BOJ Reports & Research Papers

Financial System Report

Bank of Japan
March 2008

This report mainly covers 12 major banks and 109 regional banks.
The 12 major banks comprise Mizuho Bank, The Bank of Tokyo-Mitsubishi UFJ, Sumitomo Mitsui Banking Corporation, Resona Bank, Mizuho Corporate Bank, Saitama Resona Bank, Mitsubishi UFJ Trust and Banking Corporation, Mizuho Trust and Banking Company, The Chuo Mitsui Trust and Banking Company, The Sumitomo Trust and Banking Company, Shinsei Bank, and Aozora Bank. The 109 regional banks comprise the 64 member banks of the Regional Banks Association of Japan and the 45 member banks of the Second Association of Regional Banks, as of September 30, 2007.

In the charts, "I" and "II" represent the first half and second half of the relevant year, respectively.

Unless otherwise stated, this document uses data available as of February 26, 2008.

Financial Analysis and Research
Financial Systems and Bank Examination Department, Bank of Japan
post.bsd1@boj.or.jp

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Preface

The Bank of Japan publishes the *Financial System Report* biannually with two objectives. The first objective is to present a comprehensive analysis and assessment of the stability of Japan's financial system. The second objective is to facilitate communication with the concerned parties in order to contribute to the sustained stability of the financial system.

In advancing the Bank's macroprudential research, the stability of the financial system is analyzed in two aspects: the functioning of the system and its robustness. The functioning of the system needs to be assessed whether it promotes an efficient allocation of economic resources, thereby contributing to the sound development of the economy. The robustness needs to be assessed whether any potential imbalances that might jeopardize the stability of the financial system are largely contained and whether the financial system is robust against such imbalances. Macroprudential research also provides a valuable insight into the assessment of monetary policy's transmission channels.

The March 2008 issue explores the impact of the U.S. subprime mortgage problem on Japan's financial system in addition to assessing the functioning and the robustness of the financial system. It also analyzes the risks inherent in the banking sector, by focusing on each individual bank's profitability and capital strength that appear to be diverging. Moreover, the report examines the risks in the financial system – both the banking sector and the non-banking sector – as a whole from macro and micro perspectives.

The Bank continues to contribute to ensuring the stability of Japan's financial system and enhancing its functioning. To that end, the Bank continues to analyze Japan's financial system, publish its research results, and take policy measures as needed to support the sustained stability of the financial system.

An Assessment of the Current State of Japan's Financial System: An Overview

(An assessment of the current state of Japan's financial system)

1. Japan's financial system, on the whole, has remained stable despite global financial turmoil triggered by the U.S. subprime mortgage problem. The total risks borne by banks have largely been restrained, compared with their capital position. The robustness of the banking system against a stress scenario of interest rate risk and credit risk has remained relatively high.

2. In terms of profitability, both interest income and non-interest income of Japanese banks have become rather weak, and their core profitability has remained sluggish. Each bank's profitability and capital strength appear to be diverging among the regional banks. Japanese banks need to strengthen their profit base to ensure the sustained stability of the financial system.

3. Japanese banks have exposure to the U.S. subprime mortgage problem mainly in the form of investments in structured credit products, and they are less involved in the origination and distribution of such products compared with the U.S. and European financial institutions (see Box 1 for the summary of the problem). Under such circumstances, Japanese financial institutions have contained losses stemming from the U.S. subprime mortgage problem within their current profit levels and capital strength, although such losses have increased as the problem has become serious. At present, the U.S. subprime mortgage problem is unlikely to jeopardize the stability of Japan's financial system.

(Business conditions of Japanese banks)

4. The profits of the major banks and the regional banks in the first half of fiscal 2007 declined from the previous year. While interest income bottomed out, non-interest income remained sluggish and both credit costs and general and administrative expenses increased; as a result, net income declined. In particular, credit costs, which had remained extremely low for several years, increased to a level consistent with the recent economic growth, since the reversals of allowances for loan losses ran their course. Losses also arose from loans and investments related to the U.S. subprime mortgage problem and nonbank finance companies, including consumer finance companies. The indicators of core profitability, which exclude the impact of volatile components such as credit costs, remained low, and improving the profitability of the banking sector continues to be an important business challenge.

5. In terms of soundness, the total risks borne by the major banks and the regional banks have largely been contained, compared with their capital positions. Credit risk of the major banks and the regional banks has marginally increased. Market risk associated with stockholdings remains the largest risk component at the major banks, and interest rate risk stays relatively high at the regional banks, compared with the major banks. In the meantime, the improvement in the capital positions at the major banks and the regional banks appears to have slowed.

6. Looking at alternative investments, which include the structured credit products related to the U.S. subprime mortgages, their outstanding amount and share in the total securities balance are on an increasing trend, while its increasing tempo is slow at the moment. Given the complex nature of risks inherent in such investments, as reconfirmed in the U.S. subprime mortgage problem, financial institutions need to properly gauge and manage the risk-return profiles of alternative investments as well as changes in such profiles.

(Financial intermediation function and changes in its risks)

7. In terms of risk assessment of the financial system from a macroprudential perspective, potential imbalances that might jeopardize the stability of the financial system, such as the expansion of credit aggregates and excessive risk-taking behavior, have been largely restrained. The expansion of credit aggregates has been kept relatively mild even under the prolonged accommodative monetary conditions. The private corporate sector remains in financial surplus, reflecting abundant cash flows at hand, and is still cautious in expanding debt-financing.

8. Looking next at the individual channels of financial intermediation, business conditions for real estate business financing have changed somewhat: the accelerated tempo of decline in J-REIT prices and the subdued tempo of increase in land prices in the metropolitan areas. Banks' lending attitude to real estate businesses seems to have turned slightly cautious. Considering the relatively high exposure of banks to real estate businesses, the risks related to real estate business financing need to be carefully monitored. In the mean time, new channels of financial intermediation, such as M&A financing, syndicated loans, and securitization markets, have been expanding. The risks associated with such new channels also need to be carefully monitored, in light of the recent downgrading of structured credit products due to domestic factors.

(Robustness of the banking system)

9. The robustness of the banking system against interest rate risk and credit risk, on the whole, has remained high. In terms of interest rate risk, increases in interest rates have an adverse impact on banks' profits in the short term through the decline in the market value of bond portfolios. In the medium term, however, they improve profits through higher net interest income. Such an improvement in banks' profits is more evident in the case of the major banks than the regional banks, reflecting the different maturities of assets and liabilities. In fact, some regional banks with longer average maturity of loans lag behind other regional banks in recovery of interest income on loans. Such banks need to manage interest rate risk of the entire portfolio through, for example, hedging the risk by interest rate swap, off-balancing the loans, and accepting long-term liabilities such as time deposits, based on their own expectation for the future course of interest rates.

10. The robustness of the banking system against credit risk has also remained relatively high, based on the results of macro stress-testing that assumes a severe and prolonged economic downturn. Given an indication of deterioration of borrower classification, banks nevertheless need to watch changes in the risk-return balances of their loan portfolios, even though the quality of loan portfolios for the major banks and the regional banks has been largely kept high.

(Lessons and challenges for the financial systems based on the U.S. subprime mortgage problem)

11. While international financial markets have been in turmoil as the U.S. subprime mortgage problem has worsened and its assessment is thus bound to be tentative, the lessons and challenges for the financial systems so far can be summarized as follows. First, the multi-layered securitization intensified leveraging and undermined incentives for risk assessment. Indeed, financial institutions, in the course of originating and distributing structured credit products, failed to properly evaluate and manage the risks related to warehousing those products with little market liquidity and providing contingent liquidity support to investment vehicles. Second, a number of investors and financial institutions failed to evaluate the risks inherent in complex financial transactions. In that respect, financial institutions – intermediaries responsible for distributing risks – need to assess and manage risks properly. At the same time, market infrastructure needs to be further developed so as to enable a wide range of investors – agents assuming risks – to collect and evaluate information pertaining to risks, thereby promoting the effective functioning of market discipline.

12. From a macroprudential perspective, the potential imbalances jeopardizing the stability of the financial system had been growing under the stable macroeconomic environment and continued accommodative monetary conditions in the global economy. While it still remains a challenge to gauge and address those imbalances in a timely manner, it is important to assess the sustained stability of the financial system. The Bank of Japan, in light of the experience of the U.S. subprime mortgage problem, continues to present a comprehensive analysis and assessment of the stability of Japan's financial system and to enhance communication with market participants with the intention of contributing to the sustained stability of the system.

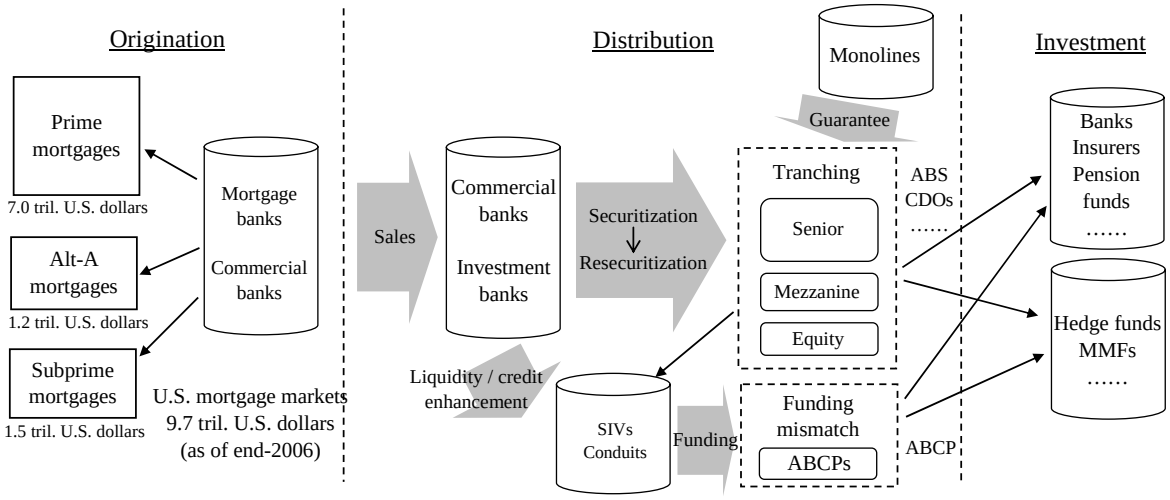
Box 1: The U.S. Subprime Mortgage Problem

Since the summer of 2007, international financial markets have been in turmoil as the U.S. subprime mortgage problem has worsened. Securitization markets in the United States and European countries have lost their normal functioning, and stock markets have remained volatile. In addition, increasing downside risks to the U.S. economy have fueled uncertainty about the global economic outlook (for the effects of the U.S. subprime mortgage problem on financial markets, see also "Financial Markets Report – Developments during the Second Half of 2007," Financial Markets Department, Bank of Japan, January 31, 2008 [Currently only available in Japanese. Forthcoming in English]).

Japan's financial institutions have some exposure to the U.S. subprime mortgage-related products as investors, but they have been less involved in the origination and distribution of structured credit products, compared with the U.S. and European counterparts. Japan's financial institutions seemed to have contained losses stemming from the U.S. subprime mortgage problem within their current profit levels and capital strength, although such losses have increased as the problem has become more serious. At present, the U.S. subprime mortgage problem is unlikely to jeopardize the stability of Japan's financial system (see Chapter I B, C and Box 2 for the effects of the U.S. subprime mortgage problem on Japan's financial institutions).

Box 1 summarizes the background and the current state of the U.S. subprime mortgage problem, as a premise for analyzing and assessing the stability of Japan's financial system (see Chart B1-1 for the overview of securitization markets related to the U.S. subprime mortgages).

Chart B1-1: Securitization Market Related to the U.S. Subprime Mortgages



(Subprime mortgages)

Subprime mortgages are referred to the loans extended to households with relatively lower creditworthiness, and provided mainly by mortgage banks that focus exclusively on mortgages. Those mortgages start with small amounts of repayment for initial two to three years with adjustable interest rates to higher ones afterward, on the

assumption of the appreciation in housing prices. Therefore, when housing prices peaked out, refinancing of those loans became difficult and resulted in a rapid rise in delinquency rates, thereby aggravating the vulnerability of the financial system.

The current problem is characterized by the fact that the financial market turmoil stemming from the subprime mortgages, whose market size was not large in the entire U.S. economy, spilled over very quickly into the rest of the world through securitization markets. The market size of subprime mortgages hovered around 15 percent of the entire U.S. mortgage market, and less than 30 percent even if Alt-A mortgages, which have somewhat better credit score borrowers than the subprime mortgages, were added. However, since securitization markets for mortgages were well-developed and the risk-return profiles and the holding structure of the structured credit products were quite complex, the effects of the subprime mortgage problem became wide-spread in a short period of time.

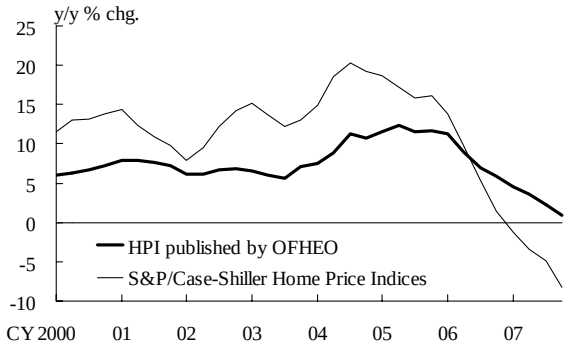
The origination and distribution of structured credit products related to mortgages have been regarded as a typical example of the "originate-and-distribute business model." Financial institutions converted mortgages into structured credit products, thereby removing credit risks and liquidity risks associated with mortgages from their balance sheets, and transferring them to various financial institutions and investors. In such a process, financial institutions repackaged mortgages several times and split them into tranches such as senior, mezzanine, and equity to generate complex structured credit products. At the same time, they made wide use of an investment strategy to create a funding mismatch and raise leverage through off-balance sheet investment vehicles, such as conduits and structured investment vehicles (SIVs).

(Developments in the U.S. subprime mortgage problem)

The developments in the U.S. subprime mortgage problem can be summarized in the four stages below.

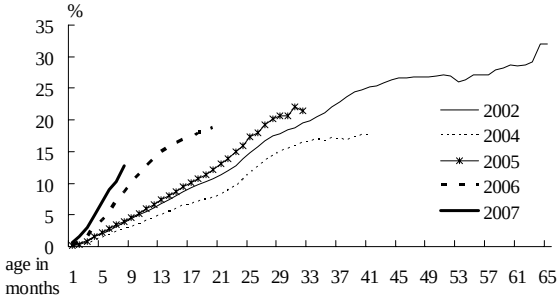
The first stage was up to the spring of 2007. During this period, the delinquency rates of subprime mortgages spiked rapidly as a rise in housing price decelerated and interest rates increased (Chart B1-2, B1-3). In particular, the delinquency rates on 2006-07 vintage of adjustable-rate mortgages (ARM), even

Chart B1-2: Home Price Indices in the United States[1]



Note: *1*. Both the HPI published by OFHEO and S&P Case-Shiller Home Price Indices are indices of the prices for single-family home re-sales. The HPI measures average price changes in repeat sales or refinancings by GSEs (Fannie Mae or Freddie Mac) on the same properties. At the same time, S&P Case-Shiller Indices measures not only GSEs' re-sales or refinancing, but high price residentials and subprime mortgage residentials.
Sources: OFHEO; Standard and Poor's.

Chart B1-3: ARM Delinquencies in the United States

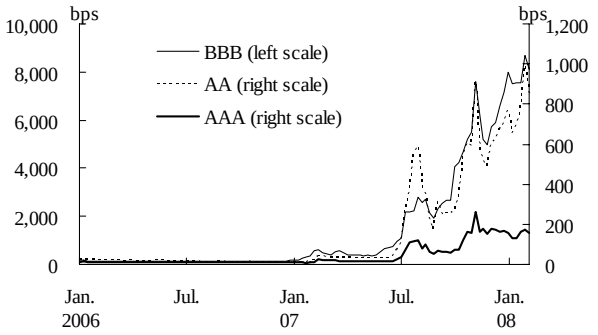


Sources: JPMorgan; Intex.

before the timing of the substantial reset to higher mortgage repayment, increased more quickly than those on the prior vintages. As a result, there was a growing concern that the asset values of financial products backed by subprime mortgages were eroded.

The second stage was from June to July 2007, when the spreads of subprime mortgage-related structured credit products, once widened in the early spring of 2007 and subdued for a while, further widened (Chart B1-4). In the meantime, there was a growing concern that hedge funds with the investment position on those structured credit products might incur losses, and that the business conditions of financial institutions holding such hedge funds might be jeopardized. In addition, rating agencies downgraded a wide range of structured credit products, making investors cautious to invest in structured credit products on the whole.

Chart B1-4: Spreads of the U.S. Subprime Mortgage-Related Structured Credit Products (ABX-HE2006-1)[1]



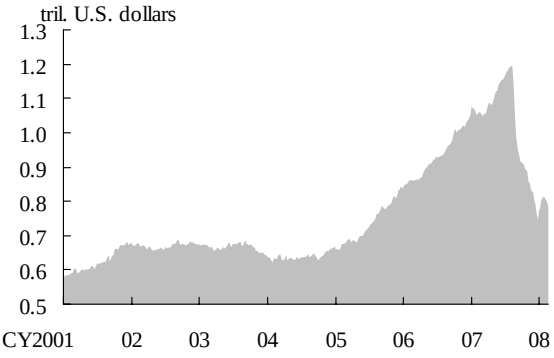
Note: *1*. ABX-HE 2006-1 is a credit default swap index linked to subprime residential mortgage-backed securities (RMBS). Its reference pool is 20 subprime RMBS issued within the period between July and December 2005.

Sources: JPMorgan Chase; Markit.

In the third stage, after the summer of 2007, adjustments in securitization markets spilled over into a wide range of financial markets. Even highly liquid stock markets became substantially volatile, and other financial markets, including leveraged buy-out markets, were also affected.

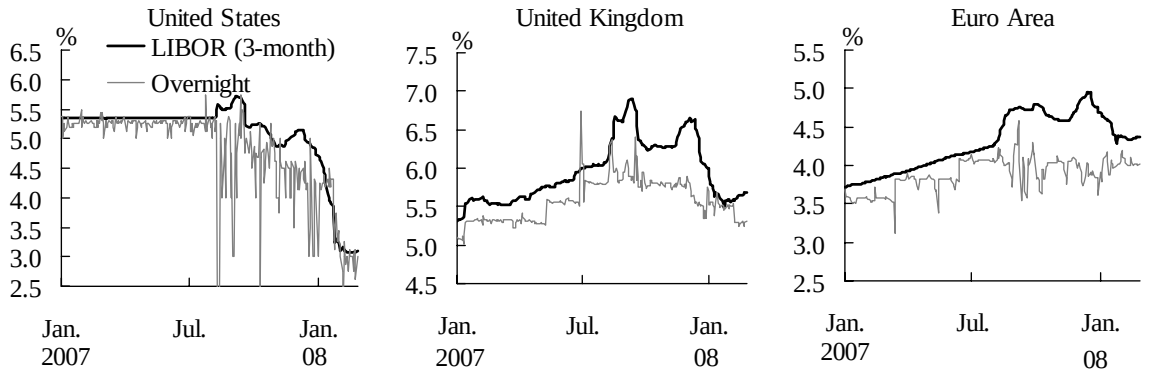
In addition, as the rollover of asset-backed commercial papers (ABCPs) issued by investment vehicles holding the U.S. subprime mortgage-backed assets became difficult (Chart B1-5), financial institutions provided funding support to those investment vehicles, thereby suddenly increasing funding pressure in the U.S. dollar. Consequently, in the money markets of the U.S. dollar, the U.K. sterling, and the euro, term premiums rose. Despite central banks' massive liquidity provisions, the spreads between overnight and term interest rates widened (Chart B1-6, see Chapter I C for funding liquidity risk of Japanese banks).

Chart B1-5: Amount Outstanding of ABCPs[1]



Note: *1*. Seasonally adjusted.
Source: FRB.

Chart B1-6: Interbank Rates in the United States and Europe[1]



Note: *1*. Overnight interest rates are the effective federal funds rate in the United States, the GBP overnight deposit rate in the United Kingdom, and the euro overnight index average (EONIA) rate in the Euro Area.
Source: Bloomberg.

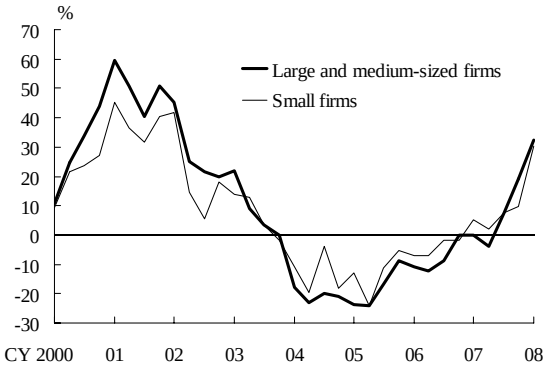
Since August 2007, in order to deal with destabilized money markets, central banks in the United States and European countries made massive and long-term liquidity provisions beyond their conventional policy frameworks as well as reduced their policy rates. In December 2007, after having entered the fourth stage explained below, five central banks (the Federal Reserve, the European Central Bank, the Bank of Canada, the Bank of England, and the Swiss National Bank) took coordinated measures to deal with tight money market conditions toward the turn of the year. The Bank of Japan, along with Sveriges Riksbank, made an announcement to welcome such action. Thanks to the liquidity provisions by those central banks, after the turn of the year, the turmoil in the money markets was mitigated, and the spreads between overnight and term interest rates narrowed.

In the fourth stage, since October 2007, major U.S. and European financial institutions increased losses in their financial statements due mainly to markdowns of the U.S. subprime mortgage-related products as time passed. Sponsor banks were forced to bring back risky assets held by investment vehicles onto their balance sheets in response to the significant deterioration of such assets. While, in the course of the process, a plan to establish a new vehicle jointly by several banks to preserve the troubled investment vehicles was explored, market pressures finally urged sponsor banks to directly shoulder their risks. Recently, the risks of falling housing prices leading to additional losses in the areas other than subprime mortgages, such as the rising delinquency rates of consumer loans and commercial mortgages, have transpired.

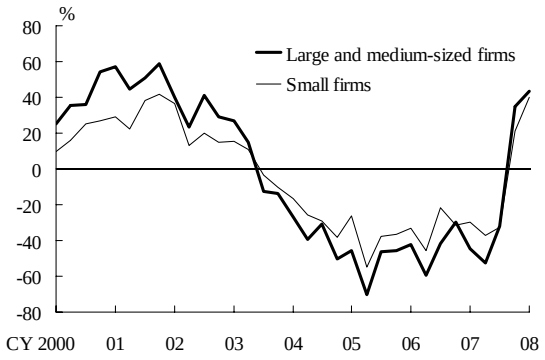
Against such a backdrop, in order to avoid a decline in the capital adequacy ratios, stemming from increases in risky assets as well as realized and unrealized losses of structured credit products, major U.S. and European financial institutions took measures to enhance their capital base one after another by, for example, raising capital from sovereign wealth funds. However, the substantial tightening of banks' lending standard has provoked concern over the possibility that the banks' reduced risk-taking capability might lead to a credit crunch, thereby affecting economic activity (Chart B1-7). After the turn of the year, the downgrading of monolines – financial insurers to structured credit products – has become another concern in securitization markets.

