

IMES DISCUSSION PAPER SERIES

**The Asset Price Bubble and Monetary Policy:
Japan's Experience in the Late 1980s and the Lessons**

Kunio Okina, Masaaki Shirakawa, and Shigenori Shiratsuka

Discussion Paper No. 2000-E-12

IMES

INSTITUTE FOR MONETARY AND ECONOMIC STUDIES

BANK OF JAPAN

C.P.O BOX 203 TOKYO

100-8630 JAPAN

NOTE: IMES Discussion Paper Series is circulated in order to stimulate discussion and comments. Views expressed in Discussion Paper Series are those of authors and do not necessarily reflect those of the Bank of Japan or the Institute for Monetary and Economic Studies.

The Asset Price Bubble and Monetary Policy: Japan's Experience in the Late 1980s and the Lessons

Kunio Okina,* Masaaki Shirakawa,** and Shigenori Shiratsuka***

Abstract

Since the latter half of the 1980s, Japan's economy has experienced the emergence, expansion, and bursting of a bubble economy, characterized by a rapid rise in asset prices, the overheating of economic activity, and the expansion of money supply and credit. This paper examines the mechanism by which the bubble economy was generated and summarizes lessons a central bank should draw from the experience in order to prevent it from happening again. Specifically, by focusing on the intensified bullish expectations which played an important role behind the large fluctuations in asset prices and the economy, the process of the emergence, expansion, and bursting of the bubble is examined in relation to the monetary policy at the time. Based on this analysis, the paper discusses a framework for monetary policy conducive to achieving both price stability and financial system stability.

Key words: Asset prices, bubble, intensified bullish expectations, monetary policy, sustained price stability, financial stability, forward-looking monetary policy

* Director, Institute for Monetary and Economic Studies, Bank of Japan (e-mail: kunio.okina@boj.or.jp)

** Advisor to the Governor, Financial Market Department, Bank of Japan (e-mail: masaaki.shirakawa@boj.or.jp)

*** Senior Economist, Research Division I, Institute for Monetary and Economic Studies, Bank of Japan (e-mail: shigenori.shiratsuka@boj.or.jp)

This paper is prepared for the Ninth International Conference sponsored by the Institute of Monetary and Economic Studies, Bank of Japan on July 3-4, 2000, entitled "Role of Monetary Policy under the Low Inflation Environment." It is also a revised version of preliminary draft presented at the workshop under the same title sponsored by the Institute for Monetary and Economic Studies at the Bank of Japan on January 25, 2000. The authors are grateful to Dr. Masaru Yoshitomi, Professor Shinichi Kitasaka, and other participants at the Workshop for their helpful comments and discussions; to Messrs. Yasuhiro Maehara, Michio Kitahara, Toyoichiro Shirota and Yuji Yokobori, and Ms. Sachiko Suematsu for their assistance. The views expressed in the paper are those of the authors and do not necessarily reflect those of the Bank of Japan.

Table of Contents

I	Introduction	1
II	Overview of Japan's Economy during the Bubble Period	2
	A. Definition of the Bubble Economy	2
	B. Characteristics of the Bubble Economy	3
	1. Substantial Increase in Asset Prices	3
	2. Overheating of Economic Activity	4
	3. Increase in Money Supply and Credit	4
	C. Size of Japan's Bubble Economy	5
	1. Comparison with Overseas Episodes	5
	2. Comparison with the Bubble after World War I	6
III	Mechanism behind the Emergence and Expansion of the Bubble	7
	A. Intensified Bullish Expectations	7
	B. Factors behind the Bubble	8
	1. Aggressive Bank Behavior	8
	2. Protracted Monetary Easing	10
	3. Taxation and Regulations	11
	4. Weak Mechanism to Impose Discipline	11
	5. Self-confidence in Japan	12
IV	Did BOJ's Monetary Policy Create the Bubble?	13
	A. Monetary Policy during the Bubble Period	13
	1. Process of Monetary Easing	13
	2. Seeking to Shift to Monetary Tightening	15
	3. Process Leading to Monetary Tightening	17
	B. Relationship between Monetary Policy and the Emergence and Expansion of the Bubble	19
	1. How Did Monetary Policy Bring About the Bubble Economy?	19
	2. Could Monetary Policy Have Prevented the Emergence of the Bubble Economy?	20
	3. Would Earlier Monetary Tightening Have Reduced the Scale of the Bubble?	20
	4. Should Prudential Regulations Have Been Strengthened during the Bubble Period?	21
V	Why Was Monetary Tightening Delayed?	22
	A. <i>Ex-post</i> Examination of Economic and Financial Conditions during the Bubble Period	23
	1. Economic Activity	23
	2. Inflation	24
	3. Expansion of Money Supply and Credit	25
	4. Rise in Asset Prices	26
	B. The Influence of the Prevailing Policy Agenda	26
	1. International Policy Coordination	27
	2. Preventing the Appreciation of the Yen	28
	3. Reducing the Current Account Surplus through the Expansion of Domestic Demand	29
	4. Relationship with Fiscal Policy	29
	C. Recognizing the Adverse Effects of the Bubble	31
VI	Lessons for the Bank of Japan	32
	A. Importance of Forward-Looking Monetary Policy	32
	B. Grasping the Risk Profile of the Economy	34
	1. Output Gap	34
	2. Money Supply and Credit	34
	3. Asset Prices	35
	4. Behavior of Financial Institutions	35
	5. Interaction of Risks	36
	C. Relationship with the Prevailing Policy Agenda	36
	D. Importance of Designing an Appropriate Institutional Framework	37
	References	37

I Introduction

Japan's economy has experienced substantial fluctuations since the latter half of the 1980s. From the latter half of the 1980s to the early 1990s when the bubble emerged and expanded, we saw a rapid and large surge in asset prices, a sizable increase in money supply and credit, and the expansion of economic activity for a protracted period. During the subsequent period of the bursting of the bubble from the early 1990s, Japan experienced a plummet in asset prices, the accumulation of huge non-performing assets and resulting difficulties faced by financial institutions, and a prolonged recession.

There have been various discussions and analyses among central bankers, academia, and economists both at home and abroad with respect to the mechanism of how the bubble economy was generated, although until now a consensus is far from being reached.¹ Similarly, discussions are under way as to how monetary policy should be conducted when asset prices rapidly rise. In fact, the evaluation of monetary policy depends very much on financial and economic conditions under which it is conducted. For example, from the latter half of 1987 when asset prices rapidly rose and economic expansion became increasingly certain, the Bank of Japan (BOJ) explored the possibility of monetary tightening in view of concern over inflation and excessive monetary easing, but could not present an argument which was regarded as sufficiently convincing for tightening. In contrast, immediately after the bursting of the bubble, there were periods when monetary tightening was generally praised as an appropriate measure. As the recession became protracted, the BOJ was exposed to severe criticism that prolonged monetary easing since the latter half of the 1980s had brought about the bubble economy, which led to the subsequent deep recession and non-performing asset problem.

Recalling the situation when the bubble emerged, the BOJ expressed concern, at a relatively early stage, over inflationary pressure and the adverse effects of excessive monetary easing. Such concerns were also shared by not a few economists at that time. However, in view of stable prices indicated by various related indices, those who were concerned with inflationary pressure had difficulty in reconciling stable price indices with concern over future inflation. Furthermore, there did not exist a commonly-shared understanding as to what is exactly problems caused by the increase in asset prices.

This paper intends to draw lessons based on the experience of monetary policy during the bubble period rather than a simple afterthought. In view of such an intention, this paper attempts to describe as accurately and as concretely as possible the economic, financial, and social background under which monetary policy was being

¹ Literature which has dealt with Japan's bubble period include: Ohta (1991), Noguchi (1992), Ueda (1992), Iwata (1993), Ministry of Finance (1993), Suzuki (1993), Takao (1994), Ogata (1996), Cargill, Hutchison, and Ito (1997), Ogawa and Kitasaka (1998), Yoshitomi (1998), Okumura (1999), and Mieno (2000).

conducted. Needless to say, the lessons derived from the experience during the bubble period could differ depending on the economic theories that are being applied and also on how the general public perceived the central bank. Some may find this paper overstates the importance of monetary policy and others find it too detached or self-defensive, neither of which intention the authors had in mind. The main purpose of this paper is to present the authors' views on the cause of the bubble since the late 1980s and the lessons for monetary policy as well as to objectively describe the background behind these views, thereby further enriching discussion on the bubble.

This paper is structured as follows. Chapter II reviews the development of Japan's economy during the bubble period and Chapter III examines the mechanism behind the emergence and expansion of the bubble. Chapter IV analyzes how monetary policy was conducted in the process of the emergence and expansion of the bubble as well as the influence of prolonged monetary easing on the process. Chapter V considers the question of why monetary tightening was delayed, and Chapter VI discusses the lessons learned from the bubble period that the BOJ should be aware of in conducting monetary policy.

II Overview of Japan's Economy during the Bubble Period

A. Definition of the Bubble Economy

While the term 'bubble' is used differently among people, based on the experience of Japan's economy in the late 1980s, let us characterize the bubble economy in this paper by three factors: a rapid rise in asset prices, the overheating of economic activity, and a sizable increase in money supply and credit (see Figure 1 for monetary and economic conditions after the 1980s).

The definition of the bubble period may vary depending on which one of the three factors one emphasizes. The rise in asset prices started around 1982 and accelerated from 1985 to 1986. However, the rise was relatively moderate in the early stage and two years (1985-86) coincided with the '*endaka* recession' (a recession caused by the appreciation of the yen). While few view these years as being part of the bubble period, many consider 1987 as the beginning of the bubble period for the following reasons. First, according to the Economic Planning Agency's (EPA) reference dates of business cycle, the economy bottomed out in November 1986 and 1987 was a year of expansion. Second, while the year-on-year growth rate of money supply (M2+CDs) and credit had been declining somewhat in 1986, albeit at a high level, it started to accelerate around 1987. As such, 1987 saw an accelerating rise in money supply and credit, a rapid increase in asset prices, and the economy entering a recovery cycle. Hence many naturally regard 1987 as the starting year of the bubble. However, some might argue that 1987 should not be included in the bubble period since the recovery of the economy was not clearly recognized in the first half of the year and

there was a worldwide stock market crash in October of the same year.

Views differ as to when the bubble began to burst. Stock prices in terms of the Nikkei 225 peaked at end-1989², while land prices in terms of the Urban Land Price Index (six major cities, commercial areas) of the Japan Real Estate Research Institute peaked around 1990. In addition, the year-on-year growth rate of money supply (M2+CDs) peaked in April and May 1990, and the economy peaked in February 1991 according to the EPA.

While the exact period of the emergence, expansion, and bursting of the bubble may differ, in this paper we define the four years from 1987 through 1990 as the ‘emergence and expansion of the bubble period’ based on the simultaneous rise in stock and land prices, economic activity, and money supply.³

B. Characteristics of the Bubble Economy

1. Substantial Increase in Asset Prices

The first characteristic of the bubble period was a rapid and substantial rise in asset prices. In fact, asset prices began increasing in 1983, and it was around 1986 when the rise began accelerating rapidly.

Among asset prices, what exhibited the most rapid rise initially were stock prices. The speed of rise in the Nikkei 225 began accelerating in 1986 and the index hit a peak of 38,915 at end-1989, 3.1 times higher than the level at the time of the Plaza Agreement in September 1985 (12,598). Then, stock prices fell sharply to 14,309 in August 1992, more than 60% below the peak.⁴

The rise in land prices followed that in stock prices with a time lag, spreading from Tokyo to major cities such as Osaka and Nagoya, and then to other cities (Figure 2). The Urban Land Price Index reached a peak in September 1990, almost four times higher than the level in September 1985. Land prices have been declining thereafter and in 1999 were some 20% lower than in September 1985, and some 80% lower than the peak in September 1990.

Since the end of World War II Japan has seen a number of substantial rises in land prices, but the rise during the bubble period was the greatest since the mid-1950s (when statistics became available) in terms of both the inflation-adjusted rate of increase and its duration (Figure 3). In terms of fluctuations in asset values, the

² The Nikkei OTC Index hit a peak on July 9, 1990, increasing almost 60% even after the Nikkei 225 peaked at end-1989 (from 2,597 at end-1989 to 4,149 on July 9, 1990).

³ A bubble period can also be defined as a period during which actual asset prices exhibit substantial upward divergence from an equilibrium price calculated from theoretical models. Such a method was not adopted in this paper since the equilibrium price critically depends on the assumptions underlying the theoretical model.

⁴ Stock prices subsequently showed a temporary rebound, but declined further to 14,485 in 1995 against the backdrop of the yen’s appreciation. Stock prices recently recorded a bottom of 12,879 in October 1998 (67% below the peak).

combined capital gains on stocks and land were 452% of nominal GDP for the 1986-89 period, which was much higher than the 193% recorded for the 1972-73 period. The capital losses were 159% of nominal GDP for the 1990-93 period (Figure 4).⁵

2. Overheating of Economic Activity

The second characteristic of the bubble period was the overheating of economic activity. According to the EPA, the economy hit a bottom in November 1986 and then expanded for four years and three months (51 months) until February 1991, after which it subsequently slowed down until October 1993. The economic expansion during the bubble period is the second longest after the expansion of the late 1960s (*Izanagi boom*)⁶ and real GDP and industrial production grew at an average annual rate of 5.5% and 7.2%, respectively. The main engine behind such economic expansion was business fixed investment which continued to be almost 20% of GDP, a level comparable to that during the high economic growth period of the 1960s (Figure 5). In addition, there was a large increase in housing investment and also in expenditure on consumer durables on the part of the household sector (Figure 6).

In contrast, during the recession after the bursting of the bubble, the economic slowdown lasted 32 months (from February 1991 to October 1993), the second longest slowdown following that after the second oil shock (36 months, from February 1980 to February 1983). Average annual real GDP growth during this period was only 0.8% and industrial production declined 5.2% annually.

3. Increase in Money Supply and Credit

The third characteristic of the bubble period was the sizable expansion of money supply and credit. The growth of money supply (M2+CDs) somewhat decelerated in 1986 (the lowest growth rate was 8.3% in October-December 1986), but gradually accelerated afterwards and exceeded 10% in April-June 1987 (Figure 7). The growth of credit was more conspicuous than that of money supply. During the bubble period, not only bank borrowing but also financing from capital markets substantially increased against the backdrop of the progress of financial deregulation and the increase in stock prices (Figure 8). As a result, the funding of the corporate and household sectors (the sum of bank borrowing, straight corporate bonds, convertible bonds, bonds with warrants, and equity increase) rapidly increased from around 1988 and recorded a rate of growth close to 14% on a year-on-year basis in 1989 (Figure 7).

⁵ In our calculation, the ratio of each year's capital gains (losses) to nominal GDP is simply added up. Capital gains during the bubble period were substantially greater than capital losses following the bursting of the bubble. This is largely attributable to Japan's land utilization structure where agricultural land and forests have been consistently converted into residential and commercial areas. The average land price in residential and commercial areas is more than 30 times that of agricultural land and forests, and thus conversion to residential and commercial use increases Japan's average land prices.

⁶ The economic expansion during the *Izanagi boom* lasted for 57 months from October 1965 to July 1970.

C. Size of Japan's Bubble Economy

From the latter half of the 1980s, a bubble economy emerged not only in Japan but also in other industrial countries. Indeed, economic and financial history both at home and abroad shows that bubbles have often emerged. Thus, to put the size of the bubble economy in Japan into perspective, it may be useful to compare it with bubbles in other industrial countries in 1980s as well as the experience in Japan after World War I (WWI).

1. Comparison with Overseas Episodes

Looking at the experience of major countries from the latter half of the 1980s, stock prices started to rise from around 1983 and, until mid-1987, it was not necessarily the case that such a rise was only conspicuous in Japan (Figure 9). However, from 1988 the stock price rise in Japan began to stand out internationally. Borio *et al.* (1994) concluded that the rate of increase in real asset prices (both stock and land prices) in Japan was quite high as were the increases in Sweden and Finland (Figure 10).⁷

From the latter half of the 1980s, Japan experienced the largest fluctuation in economic activity among industrial countries. Though the timing of the bubble period differs slightly from country to country, when one compares economic growth of the G7 countries between 1986-90 (the bubble period) and 1991-95 (the bursting of the bubble period) its fluctuation was the largest in Japan.

Many countries had observed an increase in non-performing assets since the latter half of the 1980s, among which the non-performing assets of Japanese financial institutions were the largest. Non-performing assets of major Japanese banks were ¥29.6 trillion (6.0% of nominal GDP) at end-March 1999 and reached ¥53.9 trillion (10.9% of nominal GDP) if the accumulated direct write-offs from fiscal 1992 are added (Figure 11).⁸

Granted that it is difficult to make an accurate comparison, but if we take into account the size of public funds injected and large fluctuations in asset prices, we may be able to conclude that the bubble in Japan in the late 1980s, like those in the Nordic countries, was extremely large.⁹

⁷ Real aggregate asset prices estimated by Borio *et al.* (1994) were updated until 1997 by BIS (1999). The prices are the weighted average of equity and residential and commercial real estate price indices deflated by consumer prices with the weights based on the composition of private sector wealth.

⁸ It is difficult to make a precise international comparison of the non-performing assets of financial institutions. For example, non-performing assets in the US (for member banks of the Federal Deposit Insurance Corporation) increased from 1990 to 1991, reaching \$117 billion (2.0% of nominal GDP) in the second quarter of 1991. If one adds the amount of direct write-offs in each quarter after the fourth quarter of 1986 when non-performing assets began to increase, the accumulated amount of non-performing assets was \$252.2 billion (4.1% of nominal GDP) in the third quarter of 1992.

⁹ In Sweden and Finland, public funds were injected to dispose of non-performing assets in the banking sector on the scale of 4.7% (1991-93) and 7.3% (1991, 1992) of nominal GDP, respectively (BIS [1993]). In Japan, financial reconstruction legislation passed by the Diet in October 1998 provided ¥60 trillion (12% of nominal GDP) in public funds to dispose of non-performing assets in the banking sector. The

2. Comparison with the Bubble after World War I

Comparing the change in asset prices between the bubble period in the latter half of the 1980s and the one after WWI (1914-18),¹⁰ while the rate of increase and decrease in stock prices was not different, the speed of decline after the bubble burst was somewhat faster in the period after WWI (Figure 12). And, the rate of increase in land prices was also larger. Regarding capital gains and losses, for which an estimate only exists for those on land, capital gains reached 335% of GNP during 1913-19, and capital losses 43% of GNP during 1924-30 (Table 1). In the case of the recent bubble period, capital gains on land were 367% of GDP during the bubble period, and capital losses 107% of GDP after the bursting of the bubble, evidencing that capital losses were substantially larger in the recent bubble period.

If one look at the development of the economy and prices after the bursting of the bubble, the extent of the decline was much smaller in the recent bubble period. According to the EPA, the economy hit its recent bottom in October 1993, although real GDP for the fourth quarter of 1993 slightly exceeded that of the first quarter of 1991, the recent peak of the business cycle. In contrast, after WWI, real GDP had increased for about two years after stock prices had hit a peak, and then declined sharply. Prices as well as stock prices hit a peak in the first quarter of 1920 and then declined more than 20% toward 1921, while the recent bubble period did not witness any significant price decline.

In sum, compared with the bubble period after WWI, the magnitude of the asset bubble was larger in the bubble period of the late 1980s, but the decline in economic activity after the bursting of the bubble was smaller.¹¹

figure will be increased to ¥70 trillion (14% of nominal GDP) when legislation related to revision of the Deposit Insurance Corporation passes the Diet.

¹⁰ At that time, Japan's economy had been stagnant for a while after the outbreak of WWI, and from mid-1915 started to recover thanks to a rapid increase in exports, converting the trade balance into a large surplus (so-called special war demand). The economy fell into a temporary recession after the end of WWI in November 1918, bottomed out in March 1919, and entered a boom phase with a rapid rise in land and stock prices. Economic expansion was supported by a buoyant US economy, reconstruction demand in Europe, and an expansionary fiscal and monetary policy. However, in 1920, while imports continued to increase, exports declined due to the accumulative effect of inflation and the trade balance turned to a deficit. As a result, foreign exchange reserves and money supply decreased and the economy followed a downward trend. Under such circumstances, the stock market crashed on March 15, 1920, which added a further blow to the already stagnant economy.

¹¹ While it is difficult to compare the amount of non-performing assets due to lack of data around the time of WWI, the large capital losses mentioned above suggest that substantially larger non-performing assets were generated during the recent bubble period.

III Mechanism behind the Emergence and Expansion of the Bubble

A. Intensified Bullish Expectations

The following are often pointed out as factors behind the emergence and expansion of the bubble:

- Aggressive behavior of financial institutions
- Progress of financial deregulation
- Inadequate risk management on the part of financial institutions
- Introduction of the capital accord
- Protracted monetary easing
- Taxation and regulations biased toward accelerating the rise in land prices
- Overconfidence and euphoria
- Over-concentration of economic functions on Tokyo, and Tokyo becoming an international financial center

These factors are not necessarily mutually exclusive but interrelated. In this regard, we are often tempted to ask: Among these factors, can we single out the most important and fundamental factor to explain the emergence and expansion of the bubble? Unfortunately, there is no simple answer to this question. Our experience after the late 1980s tells us that realities cannot be explained by any one factor.

Our conclusion is that no single factor was responsible for generating the bubble. Rather we believe that when several initial factors changed, there existed certain factors amplifying such changes, which led to the emergence and expansion of the bubble. The bubble was generated by the complex interaction of various factors in a similar way as in a chemical reaction. The process of such a chemical reaction could be termed the process of ‘intensified bullish expectations.’

With intensified bullish expectations as our central analytical concept, we discuss the bubble generating mechanism by examining factors which are considered to affect such expectations (Figure 13).

First of all, let us examine when and to what extent such bullish expectations became intensified. In the latter half of the 1980s, Japan’s economy was experiencing a recession due to the rapid appreciation of the yen after the Plaza Agreement, and both business and household sentiment was, up to a certain point in time, extremely bearish. After some point, however, bullish expectations became dominant among many economic agents such as firms, households, financial institutions, and the government. Though it is difficult to quantify the extent of such bullish expectations, we may be able to use the change in the yield spread of stocks as a proxy. The yield spread of stocks can be calculated by subtracting the yield on stocks (expected profits/share price) from long-term interest rates. It is equal to the difference between expected growth rate and

risk premium, and thus becomes a measure for bullish expectations in that it represents the expected growth rate adjusted for risk premium.¹²

The yield spread of stocks shrank below 2% at the beginning of 1987, but rebounded from around 1988, expanding to some 6% in 1990 (Figure 14). The expansion of the yield spread during this period implies that the expected growth rate increased, or risk premium decreased, or both happened simultaneously. If we assume a risk premium of 2%,¹³ the expected growth rate of nominal GDP in 1990 would have been as high as 8%. However, in view of low inflation at the time, it is almost impossible to believe that the potential growth rate of nominal GDP was close to 8%. Hence, it would be more natural to infer that the high level of the yield spread in 1990 reflected the intensification of bullish expectations.

B. Factors behind the Bubble

Through what mechanism was the bubble generated? With focus on intensified bullish expectations, we examine the following five factors which are considered important: aggressive bank behavior, protracted monetary easing, taxation and regulations biased toward accelerating the rise in land prices, a weak mechanism to impose discipline, and the effect of overconfidence in Japan.¹⁴ Though these five factors are mutually interrelated, if we dare to point the finger at one, it would likely be the aggressive behavior of financial institutions which indeed many consider to be the initial underlying factor behind the emergence of the bubble, while the other four factors amplified changes in such behavior.

1. Aggressive Bank Behavior

The first factor which generated the bubble was the aggressive behavior of financial institutions. After 1987-88 it was clear that the behavior of financial institutions became extremely aggressive. If looked at more closely, such aggressive behavior on the part of financial institutions did not suddenly appear in the process of monetary easing in the latter half of the 1980s, but rather had already gradually started around 1983.

¹² It is not necessarily important to distinguish between the increase in expected growth rate and the decrease in risk premium since both will have an impact on asset prices in the same direction. For example, if a rise in the yield spread of stocks reflects a decline in risk premium, it suggests stronger confidence for the future, and corporate and household economic activity will become active as the expected growth rate increases. Hence, when considering the effects on asset prices, it suffices to evaluate the expected growth rate which is adjusted for risk premium.

¹³ Risk premium can be calculated as follows. For example, if one takes the difference between the average annual nominal growth rate for the ten years 1984 through 1993 (5.3%) and the average yield spread (3.4%), it is 1.9%. If one takes the difference between the nominal growth rate of 1994 (6.9%) when the declining trend of nominal GDP came to a halt and the yield spread of the same year (4.5%), it is 2.4%.

¹⁴ The mass media also played an important role in the transmission process of intensified bullish expectations. Shiller (2000) stated "The history of speculative bubbles begins roughly with the advent of newspapers," referring to the Dutch tulip mania of the 1630s as the first example of a bubble.

a. Gradual financial deregulation and declining profitability of financial institutions

Gradual financial deregulation and declining profitability are often mentioned as factors behind the change in the behavior of financial institutions (Figure 15).¹⁵ While restrictions on fund raising in securities market by firms were removed from around 1980, banks were only allowed phased entry into the securities business and were very concerned that major firms would become less dependent on them for funding.

