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The Collapse of the Bubble and the Economic Crisis in Japan

This case study describes the formation of the bubble economy in Japan from the second half of the 1980s, its collapse in the 1990s, and the economic crisis known as the "lost decade."

I. The Formation of the Bubble

In Japan, share prices began rising sharply in 1986 and land values in 1987 (see **Figure 1** and **Figure 2**). These soaring asset prices were due in large part to the excessively lengthy and large-scale monetary easing of the second half of the 1980s. Even when asset prices had begun rising, the Bank of Japan (BoJ) reduced the official discount rate[1] from 3 percent to 2.5 percent in February 1987 (see **Figure 3**). And even after the surge in asset prices had become obvious, it left the official discount rate unchanged for two years, until June 1989.

At the time, the BoJ was cautious about moving to tighten credit because it feared a return to the "high-yen recession" (June 1985 – November 1986[2], see **Figure 4** and **Figure 5**), which was caused by a steep appreciation in the yen from 1985. The BoJ was also concerned about another plunge in the U.S. stock market (after Black Monday in October 1987). The BoJ attempted to steer the yen downwards by keeping interest rates low for a long period of time, and reduce the risk of investment in U.S. stocks by keeping bearishness concerning the dollar in check[3]. Another reason the BoJ was hesitant to tighten

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[1] Following the liberalization of interest rates in 1994, the policy rate was changed from the official discount rate to the uncollateralized call rate (i.e. the interest rate on short-term (one year or less) loans made by financial institutions in the call market). To reflect this change, from 2006 the term "official discount rate" was replaced with "basic discount rate" and "basic loan rate" in official statistics (see **Addendum 1: Notes on the Money Stock and Monetary Policy**). For the sake of consistency, however, this case study uses the term "official discount rate."

[2] The period of the high-yen recession was determined by the Cabinet Office's working group of indexes of business conditions.

[3] If the dollar is expected to fall, the value in yen of U.S. stocks (which are denominated in dollars) will be expected to drop. West Germany, on the other hand, had moved to tighten credit one year earlier than Japan, in the middle of 1988. See the "Annual World Economic Report" (1990, country profiles section) from the Economic Planning Agency.

credit and maintained an easy-money policy for so long was that inflation had been kept low because of rising productivity and cheaper imports due to the strong yen (see **Figure 6**)[4].

Because low interest rates were maintained for a long period of time, investors and speculators were able to procure large amounts of funds at low cost. This money was used for transactions involving stocks and land, leading to the rising stock prices and land values mentioned earlier.

The Asset Inflation Cycle

This increase in asset prices led to an "asset inflation cycle," under which rising asset prices generated even more bullishness, which triggered additional investments and further price increases (see **Figure 7**). Moreover, this asset inflation cycle was amplified by the following four factors.

(1) Debt-Financed Investment

The biggest factor was the way debt was used to finance investments. With one's own fund alone, the volume of investment is limited, but debt enables investors and speculators to secure more funds. Using borrowed funds, they poured huge amounts of money into the purchase of shares and land with the aim of making capital gains. As the value of the assets rose, so too did their value as collateral. This enabled investors to procure even more funds, which pushed up investment demand for assets such as shares and land (see **Figure 8**). In other words, fueled by a sharp increase in debt (i.e. credit expansion) asset prices went way higher than would be expected from the economic fundamentals.

(2) Equity Finance

Related to the first factor, debt-financed investment, the second factor was that companies used the money they raised using equity finance and other methods to play the stock market by investing in specified money trusts (known as *tokkin*) or fund trusts, instead of investing it in plant and equipment for their core operations.

Equity finance refers to methods of procuring funds that involve the issuance of new stock. It includes not only capital increase by the issue of new shares, but also the issue of convertible bonds, bonds with stock purchase warrants, and so on[5]. During the second half of the 1980s, financial liberalization led to a diversification in the ways companies procured and invested funds, and equity finance began to become a popular method of acquiring capital.

An example of this is when a company issues convertible bonds and borrows money. If its share price rises, the debt is converted into equity and the company no longer needs to repay it. Moreover, if a company's share price is expected to increase, it can engage in equity finance on favorable terms. As a result, equity finance proliferated as share prices rose, and in the three years from 1987 to 1989 around

[4] One reason that the consumer price index increased by just under two percentage points in 1997 was that the consumption tax was raised from three percent to five percent in April 1997.

[5] When convertible bonds are converted into shares, they do not need to be repaid because the bond component is cancelled. In the case of bonds with stock purchase warrants, however, the bonds will not be cancelled before maturity even if the warrants are used to purchase new shares.

60 trillion yen was procured in this way[6].

(3) Futures Trading and Arbitrage Trading

The third factor was the use of futures[7], a new form of trading made possible (from 1988) by financial liberalization. Recovery from the high-yen recession of 1985-86 led to expectations of rising stock prices, and arbitrage trading, whereby futures were sold and cash stocks were purchased at the same time, started being used to take advantage of this. If higher share prices were forecast, this type of arbitrage trading allowed investors and speculators to make risk-free profits by buying shares for cash and simultaneously selling futures for a slightly higher price than that of the shares. This type of arbitrage trading was therefore a set of financial transactions designed for making profits amid rising stock prices. Moreover, the purchase of cash stocks as part of arbitrage trading pushed up the Nikkei Stock Average, which made investors even more bullish[8].

(4) *Tochi-Korogashi*

The fourth factor was use of a technique called *tochi-korogashi*, which refers to the practice of repeatedly buying and selling land. During this period, the so-called *tochi-shinwa* [land myth] prevailed, with people believing that land values would never fall. There was therefore a bullishness about land values. Speculators, expecting land values to rise, purchased land with the goal of selling it again later. Once the land had appreciated by a certain margin, they sold it to another company. That company would then sell it on to another, which would sell it on to another, and so on. The name t*ochi-korogashi* was coined for this repeated buying and selling. *Tochi-korogashi* was also fueled by the BoJ's expansionary monetary policy, which enabled speculators to secure large sums of money at low interest rates.

As a result of these factors, share prices rose continuously until the end of December 1989, while land values continued to climb until the beginning of 1992 (see **Figure 1** and **Figure 2**). The values of both shares and land (commercial land in the three major urban areas) increased to three times their values in 1985. Meanwhile, nominal GDP[9] grew by around 50 percent between 1985 and 1992 (see **Figure 4**).

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[6] See *Kaishasai Geppou* [Monthly Corporate Bond Bulletin] from the Bond Underwriters Association of Japan. In 1985 the balance of outstanding bonds was around five trillion yen.

[7] "Futures" represents a promise now to trade an asset at a fixed price at a certain point in the future.

[8] The sale of stock index futures for arbitrage purposes became possible in 1988 for both the Nikkei Stock Average and the Tokyo Stock Price Index (TOPIX). However, selling futures on the Nikkei Stock Average was more convenient. The Nikkei Stock Average is just a number, so it cannot be traded directly. However, the purchase of all the issues comprising the Nikkei Stock Average allows a portfolio that is closely linked with it (the Nikkei Stock Average is calculated by converting the issues comprising it to a par value of 50 yen and dividing the total by a divisor). What is important here is that this technique involves the issues comprising the index being purchased in equal quantities, so the prices of thinly traded issues, i.e. issues for which few shares are outstanding, will rise by a large margin. Such spikes played a major role in pushing up the value of the Nikkei Stock Average as a whole.

[9] Gross domestic product (GDP) is the total market value of all goods and services produced in a country during a certain period of time.

II. The Transition

Gradually, however, alarm spread that the soaring asset prices did not reflect the underlying strength of the Japanese economy. Specifically, there were three concerns. First, asset values were increasing far faster than GDP, and the prices of assets were higher than their economic fundamentals would suggest. In particular, given that there are limits to returns (excluding capital gains) from shares and land, increases in their prices result in significant declines in the rates of return on these assets[10]. As a result, doubts began to spread about whether the surge in asset prices could be sustained.

Second, in response to soaring asset prices, the BoJ began tightening credit in June 1989 (see **Figure 3**). It raised the official discount rate for the first time in approximately 10 years after reducing it continuously since 1980. For investors and speculators, a higher official discount rate meant lower net returns because it increased the cost of procuring funds.

Third, restrictions were imposed on the flow of funds into the market for real estate. At the time, the government was under fire for allowing a situation to develop in which ordinary people could no longer buy land. This led to "quantitative restrictions on the extension of real estate related loans (*Souryou Kisei*, in Japanese)" being imposed (in March 1990). These restrictions were designed to curb the rise in real-estate values, and required the rate of increase in lending for the purchase of real estate to be kept below that for all lending. The introduction of these quantitative restrictions served to further heighten fears concerning the sustainability of the surge in land values.

As a result of these fears, share prices and land values began to fall after peaking at the end of December 1989 and the beginning of 1992, respectively (see **Figure 1** and **Figure 2**).

III. The Collapse of the Bubble

As bullishness concerning asset prices faded and was replaced by bearishness, investors and speculators began rushing to cash in their assets.

The fall in share prices preceded the drop in land values. What amplified the decline in stock prices was an unwinding of arbitrage trades (i.e. the purchase of futures and sale of stocks) due to fears of further credit tightening by the BoJ. As bearishness emerged, selling shares for cash and buying them back as futures, which were cheaper, became a risk-free way for investors and speculators to make profits. Moreover, the sale of stocks for cash as arbitrage positions were unwound further hastened the pace of decline in share prices.

[10] For example, the rate of return on land can be calculated by dividing the rent per unit of area by the value of the land. During the mid-1980s, the rate of return on commercial land was around 8 percent, but it had declined to 4 percent when land values peaked in 1991 (see the Annual report on the Japanese economy and public finance, Fiscal Year 2003). The same argument can be applied to dividend yields (i.e. the dividend divided by the share price). See Kenichi Tatsumi and Makoto Maeda (1994), "*Haitou Rimawari to Kabushiki Fukumieki – Anomari Bunseki*" [Analysis of Anomalies with Dividend Yields and Unrealized Profits on Stocks], Ministry of Finance Institute of Fiscal and Monetary Policy, *Financial Review*, January 1994.

In addition, the expansion in the use of equity finance, which had been one of the drivers behind the surge in stock prices, led to the conversion of bonds into stock. This created an oversupply of shares, which became another reason for the stock market fall.

A trading method called "short selling" also amplified the drop in share prices. Short selling involves investors and speculators selling stock that they do not own. They can do this by borrowing the stock concerned. When they expect share prices to fall, they borrow the stock, sell it, and then buy it back later after the price has fallen. The difference between the price they sold it for and the price they bought it back for represents their profit.

The quantitative restrictions on the extension of real estate related loans and the fall in stock prices also put a damper on the bullishness concerning land values, and signs of a rush to sell emerged as owners became nervous about holding onto overvalued land.

The Asset Deflation Cycle

Numerous investors and speculators were left with losses after waiting too long to sell, and what made the problem more serious was that many of them had used borrowed money to buy shares and land. If investors do not borrow, and invest using only their own surplus funds, non-performing loans do not arise even when asset prices plummet. All that happens is that the value of their personal assets declines.

However, when investors use borrowed money far in excess of their personal assets to make investments, and the value of their assets then plunges far below the value of their borrowings, they are unable to repay their debts even if they sell the assets. From the perspective of the financial institutions that made the loans, these borrowings that cannot be repaid become non-performing loans (see **Addendum 2: The Collapse of the Bubble and the Non-Performing Loan Problem**). In the case of loans collateralized by real estate, for example, the drop in land values made the value of the loans higher than the value of the collateral, turning them into non-performing loans.

When deadlines for loan repayment were approaching, companies, investors, and speculators were forced to sell their shares and land despite knowing that they would take losses, and this caused asset prices to fall at an even faster rate. As a result, a vicious cycle developed: Falling asset prices turned loans sour, the holders of assets moved to sell despite knowing that they would suffer losses, and asset prices dropped further (see **Figure 9**).

Moreover, with further price falls expected, buyers were thin on the ground (i.e. liquidity declined). As a result, investors and speculators carrying losses were sometimes unable to cut their losses by selling. This situation led to further falls in the (unrealized) value of assets, causing increases in non-performing loans.

The Increase in Non-Performing Loans and the Opaqueness (Asymmetry) of Information

This asset deflation cycle was amplified by another mechanism (see **Figure 9**). This was the "opaqueness

(asymmetry) of information" that existed as fears of an increase in non-performing loans mounted. In other words, the precise value of non-performing loans was invisible to outsiders.

