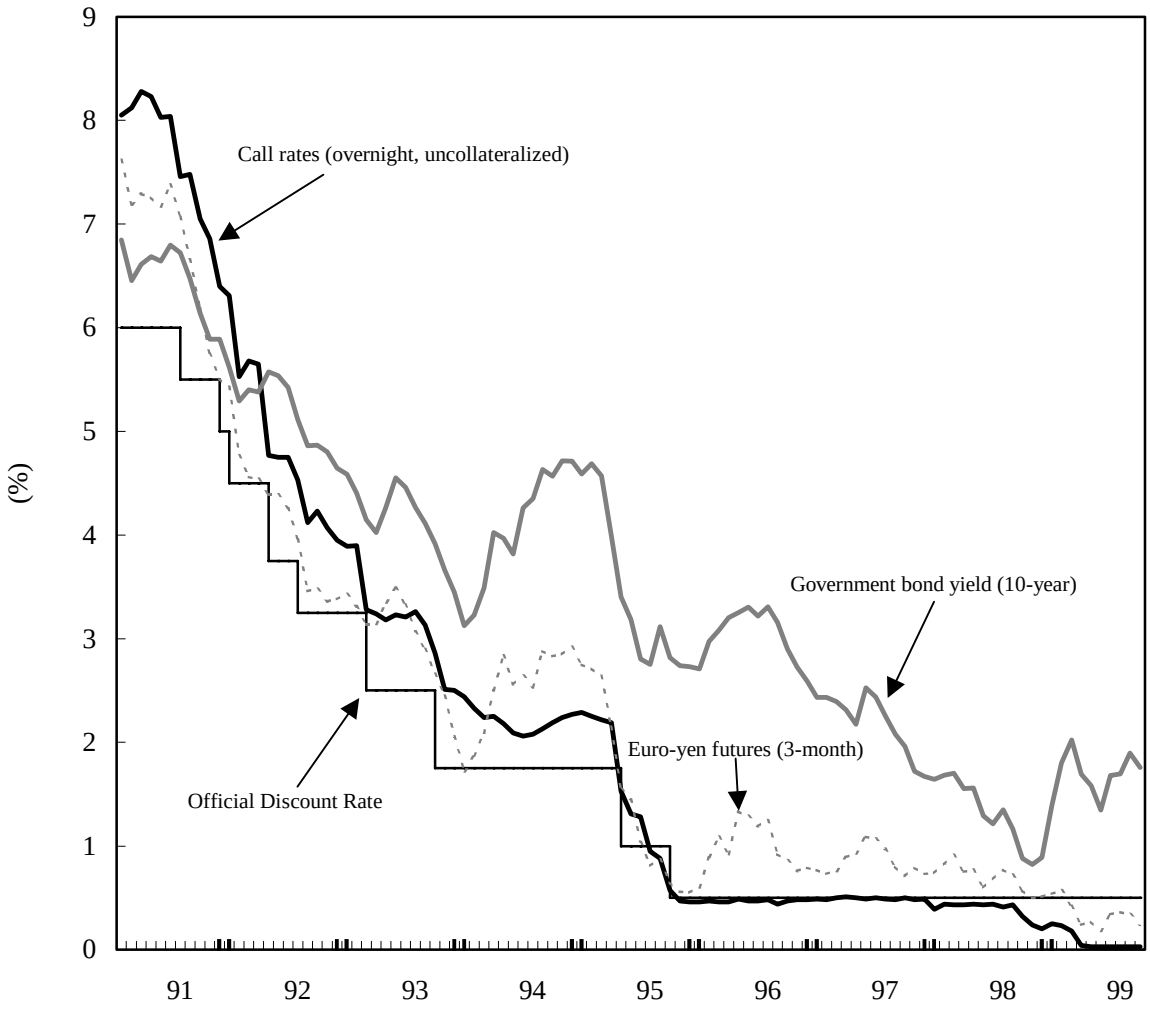
Sources: Nishimura(1999); Japanese Bankers Association, *Kin'yu*; Deposit Insurance Corporation, *Annual Report*; Bank of Japan, *Annual Report*

Figure 1: Comparison of Real GDP Growth between the US and Japan



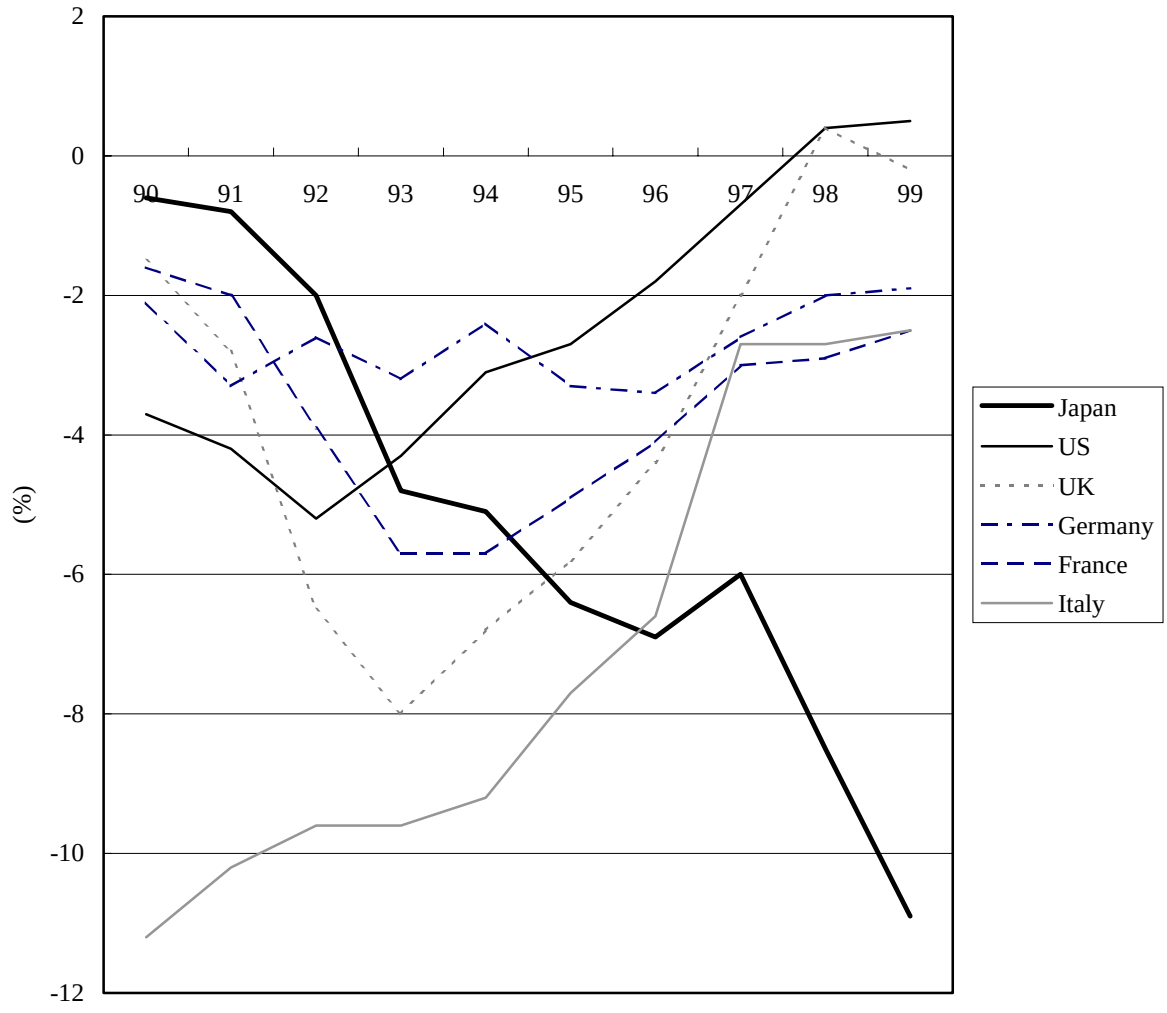
Sources: Economic Planning Agency, *National Income Statistics*; OECD, *Main Economic Indicators*, *Economic Outlook*

Figure 2: Interest Rates



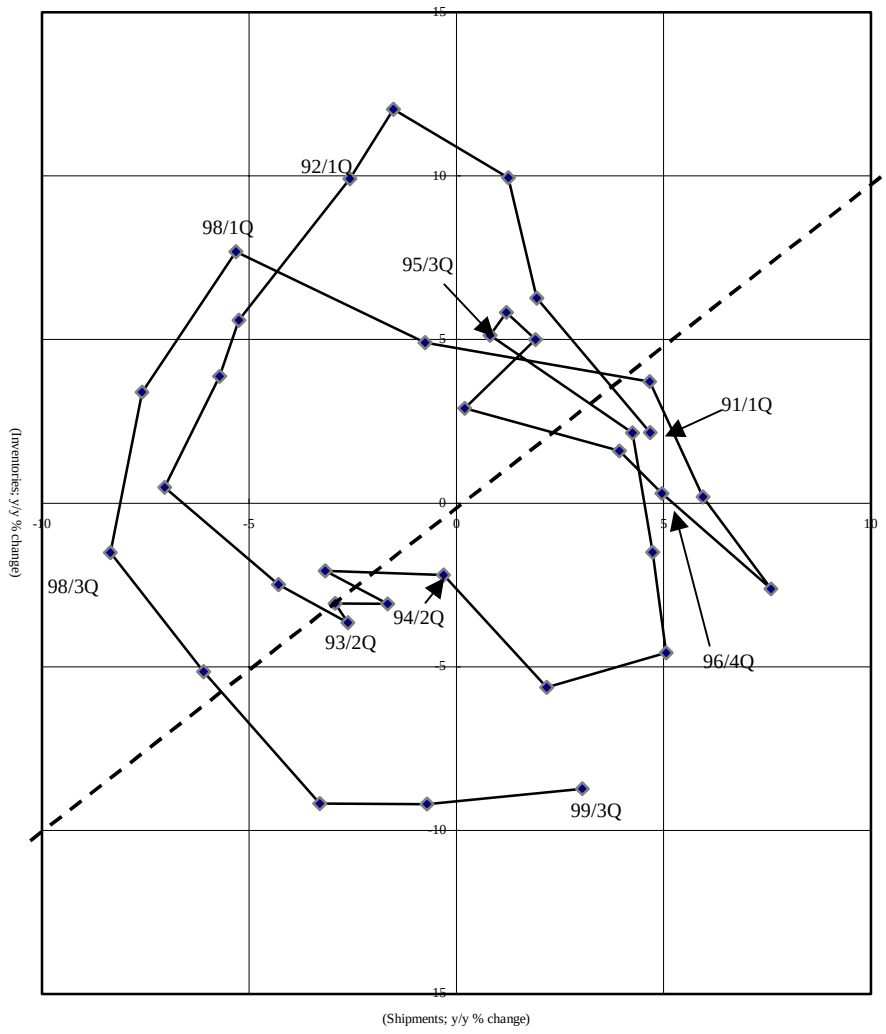
Sources: Bank of Japan; Tokyo International Financial Futures Exchange; Japan Bond Trading Co., Ltd.