In the meantime, the deregulation of interest rates on deposits proceeded gradually, forcing banks to pursue such aggressive lending as loans to small firms backed by property and also property-related loans at the expense of giving up the economic rent created by accepting deposits with regulated interest rates (Figure 16).¹⁶ As supporting evidence on this point, we compared the profitability, the growth rate of loans, and the ratio of property-related lending to total between seven failed banks and others among member banks of the Second Regional Banks Association. And, it is confirmed that these failed banks were already exhibiting poor profitability in the first half of the 1980s and aggressively expanded their loans to property-related firms from the mid-1980s (Figure 17).¹⁷

b. Capital adequacy requirements

Some point out capital adequacy requirements as a factor behind the aggressive behavior of financial institutions.¹⁸ The BIS capital base of city banks, long-term credit banks, and trust banks was ¥35 trillion as of end-September 1988 and increased to ¥46 trillion as of end-September 1989 (Figure 18). The capital base was increased through several channels. First, it was increased by higher profits reflecting economic expansion during the bubble period. Second, Tier II capital increased reflecting unrealized capital gains on stockholdings. And third, banks increased equity financing because of favorable equity market conditions.¹⁹

The effect of an increase in the BIS capital base due to unrealized capital gains on

¹⁵ Arbitrage between domestic and foreign financial markets had already become active due to revision of the Foreign Exchange and Foreign Trade Control Law in 1980, abolition of restrictions on yen conversion in 1984, and the deregulation of interest rates which in effect had already started. Gradual deregulation of interest rates on deposits commenced from 1985, and various deregulation measures concerning the business activity of financial institutions and the securities market also started in the 1980s.

¹⁶ Hoshi and Kashyap (1999) pointed out that in the 1980s since major firms became less dependent on bank borrowings and a substantial portion of overall financial assets continued to be composed of bank deposits, banks sought new lending opportunities among small businesses and property-related firms, which resulted in an increase in non-performing assets.

¹⁷ Hoshi (2000) showed, by using the financial statement data of individual banks, that the growth of non-performing assets is closely correlated with the growth of loans to property-related firms, and that the growth of such loans is affected by the degree of losing their borrowers to capital markets as well as land price increases.

¹⁸ BIS capital adequacy requirements were agreed in 1988 and effected in Japan from fiscal 1992.

¹⁹ It should be noted that subordinated bonds are included in Tier II.

stockholdings has been hotly debated in the context of aggressive bank behavior during the bubble period. If banks had raised the BIS capital base to the level of ‘economic capital’ which could have been used as a cushion against risks, it would be difficult to know whether the aggressive behavior of financial institutions was due to capital adequacy requirements or the result of recognizing risks on their part. In Japan’s economy during the bubble period, it thus appears more important to examine how financial institutions recognized and managed risks under gradual financial deregulation, rather than the effects of capital adequacy requirements.

2. Protracted Monetary Easing

Protracted monetary easing is cited as the second factor behind the emergence of the bubble. In fact, from the 1980s major countries, including Japan, saw a high correlation between a rise in asset prices and the expansion of credit (Figure 19). There were three mechanisms through which monetary easing could lead to a rapid increase in asset prices.

First, monetary easing could facilitate the funding of speculators by reducing funding costs (Iwamoto *et al.* [1999]). Since speculators who engage in large-scale investments tend to create positions in excess of their own financial resources, they usually need funds to cover a gap in settlement when trading a variety of financial assets. Protracted monetary easing from the latter half of the 1980s facilitated the creation of such investment positions by reducing funding costs. Second, a rise in stock prices, partly supported by monetary easing, reduced capital costs and facilitated financing in capital markets such as the issuance of new shares at market price as well as of convertible bonds and bonds with warrants. Third, a rise in land and stock prices increased the value of land and stocks held by firms, thereby enhancing their funding ability by increasing the collateral value of these assets.

During the bubble period, it is true that the above three mechanisms worked. However, it is difficult to believe that the bubble was generated only through monetary easing. First of all, if monetary easing automatically induces a bubble economy, then why wasn’t it generated during all previous periods of monetary easing? In addition, why hasn’t a bubble emerged under such extreme monetary easing conditions as created by the zero interest rate policy since February 1999? Second, the fact that industrial countries simultaneously, albeit to a different extent, experienced a bubble economy from the latter half of the 1980s seems to imply that there might exist some common factors which generate bubbles.²⁰ Considering all the above, it appears that monetary easing is a necessary but not a sufficient condition for the emergence of a bubble.²¹

²⁰ Generally observed common factors in the bubbles of major industrial countries from the 1980s include monetary easing, the review of regulations and supervision not being concurrent with the progress of financial deregulation, and the distortion of taxation.

²¹ The relationship between monetary easing and the bubble is examined in more detail in Chapter IV.

3. Taxation and Regulations

The third factor behind the emergence of the bubble is taxation and regulations on land which tended to induce higher land prices.²²

First is the effect of tax rates which are relatively low on the holding of land but heavy on land transactions. In general, when a rise in land prices is anticipated, the light tax burden on holding land has the effect of increasing the incentive to continue holding it which thus suppresses the supply of land. Furthermore, the heavy tax burden on transaction gains has the effect of squeezing the supply of land by creating an incentive to delay selling it for as long as possible. The rise in land prices through such a mechanism reflected the expected present discount value stemming from the above tax advantage. Expectations for a rise in land prices increased the expected present discount value of the tax advantage, leading to a further rise in land prices.

Second is the possibility that land prices, mainly in local areas, were formed by incorporating expectations that agricultural land would be converted to residential use in the future as a result of the lax application of regulations on land use. Like the tax effect just described, this suppressed the sale of land.²³

The rise in land prices due to the above factors can be regarded by landholders as the 'institutional benefits' or 'rents' created by the system. When land prices are rising, these institutional benefits become larger, which in turn accelerates the rise in land prices.

4. Weak Mechanism to Impose Discipline

As the fourth factor, it is pointed out that, while the behavior of many economic agents including financial institutions, firms, individuals, and the government became gradually aggressive during the bubble period, a mechanism to impose discipline on these agents was not functioning effectively. In Japan, the main bank system had been playing an important role in imposing discipline on firms, i.e. corporate governance. However, its functioning gradually weakened as major firms increased their funding through capital markets. In addition, the mechanism whereby discipline is imposed by shareholders and creditors did not function sufficiently due to such factors as cross-shareholdings, the application of the acquisition cost method of accounting and insufficient disclosure.²⁴

²² For the effects of tax and regulations on land price formation, see, for example, Noguchi (1989) and Nishimura (1995). In the case of overseas, interest payments on housing loans being tax-deductible from income is pointed out as an important factor in land price formation (Shigemi [1995]).

²³ When there is an incentive to hold land which can be sold at any time, it is likely to be left under-utilized. For example, Kanoh and Murase (1999) showed that the potential option value of the alternative utilization of land is an important determinant of land prices.

²⁴ As to the accounting standards, for example, convertible bonds and bonds with warrants are issued at a discount by an amount corresponding to stock conversion and stock purchase rights. Since the discount was treated inclusive of the issue price of bonds, it was regarded as a profit.

In light of the change in the environment as financial deregulation progressed, a new mechanism of corporate governance was needed for financial institutions. To this end, financial institution should have established a framework for controlling risks. Delay by the authorities in establishing an appropriate regulatory and supervisory framework made financial institutions rather lenient to review corporate governance on their part.

Any mechanism imposing discipline on economic agents will change as the economy develops. A mechanism which is effective up to a certain point in time will gradually cease functioning adequately as the economic and financial environment changes. For example, the fact that Japan had not experienced the bankruptcy of financial institutions for a long time in the post-war period mirrors, in principle, the soundness of the financial system. The practice of cross-shareholdings enabled firms to be managed with emphasis on medium- to long-term managerial stability, which contributed to the strength of Japanese firms. Partly because of such success, there occurred a delay in establishing a new mechanism of discipline, which is perhaps partly responsible for the emergence of the bubble.

5. Self-confidence in Japan

It appears that the above four factors are, albeit important, not quite sufficient to explain the emergence and expansion of the bubble. To further describe the expansion of the bubble, we need to introduce an additional factor which we may term the self-confidence that prevailed in Japan at that time.

Examining the backdrop against which such confidence was created, first is the fact that Japan's economy continued to perform well. As we have seen from the movement of the yield spread on stocks, expectations became clearly bullish from the latter half of 1988, when Japan recovered from the aftermath of the stock price crash on Black Monday, and rises in both stock prices and economic growth were witnessed under price stability. Such good macroeconomic performance brought self-confidence to many economic agents.

Second is the greater role of Japan in international financial markets. For example, Japan's external claims substantially increased with the expansion of the current account surplus. The overseas activities of Japanese financial institutions expanded considerably and their share of international bank lending was 41% at the peak (in the fourth quarter of 1989). Large-scale takeovers of foreign companies by Japanese firms were frequently reported. An often heard term, 'the largest creditor country,' vividly captures the atmosphere of the time.²⁵

Third, Japanese firms were leading the world in manufacturing technology,

²⁵ The net position of US external assets and liabilities became negative in the mid- to late-1980s (the exact timing of this turnaround slightly differs depending on the different evaluation of asset prices). In addition, it was in 1989 when both the English and Japanese editions of Ezra F. Vogel's *Japan as Number One* were published.

including semiconductors, and the success of Japanese-style management was regarded as evidence that it had a competitive edge over US-style management.

Finally, the rush of overseas financial institutions to Tokyo to open offices also supported Japan's self-confidence, as evidenced by the term 'Tokyo as an international financial center' which was often used in the bubble period to describe the situation. In addition, such a rush to Tokyo pushed land prices higher through the increased demand for office space in the center of Tokyo, leading to the further intensification of bullish expectations.²⁶

IV Did BOJ's Monetary Policy Create the Bubble?

The previous chapter described the mechanism behind the emergence of the bubble, and explained that protracted monetary easing was not the only factor, but one of several that generated the bubble. This chapter further examines in more detail the relationship between the emergence of the bubble and monetary policy.

A. Monetary Policy during the Bubble Period

In considering the relationship between the emergence of the bubble and monetary policy, it is useful to divide the bubble period from the latter half of the 1980s to the early 1990s into the following three sub-periods.

The first sub-period is from the Plaza Agreement in September 1985 through the spring of 1987, during which period monetary easing was promoted to counter the recession caused by the rapid appreciation of the yen after the Plaza Agreement. The second sub-period is from the summer of 1987 to the spring of 1989. Although the BOJ sought an appropriate timing to tighten monetary policy during this sub-period, it could not easily shift to monetary tightening thus resulting in the then lowest official discount rate being maintained for a protracted period. The third sub-period is from the spring of 1989 when the BOJ finally reversed its policy direction to monetary tightening.

1. Process of Monetary Easing

In order to counter the recession brought about by the rapid appreciation of the yen after the Plaza Agreement in September 1985, the BOJ lowered the official discount rate five times for a total of 2.5 percentage points between January 1986 and February 1987 (Table 2). As a result, the discount rate of 2.5%, the then lowest, continued for about two years and three months from February 1987 to May 1989. There were three interrelated features of monetary policy during this period.

²⁶ The National Land Agency (1985) forecast that demand for office space in Tokyo would increase to a level equivalent to the office space contained in 250 skyscrapers. It is sometimes pointed out that this forecast could have had a significant impact on expectations with respect to future land prices at that time.

a. *Framework of international policy coordination*

The first feature was that monetary policy was strongly influenced by the framework of international policy coordination as exhibited in the Plaza Agreement of September 1985. The first pillar of the Agreement was coordinated intervention in the foreign exchange market to rectify the excessive appreciation of the US dollar, and the second the international coordination of macroeconomic policy. Under such a framework of international policy coordination, countries with a current account surplus such as Japan and Germany were requested to boost domestic demand, while the US, suffering from a current account deficit, was urged to make efforts to reduce its fiscal deficit (Table 3).

Of the five reductions in the official discount rate after January 1986, only the first was at the pure instigation of the BOJ, the second through fifth being strongly influenced by the framework of international policy coordination as evidenced by the following fact: The second and third discount rate reductions were decided simultaneously in Japan and the US and the other two incorporated in the joint statement of the Japanese-US governments or the statement of the G7. Therefore, a vague recognition that interest rates were decided upon consultation with relevant countries with due consideration given to international relationships became widespread among the public.²⁷

b. *Preventing the appreciation of the yen*

The second feature was that considerable emphasis was given to ensuring foreign exchange rate stability, especially preventing the yen's appreciation, in conducting monetary policy.²⁸ This was against the backdrop of various anxieties such as the recession occasioned by the yen's appreciation and the hollowing out of the domestic economy, reaching a point where preventing the yen's appreciation became a national policy.

Statements of the G5/G7 around that time referred to the policy intention of each country. Indeed, the relationship of monetary policy with the foreign exchange rate was emphasized in the Plaza Agreement statement which said "monetary policy will be implemented flexibly with adequate attention given to the yen rate" (Table 3). As a matter of fact, every time the official discount rate was lowered the statement issued by the Chairman of the Policy Board of the BOJ mentioned securing foreign exchange rate stability (Table 4). That the change in the official discount rate was strongly linked to

²⁷ Regarding the understanding of international policy coordination, former BOJ Governor Mieno said the mass media was haunted by the shadow of the Plaza Agreement believing that policy coordination was to move interest rates simultaneously (Mieno [2000], p. 255).

²⁸ In changing the official discount rate after 1970, the foreign exchange rate was only mentioned as a policy objective when the discount rate was raised in 1979 and 1980 (following the second oil shock). When the foreign exchange rate began depreciating after 1988, interest rates were not raised. Monetary policy was implemented with emphasis not so much on foreign exchange rate stability but rather on containing the appreciation of the yen.

the foreign exchange rate appeared to be especially true in the case of the rate reductions of October 1986 and February 1987.

Of note is that monetary policy was used as a catalyst for several years after the Plaza Agreement to entice the US into coordinated intervention in the foreign exchange market or to prevent high-ranking US officials from ‘talking down the dollar.’²⁹

c. Reducing the current account surplus by expanding domestic demand

The third feature is related with the above two. Monetary policy was influenced by the economic policy agenda of the time that the current account surplus should be reduced by expanding domestic demand.³⁰ Statements issued by the Chairman of the Policy Board were explicit on this point until the third discount rate reduction (Table 4). Needless to say, the reduction in the current account surplus through the expansion of domestic demand was pursued in such a way that did not conflict with the basic objective of the central bank to achieve price stability. Though this policy agenda was not mentioned with respect to the fourth and fifth reductions, it nevertheless considerably constrained the conduct of monetary policy by the BOJ.

2. Seeking to Shift to Monetary Tightening

Economic recovery gradually became clear from around the spring of 1987.³¹ As money supply exhibited a large increase and asset prices soared, the BOJ began to take a cautious stance in conducting monetary policy. The following describes the process by which the BOJ sought an opportunity to shift to monetary tightening.

a. Concern over excessive monetary easing

The BOJ had already voiced concern over the massive increase in money supply and the rapid rise in asset prices immediately after the third reduction in the discount rate in the summer of 1986. The concern of senior BOJ officials is expressed in the term ‘dry wood’ (which can easily catch fire, i.e. easily ignite inflation) which was often heard at the time. In particular, when an increase in money supply and asset prices became rather marked after the fourth and fifth discount rate reductions, the statement issued by the Chairman of the Policy Board expressed strong concern over excessive monetary

²⁹ See Funabashi (1988) for the process of how international policy coordination was implemented after the Plaza Agreement.

³⁰ The so-called Mayekawa Report published in April 1986 most clearly described such a policy agenda. The background behind the strong concern of the Japanese government over the current account surplus was the adoption of retaliatory measures against Japan by the US Senate in March 1985 and the drafting of protectionist legislation against Japanese products. With the expansion of the current account deficit in the US, trade friction between Japan and the US intensified, and protectionist moves to impose sanctions on Japan grew in the US.

³¹ The BOJ expressed its view in its quarterly economic outlook of spring 1987 (May issue), saying that “as the effect of the appreciation of the yen in suppressing exports has gradually receded, and stock adjustment in response to the yen’s appreciation has progressed, it appears that the economy is, in cyclical terms, beginning to show firmness.” The EPA also revised its view slightly upward, saying that “the

easing (Table 4).

Against such a background, after the official discount rate was lowered to the then lowest rate of 2.5% in February 1987, the BOJ desired to raise interest rates as soon as possible, or at least to avoid a situation in which the conduct of monetary policy would be ‘constrained’ (see Table 5 for monetary policy implementation during this period). However, the joint statement after the meeting between Prime Minister Nakasone and President Reagan in May 1987 referred to the BOJ’s short-term interest rate operations,³² which resulted in a further decline in short-term interest rates (the monthly average overnight unsecured call rate fell from 3.52% in April to 3.17% in May).

b. Raising the short-term interest rate in the summer of 1987

In view of the prospective hike in the official discount rate, the BOJ took the first concrete step to change its monetary easing stance at the end of August 1987 when it began guiding market interest rates to a higher level. As a result, short-term market rates gradually rose after September and, on October 19, immediately before Black Monday in the US, the market rate on newly issued three-month CDs was 4.920%, 0.84 percentage points higher than the level at the end of August. Long-term interest rates also rose by nearly 3 percentage points compared with the lowest level, reflecting clear signs of economic recovery, an increase in money supply, and the rebound of commodity prices both domestically and overseas.

However, Black Monday resulted in the BOJ suspending monetary operations to guide interest rates to a higher level, and short-term rates declined again. Under such circumstances, the maintenance of low short-term interest rates was mentioned in the joint statement issued after the meeting of Prime Minister Takeshita and President Reagan in January 1988.³³

c. Call for ‘prudent lending attitude’

At that time, the BOJ still maintained the framework of ‘window guidance’ regarding the lending of commercial banks (moral suasion to contain the increase in loans) as a supplementary measure to orthodox monetary policy measures. Until the first quarter of 1987 the BOJ simply monitored the lending policy of commercial banks, but from the second quarter switched to moderate moral suasion urging commercial banks to maintain a ‘prudent lending attitude’ and gradually strengthened the extent of moral

economy is becoming increasingly robust although the pace of recovery is slow” (authors’ translation).

³² The joint announcement on economic issues by Prime Minister Nakasone and President Reagan which was released after the meeting referred to the conduct of monetary policy as follows: “Prime Minister Nakasone outlined extraordinary measures to stimulate domestic demand in Japan, which included the already introduced money market operations to lower short-term interest rates by the BOJ” (authors’ translation).

³³ In the joint announcement of Prime Minister Takeshita and President Reagan on economic issues, Japan’s monetary policy was described as follows: “In order to attain sustainable economic growth and to achieve foreign exchange rate stability, the BOJ has agreed to make efforts to maintain the current policy stance and low interest rates under price stability” (authors’ translation).

suasion thereafter.

In the situation where the official discount rate was unchanged, the BOJ could not conduct effective moral suasion on financial institutions to suppress lending, and even if it did lending would probably not have declined. On the other hand, if the BOJ did not effect strong moral suasion, there was a risk that the market would think the BOJ had no concern over the aggressive lending attitude of commercial banks. Under such circumstances, although the BOJ gradually strengthened window guidance with respect to the lending of commercial banks, more decisive policy action had to wait until the official discount rate was raised.

d. Shift to monetary tightening in major overseas countries

Immediately after Black Monday, financial markets and foreign exchange markets worldwide were unstable. Major foreign central banks lowered their interest rates and conducted monetary operations to provide ample liquidity to financial markets (see Table 6 for monetary policy in Germany and the US at that time). Such monetary easing continued until the spring of 1988, but in the summer of the same year major overseas countries, including the US and Germany, seeing clear signs of economic recovery, began raising interest rates again. In the foreign exchange market, the US dollar reversed course and started to appreciate, and European countries conducted dollar selling intervention.³⁴

In Japan, short-term interest rates were under pressure to rise due to economic expansion, and short-term interest rates such as CD and Euro yen rates increased. At that time, bill rates that adopted the quotation method were perceived by market participants as policy rates indicating the monetary policy stance and did not rise flexibly as the economy expanded. As a result, the outstanding amount of the bill market decreased rapidly from the spring to the fall of 1988. The BOJ adopted the so-called ‘new scheme for monetary control’ in November 1988 and decided to completely liberalize interbank market rates, the main objective of which was to enhance the functioning of the interbank money market as well as break out of this situation.

3. Process Leading to Monetary Tightening

a. Shift to monetary tightening

In 1989, the BOJ began seriously addressing the question of raising the official discount rate, but could not succeed in persuading the government or the general public on the need to tighten monetary policy.³⁵ Though the background to this will be examined in

³⁴ See Chapter V concerning the relationship between foreign exchange market intervention and monetary policy.

³⁵ Following are two examples of articles on monetary policy appearing in major newspapers:

“Japan, the world’s largest creditor, should maintain low interest rates to the extent possible and strive to restore the framework of policy coordination among industrial countries” Asahi Shimbun (February 26,

more detail in the following chapter, the gist of the problem lay in the big difference of the evaluation of future inflationary pressure.³⁶ For example, the quarterly economic outlook of the BOJ continued to express concern over inflationary pressure from the summer of 1988. On the other hand, the monthly economic report of the EPA consistently reiterated the view that consumer prices were stable even in 1989. Some argued against monetary tightening on the ground that raising interest rates would bring about a plunge in US stock prices (which had seen stability restored) and a drastic fall in the US dollar.³⁷ It was in May 1989, a month after the introduction of the consumption tax, when the official discount rate was finally raised from 2.5% to 3.25% (Table 7). In raising the official discount rate, the BOJ strongly emphasized that it was a preventive measure against inflation (Table 8).

b. Further monetary tightening

The economy expanded rigorously even after the official discount rate was raised. Therefore, the official discount rate was raised again in October and December 1989, by 0.5 percentage points each time, and then two more times in March and August 1990. The two hikes in 1990 were relatively large, 1 percentage point in March and 0.75 percentage points in August (Table 7).³⁸

Nevertheless, it took a considerable time for these hikes to have visible effects on money supply and asset prices including stock and land prices. In fact, the growth of money supply accelerated even after the official discount rate was raised and reached a peak in the second quarter of 1990, thereafter continuing to mark still double-digit growth until the fourth quarter.³⁹ Stock prices continued to rise until end-1989, and in 1990 plummeted with a few rebounds on the way. Approximately one month after the official discount rate was raised in August 1990, stock prices had dropped to half the level of their peak. Land prices lagged stock prices in their descent but began to fall from around 1991. During this period, the economy continued to expand and peaked in February 1991 according to the EPA. In light of the three features of the bubble, 1990 saw the economy and money supply continue to expand while asset prices, at least partially, began to drop.

With regard to monetary tightening after May 1989, let us look at the pace of

1989). "There is still a large discrepancy between inflationary concern in financial markets and actual price developments" Nihon Keizai Shimbun (March 26, 1989) (authors' translation).

³⁶ One reason for lack of active discussion regarding inflationary pressure was that it was difficult to calmly discuss such a possibility prior to the introduction of the consumption tax.

³⁷ Conflict between the US and Germany regarding Germany's interest rate hike in the summer of 1987 is sometimes held to be partly responsible for Black Monday, and can be cited as one reason for views opposing an interest rate hike in Japan.

³⁸ One background factor behind the official discount rate hike in August 1990 was an increase in inflationary concern due to higher oil prices caused by Iraq's invasion of Kuwait.

³⁹ It was common practice at the time that money received in issuing CP was invested in large-lot time deposits to make a profit. This increased both financial assets and liabilities on the balance sheets of

monetary tightening and the speed at which it permeated the overall economy. The call rate, adjusted for inflation, had begun to rise substantially from end-1989, lagging the rise in the nominal call rate (top panel, Figure 20). With regard to the spread between long- and short-term interest rates, we began to observe an inverted yield curve, a typical pattern at times of monetary tightening, in 1991, although it had temporarily appeared in the latter half of 1989 (center panel, Figure 20). The lending attitude of financial institutions began to become constrained from the latter half of 1989 and in 1990 such restraint intensified considerably (bottom panel, Figure 20).

B. Relationship between Monetary Policy and the Emergence and Expansion of the Bubble

1. How Did Monetary Policy Bring About the Bubble Economy?

First, let us consider how monetary policy became a factor in generating the bubble economy. In the previous chapter, a fall in funding costs, the expansion of equity financing, and an increase in collateral value were mentioned as the three mechanisms whereby monetary easing led to a rise in asset prices. Such mechanisms will always work under monetary easing, though the degree may differ.

The most important point in considering the relationship between the emergence of the bubble and monetary policy is that as low interest rates were maintained under economic expansion, expectations that the then current low interest rate would indefinitely continue proliferated after a certain point in time, which led to strengthening the effects of the above three mechanisms on the rise in asset prices.

Looking at the movement of implied forward rates from 1987 through 1989 (Figure 21), the yield curve flattened while the official discount rate was maintained at a low level.⁴⁰ This suggests widespread market expectations that despite clear signs of economic expansion, the then current low interest rates would continue for an extended period and that there would be no difficulty in raising funds.

It was in 1989 that the three characteristics of the bubble economy, namely, a rise in land and stock prices, the massive expansion of money supply and credit, and the overheating of economic activity, all progressed simultaneously and became most prominent. This seems consistent with the proliferation of expectations that then current low interest rates, which started from the summer of 1988, would continue for a

financial institutions and firms.

⁴⁰ The implied forward rate is the future interest rate estimated from market rates with a different time-to-maturity. For example, the implied forward rate for three years ahead gradually increased from June 1987. As the BOJ conducted a slightly tighter monetary operation from September 1987, it rose to a level over 6% in the fall. However, such expectations for higher interest rates receded after the worldwide plunge of stock prices in October of the same year, and the implied forward rate decreased to around 5%. After the spring of 1988, the stock market gradually recovered and the economy once again showed clear signs of expansion. Nevertheless, the rate basically remained flat at around 5% toward the spring of 1989.

prolonged period.