When non-performing loans arise, financial institutions need to set aside further provisions. However, because making these provisions dents earnings, large amounts of bed debt reduce the credibility of the financial institution concerned. As a result, the financial institution's own assessments of whether loans have soured may not be adequate. In fact, there were instances where financial institutions intentionally classified non-performing loans as normal loans.

Three factors can be identified as having been responsible for the opaqueness (asymmetry) of information: *oi-gashi* (additional lending to keep borrowers afloat), *tobashi* (moving losses off the books), and book-value accounting.

(1) *Oi-Gashi*

Oi-gashi refers to the practice of providing additional loans to debtor companies to enable them to repay their existing loans, thereby making these loans appear to be normal loans. However, the practice ran the risk of swelling the losses incurred by financial institutions. One of the reasons financial institutions engaged in this practice was that they expected the economy to recover before long, which would boost the earnings of their debtors and reduce their non-performing loans. In the event, though, their predictions proved false.

(2) *Tobashi*

Another practice that was engaged in was *tobashi*, a method of preventing losses from appearing on financial statements. Specifically, a company would sell shares or bonds carrying valuation losses to a company with a different book-closing date for prices higher than their market value, on condition that they would be repurchased at a later date and that interest would be paid. Although such window dressing was prohibited under the Securities Exchange Act (later, Financial Instruments and Exchange Act), some companies that found themselves in dire straits still did it.

(3) Book-Value Accounting

Another reason for opaqueness concerning the precise amounts of non-performing loans was that Japanese accounting standards at the time were based on book value[11]. Under book-value accounting, the books present the amount for which an asset was acquired. As long as the asset was not sold, its book value bore no relation to its market value. This made book-value accounting a means of concealing deterioration in the value of assets, and therefore became hotbed for hiding non-performing loans.

Because of the opaqueness (asymmetry) of information, which made the actual amounts of

[11] Market-value accounting was introduced in fiscal year ending March 2001.

non-performing loans invisible to outsiders, suspicion grew, particularly among overseas investors, concerning not only Japanese financial institutions but also the Japanese financial system as a whole. This distrust led to further selling of shares, which pushed down stock prices and amplified the asset deflation cycle.

Tighter Standards and Auditing for Non-Performing Loans and the Increase in Non-Performing Loans

Against a backdrop of criticism concerning the concealment of non-performing loans, the Japanese government and financial sector toughened standards for auditing non-performing loans, forcing financial institutions to deal with them properly.

To begin with, the scope of disclosure for non-performing loans was gradually expanded from 1992 onwards. In March 1998, the Japanese Bankers Association added "restructured loans" and "loans overdue for three months or more" to "risk-monitored loans," making disclosure of the amount of such loans compulsory. The two existing categories were "loans to bankrupt borrowers" and "past due loans." These standards were based on those of the U.S. Securities and Exchange Commission[12].

A system of auditing was also gradually established. Questions were raised about the inspections and supervision of financial institutions conducted by the Ministry of Finance (MoF), which provided operational guidance to financial institutions. This culminated, in 1998, in the MoF's inspection and supervisory functions being spun off to the new Financial Supervisory Agency (which became the Financial Services Agency in 2000). Furthermore, from July 1998, the Financial Supervisory Agency, the MoF's local finance bureaus, and the BoJ began performing intensive inspections and audits.

The tougher standards and more rigorous auditing system for non-performing loans resulted in an increase in non-performing loans. At the end of March 1998, for example, major banks (i.e. city banks and long-term credit banks) had, under the old standards, 14.5 trillion yen worth of non-performing loans. Under the new standards, however, the figure swelled by around 50 percent to 22 trillion yen (see **Figure 10**). Their disposal resulted in not only the sale of shares and land carrying unrealized gains, but also the sale of shares and land for which losses were expected to be realized. This triggered a further drop in asset prices (see **Figure 9**).

The Failure of Financial Institutions

The plunge in asset prices due to the collapse of the bubble and corporate bankruptcies due to the weakened economy led to an increase in non-performing loans, which put pressure on financial institutions. From 1995, the weakest financial institutions began to fail (see **Figure 11**). Following the bankruptcy of small and medium financial institutions such as Hyogo Bank (in August 1995) and Taiheiyo Bank (in March 1996), the issue of non-performing loans held by the housing loan companies called *Jusen* in Japanese was debated in the Diet in 1996.

[12] Further changes to the reporting standards were also made after that.

Then, in November 1997, the bankruptcies spread, with major brokerages Sanyo Securities and Yamaichi Securities, as well as Hokkaido Takushoku Bank, a city bank, all falling. The failed securities firms had been keeping their losses from the drop in share prices off their books, but were believed to have liabilities in excess of the value of their assets. The failed banks, meanwhile, had overestimated the value of collateral during the bubble, and extended too many loans. Moreover, their focus on lending had led them to make loans even when they were at the back of the line to receive proceeds from the sale of the collateral (such loans are referred to as subordinated debt, and they mean that if the borrower fails, there is a strong possibility that the lender will not be able to gain access to the collateral and recover the loan).

Inadequate Injections of Public Funds

Following the succession of financial institution failures, a law concerning emergency measures for financial function stabilization was passed in February 1998[13]. This law was aimed at steadying the financial system by using public funds to shore up the capital of financial institutions. As a result of the law, in March the same year 1.8 trillion yen in taxpayers' money was injected into 21 major banks, including the Long-Term Credit Bank of Japan and the Nippon Credit Bank[14].

The Failure of Large Financial Institutions

Later, it emerged that some banks had been falsifying their accounts, making losses appear smaller than they actually were, for example. In other words, this implies that the injections of public funds described above were inadequate to prevent financial institutions failing.

The government then put together a comprehensive plan for revitalizing the financial system. Under this plan, it enacted and implemented two laws, "the Law concerning Emergency Measures for the Revitalization of the Financial Functions" and "the Law concerning Emergency Measures for Early Strengthening of Financial Functions" to get the financial system functioning normally again. The first defined procedures for revitalizing failed banks, while the second enabled public funds to be injected into banks that were still operating but whose financial condition had deteriorated[15].

With their finances still in poor shape, the Long-Term Credit Bank of Japan and the Nippon Credit Bank were revealed to have been doctoring their accounts, and found themselves in a desperate situation, and a direct bailout by the government was considered. This led, in November 1998, to the two banks being given temporarily nationalized.

These failures caused distrust in Japanese financial institutions and Japan's financial system as a whole to reach a peak, which led the Japanese government in March 1999 to inject a further 7.5 trillion

[13] The law was repealed in October 1998 following the passage of the laws to revitalize the financial functions.

[14] See "*Kinyuu Kinou Anteika Hou ni Motozuku Shihon Zoukyou Jisseki Ichiran*" [List of Capital Injection Performed Pursuant to the Law concerning Emergency Measures for Financial Function Stabilization] Deposit Insurance Corporation of Japan.

[15] A number of other laws were also enacted and implemented to get the financial system functioning normally again.

[16] See "*Souki Kenzenka Hou ni Motozuku Shihon Zoukyou Jisseki Ichiran*" [List of Capital Injection Performed Pursuant to the Law concerning Emergency Measures for Early Strengthening of Financial Functions] Deposit Insurance Corporation of Japan.

yen into 15 major banks[16].

IV. A Vicious Cycle of Economic Shrinkage: The Adverse Impact on the Real Economy

The plunge in share prices and land values began to exert negative influences on consumption through the negative wealth effect[17]. However, the decisive factors in triggering adverse effects on the real economy were the refusal to make fresh loans and the paring back of existing loans and the failure of financial institutions (see **Figure 12**).

Credit Crunch and the BIS Rules

When loans are revealed to have soured, financial institutions have to perform the proper accounting treatment for them. This required them to increase their provisions for non-performing loans, which reduced their earnings (see **Figure 13**). However, the impact didn't stop there. It changed the behavior of financial institutions, which became criticized for "credit crunch."

Credit crunch occurs when lending is not conducted (i.e. funds are not provided) smoothly, even to borrowers from whom an adequate margin can be earned at current standard interest rates, due to restrictions on the side of the lending financial institution.

Closely related to credit crunch are the BIS rules, which are rules governing capital ratios issued by the Bank of International Settlements. They are also referred to as the Basel accords[18]. They are aimed at ensuring the health of banks in order to stabilize the financial functions. The first rules were announced in 1988, and were applied in full to Japanese banks from the end of 1992.

Specifically, banks with capital ratios, as calculated under the rules, of less than 8 percent were prohibited from engaging in international operations (with those with ratios of under 4 percent forbidden from engaging in domestic operations). Here, the capital ratio is defined as the ratio between equity capital and risks (see **Addendum 3: BIS Rules and Credit Crunch**).

$$\text{Capital ratio} = \frac{\text{equity capital}}{(\text{credit risk} + \text{market risk})} > 8\% \text{ (for international operations)}$$

Equity capital: Tier I (core capital[19])

[17] The wealth effect refers to the way consumption is boosted when the value of people's assets rises due to increases in the value of holdings of land, shares, etc. A negative wealth effect occurs when asset prices fall, negatively impacting consumer behavior.

[18] The official term is "International Convergence of Capital Measurement and Capital Standards," and the rules were fully applied to Japanese banks from the end of 1992. See Financial Services Agency, "Basel II (*Atarashii Jiko Shihon Hiritsu Kisoku*) [New Rules Concerning Capital Adequacy Requirements]". Since the end of March 2007, new BIS rules (Basel II) have been in effect in Japan. Under these new rules, operational risk (administrative errors, systems failures, etc.) were added to the denominator. More detailed methods for calculating credit risk were also established. The credit risk for loans to individuals and small and medium companies was reduced, but banks became required to disclose a breakdown of their capital ratio, the amount of each type of risk, and the calculation methods they used.

[19] Includes capital, legal reserves, retained earnings, etc.

+ Tier II (supplementary capital, such as subordinated loans, unrealized gains on securities, etc.)

Credit risk: value of government bonds × 0% + loans to banks × 20% + loans to companies × 100% + housing loans × 50%[20]

Credit risk, the denominators for the capital ratio, is calculated as the amount of lending (credit) weighted according to the risk of default. Under new regulations applied to Japanese banks from March 1998 (Basel II), the denominator takes into account not only credit risk but also the risk from trading and other operations, i.e. market risk (see **Addendum 3: BIS Rules and Credit Crunch**)[21].

Financial institutions that tapped into their equity capital (the numerator, Tier I or Tier II) to dispose of non-performing loans were forced to reduce their lending (the denominator) in order to keep their capital ratios above the 8-percent level required to engage in both domestic and international operations. (Note that if a bank's capital ratio approaches the 8-percent BIS minimum, concern in the market about the bank's health would grow. Therefore, the bank needs to keep the ratio at a level comfortably above 8 percent to ensure its safety.)

As a result, banks decided to reduce their lending, even to companies with healthy finances. This practice came to be known as credit crunch. In the worst cases, borrowers subject to credit crunch ran into trouble funding their day-to-day operations and were forced into bankruptcy. This led to more non-performing loans, creating a vicious circle whereby lending was cut back further (see **Figure 12**).

The Impact on the Real Economy

Credit crunch has a negative impact on the real economy when it is engaged in by financial institutions that have so far managed to survive the competition, but when financial institutions themselves fail, the negative impact is magnified.

Companies that could no longer obtain loans due to the failure of the financial institution they had been dealing with ran into problems with day-to-day funding and were forced into bankruptcy, which created more non-performing loans. Most small and medium enterprises (SMEs) also found it difficult to obtain loans from other financial institutions due to the credit crunch described earlier. In 1998, when a number of large financial institutions failed, financial institutions became extremely reluctant to lend (see **Figure 14**).

What made this vicious cycle more serious for the Japanese economy was that in Japan indirect finance was dominant, so banks played an extremely important role in funding companies (see **Figure 15**). At the end of 1998, nearly half of the liabilities of nonfinancial companies in Japan were borrowings from financial institutions (in the U.S., the figure was 14 percent). A similar situation can be seen from the high-growth period of the 1950s-60s until the mid-1990s[22]. When banks became unable to supply

[20] Weights are also determined for other lending.

[21] See Financial Services Agency (2001), "BIS *Kisei Minaoshi*" [New BIS Rules].

[22] See the Annual report on the Japanese economy and public finance (Fiscal Year 2009). During the high-growth period of the 1950s-60s financial institutions were the engine of growth, smoothly supplying the funds that served as the source of energy.

cash, a shortage of cash for daily operation had an adverse effect on the business activities of companies, and in particular SMEs, which relied heavily on banks.