Chart B1-7: United States Senior Loan Officer Opinion Survey on Bank Lending Practices

[1] Net Percentage of Domestic Respondents Tightening Standards for C&I Loans



[2] Net Percentage of Domestic Respondents Increasing Spreads of Loan Rates over Banks' Cost of Funds



Source: FRB.

(The backgrounds of the U.S. subprime mortgage problem)

There seems to be several factors behind the fact that the subprime mortgage problem became serious and affected a wide range of financial markets – from the deterioration of subprime mortgages and structured credit products backed by the subprime mortgages, to the impaired functioning of money markets especially in the United States and European countries.

First, at the time of originating subprime mortgages, mortgage banks might have loosened lending standards amid prolonged accommodative monetary conditions and rising housing prices. As the mortgage scheme of small initial repayment with adjustable interest rates to higher ones in two to three years proliferated, mortgages became available to the households with low creditworthiness who were otherwise unable to pass the mortgage screening.

Second, in the process of transferring risks from financial institutions to investors, a mechanism of amplifying risks, i.e., raising leverage, had been embedded. Some investment vehicles intentionally generated a maturity mismatch between their assets and liabilities by investing in structured credit products with longer maturities against short-term funding in ABCPs. That behavior suggests that investors and banks behind such investment vehicles were taking highly leveraged positions as well as credit, liquidity and interest rate risks, thereby pursuing higher returns.

Third, the banking system, on the whole, seemed to take excessive risk. In retrospect, risk was amplified by higher leverage and continued to remain within the system, while such risk was initially considered to be separable from the system. Financial institutions involved in securitization business suffered serious losses from the revaluation of their inventory assets, such as underlying assets and structured credit products, in the process of securitization business. That was because market liquidity of such inventory assets was generally low, and financial institutions were unable to reduce such inventories quickly when investors became increasingly risk-averse. As the rollover of ABCPs issued by investment vehicles became difficult, sponsor banks were urged to provide a large amount of liquidity to ABCP conduits through contingent liquidity lines, and SIVs through implicit commitments.

Fourth, investors might have purchased structured credit products, even though they were unable to assess the complicated risks. Some investors, including small to medium-sized financial institutions, relied on the ratings and valuation models provided by external experts. Indeed, a spate of downgradings for a wide range of structured credit products resulted in undermining investors' basis for risk-return assessment.

(Lessons and challenges for the financial systems)

While international financial markets have been in turmoil as the U.S. subprime mortgage problem has worsened and its assessment is thus bound to be tentative, the lessons and challenges for the financial systems so far can be summarized as follows. First, the multi-layered securitization intensified leveraging and undermined incentives for risk assessment. Once the financial environment deteriorated, it accelerated the re-evaluation of risks and aggravated deleveraging, amplifying the scale and depth of adjustments in the financial markets. In other words, large and complex financial institutions in the United States and European countries, which progressively moved toward the originate-and-distribute business model, appeared to fail to properly evaluate and manage the risks inherent in diversified and complicated financial transactions. Moreover, it reaffirmed that the risks were likely to manifest themselves in an abrupt and wide-ranging manner in light of the progress in the financial and economic globalization and information and communications technology.

Second, the financial system relying heavily on the originate-and-distribute model excels in distributing risks not only among banks but among different types of investors. The model thus enables the distribution of funds and risks in a more efficient way by making use of financial markets. To make the system function in an efficient and a stable manner, it is important to develop market infrastructure and thereby promote the effective functioning of market discipline. In that respect, two points are particularly noteworthy: first, financial institutions – intermediaries responsible for distributing risks in securitization – need to assess and manage risks; and second, a wide range of investors – agents assuming risks – need to collect information about risks and evaluate them accordingly.

In terms of risk assessment and management at financial institutions, they may well underestimate the risks related to warehousing structured credit products with little market liquidity and the risks related to providing contingent liquidity support to investment vehicles. Indeed, massive holdings of structured credit products were intended to help banks engage in the originate-and-distribute business proactively, and investment vehicles played an important role in doing such businesses. In short, proper risk assessment and management would play a crucial role in the course of expanding the originate-and-distribute business in the financial system.

In terms of collecting information and evaluating risks at investors, the originate-and-distribute business calls for further disclosure of information in order to ensure the effective functioning of market discipline, as seen in the conventional capital markets. It is also vital to establish more solid market infrastructure, including improvement in credit rating agencies. Recent experience based on the U.S. subprime mortgage problem leaves a number of items to be reflected such as whether or not investors understood well the meaning of credit ratings and the risks in the complex credit products. The framework of financial regulation and supervision needs to take account of incentive compatibility so as to let market discipline work and promote initiatives of financial institutions. In that

regard, financial supervisory authorities and central banks of countries continue to make efforts toward the stability of international financial systems. In fact, the Financial Stability Forum published an interim report to G7 Finance Ministers and Central Bank Governors in February 2008, proposing policy directions for strengthening the resilience in such areas as the underpinnings of the originate-and-distribute business model, the uses and role of credit ratings, and the market transparency (e.g., the disclosure requirement under Pillar 3 of Basel II).

Finally, from a macroprudential perspective, it is important to assess potential imbalances jeopardizing the stability of the financial system on a real-time basis. With hindsight, such imbalances were growing in the stable macroeconomic environment and continued accommodative monetary conditions in the global economy. While it still remains a challenge to gauge and address those imbalances in a timely manner, the stability of the financial system needs to be constantly assessed in terms of its sustainability.

I. Business Conditions of Japanese Banks

A. Developments in Banks' Profits

1. Net income

Net income in the first half of fiscal 2007 declined from the first half of the previous year for both the major banks and the regional banks (Chart 1-1). The net income for the major banks declined by half, a sharp contrast, compared with the first half of the previous year when they recorded an all-time high on a biannual basis for two consecutive years. The regional banks declined, albeit slightly, for two consecutive years since the first half of fiscal 2005 when they recorded an all-time high on a biannual basis.

Looking at the factors for fluctuations in net income, although net interest income for both the major banks and the regional banks increased marginally, the increase in credit costs and general and administrative expenses pushed down net income (Chart 1-2). Especially for the major banks, credit costs that marked below zero in the first half of fiscal 2006 rebounded and increased, pushing down net income. The negative credit costs in the first half of fiscal 2006 were due to reversals in loan-loss allowances which exceeded the sum of provisions and write-offs.

The financial statements for the first half of fiscal 2007 are marked by the two types of losses in loans and investments. First is the losses incurred by the structured credit products related with the U.S. subprime mortgage problem. While the losses including unrealized losses were still limited in the first half of fiscal 2007, they increased as the U.S. subprime mortgage problem became serious. Consequently, those losses are likely to further push down net income in the entire fiscal 2007 for the major banks, although the losses are projected to be limited to a size that

Chart 1-1: Net Income/Loss

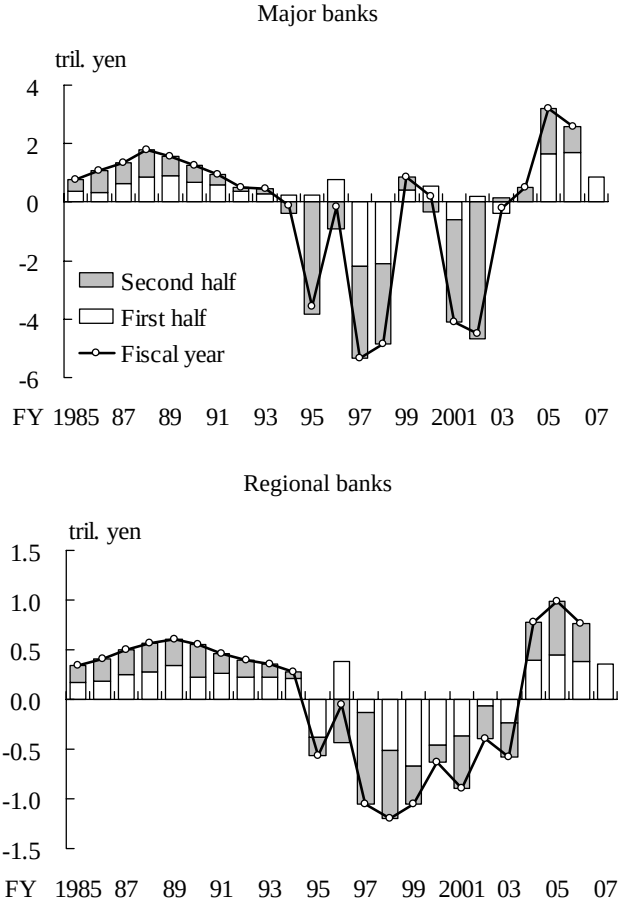
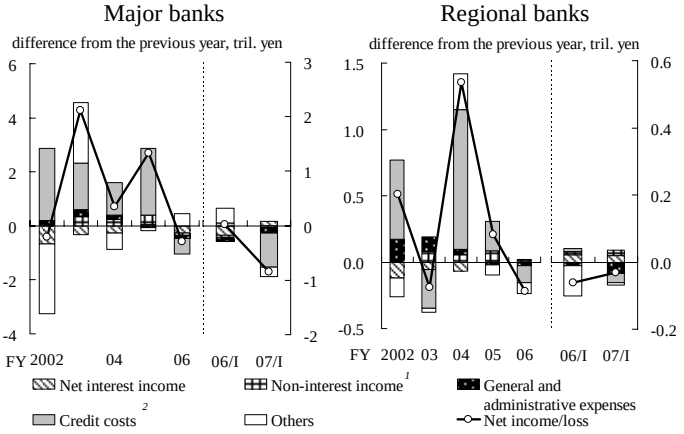


Chart 1-2: Contributions to Changes in Net Income/Loss



Notes: *1*. Non-interest income = net fees and commissions + trading profits + other operating profits - net realized bond-related gains/losses.
2. Credit costs = loan-loss allowances + write offs - recoveries of written-off claims.

could be absorbed by the major banks' current profit levels and capital strength (see Box 2 for the major banks' loans and investments related with the U.S. subprime mortgage, and see Box 3 for the valuation of structured credit products). Second is the losses in loans and investments (credit costs and losses on write-down of stocks) towards consumer finance companies, consumer credit companies, and credit card companies that incurred following the second half of fiscal 2006 (see Box 4 for business conditions of nonbank finance companies).

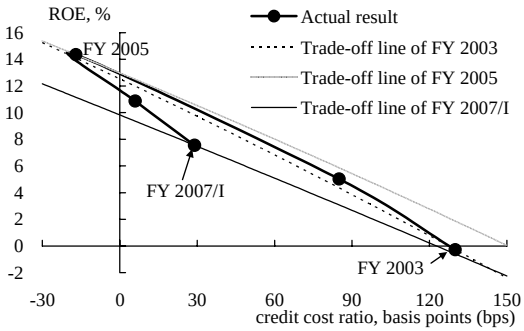
2. Core return on equity

The degree of improvement in banks' profitability can be seen in the core return on equity (core ROE), which is calculated by excluding the impact of volatile components such as credit costs, gains/losses on securities, and corporate income tax from net income (see Chart 1-3). The core ROE moved to the upper left of the chart from fiscal 2003 to fiscal 2005, reflecting a decline in credit cost ratios, but due to its rise, the core ROE moved to the lower right of the chart in fiscal 2006 and in the first half of fiscal 2007. In other words, while the downward-sloping relationship between the core ROE and credit cost ratios remained almost unchanged, the core ROE moved up and down in response to changes in credit cost ratios. That indicates that the fluctuations in the banks' profits for the past several years mainly reflected the fluctuations in the credit cost ratios and that improvement in core profitability remained stagnant.

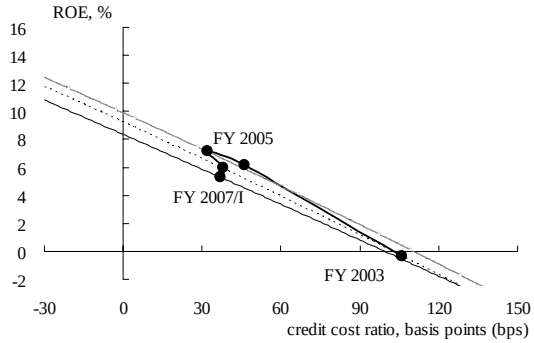
Moreover, the core ROE for each bank is calculated by fixing credit cost ratios at 30 basis points, which corresponds approximately to the expected average credit cost ratio under economic growth of around 2 percent (Chart 1-4, see the September 2007 issue of the

Chart 1-3: Credit Cost Ratios and Core ROE of Banks[1,2]

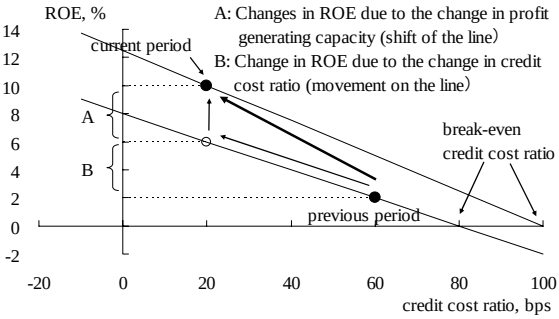
Major banks



Regional banks

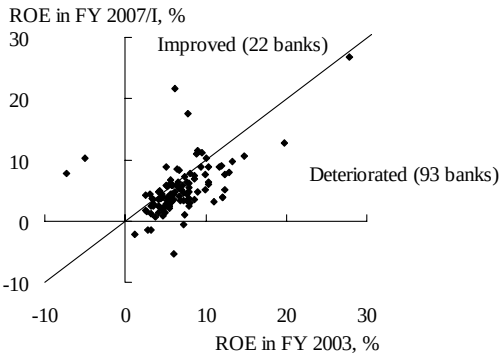


Fluctuation of Core ROE (Illustration)



Notes: *1.* ROE of the first half of fiscal 2007 is annualized.
2. See Hattori, Masazumi, Joji Ide, and Yasuo Miyake, "Bank Profits in Japan from the Perspective of ROE Analysis," Bank of Japan Review 2007-E-3, 2007, for details.

Chart 1-4: Banks' Core ROEs[1,2,3,4]



Notes: *1.* Credit cost ratio is assumed to be 30 basis points.
2. The regional banks which experienced mergers since fiscal 2003 fall outside this chart.
3. The bank that has liabilities exceeding its assets falls outside this chart.
4. When credit cost ratio is assumed to be 40 basis points, the distribution of core ROEs is similar to the above.

Financial System Report). The result shows that the level of the core ROE for the first half of fiscal 2007 varied considerably from bank to bank, and many banks did not improve their core ROEs, compared with the level in fiscal 2003.

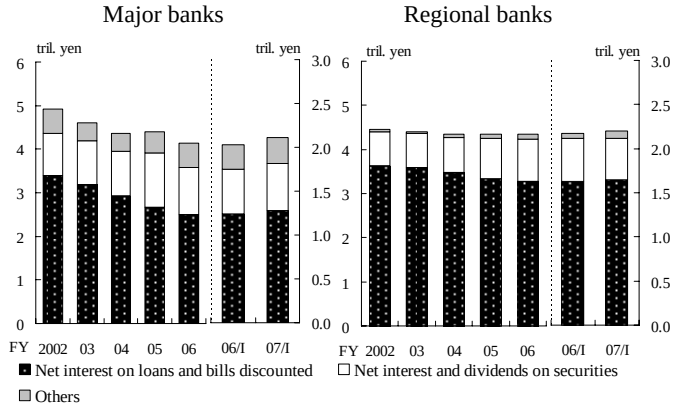
The above analysis suggests that the improvement in core profitability remained sluggish both for the major banks and the regional banks. Although the declining net interest income bottomed out, non-interest income increased slowly, and general and administrative expenses took an upturn. For Japanese banks, improving the core profitability has remained an important challenge (see Box 5 for the overview of Japan Post Bank established through privatization and split-up of Japan Post in October 2007. In this *Report*, Japan Post Bank is neither included in the major banks nor in the regional banks. Also see Box 6 for profit differentials in the regional banking sector).

B. Developments in the Components of Profits

Next, the developments in the components of profits will be examined more closely.

The net interest income of the major banks and the regional banks had in recent years been showing a declining trend due to a decrease in net interest income on loans (Chart 1-5). For the first half of fiscal 2007, however, both the major banks and the regional banks showed a slight increase. The increase in net interest income on loans was attributable to the expansion of total interest margins on loans (i.e., the interest rate on lending minus the interest rate on interest-bearing liabilities) for the major banks and an increase in loans outstanding for the regional banks. Net interest income and dividends on securities had been gradually increasing.

Chart 1-5: Net Interest Income[1]



Note: *1*. The composition of interest expenses is calculated assuming that the ratio of each component to total expenses is the same as the ratio of interest on loans and bills discounted, interest and dividends on securities, and other interest income to total interest income.

Below, to analyze net interest income on loans – the largest component in net income – in more detail, it is divided into two components: interest margins and the volume of loans. Then the overall gains and losses on securities, non-interest income, and general and administrative expenses are analyzed in sequence.

1. Interest margins on loans

First, interest margins on loans (Chart 1-6), which had been on a diminishing trend in the past few years, turned upward in the second half of fiscal 2006 for the major banks, and continued to narrow, albeit by a small amount, for the regional banks. The interest rate on interest-bearing liabilities turned upward in the first half of fiscal 2006 for both the major banks and the regional banks. The interest rate on lending turned upward in the first half of fiscal 2006 for the major banks. For the regional banks, it turned upward in the second half of fiscal 2006, a half year behind the major banks.

Next, for each bank, the changes in interest margins on loans are divided into changes in interest rates on lending and changes in interest rates on interest-bearing liabilities (Chart 1-7). While changes in interest rates on interest-bearing liabilities concentrated around 10 basis points for both the major banks and the regional banks, changes in interest rates on loans varied considerably. That contrast shows that changes in interest rates on loans strongly affect the degree of improvement in interest margins on loans. Notably, many of the major banks showed an improvement in interest margins on loans (those above the 45 degrees line) whereas the regional banks lagged in raising interest rates on loans.

Meanwhile, interest rate spreads on deposits (i.e., market interest rates minus interest rates on deposits)

Chart 1-6: Total Interest Margin on Domestic Loans

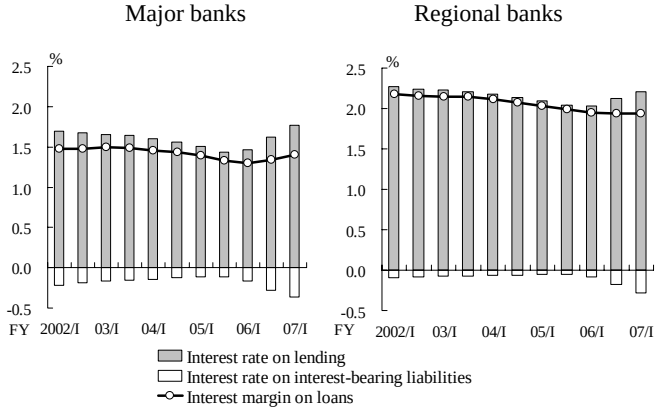
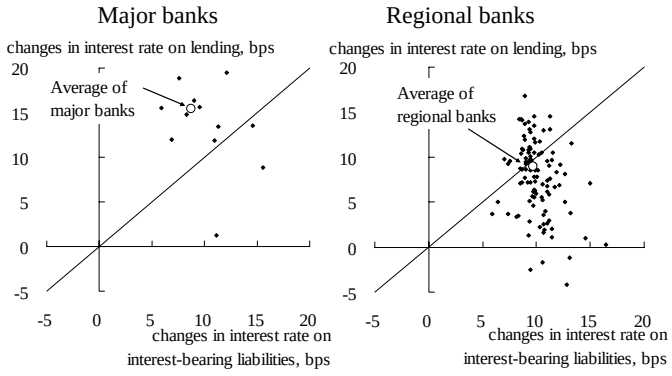
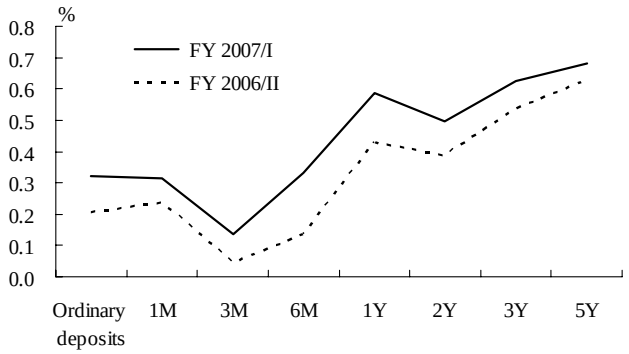


Chart 1-7: Decomposition of Changes in Interest Margins on Domestic Loans[1,2,3]



Notes: *1*. Changes are between the first half of fiscal 2007 and the second half of fiscal 2006.
2. Observations above the 45-degree line indicate that the interest margin on loans improved in the first half of fiscal 2007 when compared with the second half of fiscal 2006.
3. The observation for one of the banks falls outside this chart (i.e., below -5 basis points of changes in interest rate on lending).

Chart 1-8: Interest Rate Spreads on Deposits[1,2]



Notes: *1*. Interest rate spread on deposits = market interest rate - deposit rate.
2. LIBOR data are used for market interest rate for 1-month to 1-year maturity, and the swap rate data for 2-year maturity or more. The overnight call rate is used for market interest rate for ordinary deposits.
Sources: Bloomberg; Bank of Japan, "Average Interest Rates on Time Deposits by Term (New Receipts)."

had continued to widen since March 2007 (Chart 1-8). That reflects the fact that the rise in market interest rates is larger than that in interest rates on deposits, as seen during the periods of rising interest rates in the past. Looking more closely, however, the interest rate spreads on 3-month time deposits remained relatively small as a result of offering preferential interest rates, while those on 1-year or longer time deposits were large.