Figure 3: Fiscal Deficits (Ratio to Nominal GDP) of the Major Industrial Countries



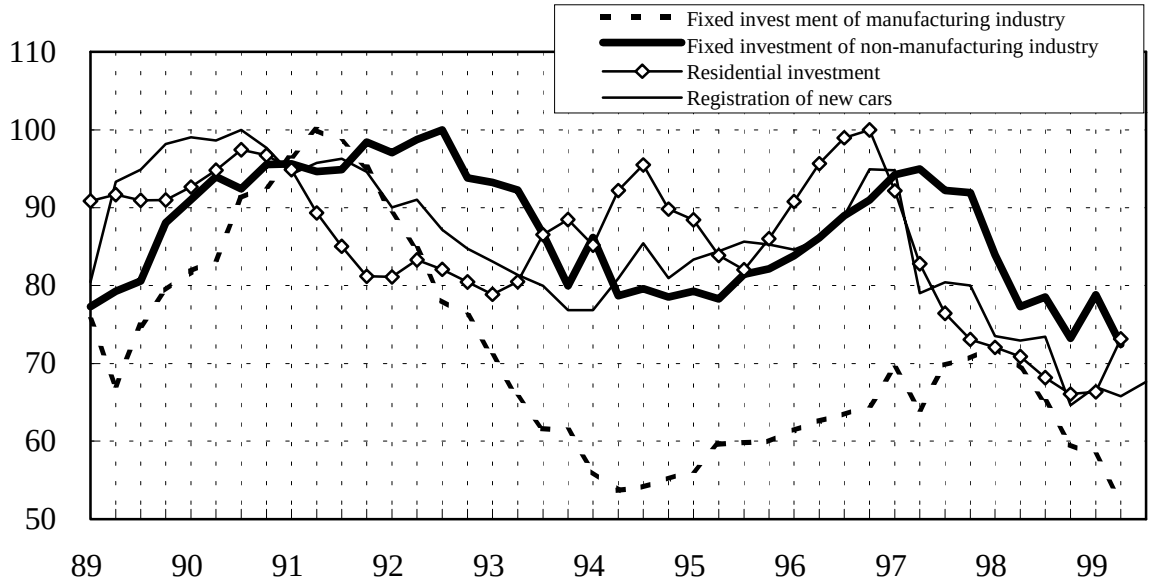
Source: OECD, *Economic Outlook*, June 1999

Figure 4: Inventory Cycle (Industrial Production Total)



Source: Ministry of International Trade and Industry, *Indices of Industrial Production*

Figure 5: Business Fixed Investment, Residential Investment, and Expenditure on Consumer Durables



Sources: Ministry of Finance, *Financial Statements Statistics of Corporations by Industry, Quarterly*; Economic Planning Agency, *National Income Statistics*; Japan Automobile Dealers Association, *Registration of New Passenger Cars, Trucks, and Buses*

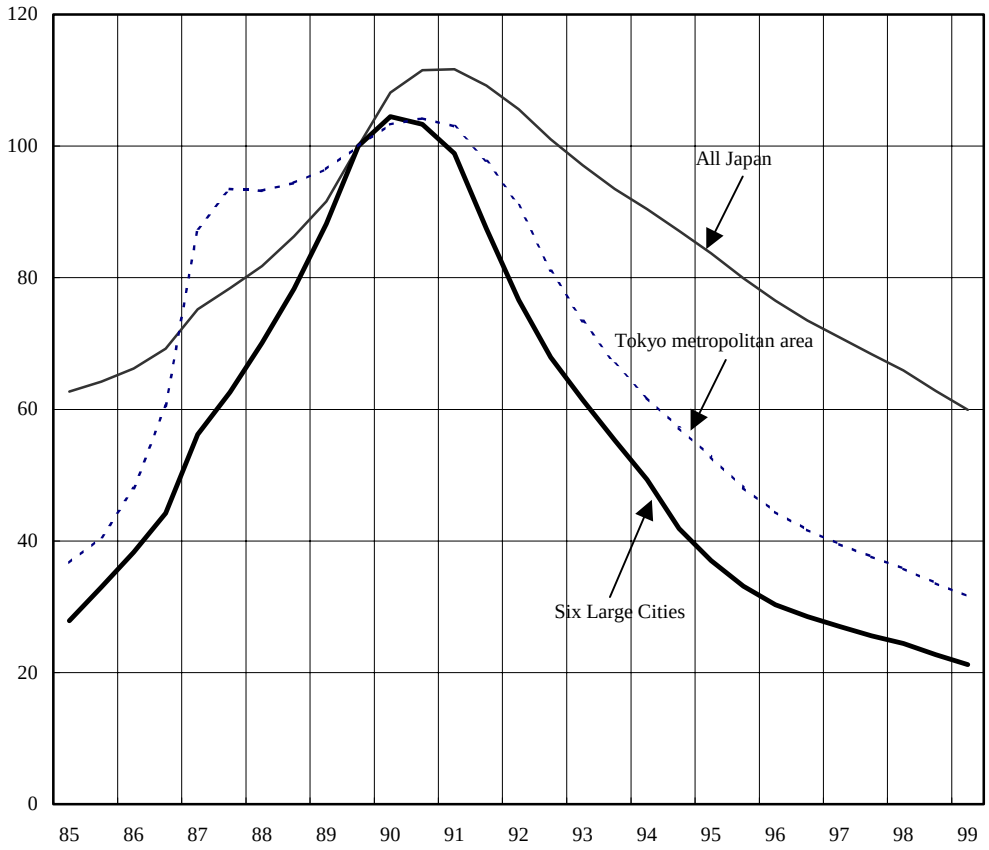
Note: Data are indexed by setting the peak of 1989/1Q to 1999/3Q to 100.

Figure 6: Development of the Nikkei 225 Stock Average (End of Month)

Source: *The Nihon Keizai Shimbun*

Figure 7: Development of Land Prices (Commercial Land)

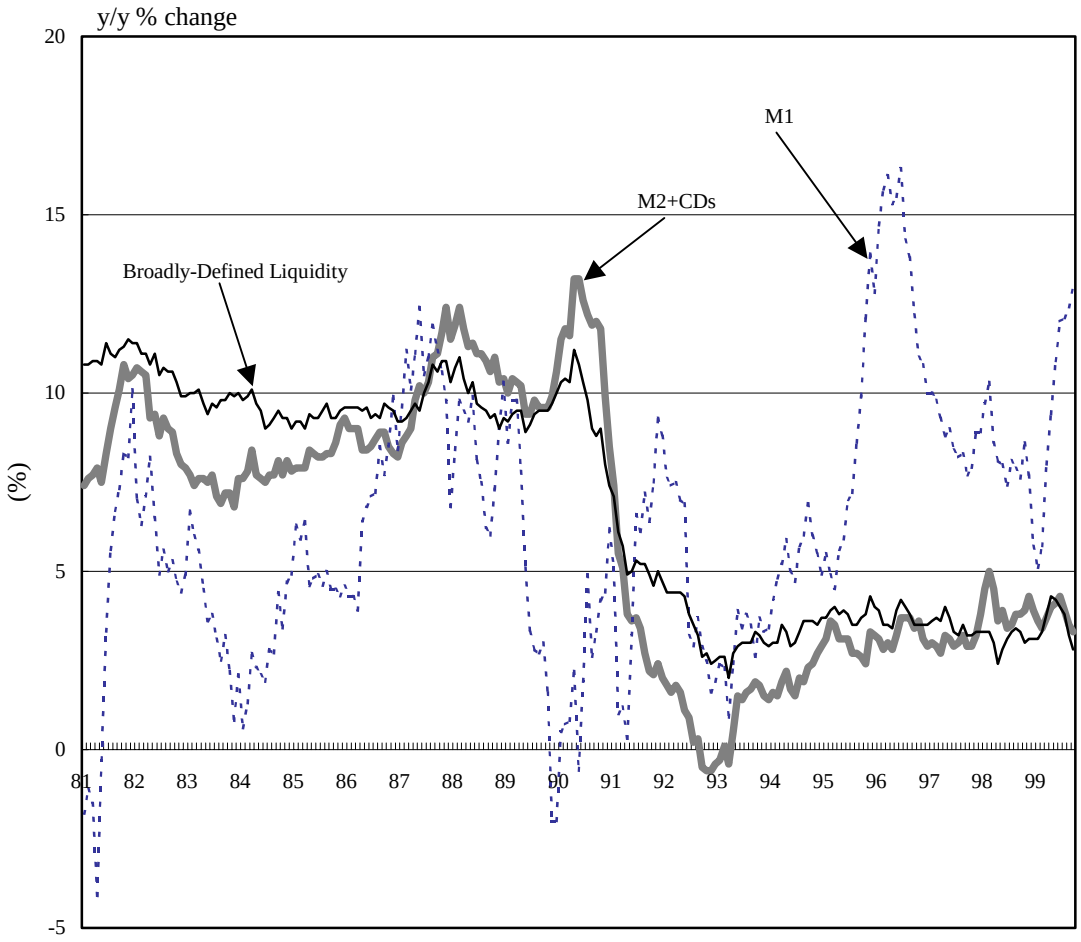
(89/2H = 100)



Source: Japan Real Estate Institute, *Land Price Index of Cities*

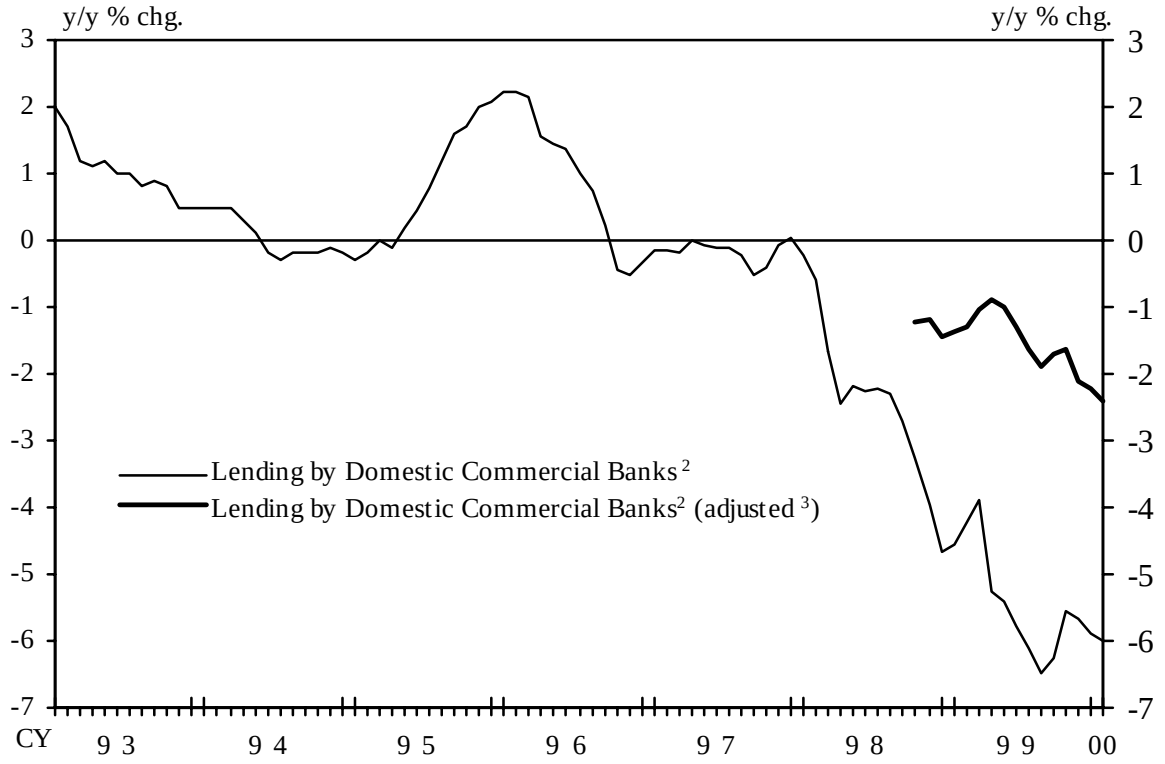
Note: Data for the first half are those at the end of March, while those for the second half are at the end of September.

Figure 8: Money Stock (M1, M2+CDs, Broadly-Defined Liquidity)



Source: Bank of Japan, *Monetary and Economic Statistics Monthly*

Figure 9: Lending by Domestic Commercial Banks



Source: Bank of Japan, *Financial and Economic Statistics Monthly*

Notes: 1. Percent changes in average amounts outstanding from a year earlier.
2. "Domestic commercial banks" refers to member banks of the Japanese Bankers Association, which consists of city banks, long-term credit banks, trust banks (excluding foreign-owned trust banks and trust banks that started business after October 1993), the member banks of the Regional Banks Association of Japan (regional banks) and the member banks of the Second Association of Regional Banks (regional banks II).
3. Adjusted to exclude
(1) fluctuations resulting from the liquidation of loans,
(2) fluctuations in the yen value of foreign currency-denominated loans due to changes in exchange rates,
(3) fluctuations resulting from loan write-offs,
(4) the transfer of loans to the former Japan National Railways Settlement Corporation to the General Account, and
(5) the transfer of loans to the former Housing Loan Administration Corporation to the Resolution and Collection Corporation.