2. Could Monetary Policy Have Prevented the Emergence of the Bubble Economy?

The second question is whether monetary policy could have prevented the emergence of the bubble economy. If monetary policy were to solely focus on the ‘complete suppression of rises in asset prices,’ such an objective could be achieved by significantly raising interest rates. In this rather extreme sense, monetary policy could have prevented the emergence of the bubble economy, or at least the emergence of the asset price bubble.

In fact, Bernanke and Gertler (1999) conducted a simulation using data for Japan and calculated the *ex post* target interest rate that would have offset the stimulative effects of the asset price bubble (Figure 22). According to their calculation, if the target interest rate had been raised from around 4% to 8% in 1988, the emergence of the bubble could have been prevented.⁴¹ And, even without such detailed simulation, there are many discussions in the same vein which maintain that the emergence of the bubble could have been prevented if monetary policy had been sufficiently tightened.

However, even if we had known *ex ante* the target interest rate which would have prevented the bubble from emerging, one wonders whether a central bank could have raised the short-term interest rate from 4% to 8% in one go at a time when inflation was very low (annualized inflation rate of the CPI was 0.7% in 1988).⁴² During the bubble period, even though the BOJ advocated the need for monetary tightening likening the economy to ‘dry wood which could ignite at any moment,’ it could not succeed in persuading the public. Even if the BOJ believed that the emergence of a bubble was very likely, it is not clear if it would have been wise for the BOJ to raise interest rates to 8% when the BOJ was not sufficiently sure about the existence of the bubble. It thus appears difficult for monetary policy alone to prevent the emergence of a bubble.

3. Would Earlier Monetary Tightening Have Reduced the Scale of the Bubble?

The third question is whether we could have reduced the scale of the bubble if monetary policy had been tightened at an earlier stage. There are two opposing views on this.

On the one hand, if monetary policy had been tightened at an early stage, the output gap would have narrowed, and the expansion of money supply and credit would have been suppressed, thus preventing the expansion of the bubble. On the other hand, if an early and small rise in interest rates had nipped inflationary pressure in the bud, it

⁴¹ The simulation by Bernanke and Gertler (1999) shows that the target interest rate temporarily jumped in 1987 and 1997. Such temporary fluctuations in the target interest rate might perhaps reflect the effects of the introduction of the consumption tax (3%) in April 1989 and the hike in the consumption tax (from 3% to 5%) in 1997.

⁴² BOJ Deputy Governor Yamaguchi questions the practical validity of the simulation result saying “I don’t see how a central bank can increase the interest rate to 8% or 10% when we don’t have inflation at all” (Yamaguchi [1999]).

would have only further strengthened already bullish expectations, thus leading to the expansion of the bubble. Indeed, turmoil in the market following Black Monday was effective in calming market participants' bullish expectations, but we cannot deny the possibility that by overcoming the turmoil bullish expectations were strengthened again, thus expanding the bubble.

Our views on this are as follows.⁴³ If interest rates had been raised early, expectations for the continuation of low interest rates would have receded more quickly than otherwise, and to that extent the timing of the autonomous collapse of the bubble would have been somewhat expedited. If this had transpired, the expansion of credit during the bubble period would likely have been suppressed and the negative effects after the bursting of the bubble smaller than otherwise. If interest rates had been raised early but only by a small degree, asset prices would have continued to rise, and thus the level of asset prices at the peak might not have differed much from the level if interest rates had not been raised early.

In fact, bullish expectations intensified so much during the emergence and expansion of the bubble that a small rise in interest rates would have had little impact on such expectations. Under such circumstances, it is apparent that an increase in interest rates would have had to be fairly large to induce a change in market expectations. In other words, even if interest rates had been high, the effect of monetary tightening would not have materialized to any great degree until such expectations had been adjusted downward. If such expectations had been adjusted downward, the adverse effects on the economy would inevitably have been quite large due to the combined effect of the rise in interest rates itself and the revision of expectations. Indeed, there is a strong possibility that the interest rate hike would have been large at the end of the bubble period, but this does not imply that it would have magnified the collapse of the bubble economy.

4. Should Prudential Regulations Have Been Strengthened during the Bubble Period?

The fourth question is whether we should have responded to the emergence and expansion of the bubble by tightening prudential regulations on financial institutions. There is a view which attributes the emergence and expansion of the bubble solely to an increase in financial institutions' aggressive lending to the property-related sector.⁴⁴ Such a view leads us to the conclusion that an appropriate policy response during the bubble period would have been the strengthening of prudential regulations rather than monetary tightening.

⁴³ Kent and Lowe (1997) expressed similar views to those of the authors emphasizing that an early rise in interest rates would heighten the possibility of the bubble bursting, thereby leading to smaller fluctuations in the real economy and inflation through smaller negative effects on the financial system after the bursting of the bubble.

⁴⁴ See Yoshitomi (1998).

If the objective of prudential regulations was only to burst the bubble, property-related lending could have been curbed through the strict regulation of the amount of loans. In this case the rise in land prices would have been contained. In fact, the introduction of regulation on the total amount of property-related lending almost coincided with the bursting of the bubble.⁴⁵ However, it is difficult to judge in advance whether a rise in land prices is a bubble or not and hence whether the regulatory and supervisory authorities should implement regulations on the total amount of lending. In addition, if such regulations are effected when there are strong expectations of a further rise in land prices, a number of loopholes to raise funds can be found, thus hampering the effectiveness of such regulations. Therefore, it would be desirable for the regulatory and supervisory authorities to avoid direct intervention, to the extent possible, in the lending policy of financial institutions, including lending to property-related firms.

However, this does not mean to argue that it is meaningless for the central bank and supervisory authorities to attempt some preventive measures in the management of financial institutions. As we discuss in detail in Chapter VI, the problem during the bubble period was that credit had substantially expanded and had become greatly influenced by the movement of land prices. It is an important role of a central bank and supervisory authorities to accurately understand the existence and characteristics of risks accompanying aggressive lending and to explain them to the management of financial institutions. Although it might be difficult to draw a line between the explanation of risks and direct regulations as described above, it is nevertheless important for a central bank and supervisory authorities to recognize the difference between them.

V Why Was Monetary Tightening Delayed?

As described earlier, the BOJ sought an opportunity to tighten monetary policy long before the increase in the official discount rate in May 1989, but the start of actual monetary tightening was significantly delayed. We argued in the previous chapter that even if we had begun monetary tightening earlier, we could not have prevented the emergence of the bubble, though perhaps we could have expedited the timing of its bursting, thereby reducing its negative effects. This chapter examines the reasons why actual monetary tightening was delayed compared with the BOJ's intention by looking

⁴⁵ In the late 1980s, the Ministry of Finance (MOF) and the Federation of Japanese Bankers Associations issued quite a few directives and guidelines which warned about excessive property-related lending. In March 1990, MOF issued a directive and guideline which included the following two points:

- (a) For the time being, except for lending to public housing land development institutions, the MOF requests financial institutions to contain the increase in lending to property-related firms to within the increase in total lending.
- (b) For the time being, the MOF will collect reports with respect to lending to the real estate industry, construction industry, and non-banks.

at the economic and financial conditions, mainly after 1988.

We adopt two approaches. The first looks back on various developments such as the increase in money supply which gave warning signals of the emergence of the bubble and examines why insufficient attention was paid to above developments in the economic and financial environment. The second, putting aside individual warning signals, examines why it was difficult to tighten monetary policy by analyzing the then prevailing ideas with respect to the conduct of monetary policy.

A. *Ex-post* Examination of Economic and Financial Conditions during the Bubble Period

1. Economic Activity

Upon reflection, at the time there did not exist sufficient recognition that monetary tightening was necessary, though the reasons for this might differ between the early and the latter part of the bubble period.

During the early bubble period from 1987 to the first half of 1988, the strength of economic recovery was underestimated because of the following two reasons. First, the speed of the yen's appreciation after the 1985 Plaza Agreement had been so rapid that there were serious concerns of recession and the 'hollowing out' of the economy. However, what happened in fact was that the downward pressure on demand through the appreciation of the yen had already run its course, and the growth of the non-tradable goods sector triggered by the change in relative prices and an increase in real income due to improved terms of trade, was materializing.⁴⁶ Second, in forming public opinion, the manufacturing industry, which was susceptible to the deflationary impact of the yen's appreciation, had a large say. Although the yen's appreciation could work to bring about economic expansion led by non-manufacturing industries through lower import prices, the voice of non-manufacturing industries was not very loud.

From the viewpoint of what generated the bubble, we should examine the assessment of the economy during the latter half of 1988. During this period, economic expansion became clear and the BOJ repeatedly gave warning signals that the economy was expanding beyond 'cruising speed.'⁴⁷ One reason for the warning was the constraint on resources as evidenced by the tightness of demand and supply, especially in the labor market (Figure 23). In addition, there was recognition of the risk that a large increase in business fixed investment would create excess capacity in the future, leading to an economic slowdown.

⁴⁶ In analyzing the appreciation of the yen and economic adjustment in this period, the BOJ (1987) stated that "Japan's economy has entered a stage in which the effects of the yen's appreciation on demand are diminishing, while those on industrial structure due to the change in relative prices are gaining momentum" (authors' translation).

⁴⁷ For example, the BOJ (1989a) pointed out, in its quarterly economic outlook of January 1989, the risk that the economy might enter an adjustment phase due to upward pressures on prices.

However, these warnings were not viewed as sufficiently convincing. This was partly because prices were stable in spite of economic expansion. More fundamentally, there existed the prevailing recognition that productivity and the growth potential of Japan's economy had increased. Many interpreted the high growth of business fixed investment as being due to the rising trend of the capital coefficient.⁴⁸ Despite the rapid economic expansion, over-evaluation with respect to the medium- to long-term sustainability of economic growth proliferated.

2. Inflation

While the most orthodox rationale for a shift to monetary tightening is the existence of inflationary pressure, extremely stable price developments at the time considerably weakened the recognition of the need to raise interest rates. For example, in the summer of 1988 when the US and Germany raised interest rates, prices in Japan were extremely stable as witnessed by the year-on-year change in WPI and CPI for the third quarter being -0.7% and 0.2%, respectively.⁴⁹

Looking back, how can we assess the validity of 'inflationary concerns' then expressed by the BOJ? There are three possible assessments as follows.

First, prices eventually rose substantially toward the end of the bubble period. CPI had been stable until around 1987, started to rise gradually in 1988, and the year-on-year increase was 1.1% in March 1989, immediately before the introduction of the consumption tax (Figure 24). The year-on-year increase in CPI, adjusted for the impact of consumption tax, continued to rise after April 1989, and it reached 2% in April 1990 and 3% in November 1990. In addition, the month-to-month annualized increase on a seasonally-adjusted basis momentarily exceeded 4% in the latter half of 1990.⁵⁰ In view of the fact that this 3-4% rise in inflation materialized despite a series of monetary tightening measures beginning with the official discount rate hike in May 1989, it is possible to conclude that inflationary concerns expressed by the BOJ materialized with a time lag of about two to three years.

Second, inflationary pressure did not materialize after all and prices were generally stable during the bubble period. While it is true that the 3-4% inflation rate in the final phase of the bubble period was high compared with the present level of inflation, such a level cannot be regarded as particularly high compared with the figure

⁴⁸ It is emphasized that a rise in the capital coefficient has been supported by not only investment for capacity expansion purposes but also for structural change such as research and development, information-related fields, and rationalization (for example, see the BOJ [1990b]).

⁴⁹ It is often pointed out that one reason for stable prices under tight supply and demand conditions was the increase in merchandise imports from NIEs under the yen's appreciation, which was termed the 'safety bulb effect of imports.' (For example, see the BOJ [1989c, 1990b].)

⁵⁰ In judging monetary policy operations, it is crucial to know when the expected inflation rate turned to increase. Higo (1999) has estimated the expected inflation rate and obtained the result that while it had moved parallel with, or with a time lag, vis-à-vis actual inflation until 1988, it increased rapidly preceding the increase in actual inflation from 1989 to 1990.

before the bubble period, and thus we might be able to say that price stability had not been eroded.

The third assessment emphasizes the importance of a long-term view with respect to price stability. If we take only the bubble period, prices could be perceived as stable. But, if we include the period when the bubble bursts, we cannot say that prices were stable. During the period when the bubble burst, Japan's economy experienced a decline in inflation and faced the risk of tumbling into a deflationary spiral (Figure 24). Such deflation very likely resulted from the bubble economy generated in the latter half of the 1980s. In this context, it seems more important to consider whether price stability is sustainable over the long run, instead of discussing whether prices had been stable during the bubble period. According to this view, it might be possible to assess that Japan's economy did not succeed in sustaining price stability after the bubble period.

Of the three possible assessments above, the first and second boil down to the question of what can be regarded as a tolerable inflation rate, and there can be a variety of answers. The experience of the bubble period seems to suggest the importance of the third point which puts emphasis on the sustainability of price stability over a fairly long period.

3. Expansion of Money Supply and Credit

During the bubble period, it was the large increase in money supply and credit that signaled the need for an early rise in interest rates. In fact, as previously mentioned, while the BOJ expressed concern over this increase from a relatively early stage, it turned out that such concern was not sufficiently taken into account. The major reason for this was lack of a common understanding, including on the part of the BOJ, as to what kind of problems might be occasioned by the massive expansion of money supply and credit.

At the time, concern over the large increase in money supply was mainly based on the view that such an increase would eventually lead to inflation. However, prices did not rise even though money supply increased, and a view that the statistical relationship between money supply and prices had become unstable gradually prevailed. In addition, the on-going deregulation of deposit interest rates was often mentioned as a reason for the statistical instability.⁵¹

While an increase in money supply eventually affected prices to a certain extent, it had more conspicuous effects on the rise in asset prices. However, at the time, the rise

⁵¹ The BOJ (1988) pointed out that the relationship between prices and money supply had become unstable, and as background referred to the price stabilization effect stemming from the yen's appreciation in addition to the effect of financial deregulation. In the US, money supply ceased to be used as a policy target and its role in the conduct of monetary policy subsided substantially as the relationship between money supply and prices weakened in the process of financial deregulation. (For example, see Friedman [1997].)

in asset prices was mainly discussed from the viewpoint of equality of income and asset distribution, and was not seen as inducing large fluctuations in the economy from a medium- to long-term viewpoint. Accordingly, the large increase in money supply was not taken seriously.⁵²

4. Rise in Asset Prices

The rise in asset prices in general and land prices in particular, together with the increase in money supply was often cited as a rationale for an early interest rate hike during the bubble period. While the rise in asset prices was discussed from various viewpoints, the main focus was on the magnitude of so-called wealth effects on expenditure, the equality of asset and income distribution, and the risk of future inflation.⁵³

While these points were important, the biggest problem stemming from the rapid rise in asset prices during the bubble period, in our view, was that it induced large fluctuations in economic activity, including the impact on the financial system, from a medium- to long-term viewpoint. However, there were only few arguments from such a viewpoint during the bubble period, and thus the rise in asset prices was not adequately taken as a warning signal in the conduct of monetary policy.⁵⁴

B. The Influence of the Prevailing Policy Agenda

In the previous section, we pointed out the difference in assessment regarding economic conditions and prices as a major reason the BOJ failed to make a convincing argument in favor of the need for an early interest rate hike. At the same time, it should be noted that this difference was also strongly influenced by then prevailing orientation of

⁵² The BOJ (1988) said that “while progress in monetary easing as witnessed by the large increase in money supply exerted multiple effects on the expansion of domestic demand and foreign exchange rate stability, one should be sufficiently aware of its side effects such that an increase in money supply will not lead to higher growth in the long run, but is accompanied by the risk of higher inflation,” and that “excessive monetary easing would induce problems from the viewpoint of the stability of money and capital markets as well as of social equality” (authors’ translation).

⁵³ During the bubble period, many estimates were made regarding wealth effects on expenditure, with most of the results indicating that they were not so large (For example, see the BOJ [1990a]).

⁵⁴ In this regard, the BOJ (1990) stated as follows in April 1990:

“Various economic agents appear to implicitly assume the ‘myth of ever-rising land prices,’ which means that land prices will continue to rise, or, at least, never fall. However, recent episodes in foreign countries such as the US and the UK show that the decline in land prices triggered the deterioration in the soundness of financial institutions. Lessons from these episodes can be summarized in the following three points: (1) A rapid increase in land prices in a short period of time could easily be reversed later on. (2) In this case, a decline in land prices could ignite financial difficulties at individual financial institutions, and, in the worst case, lead to the instability of the financial system as a whole. (3) Property-related firms defaulting on loans is most likely to be seen at small and medium-sized financial institutions and non-banks. Although it is true that the factors behind the decline in land prices both at home and abroad, such as monetary tightening, changes in industrial organization, and changes in taxation and other institutional arrangements, are numerous and varied, they also indicate that the ‘myth of ever-rising land prices’ is not infallible” (authors’ translation).

economic policy which may be termed as the ‘policy agenda of the era’ or the ‘policy paradigm.’

1. International Policy Coordination

The most often heard counterargument during the period after 1988 when the BOJ sought an opportunity to effect monetary tightening was that, against the backdrop of Japan being the world’s largest creditor and having a huge current account surplus, an interest rate hike in Japan would result in the collapse of international policy coordination.⁵⁵

Originally, international policy coordination was a policy agenda whereby each country should contribute to sustained growth of the world economy by ensuring the stability of its own economy.⁵⁶ However, the experience of the bubble period suggests that the term ‘international policy coordination’ was often used by a country as rhetoric in forcing other countries to implement macroeconomic policy adjustment which they themselves should have already effected.⁵⁷ The US, after having corrected the excessive appreciation of the dollar at the Plaza Agreement, began to strongly urge other major countries to reduce interest rates for fear that further depreciation of the dollar might lead to its free-fall against the backdrop of a large budget deficit and current account deficit.⁵⁸ It was unfortunate that, against the backdrop of concern over further depreciation of the dollar on the part of the US and concern over recession due

⁵⁵ Looking back, former BOJ Governor Mieno mentioned one background factor behind delayed monetary tightening: “Despite the appreciation of the yen, a reduction in the current account surplus which was regarded as an international pledge at the time did not progress as expected. Therefore, to raise interest rates and suppress domestic economic growth was regarded as contradicting the international pledge” (Mieno [2000], p.206, authors’ translation).

⁵⁶ Naturally, effects stemming from the economic policy of other countries are marginal compared with those of one’s own. For example, Taylor (1993), in estimating the Taylor rule by using a large macro model, estimated a policy rule by ignoring policy transmission effects from abroad. In addition, Komiya (1988), from the viewpoint of the effective assignment of macroeconomic policy instruments, argued that “all countries can simultaneously achieve all objectives most effectively when each country appropriately employs its domestic policy tools to achieve its own domestic goals.” In addition, Frankel and Rockett (1988) examined major world econometric models and pointed out that important policy multipliers differed not only in their value but also in terms of positives and negatives, and that if countries took a policy coordination action based on different models, we could not expect an improvement in the economic welfare of the countries concerned.

⁵⁷ Former Governor Matsushita of the BOJ pointed out at a symposium in 1995 that “if a country pursues macroeconomic policy in coordination with other countries, favorable domestic economic conditions such as price stability and sustainable growth are likely to be sacrificed” (Matsushita [1995]). In addition, Feldstein (1988), based on his experience as the Chairman of the Council of Economic Advisers in the Reagan administration, pointed out that macroeconomic policy coordination is likely to make other countries a scapegoat or tends to serve as external pressure to change domestic policy.

⁵⁸ In Congressional testimony based on the Humphrey-Hawkins Act in February 1986, former FRB Chairman Volcker emphasized that foreign countries need to expand their domestic economy saying “The success of all our efforts is dependent in substantial part on complementary policies by other countries -- their success in enhancing their growth and stability, in opening markets to others, and in helping to deal with points of strain in the international financial fabric.” As explained in footnote 56, the improvement in the current account balance through economic expansion overseas is generally limited.

to the appreciation of the yen on the part of Japan, the maintenance of low interest rates with a domestic policy orientation was often discussed in Japan in the same light as international policy coordination.

2. Preventing the Appreciation of the Yen

There are two views with respect to how the foreign exchange rate is placed in the conduct of monetary policy. The first is to conduct monetary policy so as to offset the effects of foreign exchange rate fluctuations on economic activity, and the second is to conduct monetary policy with the foreign exchange rate or a foreign exchange rate range as a direct target. The argument against an interest rate hike grounded on concern of an economic slowdown and the hollowing out of the domestic economy due to the appreciation of the yen centered around the first viewpoint. Though there are different views regarding the extent of the economic slowdown and the hollowing out of the domestic economy, there is no essential difference between those who advocate an early interest rate hike and those who oppose an interest rate hike in that the effects of the foreign exchange rate need to be taken into account in the conduct of monetary policy.

During the bubble period, it was a serious blow to the BOJ that many strongly argued that monetary policy should be conducted with the foreign exchange rate as a target.⁵⁹ Under the situation where capital can freely move internationally, conducting monetary policy with the foreign exchange rate as a target means to abandon independent domestic monetary policy, which is neither possible nor appropriate for a large economy like Japan. However, under the circumstances where preventing the yen's appreciation became 'a national priority,' the fundamental problem was in the tendency to consider that the foreign exchange rate level could be controlled at will by monetary policy.⁶⁰

As to the relationship between the foreign exchange rate and monetary policy, the role of foreign exchange intervention also became a topic of discussion. In Japan, the Ministry of Finance is responsible for foreign exchange intervention and the BOJ only conducts foreign exchange transactions as its agent.⁶¹ As a result, in some cases, foreign exchange intervention might not be effected in line with the stance of monetary

⁵⁹ The communiqué of the 1987 Louvre Accord stated "they agreed to cooperate closely to foster stability of exchange rates around current levels," and it cannot be denied that such treatment of the foreign exchange rate became an obstacle for the subsequent conduct of monetary policy.

⁶⁰ In general, it is known as the irreconcilable trinity of an open economy in international finance that, among three objectives, namely, independent monetary policy, free international capital flows, and fixing the foreign exchange rate, only two can be achieved simultaneously.

⁶¹ Based on Consolidated Version of the Treaty Establishing the European Community which stipulates that price stability is the objective for both monetary and foreign exchange rate policy, the European Central Bank conducts foreign exchange market intervention to the extent that it does not conflict with price stability. Regarding US foreign exchange intervention in the 1980s, former FRB Chairman Volcker said it was a system with a mutual veto held by the Treasury and the Federal Reserve (Volcker and Gyoten [1992], p. 234).

policy. For example, when the BOJ was seeking monetary tightening, if it had conducted foreign exchange buying intervention as an agent of the Ministry of Finance in order to prevent the further appreciation of the yen, the policy stance of the BOJ would have been weakened and its policy intention perhaps misunderstood. In fact, after the spring of 1988 when the US dollar reversed course and began to rise, European countries conducted US dollar selling intervention and turned to monetary tightening, but Japan did not intervene. We cannot deny the possibility that this was perceived as a signal of protracted monetary easing (Figure 25).⁶²

3. Reducing the Current Account Surplus through the Expansion of Domestic Demand

The policy agenda of reducing the current account surplus through the expansion of domestic demand also had quite a significant effect in supporting protracted monetary easing.

The current account balance is the difference between the export and import of goods and services, which can also be regarded as the difference between domestic savings and investment. The difference between savings and investment of a country reflects not only cyclical factors but also its long-term trend.⁶³ Japan's current account surplus reached 2.1% of nominal GDP in the 1980s and, roughly speaking, the difference between savings and investment over the long term is likely of this magnitude (Figure 26).⁶⁴

When a current account surplus basically stems from long-term excess savings, the expansion of domestic demand cannot result in a substantial reduction in the surplus. However, in Japan there still remained strong pressure for the reduction of the surplus through the expansion of domestic demand. Indeed, many called for a reduction in the current account surplus which went beyond what was justified by cyclical factors. This policy agenda was a powerful argument against an early discount rate hike.

4. Relationship with Fiscal Policy

When we examine the conduct of monetary policy during the bubble period in relation to the then prevailing policy agenda, the relationship with fiscal policy is also an issue for discussion. In this regard, the most often heard argument was that the delay in the implementation of expansionary fiscal policy increased the burden on monetary policy

⁶² As to the relationship between foreign exchange intervention policy and monetary policy at the time, Ohta (1991) said "it looked rather bizarre in the eyes of central banks in Europe, including the Bundesbank, to see Japan doing nothing while they were struggling to stop the appreciation of the US dollar by intervening in the market" (p118, authors' translation).

⁶³ See, for example, Komiya (1994).

⁶⁴ Ueda (1988, 1992) pointed out, based on an estimation of the current account balance function, that Japan's structural current account surplus reached some 3% of nominal GDP in the first half of the 1980s, mainly because of an increase in the US government deficit and a decrease in Japan's government deficit.

which resulted in excessive monetary easing, thus generating the bubble.⁶⁵ Indeed, it is true that the government was cautious in implementing expansionary fiscal policy during the first half of the bubble period from the viewpoint of fiscal consolidation, and that the expansion of domestic demand was mainly borne by monetary policy (Figure 27).⁶⁶

It is often argued that, if expansionary fiscal policy had been implemented at an earlier stage, the official discount rate might not have been reduced to 2.5%. However, as we examined, the essential issue for monetary policy during the bubble period was not low interest rates *per se* but rather the creation of expectations that low interest rates would continue for a protracted period under economic expansion. Therefore, the point of discussion is whether an early implementation of expansionary fiscal policy facilitated a policy shift to monetary tightening. If such a shift in monetary policy was difficult in any case, the argument that the bubble would not have emerged if expansionary fiscal policy had been effected earlier will not hold.