Chart 1-9: Year-on-Year Change of Loans in Domestic and International Sectors

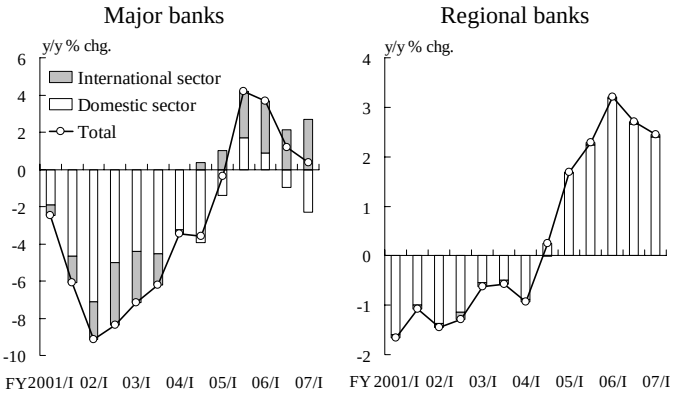
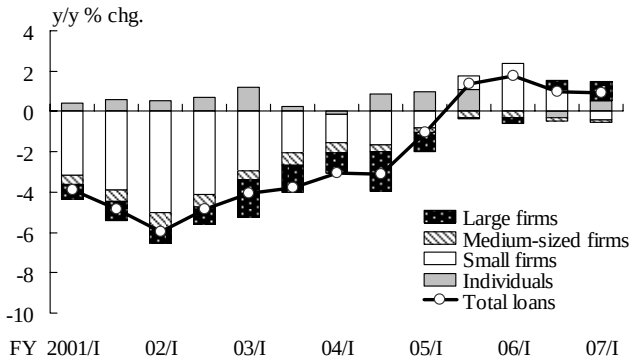
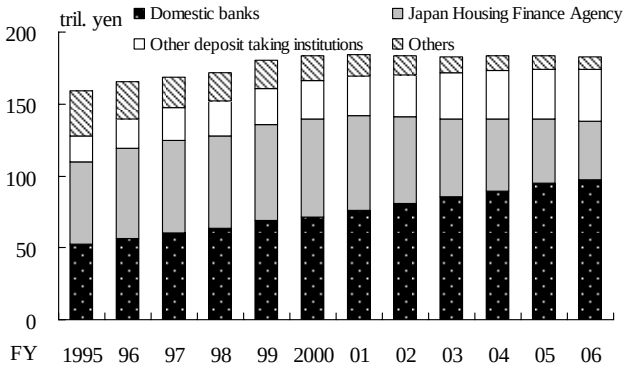


Chart 1-10: Bank Loans Outstanding by Type of Borrower



Source: Bank of Japan, "Loans and Discounts Outstanding by Sector."

Chart 1-11: Housing Loans Outstanding



Source: Japan Housing Finance Agency.

2. Bank loans

Outstanding bank loans (Chart 1-9) continued to increase both for the major banks and the regional banks, although the pace of increase slowed. For the major banks, the decrease in bank loans to the domestic sector was particularly prominent, which was offset by the increase in bank loans to the international sector.

Next, looking at the contribution of various types of loans to the domestic sector (Chart 1-10), the rate of changes in loans to small firms turned positive in the second half of fiscal 2005, while that of changes in loans to individuals remained positive. In the first half of fiscal 2007, loans to small firms turned negative, while loans to large firms increased at a higher rate than the previous periods. Against that background, the rate of increase in outstanding bank loans fell slightly in the first half of fiscal 2007.

In the last few years, the pace of increase in housing loans, the driving force behind the increase in loans to individuals, had been slowing (Chart 1-11). Bank loans to individuals had experienced strong growth due to the replacement of loans from the Japan Housing Finance Agency (formerly the Government Housing Loan Corporation of Japan), but such replacement appeared to be coming to a halt.

With respect to the regional allocation of loans, the ratio of loans in the three major metropolitan areas to overall loans was more or less unchanged at the major banks, following the decline from 2003 to 2005, and the ratio was rising at the regional banks reflecting involvement in the syndicated loan market (Chart 1-12).

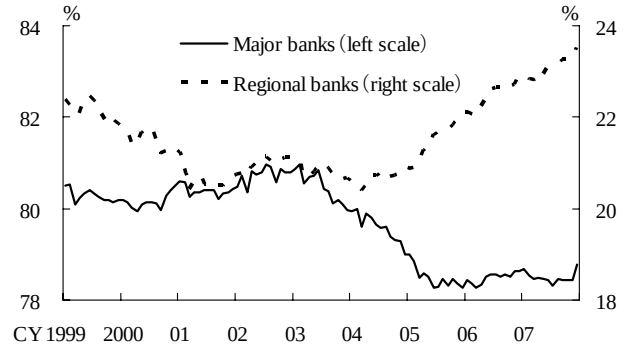
3. Overall gains and losses on securities

In the first half of fiscal 2007, both the major banks and the regional banks recorded overall losses on securities holdings (Chart 1-13). The fall in the stock prices during the first half of fiscal 2007 pushed down unrealized gains on stocks, while overall gains/losses on bonds remained almost unchanged.

Looking at the unrealized gains/losses on securities at the end of the first half of fiscal 2007, unrealized gains for domestic stocks (excluding those for affiliate companies), which account for a large share of unrealized gains, declined substantially for both the major banks and the regional banks (Chart 1-14). For the major banks, unrealized gains on securities of affiliated companies, which account for the second largest share after domestic stocks, decreased due to a fall in the stock prices of consumer finance companies, consumer credit companies, and credit card companies within the same financial group.

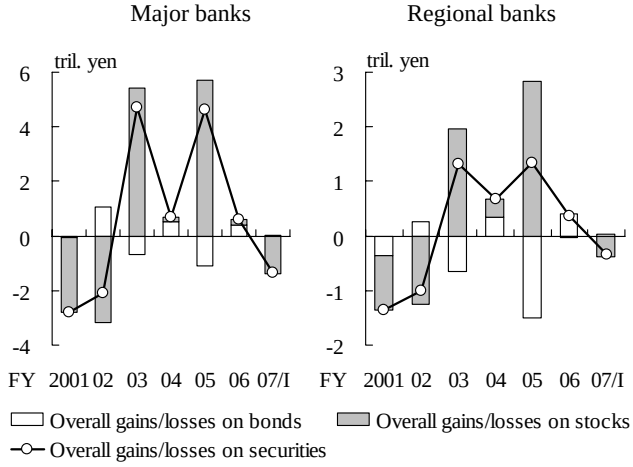
Meanwhile, unrealized gains/losses on foreign securities and others remained marginal on the whole, and therefore, the influence of unrealized losses on structured credit products included in the above items appeared to be limited. Risks of alternative investments including structured credit products are analyzed thoroughly in the next section.

Chart 1-12: Ratio of Loans Outstanding in the Three Major Metropolitan Areas (Tokyo, Osaka, and Aichi) to Overall Loans Outstanding[1]



Note: *1.* Figures are based on the Bank of Japan's "Table of Deposits, Vault Cash, and Loans and Discounts Outstanding of Domestically Licensed Banks by Prefecture."

Chart 1-13: Overall Gains/Losses on Securities[1]



Note: *1.* The overall gains/losses on securities are changes in the sum of net realized securities gains/losses and changes in net unrealized securities gains/losses when compared with previous half-year.

Chart 1-14: Unrealized Gains/Losses on Securities

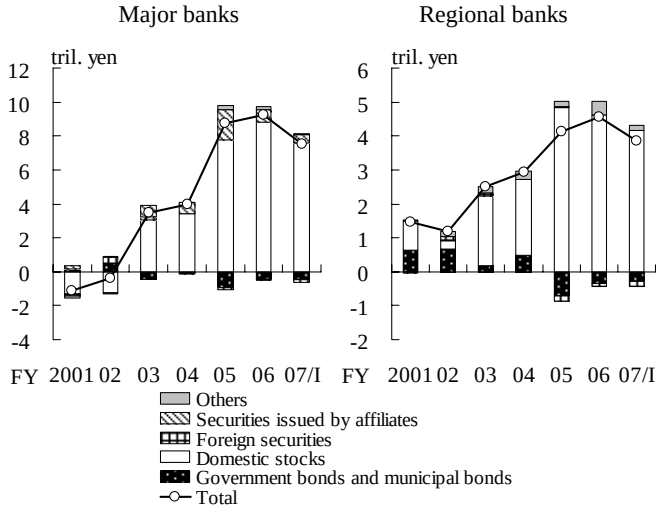
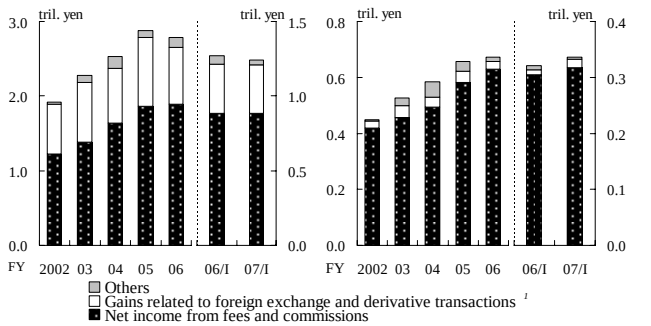
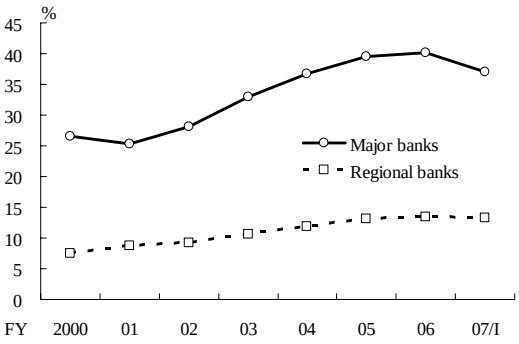


Chart 1-15: Composition of Non-Interest Income



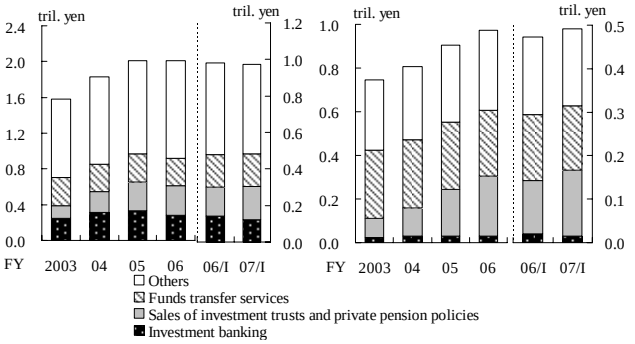
Note: *1*. Figures are profits from selected items in trading profits and other operating profits.

Chart 1-16: Ratios of Non-Interest Income to Gross Profits[1]



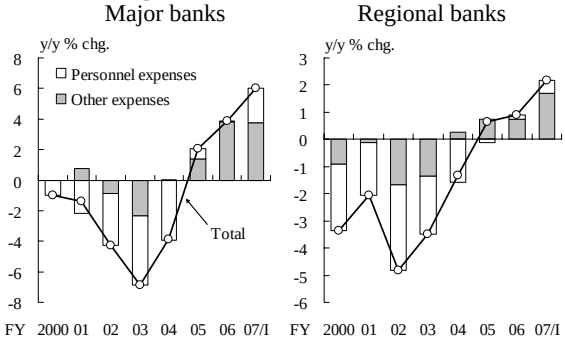
Note: *1*. Ratio of non-interest income to gross profits = non-interest income / (net interest income + non-interest income).

Chart 1-17: Composition of Income from Fees and Commissions[1]



Note: *1*. Figures are gross income from fees and commissions of domestic operations.

Chart 1-18: Year-on-Year Change of General and Administrative Expenses



4. Non-interest income

Non-interest income had increased since 2000, but had been sluggish in the past several years (Chart 1-15). For the major banks, overall non-interest income declined for two consecutive years, reflecting a slight decrease in net income from fees and commissions and a fall in profits on foreign exchange and derivative transactions. The regional banks maintained an increase as a whole, but its growth rate slowed down.

As a result, the non-interest income ratio for the major banks fell and the one for the regional banks remained almost flat, while net interest income increased for both the major banks and the regional banks (Chart 1-16).

Looking into the banks' income from fees and commissions – the largest component in non-interest income (Chart 1-17) –, for the major banks, the fees related to investment banking such as arrangement of syndicated loans and M&A decreased, and the income from the sales of investment trusts and private pension policies showed somewhat a sluggish movement. For the regional banks, the increase in the income from the sales of investment trusts and pension policies underpinned the rise in their income from fees and commissions.

5. General and administrative expenses

Finally, general and administrative expenses for both the major banks and the regional banks had increasingly shown an upward trend because personnel expenses began to increase in addition to other expenses (Chart 1-18). Such an increase in the general and administrative expenses seems to reflect financial institutions' step toward forward-looking resource allocation such as an introduction of a new data processing system, recruitment of new employees,

active investments in the new business sector, and reconstruction of the overseas sector. Looking ahead, it is important that such forward-looking resource allocation leads steadily to strengthening banks' profitability.

C. Risks

1. Credit risk

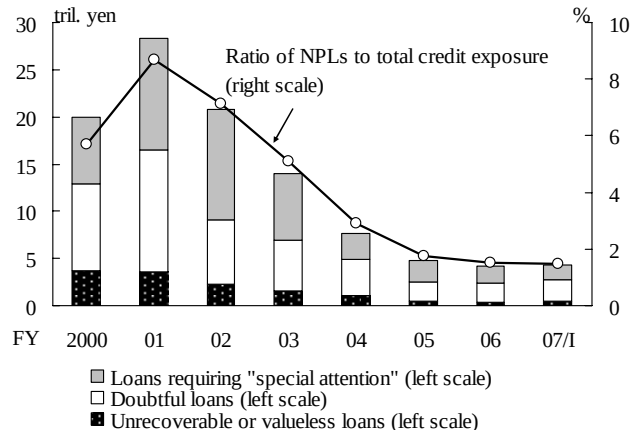
Banks' nonperforming loans (NPLs) were steadily decreasing with the continued expansion of Japan's economy. The ratio of NPLs to total credit exposure at the major banks declined to 1.5 percent at the end of the first half of fiscal 2007, down from a peak of 8.7 percent at the end of fiscal 2001. The ratio at the regional banks also declined to 4.0 percent at the end of the first half of fiscal 2007, compared with 8.1 percent at the end of fiscal 2001 (Chart 1-19).

The NPL ratio at the regional banks stopped declining at a higher level than the one at the major banks. Among the regional banks, the NPL ratios still remained high at some banks (Chart 1-20).

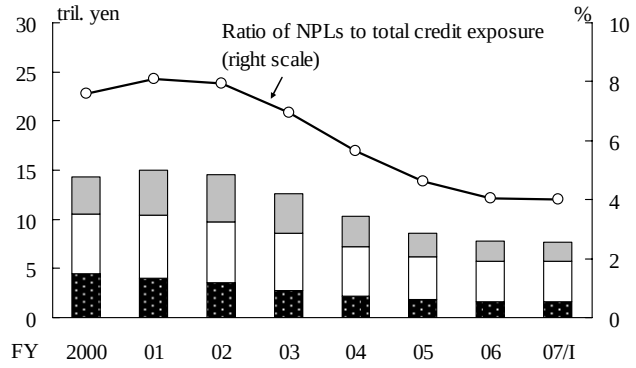
The business environment including the customer base and the business relationship differs between the major banks and the regional banks. Therefore, a simple comparison cannot be made as to the level of NPL ratios and the pace of NPL disposals. Nevertheless, the ratio of unrecoverable or valueless loans and doubtful loans to total NPLs was still at a relatively high level at the regional banks, and the pace of the removal of NPLs from banks' balance sheet at the regional banks was slower than at the major banks. In order to improve the profitability of loans, the banks need to adequately evaluate the risk-return balances of loans, and through reallocating the loan portfolios, they need to step up their efforts to dispose of NPLs.

Chart 1-19: NPL Ratios and the Amount of NPLs[1,2]

Major banks

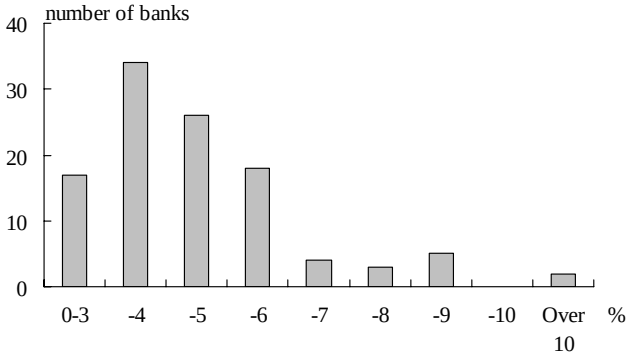


Regional banks



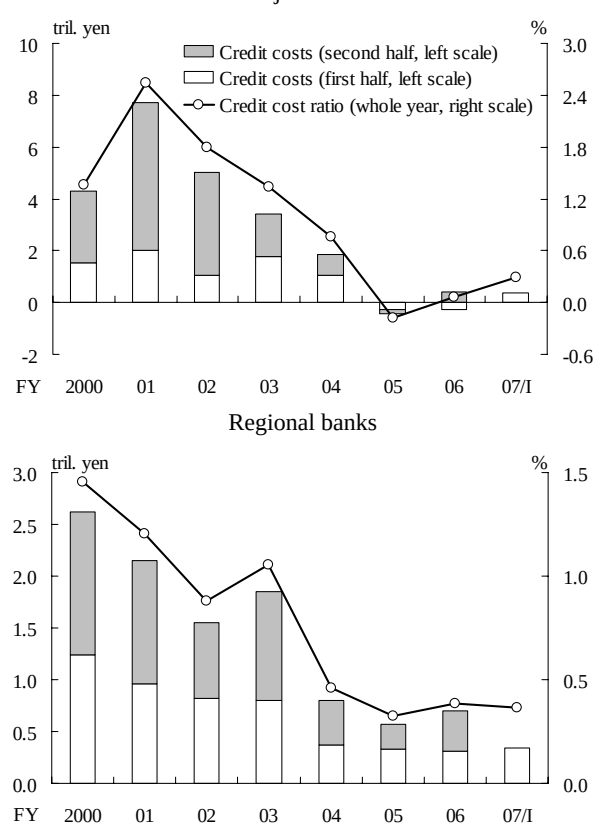
Notes: *1.* NPLs disclosed under the Financial Reconstruction Law.
2. Figures include NPLs which are transferred to subsidiary companies for corporate revitalization.

Chart 1-20: NPL Ratios at the Regional Banks[1]



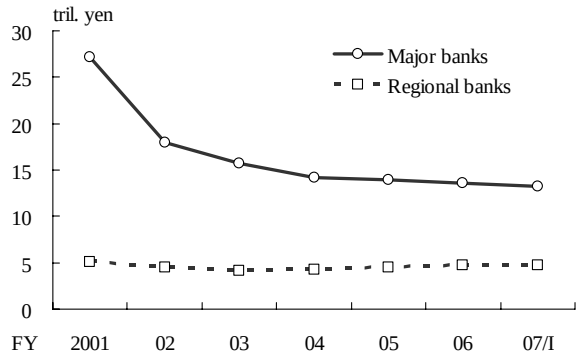
Note: *1.* As of the end of the first half of fiscal 2007.

Chart 1-21: Credit Costs and Credit Cost Ratios[1,2,3]



Notes: *1*. Credit cost ratio = credit costs/total loans outstanding.
2. From fiscal 2000 to 2005, figures include credit costs of subsidiary companies for corporate revitalization.
3. Figures for credit cost ratios in the first half of fiscal 2007 are annualized.

Chart 1-22: Banks' Stockholdings[1,2]



Notes: *1*. Figures are based on acquisition prices.
2. On a consolidated basis.

Next, the credit cost ratio at the major banks rose from fiscal 2006, while it remained nearly unchanged for the regional banks (Chart 1-21, the major banks' credit cost ratio [annualized basis] rose from 0.06 percent in fiscal 2006 to 0.29 percent in the first half of fiscal 2007, and the regional banks' credit cost ratio declined from 0.38 percent to 0.37 percent during the same period). In the September 2007 issue of the *Financial System Report*, the forecast for the credit cost ratio was approximately 0.2 percent to 0.4 percent at the major banks with GDP growth rate of around 2 percent. The level of the credit cost ratio in the first half of fiscal 2007 was at large within that forecast range.

The credit cost ratio at the major banks rose sharply from the first half of the previous year partly because the reversals of provisions for loan losses in the first half of fiscal 2006 (the credit cost ratio was minus 0.22 percent) diminished. The rise in the credit cost ratio was also attributable to the provisions for loan losses to consumer finance companies, consumer credit companies, and credit card companies. From the second half of fiscal 2006, the credit cost ratio turned positive at the major banks, and for fiscal 2006 as a whole, it became positive (0.06 percent).

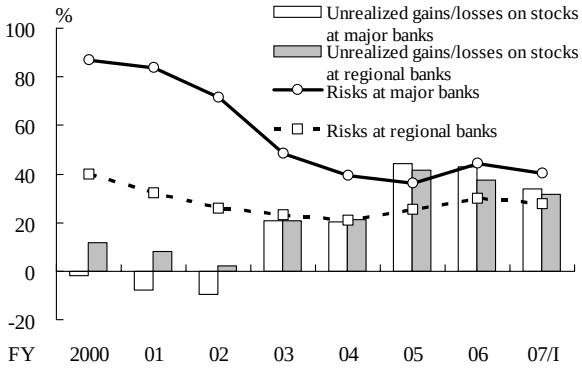
2. Market risk associated with stockholdings

Banks' stockholdings based on acquisition prices remained almost unchanged (Chart 1-22). Market risk associated with stockholdings declined slightly during the first half of fiscal 2007, reflecting declines in banks' stockholdings based on market prices. As a result, the ratio of market risk associated with stockholdings to banks' core capital (Tier I) continued to hover around 40 percent for the major banks and little less than 30 percent for the regional banks (Chart 1-23).

As seen in the previous section, however, unrealized gains on stockholdings declined due to a fall in stock prices. For the major banks and the regional banks, the decline in unrealized gains exceeded the decline in market risk associated with stockholdings.

As pointed out in the September 2007 issue of the *Financial System Report*, it is important to properly analyze and evaluate risk-return balances of banks' stockholdings.

Chart 1-23: Ratios of Market Risk Associated with Banks' Stockholdings to Tier I Capital[1]

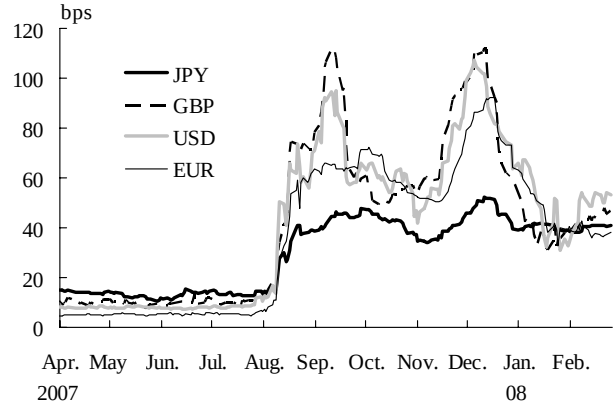


Note: *1*. Bank of Japan estimation. As measured by 1-year, 99 percent VaR (using TOPIX as a risk factor).

3. Funding liquidity risk

The emergence of "funding liquidity risk" – the risk that banks face difficulties in meeting their liquidity needs in the money market – on a global basis is one of the characteristics of the global financial market turmoil stemming from the U.S. subprime mortgage problem (see Box 1 on how such risks manifested themselves). The spread between interbank interest rates on term instruments and the overnight index swap (hereafter LIBOR-OIS spread) – one of the indicators of liquidity premiums for financial institutions – widened sharply for major currencies from August 2007 (Chart 1-24, see Box 7 for details). By contrast, the LIBOR-OIS spread of the Japanese yen remained relatively stable.

Chart 1-24: Three-Month Spreads between LIBOR and OIS

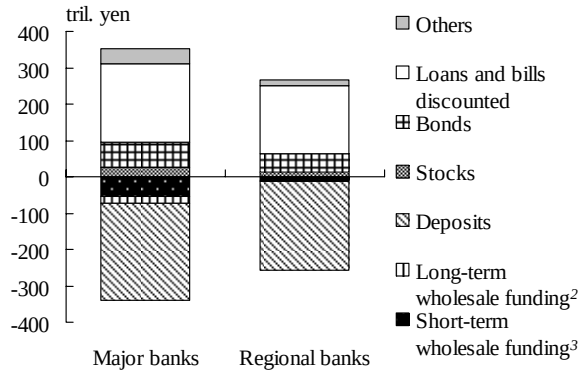


Sources: Bloomberg; Meitan Tradition.