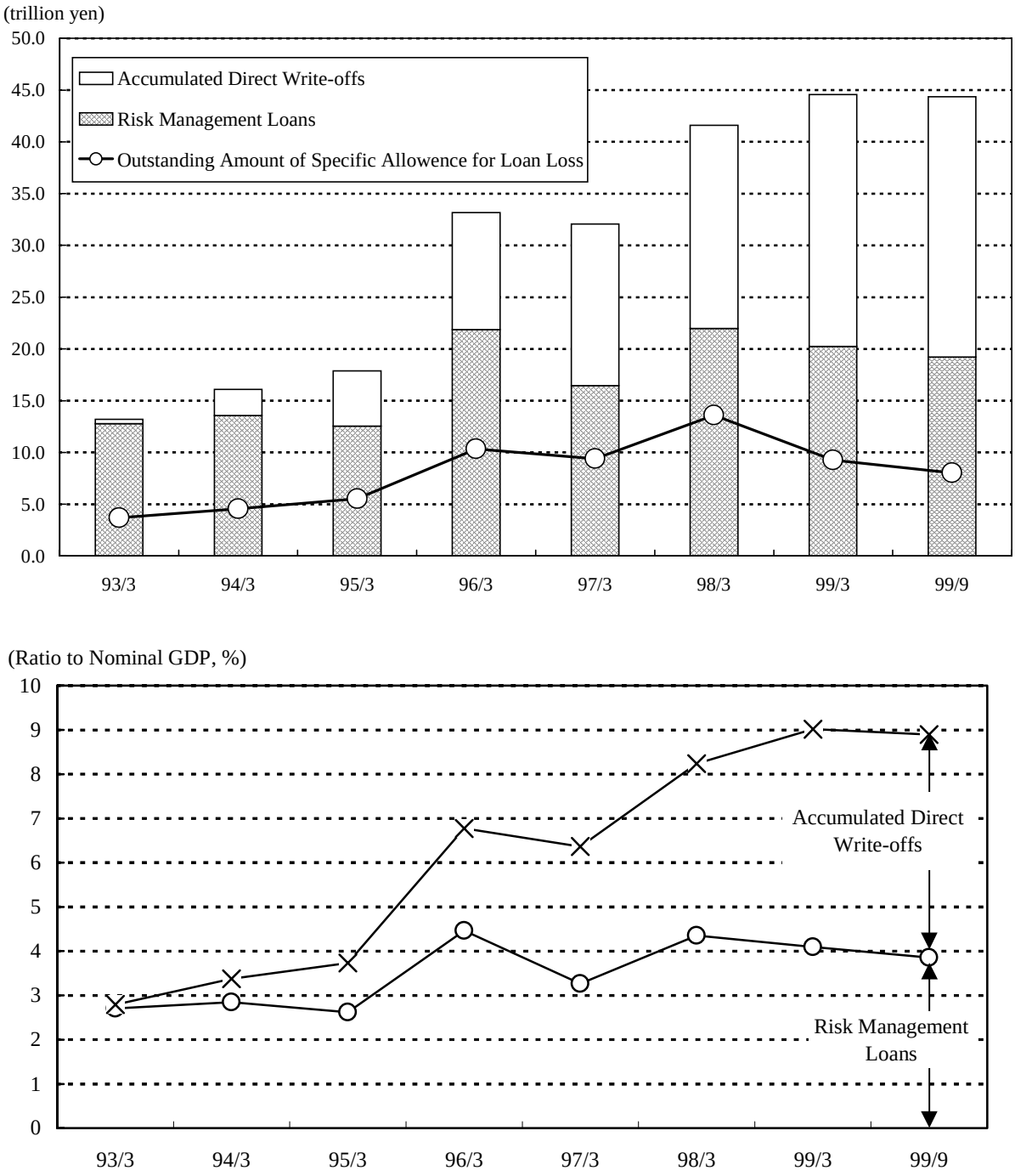
Figure 10: Amount Outstanding of Corporate Bonds (Year-on-year Changes)

Source: IN Information Center, "Funding Eye."

Notes: 1. Includes straight bonds, convertible bonds, and bonds with warrants.

2. Estimated by the Bank of Japan.

Figure 11: Risk Management Loans of Major Japanese Banks



Source: Financial Supervisory Agency (http://www.fsa.go.jp)

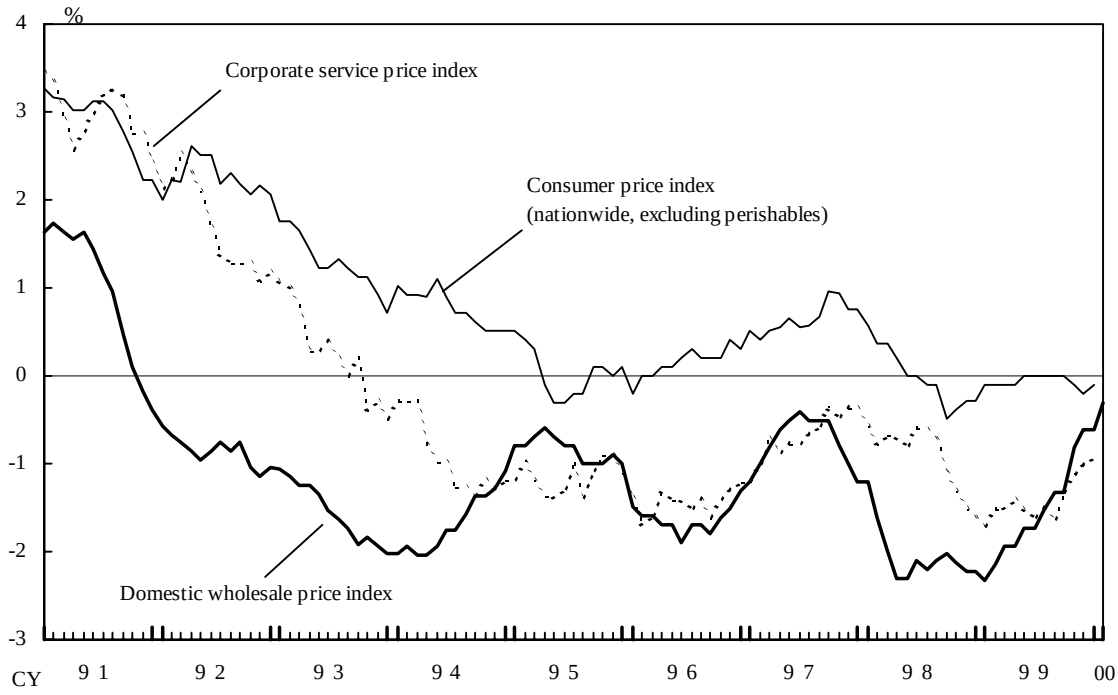
Note: 1. The above data are the total of those for City Banks, Long-term Credit Banks, and Trust Banks.
2. Figures of the Risk Management Loans at 93/3 and 94/3 are the total of loans to borrowers in legal bankruptcy and past due loans, and those at 95/3 and 96/3 include these two and restructured loans.

Figure 12: Exchange Rate (yen/US$)

Source: Bank of Japan

Note: End of Month. Data are the exchange rates of yen per US dollar at 5pm in Tokyo.

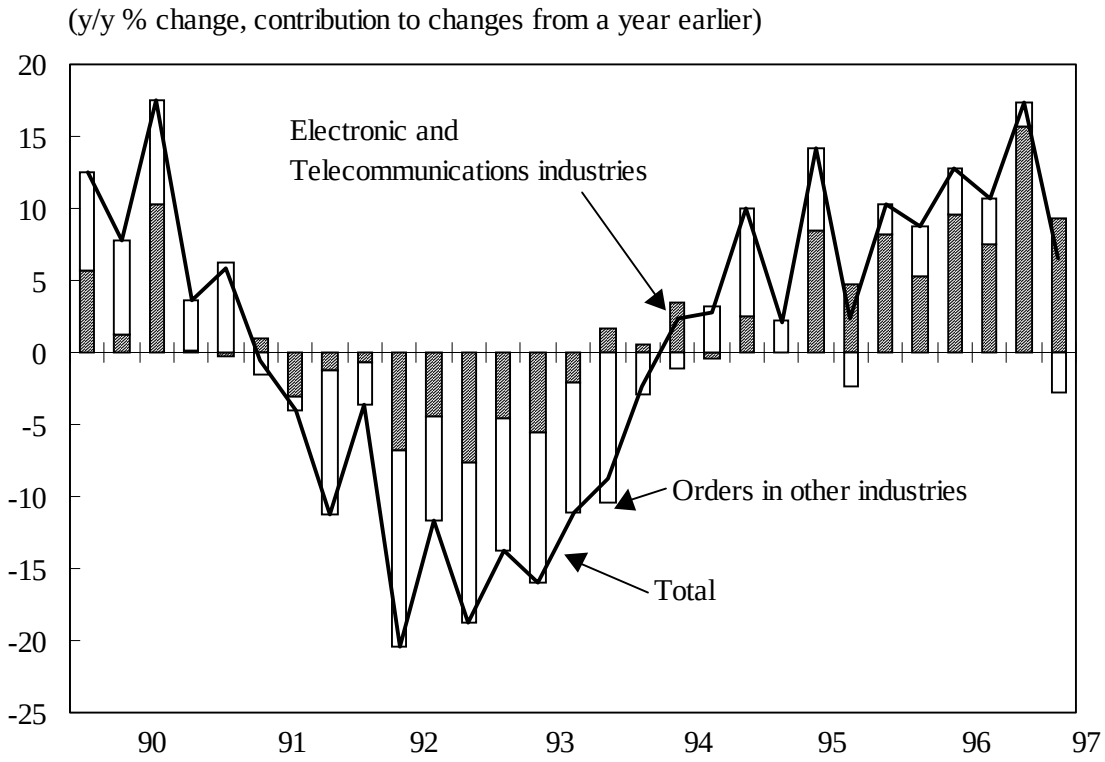
Figure 13: Prices (Changes from a year earlier)



Sources: Management and Coordination Agency, "Consumer Price Index"; Bank of Japan, "Wholesale Price Indexes," "Corporate Service Price Index."

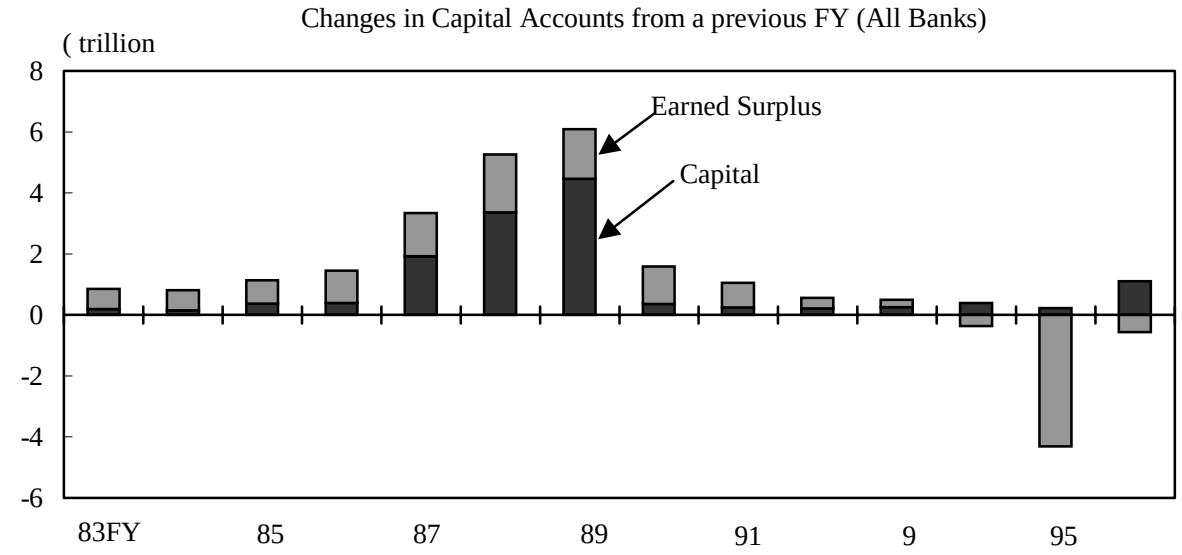
Note: Excluding the effects of the consumption tax hike in April 1997 on the assumption that prices of all taxable goods fully reflect the rise of the tax rate.