The point of discussion above boils down to the question as to what extent the independence of the BOJ had been assured during the bubble period. Even under the old Bank of Japan Law, the change in the official discount rate was determined exclusively by the Policy Board and the BOJ retained independence in monetary policy. However, the BOJ was also under the broad supervision of the government (the Ministry of Finance) which is responsible for fiscal policy, and the possibility cannot be denied *a priori* that such supervision might have affected the independence of monetary policy. Under the old law the BOJ maintained that it had '*de facto* independence.'⁶⁷ The new Bank of Japan Law was put into effect in April 1998, and the independence and accountability of the BOJ were strengthened in various aspects.⁶⁸ Experience

⁶⁵ It is natural that the fiscal authorities put emphasis on fiscal consolidation. However, the question is whether fiscal consolidation is achieved through sustainable measures. The bubble period had seen an increase in tax revenue (corporate, income, inheritance, securities transaction tax, etc.) not only due to economic expansion and the rise in asset prices but also a temporary increase in revenues stemming from such factors as the sale of NTT shares and the issuance of commemorative coins. However, tax revenue had not increased if we include the bursting of the bubble period, and fiscal consolidation was not truly achieved. The BOJ (1989c) estimated that the increase in tax revenue due to the bubble was about ¥7.5 trillion (5.4% of tax revenue and stamp duties) for three years from fiscal 1986 to 1988.

⁶⁶ The contribution of public demand to the growth rate of real GDP consistently declined from 1986 through 1989 as follows: 0.8%, 0.5%, 0.5%, and 0.2%.

⁶⁷ Regarding independence of the BOJ at the time, the Institute for Monetary and Economic Studies of the BOJ (1986) stated that "under the current law, the BOJ is widely under the supervision of the Ministry of Finance. Individual items subject to supervision are stipulated in detail, and the Ministry of Finance retains the right to issue general business directives and supervisory ordinances as well as to dismiss senior management. However, since the Bank always maintains close contact and a cooperative relationship with the government, the above mentioned right has never been exercised and, in fact, monetary policy has been conducted independently under the sole responsibility of the Bank of Japan" (p 445, authors' translation).

⁶⁸ For example, independence was strengthened and the transparency of policy decision making mandated legally. First, the wide ranging right of the government to issue general business directives was abolished and the right of the government became limited to supervision of compliance with laws and

under the new law so far seems to suggest the importance of independence and accountability which are legally spelled out.

C. Recognizing the Adverse Effects of the Bubble

To summarize the discussions regarding the delay in monetary tightening, we conclude that we had insufficient recognition about the magnitude of damage caused by the bursting of the bubble which was disproportionately larger than the gains obtained in the emergence and expansion of the bubble.⁶⁹ If we analyze the adverse effects of the bubble with the benefit of hindsight after the bursting of the bubble, the largest adverse effect would be that it induced a prolonged recession through the following three mechanisms. Among these three, while the first works symmetrically between the period of the emergence and expansion of the bubble and the period of the bursting of the bubble, the effects of the second and third mechanisms are disproportionately larger during the period of the bursting of the bubble.

The first mechanism is a decline in economic activity accompanying the correction of bullish expectations. For example, we can point out the reversed wealth effects on expenditure and classical stock adjustment as a result of excessive investment during the bubble period.

The second mechanism is a reduction in the economic value of capital equipment and reduced supply capacity. During the bubble period, capital expenditures dramatically increased on the premise of a future rise in asset prices and the underlying pattern of demand. The economic value of such physical assets fell sharply because they were unlikely to be utilized in the future and it would have been costly to convert them to different uses. In particular, considering that in the 1990s major industrial countries expanded their economies by taking advantage of innovation in information and telecommunications technology, the question of which areas had been the recipients of business fixed investment during the bubble period in Japan turned out to be of the utmost significance. In this context, we should recognize that the serious dynamic resource misallocation caused by misguided prices during the bubble period was a mechanism inducing economic stagnation.⁷⁰

The third and the most important mechanism is a so-called balance sheet adjustment which a fall in asset prices eroded the asset quality of both lenders and

articles of association. Second, the reasons for the dismissal of senior management are confined to those such as bankruptcy, physical and mental disorders, and imprisonment. Third, if the Minister of Finance does not approve the operational budget of the BOJ, the Minister must publish the reasons. Fourth, monetary policy directives are to be decided by a majority vote at Monetary Policy Meetings accompanied by a high degree of transparency with detailed minutes published after meetings.

⁶⁹ IMF's Annual Reports in 1989 and 1990 expressed an optimistic view of the future course of economic developments in Japan saying that both high economic growth and price stability could be achieved through appropriate economic policy management.

⁷⁰ While the first mechanism materializes mainly from the demand side, the second comes mainly from the supply side.

borrowers, and reduced credit availability through the erosion of capital base, leading to a decline in economic activity. The capital base functions as a buffer against future risks and losses. Such a function is not clearly recognized as long as the economy is expanding smoothly. The effects of a capital base shortage will materialize once the outlook for economic expansion changes. After the bursting of the bubble, as asset prices fell and the capital base was substantially reduced, the possibility of bankruptcy increased among financial institutions, firms, and individuals. Under such circumstances, economic agents whose capital base had been eroded became cautious in taking on risks and also in doing business with counterparties whose capital base had been eroded.⁷¹

VI Lessons for the Bank of Japan

As explained in the preceding chapters, a bubble is defined as a phenomenon in which expectations become extremely bullish as various factors work in a complex manner. As such, we may not be able to completely prevent the emergence of a bubble. The most orthodox approach is to build into the economic fabric a mechanism of self-restraint, recognizing that bullish expectations might sometimes intensify to the extreme. In this chapter, we intend to draw four lessons for central banks, bearing in mind the importance of self-restraint in responding to a bubble.

A. Importance of Forward-Looking Monetary Policy

The most significant lesson that central banks have learnt from the emergence of bubble economies is the importance of conducting monetary policy in such a forward-looking manner that it is possible to grasp the potential risk to the economy as early as possible.

As evidenced by the experience of Japan's bubble period, a bubble is not generated suddenly, but expands as it gradually accumulates energy. Therefore, it is important to deal with a possible bubble in a preemptive manner with a view to the future risk of inflation rather than to make a belated response only after inflation or the existence of a bubble visibly materializes. Perhaps monetary policy alone cannot prevent a bubble from emerging. However, if monetary policy were conducted in a forward-looking manner, economic fluctuations would be smaller.⁷²

Needless to say, in the very process of the expansion of a bubble, it is difficult to

⁷¹ Bernanke, Gertler, and Gilchrist (1996) advocate a 'financial accelerator' theory where a vicious circle between a decline in asset prices and a decline in demand will be created if information asymmetry exists between those who supply funds and those who demand funds. Balance sheet adjustment is regarded as reflecting a more cautious lending attitude on the part of financial institutions from the viewpoint of firms, and as a more cautious investment attitude on the part of firms and a decline in demand for funds from the viewpoint of financial institutions.

⁷² There may be a case where the market would respond before the central bank if it was thought the central bank would act in a preemptive manner. In this case, the central bank would follow market movements to change the policy rate.

identify whether it is really a bubble or not. One reason for this is the possibility that the economic structure might be undergoing change. When productivity is rising reflecting a change in economic structure, strong monetary tightening based on the assumption that the economic structure has not changed would constrain economic growth potential. In such a case, the central bank is faced with two different kinds of risks.

This issue can be regarded as similar to a problem of statistical errors in the test procedure of statistical inference. Put metaphorically, Type I error (erroneously reject a hypothesis when it is true) corresponds to a case where (though a 'New Economy' theory may be correct) rejecting the theory means the central bank erroneously tightens monetary conditions and suppresses economic growth potential. Type II error (failure to reject a hypothesis when it is false) corresponds to a case in which a bubble is mistaken as a transitional process to a 'New Economy,' and the central bank allows inflation to ignite. Given that one cannot accurately tell in advance which one of the two statistical errors the central bank is more likely to make, it is important in the conduct of monetary policy to consider not only the probability of making an error but also the relative cost of each error. Based on the experience of Japan's bubble period, it is important for the central bank to recognize that making the Type II error is fatal compared with the Type I error when faced with bubble-like phenomena.

Of course, a comparison of risks inherent in the two types of errors does not necessarily imply that monetary policy should be conducted by considering only the more fatal risk. Even though the risk of a bubble is regarded as more fatal, we should perhaps choose a gradual tightening rather than a rapid tightening in the conduct of monetary policy.⁷³ However, even in such a case, we should take a pragmatic approach to flexibly select the degree of tightening while paying due attention to not only Type II error but also Type I error.

How should a forward-looking monetary policy be conducted? The answer is to conduct monetary policy with emphasis on maintaining an environment conducive to sustainable economic growth which is the ultimate goal of price stability. A favorable environment presumes both price stability and financial system stability.

Price stability, which monetary policy should aim at, is not stability at any particular point in time but rather sustainable stability that can support economic growth over the medium to long term. Therefore, even when measured inflation is stable, it will become necessary to raise interest rates promptly to ensure sustainable price stability if the risk of such stability being impaired is judged to be increasing.⁷⁴

⁷³ Brainard (1967) points out that if there is uncertainty with respect to the multiplier effect of economic policy measures, then the authorities should adopt a conservative approach. See also Blinder (1999) on this point. However, Stock (1998), by using a small US model, contends that it is desirable to adopt an aggressive policy rule when the economy is undergoing structural change.

⁷⁴ FRB Chairman Greenspan discusses the definition of price stability that monetary policy should pursue and referred to an operating definition of price stability from a central banker's point of view: "Price

Monetary policy also influences the financial system through the behavior of financial institutions and macroeconomic conditions. To achieve financial system stability, it is important to maintain not only a favorable macroeconomic environment but also the soundness of individual financial institutions. In this regard, the regulatory and supervisory authorities play an important role. Thus, it should be noted that, although financial system stability is an important policy objective for the central bank, it should be recognized that the central bank does not command the same power of influence over this objective as it does price stability when trying to maintain a favorable environment.

B. Grasping the Risk Profile of the Economy

The second lesson of the bubble economy is the importance of recognizing the risk profile of the economy as a whole, which might adversely affect price stability and financial system stability from the medium- to long-term viewpoint. No rules exist regarding how to recognize risks. Based on the experience of Japan's bubble period, we should examine the issue from the following five perspectives: the output gap in the economy, money supply and credit, asset prices, the behavior of financial institutions, and the interaction of various risks.

1. Output Gap

In the bubble period, the overheating of the real economy was most vividly evidenced by labor market and capacity utilization data. Of course, there is a lag between the tightening in the labor market and capacity utilization, and a rise in wages and prices. However, as it is not easy to increase capacity in the short run, the economy should be carefully monitored when the output gap narrows.

2. Money Supply and Credit

In the bubble period, we could have extracted useful information from such data as an increase in money supply and credit. After the 1970s, money supply fluctuated widely on two occasions: in the first half of the 1970s when the yen appreciated and the first oil crisis occurred, and after the latter half of the 1980s. These two occasions coincided with periods of considerable fluctuations in prices in general as well as asset prices (except for the period when the second oil crisis occurred). Furthermore, during these two periods, real economic growth rates also experienced large fluctuations.

At present, no consensus exists among central banks concerning how to place money supply in the conduct of monetary policy. Based on past experience, including the bubble period, when money supply and credit show a very large upswing, we should pay close attention to such movements in the conduct of monetary policy on the

stability obtains when economic agents no longer take account of the prospective change in the general price level in their economic decision making" (Greenspan [1996]). See Shiratsuka (1997) for discussion on the definition of price stability as the target of monetary policy.

presumption that large fluctuations in these indices may indicate the possibility of undesirable changes in economic activity.

3. Asset Prices

Monetary policy cannot control the level of asset prices. If we dared to do so, it would amplify fluctuations in economic activity. Nevertheless, we should recognize the importance of asset prices in the conduct of monetary policy because they influence monetary policy in a variety of ways. First, asset prices affect expenditures through wealth effects. Second, they contain valuable information about expectations regarding the future economic outlook. If we make use of asset prices in obtaining information, we must be mindful of the fact that a change in asset prices reflects not only the inflationary expectations of private economic agents but also other factors such as phenomena similar to the bubble and structural change in the economy.⁷⁵ Third, a change in asset prices may have a huge impact on financial system stability and, in due course, on economic activity as a whole.⁷⁶

As Kindleberger (1995) points out, there are no cookbook rules to deal with asset prices.⁷⁷ However, we think it important to accurately analyze changes in asset prices and examine whether the expectations implied are sustainable in relation to the course of the overall economy, bearing the above three viewpoints in mind.

4. Behavior of Financial Institutions

The expansion of a bubble accompanies the expansion of money supply and credit. And, one cannot judge whether the expansion of money supply and credit is compatible with sustainable economic growth just by looking at growth rates of money supply and credit. To evaluate the nature of expansion, the content has to be taken into consideration. For example, borrowing costs and covenant clauses such as collateral requirements, types of collateral and haircut rates are important. Another important point is how an increase in bank liabilities, i.e. money supply, corresponds to an increase in the assets of financial institutions. During the bubble period in Japan, money supply and credit were discussed from quantitative viewpoints. But, we also need to monitor the credit creation behavior of financial institutions and analyze how it might affect the economy.

⁷⁵ Shiratsuka (1999) examines the possibility of incorporating asset prices in the price index. He concludes that it is very difficult to construct a price index which includes asset prices for the following reasons: accuracy and coverage of asset price statistics are low; changes in asset prices depend on various factors; they are also significantly influenced by economic and financial developments.

⁷⁶ For example, the possibility of utilizing information, which can be extracted from derivatives markets and other financial markets, is one important issue to be examined (see Nakamura and Shiratsuka [1999]).

⁷⁷ Kindleberger (1995) said on this point that “When speculation threatens substantial rises in asset prices, with a possible collapse in asset markets later, and harm to the financial system, or if domestic conditions call for one sort of policy, and international goals another, monetary authorities confront a dilemma calling for judgment, not cookbook rules of the game. It is, I believe, realistic.”

5. Interaction of Risks

In retrospect, during the bubble period financial institutions took risks that were out of proportion to expected profits. There was lack of recognition about risks related to the economy as a whole and the financial system, especially the concentration and interaction of risks.

The interaction of risks takes various forms. First, let us look at the interaction of risks among different but related industries. For example, during the bubble period the high profitability of computer-related industries owed greatly to large computer-related investments by financial institutions. Such investments, triggered by financial globalization and the progress of technological innovation, were also closely related to a rise in asset prices. Under these circumstances, the economy tended to be influenced by a larger increase in asset prices than generally thought. Second, risks arising from the correlation between loan value and collateral value can be pointed out. During the bubble period, real estate and stocks were often accepted as collateral. However, if the profitability of businesses financed by secured loans is closely related to collateral value, such loans become practically unsecured since profits and collateral value move in the same direction.

These aggregate risks are not merely the sum of risks recognized by individual economic agents. Here, the interaction of various risks plays an important role. In addition, the interaction of risks may arise between financial and non-financial sectors. Therefore, a perspective that recognizes aggregate risks is quite important, and it becomes crucial which risk factor should be watched under evolving economic and financial conditions.

The BOJ gathers information regarding the economy and financial system through its examination and monitoring of financial institutions and also through daily dialogue with financial market participants. The BOJ is well positioned to grasp the risk profile of the economy, which may adversely affect sustainable economic growth, by taking advantage of such information.

C. Relationship with the Prevailing Policy Agenda

The third lesson we have learnt from the bubble period is the importance of working on the policy agenda. In Chapter V, we described three policy agenda items, namely, international policy coordination, preventing the appreciation of the yen, and a reduction in the current account surplus by expanding domestic demand, which constrained the conduct of monetary policy during the bubble period. We also explained the relationship with fiscal policy. Although various agenda which may be detrimental to the fundamental mission of the central bank may surface depending on economic conditions at the time, it will be difficult for the conduct of monetary policy to be immune from any particular policy agenda once it proliferates. Hence, it is important for the central bank to constantly express its views on key policy items.

D. Importance of Designing an Appropriate Institutional Framework

The fourth and last lesson from the bubble period is the need to design an appropriate institutional framework. Monetary policy influences the decisions and behavior of private economic agents through interest rates and liquidity. But the degree of influence depends on the institutional framework such as the supervision of financial institutions, taxation, the regulatory framework, accounting system, and legal infrastructure.

Considering the experience during the bubble period in Japan, if financial deregulation had progressed at an earlier stage, and if the regulatory and supervisory framework had been modified in line with the changes in financial markets, the behavior of financial institutions would probably have been different to some extent. If taxation on land had not been biased toward accelerating an increase in land prices, the degree of increase in land prices would have been different. If the BOJ had implemented reform measures with respect to the short-term money market and window guidance at an earlier stage, as we touched upon in Chapter IV, economic developments might have been slightly better.

If an institutional framework is likely to adversely affect sustainable price stability and financial system stability, the BOJ should analyze the macroeconomic impact and make known its views to the public, even if the BOJ is not directly responsible for designing the institutional framework. At the same time, it is important that the BOJ should make efforts to review and modify, if necessary, any institutional framework for which it is primarily responsible as the economic and financial environment changes.

References

Bank for International Settlements, *63rd Annual Report*, 1993.

_____, *Quarterly Review: International Banking and Financial Market Developments*, August 1999.

Bank of Japan, Institute for Monetary and Economic Studies, *Shin Ban Wagakuni no Kin'yu Seido (Japanese Financial System: New Edition)*, 1986 (in Japanese).

Bank of Japan, Research and Statistics Department, "Endaka ka no Keizai Chosei ni tusite" (Economic Adjustment under Yen's Appreciation), *Chosa Geppo*, Research and Statistics Department, Bank of Japan, February 1987 (in Japanese).

_____, "Saikin no Manei Sapurai Doukou ni tsuite" (Recent Development of Monetary Aggregates), *Chosa Geppo*, Research and Statistics Department, Bank of Japan, February 1988 (in Japanese).

_____, "Jousei Handan Shiryo: Heisei Gan-nen Fuyu" (Quarterly Economic Outlook: Winter 1989), *Chosa Geppo*, Research and Statistics Department, Bank of Japan, January 1989a (in Japanese).

_____, "Jousei Handan Shiryo: Heisei Gan-nen Haru" (Quarterly Economic Outlook:

- Spring 1989), *Chosa Geppo*, Research and Statistics Department, Bank of Japan, April 1989b (in Japanese).
- _____, “Shouwa 63 Nendo no Kin’yu oyobi Keizai no Doukou” (Annual Review of Monetary and Economic Developments in Fiscal 1988), *Chosa Geppo*, Research and Statistics Department, Bank of Japan, May 1989c (in Japanese).
- _____, “Wagakuni ni okeru Kin’nen no Chika Joushou no Haikei to Eikyo ni tsuite” (Causes of Recent Rise in Land Prices and their Impacts), *Chosa Geppo*, Research and Statistics Department, Bank of Japan, April 1990a (in Japanese).
- _____, “Heisei Gan-nendo no Kin’yu oyobi Keizai no Doukou” (Annual Review of Monetary and Economic Developments in Fiscal 1989), *Chosa Geppo*, Research and Statistics Department, Bank of Japan, May 1990b (in Japanese).
- _____, “Wagakuni Kin’yu Keizai no Bunseki to Tenbo: Jousei Handan Siryo Heisei 3 Nen Haru” (Quarterly Economic Outlook: Spring 1991), *Nippon Ginko Geppo*, Bank of Japan, May 1991 (in Japanese).
- Bernanke, Ben, and Mark Gertler, “Monetary Policy and Asset Price Volatility,” paper presented at the conference on “New Challenges for Monetary Policy” sponsored by the Federal Reserve Bank of Kansas City, 1999.
- _____, _____, and Simon Gilchrist, “The Financial Accelerator and the Flight to Quality,” *Review of Economics and Statistics*, 78 (1), 1996, pp. 1-15.
- Basel Committee on Banking Supervision, “Enhancing Corporate Governance in Banking Organisations,” (<http://www.bis.org>), 1999.
- Blinder, Alan S., *Central Banking in Theory and Practice*, 1998, MIT Press.
- Borio, C. E. V., N. Kennedy, and S. D. Prowse, “Exploring Aggregate Asset Price Fluctuations Across Countries: Measurement, Determinants and Monetary Policy Implications”, *BIS Economic Papers*, No. 40, 1994.
- Brainard, William, “Uncertainty and the Effectiveness of Policy,” *American Economic Review*, 57 (2), 1967, pp. 411-425
- Cargill, Thomas F., Michael M. Hutchison, and Takatoshi Ito, *The Political Economy of Japanese Monetary Policy*, MIT Press, 1997.
- Estrella, Arturo, “A Prolegomenon to Future Capital Requirements,” *FRBNY Economic Policy Review*, 1 (2), Federal Reserve Bank of New York, July 1995, pp. 1-12.
- Feldstein, Martin, “Distinguished Lecture on Economics in Government: Thinking About International Economic Coordination,” *Journal of Economic Perspectives*, 2 (2), 1988, pp. 3-13.
- Frankel, Jeffrey A., and Katharine E. Rockett, “International Macroeconomic Policy Coordination When Policymakers Do Not Agree on the True Model,” *American Economic Review*, 78 (3), 1988, pp. 318-340.
- Friedman, Benjamin M., “The Rise and Fall of Money Growth Targets as Guidelines for US Monetary Policy,” Iwao Kuroda, ed., *Towards More Effective Monetary Policy*, London: Macmillan Press, 1997, pp. 137-164.
- Funabashi, Yoichi, *Managing the Dollar: From the Plaza to the Louvre*, Institute for

- International Economics, 1988.
- Greenspan, Alan, "Opening Remarks," in *Achieving Price Stability: A Symposium Sponsored by the Federal Reserve Bank of Kansas City*, 1996.
- _____, "Remarks," at the 15th Anniversary Conference of the Center for Economic Policy Research at Stanford University, 1997 (<http://www.bog.frb.fed.us/BOARDDOCS/SPEECHES/19970905.htm>).
- Higo, Masahiro, "What Can Inflation Expectations and Core Inflation Tell Us about Monetary Policy in Japan?," IMES Discussion Paper, No. 99-E-22, Institute for Monetary and Economic Studies, Bank of Japan, 1999.
- Hoshi, Takeo, and Anil Kashyap, "The Japanese Banking Crisis: Where Did It Come From and How Will It End?," NBER Working Paper No. 7250, 1999.
- Iwamoto, Yasushi, Fumio Ohtake, Makoto Saito, and Koichi Futagami, *Keizai Seisaku to Makuro Keizai Gaku (Economic Policy and Macroeconomics)*, Nihon Keizai Shinbunsha, 1999 (in Japanese).
- Iwata, Kikuo, *Kin'yu Seisaku no Keizai Gaku: 'Nichigin Riron' no Kensho (Economics of Monetary Policy: Examination of 'BOJ Theory')*, Nihon Keizai Shinbunsha, 1993 (in Japanese).
- Kanoh, Satoru, and Hideaki Murase, "On Land Price Formation: Bubble versus Option," *Japanese Economic Review*, 50 (2), 1999, pp. 212-226.
- Kindleberger, Charles P., "Asset Inflation and Monetary Policy," *BNL Quarterly Review* no. 192, 1995, pp. 17-37.
- Komiya, Ryutaro, *Gendai Nihon Keizai (Japanese Economy in Our Time)*, University of Tokyo Press, 1988 (in Japanese).
- _____, *Boueki Kuroji-Akaji no Keizai Gaku (Economics of Trade Surplus and Deficit)*, Toyo Keizai Shinpo Sha, 1994 (in Japanese).
- Matsushita, Yasuo, "Global Economic Integration and the Central Bank," *BOJ Quarterly Bulletin*, 3(3), 1995, pp. 5-13.
- Mieno, Yasushi, "Korekara no Nihon Keizai" (Japanese Economy from Now on), *Nippon Ginko Geppo*, Bank of Japan, November 1992, pp. 1-10 (in Japanese).
- _____, *Nihon Keizai to Chuo Ginko (Japanese Economy and Central Bank)*, Toyo Keizai Shinpo Sha, 1995 (in Japanese).
- _____, *Ri wo Mite Gi wo Omou (Recall Faith to See What Makes a Profit)*, Chuo Koron Sha, 2000 (in Japanese).
- Ministry of Finance, "Shisan Kakaku Hendo no Mekanizumu to Sono Keizai Kouka" (Mechanism of Asset Price Fluctuations and Its Economic Impact), *Financial Review*, No. 30, Institute for Fiscal and Monetary Studies, Ministry of Finance, 1993 (in Japanese).
- Nakamura, Hisashi, and Shigenori Shiratsuka, "Extracting Market Expectations from Option Prices: Case Studies in Japanese Option Markets," *BOJ Monetary and Economic Studies*, 17 (1), Institute for Monetary and Economic Studies, Bank of Japan, 1999, pp. 1-43.