While the situation deteriorated, a bank run on Northern Rock in the United Kingdom was an example of the serious funding liquidity problem. The Northern Rock's balance sheet was structured in a way that the bulk of the long-term assets such as housing loans was funded with the short-term instruments in the financial market. As the short-term money market became unstable, it became increasingly evident that Northern Rock was vulnerable to funding liquidity risk.

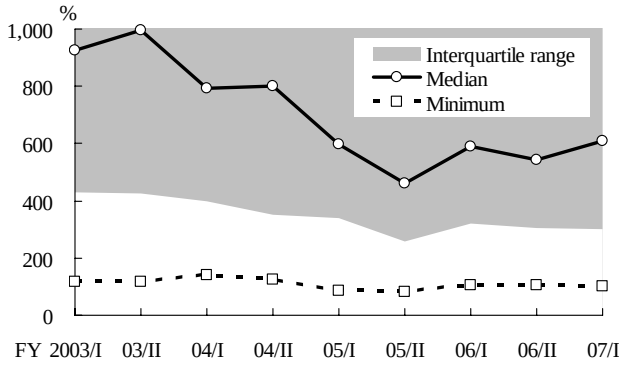
In Japan, by contrast, the liabilities of Japanese banks were structured in a way that deposits account for most

Chart 1-25: Domestic Interest-Bearing Assets and Liabilities[1]



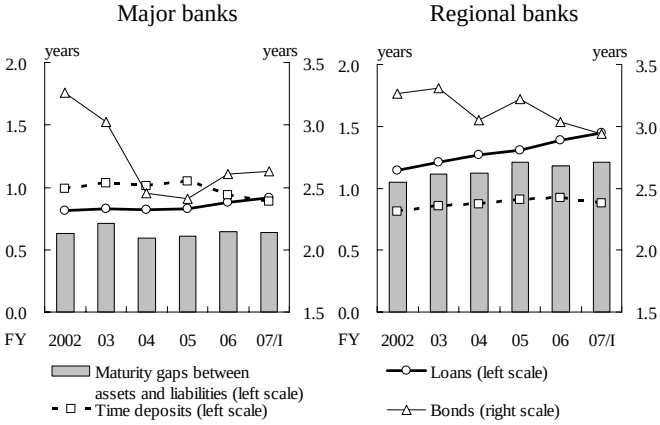
Notes: *1.* As of the end of the first half of fiscal 2007.
2. Long-term wholesale funding = bonds and notes + borrowed money (excluding borrowed money from the Bank of Japan).
3. Short-term wholesale funding = CDs + call money + payables under repurchase agreements + payables under securities lending transactions + short-term corporate bonds + borrowed money from the Bank of Japan.

Chart 1-26: Ratios of Banks' Funding Capacity to Their Market Borrowing[1,2,3,4]



Notes: *1.* Ratios of banks' funding capacity to their market borrowing = (Market lending up to three months + reserve deposits + government bond holding)/market borrowing up to three months
2. Ratios of banks' funding capacity to their market borrowing are sorted out in ascending order. The minimum, 25th, and 50th percentiles (median) are shown.
3. Government bond holding is adjusted according to the ratio of the collateral value to the face value of the government bonds accepted by the Bank of Japan at the end of September 2007.
4. Banks consolidated by another bank or one holding company are summed up to one banking group. Data exclude banks with no market borrowing.

Chart 1-27: Average Maturities of Banks' Assets and Liabilities[1]



Note: *1.* Bank of Japan estimation.

of the liabilities and the share of short-term funding from the market is small (Chart 1-25).

In that context, how banks' funding needs are met by the central bank's collateralized loans and surplus funds under a stress scenario, where banks cannot raise funds from the market at all in a short period, is estimated (Chart 1-26). The result shows that the Japanese banks as a whole had ample funding capacity enough to substitute for all the money market financing. In addition, the Bank of Japan daily checks the funding liquidity risk of the Japanese banks through monitoring.

In sum, the funding liquidity risk of the Japanese banks as a whole was limited even in the midst of deterioration in the overseas money markets as the U.S. subprime mortgage problem worsened.

4. Interest rate risk

Next, interest rate risk in the banking books of the major banks and the regional banks is examined.

First, the average length of time for the renewal of the interest rates (hereafter, average maturity) of major items in the banking books is examined (Chart 1-27). On the one hand, the average maturity of bonds was shortening for the regional banks, and the average maturity of bonds of the major banks was even shorter than that of the regional banks. On the other hand, the average maturity of loans was lengthening especially for the regional banks. Against such a background, the maturity gap between assets and liabilities remained almost unchanged for both the major banks and the regional banks. For the regional banks it was 1.21 years, double that of the major banks (0.64 years).

The ratio of interest rate risk relative to banks' Tier I capital (Chart 1-28 [1]) was at a restrained level of 10

percent for the major banks, while it was at a relatively high level of 24 percent for the regional banks, reflecting the aforementioned difference in the maturity gap between assets and liabilities.

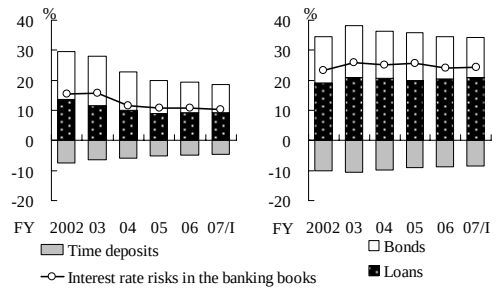
Decomposing changes in the ratio of interest rate risk relative to banks' Tier I capital from the previous period (Chart 1-28 [2]), the increase in Tier I capital and the decrease in interest rate risk of bonds were both pushing down the overall ratio, whereas by contrast, the increase in interest rate risk of loans was pushing up the overall ratio. The contribution of interest rate risk of loans to increase in the overall interest rate risk was particularly large for the regional banks.

Looking at each regional bank's loan portfolio, the distribution of its average maturity showed a tendency for longer maturity (Chart 1-29). That was partly due to an increase in housing loans with medium- and long-term fixed interest rates in recent years. In that light, some banks shifted to variable-rate housing loans in order to restrain the rise in its average maturity. As such, the impact of a rise in market interest rates on banks' net interest income is likely to vary further from bank to bank.

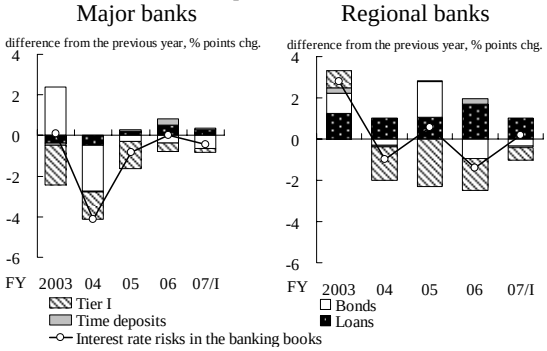
In that context, the average maturity of loans and the change in interest rates on loans during the first half of fiscal 2007 were negatively correlated (Chart 1-30). In other words, during the period of market rate rises, banks with longer average maturity of loan portfolios had more difficulty reflecting market rate rises on their loans; their profits were thus more likely to be squeezed. That is examined thoroughly in Chapter III where the results of interest rate risk simulations are shown.

Chart 1-28: Interest Rate Risks in the Banking Books (100bpv)[1,2]

[1] Ratios of the Interest Rate Risks to Banks' Tier I Capital

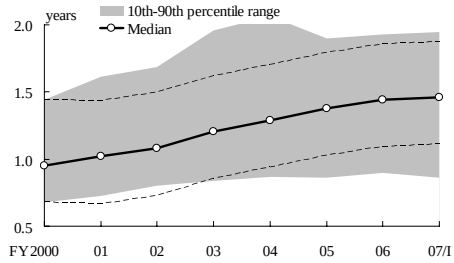


[2] Contributions to Changes in the Ratios of the Interest Rate Risks to Banks' Tier I Capital



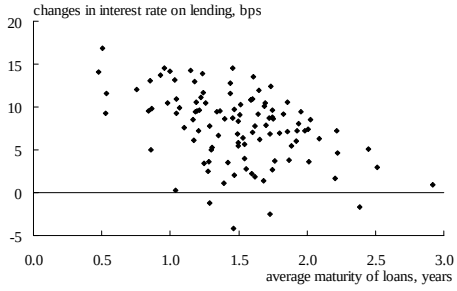
Notes: *1*. The risks are estimated based on the assumption that market interest rates rise by 100 basis points at all maturities.
2. Bank of Japan estimation.

Chart 1-29: Regional Banks' Average Maturity of Loans[1,2,3]



Notes: *1*. Bank of Japan estimation.
2. Average maturity of loans for the regional banks is sorted out in ascending order and 10th percentile, 50th percentile (median), and 90th percentile are shown.
3. Dashed lines indicate the range between the 10th percentile and the 90th percentile around the 50th percentile (median) in fiscal 2000.

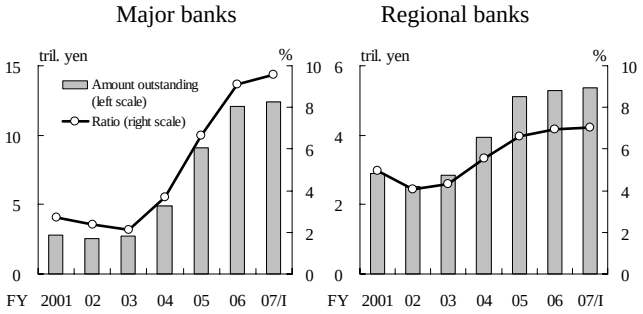
Chart 1-30: Regional Banks' Average Maturity of Loans and the Changes in Interest Rate on Lending[1,2,3]



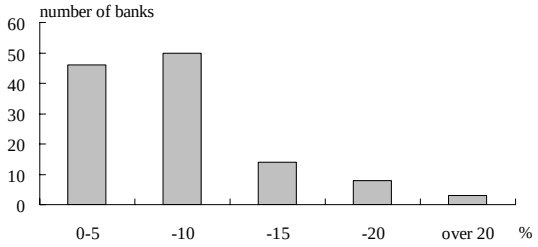
Notes: *1*. Bank of Japan estimation.
2. As of the end of the first half of fiscal 2007. The changes in interest rate are between the first half of fiscal 2007 and the second half of fiscal 2006.
3. The observation for one of the banks falls outside the chart (i.e., below -5 basis points of changes in interest rates on lending).

Chart 1-31: Alternative Investments

[1] "Other Securities[1]","Monetary Claims Bought[2]" and Ratios to Total Securities[3]



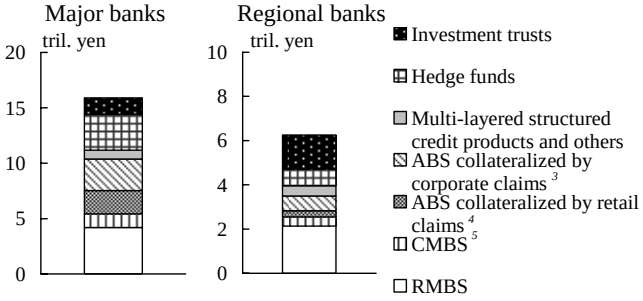
[2] Ratios to Total Securities



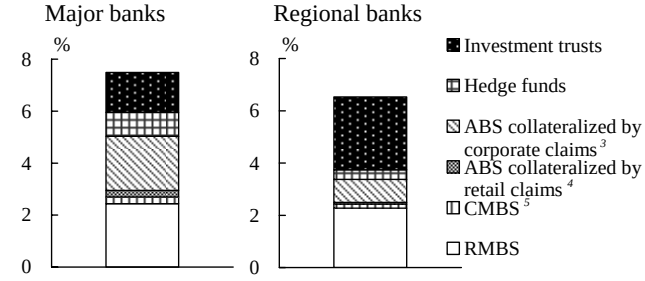
Notes: *1.* "Other securities" refer to banks' holdings of securities other than government bonds, corporate bonds, and stocks.
2. "Monetary claims bought" include beneficial interests in trust.
3. Total securities include monetary claims bought.

Chart 1-32: Banks' Alternative Investments[1,2]

[1] Portfolios



[2] Ratios of Risks to Tier I Capital[6]



Notes: *1.* As of the end of the first half of fiscal 2007.
2. The definition of alternative investments here is different from that of Chart 1-31. For example, some RMBS are not included in Chart 1-31.
3. Lease claims for example.
4. Credit card claims for example.
5. Commercial mortgage-backed securities.
6. Bank of Japan estimation. As measured by 1-year, 99 percent VaR (using Lehman indices, Dow Jones hedge fund indices and TOPIX as risk factors). The composition of multi-layered structured credit products and others is assumed to be the same as that of the other part of securitization portfolio.

5. Risk in alternative investments

Finally, "alternative investments" such as investments in structured products, credit products, and hedge funds – the financial products that have risk-return profiles different from the traditional assets – are considered. When the sum of "other securities" and "monetary claims bought" in banks' balance sheet is used to estimate the size of alternative investments, its outstanding amount and share in the total securities and monetary claims bought showed an increasing trend, though its growing pace was recently slowing (Chart 1-31 [1]). Such alternative investments accounted for 9.6 percent of the total balance of securities and monetary claims bought at the major banks and 7.0 percent at the regional banks. It should be noted that there were some banks that had higher shares of alternative investments (Chart 1-31 [2]).

Looking at the composition of alternative investments, residential mortgage-backed securities (RMBS), which included those originated in Japan, had the largest share both for the major banks and the regional banks at the end of the first half of fiscal 2007. Other than RMBS, investment in hedge funds was relatively large for the major banks and that in investment trusts was sizable for the regional banks (Chart 1-32 [1]).

Computing the ratio of risks in alternative investment portfolios to Tier I capital, it was 7.5 percent for the major banks and 6.5 percent for the regional banks in the first half of fiscal 2007 (Chart 1-32 [2]). That suggests that risks from alternative investment remain within manageable levels.

It should be noted that there are several caveats in interpreting the estimate. The estimate is as of the end of the first half of fiscal 2007 and any further development in market prices and volatility in alternative investment portfolios is not reflected in the

estimate. Furthermore, the coverage and availability of market data may not be sufficient, and there may be a risk not fully incorporated in the data.

As the U.S. subprime mortgage problem has made it clear that many types of alternative investments have a complex nature, it is important to evaluate and manage their risk-return profiles.

D. Banks' Capital

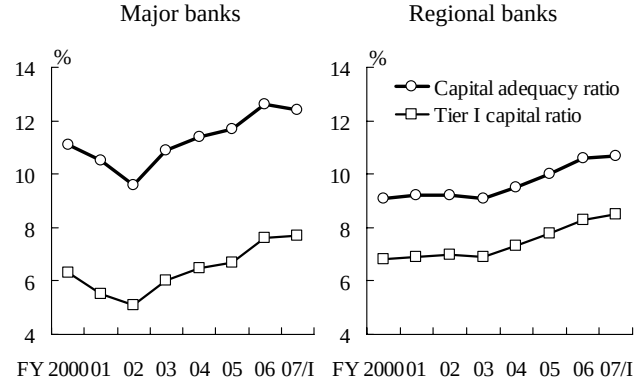
1. Banks' capital adequacy ratios and risk balance

Banks' capital adequacy ratios that continued to improve in recent years appeared to moderate at the end of the first half of fiscal 2007 for both the major banks and the regional banks (Chart 1-33). The core capital adequacy ratios (Tier I ratios) showed only a slight rise from the end of fiscal 2006 due to a decrease in the net income, marking 7.7 percent for the major banks and 8.5 percent for the regional banks. The capital adequacy ratios, whose numerator includes Tier II, Tier III, and deductions as well, decreased to 12.4 percent for the major banks. That reflects a fall in unrealized gains on stocks, since many of the major banks are subject to the international standards that allow unrealized gains of the securities to be included in Tier II capital. The regional banks remained almost unchanged at 10.7 percent.

When evaluating the amount of risks examined in the previous section relative to the level of banks' capital, the total risks borne by banks were restrained on the whole (Chart 1-34). For the major banks, market risk associated with stockholdings continued to be the largest share in the overall amount of risks while the amount of credit risk became smaller.

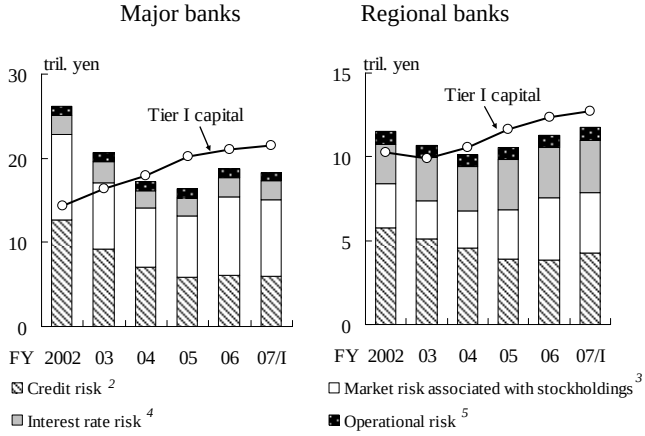
It remains an important challenge for banks to evaluate

Chart 1-33: Capital Adequacy Ratios and Tier I Capital Ratios[1]



Note: *1.* On a consolidated basis.

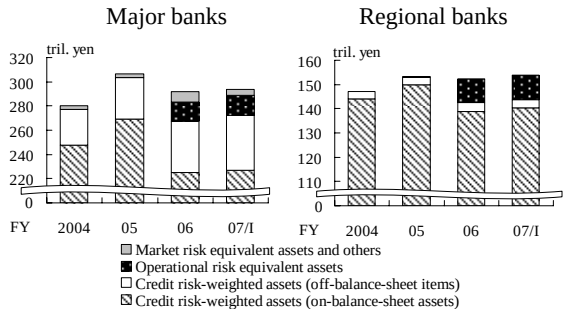
Chart 1-34: Overall Amount of Risk and Tier I Capital[1]



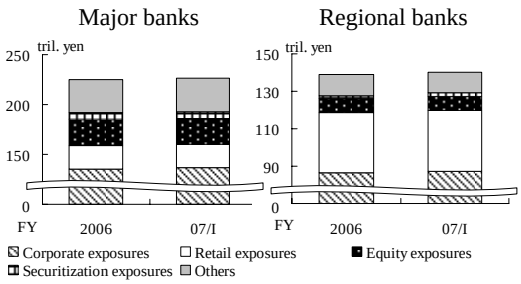
Notes: *1.* Bank of Japan estimation.
2. Credit risk is calculated by subtracting the expected loss (EL) from the maximum loss (EL + UL) based on the Basel II risk weight formulas with a confidence level of 99 percent. In the estimation, borrowers classified as requiring "special attention" or below (in terms of credit quality) are considered to be in a state of default.
3. Market risk associated with stockholdings is calculated by the same method as in Chart 1-23.
4. Interest rate risk is limited to yen-denominated bond portfolios and calculated by the same method as in Chart 1-28.
5. Operational risk is defined to be 15 percent of gross profits based on the Basel II basic indicator approach.

Chart 1-35: Banks' Risk-Weighted Assets[1]

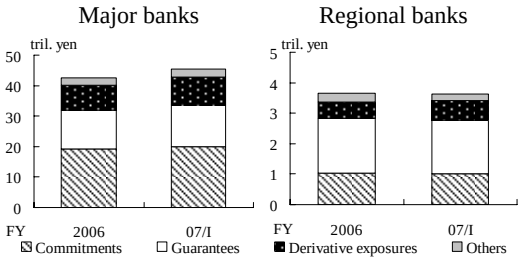
[1] Total Risk-Weighted Assets



[2] On-Balance-Sheet Assets

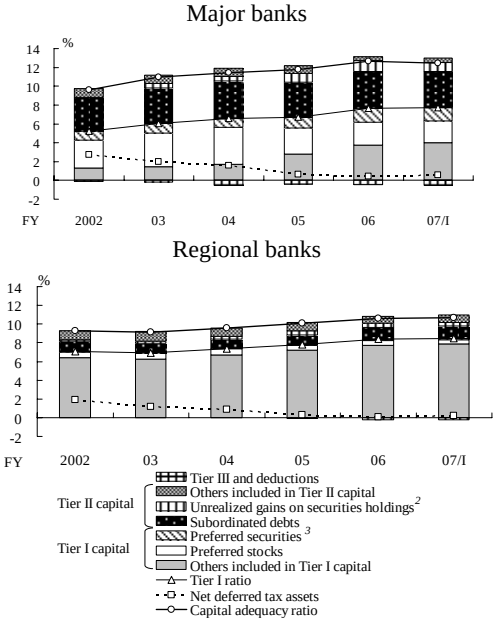


[3] Off-Balance-Sheet Items



Note: *1*. On a consolidated basis.

Chart 1-36: Composition of Capital[1]



Notes: *1*. Only the banks subject to international standards are allowed to include unrealized gains into Tier II. The proportion of unrealized gains is smaller at regional banks than at major banks, many of which are subject to international standards.

2. Issued by offshore operating companies and included in minority interests.

3. Issued by consolidated offshore special purpose companies.

the balance between the amount of total risks and their capital, thereby improving the efficiency of capital allocation.

2. Banks' risk-weighted assets and capital

Banks' risk-weighted assets and capital that constitute the capital adequacy ratio are decomposed. First, risk-weighted assets decreased at the end of fiscal 2006 due partly to the transition to Basel II, but increased at the end of the first half of fiscal 2007, mainly reflecting a rise in credit risk-weighted assets (Chart 1-35 [1]).

Looking at the items of on-balance-sheet assets (Chart 1-35 [2], most of the increases were attributable to the loans to the corporate sector and individuals for both the major banks and the regional banks. With respect to securitization exposures, their share in the total assets was low and their amount of the increase remained marginal.

Off-balance-sheet items were, in general, on an increasing trend for the major banks as seen in commitment contract-related items (Chart 1-35 [3]).

The share of off-balance-sheet items in the risk-weighted assets of the regional banks remained small and no significant changes were seen.

Second, looking at the capital adequacy ratio from the composition of capital (Chart 1-36), both at the major banks and the regional banks, ordinary stocks and retained earnings were on an increasing trend, which decelerated somewhat in the first half of fiscal 2007. Unrealized gains on securities were diminishing. The ratio of deferred tax assets to banks' capital was kept at an extremely low level.

At the major banks, the shares of preferred stocks,

preferred securities (included in Tier I capital), and subordinated debts (included in Tier II capital), remained at high levels. In that respect, increasing Tier I capital and enhancing the quality of assets remain an important challenge for the major banks.