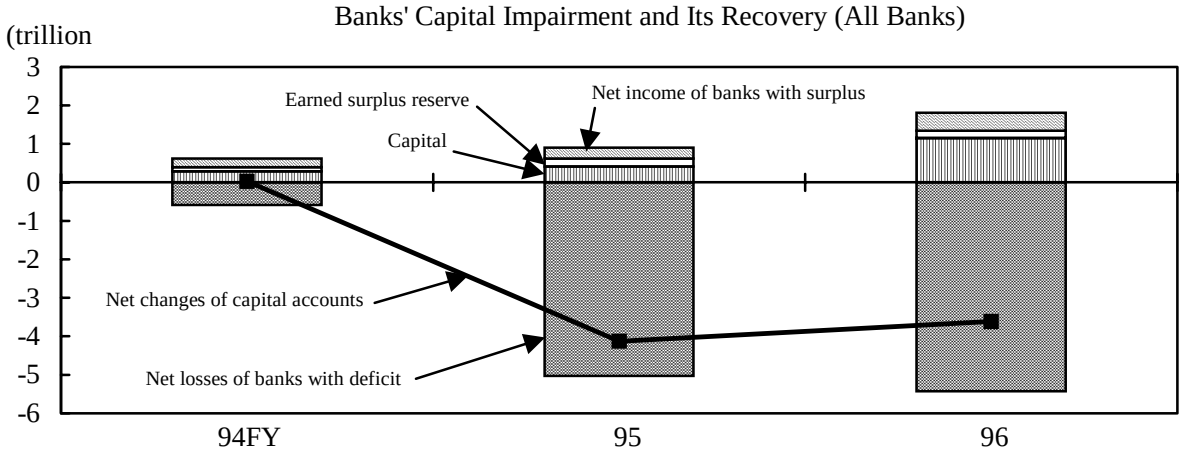
Figure 14: Contribution of Electronic and Telecommunications Industries to Machinery Orders



Source: Economic Planning Agency, “Machinery Orders Statistics”

Figure 15: Japanese Banks' Capital Impairment

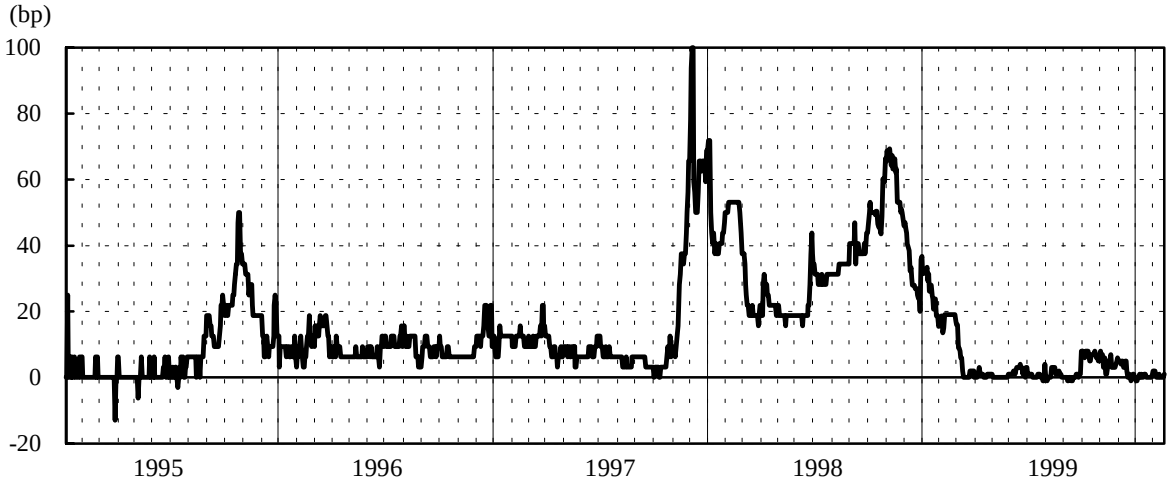




Source: Bank of Japan (1997)

Notes: 1. All data in the below chart are cumulative figures from fiscal year 1994.
2. "Capital" is the sum of capital, funds paid in for new shares, and the legal reserve.
3. "Net income of banks with surplus" is equal to net income minus dividend payments and managing directors' bonus payments. The term "net losses of banks with deficit" is equal to net losses plus dividend payments and managing directors' bonus payments. These adjustments are necessary to calculate the changes in capital accounts.
4. "Net changes in capital accounts" indicate recovery of net losses on a stock basis in the net capital accounts.

Figure 16: Japan Premium in the Eurodollar Market

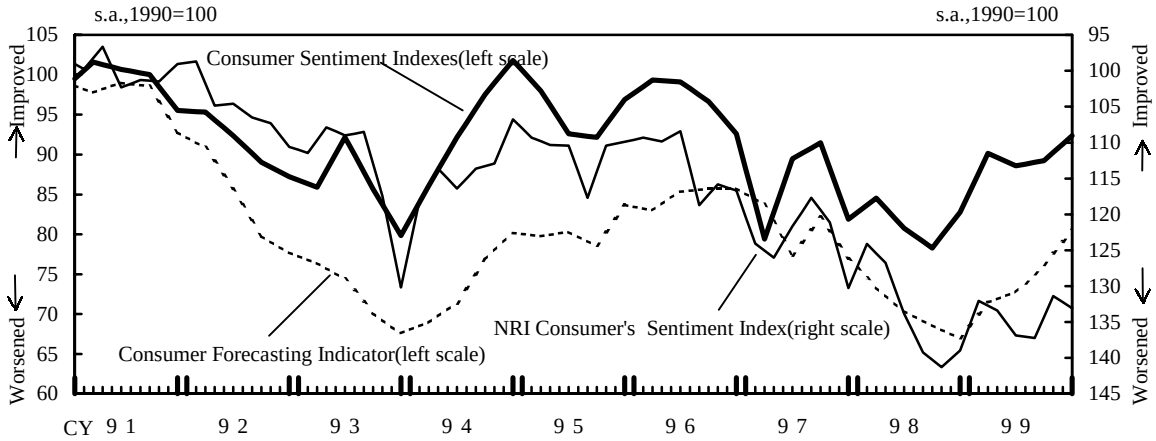


Source: British Bankers' Association

Note: The Japan premium is an extra expense a Japanese bank must pay for raising funds in overseas financial markets. The Japan premium in this chart is calculated as follows: Japan premium = interest rate quoted by Bank of Tokyo-Mitsubishi - interest rate quoted by Barclays Bank in the Eurodollar market (London).

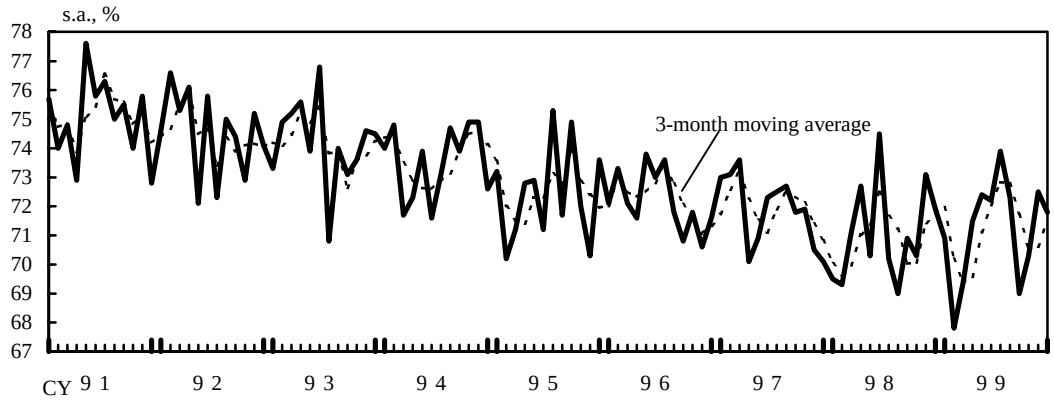
Figure 17: Consumer Confidence and the Propensity to Consume

(1) Surveys on consumer confidence



Notes: 1. Seasonally adjusted by X-11. "Consumer Sentiment Indexes" is seasonally adjusted by the Economic Planning Agency.
2. Consumer Sentiment Indexes, Consumer Forecasting Indicator, and NRI Consumer's Sentiment Index are based on surveys on consumer confidence.
3. Data are plotted at the months of each survey.
4. Consumer Sentiment Indexes is surveyed by the Economic Planning Agency, "Consumer Forecasting Indicator" by Nikkei RIM, and "NRI Consumer's Sentiment Index" by NRI.

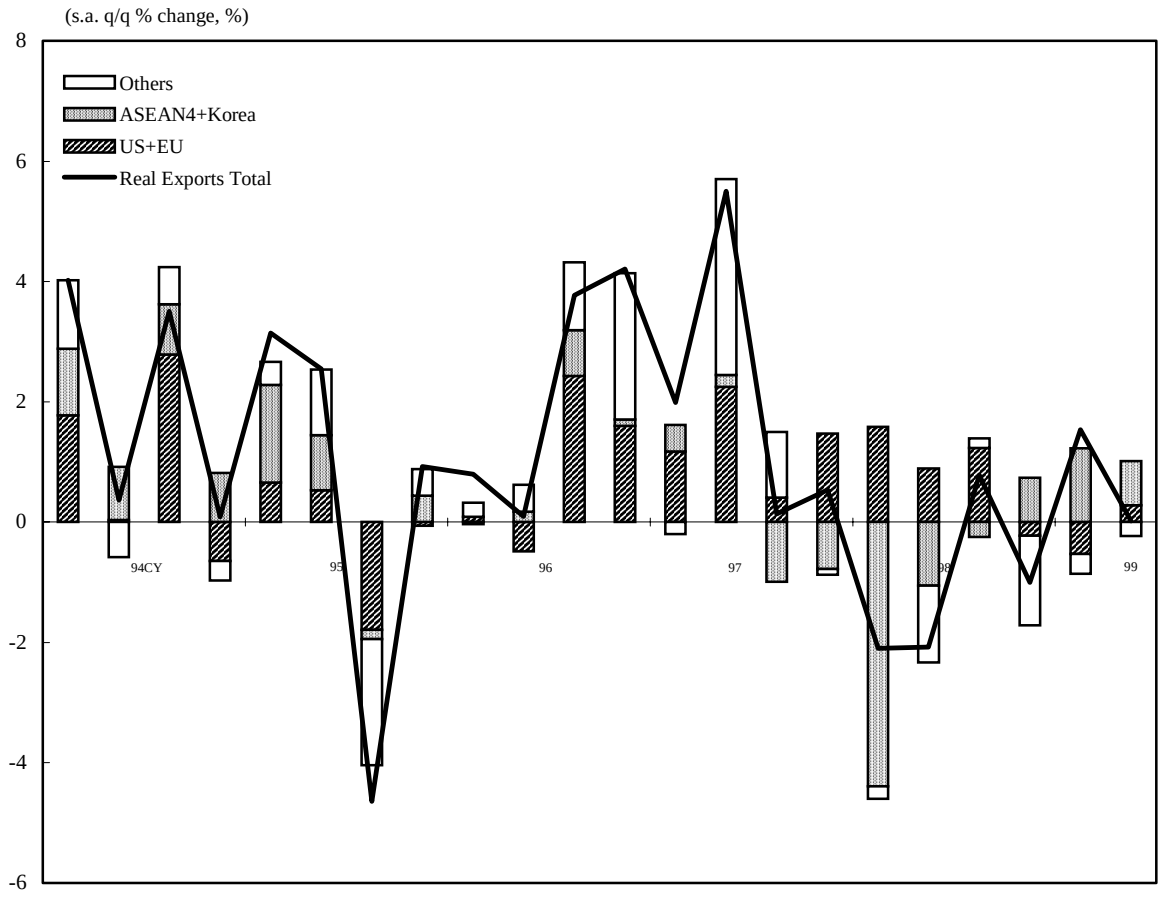
(2) Propensity to consume (Family Income and Expenditure Survey)



Note: Seasonally adjusted by the Management and Coordination Agency.

Sources: Economic Planning Agency, “Consumer Behavior Survey;” Nikkei Research Institute of Industry and Markets (Nikkei RIM), “Consumption Forecasting Indicator”; Management and Coordination Agency, “Monthly Report on the Family Income and Expenditure Survey”; Nippon Research Institute (NRI), “Consumer’s Sentiment Survey.”