Another serious problem was that funds were not being directed at growth industries. In the U.S. in the 1990s, NASDAQ, a stock market for startup companies, enabled IT-related firms to procure funds and achieve tremendous growth. In Japan, however, no market for startups was established until "Mothers" in 1999 and "NASDAQ Japan" (now "JASDAQ") in 2000. As a result, risk money (i.e. money invested in high risk, high return businesses) was in short supply, which hampered the growth of startup companies.

The Decline in the Effectiveness of Fiscal and Monetary Policy

The core of the problems of the bubble collapse was the increase in non-performing loans and the resulting breakdown of the financial system. For some time, the Japanese government believed that the country was only experiencing a normal downturn as part of a traditional economic cycle. In line with this thinking, it just continued taking normal measures, loosening credit and boosting government spending. As a result, the official discount rate was reduced to 0.5 percent in 1995, while the uncollateralized call rate (for overnight loans)[23], the main policy interest rate following the financial liberalization in the 1980s-90s, fell below 0.5 percent[24].

Moreover, government bond issuance topped 20 trillion yen for the first time in 1995 and 30 trillion yen in 1998 (see **Figure 16**). In addition, tax revenues as a percentage of fiscal revenue declined year by year.

Monetary easing and the expansion in government spending had some effect, with the economy recovering temporarily in 1995-96 (see **Figure 4**). Nevertheless, the effectiveness of monetary and fiscal policy gradually ebbed away.

In the area of monetary policy, not only had the decline in short-term interest rates reached its limits, even when funds were supplied to the market through open market selling operations[25], money, which can be described as the lifeblood of the economy, failed to reach the economy due to credit crunch on the part of financial institutions (see **Addendum 3: BIS Rules and Credit Crunch**). Moreover, as more and more financial institutions failed, some individuals and companies became reluctant to keep their deposits in banks. In other words, a tendency developed for households and companies began

[23] For data on the uncollateralized call rate (for overnight loans) since 1995, see the following page on the Tokyo Tanshi website: http://www.tokyotanshi.co.jp/past/index2.shtml (in Japanese, accessed in January 2011).

[24] Financial liberalization was completed in 1994, ending the direct relationship between the official discount rate and interest rates on bank deposits. Since the liberalization, the various different interest rates have been determined in the relevant financial markets. The levels of the various interest rates are also affected by the level of the uncollateralized call rate (for overnight loans) in the call market, which is used by financial institutions to lend/borrow money for periods of one year or less. The uncollateralized call rate is used as a target by the BoJ when attempting to adjust financial markets. In other words, the uncollateralized call rate is the BoJ's policy interest rate at present. The official discount rate represents the upper limit to the uncollateralized call rate (for overnight loans).

[25] Even if short-term interest rates reach their lower limit, medium- to long-term rates are higher, so quantitative easing through selling operations enables medium- to long-term rates to be reduced.

keeping more of their money in cash than in banks, which negatively affected the volume of deposits, the source of lending. The money multiplier, which indicates the extent of credit creation by financial institutions, had been in decline since the early-1990s, but fell further due to the aforementioned factors[26] (for more information on credit creation and the money multiplier, see **Addendum 1: Notes on the Money Stock and Monetary Policy**).

Furthermore, aggressive fiscal policy caused the budget deficit to increase continuously, and the balance of outstanding government debt as a proportion of GDP grew faster than in other developed countries. This led to criticism that a lack of fiscal discipline was a serious problem (see **Figure 17**).

V. The Temporary Recovery Due to the IT Bubble and the Subsequent Collapse of the IT Bubble

The Economic Recovery of 1999

In 1999, the sagging economy came back to life. The reasons for this were the IT revolution centered on the U.S. and the recovery of Asian economies from the East Asian economic crisis of 1997. These developments boosted demand from abroad and resulted in a sharp rise in IT-related production and consumption.

In the U.S., the NASDAQ market, on which numerous IT-related companies were listed, topped 5,000 (as measured by the NASDAQ Composite Index) in 2000, meaning that share prices had increased by five times since 1996. This surge came to be known as the IT bubble, and its influence also spread to Japan, where share prices also climbed.

The Collapse of the IT Bubble, the 9/11 Terrorist Attacks, and Accounting Scandals

In the U.S., however, it gradually became clear that the actual earnings of IT-related companies were not rising enough to justify the increase in the prices of these company's stocks, and that the excessive projections for demand, which had been a factor behind the increase, were not going to materialize. Expectations for IT-related companies suddenly receded, and the IT bubble burst.

Moreover, many IT-related companies had built up inventories and purchased production equipment based on overoptimistic forecasts for demand. Left with too much inventory and equipment, they needed to significantly reduce their production, capital spending, and payrolls, and this behavior began to have an adverse effect on other industries.

At the end of 2000, the NASDAQ Composite Index had fallen to half its peak. The terrorist attacks on September 11, 2001 only made matters worse. Furthermore, during 2001 and 2002 a series of

[26] See the Annual report on the Japanese economy and public finance (Fiscal Year 2004, Chapter 1, Section 4). A financial institution lends its funds to a company and the company deposits a part of the funds at another bank, which then lends funds to another company. This process is referred to as "credit creation by financial institutions." The money multiplier shrank from the first half of the 1990s. Until 1998, the major reason for this decline was that households and companies came to hold more cash than bank deposits. From 1999, however, the decline was mainly due to private-sector financial institutions being cautious about lending and increasing their current account balances with the Bank of Japan (BoJ) (see **Addendum 1: Notes on the Money Stock and Monetary Policy**).

accounting scandals, involving Enron, WorldCom, and other companies, occurred, which led to growing mistrust in corporate accounts and spurred further falls in share prices.

In October 2002, the NASDAQ Composite Index dropped to 1,108, down around 80 percent from its peak (see **Figure 1**). The Dow Jones Industrial Average (DJIA), which comprises leading issues from various sectors, also plummeted around 40 percent from a peak of around $12,000 in January 2000 to $7,181 in October 2002.

VI. A Return to Economic Crisis

Reemergence of the Asset Deflation Cycle and the Vicious Cycle of Economic Contraction

In Japan, the economic recovery that had begun in the spring of 1999 soon came to an end. Capacity-boosting capital spending, particularly in the IT sector, stopped growing, as did investment in nonmanufacturing industries. Incomes also stagnated and the employment situation worsened as the unemployment rate climbed. As a result, consumption also slumped. Moreover, the protracted problem of non-performing loans and excessive debt continued to weigh down on the Japanese economy.

The Nikkei Stock Average, which had ridden the IT bubble to over 20,000 yen in March 2000, headed downwards due to the impacts of the collapse of the IT bubble, the 9.11 terrorist attacks, and distrust in corporate accounting. Methods such as short selling magnified the decline, and in April 2003 the Nikkei registered its lowest level since the bubble, falling below 8,000 yen. The drop in share prices led to an asset deflation cycle and a vicious cycle of economic contraction (see **Figure 9** and **Figure 12**).

The Financial Revitalization Program

In October 2002 the Japanese government unveiled and began implementing a financial revitalization program aimed at resuscitating the financial system by thoroughly disposing of non-performing loans. The key elements of this program were as follows:

- Reduce the number of non-performing loans as a proportion of all outstanding loans to half their current level during Fiscal 2004 (at the end of March 2002, non-performing loans accounted for 8.4 percent of outstanding loans at major banks).
- Tighter assessment of assets.
- Shore up bank capital.
- Improve corporate governance.

During the process of implementing this plan, Resona Bank had to be effectively nationalized in May 2003.

The Economic Recovery from 2002

From 2002, the economy gradually began to pick up. The key feature of this recovery was that the period of expansion was long. The economy expanded from February 2002 to October 2007, making the economic recovery the longest period of continuous expansion since the war (altogether it lasted five years and nine months)[27]. The second characteristic was that the economic recovery was driven by the private sector. The public sector (the total of government final consumption expenditure and government spending on public fixed capital formation) made hardly any contribution to the economic growth. In fact, the public sector's contribution during from Fiscal 2003 to Fiscal 2006 was negative (see **Figure 18**). A third feature was that the rate of growth, at around 2 percent, was comparatively low, meaning that the public didn't really feel like much of a recovery.

The following three reasons can be given for the economic recovery:

(1) A Recovery in the World Economy

Thanks to growth in the U.S., which had bounced back from the collapse of the IT bubble, as well as growth in emerging countries such as Brazil, Russia, India, and China (the BRICs), many companies, particularly those in export-related industries, saw their sales and earnings pick up.

Moreover, companies from emerging nations and globalized companies from developed countries took advantage of low-cost labor to manufacture more and more products in developing countries. Moreover, the export of these products to developed nations benefited consumers in these countries by allowing them to purchase manufactured goods at lower prices.

(2) An Improvement in the Financial Health of Companies

From the second half of the 1990s, Japanese companies, particularly blue-chip firms, made progress with reducing their interest-bearing liabilities. As a result, their financial condition improved, and the corporate sector ended up with excess cash and became suppliers of funds (see **Figure 19**). What was happening was that surplus funds held by households and companies were financing the government's shortage of funds resulting from years of budget deficits.

Alongside continued low interest rates and a weakening of the yen between 2001 and mid-2003 (see **Figure 3** and **Figure 5**), companies found themselves with room to invest in their core operations, and some spent large amounts of money on plant and equipment (in Japan as a whole, however, net investment (net fixed capital formation) continued to decline[28]).

(3) Progress in Dealing with Non-Performing Loans

Financial institutions pressed ahead with the disposal of non-performing loans, and by the end of Fiscal 2004 such loans as a proportion of all loans held by major banks had declined to 2.9 percent, less than half the figure of 8.4 percent at the end of March 2002 (see **Figure 20**). Moreover, the economic recovery brought about by the factors described above reduced the number of corporate bankruptcies.

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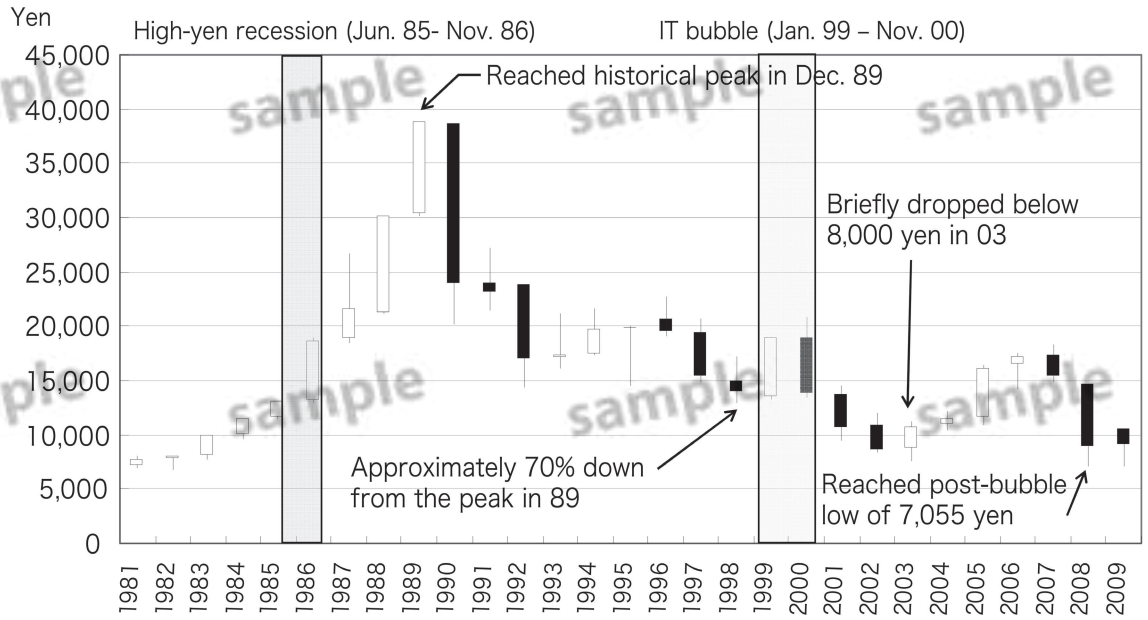
[27] Cabinet Office's working group of indexes of business conditions.

[28] See Cabinet Office (2009), "*Nihon Keizai 2009-2010*" [The Japanese Economy 2009-2010].

This enabled banks to reverse the massive provisions they had made for non-performing loans, which helped to improve their financial condition. Furthermore, as banks increased their lending, the real economy began to benefit. This led to a virtuous cycle whereby the economy improved, which further improved the financial condition of banks, and so on.