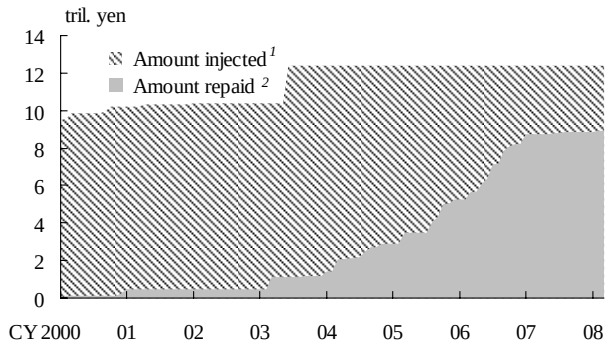
Meanwhile, banks continued to repay public funds. As a result, nearly 8.9 trillion yen – about 75 percent of the total public funds injected since 1998 (approximately 12.4 trillion yen) – had been repaid by the end of December 2007 (Chart 1-37). Nevertheless, the pace of repayment slowed after the three mega financial groups fully repaid public funds in fiscal 2006.

E. Financial Market's Assessment of Japan's Financial System

With regard to the financial market's assessment of Japan's financial system, while considerable variation among indicators remained, more indicators on the whole showed signs of deterioration, as the U.S. subprime mortgage problem worsened (Charts 1-38 and 1-39). On the one hand, the credit ratings of Japanese banks continued to be revised upward. On the other hand, banks' stock prices declined substantially, underperforming the overall stock prices. Credit default swap (CDS) premiums for three major Japanese banks also rose but not as sharply as the U.S. and European banks.

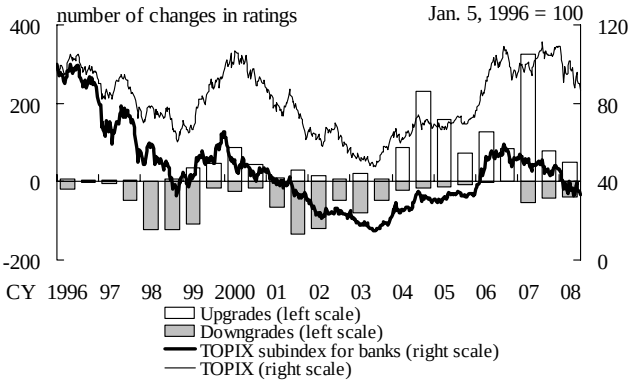
Looking at the movements of those indicators in more detail, first, the credit ratings of Japanese banks, especially large regional banks, were revised upward, due to the improvement in the qualities of their assets and capital base (Chart 1-38). Second, the stock prices of Japanese banks declined from the summer of 2007 at a faster pace than those of the U.S. and European banks directly affected by the U.S. subprime mortgage

Chart 1-37: Repayment of Public Funds



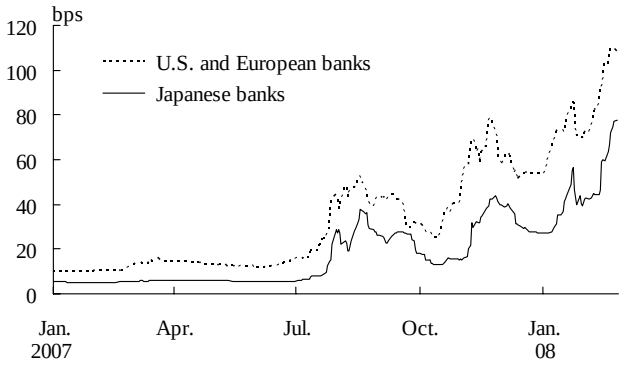
Notes: *1.* The sum of public funds injected pursuant to the Early Strengthening Law, the Financial Function Stabilization Law, the Deposit Insurance Law, the Financial Reorganization Promotion Law, and the Financial Functions Strengthening Law.
2. At face value.
Source: Deposit Insurance Corporation of Japan.

Chart 1-38: Credit Rating and Prices of Bank Stocks[1]



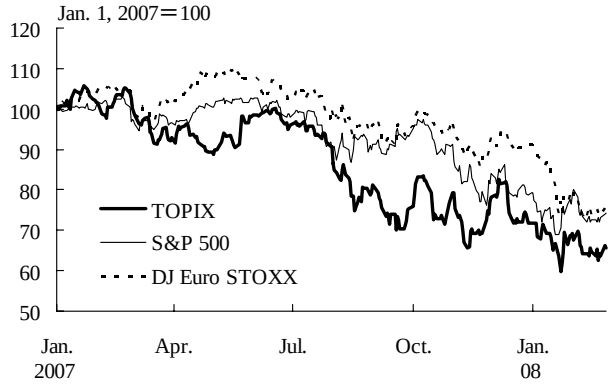
Note: *1.* The number of upgrades and downgrades is the sum of the number of changes in ratings made by the following credit rating agencies: Moody's Investors Service, Standard and Poor's, Fitch Ratings, Rating and Investment Information, and Japan Credit Rating Agency.
Sources: Tokyo Stock Exchange; Bloomberg.

Chart 1-39: CDS Premiums of Major Banks[1]



Note: *1.* The values for Japanese banks are calculated as the simple average of the CDS premiums of Mizuho Corporate Bank, The Bank of Tokyo-Mitsubishi UFJ, and Sumitomo Mitsui Banking Corporation. The values of U.S. and European banks are the simple average of those of Citigroup, Bank of America, JPMorgan Chase, Wells Fargo, Goldman Sachs, HSBC, and UBS.
Sources: Tokyo Financial Exchange; Bloomberg.

Chart 1-40: Prices of Bank Stocks



Source: Bloomberg.

problem (Chart 1-40). Such a plunge in banks' stock prices appears to reflect the lowered expectation of an upturn in banks' business, attributable more to the problems specific to Japan than to the effect stemming from the U.S. subprime mortgage problem.

Third, the CDS premiums for three major Japanese banks rose with some fluctuation from late July in 2007, in part reflecting heightened concern over the U.S. subprime mortgage problem (Chart 1-39). However, the increases in the CDS premiums for those Japanese banks were smaller than those for the major banks registered in the United States and Europe.

Those indicators of the market's assessment of Japan's financial system show that the conclusions vary considerably depending on the perspective, i.e., whether one places greater weight on the stability or the profitability of the financial system, as pointed in the previous *Financial System Reports*.

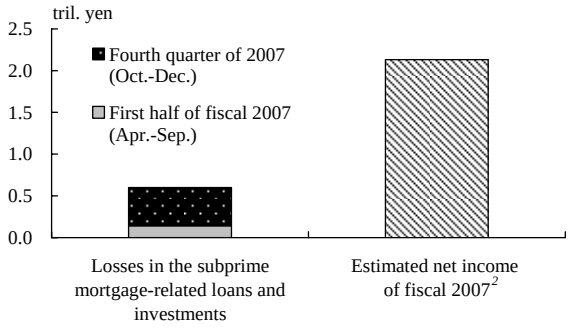
While Japan's financial system has largely overcome the NPL problem after the bursting of the asset price bubble and it has become increasingly stable over the years, improvement in the profitability of banks' core business remains a major challenge from a long-term perspective. As a result, higher credit ratings reflected the increasing stability of the financial system, while the weak performance of banks' stock prices reflected market concern over the long-term profitability of banks' core business.

Box 2: Subprime Mortgage-Related Loans and Investments of the Japanese Major Banks

The Japanese major banks reported 600 billion yen in net loss related to the subprime mortgage-related loans and investments by the fourth quarter (October to December) of 2007 (Chart B2-1). The losses increased by 460 billion yen in three months following the first half of fiscal 2007, when they reported 140 billion yen in net loss.

The losses comprised realized losses (including write-down) of structured credit products, provisions for loan losses on LBO projects and losses related to liquidity support facilities, as well as monoline-related losses.

Chart B2-1: Major Banks' Losses in the Subprime Mortgage-Related Loans and Investments [1]

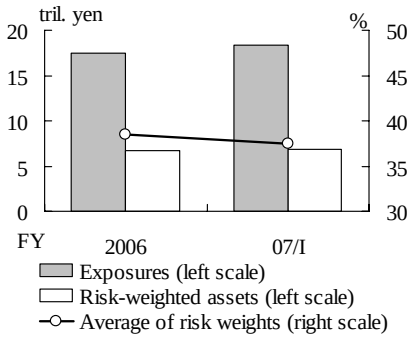


Notes: *1*. Figures of financial groups. The reported coverage differs from bank to bank.
2. The estimated net income of fiscal 2007 is as of the announcements of the financial statements of the quarter ending in December 2007.
Source: Published accounts.

The losses associated with the U.S. subprime mortgage problem have proliferated in terms of size and range as the problem has been aggravated. Nevertheless, the losses for fiscal 2007 are projected to be limited to an amount absorbable by major banks' annual net income.

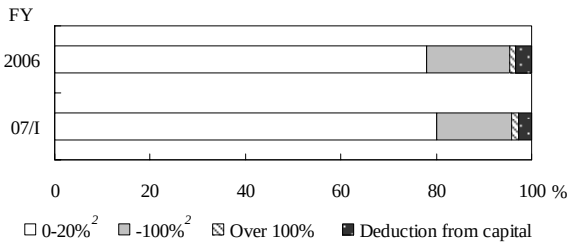
Looking at the major banks' exposure at the end of September 2007, used for calculating the capital adequacy ratio, to the structured credit products, the total amount including exposure to those other than the subprime mortgage-related products increased, compared with the end of March 2007, while the risk assets remained almost unchanged. As a result, the average risk weight declined (Chart B2-2). In terms of the risk weight distribution of the exposure, the risk weight equal to or lower than 20 percent was predominantly large, reaching at about 80 percent of the total. By contrast, the exposure to low-rated products (i.e., equal to or below BB- for banks adopting internal ratings-based approach) and non-rated products – the most disadvantageous items in the calculation of the capital adequacy ratio, classified as deduction items – were only about 3 percent of the total (Chart B2-3). Nevertheless, attention should be paid to risk management as even the credit ratings of high-rated products have been revised downward recently.

Chart B2-2: Securitization Exposures of the Major Banks[1]



Note: *1*. On a consolidated basis.

Chart B2-3: Securitization Risk Weights of the Major Banks[1]



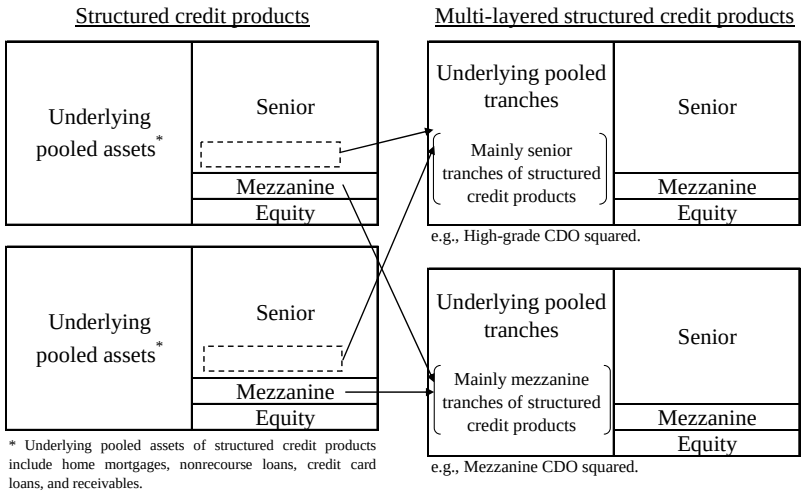
Notes: *1*. Financial groups' consolidated exposures as investors.
2. "-20 (100) percent" indicates "below 20 (100) percent" or "20 (100) percent and below."
Source: Published accounts.

Box 3: Valuation and Accounting Treatment of Structured Credit Products

In the wake of the U.S. subprime mortgage problem, the spreads for structured credit products such as HEL ABS and ABS CDO widened considerably (see Box 1 for the summary of the problem). Several factors behind the observed widening of spreads have been pointed out, such as investors' demand for larger premiums due to insufficient disclosure and fire-sales to unwind the leveraged positions. This box attempts to shed light on the observation that the spreads of lower tranches of structured credit products widened considerably as the underlying pooled assets deteriorated, and, in particular, such tendency has been more evident for multi-layered structured credit products. In addition, the box summarizes the accounting treatments of structured credit products.

To begin with, the basic framework of structured credit products is briefly reviewed (Chart B3-1). Structured credit products are generally split into tranches by the level of seniority and subordination in the payment from underlying pooled assets. Broadly speaking, the tranche with the first seniority is called "senior," while the one with the most subordinated is called "equity." A tranche between senior and equity is called "mezzanine." The level of subordination for each tranche is generally determined depending on the risk attributes of underlying pooled assets and the tranche's target level of ratings. In many cases, the senior tranche accounts for the majority of the deal, while the equity and the mezzanine share a small amount of the remaining. Structured credit products are often pooled and compounded further into another type of structured credit products by re-creating the seniority and subordination structure. In this process, even the pool of mezzanine tranches can be transformed into not only equity and mezzanine tranches but also senior tranche. As examined below, however, even if the risk attributes of underlying pooled assets are the same, the risk attributes of multi-layered structured credit products may vary, depending on whether the underlying tranches is closer to senior or equity.

Chart B3-1: Framework of Structured Credit Products



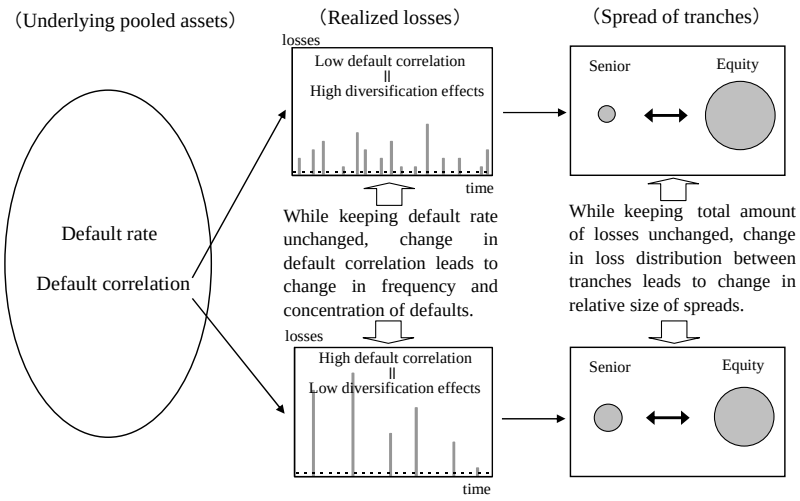
* Underlying pooled assets of structured credit products include home mortgages, nonrecourse loans, credit card loans, and receivables.

Next, the effects of changes in the default rate and default correlation of underlying assets on the loss distribution and the spreads of tranches are examined. First, the rise in the default rate widens the spreads of all the tranches because it increases the overall losses to investors. Second, the changes in default correlation, while keeping the default rate unchanged, influence the loss distribution among the tranches, thereby changing the relative size of spreads across the tranches.

The effect of changes in default correlation is further explained below (Chart B3-2). In the first case of low default correlation with high diversification effects in the pooled underlying assets, losses are likely to be realized in a dispersed manner. In the second case of high default correlation with low diversification effects, by

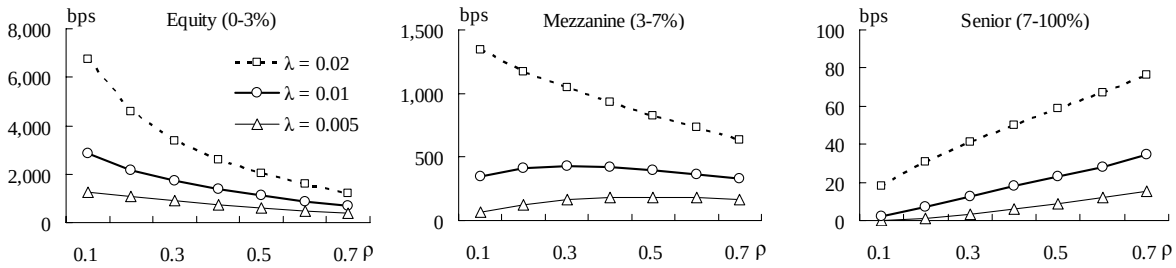
contrast, losses are likely to be realized in a concentrated manner. In that case, the senior tranche is more likely to suffer losses because the losses once realized tend to become large enough to exhaust the buffer in the equity tranche. At the same time, the equity tranche is more likely to avoid losses, because of higher probability of zero default events. Consequently, when default correlation rises, the spread decreases in the equity tranche, while it increases in the senior tranche. Since the mezzanine tranche stays between the two, the way its spread changes becomes more similar to that of equity, as its relative position comes closer to equity.

Chart B3-2: Default Correlation and Spread of Tranches



A numerical exercise using a simplified version of a plain CDO is carried out to examine the effects of changes in the default rate (λ) and default correlation (ρ) on the sensitivity of the break-even spread (i.e., the spread making the value of default payments equal to the value of premium receipts). Chart B3-3 shows that the rise in the default rate causes an upward shift in the relationship between spread and default correlation for all the tranches. As for the effects of the rise in default correlation, the equity tranche shows an upward-sloping curve, while the senior tranche shows a downward-sloping curve when keeping the default rate constant. That reflects the shift in the loss distribution toward the upper tranches when default correlation rises. Mezzanine spreads initially show an upward-sloping curve at low default rate, but turn into a downward-sloping curve as the default rate increases. That is because the rise in the default rate induces the mezzanine tranche to be located in a more subordinated position, thus making the mezzanine tranche closer to the equity tranche.

Chart B3-3: Break-Even Spreads of CDOs[1,2,3]

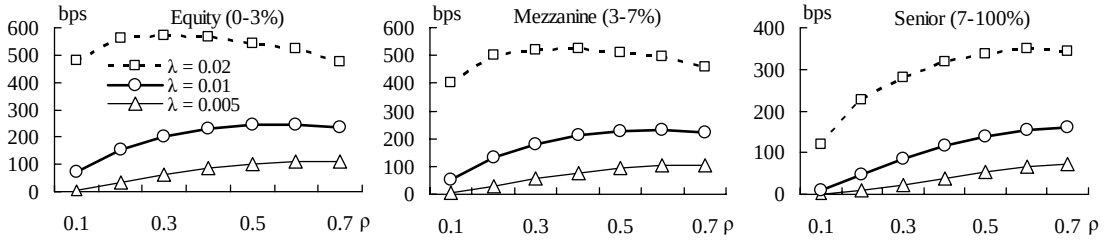


Notes: *1.* Bank of Japan estimation.
2. The normal one-factor copula model is adopted in the numerical study above. The number of obligors in the underlying pooled assets and notional amount of each obligor are assumed to be 500 and 1 respectively. Maturity of the underlying tranches, recovery ratio, and risk free rate are assumed to be 5 years, 40 percent, and 5 percent respectively.
3. Figures in parentheses are attachment (lower limit of tranches) and detachment (upper limit of tranches) of each tranche.

The next numerical exercise examines the behavior of break-even spreads of multi-layered structured credit products, using a simplified version of a CDO squared. Chart B3-4 shows a case of the CDO squared with the senior underlying tranches of 10 percent attachment and 14 percent detachment (e.g., high-grade CDO squared). The chart shows that all the tranches of the CDO squared exhibit an upward-sloping curve, similar to a plain

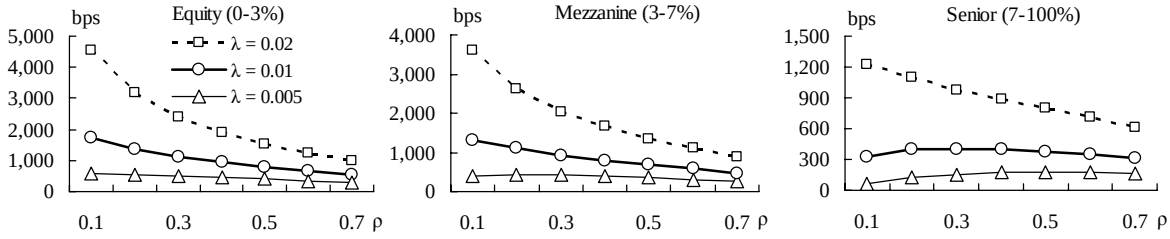
CDOs' senior tranches, with respect to the rise in default correlation, in the case of a low default rate (λ=0.005). The chart also shows that, as the default rate increases, such an upward-sloping curve turns toward a downward-sloping, similar to a plain CDOs' equity tranche, from the lower tranche. By contrast, Chart B3-5 shows a case of the CDO squared with the mezzanine underlying tranches of 3 percent attachment and 7 percent detachment (e.g., mezzanine CDO squared). The chart shows that all the tranches of the CDO squared exhibit a downward sloping curve at a high default rate (λ=0.02), since the underlying tranches consist of portions close to equity. To sum up, the multi-layered structured credit products such as CDO squared, whether they are senior or not, can possess risk attributes similar to equity, as the underlying tranches become subordinated.

Chart B3-4: Break-Even Spreads of the CDO squared with the Senior Underlying Tranches[1,2]



Notes: *1.* Bank of Japan estimation.
2. It is assumed that each underlying tranche of CDO squared above consists of 100 obligors. Attachment and detachment of each underlying tranche are assumed to be 10 percent and 14 percent respectively. Assumptions of parameters for underlying pooled assets are the same as Chart B3-3.

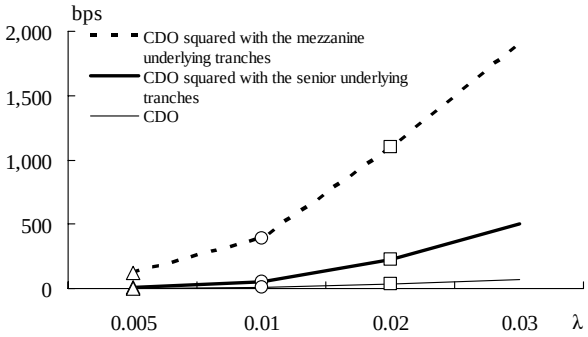
Chart B3-5: Break-Even Spreads of the CDO squared with the Mezzanine Underlying Tranches[1,2]



Notes: *1.* Bank of Japan estimation.
2. All the assumptions are the same as Chart B3-4 except that attachment and detachment of each underlying tranche are assumed to be 3 percent and 7 percent respectively.

To compare the three numerical exercises above, Chart B3-6 plots the spread sensitivity of the senior tranches, showing that the descending order of impacts on spreads is the CDO squared with the mezzanine underlying tranches, the CDO squared with the senior underlying tranches, and the CDO. In other words, the senior spread in the multi-layered structured credit products has a tendency to intensify its sensitivity to increase in the default rate of the pooled underlying assets, as the relative position of the underlying tranches becomes subordinated.

Chart B3-6: Spreads of Senior Tranches[1,2]



Notes: *1.* Bank of Japan estimation.
2. The result above is the case of ρ = 0.2 in the previous charts.

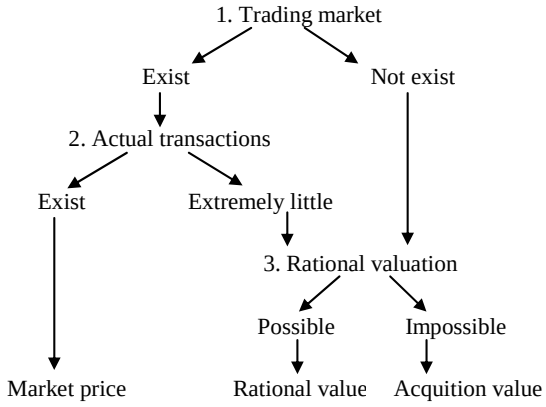
In purchasing and managing credit structured products, it is important to examine the difference in risk attributes by products and tranches as well as the structure of those products. Such structures include: credit enhancement for upper tranches such as an over-collateralization test (i.e., the paydown of the senior occurs when an excess

portion of underlying pooled assets fall below a certain level), and assessment on managers of managed-type products whose underlying assets can be flexibly rebalanced.