- Neumann, Manfred J. M., "Monetary Targeting in Germany," Iwao Kuroda, ed., *Towards More Effective Monetary Policy*, London: Macmillan Press, 1997, pp. 176-198.
- Nishimura, Kiyohiko, *Nihon no Chika no Kimari Kata (Way to Determine Land Prices in Japan)*, Chikuma Shobo, 1995 (in Japanese).
- Nishimura, Yoshimasa, *Kin'yu Gyosei no Sippai (Failure of Financial Regulatory Policy)*, Bunshun Bunko, 1999 (in Japanese).
- Noguchi, Yukio, *Tochi no Keizai Gaku (Economics of Land)*, Nihon Keizai Shinbun Sha, 1989 (in Japanese).
- _____, *Economics of Bubble (Baburu no Keizai Gaku)*, Nihon Keizai Shinbun Sha, 1992 (in Japanese).
- Ohta, Takeshi, *Kokusai Kin'yu --- Genba Kara no Shougen (International Finance --- Witness Concerned)*, Chuko Shinsho, 1991 (in Japanese).
- Okumura, Hirohiko, *Gendai Nihon Keizai Ron (A Essay on Current Japanese Economy)*, Toyo Keizai Shinpo Sha, 1999 (in Japanese).
- Ogata, Shijuro, *Yen to Nichigin (Yen and Bank of Japan)*, Chukoshinsho, 1996 (in Japanese).
- Ogawa, Kazuo, and Shinichi Kitasaka, *Shisan Shijo to Keiki Hendo (Asset Markets and Economic Fluctuations)*, Nihon Keizai Shinbun Sha, 1998 (in Japanese).
- Shigemi, Yusuke, "Asset Inflation in Selected Countries," *BOJ Monetary and Economic Studies*, 13 (2), Institute for Monetary and Economic Studies, Bank of Japan, 1995, pp. 89-130.
- Shiratsuka, Shigenori, "Inflation Measures for Monetary Policy: Measuring the Underlying Inflation Trend and Its Implication for Monetary Policy Implementation," *Monetary and Economic Studies*, 15 (2), Institute for Monetary and Economic Studies, Bank of Japan, 1997, pp. 1-26.
- _____, "Asset Price Fluctuation and Price Indices," *Monetary and Economic Studies*, 17 (3), Institute for Monetary and Economic Studies, Bank of Japan, 1999, pp. 103-128.
- Stock, James H., "Monetary Policy in a Changing Economy: Indicators, Rules, and the Shift Toward Intangible Output," IMES Discussion Paper, No. 99-E-13, Institute for Monetary and Economic Studies, Bank of Japan, 1998.
- Suzuki, Yoshio, *Nihon no Kin'yu Seisaku (Japanese Monetary Policy)*, Iwanami Shinsho, 1993 (in Japanese).
- Ueda, Kazuo, "The Japanese Current Account Surplus and Fiscal Policy in Japan and the U. S.," J. Shoven ed., *Government Policy Towards Industry in the United States and Japan*, Cambridge University Press, 1988, pp. 145-172.
- Takao, Giichi, *Heisei Kin'yu Fukyo (Heisei Financial Depression)*, Chuko Shinsho, 1994 (in Japanese).
- Taylor, John B., *Macroeconomic Policy in a World Economy*, New York: Norton, 1993.
- Vogel, Ezra F., *Japan as Number One*, Harvard University Press, 1979.

- Volcker, Paul A., "Statements to Congress," *Federal Reserve Bulletin*, Federal Reserve Board, April 1986.
- _____, and Toyoo Gyoten, *Changing Fortune*, Times Books, 1992.
- Tsutomu, Watanabe, *Shijo no Yoso to Keizai Seisaku no Yukosei (Market Expectations and Effectiveness of Economic Policy)*, Toyo Keizai Shinpo Sha, 1994 (in Japanese).
- Yamaguchi, Yutaka, "Asset Price and Monetary Policy: Japan's Experience," remarks presented at the conference on "New Challenges for Monetary Policy" sponsored by the Federal Reserve Bank of Kansas City, 1999.
- Yoshitomi, Masaru, *Nihon Keizai no Shinjitsu (Truth of Japanese Economy)*, Toyo Keizai Shinpo Sha, 1998 (in Japanese).

Table 1: Capital Gain-Loss in Land Assets (Comparison with the Past Episodes)

	Ratio to Nominal GDP, %
World War I	
1913-19	335
1919-24	1
1924-30	▲ 43
1930-35	▲ 26

'Remodeling the Japanese Archipelago'	
1972-73	165

Bubble Era	
1986-90	367
1991-93	▲ 107

Sources: Bank of Japan, *Hundred-Year Statistics of the Japanese Economy*; Economic Planning Agency, *Annual Reports on System of National Accounts*.

Notes: 1. Figures for capital gains and losses are on land stocks.

2. National wealth statistics before the World War I are discontinuous.

Table 2: Reduction of Official Discount Rates

Effective date	Official discount rate	N o t e s
January 30, 1986	5.0% → 4.5%	
March 10, 1986	4.5% → 4.0%	The announcement date was same as that of reduction of official discount rate by the FRB and Bundesbank.
April 21, 1986	4.0% → 3.5%	The effective date was same as that of reduction of official discount rate by the FRB.
November 1, 1986	3.5% → 3.0%	Join announcement on the stability of foreign exchange rates by Financial Minister Miyazawa and Treasury Secretary Baker was published when the BOJ's reduction of official discount rate was put into effect.
February 23, 1987	3.0% → 2.5%	Louvere Accord was agreed on the announcement date of the BOJ's reduction of official discount rate.

Table 3: Plaza Agreement and Louvre Accord

Plaza Agreement (September 22, 1985 at New York)

18. The Ministers and Governors agreed that exchange rates should play a role in adjusting external imbalances. In order to do this, exchange rates should better reflect fundamental economic conditions than has been the case. They believe that agreed policy actions must be implemented and reinforced to improve the fundamentals further, and that in view of the present and prospective changes in fundamentals, some further orderly appreciation of the main non-dollar currencies against the dollar is desirable. They stand ready to cooperate more closely to encourage this when to do so would be helpful.

...

In particular, the Government of Japan will implement policies with the following explicit intentions.

...

3. Flexible management of monetary policy with due attention to the yen rate.

...

Louvre Accord (February 22, 1987 at Paris)

10. The Ministers and Governors agreed that the substantial exchange rate changes since the Plaza Agreement will increasingly contribute to reducing external imbalances and have now brought their currencies within ranges broadly consistent with underlying economic fundamentals, given the policy commitments summarized in this statement. Further substantial exchange rate shifts among their currencies could damage growth and adjustment prospects in their countries. In current circumstances, therefore, they agreed to cooperate closely to foster stability of exchange rates around current levels.

Table 4: Official Announcement of Policy Board

Effective date	Announcement (extraction)
January 29, 1986	“The Bank of Japan hopes that this action will contribute to achieving a domestic demand growth promoted by lower interest rates, and leading to <u>help correcting Japan’s external imbalance</u> . The Bank will <u>continue to carefully watch the development of foreign exchange markets</u> in future monetary policy management.
March 7, 1986	“Under such circumstances, the Bank of Japan decided it appropriate to lower its official discount rate. The Bank of Japan hopes that this action will contribute to <u>limit extreme fluctuations of foreign exchange rate</u> , and to <u>help correcting Japan’s external imbalance</u> by promoting a growth in domestic demand.”
April 19, 1986	“The Bank of Japan hopes that this action will contribute to <u>achieving more a stable movement of foreign exchange rate</u> , and, along with economic stimulus package by the Government, promoting to an expansion of domestic demand and <u>correcting Japan’s external imbalance</u> through such expansion.”
October 31, 1986	“The Bank of Japan hopes that this action will contribute to a sustained economic growth, and to this end, <u>stability in foreign exchange rate is strongly desired</u> . In the meantime, the Bank of Japan will continue to carefully watch the development of monetary easing, such as money supply, while maintaining price stability.”
February 20, 1987	“The Bank of Japan hopes that this action, coupled with monetary easing so far, will contribute to <u>achieving a stability in foreign exchange rate</u> and a steady growth in domestic demand. Recently Japan-US reconfirm the commitment to cooperating in various issues on foreign exchange markets, and it is thus far expected to closely cooperate among industrial countries to promote stability in foreign exchange markets. The Bank of Japan will continues to carefully watch the development of monetary easing, such as money supply.”

Notes: Text are authors’ translation from original announcement in Japanese, and underlines are added by the authors.

Table 5: Transition Process to Monetary Tightening

D a t e	R e l a t e d a c t i o n s
End-August, 1987	Encouragement of money market rates to rise
October 19, 1987	Black Monday (Crash of NY stock prices)
October 20, 1987	Ease in the stance of money market operation
January 13, 1988	US-Japan joint announcement (Reagan and Takeshita)
July-September, 1988	Gradual shift in the stance of money market operation for the direction of tightening (CD rate increased 0.7% from its latest bottom)
November, 1988	Introduction of new framework of money market operation
April 1, 1989	Introduction of consumption tax
May 30, 1989	Increase in the official discount rate (2.5% → 3.25%, effective date: May 31)

Table 6: US and German Monetary Policy around the Black Monday

D a t e	U n i t e d S t a t e s	G e r m a n y
September 4, 1987	Increase in official discount rate (5.5% → 6.0%)	
September 23		Raise in repo rate (3.60% → 3.65%)
October 7		Raise in repo rate (3.65% → 3.75%)
October 14		Raise in repo rate (3.75% → 3.85%)
October 19	Stock price crash in the world markets (so-called Black Monday). Central banks in each country provided ample liquidity to money markets.	
Mid-October to Mid-November	Reduction of FF rate (week of October 16, 7.59% → week of November 13, 6.72%)	
November 5		Reduction in Lombard rate (5.0% → 4.5%, Effective date: November 6)
December 3		Reduction in official discount rate (3.0% → 2.5%, Effective date: December 5)
After March 1988	Gradual shift back to tighter stance in money market operations	
June 30		Reduction in official discount rate (2.5% → 3.0%, Effective date: July 1)
July 28		Reduction in Lombard rate (4.5% → 5.0%, Effective date: July 29)
August 9	Increase in official discount rate (6.0% → 6.5%)	
August 25		Increase in official discount rate (3.0% → 3.5%, Effective date: August 26)

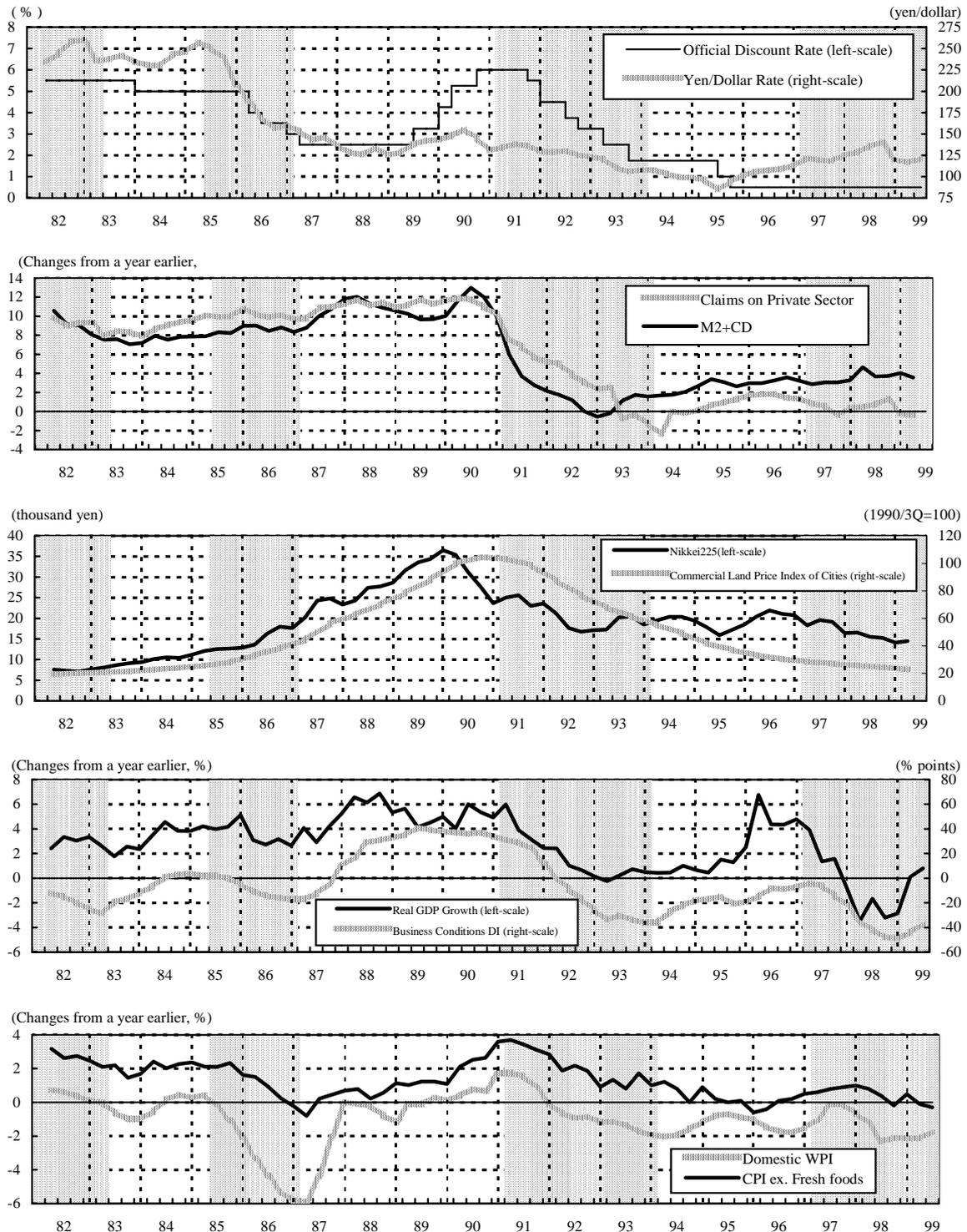
Table 7: Increase in the Official Discount Rate

Effective date	Official discount rate	N o t e s
May 31, 1989	2.5% → 3.25%	The BOJ called for commercial banks' "more disciplined management of their lending in terms of both quantity and quality" in the guidelines if "window guidance" for the period of June to September.
October 11, 1989	3.25% → 3.75%	
December 25, 1989	3.75% → 4.25%	
March 20, 1990	4.25% → 5.25%	The MOF published an instruction on limiting real estate related bank lending in March.
August 30, 1990	5.25% → 6.0%	Iraq's invasion to Kuwait (so-called the Gulf crises)

Table 8: Policy Board's Official Announcements to Raise Official Discount Rate

Effective date	Announcement (extraction)
May 30, 1989	“The Bank of Japan considers that this action will contribute to achieving a continuing sustained growth promoted by domestic demand while maintaining price stability. The Bank also hopes that it will help correcting Japan’s external imbalance and fostering a healthy development of the world economy.”
October 11, 1989	“The decision was taken to ensure an appropriate and flexible management of monetary policy with a view to the developments of foreign exchange rate, interest rates abroad, domestic business activity, prices, and money supply as well as a rise in market interest rates reflecting these developments. The Bank of Japan hopes that this action will contribute to a sustainable growth led by domestic demand while maintaining price stability.”
December 25, 1989	“The decision was taken to ensure appropriate and flexible management of monetary policy with a view to the recent developments of domestic business activity, prices, the money supply, foreign exchange rate and interest rates abroad as well as a rise in market interest rates reflecting these developments. The Bank of Japan hopes that this measure will contribute to sustainable growth led by domestic demand while maintaining price stability.”
March 20, 1990	“The decision was taken to ensure appropriate and flexible management of monetary policy with a view to the recent developments of domestic business activity, prices, the money supply, foreign exchange rate and interest rates abroad as well as a rise in market interest rates reflecting these developments. The Bank of Japan expects that this decision will contribute fully preemptively to maintaining price stability under the present circumstances. The Bank hopes that this measure will also contribute to sustainable growth led by domestic demand while maintaining market stability.”
August 30, 1990	“The decision was taken to ensure appropriate and flexible management of monetary policy with a view to the recent developments of domestic economic activity, supply and demand condition of labor market, prices and the money supply as well as a rise in market interest rates reflecting these developments. It was based on the judgement that it would be necessary for the Bank of Japan to take a clearer stance to contain inflation. The Bank of Japan expects that this decision will prevent a resurgence of inflationary pressures, contribute to the financial market stability and continue providing for the conditions to maintain sustainable growth led by domestic demand.”

Figure 1: Financial and Macroeconomic Conditions



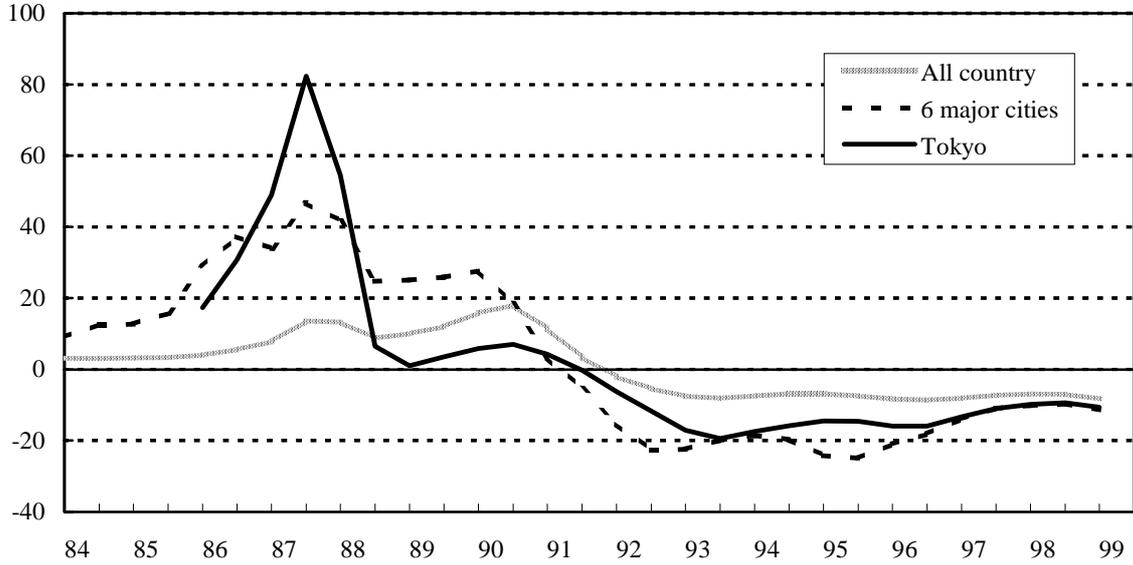
Sources: Bank of Japan, *Financial and Economic Statistics Monthly*; Economic Planning Agency, *Annual Reports on System of National Accounts*; Japan Real Estate Institute, *Urban Land Price Index*.

Notes: Shaded areas indicate periods of economic recession.

Figure 2: Land Prices in Uses and Areas

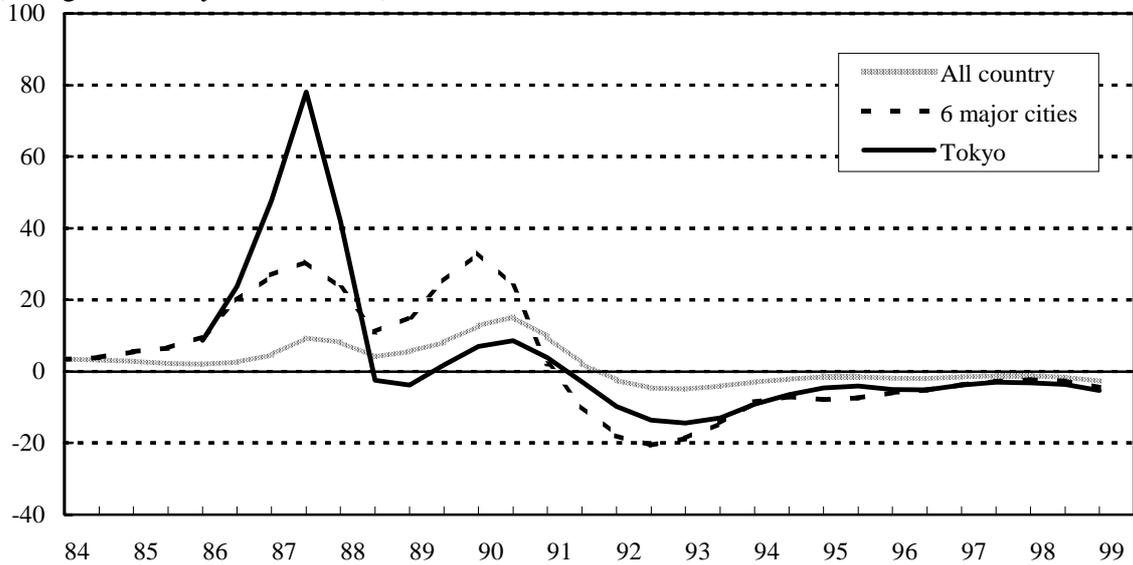
(1) Commercial Land

(changes from a year earlier, %)



(2) Residential Land

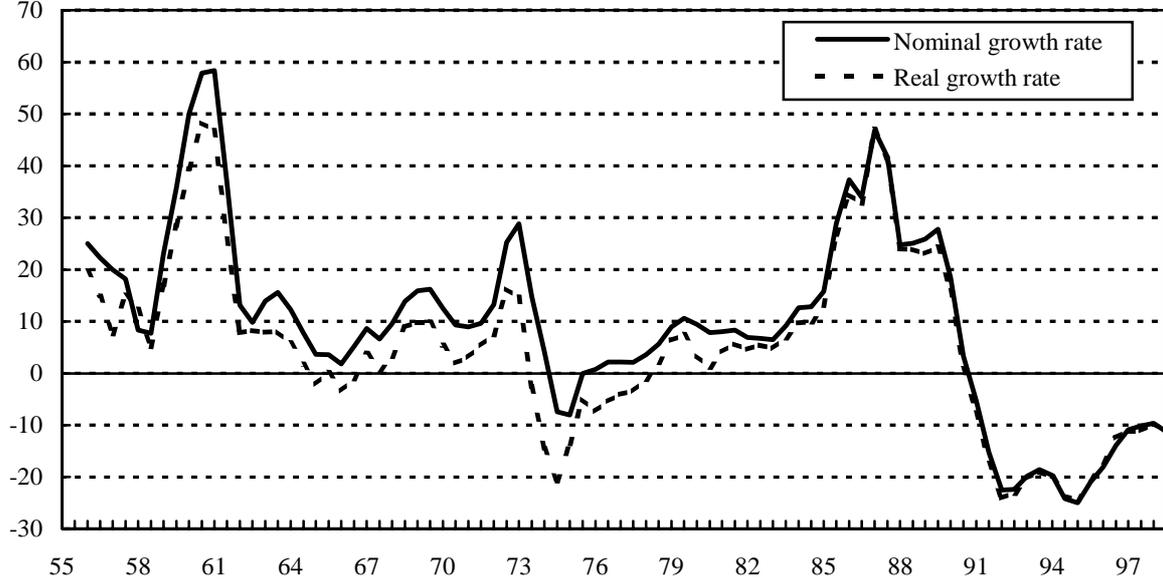
(changes from a year earlier, %)



Sources: Japan Real Estate Institute, *Urban Land Price Index*.

Figure 3: Real Land Prices

(changes from a year earlier, %)

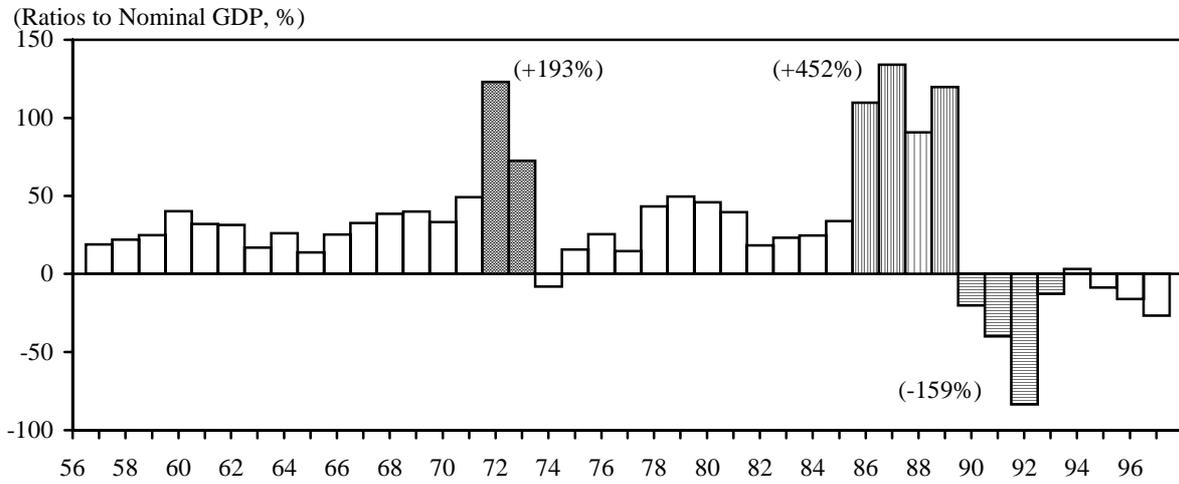


Sources: Japan Real Estate Institute, *Urban Land Price Index*; Economic Planning Agency, *Annual Reports on System of National Accounts*.