Figure 18: Real Exports (breakdown by region)

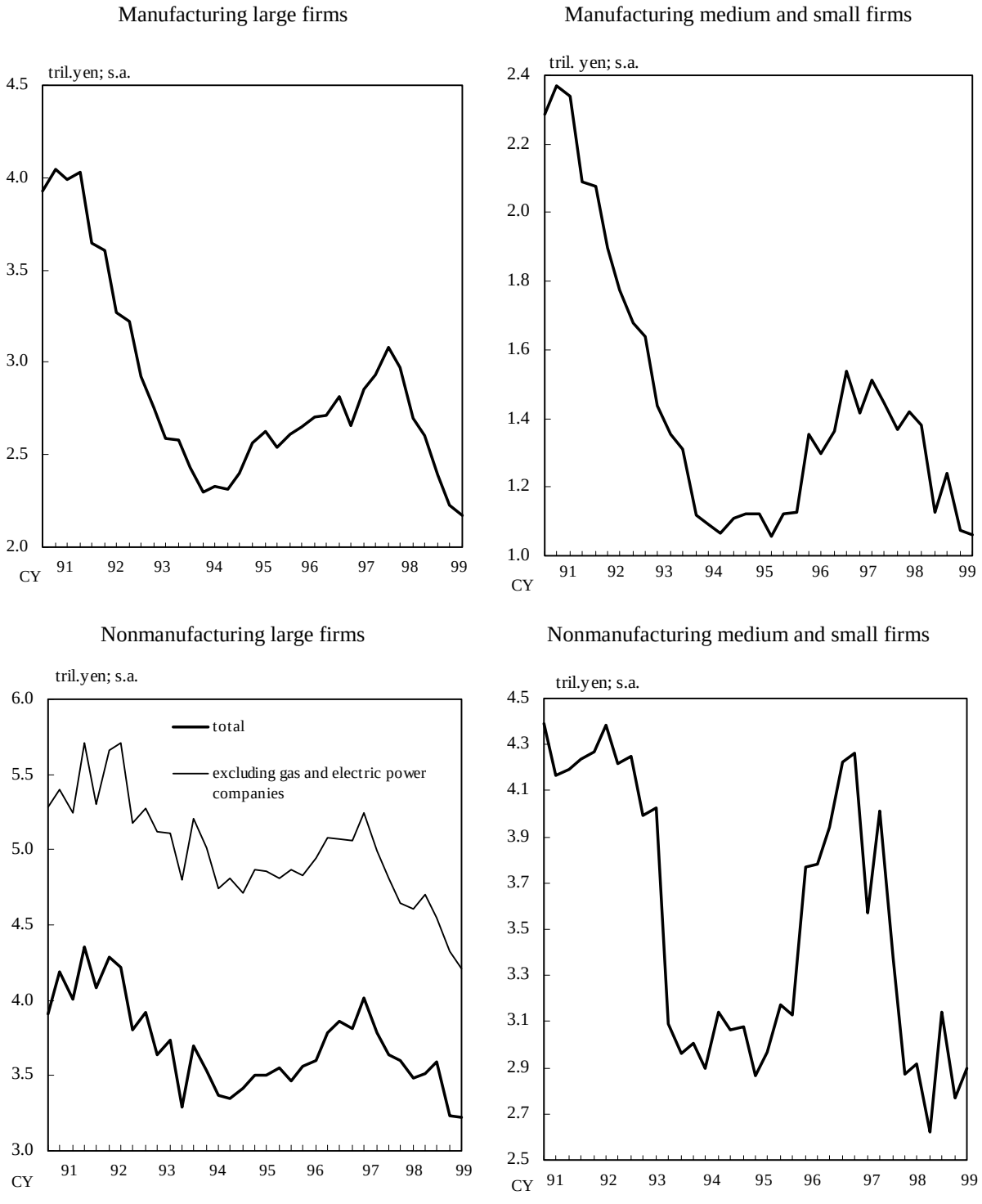


Source: Ministry of Finance, "The Summary Report on Trade of Japan"

Notes: 1. Seasonally adjusted by X-11.

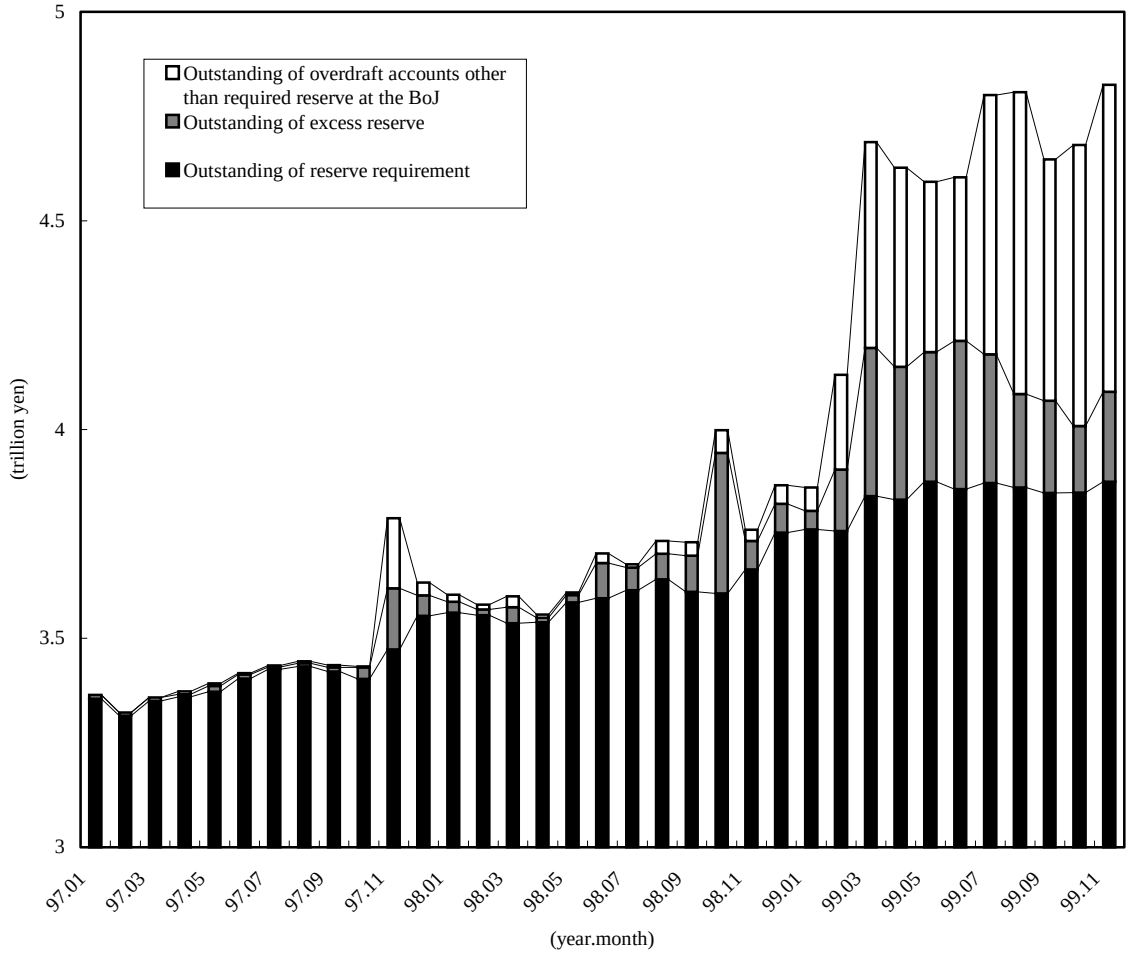
2. ASEAN 4 consists of Thailand, Malaysia, the Philippines, and Indonesia.

Figure 19: Business Fixed Investment by Industry and Scale



Source: Ministry of Finance, "Financial Statements Statistics of Corporations by Industry, Quarterly."

Figure 20: Reserve Requirement and Excess Reserve

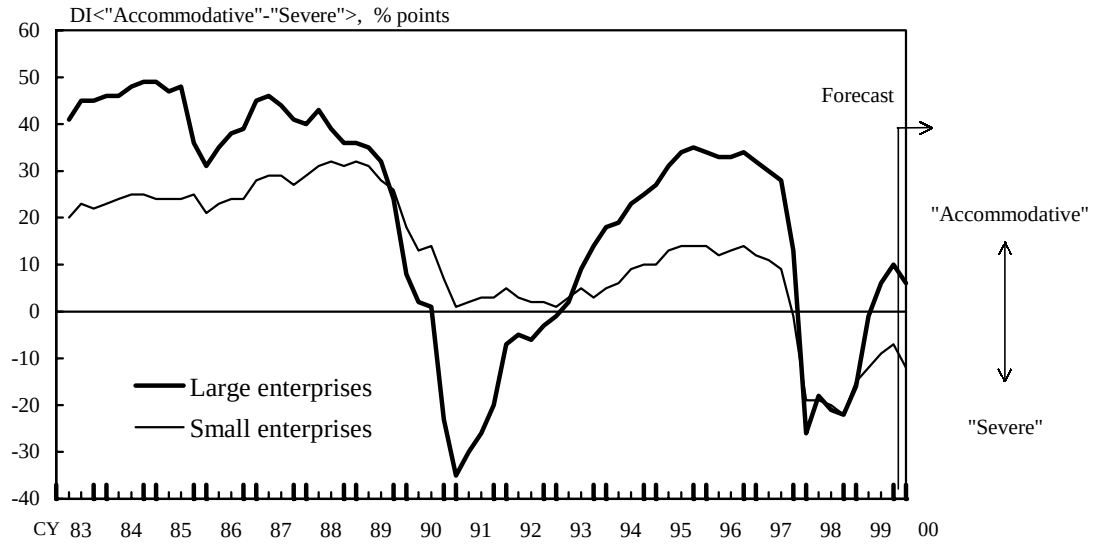


Source: Bank of Japan

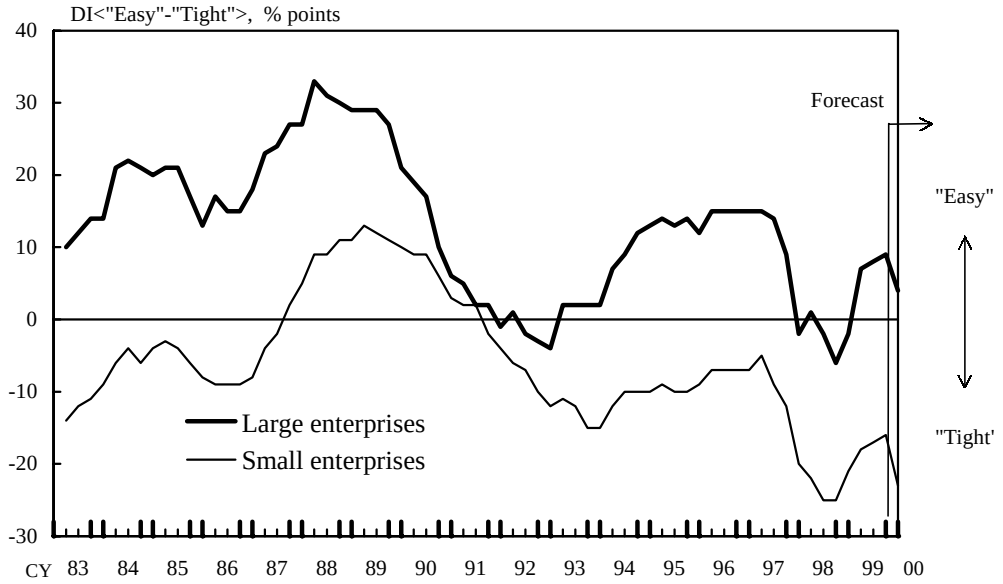
Note: Data are average amounts per day from the 16th of the month and the 15th of next month.

Figure 21: Corporate Finance-Related Indicators in the ***Tankan*** (December 1999)

(1) Lending Attitude of Financial Institutions

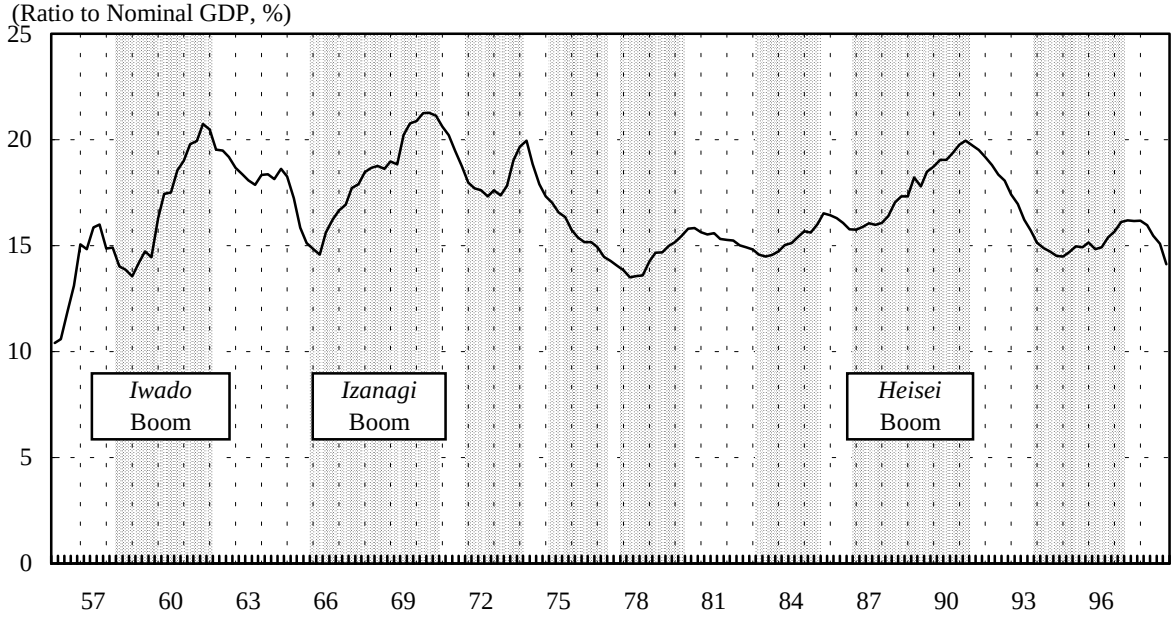


(2) Financial Position



Source: Bank of Japan, "*Tankan* Short-term Economic Survey of Enterprises in Japan."