Next, the accounting treatment of the valuation of structured credit products is reviewed. First, in the United States, the Financial Accounting Standards Board (FASB) published the Statement of Financial Accounting Standards No.157 (FAS 157) entitled "Fair Value Measurements" with effect from November 2007. In the statement, fair value was classified in the descending order of pricing observability in the market from level 1 to 3, and stipulated valuation methods according to each category. In addition, with respect to the interpretation of FAS 157, a business group of accounting offices, the Center for Audit Quality (CAQ) published a guideline focusing on market liquidity, "Measurement of Fair Value in Illiquid (or Less Liquid) Markets," in October 2007. The guideline articulated that, market prices are considered to be fair value even when the prices declined due to the supply-demand imbalance in the market, and not to use less objective "level 3" information as much as possible. Nevertheless, even though such guidelines were published, fair value measurements of structured credit products related to the U.S. subprime mortgage seem to remain difficult, because their market prices are not easily observed.

Second, in Japan, valuation methods of securities are stipulated in "Accounting Standards for Financial Instruments" (Accounting Standards Board of Japan) and "Practical Guidelines Concerning Accounting for Financial Instruments" (The Japanese Institute of Certified Public Accountants) (Chart B3-7). According to those standards and guidelines, following factors are considered to be crucial in the valuation of securities in Japan: (1) whether trading market exists, (2) whether actual transactions exist, and (3) whether the valuation of securities can be estimated in a rational manner. Applying those standards and guidelines in practice, however, remains difficult in Japan as in the United States. Here, the rational valuation is based on the reasonable estimates by management and also is derived by using discounted cash flow analysis or prevailing pricing models.

Chart B3-7: Valuation of Securities in Japan[1]



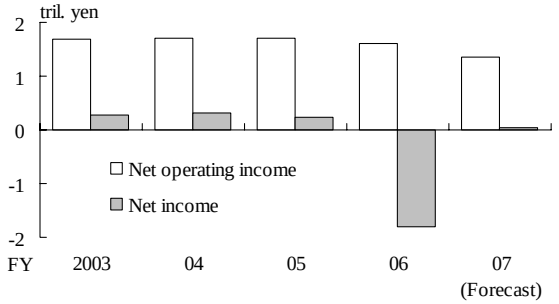
Note: *1*. The classification above is a sketch of accounting standards pertaining to reasonable market values.

As such, accounting judgment about the valuation of structured credit products related to the U.S. subprime mortgage problem and other structured credit products would not be easy. Nevertheless, it would be crucial for financial institutions to strive to stave off market concern stemming from the aggravation of the U.S. subprime mortgage problem by properly applying the existing accounting standards, disclosing their related losses, and also setting provisions and/or writing off those losses.

Box 4: Business Conditions of Nonbank Finance Companies

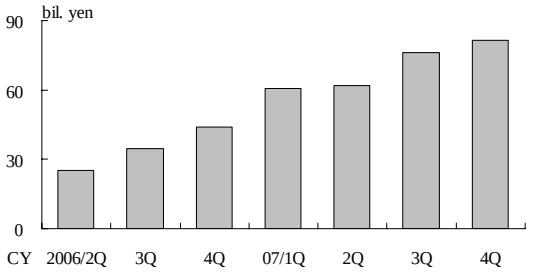
The five largest consumer finance companies (CFCs: Acom, Aiful, Promise, Sanyo Shinpan Finance, and Takefuji) recorded net losses in fiscal 2006 due to a jump in provisions for refunding excess interest repayments and a rise in loan-loss provisions (Chart B4-1). Subsequently, while some companies ran deficits because of additional provisions, many reported profits in the first half of fiscal 2007, and the profits of the CFCs as a whole are likely to turn positive, albeit small, for the entire fiscal 2007. In the meantime, the actual reimbursements so far were within their expectations, while yet to show a clear sign of peaking out (Chart B4-2).

Chart B4-1: Net Income of Five Large CFCs[1]



Note: *1.* Based on values for Acom, Aiful, Promise, Sanyo Shinpan Finance, and Takefuji.
Source: Published accounts.

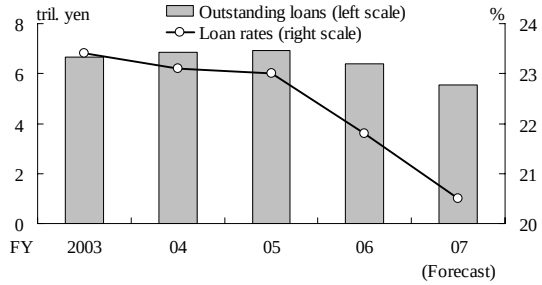
Chart B4-2: Reimbursement[1,2]



Notes: *1.* Based on values for Acom, Aiful, Promise, and Takefuji.
2. Excludes the portion of interest repayments applicable to the loan principal.
Source: Published accounts.

Outstanding loans of the CFCs were declining at a year-on-year rate of about 10 percent, since the CFCs tightened their lending standards in response to the enactment of the Amendment to the Money-Lending Business Law in December 2006 (Chart B4-3). Loan rates were also declining as the CFCs refrained from lending at grey-zone interest rates, and write-off rates were recently increasing.

Chart B4-3: Outstanding Loans and Loan Rates[1]

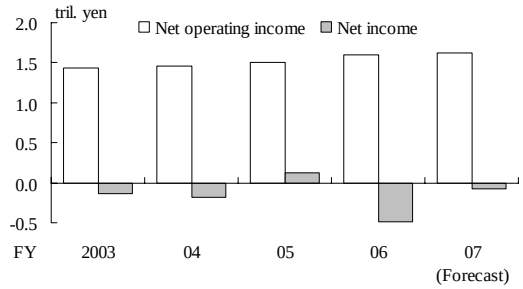


Note: *1.* Based on values for Acom, Aiful, Promise, Sanyo Shinpan Finance, and Takefuji.
Source: Published accounts.

The CFCs' capital adequacy ratios (net assets/gross assets) declined in fiscal 2006 due to large net income losses; nevertheless, they remained relatively high and marked 25 percent on average at the end of the first half of fiscal 2007.

Credit card and consumer credit companies, which earn almost half of their net operating income from cashing and card-loan businesses, are in severe business condition. They are also facing the challenges of the increase in refunding excess interest repayments, the decline in outstanding loans, and the decline in loan rates. The major credit card and consumer credit companies as a whole reported net losses in fiscal 2006 due partly to a large loss reported by some companies.

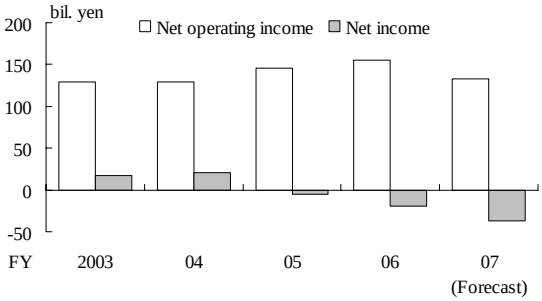
Chart B4-4: Net Income of Nine Large Credit Card and Consumer Credit Companies[1]



Note: *1.* Based on values for Mitsubishi UFJ NICOS, Orient Corporation, Central Finance, APLUS, JACCS, Credit Saison, UC Card, OMC Card, and AEON CREDIT SERVICE.
Source: Published accounts.

They are expected to report losses, though by a small amount, again in fiscal 2007 amid increasing provisions for refunding excess interest repayments (Chart B4-4). Against such a backdrop, major credit card and consumer credit companies attempt to map out business strategies, for example, by focusing on the card business. They also explore the reorganization and consolidation of their industry for the purpose of cost reduction.

Chart B4-5: Net Income of Six Large Business Finance Companies[1]



Note: *1.* Based on values for SFCG, LOPRO, NIS Group, INTER, Ikko, and APREK.
Source: Published accounts.

Many business finance companies, which depend heavily on unsecured loans and mainly lend at grey-zone interest rates, were also facing declining profits due to the decline in loan rates and the rise in nonperforming loans (Chart B4-5). Some companies, taking into account the balance between the reduction of loan rates and the risk of loan-losses, were trying to secure profits by shifting their loans from unsecured loans to loans with mortgage collateral.

Box 5: Privatization of Postal Services and Establishment of Japan Post Bank

On October 1, 2007, Japan Post Bank, Japan Post Insurance, Japan Post Service, and Japan Post Network were established as subsidiaries of Japan Post Holdings and the privatization process of the postal services began. On the same day, the Bank of Japan began providing current account services to Japan Post Bank.

Japan Post Bank is a commercial bank which conducts businesses based on the Banking Law, but during the transition phase towards its final privatization deadline, it is temporarily constrained in its business scope. The scope for operation at the start of privatization was limited to those originally conducted by Japan Post and any new operation is subject to the approvals by the Prime Minister and the Minister for Internal Affairs and Communications upon hearing opinions from the Postal Services Privatization Committee. After the start of the privatization process, Japan Post Bank was granted mainly the following operations in December 2007: (a) participating in syndicated loans and lending to special purpose companies (SPCs), (b) trading of public bonds, (c) trading of trust beneficiary interests and stocks, (d) acquisition or transfer of loans, (e) interest rate swap and interest rate futures transactions, and (f) reverse repo transactions.

Within the time frame of the end of September 2017 as the final deadline for complete privatization, Japan Post Bank will aim to be listed on the stock market. Japan Post Bank will be fully privatized when either of the following takes place: (a) when Japan Post Holdings disposes of all Japan Post Bank's stocks it holds, and (b) when the Prime Minister and the Minister for Internal Affairs and Communications decide, upon taking Japan Post Bank's business condition into consideration, that fair competition with other financial institutions will be secured and that Japan Post Bank can provide adequate services.

Chart B5-1: Balance Sheet of Japan Post Bank at the Outset of Privatization Process

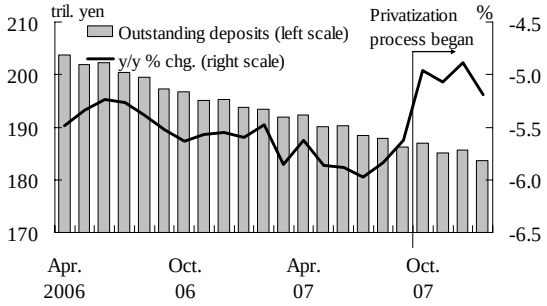
tril. yen

Cash and deposits	5.8	Savings	188.9
Securities	170.8	Special savings	131.7
Japanese government bonds	155.5	Ordinary savings	47.7
Local government bonds	8.0	Borrowed money	24.8
Loans	3.9	Total liabilities	215.8
Deposits to fiscal loan fund	38.8	Total net assets	7.7
Total assets	223.6	Total liabilities and net assets	223.6
Capital adequacy ratio (international standards)			54.0%

Source: Japan Post Holdings.

The size of Japan Post Bank at the outset of the privatization process was slightly less than 80 percent of the overall size of the regional banks, with total assets of 223 trillion yen and a savings balance of 188 trillion yen (Charts B5-1 and B5-2). Capital was 7.7 trillion yen. At the planning phase, the capital adequacy ratio calculated according to the international capital adequacy framework was 54.0 percent.

Chart B5-2: Balance of Postal Savings



Source: Japan Post Bank.

Chart B5-3: Japan Post Bank's Profits Projections

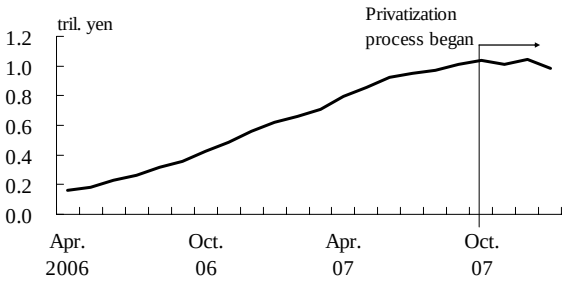
100 mil. yen

	FY 2007 (half year)	FY 2008	FY 2009	FY 2010	FY 2011
Operating income	12,920	24,480	23,520	23,010	22,090
Interest income	12,100	22,720	21,610	20,930	19,840
Operating expenses	10,750	19,130	17,510	16,930	17,020
Interest expenses	3,300	5,230	3,650	2,950	2,850
General and administrative expenses	7,100	13,190	13,150	13,270	13,460
Personnel expenses	510	1,000	980	970	970
Other expenses	4,770	8,830	9,110	9,310	9,530
Commission expenses paid to Japan Post Network	3,140	6,270	6,290	6,210	6,060
Net operating income	2,170	5,350	6,010	6,080	5,070
Pre-tax income	2,170	5,350	6,010	6,080	5,070
Net income	1,300	3,210	3,610	3,650	3,040
Deposits (in tril. yen)[1]	187.3	185.4	183.8	172.2	164.2

Note: *1*. At the end of fiscal year.
Source: Japan Post Holdings.

In terms of profit outlook, interest income mainly from securities accounts for more than 90 percent of the net operating income (Chart B5-3). And, Japan Post Bank has a network of 234 direct branches. Moreover, it entrusts teller operations to 24 thousand post offices and small post offices as the bank's agents. Because of that, nearly 50 percent of the general and administrative expenses are expected to be commission expenses paid to Japan Post Network.

Chart B5-4: Net Asset Value of Investment Trust Sold



Sources: Japan Post Bank; Japan Post Holdings.

In the meantime, looking at the sales of investment trusts, which comprise a major part of income from fees and commissions, net asset value of investment trusts sold has remained almost unchanged since the start of the privatization of process of the postal services (Chart B5-4).

Box 6: Profit Differentials in the Regional Banking Sector

The regional banks' profits for the first half of fiscal 2007, compared with the profits in fiscal 2001 – the most recent cyclical trough –, improved on the whole as the adverse impact of credit costs diminished (Chart B6-1). However, some banks lagged behind in improving their profits. This Box analyzes the regional banks' profitability by classifying 109 regional banks according to (a) economic size of the region (gross prefectural product [GPP] in fiscal 2004) the bank is based on (hereafter, business base) and (b) bank's total fund volume as of the first half of fiscal 2007 (Chart B6-2). In principle, the average figures are used for analysis for the period from fiscal 2004, when credit costs more or less settled at the current level, to the first half of fiscal 2007.

Chart B6-1: Fund Volume and ROA of the Regional Banks

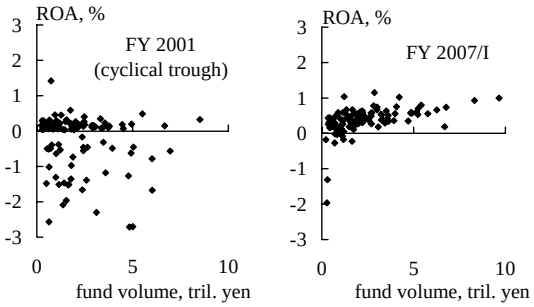
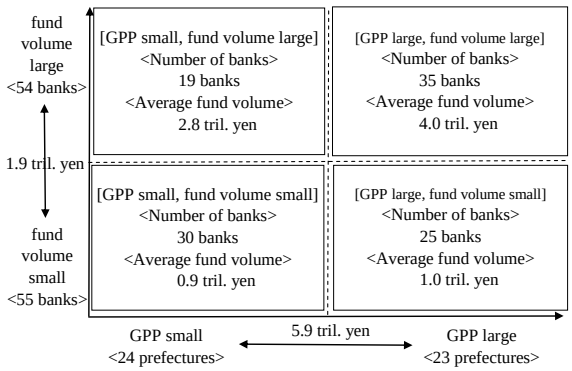
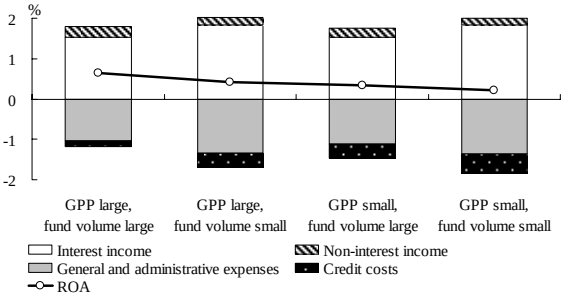


Chart B6-2: Classifying 109 Regional Banks



Looking at ROA (net income before taxes/total assets) by group, the highest is the group of large GPP and a large fund volume, followed by the group of large GPP and a small fund volume, the group of small GPP and a large fund volume, and the group of small GPP and a small fund volume (Chart B6-3). Regardless of the size of GPP, both the ratios of interest income to total assets (hereafter, interest income ratio) and general and administrative expenses to total assets (hereafter, expense ratio) are higher for the groups of the smaller fund volume. In particular, the expense ratio differs significantly between fund volume groups. The ratio of credit costs to total assets (hereafter, credit cost ratio) is relatively higher for the groups of the smaller fund volume and GPP. In the meantime, the ratio of non-interest income to total assets (hereafter, non-interest income ratio) is more or less the same among the groups.

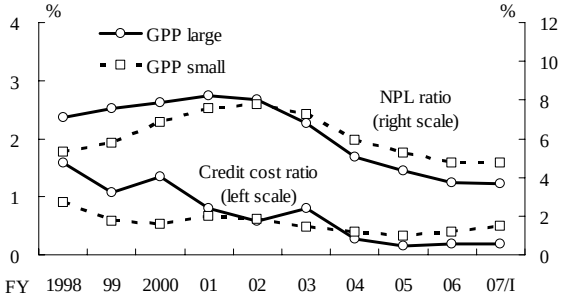
Chart B6-3: ROA by Groups



The above results imply that the expense ratio is largely influenced not by the business base, but by the fund volume, while, in terms of credit cost, the quality of a loan portfolio is influenced by both the fund volume and the business base.

Looking at the time-series developments in the credit cost ratio according to the size of GPP (Chart B6-4), it had been lower for the regions with small GPP than regions with large GPP until fiscal 2003, contrary to

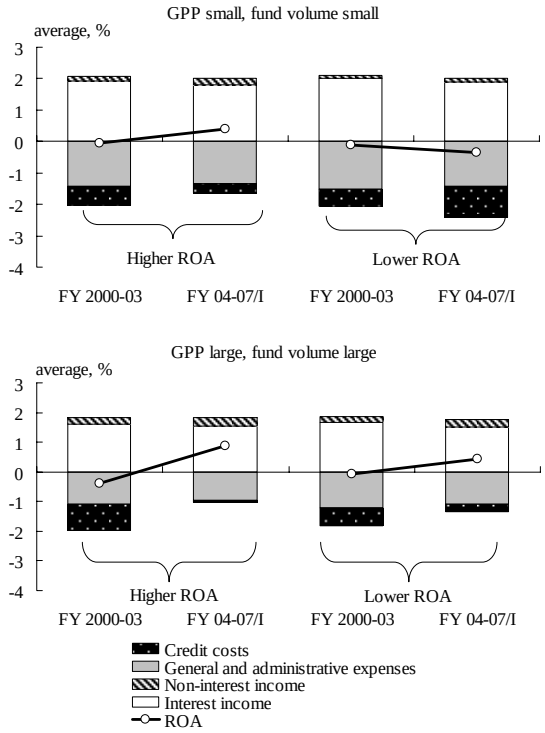
Chart B6-4: Credit Cost Ratios and NPL Ratios



the current situation. Subsequently, the credit cost ratio for regions with small GPP became higher than that for regions with large GPP in fiscal 2004 and the difference somewhat widened thereafter. Also, in terms of nonperforming loan (NPL) ratio, it was lower for the regions with small GPP than the regions with large GPP until fiscal 2002, but became higher in fiscal 2003. In the group of small GPP, both the current credit cost ratio and the NPL ratio were somewhat high since the region's economic recovery was relatively moderate, and the removal of the NPLs from their balance sheet was delayed after provisioned.

Next, within the two groups – the group of small GPP and a small fund volume and the group of large GPP and a large fund volume –, the banks are further classified into those with higher-than-average ROAs and those with lower-than-average ROAs to analyze the changes in profit structure (Chart B6-5). With respect to the sample period, the average ROA from fiscal 2004 to the first half of fiscal 2007 is compared with that from fiscal 2000 to 2003, when credit costs as a whole had remained high.

Chart B6-5: ROA within the Two Groups



Within the group of small GPP and a small fund volume, the banks with higher-than-average ROAs improved their ROAs between the above two periods, while the banks with lower-than-average ROAs rather worsened their ROAs, remaining below zero percent. That is because the credit cost ratio substantially declined in the case of the banks with higher ROAs, while it increased in the case of the banks with lower ROAs. In terms of the interest income ratio and the expense ratio, the difference between the two groups of banks was not as large as in the case of the credit cost ratio. That suggests that, within the group of small GPP and a small fund volume, the banks with relatively high ROAs increased their profits by containing credit costs.

Making the same comparison for the group of large GPP and a large fund volume, both the banks with higher-than-average ROAs and lower-than-average ROAs improved their ROAs between the two periods, while the extent of improvement was more obvious for the first one. That is because the credit cost ratio and the expense ratio declined more markedly in the case of banks with higher-than-average ROAs. Those banks seem to have substantially contained their credit costs and general and administrative expenses through the drastic disposal of NPLs and rationalization efforts. In addition, the increase in the non-interest income ratio contributed, albeit marginally, to increasing profits.

In sum, for the regional banks, while there were differences according to the business base and fund volume, how credit costs and general and administrative expenses were contained seems to have been critical for enhancing bank profitability. For the regional banks to further enhance profitability in the future, they need to improve the interest income ratio and the non-interest income ratio in addition to properly controling credit costs and general and administrative expenses. In order to do so, each regional bank needs to pursue forward-looking allocation of managerial resources in business areas with its competitive edge, upon accurately gauging the region's economic condition in which the bank is based on.

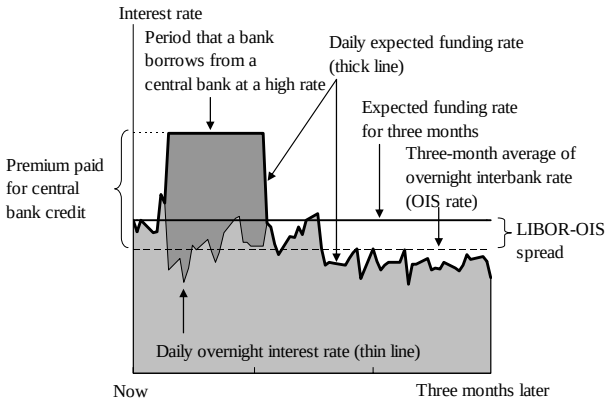
Box 7: Funding Liquidity Risk in Money Market

As an indicator for funding liquidity risk in the money market, the spread between interest rates on term instruments (LIBOR) and overnight index swap (OIS), hereafter the LIBOR-OIS spread, has been receiving a lot of attention (Chart 1-24).

The OIS transaction is an interest rate swap that exchanges the uncollateralized overnight interest rate of a certain period for the fixed interest rate. For example, a bank that raises funds for three months by rolling over overnight transactions, can hedge the volatility risk of overnight interest rates by conducting the OIS transaction of "receive overnight interest rate and pay 3-month fixed interest rate."