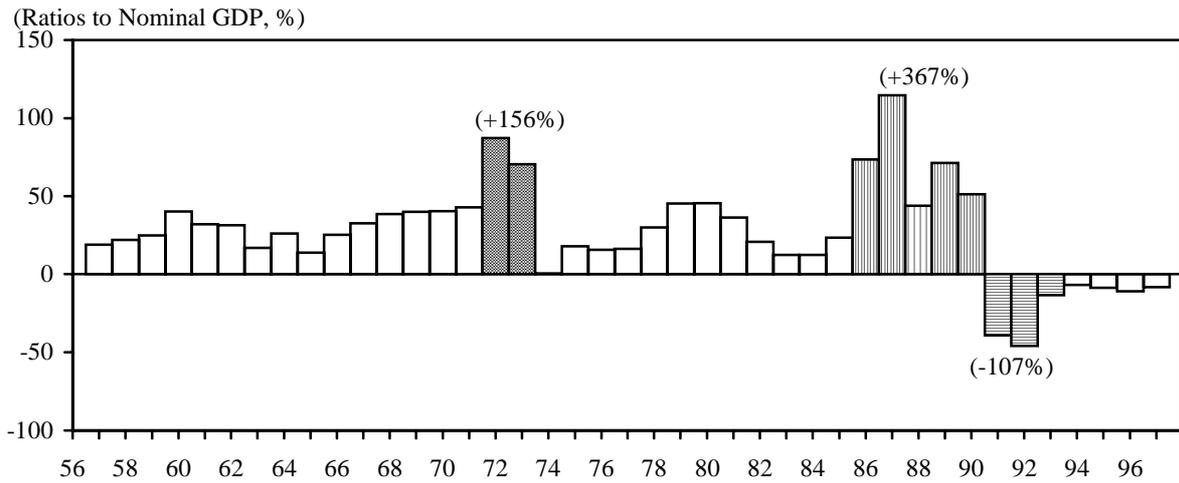
Notes: Real land prices correspond to the commercial land prices in six major cities deflated by the GDP deflator.

Figure 4: Capital Gains and Losses

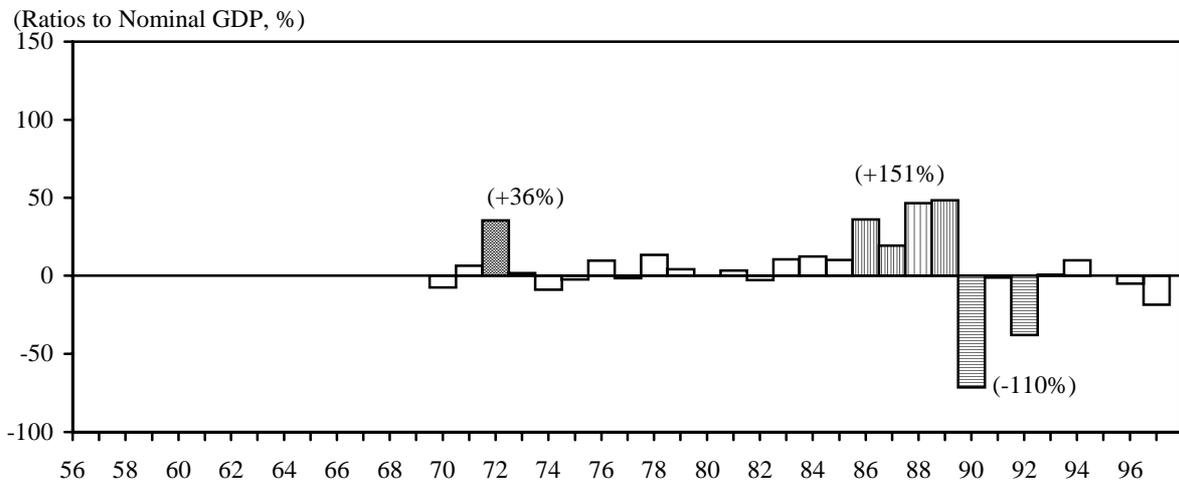
(1) Lands and Stocks



(2) Lands

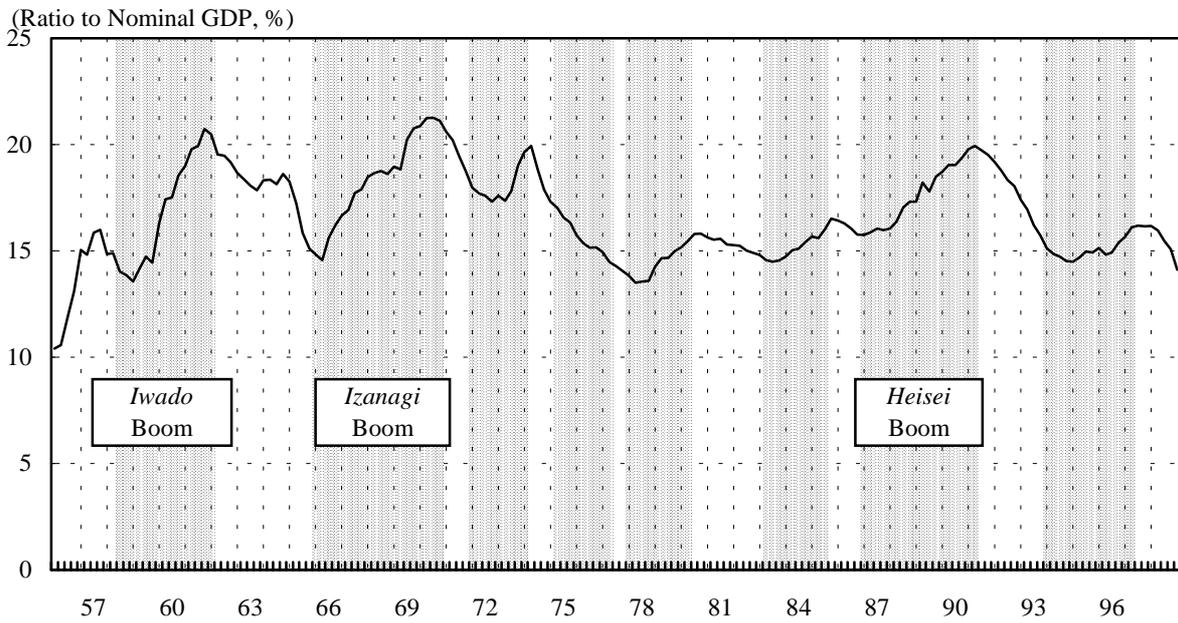


(3) Stocks



Sources: Economic Planning Agency, *Annual Reports on System of National Accounts*.

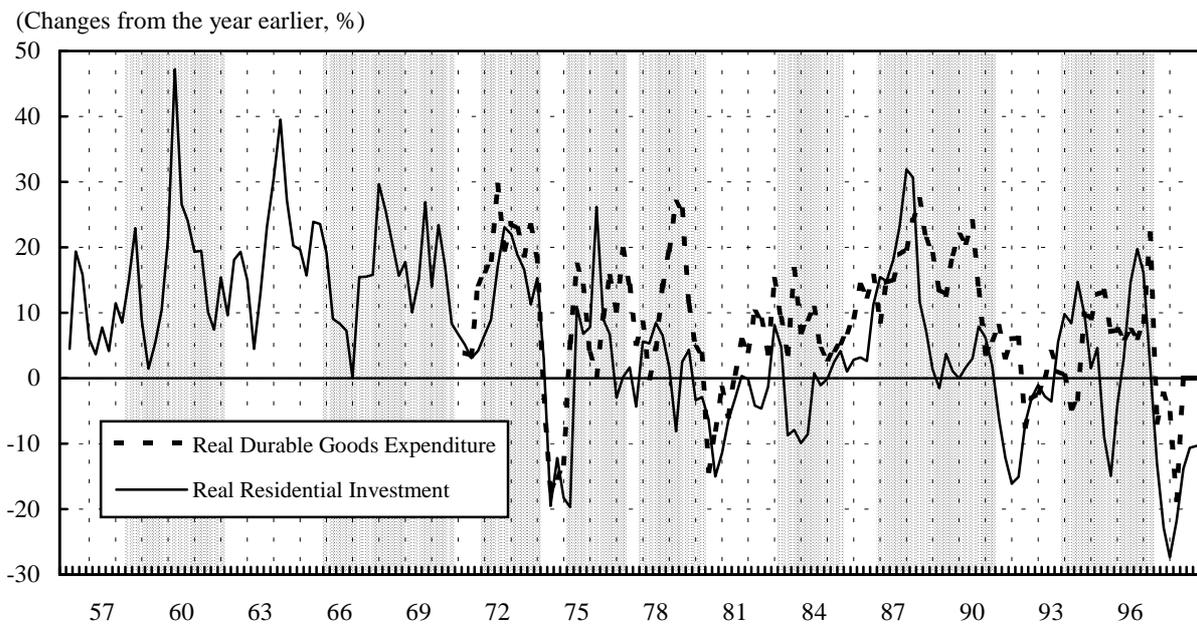
Figure 5: Fixed Investment and Nominal GDP Ratios



Sources: Economic Planning Agency, *Annual Reports on System of National Accounts*.

Notes: Shaded areas indicate periods of economic recovery.

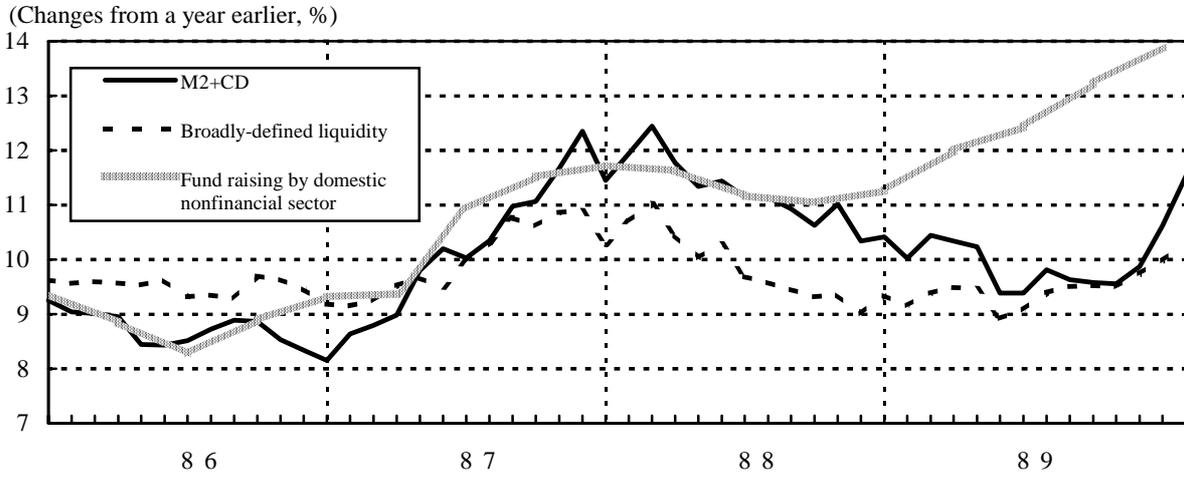
Figure 6: Real Expenditure by Households



Sources: Economic Planning Agency, *Annual Reports on System of National Accounts*.

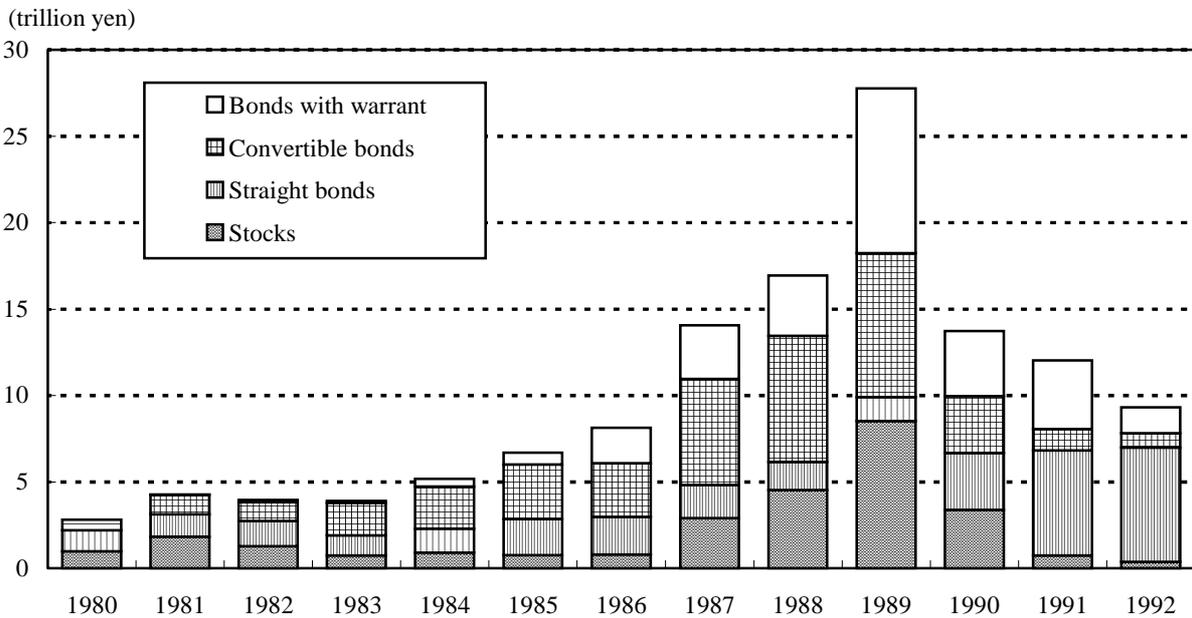
Notes: Shaded areas indicate periods of economic recovery.

Figure 7: Monetary Aggregates and Credits



Sources: Bank of Japan, *Financial and Economic Statistics Monthly*.

Figure 8: Fund Raising in Capital Markets by Private Sector

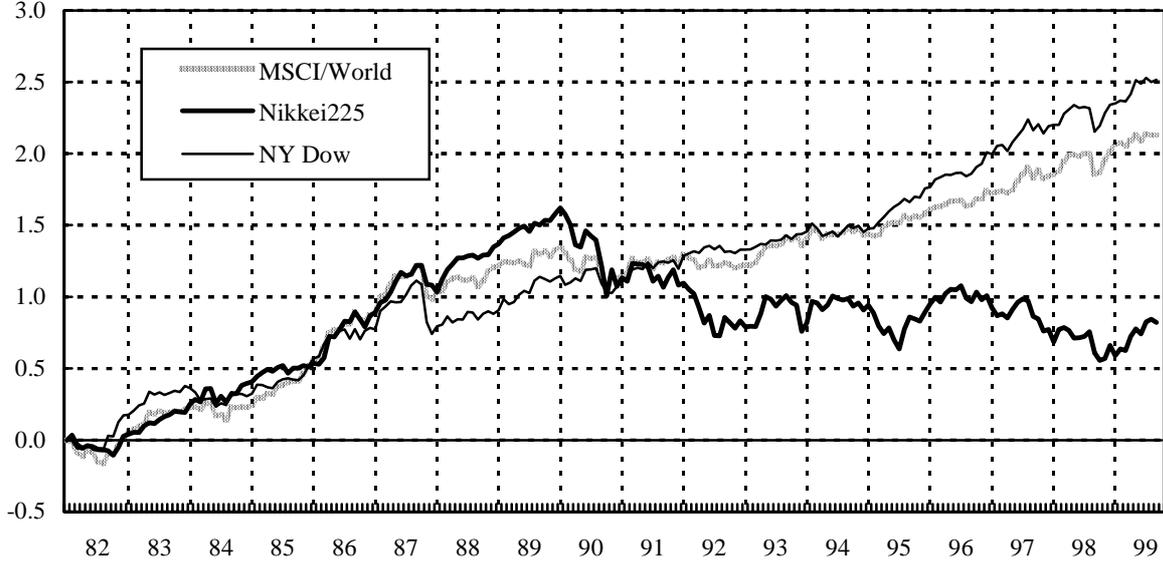


Sources: Tokyo Stock Exchange

Notes: Figures correspond to funding by companies listed on the Tokyo Stock Exchange.

Figure 9: International Comparison of Stock Price Movements

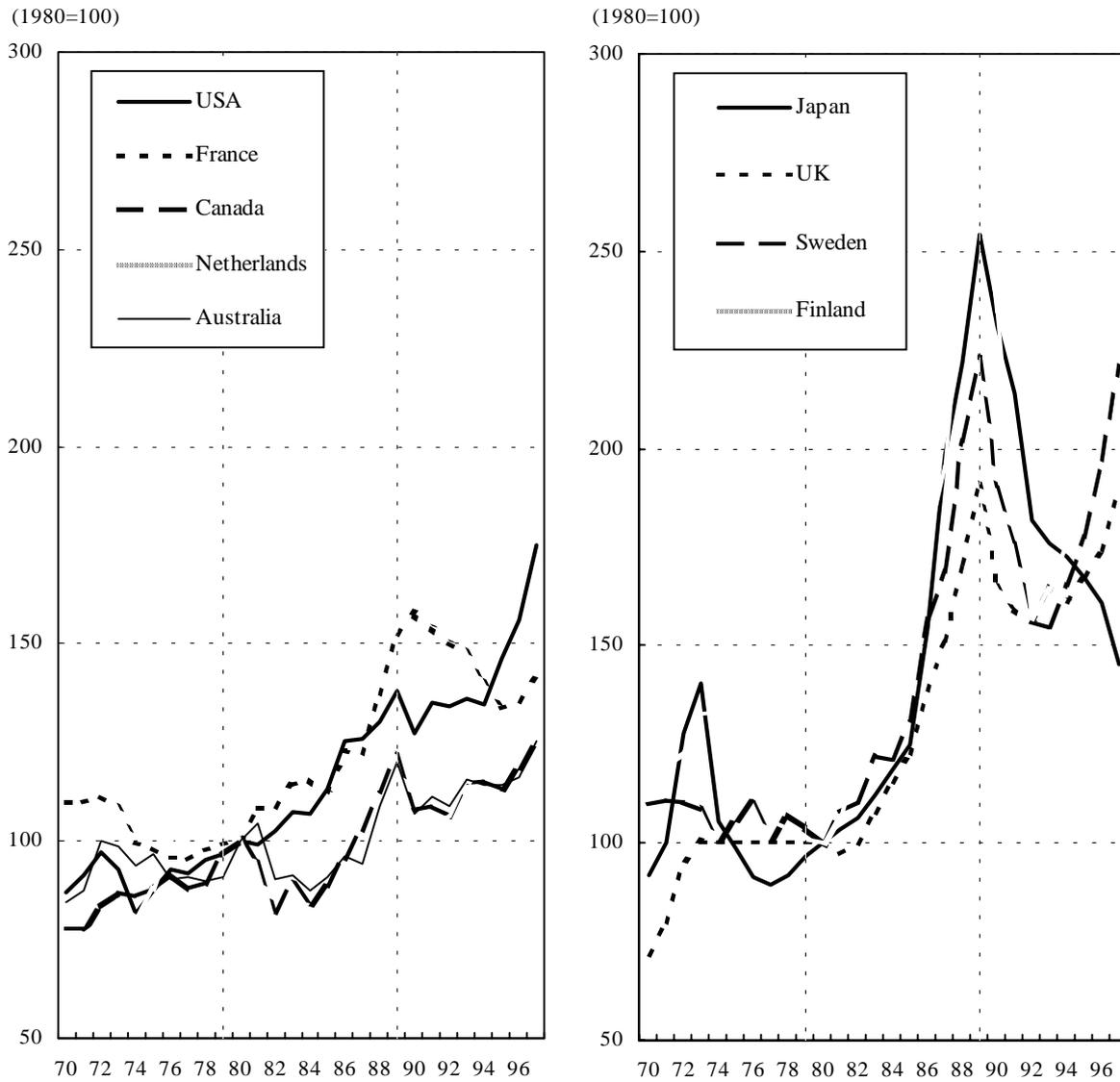
(end-1981=0 in log-scale)



Sources: Bank of Japan, *Financial and Economic Statistics Monthly*, Morgan Stanley Capital International (<http://www.msci.com>).

Notes: MSCI/World corresponds to aggregated stock price index in 22 industrialized countries compiled by Morgan Stanley Capital International.

Figure 10: Real Aggregated Asset Prices

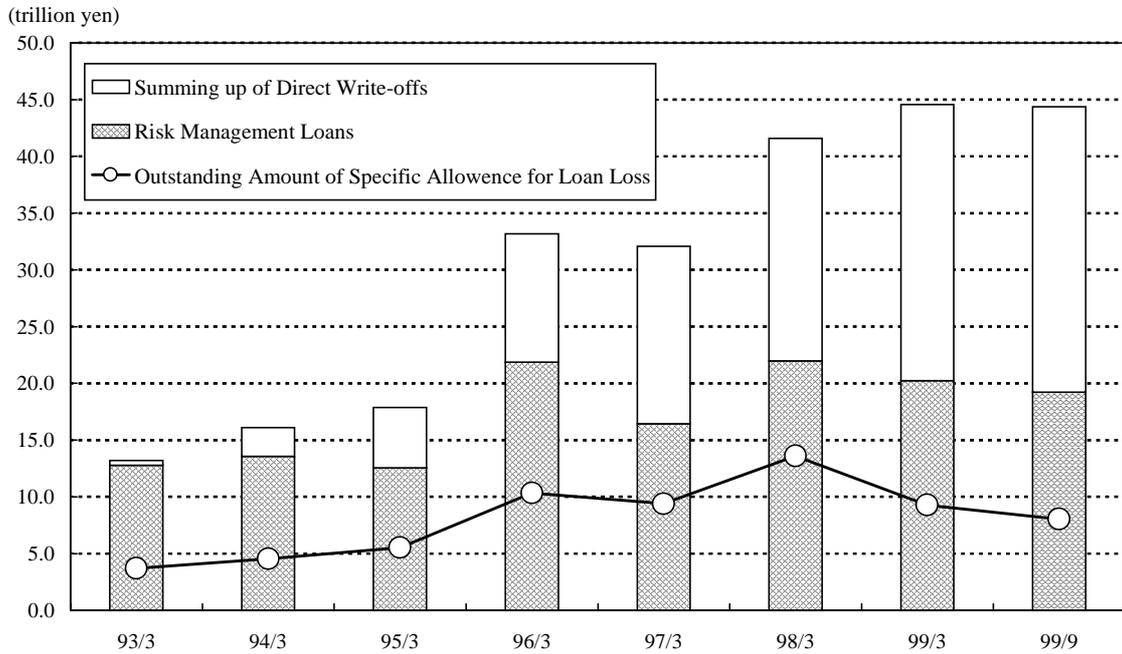


Sources: BIS (1999)

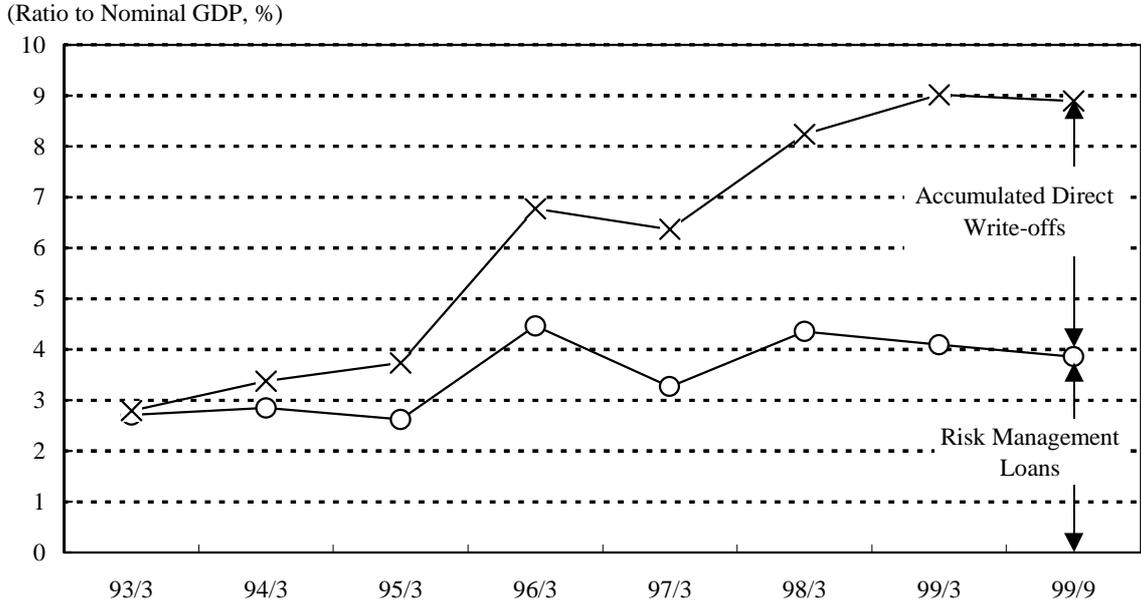
Notes: Real aggregate asset price indices are a weighted average of equity and residential and commercial estate price indices deflated by consumer prices. The weights are based on the composition of private sector wealth.