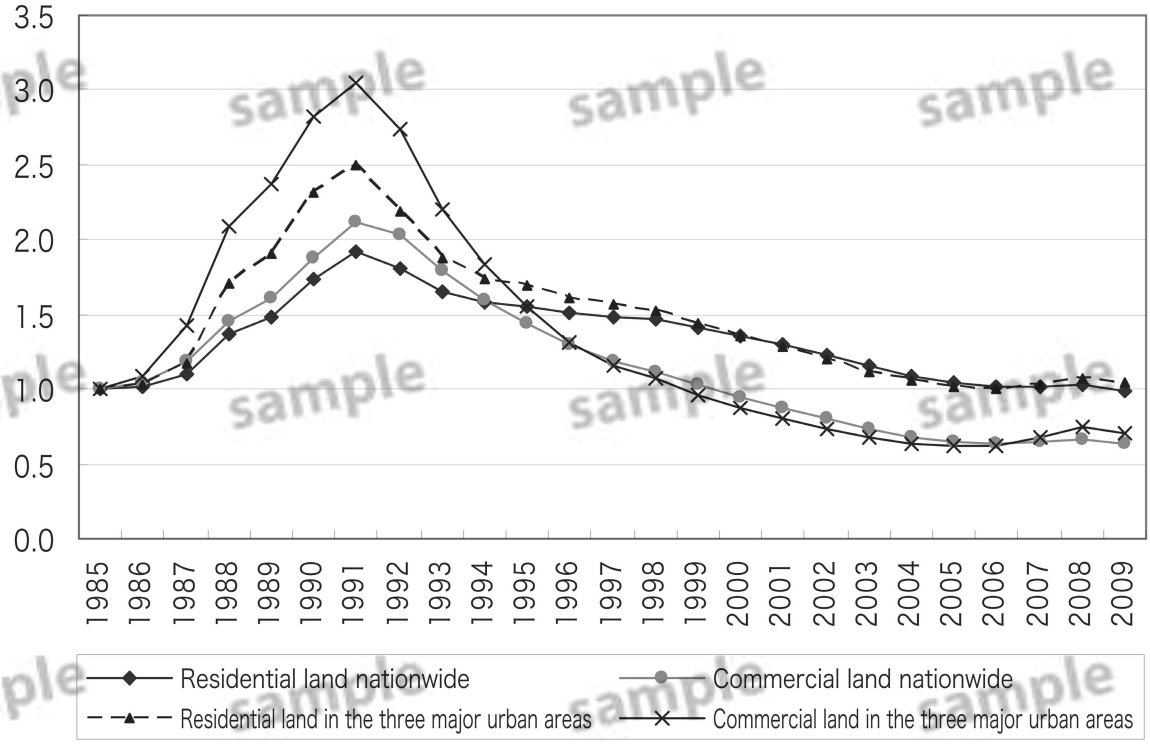
Figure 1: The Nikkei Stock Average



Source: Nihon Keizai Shimbun

Note: Periods of economic cycles are determined by the Cabinet Office's working group of indexes of business conditions

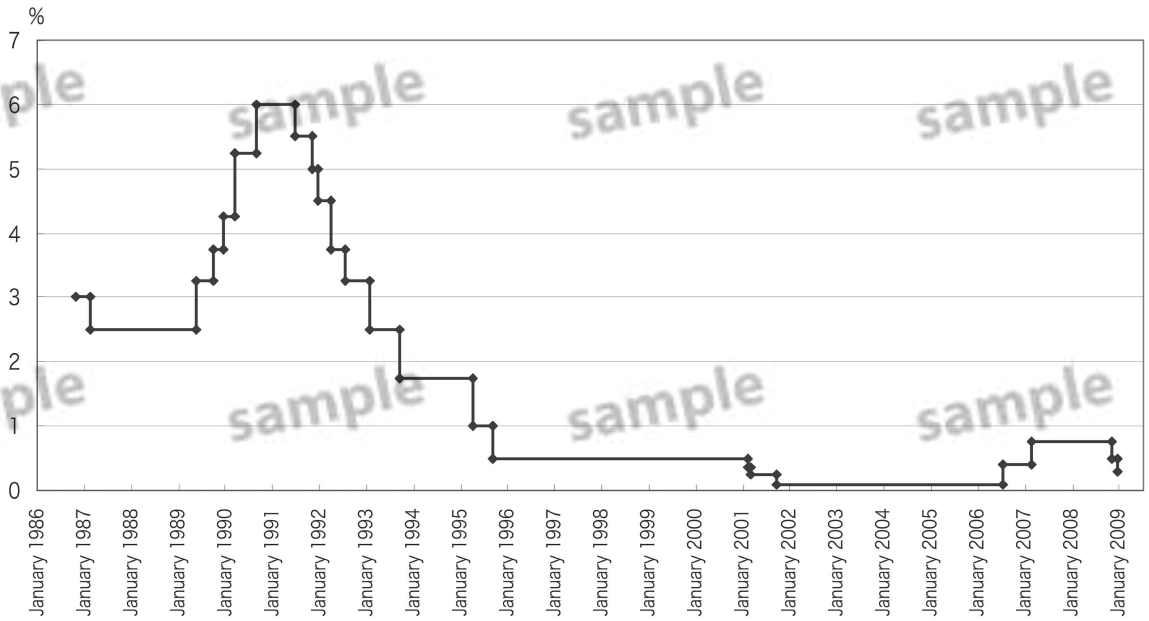
Figure 2: The Publicly Assessed Values of Land (1985=1)



Source: Ministry of Land, Infrastructure, Transport and Tourism

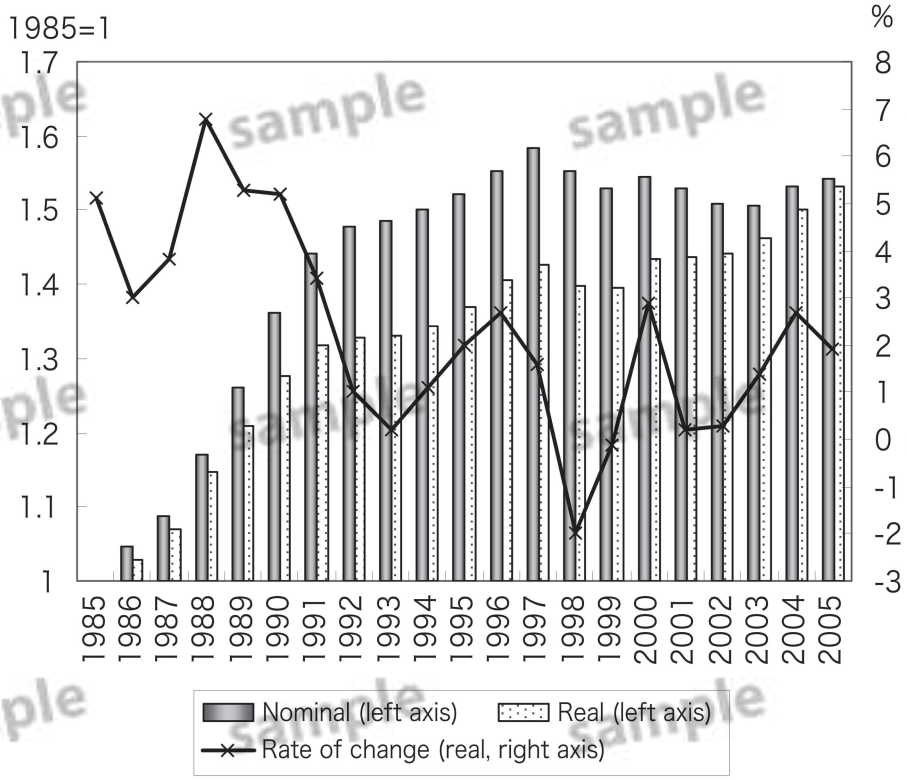
Note: The three major urban areas are the Tokyo, Chukyo, and Kinki areas.

Figure 3: Japan's Official Discount Rate



Source: Bank of Japan

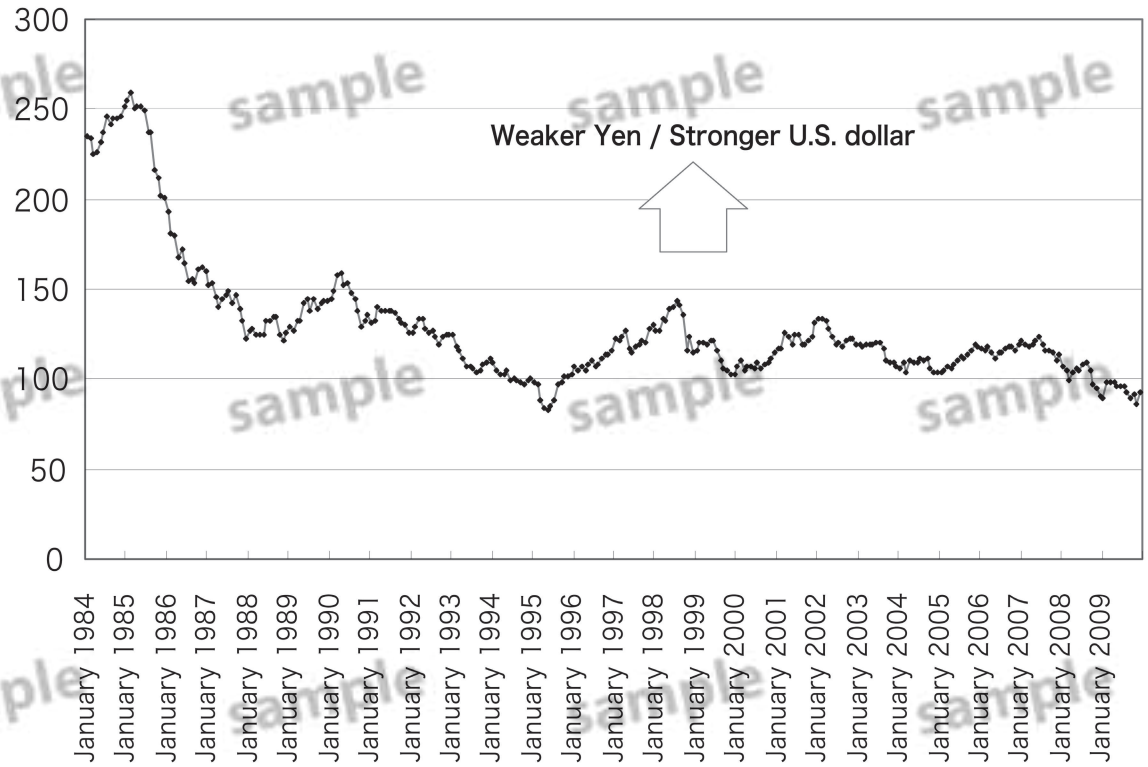
Figure 4: Japan's GDP



Source: Cabinet Office

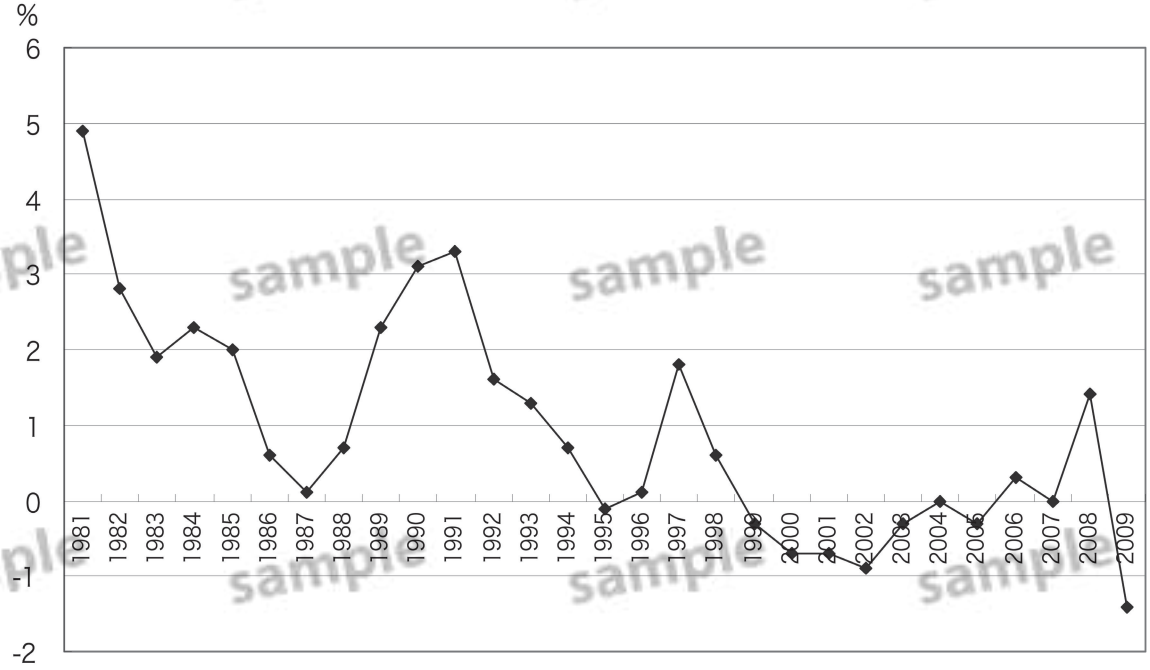
Note: Gross domestic product (GDP) is the total market value of all goods and services produced in a country during a certain period of time.