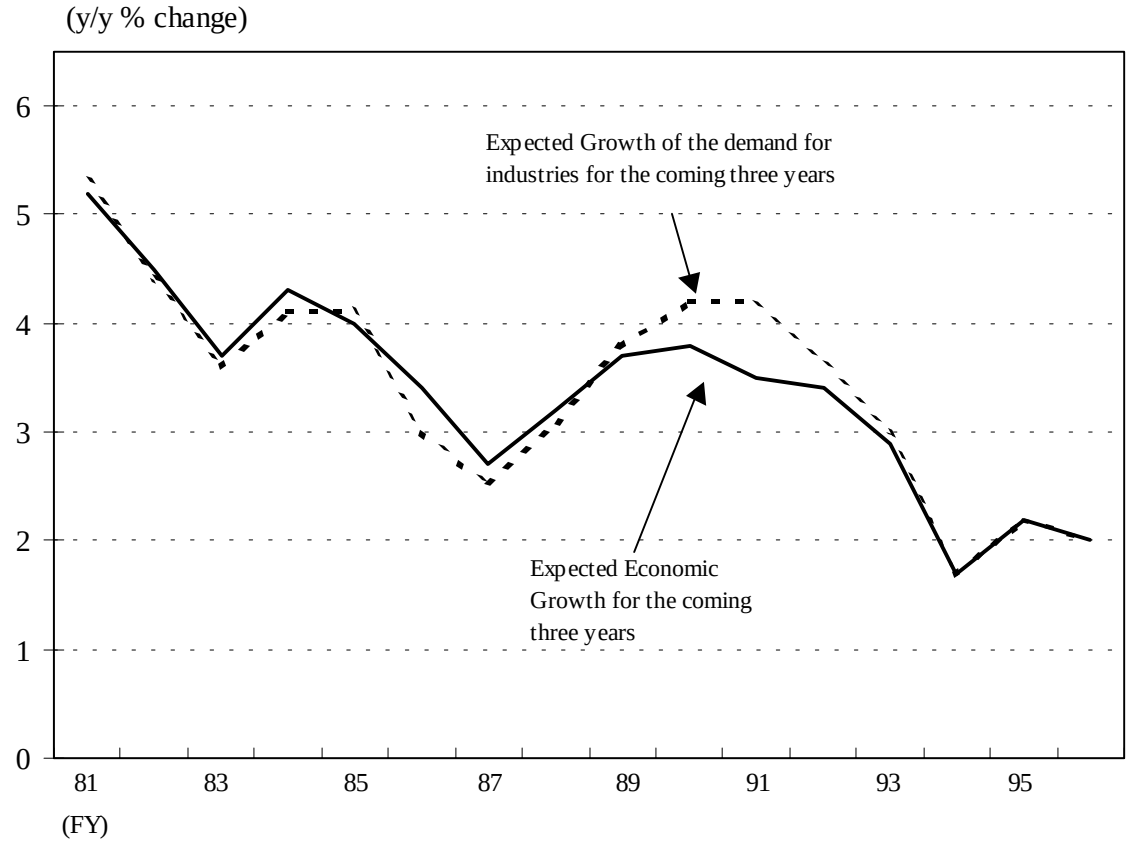
Figure 22: Ratio of Business Fixed Investment to Nominal GDP



Source: Economic Planning Agency, “National Income Statistics”

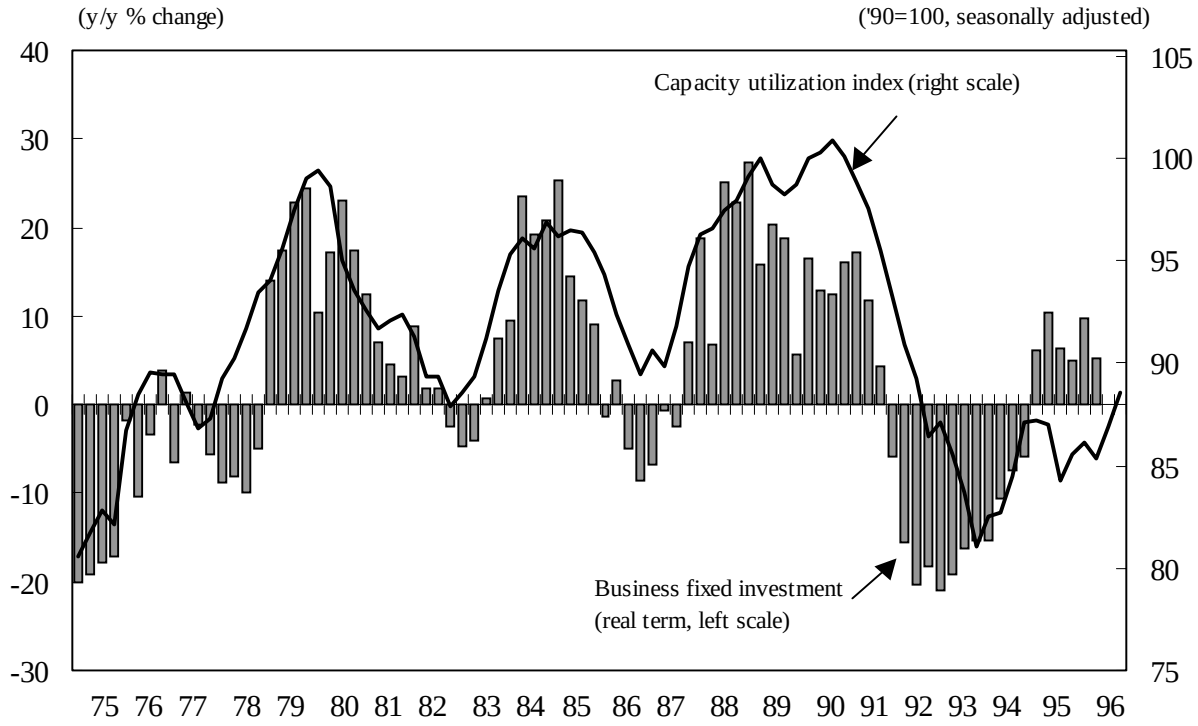
Note: Shaded periods are those of business contraction.

Figure 23: Firms' Expected Growth Rates



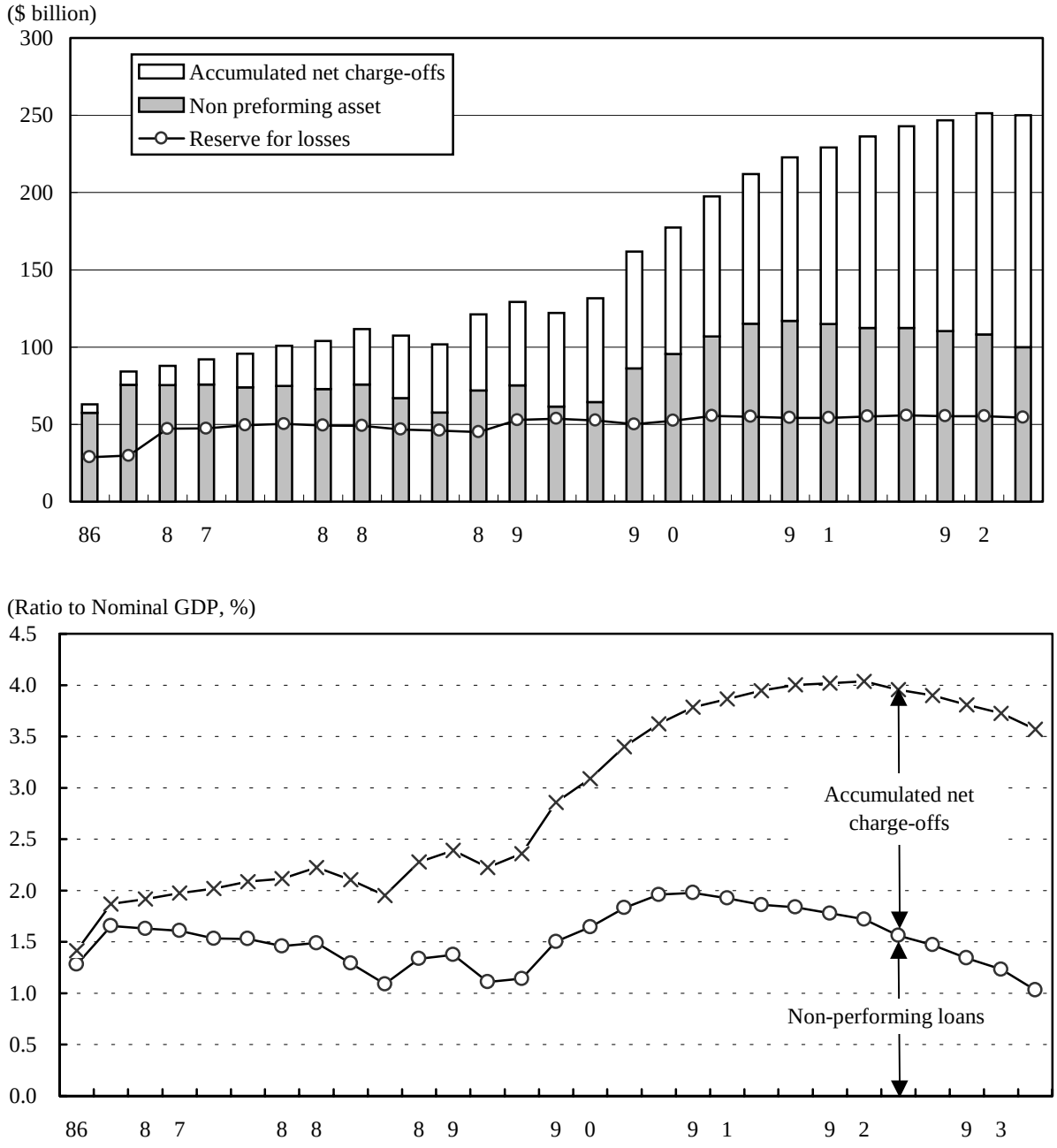
Source: Economic Planning Agency, "Report on Survey Research of Firms' Behavior"

Figure 24: Capital Utilization Index and Business Fixed Investment



Sources: Economic Planning Agency, "Gross Capital Stock of Private Enterprises"; Ministry of International Trade and Industry, "Monthly Statistics of Machinery"