Figure 11: Non-Performing Loan of Banks

(1) Amounts Outstanding



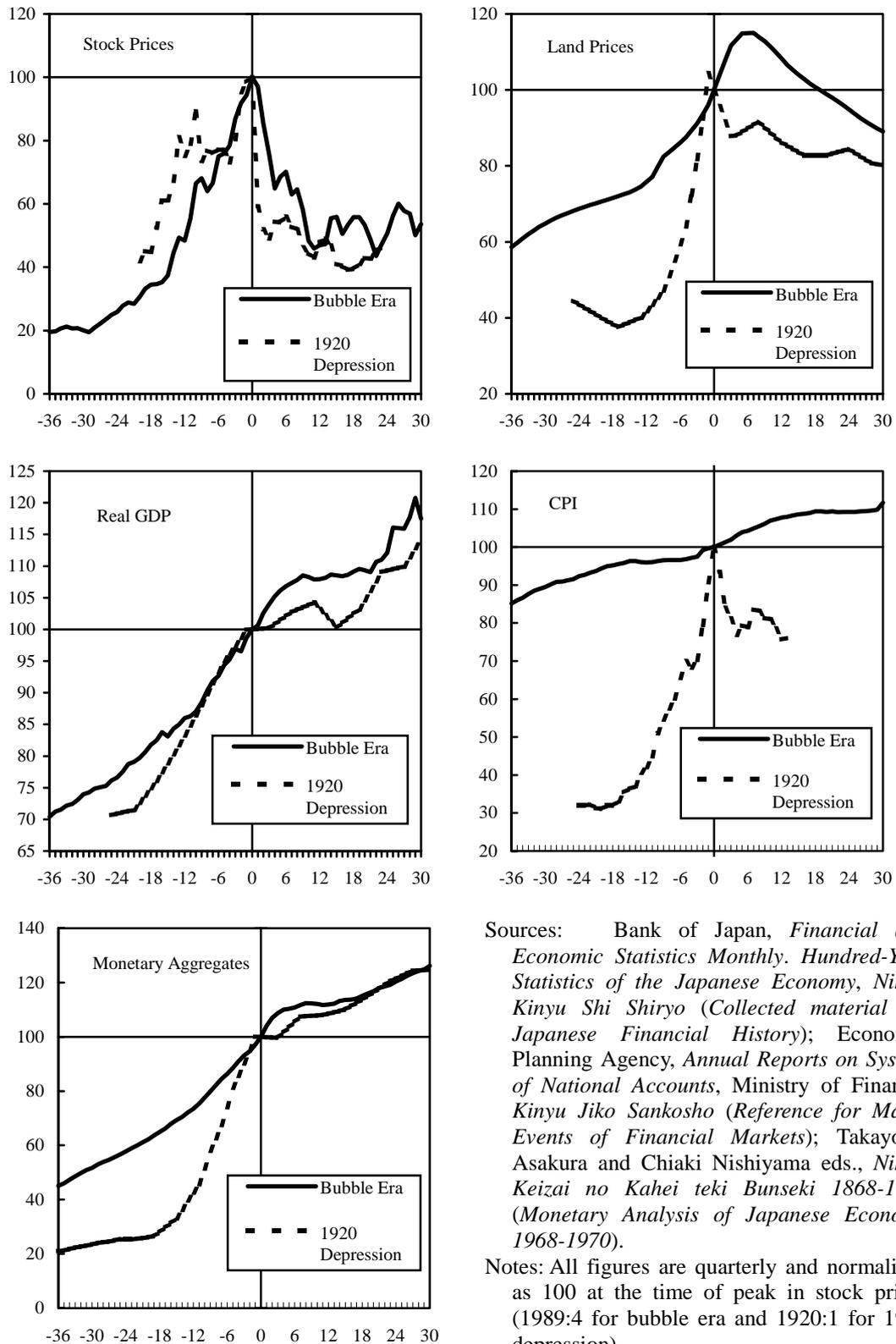
(2) Ratios to Nominal GDP



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

- Notes:
1. Figures are summations of city banks, long-term credit banks, and trust banks (Figures for all banks and all deposit-taking institutions are impossible to retroact before the fiscal year of 1995).
 2. Risk management loans are summations of loans to borrowers in legal bankruptcy, past due loans in arrears by six months or more, and loans in arrears by three months or more and less than six months.

Figure 12: Comparison of Bubbles: 1920s and 1980s



Sources: Bank of Japan, *Financial and Economic Statistics Monthly. Hundred-Year Statistics of the Japanese Economy*, *Nihon Kinyu Shi Shiryo* (Collected material for Japanese Financial History); Economic Planning Agency, *Annual Reports on System of National Accounts*, Ministry of Finance, *Kinyu Jiko Sankosho* (Reference for Major Events of Financial Markets); Takayoshi Asakura and Chiaki Nishiyama eds., *Nihon Keizai no Kahei teki Bunseki 1868-1970* (Monetary Analysis of Japanese Economy 1968-1970).

Notes: All figures are quarterly and normalized as 100 at the time of peak in stock prices (1989:4 for bubble era and 1920:1 for 1920 depression).

Figure 13: Illustration of Bubble Economy in Japan

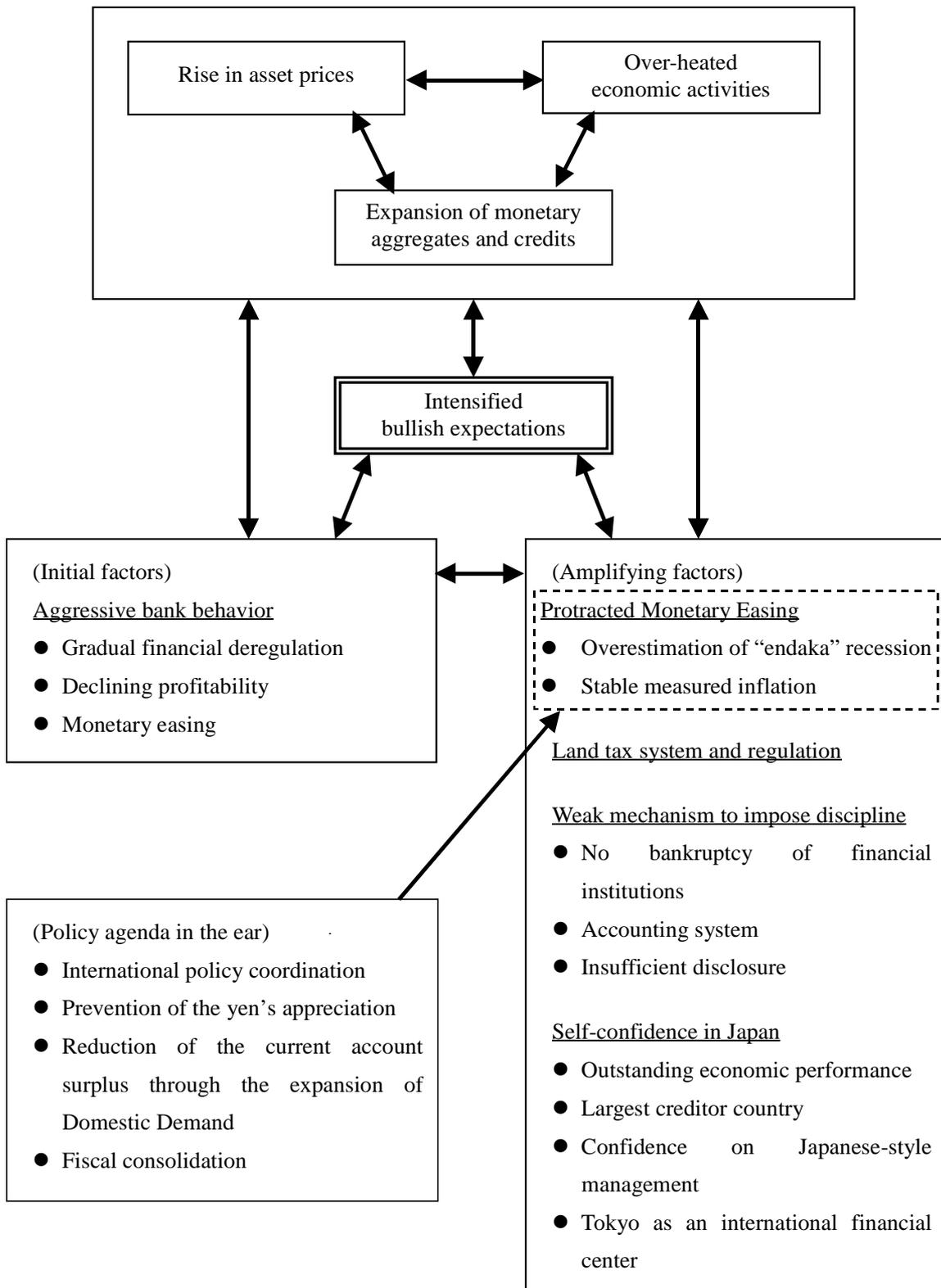
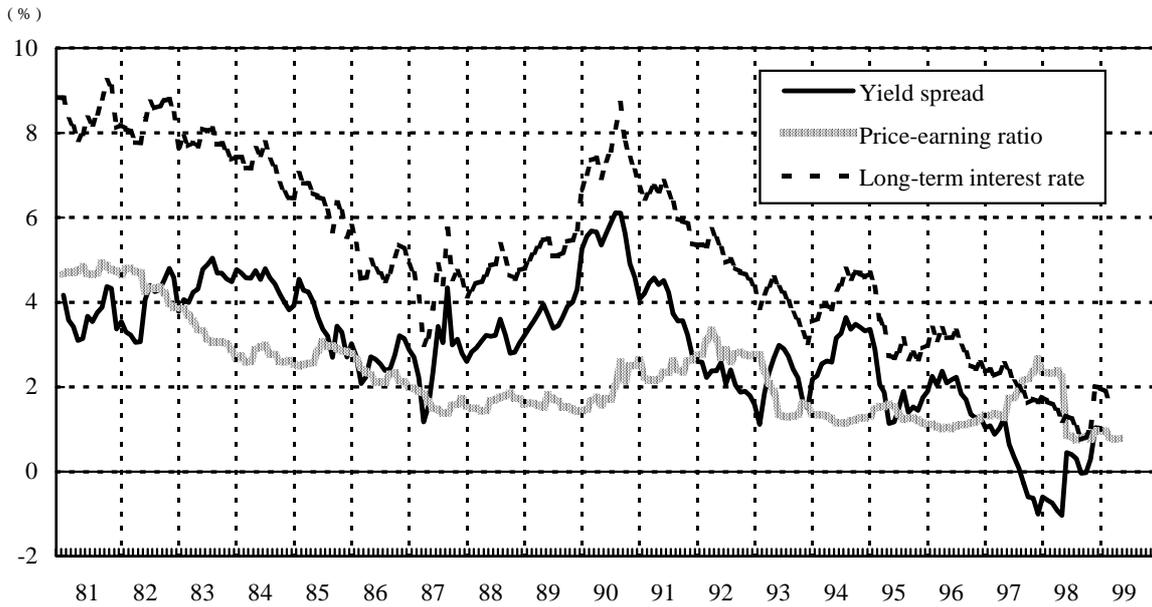


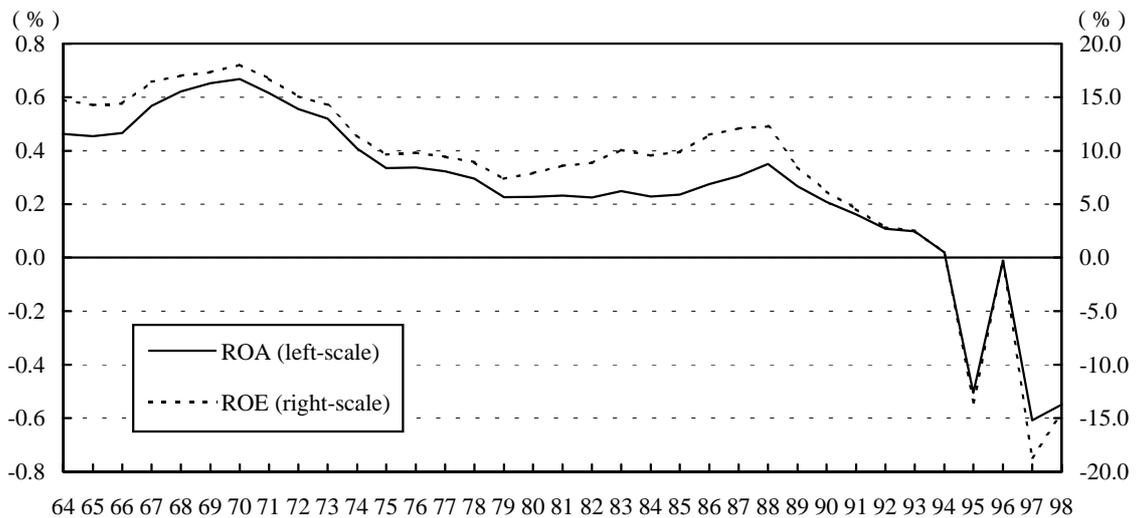
Figure 14: Equity Yield Spreads



Sources: Bank of Japan, *Financial and Economic Statistics Monthly*.

- Notes: 1. Yield spread and price-earning ratio are computed in TOPIX basis.
 2. Long-term interest rate is JGB (10-year) at the end of each month.

Figure 15: Profitability of Japanese Banks



Sources: Japanese Bankers Association, *Financial Statements of All Banks*.

- Notes: 1. Figures are for domestically licensed banks (summation of city banks, regional banks, regional banks II, trust banks, and long-term credit banks).
 2. The definitions of ROA and ROE are as follows:

$$\text{ROA} = (\text{Profit for the Term}) / (\text{Total Assets} - \text{Acceptance and Guarantees})$$

$$\text{ROE} = (\text{Profit for the Term}) / (\text{Total Stock Holders' Equity})$$

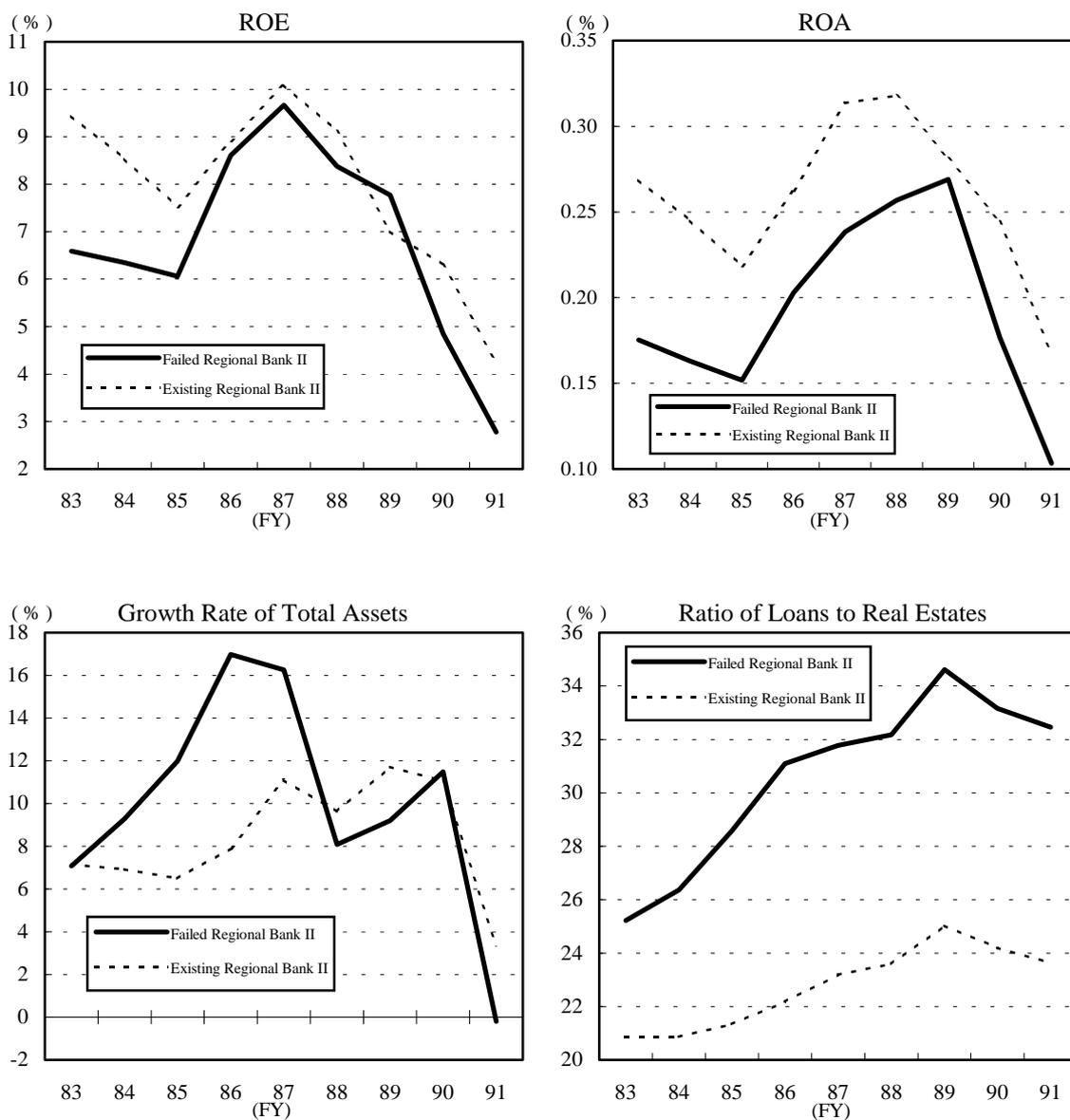
Figure 16: Bank Lending to Real Estate Related Sectors



Sources: Bank of Japan, *Financial and Economic Statistics Monthly*.

Notes: Real estate related industries correspond to real estate, construction, and non-banks.

Figure 17: Profitability and Behavior of Failed Tier II Regional Bank

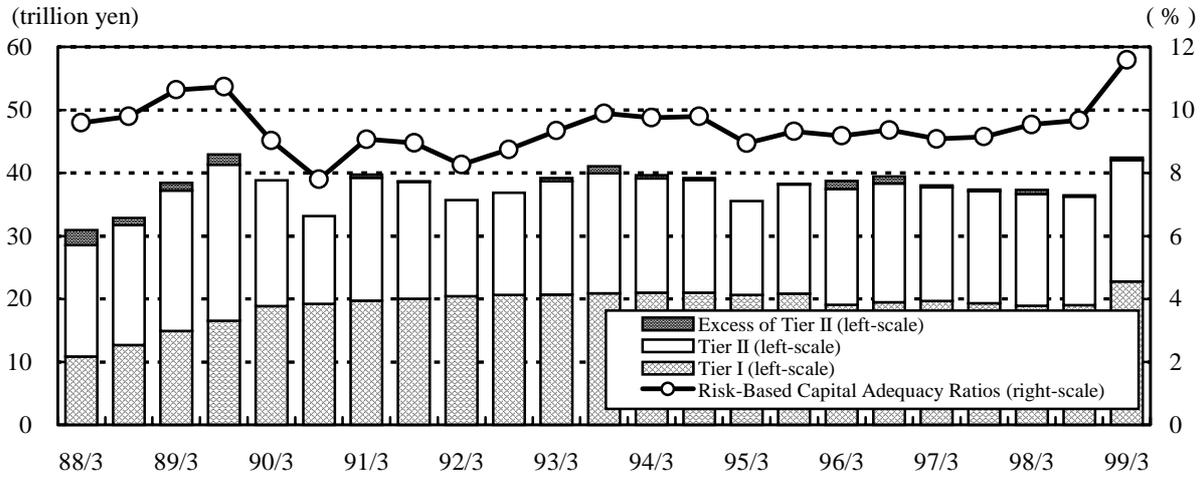


Sources: Japanese Bankers Association, *Financial Statements of All Banks*.

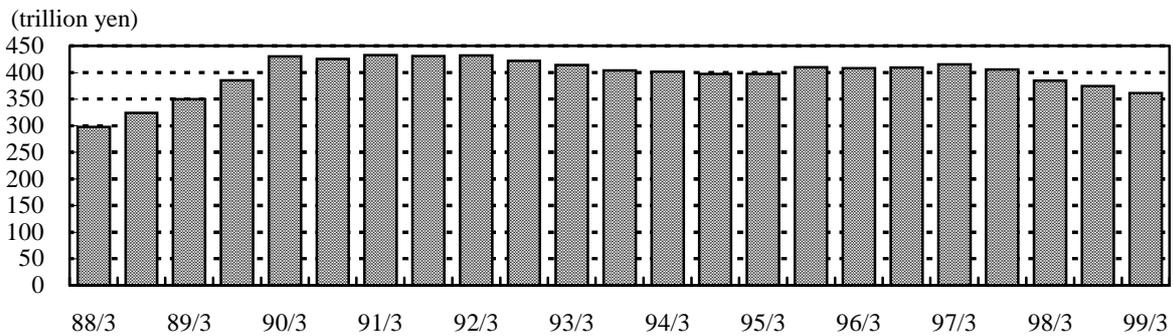
- Notes:
1. Tier II regional banks are member banks of Second Association of Regional Banks.
 2. Failed tier II regional banks are Taiheiyo, Tokyo Sowa, Kokumin, Niigata Chuo, Koufuku, Fukutoku, and Hyogo.

Figure 18: Capital-Asset Ratios of Financial Institutions

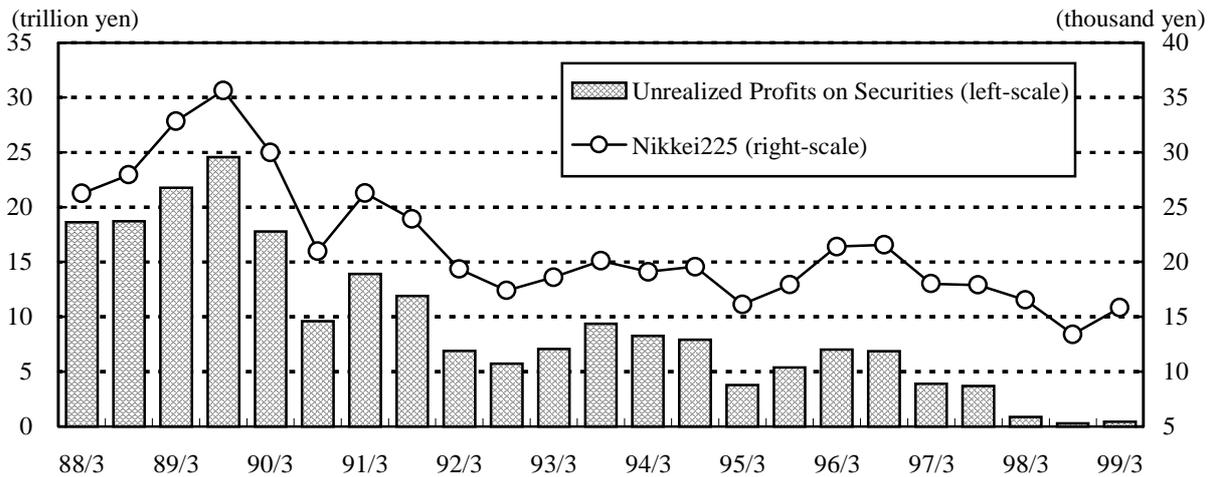
(1) Risk-Based Capital Adequacy Ratios and



(2) Amount Outstanding of Risk Assets



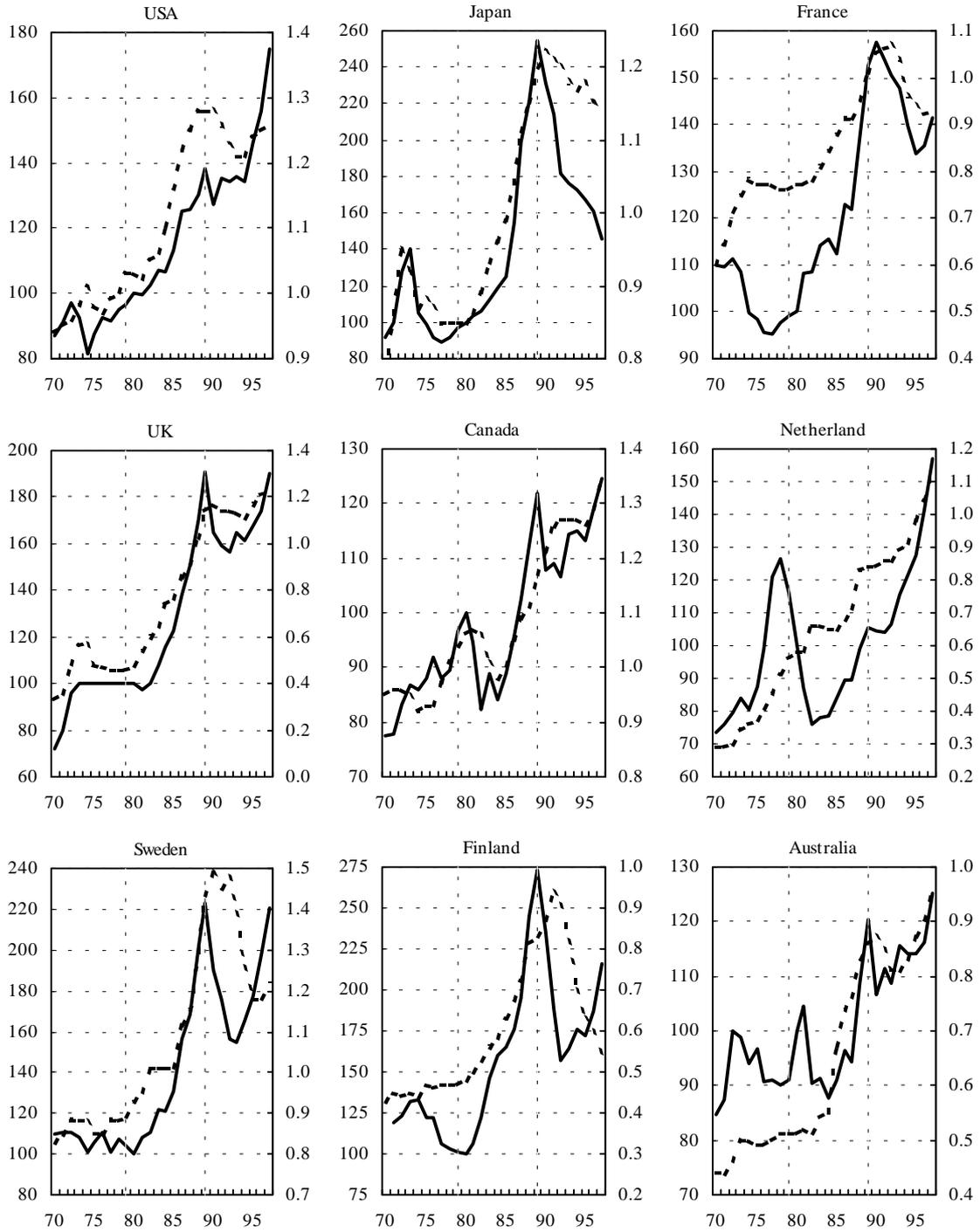
(3) Stock Prices and



Sources: Japanese Bankers Association, *Financial Statements of All Banks*.