Figure 5: Yen-Dollar Exchange Rates (JPY/USD)



Source: Bank of Japan

Figure 6: Consumer Price Index



Source: Bank of Japan

Note: The reason the rate of increase in the consumer price index spiked by just under two percentage points in 1997 was that the consumption tax was increased from three percent to five percent in April 1997.

Figure 7: The Asset Inflation Cycle

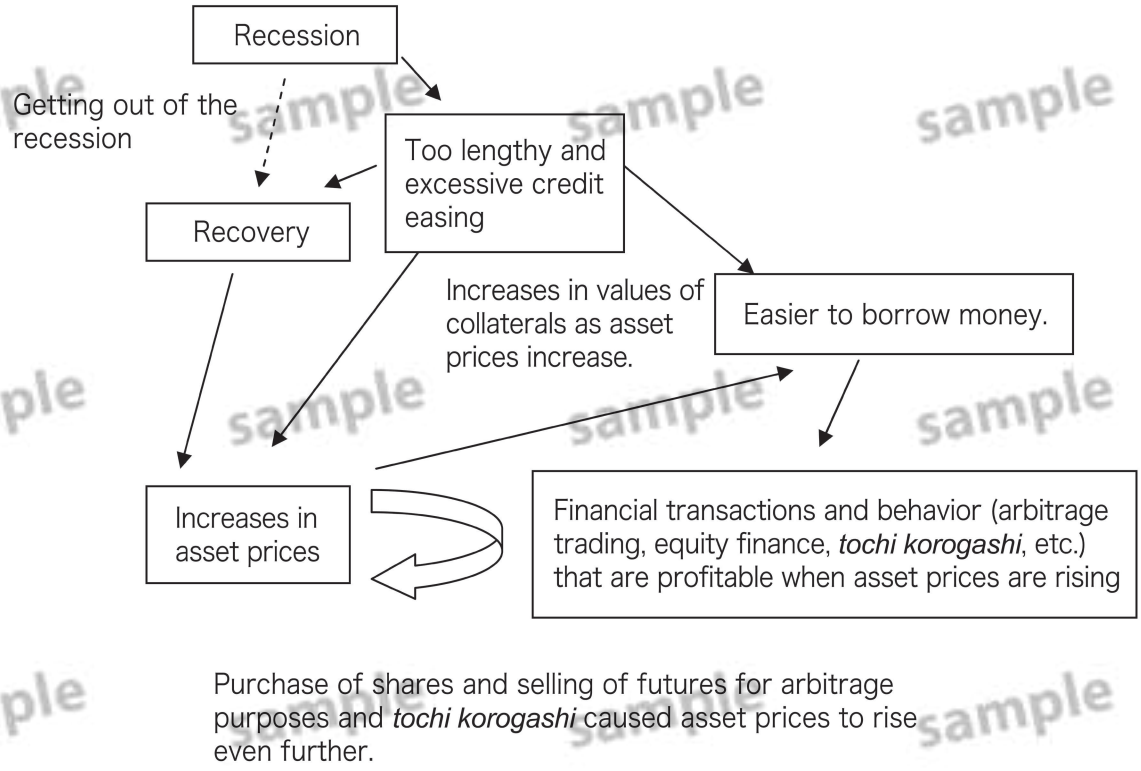


Figure 8: The Mechanisms behind the Formation and Collapse of the Bubble

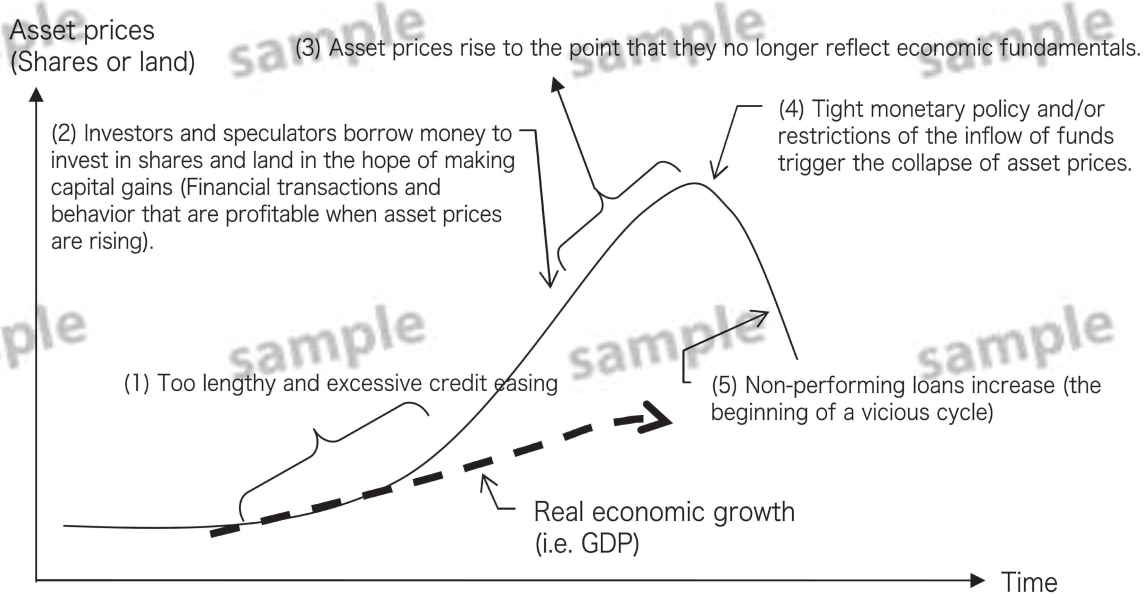


Figure 9: The Asset Deflation Cycle

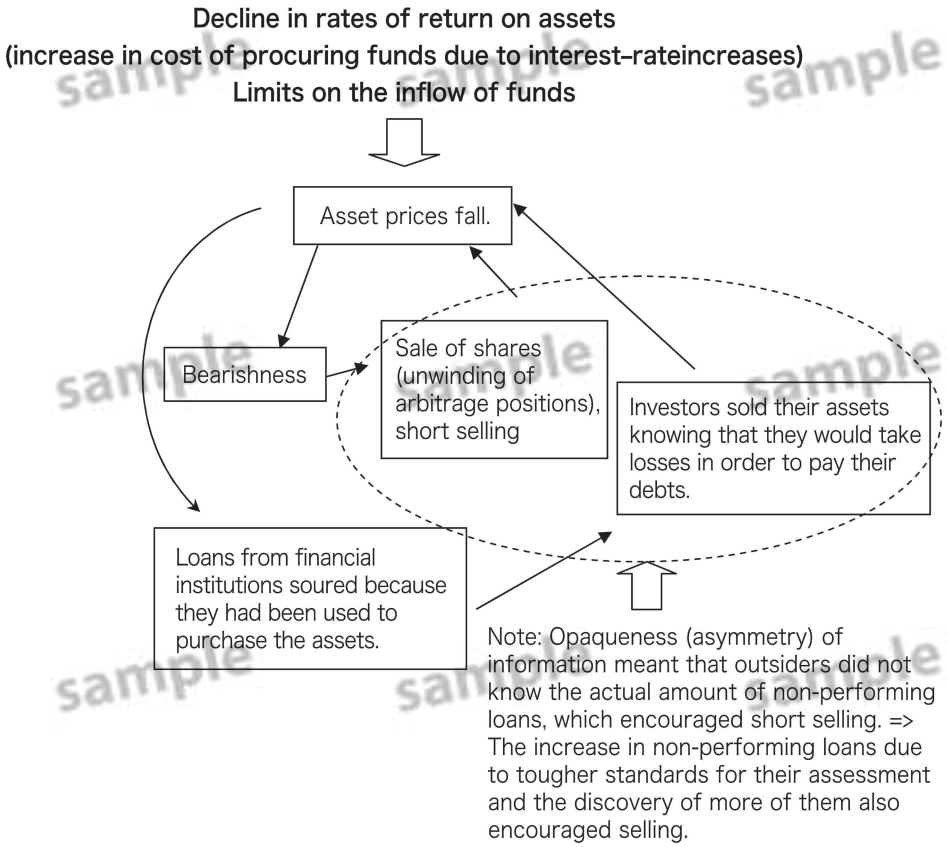
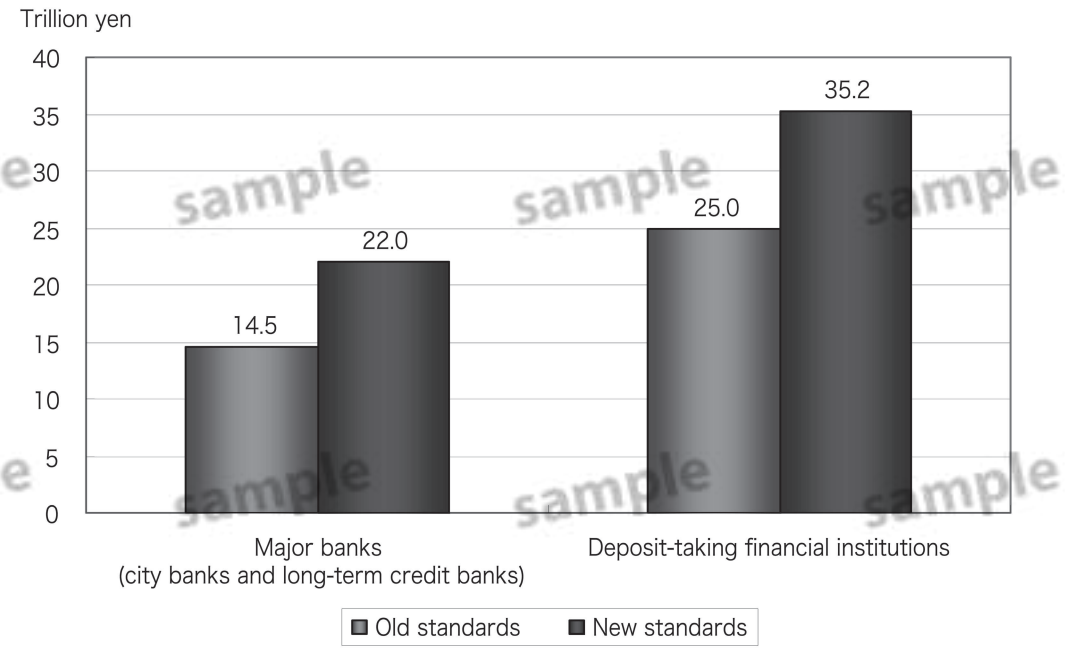


Figure 10: Changes in Non-Performing Loans due to Changes in Assessment Standards (at the end of March 1998)