In a case in which banks are able to raise funds without difficulty in the interbank market on a daily basis, the OIS rate and the interbank interest rate on term instruments are almost identical and the LIBOR-OIS spread tends to be extremely small. However, when banks face funding liquidity risk and the fragility of fund raising in the interbank market becomes acute, banks' expected fund-raising interest rate for three months (LIBOR) tends to exceed the OIS rate (Chart B7-1). As such, the LIBOR-OIS spread is considered to reflect the degree of funding liquidity risk banks are facing.

Chart B7-1 : Three-Month LIBOR-OIS Spread (Illustration)



The LIBOR-OIS spread for all major currencies rapidly widened after August 2007 when the short term money market experienced a crunch in funding liquidity (Chart 1-24). Although the spread temporarily narrowed, it widened again towards the year-end. That developed into an unprecedented case in which five central banks cooperated in providing ample supplies of liquidity to the market on December 12, when uncertainty over funding liquidity reached its peak (see Box 1). In the meanwhile, the LIBOR-OIS spread for the yen widened as in the case with other major currencies, but the widening was relatively moderate.

Meanwhile, the LIBOR-OIS spread for the U.S. dollar continued to substantially exceed 50 basis points even after August 17, 2007, when the Federal Reserve Bank of New York narrowed the premium margin of discount interest rates to 50 basis points from 100 basis points. That suggests the seriousness of a liquidity shortage particularly in the U.S. dollar funds among major currencies. Behind the problem, it is pointed out that some banks were unable to use the discount window due to collateral constraints, or they avoided using it for fear of hurting their reputation. One should be aware of the trade-off below: a narrower premium margin is likely to mitigate the funding liquidity risk more effectively in vulnerable market conditions, while a narrower premium margin reduces the incentive for banks to properly manage their liquidity risk in normal market conditions.

Reference:

Ooka, Eiko, Teppei Nagano, and Naohiko Baba, "Recent Development of the OIS (Overnight Index Swap) Market in Japan," Bank of Japan Review 2006-E-4, 2006.

II. Financial Intermediation Function and Changes in Its Risks

This chapter starts with a summary of recent macroeconomic and financial conditions in Japan. It then examines the risk factors behind the financial system both from macro and micro perspectives.

A. Recent Economic and Financial Developments

Since the publication of the September 2007 issue of the *Financial System Report*, Japan's economy has been expanding moderately as a trend, although the pace of growth seems to be slowing mainly due to the drop in housing investment (Chart 2-1 [1]). Japan's economy is expected to continue expanding moderately, although the pace of growth is likely to slow for the time being.

As explained in Box 1, however, amid the aggravating effect of the U.S. subprime mortgage problem, due attention should be paid to such factors including uncertainties about overseas economies and global financial markets as well as the effects of high energy and materials prices.

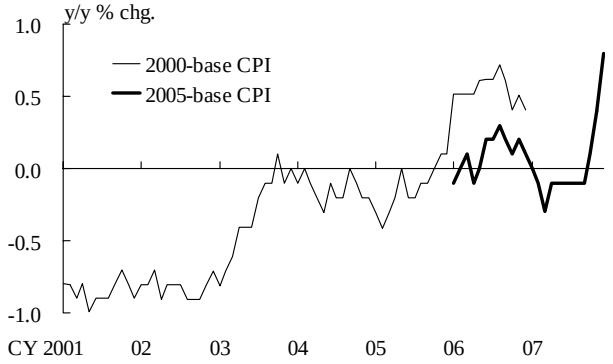
On the price front, the year-on-year rate of change in consumer prices (excluding fresh food) has been rising due to the increase in the prices of petroleum products and food products (Chart 2-1 [2]). The year-on-year rate of change in consumer prices is projected to follow a positive trend due to the rise in the prices of petroleum products and food products in the short run and the positive output gap in the longer run.

Against such a background, the overnight call rate – the operating target of the Bank of Japan – has remained at its target level of around 0.5 percent in the

Chart 2-1: Economic Growth and Prices in Japan

[1] Real GDP Growth Rate

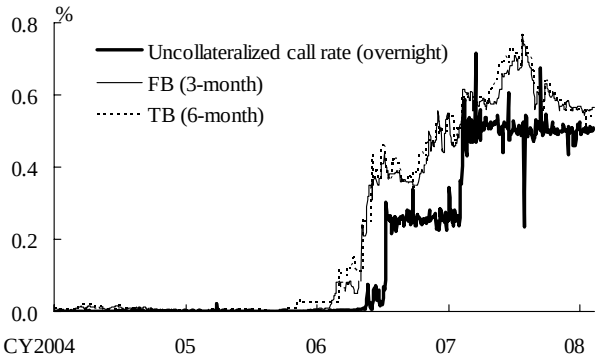
[2] CPI (Excluding Fresh Food)



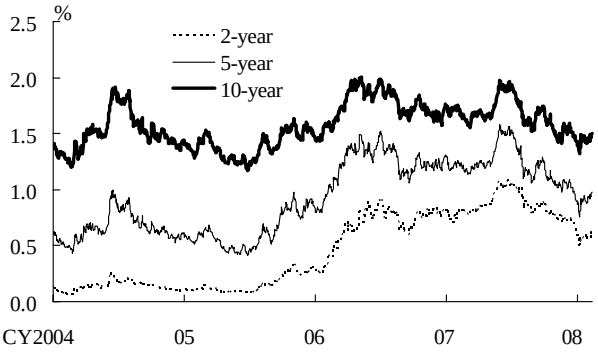
Sources: Cabinet Office, "National Accounts"; Ministry of Internal Affairs and Communications, "Consumer Price Index."

Chart 2-2: Market Interest Rates

[1] Short-Term Interest Rates

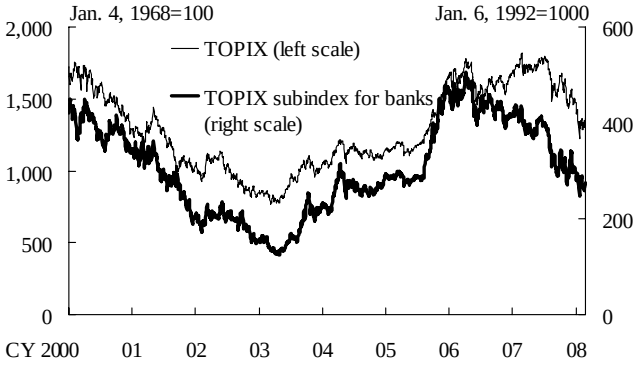


[2] Medium- and Long-Term Interest Rates (JGBs)



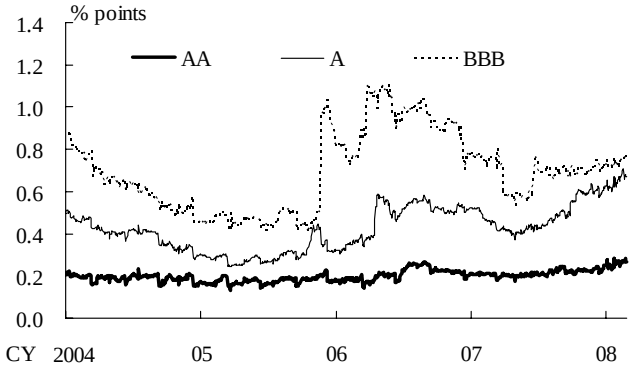
Sources: Bloomberg; Japan Bond Trading Co., Ltd.; Bank of Japan.

Chart 2-3: Stock Prices



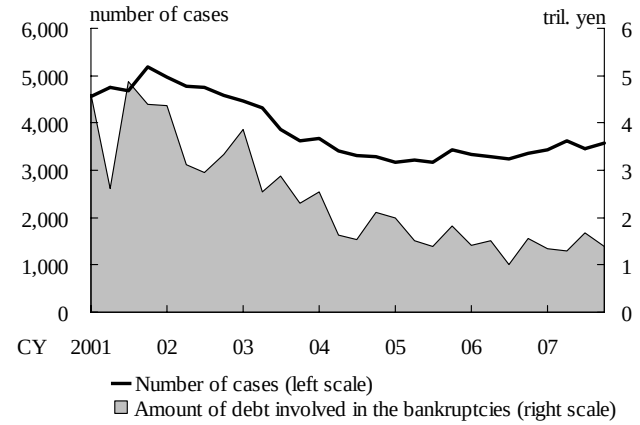
Source: Tokyo Stock Exchange.

Chart 2-4: Credit Spreads on Bonds[1,2]



Notes: *1*. The ratings indicated above are those by Japan Rating & Investment Information.
2. Spreads on bonds with 4 to 6-year maturities against 5-year Japanese government bonds.
Sources: Japan Securities Dealers Association; Bloomberg.

Chart 2-5: Corporate Bankruptcies[1]



Note: *1*. The data are quarterly.
Source: Tokyo Shoko Research, "*Tosan Geppo* (Monthly Review of Corporate Bankruptcies)."

short-term money market (Chart 2-2 [1]). As for interest rates on term instruments, upward pressure increased mainly for over the year-end rates; otherwise, they remained relatively stable compared to those in the United States and Europe. Such developments in Japan's short-term money market suggest that the effect of turmoil in the U.S. and European markets continues to be restrained in Japan (see Chapter I C and Box 7 for funding liquidity risk).

With regard to the government bond market, long-term interest rates (newly issued 10-year bonds) declined in line with those in the United States and Europe. They have recently stayed at around 1.4 percent (Chart 2-2 [2]). In the stock market, reflecting concern over the U.S. economy's possible recession and a decline in stock prices worldwide, investors appear to have become more risk averse. Moreover the outlook for Japanese firms' business performance has become rather more pessimistic against a background of the stronger yen. All those developments have led to the continued weakness in the stock market (Chart 2-3).

Looking at the credit market, credit spreads seem to have widened in the United States and Europe in the wake of the U.S. subprime mortgage problem. The spreads in Japan have also widened, albeit marginally (Chart 2-4).

Meanwhile, the number of corporate bankruptcies is somewhat on the rise. Sector-wise, the construction industry has contributed to the rise in bankruptcy. Area-wise, bankruptcies have risen in the metropolitan areas (Chart 2-5). The amount of debts involved in the bankruptcies for 2007 exceeded the previous year for the first time in seven years in part due to a large failure in the real estate businesses.

Land prices in the metropolitan areas continued to rise until recently. Their rate of increase appears to have

peaked out. In the regional areas, land prices have kept declining, albeit at a decelerating pace (Chart 2-6).

B. Risks Associated with Banks' Financial Intermediation Function from a Macro Perspective

Next the risks associated with financial intermediation are examined based on financial and economic data.

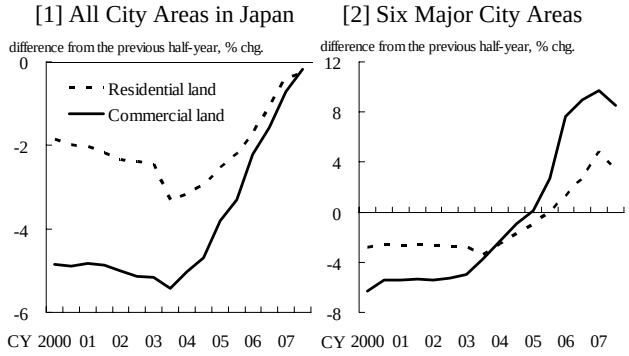
1. Flow of funds

The "Flow of Funds Accounts" shows that the overall picture of the funds surplus/deficit structure by sector remained unchanged from the late 1990s: households and private non-financial firms continued to register a surplus, while general government continued to register a deficit (Chart 2-7). From fiscal 2005, the surplus of households grew, reflecting an increase in income. By contrast, due to increased demand for business fixed investment, the surplus of private non-financial firms gradually decreased after peaking in fiscal 2003 despite their effort to cut down on interest-bearing liabilities. As a result, households continued to register the largest surplus from fiscal 2006.

The fact that private non-financial firms still ran a surplus, albeit at a decreasing level, indicates that those firms' appetite for external funds remained benign against a background of ample cash flows in the accommodative financial environment.

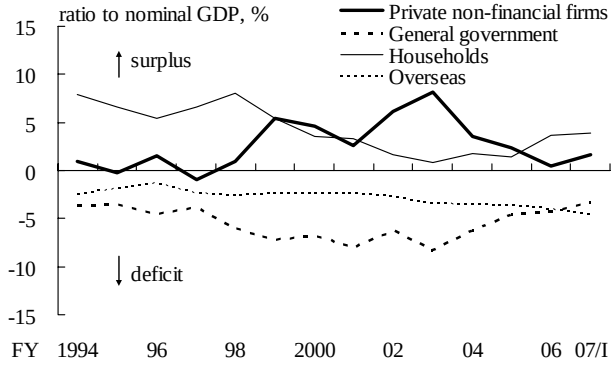
From the banks' perspective on the firms' demand for bank loans, the number of respondents selecting stronger demand continued to exceed the number of respondents selecting weaker demand from 2005 (Chart 2-8). Recently, however, the demand lost momentum somewhat. The volume of total financial

Chart 2-6: Land Prices[1,2]



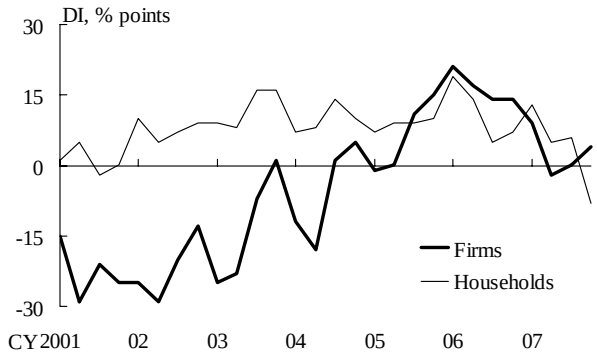
Notes: *1.* The Urban Land Price Index is based on surveys conducted at the end of March and September each year.
2. The six major city areas are the 23 wards of Tokyo, Yokohama, Nagoya, Kyoto, Osaka, and Kobe.
Source: Japan Real Estate Institute, "Urban Land Price Index."

Chart 2-7: Financial Surplus/Deficit[1]



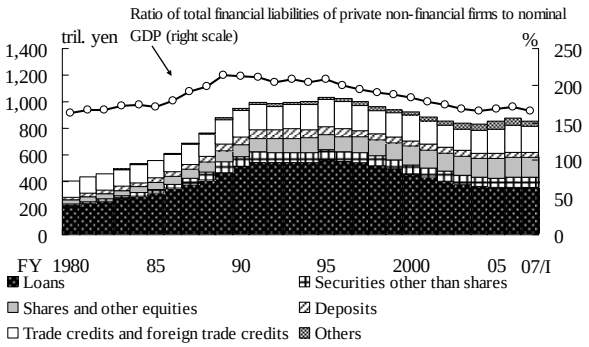
Note: *1.* In order to remove effects of seasonality, the figures for the first half of fiscal 2007 are calculated using data from the second half of fiscal 2006 to the first half of fiscal 2007.
Source: Bank of Japan, "Flow of Funds Accounts."

Chart 2-8: DI for Demand for Loans: Classified by Borrower Type[1]



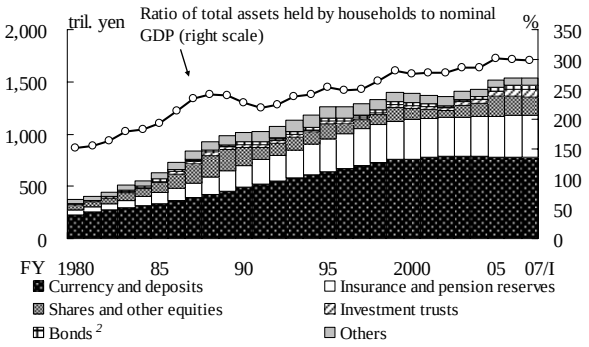
Note: *1.* DI for demand for loans = (percentage of respondents selecting "substantially stronger" + percentage of those selecting "moderately stronger" × 0.5) - (percentage of those selecting "substantially weaker" + percentage of those selecting "moderately weaker" × 0.5) .
Source: Bank of Japan, "Senior Loan Officer Opinion Survey on Bank Lending Practices at Large Japanese Banks."

Chart 2-9: Financial Liabilities of Private Non-Financial Firms[1]



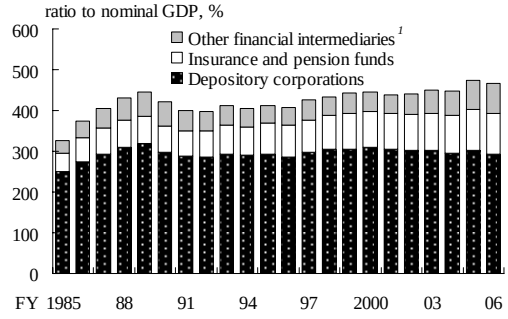
Note: *1.* Loans, shares and other equities, and securities other than shares are evaluated at face or book values.
Source: Bank of Japan, "Flow of Funds Accounts."

Chart 2-10: Financial Assets Held by Households[1]



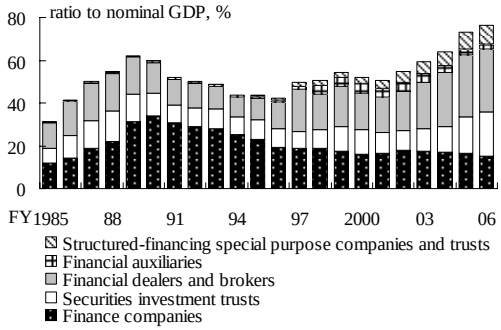
Notes: *1.* Shares and other equities, investment trusts, bonds, and some financial products which are included in others are evaluated at market prices.
2. Bonds = securities other than shares - (trust beneficiary rights + mortgage securities).
Source: Bank of Japan, "Flow of Funds Accounts."

Chart 2-11: Financial Assets of Financial Sector



Note: *1.* Other financial intermediaries include securities investment trusts, nonbanks, financial dealers and brokers, and financial auxiliaries.
Source: Bank of Japan, "Flow of Funds Accounts."

Chart 2-12: Financial Assets of Other Financial Intermediaries



Source: Bank of Japan, "Flow of Funds Accounts."

liabilities of private non-financial firms remained almost flat even in the middle of the moderate expansion of Japan's economy (Chart 2-9).

The volume of financial assets held by households continued to follow a moderate uptrend, reaching 1,536 trillion yen at the end of September 2007 (Chart 2-10). Above all, the share of holdings of currency and deposits was nearly stable, while the share of holdings of investment trusts increased. That suggests that a gradual shift "from savings to investment" remained on track, though currency and deposits still accounted for the largest share of the overall financial assets and the shift from safe to risky assets remained limited.

With regard to the financial sector channeling funds between the fund-investing sector and the fund-raising sector, there was no significant change in the intermediation structure, where depository institutions still play a leading role (Chart 2-11). The financial assets in the insurance and pension funds as well as other financial intermediaries were expanding gradually, but their size in the overall financial sector remained small. Among "other financial intermediaries," financial dealers and brokers, investment trusts and special purpose companies were gaining shares (Chart 2-12). While the shares of "other financial intermediaries" were still limited, evidence suggests that the intermediation via those institutions, including securitization in the credit market, was gradually gaining ground in Japan's financial system.

Looking at the financial sector in the United States, "other financial intermediaries" were the driving force behind the expansion of the overall financial sector from the second half of the 1990s (Chart 2-13). It appears that the originate-and-distribute business model prevailed through those intermediaries (see Box 8 for the originate-and-distribute model from the flow

of funds perspectives).

2. Credit creation from a macro perspective

This section examines the credit performance in the current financial environment.

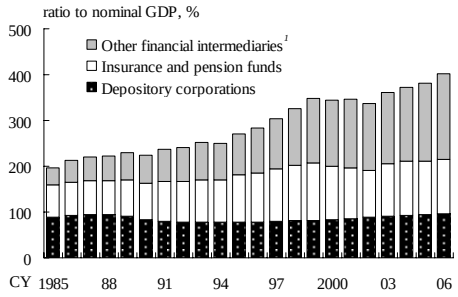
First, regarding the level of short-term interest rates relative to the real economy, the real interest rate gap (i.e., the real interest rate minus the trend growth rate) stayed negative from around 2003 (Chart 2-14). Despite the narrowed gap somewhat reflecting the adjustments in policy interest rates, it has been more significantly negative than the past. As a result, the level of real interest rates, adjusted for inflation, relative to the level of the real economic activity has remained low, and the accommodative financial environment has been kept intact.

Second, regarding the level of credit aggregates relative to the level of the real economic activity, both the ratio of financial liabilities of the private non-financial sector and the ratio of bank loans outstanding to nominal GDP remained almost unchanged at levels close to those in the mid-1980s (Chart 2-15). That suggests that the expansion of credit aggregates seems benign relative to the tempo of the expansion in economic activity.

Banks' lending attitude continued to be accommodative against a background of their improved risk-taking capacity due to easing capital constraints of banks and improved creditworthiness of borrowers. Recently, however, their lending attitude toward small firms became somewhat less accommodative (Chart 2-16).

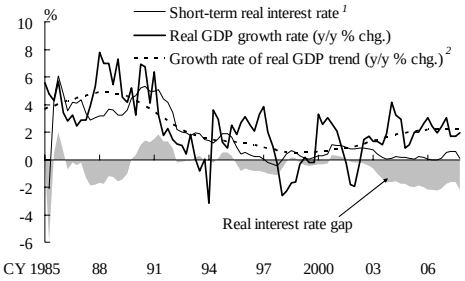
In sum, potential imbalances stemming from excessive expansion in credit aggregates and banks' excessive risk-taking behavior, which might jeopardize the stability of the financial system, are deemed to be restrained.

Chart 2-13: Financial Assets of Financial Sector in the United States



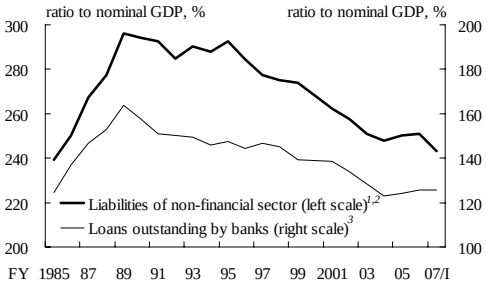
Note: *1.* Other financial intermediaries are the sum of investment trusts, financial dealers and brokers, nonbanks, and funding companies.
Source: FRB, "Flow of Funds Accounts of the United States."

Chart 2-14: Short-Term Real Interest Rate and Real GDP Growth Rate



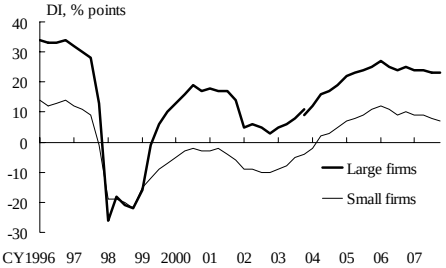
Notes: *1.* Short-term real interest rate = call rate (overnight, uncollateralized) - y/y % chg. in CPI (excluding fresh food).
2. Real GDP trend is calculated by applying the HP filter.
Sources: Cabinet Office, "National Accounts"; Ministry of Internal Affairs and Communications, "Consumer Price Index"; Bank of Japan.