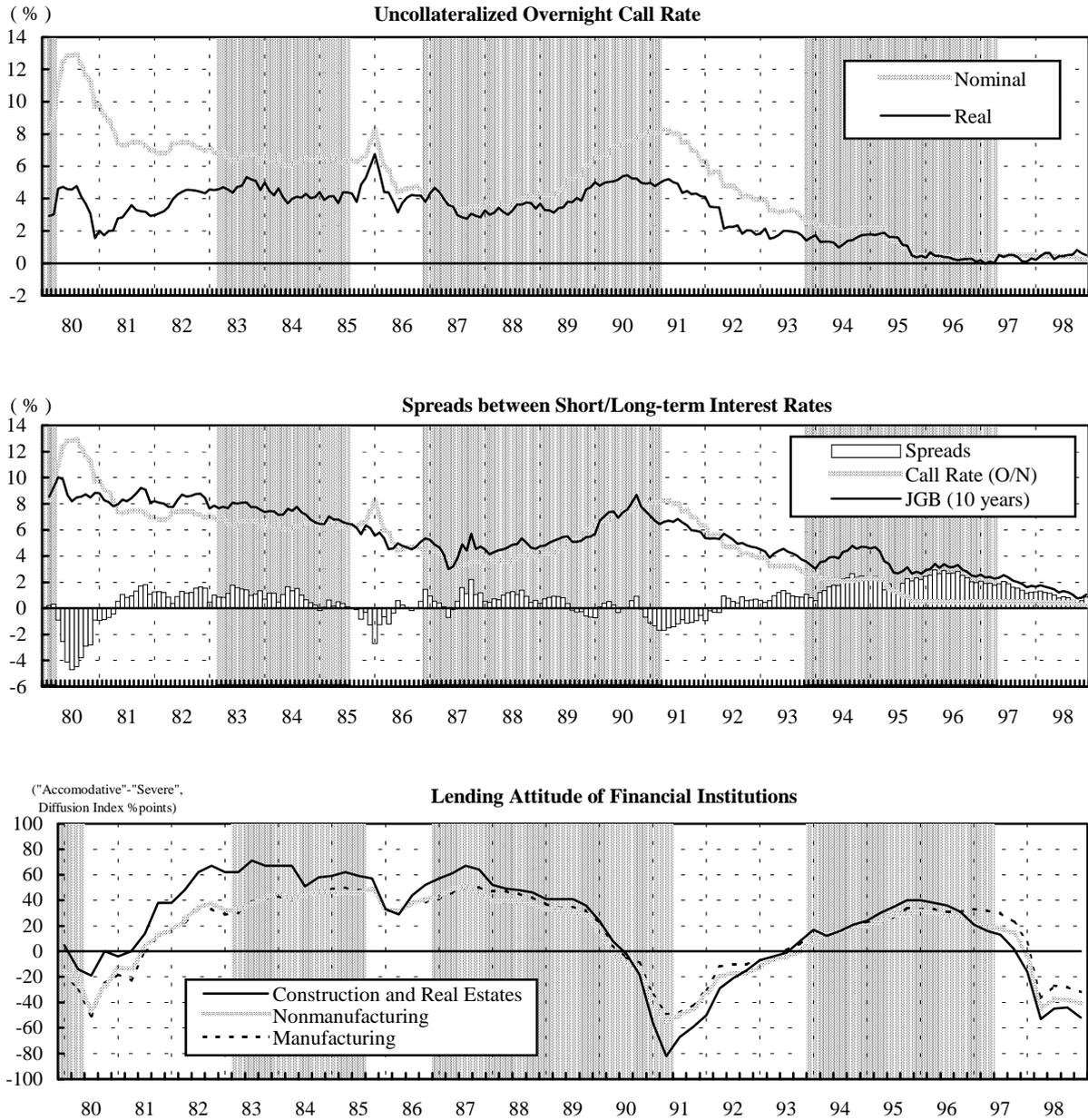
- Notes:
1. Figures are summation of 16 banks that are subject to the international standard as of March 1999 among city banks, long-term credit banks, and trust banks.
 2. Unrealized profits on securities correspond to 45 percent of total, which can be included into the risk-based capital adequacy ratios.
 3. Nikkei 225 is figures at the end of each period.

Figure 19: Real Aggregated Asset Prices and Credit



Sources: BIS (1998)

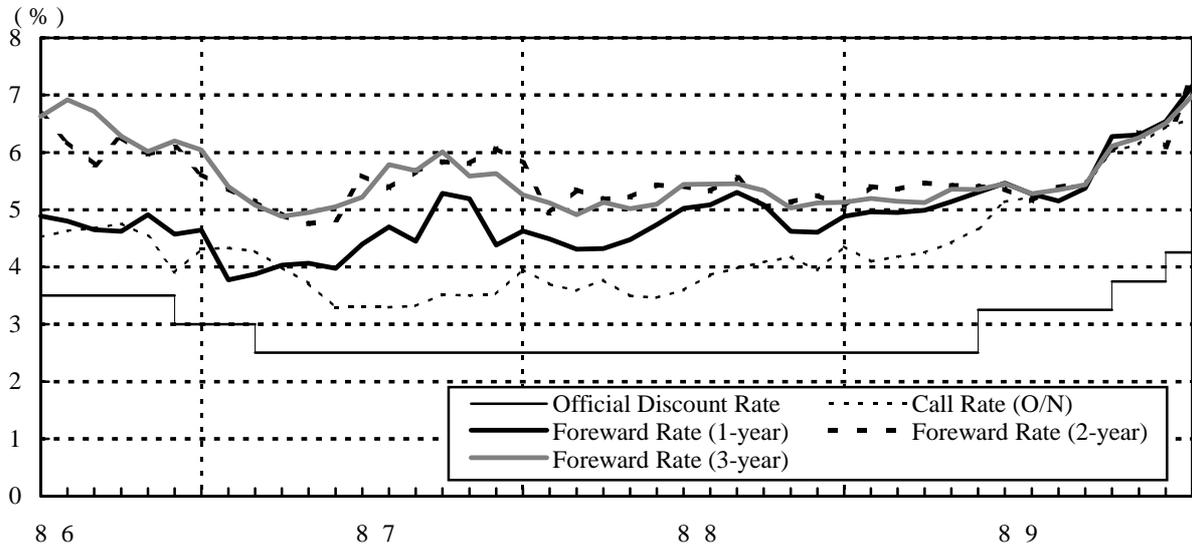
Figure 20: Real Short-term Interest Rates, Spreads between Short/Long-term Interest Rates, and Lending Attitude of Financial Institutions



Sources: Bank of Japan, Financial and Economic Statistics Monthly; Management and Coordination Agency, Consumer Price Index.

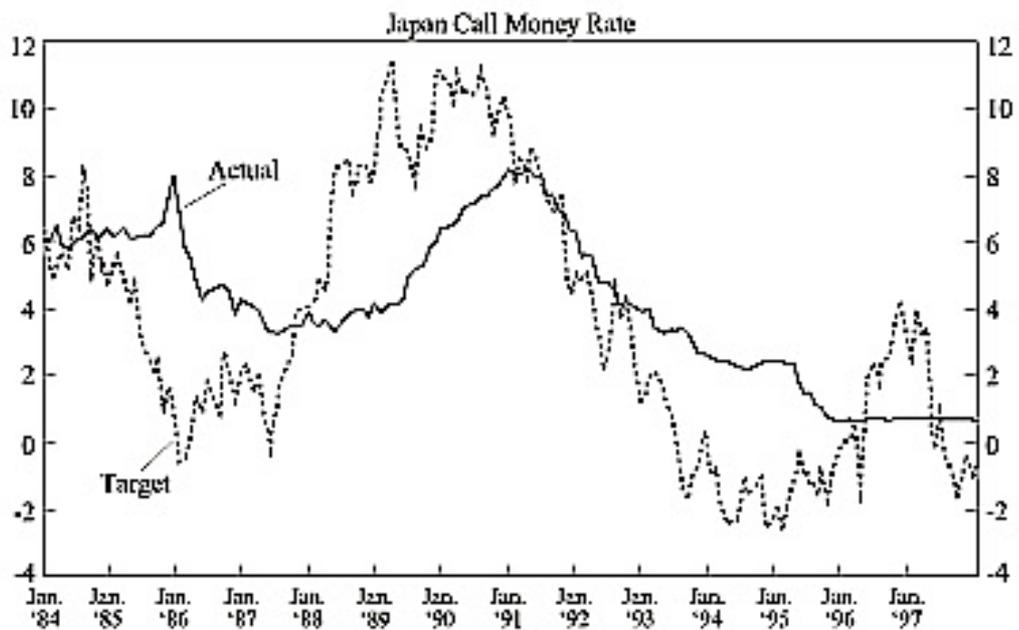
Notes: Impacts of introduction of consumption tax (April 1989) and increases in its rate (April 1997) are adjusted by the estimates of Research and Statistics Department.

Figure 21: Implied Forward Rates



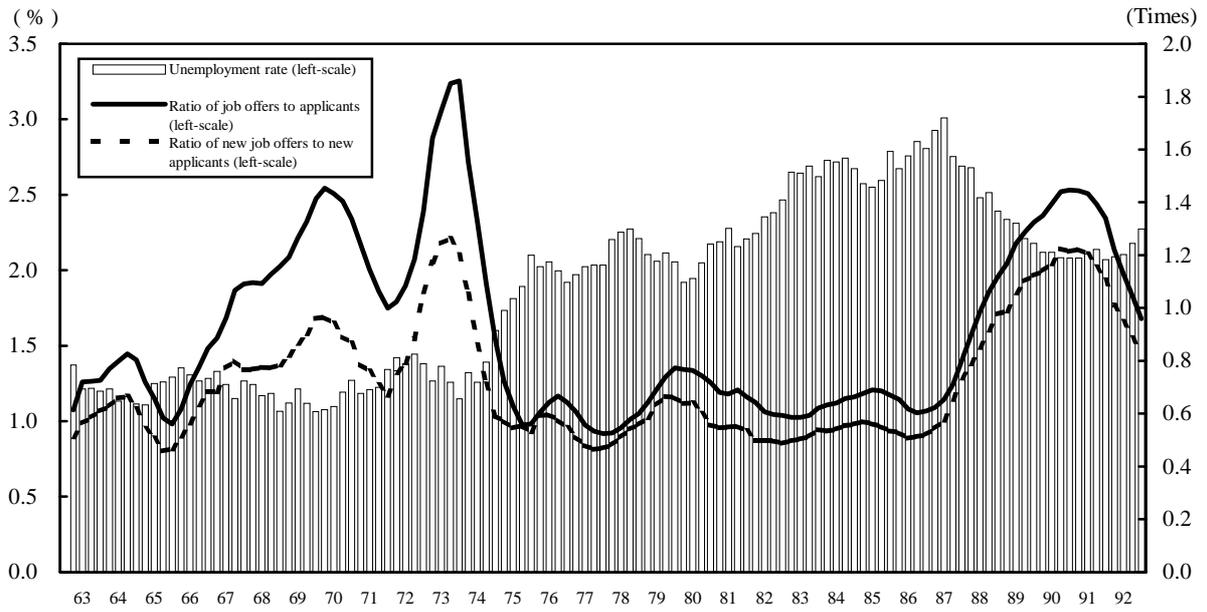
Sources: Bank of Japan, *Financial and Economic Statistics Monthly*.

Figure 22: Simulation by Bernanke=Gertler



Sources: Bernanke and Gertler (1999)

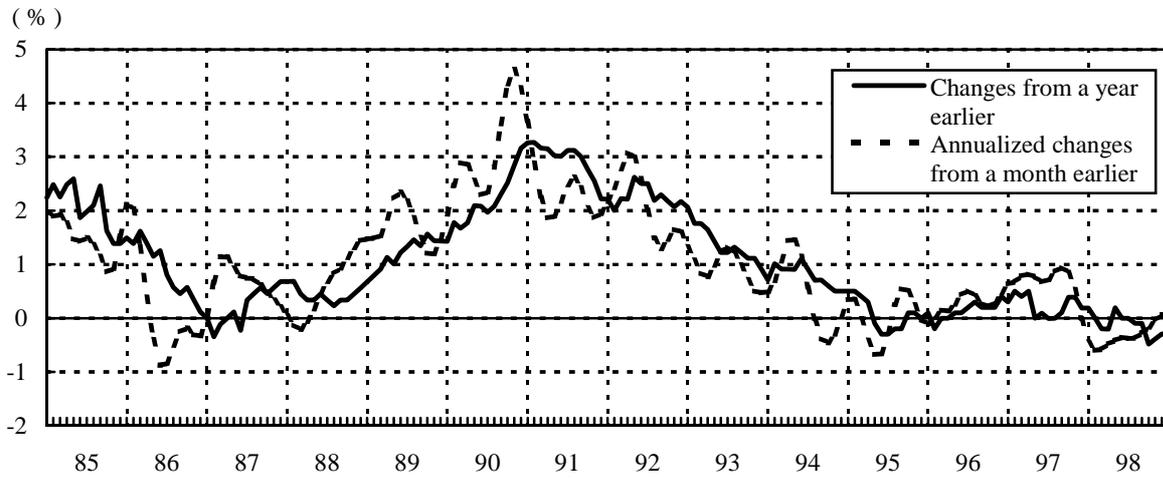
Figure 23: Labor Supply and Demand Conditions



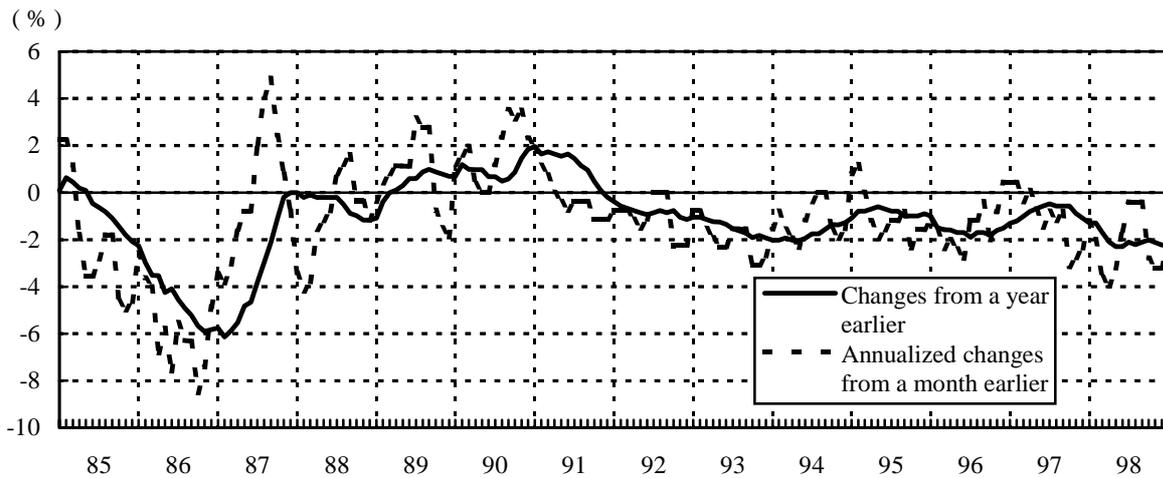
Sources: Management and Coordination Agency, *Labor Force Survey*; Ministry of Labor, *Report on*

Figure 24: Price Development

(1) Consumer prices



(2) Wholesale prices



Sources: Management and Coordination Agency, *Consumer Price Index*.

Sources: 1. Figures are adjusted for the impacts of consumption tax.
2. Regarding the CPI, annualized changes from a month earlier are computed from a seasonally adjusted series applied by the X-12-ARIMA with the options as follows:

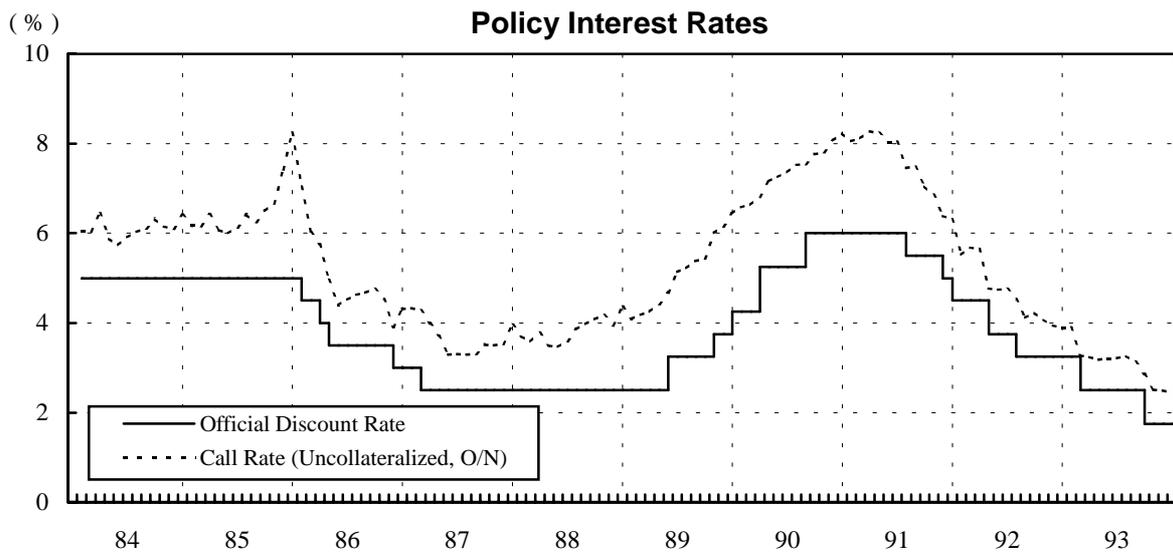
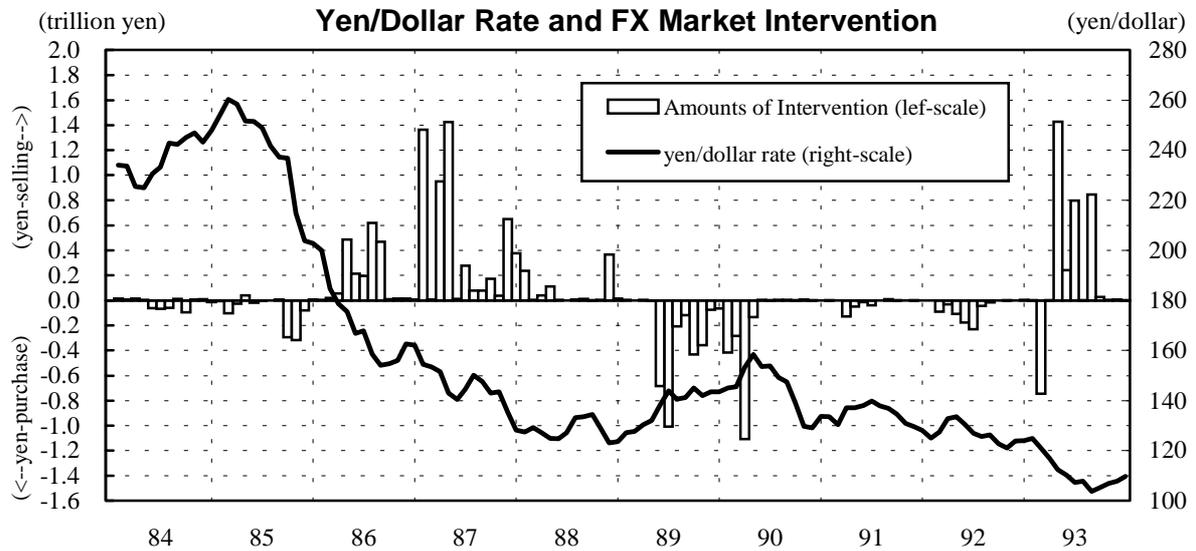
Estimation period: From January 1980 to December 1998

ARIMA Model: $(0\ 1\ 1)(0\ 1\ 1)_{12}$

Level Adjustment: April 1989 (introduction of consumption tax) and April 1997 (consumption tax hike)

3. Regarding the WPI, annualized changes from a month earlier are three-month moving average of the annualized month-to-month changes in original series.

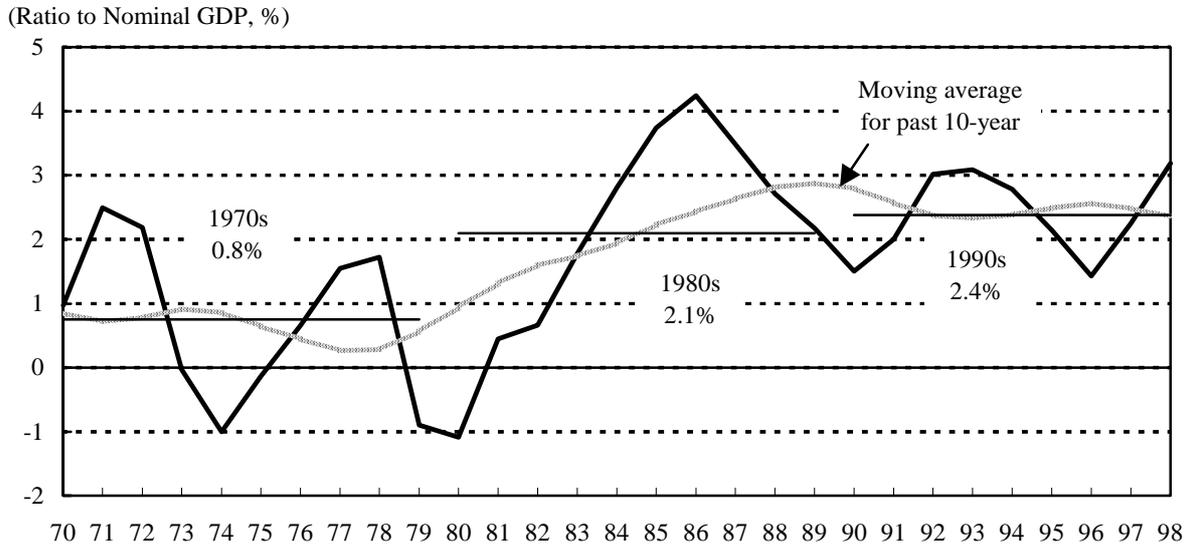
Figure 25: Foreign Exchange Market Intervention and Conduct of Monetary Policy



Sources: Bank of Japan, *Financial and Economic Statistics Monthly*.

- Notes:
1. Amounts of interventions are estimated from the supply and demand of funds in foreign exchange funds.
 2. Call rates are concatenation of the following two rates: collateralized overnight rate before June 1985, and uncollateralized overnight rate after July 1985.

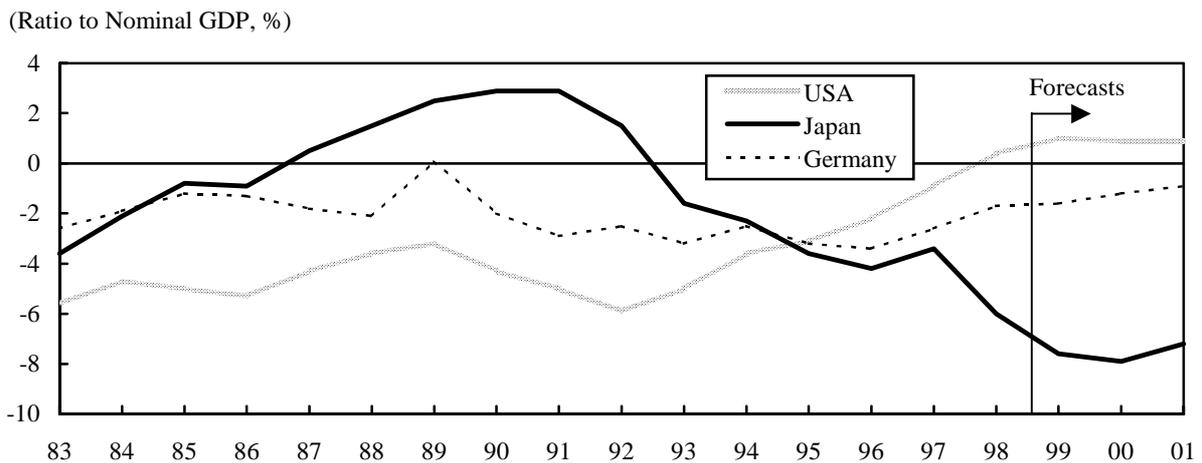
Figure 26: Ratio of Current Account to Nominal GDP



Sources: Bank of Japan, *Balance of Payments Monthly*; Economic Planning Agency, *Annual Reports on System of National Accounts*.

Notes: Figures for current account are concatenation of current and previous basis data by adjusting the average from 1985 to 1995 when both basis data are available.

Figure 27: Fiscal Balances in Japan, US, and Germany



Sources: OECD, *Economic Outlook*, various issues.

Notes: 1. Figures after 1999 are forecasts.
 2. Figures for Germany are concatenation of the following two series: West Germany before 1990, and Unified Germany after 1991.