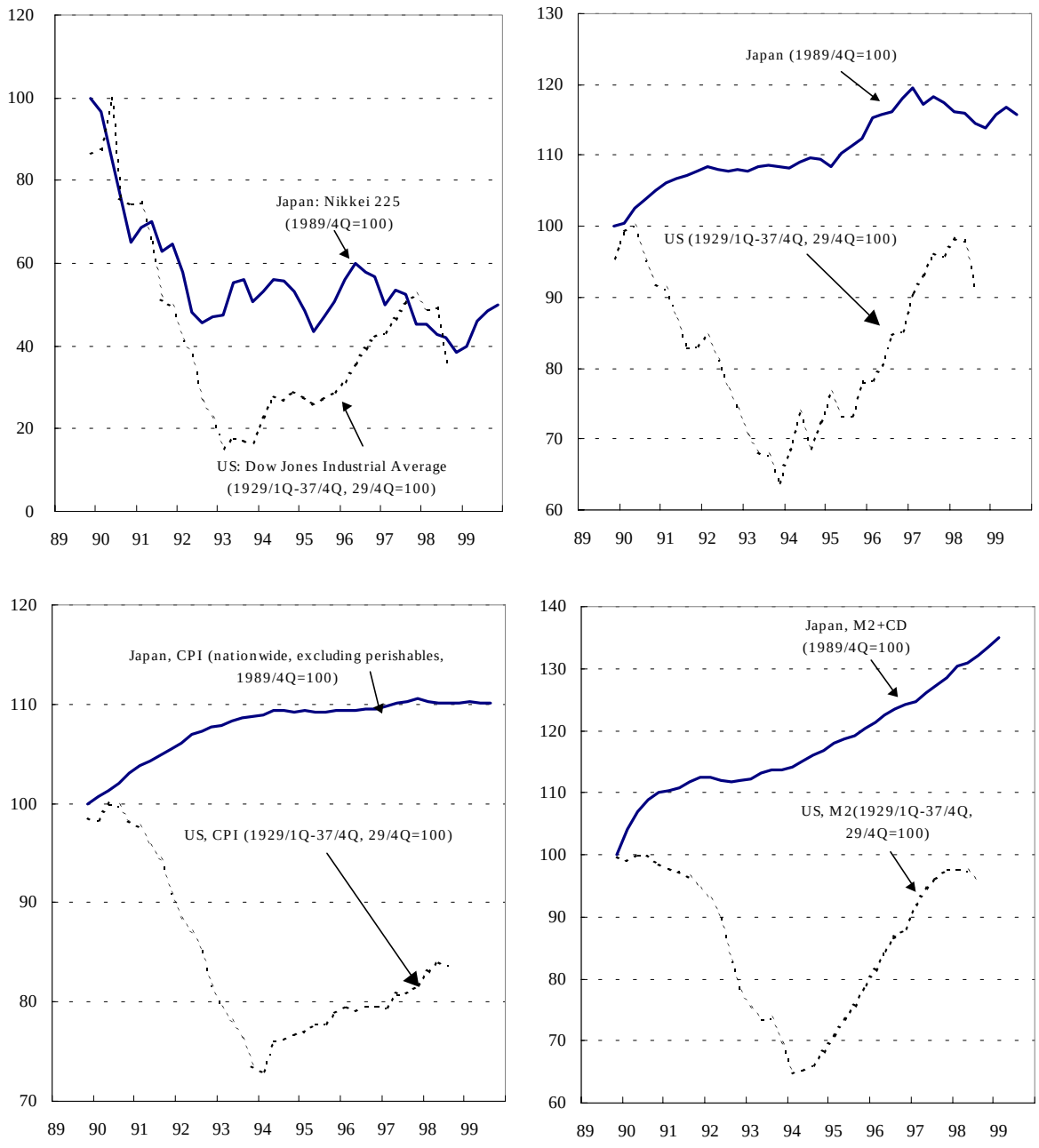
Figure 25: Non-performing Loans of the U.S. Commercial Banks



Source: Federal Deposit Insurance Corporation, *Quarterly Banking Profile*

Note: Data for FDIC-insured commercial banks. Non-performing loans include those past their due date by 90 or more days, those in non-accrual status, and OREO.

Figure 26: Comparison of Stock Price, Real GDP, Consumer Prices, and Money Stock
(Between the 1990s in Japan and the Great Depression Era in the US)

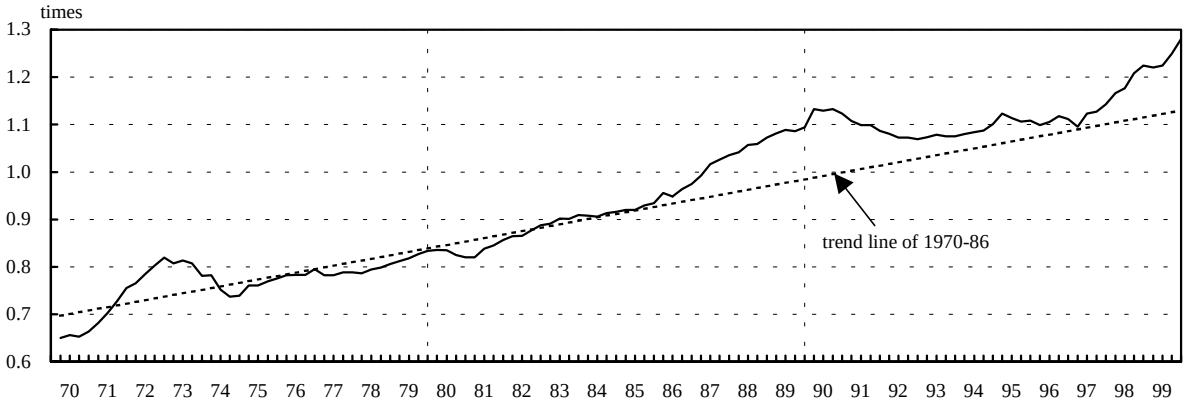


Note: 1. Japanese CPI data are adjusted by excluding the effects of the consumption tax increase in April 1997 on the assumption that prices of all taxable goods fully reflect the tax rate rise.
2. Data for stock prices, consumer prices, and money stocks are quarterly average.

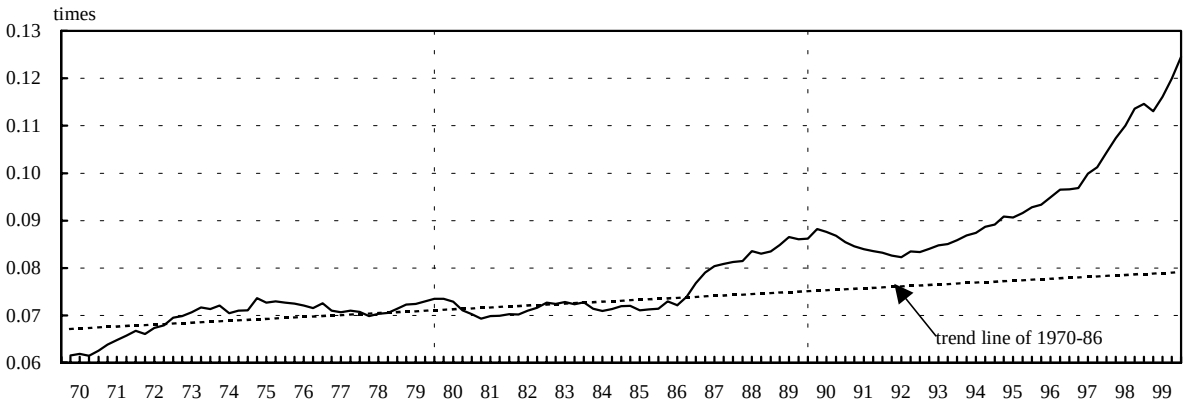
Sources: Bank of Japan; Management and Coordination Agency, "Consumer Price Index"; Economic Planning Agency, "National Income Statistics"; *Nihon Keizai Shimbun*; Bloomberg; U.S. Department of Labor, Bureau of Labor Statistics, "Consumer Price Index"; Balke, N. S., and R. J. Gordon, "Historical Data," in R. J. Gordon, ed., *The American Business Cycle* (University of Chicago Press, 1986).

Figure 27: Ratio of Money Stock to Nominal GDP

(1) M2+CDs

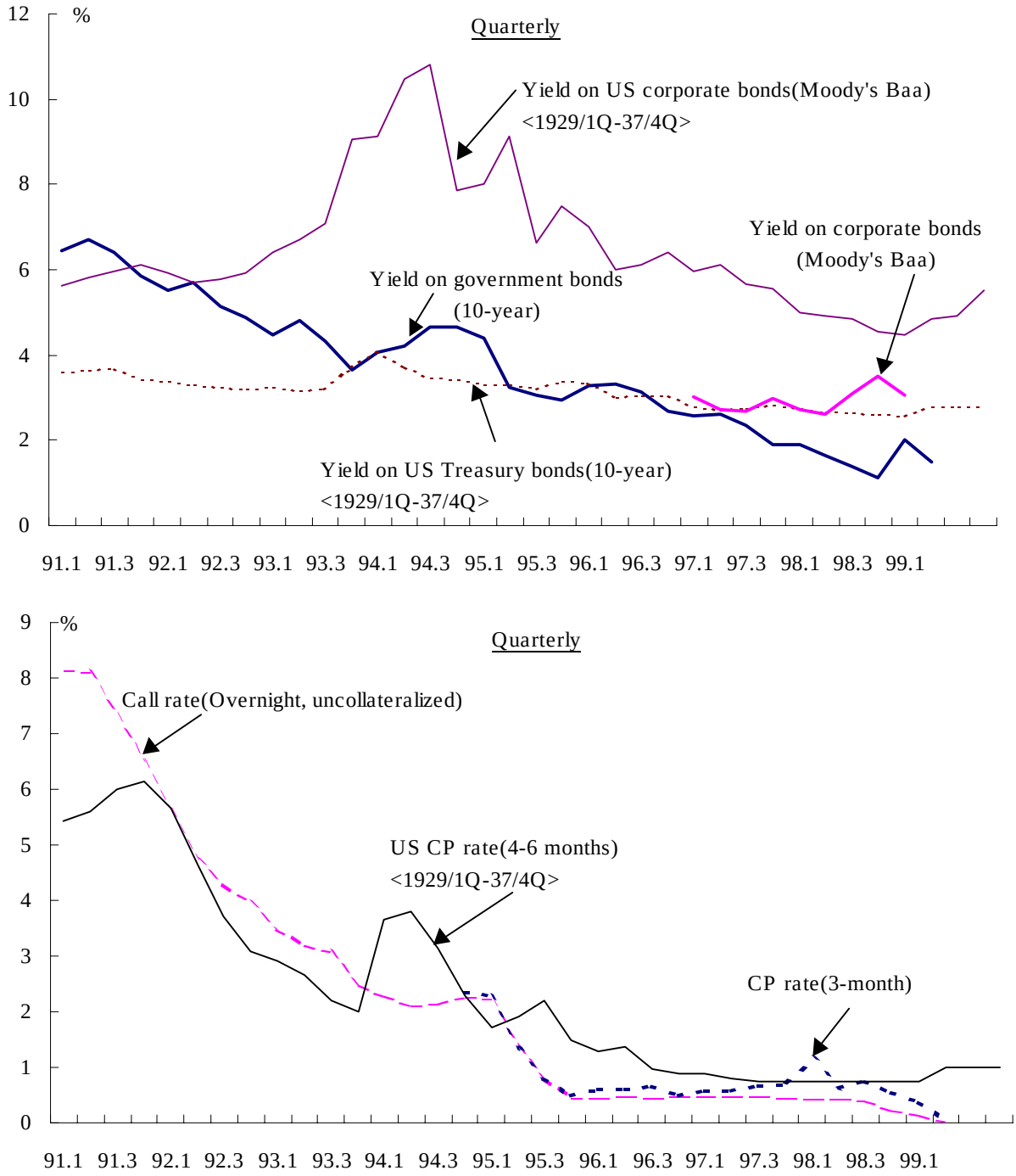


(2) Monetary Base



Sources: Bank of Japan, *Monetary and Economic Statistics Monthly*; Economic Planning Agency, "National Income Statistics"

Figure 28: Comparison of Interest Rates
(Between the 1990s in Japan and the Great Depression Era in the US)

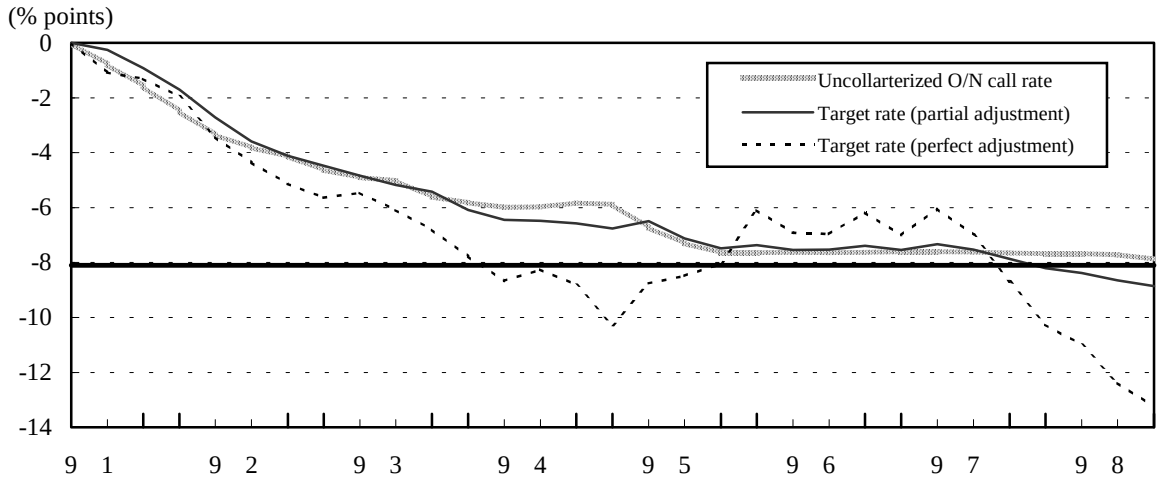


Notes: 1. Japanese interest rates: 1991/1Q-1999/2Q. US interest rates: 1929/1Q-1937/4Q.
2. The horizontal scale is graduated for the Japanese case, while 1991/1Q in the scale corresponds to 1929/1Q for the US data.