Source: Japanese Bankers Association

Figure 11: Significant Events

June 1985 - :	High-yen recession (bottomed out in November 1986)
February 1987 :	Bank of Japan lowered its official discount rate from 3 percent to 2.5 percent
October 1987 :	U.S. stock market crashed (Black Monday)
September 1988 :	Futures trading began in Japan
June 1989 :	Bank of Japan began to tighten credit
December 1989 :	Share prices hit record high
March 1990 :	Introduction of "quantitative restrictions on extension of real estate related loans (Souryou Kisei, in Japanese)"
Early 1992 :	Land values hit record high
December 1992 :	Full application of BIS rules
1995 onwards :	Series of failures of regional banks (Hyogo Bank in August 1995, Taiheiyo Bank in March 1996, Hanwa Bank in October the same year), failure of the housing finance specialized company, called *Jusen* in Japanese, in 1996
November 1997 :	Failure of Sanyo Securities
November 1997 :	Failure of Hokkaido Takushoku Bank
November 1997 :	Failure of Yamauchi Securities
February 1998 :	Law concerning emergency measures for financial function stabilization passed
March 1998 :	1.8 trillion yen in public funds injected into 21 major banks
March 1998 :	Japanese Bankers Association expanded disclosures concerning non-performing loans
June 1998 :	Financial Supervisory Agency established
July 1998- :	Financial Supervisory Agency, the MoF's local finance bureaus, and the Bank of Japan performed intensive inspections and audits of financial institutions
October 1998 :	Long-Term Credit Bank of Japan failed
December 1998 :	The Nippon Credit Bank failed
March 1999 :	7.5 trillion yen in public funds injected into 15 major banks
1999 :	IT boom (January 1999-November 2000)
March 2001 :	Market-value accounting introduced
September 2001 :	9.11 terrorist attacks in the U.S.
Fiscal year ending March 2001:	
	Market-value accounting was introduced
February 2002 :	Economy bottomed out (continued recovering until October 2007)
October 2002 :	Financial revitalization program announced
April 2003 :	Nikkei Stock Average dropped to lowest level since the bubble
May 2003 :	Effective nationalization of Resona Bank

Figure 12: Vicious Cycle of Economic Contraction due to the Lending Behavior and Failure of Financial Institutions

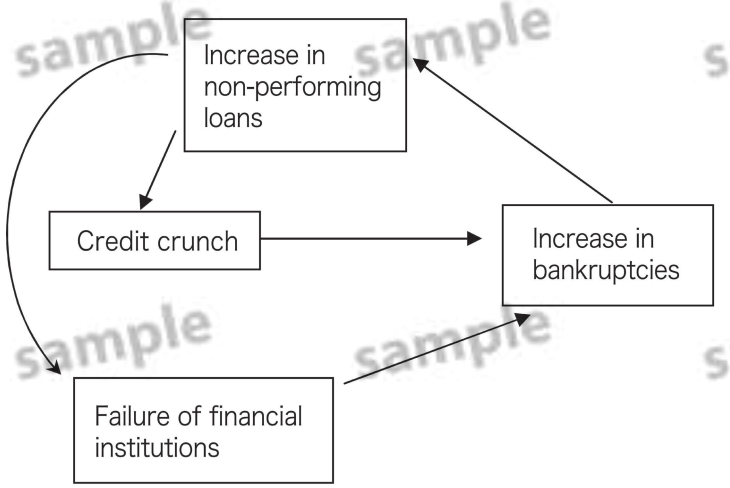
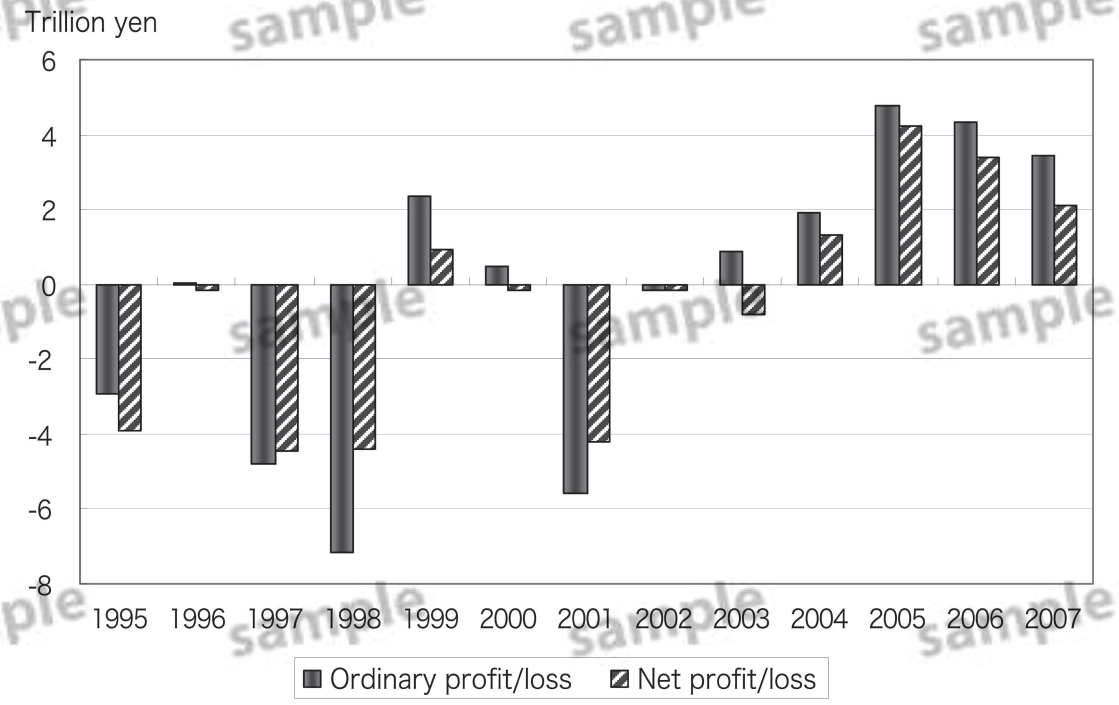


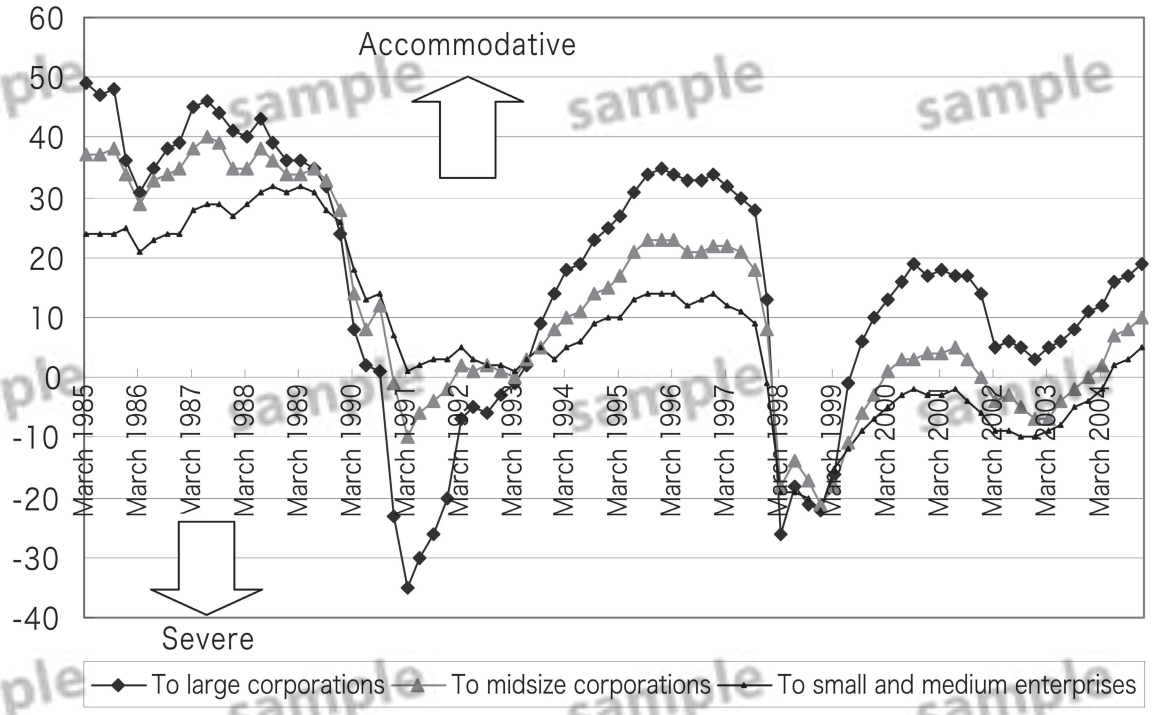
Figure 13: Total Profits of All Japanese Banks (Fiscal Years)



Source: Japanese Bankers Association

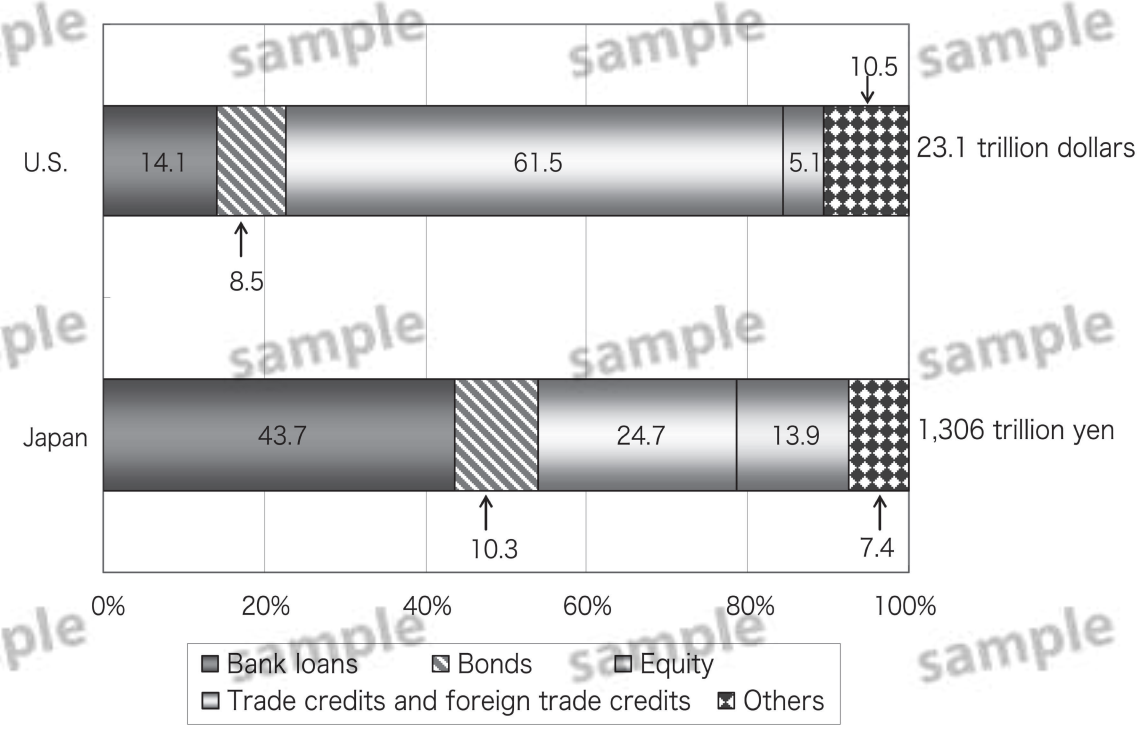
Note: Includes city banks, regional banks, trust banks, and long-term credit banks.