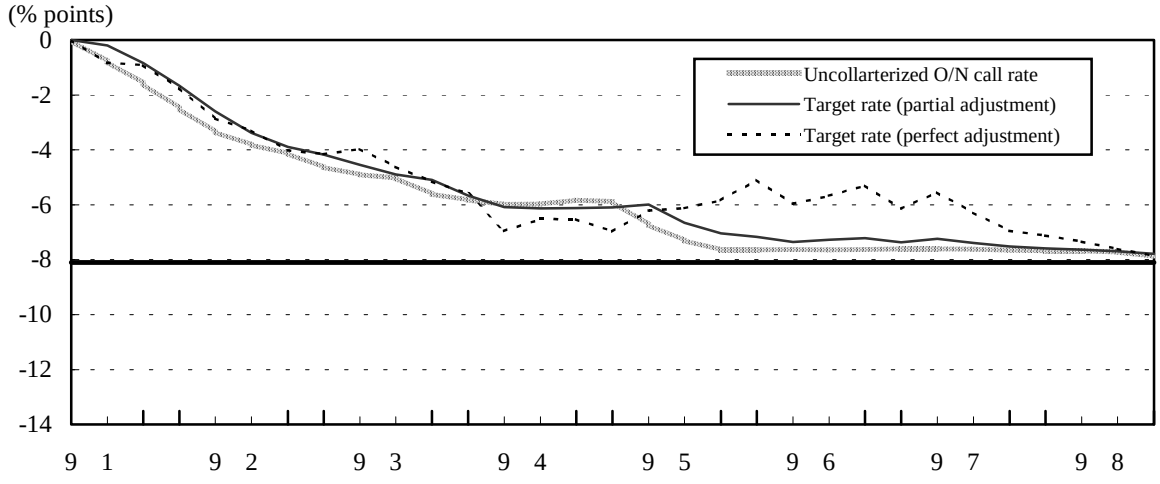
Sources: Bank of Japan; Federal Reserve Board, *Financial and Business Statistics*; Balke, N. S., and R. J. Gordon, "Historical Data," in R. J. Gordon, ed., *The American Business Cycle* (University of Chicago Press, 1986).

Figure 29: Monetary Easing in Japan in the 1990s
(Actual vs. Taylor's Rule-type Policy Reaction Function)

(i) Case 1 (α=1.5, β=1.0)



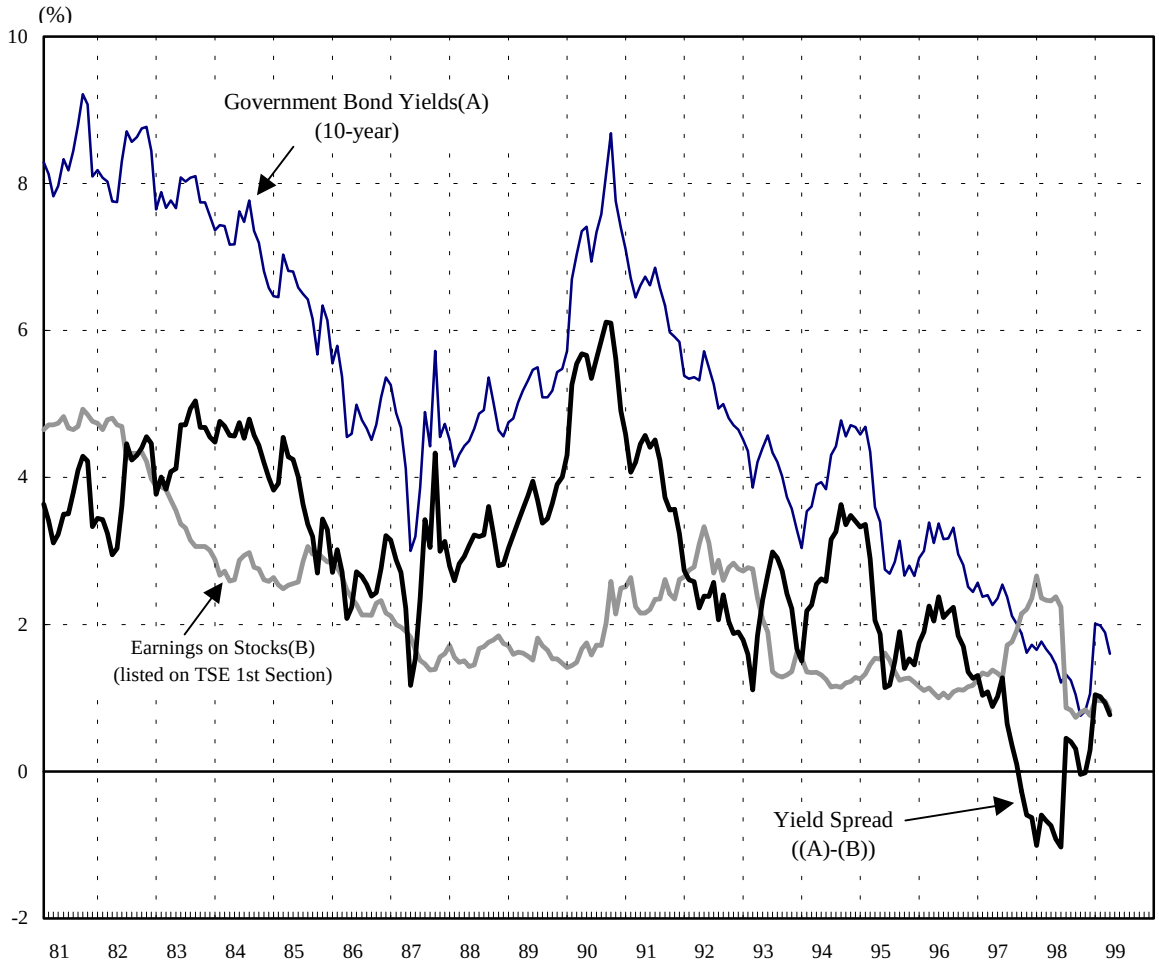
(ii) Case 2 (α=2.0, β=0.3)



Sources: Bank of Japan; Management and Coordination Agency, "Consumer Price Index"; Economic Planning Agency, "Consumer Price Index"; Economic Planning Agency, "National Income Statistics"

Notes: 1. Baseline formula of Taylor's Rule: $R_t = (1-\lambda)\times[\alpha\times(\pi_{t+4}-\pi^*)+\beta\times(Y_t-Y^*)]+\lambda\times R_{t-1}$
R_t=uncollatellized overnight call rates at t-period; $\pi_{t+4}-\pi^*$=the difference in inflation rate (consumer prices) between the actual and the target; Y_t-Y^*=real GDP gap at t-period (actual real GDP minus potential real GDP); λ=0 in total adjustment rule; λ=0.85 in partial adjustment rule.
2. The data above are the changes in interest rates (actual call rates or target rates calculated by the baseline formula of Taylor's rule) from the rates in the 1991/2Q (when the first move to monetary easing in the 1990s was made).

Figure 30: Yield Spread

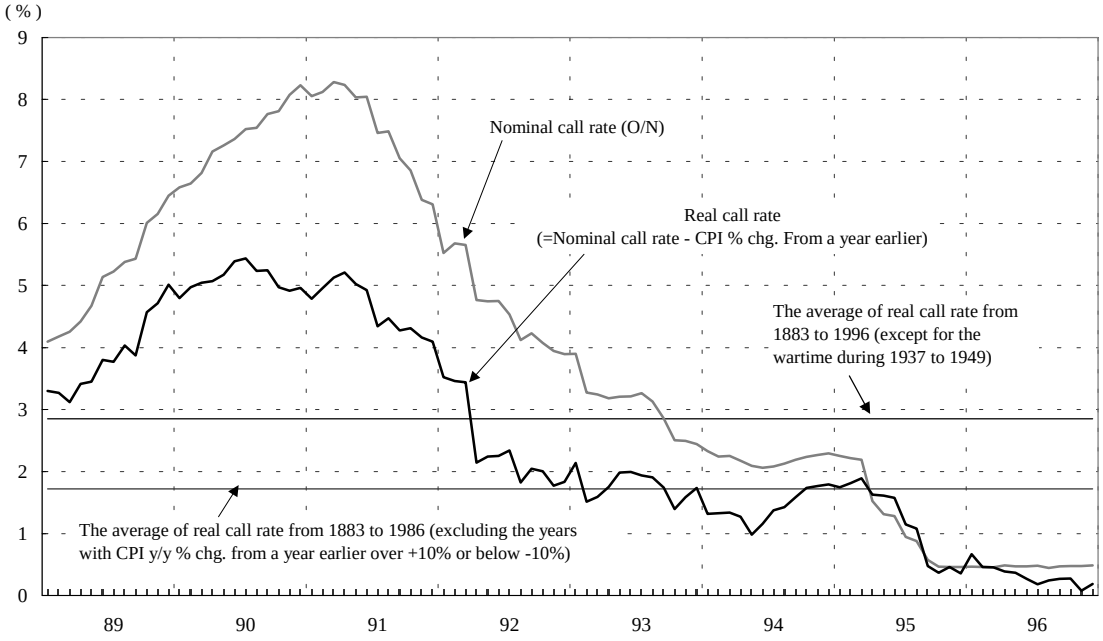


Sources: Bank of Japan, *Monetary and Economic Statistics Monthly*

Notes: 1. Data are at the end of month. Government bond yields are 10-year bond yields with the longest remaining maturity.

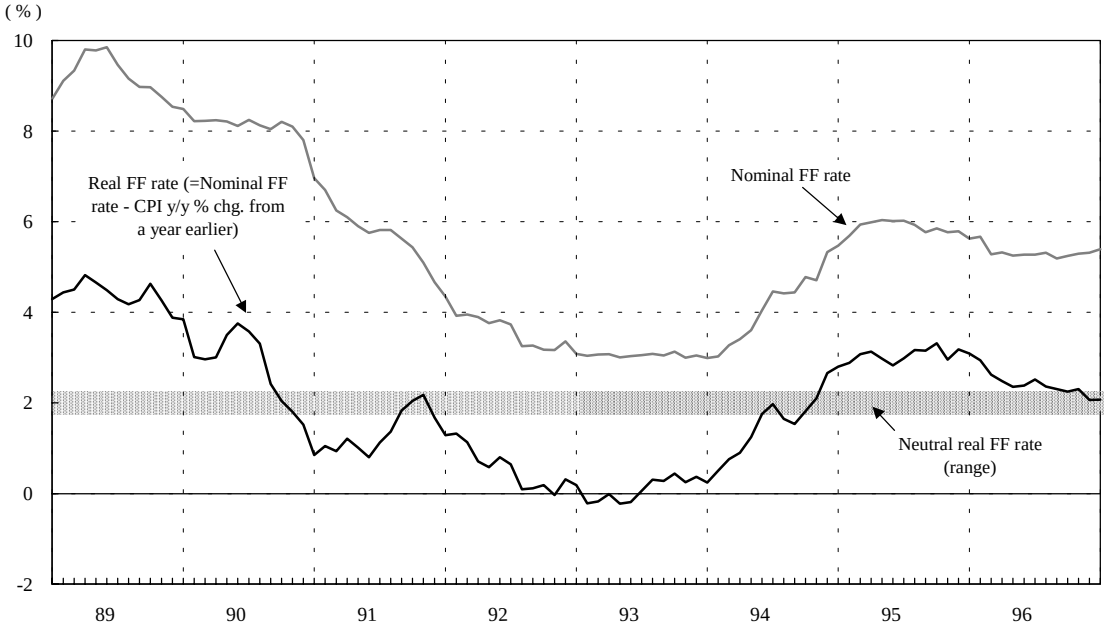
2. Yield spread = government bond yields – expected earnings on stocks where expected earnings on stocks are the inverse of the price earnings ratio.

Figure 31: Short-term Real Interest Rates in Japan



Sources: Bank of Japan, *Economic Statistics Monthly*, Bank of Japan, *Nihon Ginko Hyakunenshi Shiryouhen* (*The Centennial History of the Bank of Japan: Data and Materials*)

Figure 32: US Short-term Real Interest Rates



Sources: Board of Governors of the Federal Reserve System, *Federal Reserve Bulletin*, Blinder (1998)
Note: The range of neutral real interest rates above are based on Blinder (1998).