Figure 14: Banks' Lending Attitudes



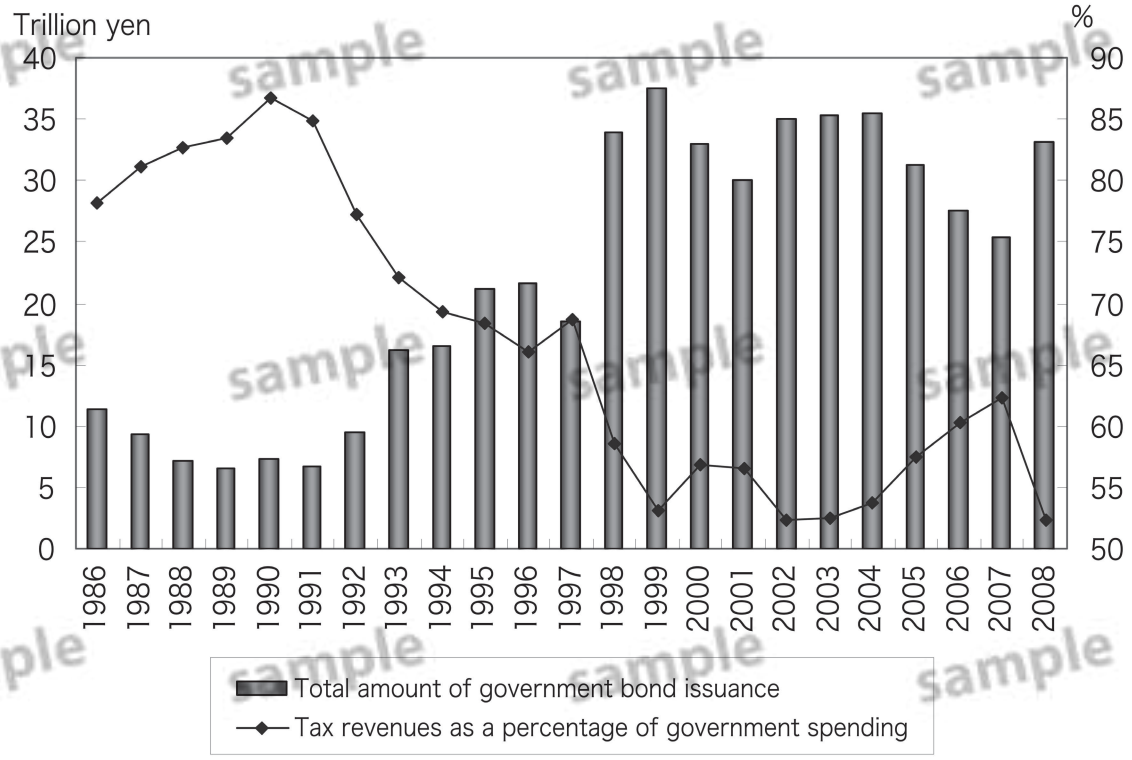
Source: Bank of Japan

Figure 15: Financial Liabilities owed by Private Nonfinancial Corporations (End of 1998)



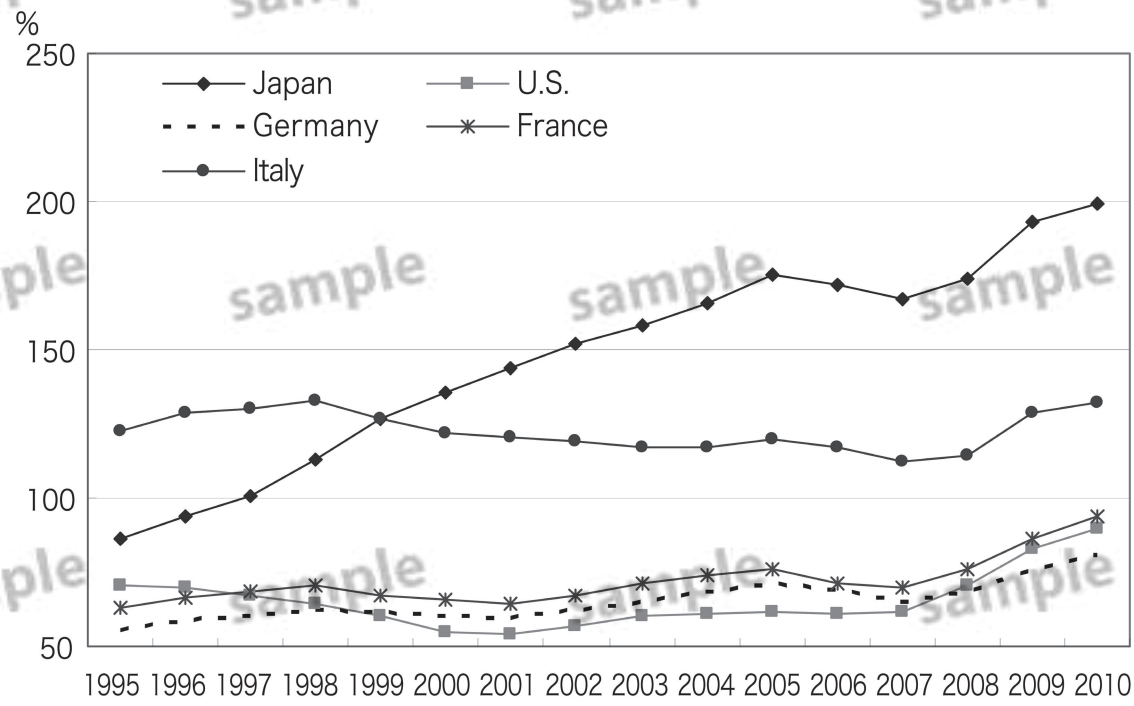
Source: Bank of Japan: "*Shikin Junkan no Nichi-Bei Hikaku: 1998*" [Japan-U.S. Comparison of flow of funds: 1998]

Figure 16: Total Amount of Government Bond Issuance and Tax revenues as a Percentage of Government Spending in Japan



Source: Ministry of Finance

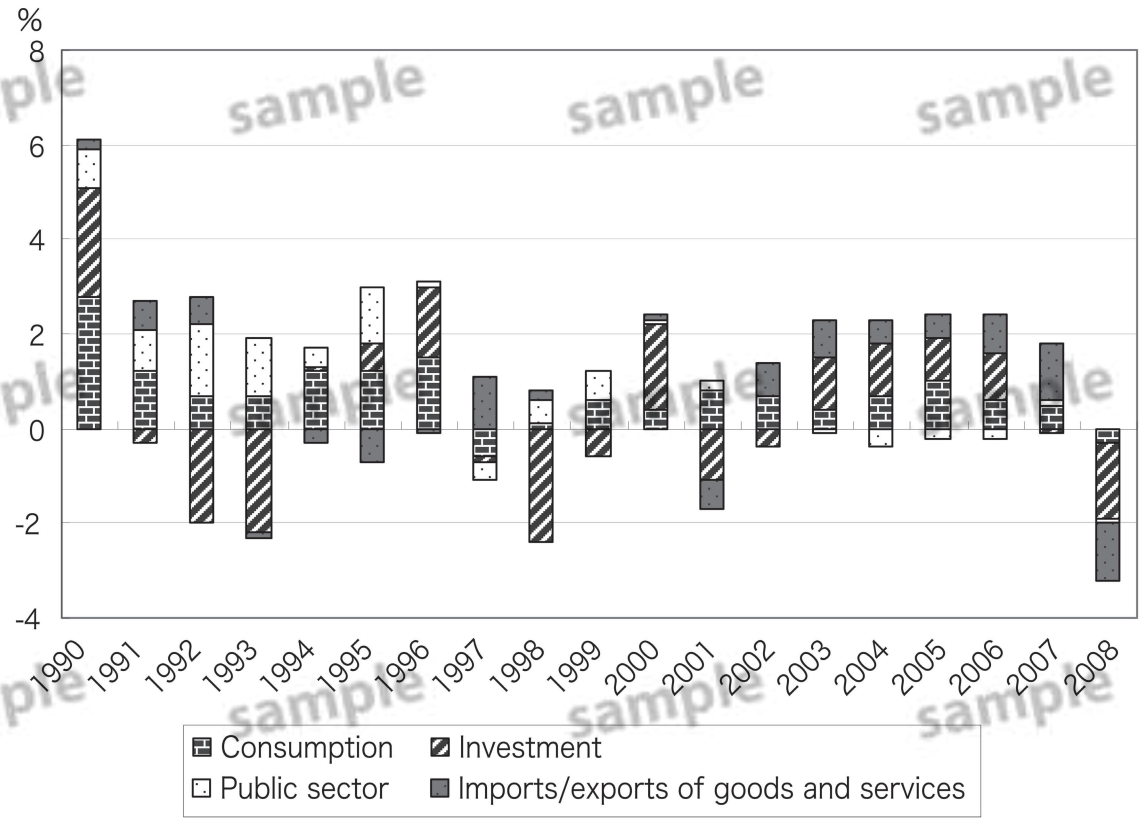
Figure 17: Deterioration in Japan's Fiscal Balance (International comparison of General Government Gross Financial Liabilities as a Percentage of nominal GDP)



Source: OECD, Economic Outlook, No.87, June 2010

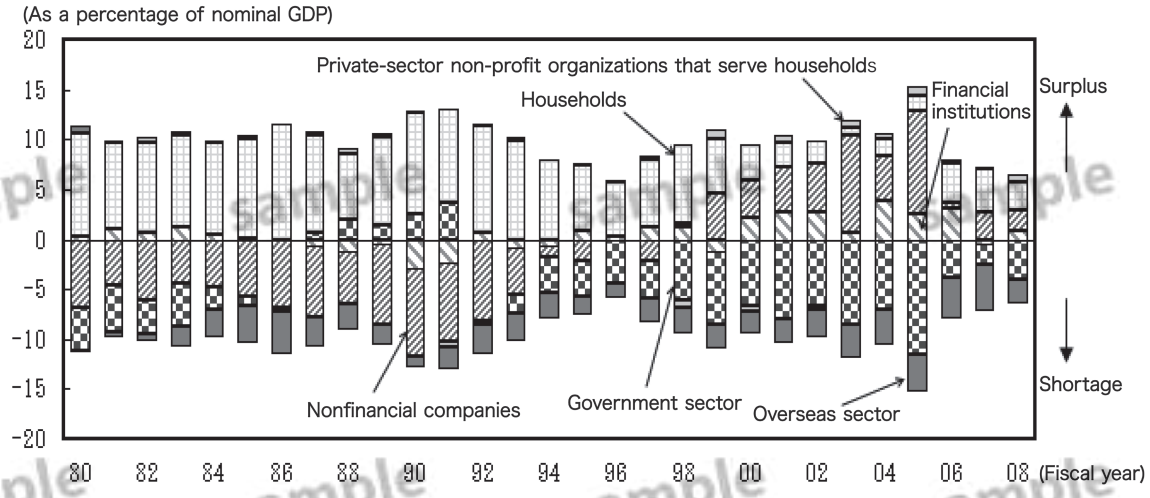
Note: Figures are general government based (i.e. include spending by the central government, local governments, and social security funds).

Figure 18: Contributions to Growth Rate



Source: Annual reports on the Japanese economy and public finance (Long-Term Economic Statistics, Cabinet Office, Government of Japan

Figure 19: Balance of Investment and Savings in Japan

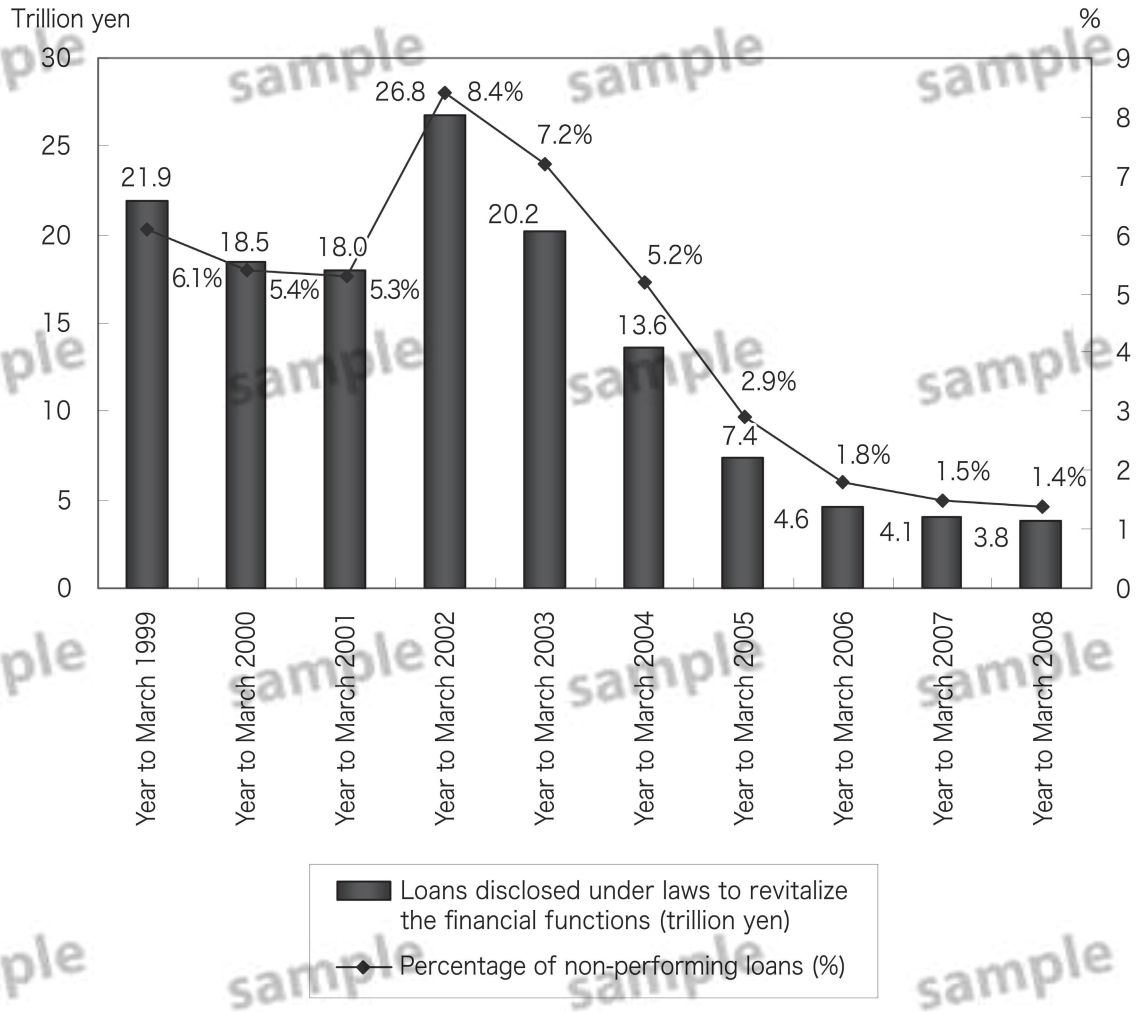


Source: Cabinet Office, "*Nihon Keizai* 2009-2010" [The Japanese Economy: 2009-2010]

Note 1: Private-sector non-profit organizations that serve households are labor unions, political parties, religious organizations, etc. and all private schools that are "judicial persons other than corporations" and "organizations other than judicial persons."

Note 2: Balances for the overseas sector are as seen from overseas. A surplus as seen from Japan is recorded as negative amount (deficit).

Figure 20: Loans Disclosed under the Financial Revitalization Act and the Percentage of Non-Performing Loans



Source: Financial Services Agency

Addendum 1: Notes on the Money Stock and Monetary Policy

Definition of the Money Stock

The money stock is the total amount of money supplied to the economy as a whole by the financial sector[29]. In Japan, the money stock can be broken down as follows:

M = currency in circulation (*C*) + deposit money (*D*)

(This is the currency held by the public. Currency held by banks (bank reserves) is not included in *C*.)

Deposits: Demand deposits (current deposits, ordinary deposits, saving deposits, deposits at notice, special deposits, and deposits for tax payments) minus checks and bills held by the surveyed financial institutions.

*M*2 = currency in circulation + deposits

*M*3 = M1 + quasi-money + CDs (certificates of deposit)

Quasi-money: Time deposits + fixed savings + installment savings + foreign currency deposits

Banks lend a portion of their deposits, keeping back some as reserves (*R*) to ensure they are always able to meet requests for withdrawals. The proportion kept back in this way is referred to as the reserve-deposit ratio (*R* / *D*).

The Money Creation Process

Next, let us look at the money creation process. We will assume that the reserve-deposit ratio (*R* / *D*) is 20 percent at all banks.

At the beginning, Person X deposits **10 million yen** in cash at First Bank (as a demand deposit, i.e. the most basic type of deposit)

First Bank lends 8 million yen to Company A, and keeps 2 million yen back (the reserve-deposit ratio is 20 percent, so 8 million yen is newly created).

Company A pays the 8 million yen to Company B to purchase products.

Company B deposits **8 million yen** with Second Bank (as a demand deposit).

Second Bank lends 6.4 million yen (800×0.8) to Company C (6.4 million yen is newly created).

If this process continues, the final money stock will be as follows:

M = 1,000 + 800 + 640 + ... = 50 million yen (= 1,000/0.2)

This process is referred to as “credit creation by financial institutions.”

The Impact on the Money Stock

Next, in order to show the impact of monetary policy on the money stock, we will define the monetary base as follows:

Monetary base (*B*) = currency in circulation (*C*) + bank reserves (*R*)

Bank reserves (*R*): current account balance in the Bank of Japan

[29] “Monet stock” used to be called the “money supply.” However, in 2008, when changes were made to the way money supply statistics were compiled, the name was changed to that used in the West.

Here, the relationship between the money stock and the monetary base can be expressed as follows[30]:

$$M = \frac{\mathrm{C/D}+1}{\mathrm{C/D}+\mathrm{R/D}}\mathrm{B}$$

Here, $m = \frac{\mathrm{C/D}+1}{\mathrm{C/D}+\mathrm{R/D}} > 1.$

Here, the foll

m is the money multiplier.

1. When the monetary base B increases by 10,000 yen, the money stock increases by m x 10,000 yen.

2. The lower (higher) the reserve-deposit ratio (R / D), the more (less) banks will lend, and the money stock will grow (shrink), i.e. the money multiplier, m, will increase (decrease).

R / D = 10%	M = 1,000 + 900 + 810 + ... = 10,000 yen (= 1000/0.1)
R / D = 20%	M = 1,000 + 800 + 640 + ... = 5,000 yen (= 1000/0.2)
R / D = 30%	M = 1,000 + 700 + 490 + ... = 3,333 yen (= 1000/0.3)

3. The lower (higher) the cash-deposit ratio (C / D), the lower (higher) will be the proportion of the monetary base held as cash by the public, and the higher (lower) will be the proportion held by banks. Therefore, banks will be able to create more (less) money, i.e. the money multiplier, m, will increase (decrease)[31] .

According to the Annual report on the Japanese economy and public finance (Fiscal Year 2004), the money multiplier shrank from the first half of the 1990s[32]. Until 1998, the major reason for this decline was that households and companies came to hold more cash than bank deposits. From 1999, however, the decline was mainly due to private-sector financial institutions being cautious about lending and increasing their current account balances with the Bank of Japan (BoJ).

Monetary Policy

1. Open market operations (the most frequently used monetary policy tool)

Open market operations refer to the BoJ buying/selling securities (government bonds, promissory notes, etc.) from/to commercial banks on the open market in order to adjust the money stock or interest rates in the financial markets.

From 1994, when financial liberalization was completed, open market operations became the most important tool of monetary policy. The present policy interest rate is the uncollateralized call rate[33] (for overnight loans), which the BoJ uses as its target when it tries to influence the financial markets.

Buying operations: The central bank purchases government bonds etc. held by private-sector financial institutions for cash (note that it is not the government that is making these purchases).

- Private-sector financial institutions that have sold government bonds to the central bank receive cash, so the amount of cash (C) and B [$B = C+R$] increases.

[30] $M = C+D$, $B = C+R$ gives $M / B = (C+D) / (C+R)$, and dividing both the numerator and denominator by D yields the formula above.

[31] Differentiating m by C / D gives a negative value.

[32] See Economic and Fiscal White Paper (Fiscal 2004, Chapter 1, Section 4).

[33] This is the interest rate in the call market, where financial institutions lend/borrow money for periods of one year or less.

Selling operations: The central bank sells government bonds etc. to private-sector financial institutions.

- Private-sector financial institutions that have bought government bonds pay cash to the central bank, so the amount of cash (C) and B [$B = C+R$] decreases.

2. The reserve ratio

The central bank in each country determines the minimum proportion of deposits that private-sector financial institutions must keep with the central bank. Even if private-sector banks want to lend more, if the central bank, in an effort to tighten credit, sets the minimum reserve ratio at a level higher than the proportion of their deposits they are holding with the central bank, the reserve-deposit ratio will increase and the money stock will shrink. In China, the central bank had increased the minimum reserve ratio several times since 2010 in order to tighten credit.

However, if banks do not wish to increase lending, even a reduction in the minimum reserve ratio will not reduce the reserve-deposit ratio and will not increase the money stock. In Japan, the minimum reserve ratio has not changed since 1991 [34].

3. The official discount rate (standard discount rate and standard loan rate)

This is the interest rate at which the central bank lends to private-sector banks. The lower the official discount rate, the lower the cost of borrowing from the central bank, so private-sector banks will borrow more from the central bank. A drop in the official discount rate will increase lending by the central bank, and increase the monetary base (B) and the money stock.

Since 2006, the term "official discount rate" has been replaced with "standard discount rate and standard loan rate) in statistics. This change reflects the fact that the official discount rate has lost its status as the policy rate. Before 1994, when interest rates were completely liberalized, various other interest rates moved in line with the official discount rate, and it was the BoJ's main policy rate. However, the liberalization of interest rates broke down this correlation, and the policy rate now is the uncollateralized call rate (for overnight loans) described above.

Question 1: Sometimes the money stock does not increase even when the central bank supplies funds to the market through buying operations. Use the concepts of the reserve-deposit ratio and cash-deposit ratio to think about why this might happen.

[34] The minimum reserve ratio is 1.2 percent for time deposits which total over 2.5 trillion yen.

Addendum 2: The Collapse of the Bubble and the Non-Performing Loan Problem

Case 1: Purchase of shares without taking on debt
If 10 billion yen of one's own funds is invested in shares, non-performing loans will not arise even if the stock halves in value to 5 billion yen.

Case 2: Purchase of shares with debt
Shares with a value of 10 billion yen are used as collateral to borrow money from a financial institution, which is then used to purchase additional stock. Suppose that this process continues. If we assume that the collateral rate (the maximum amount the bank will lend divided by the value of the collateral is 70 percent, the credit multiplier is {1/(1 – 0.7)} = 3.333, so stock with a total value of 33.33 billion yen can be held.

Stock worth 10 billion yen for collateral → 7 billion yen loan → purchase of stock worth 7 billion yen

Stock worth 7 billion yen for collateral → 4.9 billion yen loan → purchase of stock worth 4.9 billion yen

Stock worth 4.9 billion yen for collateral → 3.43 billion yen loan → purchase of stock worth 3.43 billion yen

(And so on.)

Here, the total amount of debt will be 23.33 (= 33.33 – 10) billion yen.

Question 2: If the share price halves, how many non-performing loans will arise?

Addendum 3: BIS Rules and Credit Crunch

The Old BIS (Bank for International Settlements) Rules

The BIS rules that have been fully applicable to Japanese banks since 1992 can be expressed as follows:

Capital ratio =
equity capital / (credit risk + market risk) > 8% (for international operations)
> 4% (for domestic operations)

Equity capital: Tier I (core capital) + Tier II (supplementary capital)

Equity capital (numerator) =
Core capital (Tier I): capital accounts (capital, legal reserves, retained earnings, etc.)
Supplementary capital (Tier II): unrealized gains on securities holdings
(maximum of 45% of)[35] [36] + loan loss provisions + subordinated term loans
(maximum of 50% of core capital)
However, the total of supplementary capital must not exceed the total of core capital.

Retained earnings: (non-legal) reserves and unappropriated net income
Securities: certificates conferring rights that have value as assets. Include checks, bonds, shares, and so on.
Subordinated loans: uncollateralized loans that rank lower than other loans with regard to repayment (i.e. if the company goes bankrupt or fails, principal and interest are only paid after general loans and obligations have been settled).
Loan loss provisions: allowances set aside for future losses that have not been identified at the present time (this provision can be freely allocated to losses when they arise). Note that provision for the souring of specific assets and provisions applied to unspecified liabilities cannot be included in supplementary capital.

Credit risk (denominator) = value of government bonds × 0% + loans to banks × 20% + loans to companies × 100% + housing loans × 50%[37]

New BIS Rules (Basel II)

The BIS rules were revised in March 2007, with the new rules known as Basel II. Operational risk (administrative errors, system failures, etc.) was added to the denominator. More detailed methods for calculating credit risk were also established, and the credit risk for loans to individuals and companies was reduced.

Capital ratio = equity capital / (credit risk + market risk + operational risk)
> 8% (for international operations)
> 4% (for domestic operations)

To simplify things, let us consider the weakest possible capital structure:

Core capital = 0.4 billion yen
Supplementary capital includes unrealized gains on securities holdings alone. The amount of such gains is (80/9 ≈ 8.9), and 45 percent of this is 0.4 billion yen (the use of a fraction here is aimed at making subsequent calculations easier).

[35] In the case of domestic operations, unrealized gains on securities are not included.

[36] If revaluation gains on land are included in capital, only 45 percent of the unrealized gains can be included in supplementary capital.

[37] Weights are also determined for other lending.

Credit risk = lending to the private sector only, 10 billion yen
Market risk and operational risk are ignored.

With this example, the capital ratio is 8 percent. Moreover, the 45 percent of unrealized gains on securities holdings, the maximum amount that can be included, accounts for half of equity capital.

Case 1: Unrealized gains on securities holdings fall by half (40/9 ≈ 4.4)

Question 3: To meet the 8-percent minimum under BIS rules, by how much does lending to the private sector need to be reduced?

Case 2: Non-performing loans to the private sector (0.1 billion) are written off using the excess unrealized gains

Question 4: To meet the 8-percent minimum under BIS rules, by how much does lending to the private sector need to be reduced?

Question 5: Suppose that for some reason a bank is unable to tap into its unrealized gains, and instead uses its capital reserves to write off the non-performing loans (i.e. reduces its core capital), by how much does lending need to be reduced?

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