Chart 2-15: Financial Liabilities in the Private Non-Financial Sector and Loans Outstanding by the Banks



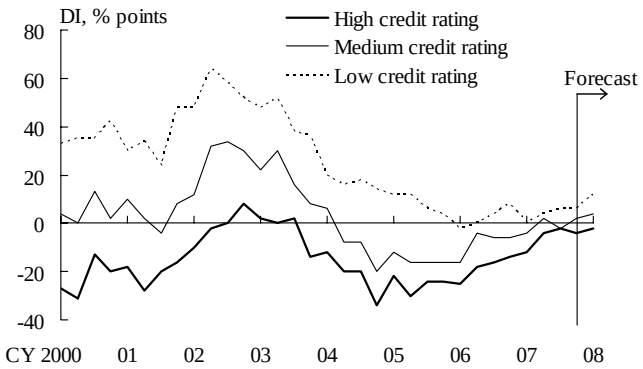
Notes: *1.* The figures for the non-financial sector are the sum of private non-financial corporations, households, and private non-profit institutions serving households.
2. Shares and other equities, and securities other than shares are evaluated at face or book values.
3. Banks are comprised of the domestically licensed banks and foreign-owned banks in Japan.
Source: Bank of Japan, "Flow of Funds Accounts."

Chart 2-16: Lending Attitude of Financial Institutions as Perceived by Firms[1]



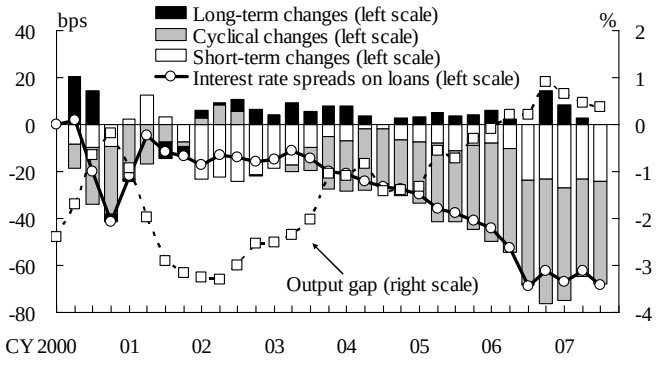
Note: *1.* DI = "accommodative" - "severe."
Source: Bank of Japan, "*Tankan* (Short-Term Economic Survey of Enterprises in Japan)."

Chart 2-17: DI for Spread of Loan Rates[1]



Note: *1*. DI for spread of loan rates = percentage of respondents selecting "widened" - percentage of respondents selecting "narrowed." All responses were given, taking account of lending margins over the past three months.
Source: Bank of Japan, "Senior Loan Officer Opinion Survey on Bank Lending Practices at Large Japanese Banks."

Chart 2-18: Decomposition of Changes in Interest Rate Spreads on Loans[1,2,3,4]



Notes: *1*. Bank of Japan estimation.
2. Interest rate spread on loans = average contracted interest rate on new loans and discounts (short-term) - CD interest rate (3-month).
3. Figures are the deviation from those in the first quarter of 2000 except for output gap.
4. For details, see Box 1 of the March 2007 issue of the *Financial System Report*.

3. Credit risk and interest rate spread on loans

Turning to the relationship between credit risk and interest rate spread on loans, the second one has remained extremely low, and that raises the possibility that the spread is unable to cover the credit cost (see discussion over Japanese banks' interest income ratios in Chapter IV of the September 2007 issue of the *Financial System Report*).

According to a survey regarding banks' stance on setting interest margins, the number of banks responding to narrower spreads has been on a down trend. The number of banks planning to raise interest margins has been increasing (Chart 2-17).

Given the aforementioned developments, a multivariate time-series model is applied to decompose the change in interest rate spreads on loans into three factors: (1) long-term changes in the lending market environment; (2) cyclical changes induced by the business cycle; and (3) short-term changes due to the stickiness of loan interest rates (Chart 2-18). The figures representing changes in spreads and their components are computed as the deviation from those in the first quarter of 2000 (i.e., 167 basis points). The analysis suggests that both the short-term changes and cyclical changes contributed to narrowing spreads until the mid-2006. Recently, however, the contribution from those factors remained nearly flat.

In general, the rise in lending rates lags behind changes in the market interest rates; thus, reducing the interest margin in the short term as the market interest rates rise. Moreover, economic expansion contributes to narrowing spreads due to the improvement in borrowers' creditworthiness and the accommodative lending attitude on the part of lenders.

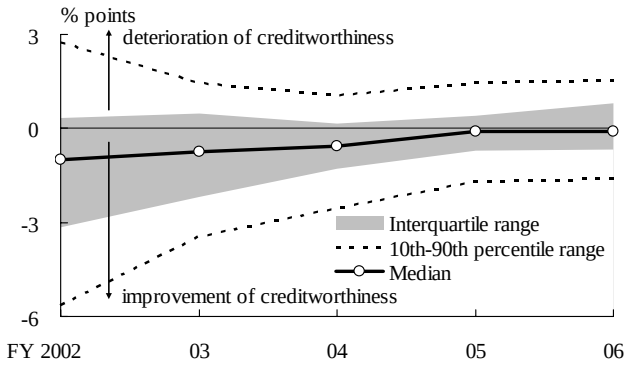
The aforementioned results suggest two things. First, the narrowing pressure on spreads attributable to

short-term changes has subsided against a background of gradual adjustments in market interest rates. Second, as the momentum of economic expansion has decreased, the narrowing pressure on spreads attributable to cyclical changes has weakened somewhat.

The performance of banks' credit portfolios as a whole has been kept high. Looking ahead, further improvement in its performance is unlikely to take place. More concretely, the probability of changes in transition matrices from "normal" borrowers or borrowers that "need attention" to borrowers requiring "special attention" or below within a year is computed to draw distributions of the annual change in the probability (Chart 2-19).

That chart shows that, first, medians remained at around zero after fiscal 2005, indicating that the number of banks whose probability of change in transition matrices improved and the number of banks whose probability of change worsened were balanced. Second, the number of banks facing worsening credit risk increased somewhat from fiscal 2004, as the 75th and 90th percentiles of the distribution were on a gradual uptrend. Due attention should be paid to whether such marginal changes in the quality of credit portfolios may proliferate.

Chart 2-19: Changes in Probability of Downgrade to NPLs[1,2,3,4]



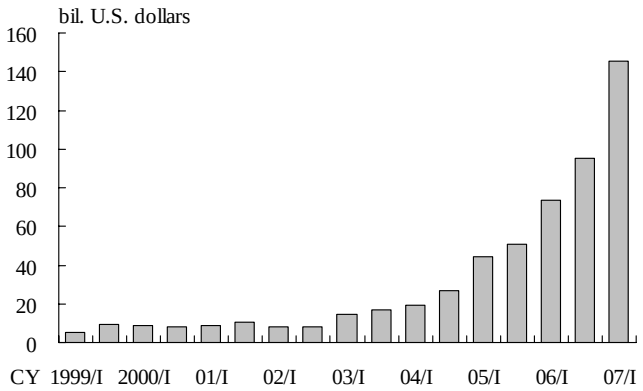
Notes: *1.* Bank of Japan estimation.
2. Changes in probability of downgrade to NPLs for the major banks and the regional banks are sorted out in ascending order. 10th, 25th, 50th, 75th, and 90th percentiles are shown.
3. Probability of downgrade to NPLs = Loans outstanding that are classified in "Normal" and "Need attention" less "Loans requiring special attention" at the beginning of the period and downgraded to "Loans requiring special attention" and lower classifications at the end of the period/Loans outstanding that are classified in "Normal" and "Need attention" less "Loans requiring special attention" at the beginning of the period.
4. Exclude banks which experienced mergers in past periods.

4. Off-balance-sheet transactions and overseas capital flows

Turning to the developments in the off-balance-sheet items, the use of derivative transactions and commitment lines increased.

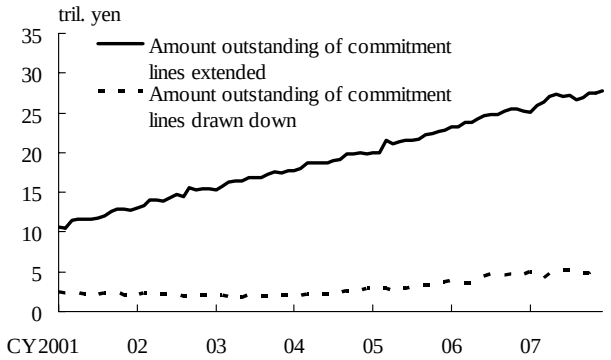
In particular, the outstanding amount of credit default swap (CDS) transactions increased rapidly in recent years, reaching 145.7 billion dollars in the first half of

Chart 2-20: CDS Amounts Outstanding[1]



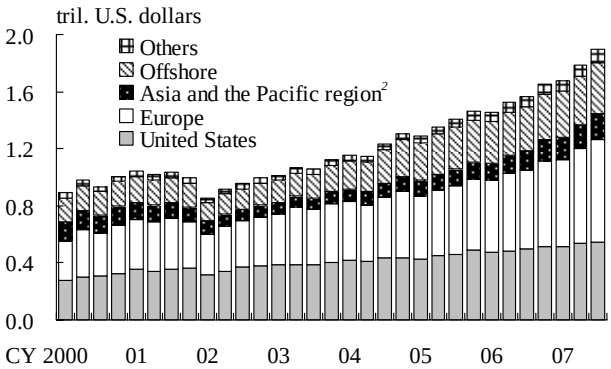
Note: *1.* Figures are based on the notional amounts outstanding bought of credit default swaps.
Source: Bank of Japan, "Results of the Regular Derivatives Market Statistics in Japan."

Chart 2-21: Amount of Commitment Lines



Source: Bank of Japan, "Commitment Lines Extended by Japanese Banks."

Chart 2-22: Consolidated Cross-Border Claims of Japanese Banks[1]



Notes: *1.* Consolidated cross-border claims in all currencies and local claims in non-local currencies of Japanese banks to each country and region.
2. Asia and the Pacific region is comprised of Australia, New Zealand, Hong Kong, Singapore and 25 countries defined as "Asia/Pacific" in the Statistics.
Source: Bank of Japan, "Consolidated International Banking Statistics in Japan."

fiscal 2007 (Chart 2-20). The demand for such transactions was on an increasing trend as financial institutions made wider use of CDS to hedge credit risk as part of credit portfolio management (CPM). Furthermore, not only the amount outstanding of commitment lines increased but the amount outstanding of commitment lines drawn down increased steadily (Chart 2-21).

In sum, the expansion of off-balance-sheet transactions was solid, and further developments need to be carefully monitored with a view to capturing the overall credit risk exposure of financial institutions.

Finally, with regard to the developments in international capital flows, Japanese banks' cross-border claims in all currencies and local claims in non-local currencies, based on the BIS consolidated international banking statistics, steadily increased from around 2002 in response to strong global demand for funds. They reached 1.8 trillion dollars in September 2007 (Chart 2-22). While the lending attitudes of the U.S. and European financial institutions have become tighter after the U.S. subprime mortgage problem, Japanese banks' international claims are expected to continue expanding. Among the regions, Japanese banks' exposure was mainly concentrated in the United States and Europe, and Asia and the Pacific region accounted for relatively a small share.

C. Individual Risk Factors Associated with Financial Intermediation

Finally, individual risk factors for the functioning of financial intermediation are examined from a micro perspective.

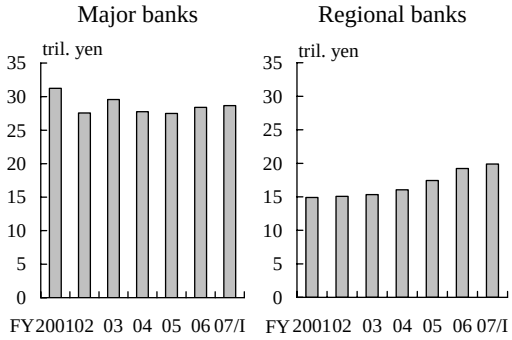
1. Banks' real estate-related exposure

In recent years, the amount of loans to the real estate industry remained almost unchanged for the major banks while it was on an increasing trend for the regional banks (Chart 2-23). Real estate-related exposure – including loans, equity participation and bond investment – of the major banks and the regional banks was about 32 trillion yen and 21 trillion yen respectively, as of the end of September 2007 (Chart 2-24). The share of that exposure to overall credit outstanding was about 11 percent for both the major banks and the regional banks (see Box 9 for the quantitative risk valuation of real estate-related exposure).

Creditworthiness of real estate businesses is influenced by the change in the rates of investment return for real estate. Examining the relationships between the default rates of real estate businesses and the rates of changes in real estate prices, the former was influenced by large swings in real estate prices (Chart 2-25).

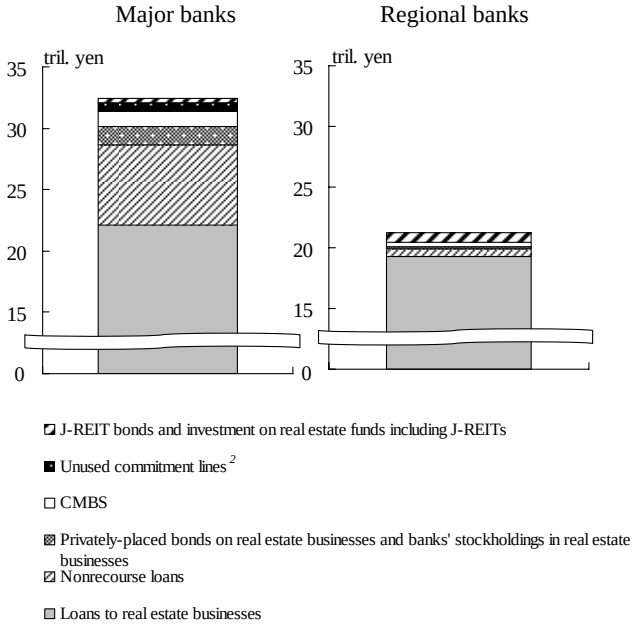
Given the above observation, the robustness of real estate businesses' balance sheets is examined against an unexpected fall in real estate prices. First, the loan to value (LTV) of real estate businesses as a whole (Chart 2-26 [1]) declined gradually from fiscal 2002 to fiscal 2005. It leveled off thereafter. Second, the real estate businesses are divided into two: "income gain-oriented real estate businesses," earning profits mainly from income gains such as lease and management of real estate properties, and "capital gain-oriented real estate businesses," earning profits mainly from capital gains such as sales of developed real estate properties and dealings in properties. The LTV of the first type was on a declining trend while that of the second type was rising. That suggests the possibility that the capital gain-oriented real estate businesses became somewhat active in external

Chart 2-23: Loans to Real Estate Industry[1]



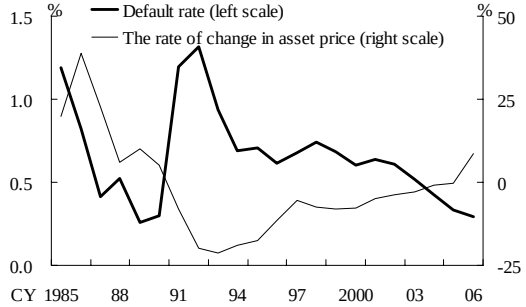
Note: *1.* Figures include nonrecourse loans.
Source: Bank of Japan, "Loans and Discounts Outstanding by Sector."

Chart 2-24: Exposures to Real Estate Sector[1]



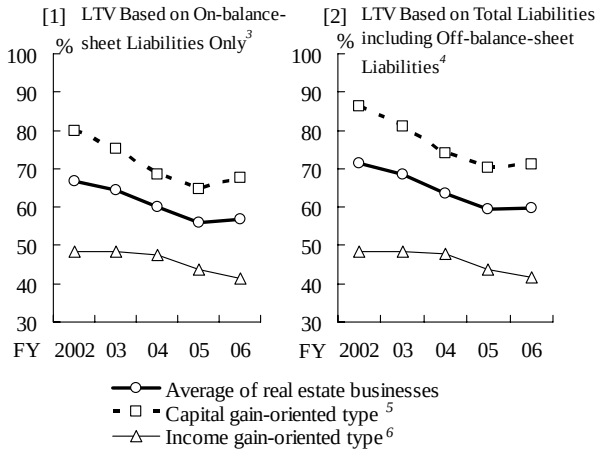
Notes: *1.* Bank of Japan estimation.
2. Figures for unused commitment lines are as of the end of March 2007. Figures for the other exposures are as of the end of September 2007.
Sources: Toyo Keizai Inc., "*The Kaisha Shikiho* (the Japan Company Handbook)"; Japan Securities Dealers Association, "Trading Volume of CP, Private Placement Corporate Bonds, etc."; Published accounts; Bank of Japan, "Loans and Discounts Outstanding by Sector."

Chart 2-25: Default Rate of Real Estate Firms and the Rate of Change in Asset Price on Real Estate Investment[1,2]



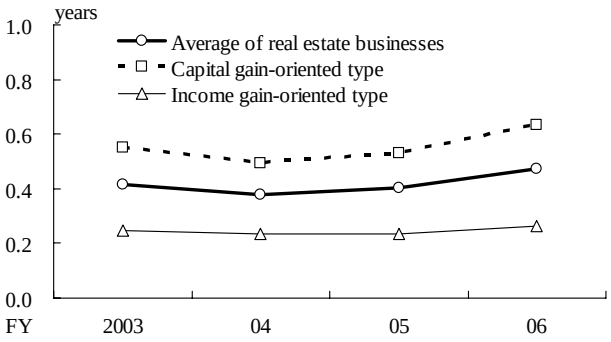
Notes: *1.* Bank of Japan estimation.
2. Rate of change in asset price = (asset price at the end of period - asset price at the beginning of period)/(asset price at the beginning of period).
Sources: Teikoku Databank; MTB-IKOMA.

Chart 2-26: LTV Ratios of Real Estate Businesses[1,2]



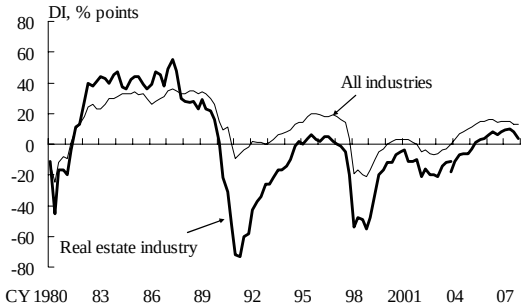
Notes: *1.* Bank of Japan estimation.
2. Figures are based on 68 consolidated companies listed from fiscal 2002 to 2006.
3. (Interest bearing liabilities - cash and deposit)/(inventory assets + income properties).
4. (Interest bearing liabilities + contingent liabilities - cash and deposit)/(inventory assets + income properties).
5. "Capital gain-oriented type" businesses mainly earn profit from capital gain, for example, by selling real estates.
6. "Income gain-oriented type" businesses mainly earn profit from income gain, for example, by leasing real estate properties or property administrations.

Chart 2-27: Inventory Turnover Period of Real Estate Businesses[1,2,3]



Notes: *1.* Bank of Japan estimation.
2. Figures are based on 68 consolidated companies listed from fiscal 2002 to 2006.
3. Inventory turnover period = inventory assets/sales.

Chart 2-28: Lending Attitude of Financial Institutions[1]



Note: *1.* DI = "accommodative" - "severe."
Source: Bank of Japan, "*Tankan* (Short-Term Economic Survey of Enterprises in Japan)."

financing.

In addition, many capital gain-oriented real estate businesses possessed real estate-related contingent liabilities off balance sheets, such as a commitment for the purchase of real estate properties under development. Taking such contingent liabilities into account in calculating the LTV as a stress scenario, the LTV of the capital gain-oriented real estate businesses shifted upward, while that of the income gain-oriented real estate businesses showed little change (Chart 2-26 [2]). Those results suggest that close attention needs to be paid to off-balance-sheet liabilities in addition to on-balance-sheet liabilities.

Looking next at the inventory turnover period, the average period was longer in the capital gain-oriented real estate businesses, with sales properties as inventory, than the income gain-oriented real estate businesses (Chart 2-27). As for the recent trends, the inventory turnover period of the capital gain-oriented real estate businesses gradually became longer from fiscal 2005, while that of the income gain-oriented real estate businesses remained unchanged. Such an increase in the average inventory turnover period itself does not necessarily indicate an increase in risk of the real estate businesses. Nevertheless, there seems to be a slowdown in sales of condominiums and the adjustment in their prices very lately. Future developments in the average inventory turnover period need to be monitored carefully in order to check the robustness of the business against a rapid fall in real estate prices.

The diffusion index of financial institutions' lending attitude (Chart 2-28) shows that the lending attitude against the real estate industry was "accommodative" from 2005, and the difference in the diffusion index between that industry and all industries was shrinking.

Recently, however, the index for the real estate industry declined and its difference with all industries widened. That suggests that financial institutions' lending attitude viewed from the real estate industry became somewhat cautious.

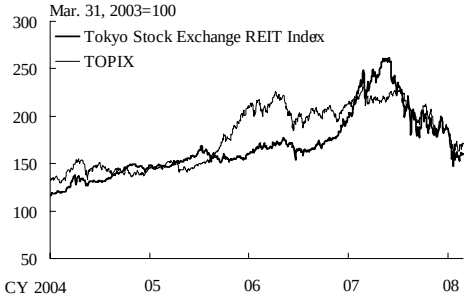
2. Real estate funds

With respect to real estate funds, the price index of J-REITs, which rose in the second half of 2006, plunged partly because overseas investors turned to net sellers as the U.S. subprime mortgage problem worsened (Charts 2-29 and 2-30). As for the inflow of funds to the real estate market via real estate funds, the expansion of J-REIT investment assets slowed somewhat, while private real estate funds increased substantially (Chart 2-31). Indeed, the growing pace of the private real estate funds accelerated even after adjusting for an increase in the number of respondents in the survey. That indicates the possibility of accumulation of properties within private real estate funds.

Cap rates of office type properties in Tokyo – the benchmark in the real estate property in Japan – were declining in recent years with the expectations for rent rises, though the pace of decline was gradually slowing (Chart 2-32). Net operating income (NOI) of individual office type properties owned by J-REITs, which hovered around 1 percent until recently, rose to 2 percent in 2007 (Chart 2-33). Most notably, the NOI-weighted median exceeded the unweighted median, suggesting that NOIs were on an uptrend with large-scale office type properties being a driving force.

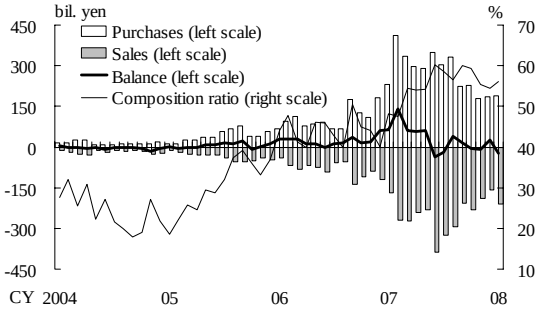
There is wariness, however, in the future profitability of some residential and commercial properties at the moment. In addition, there seems to be a decline in fund inflows to private real estate funds in some

Chart 2-29: Price Index of J-REITs[1]



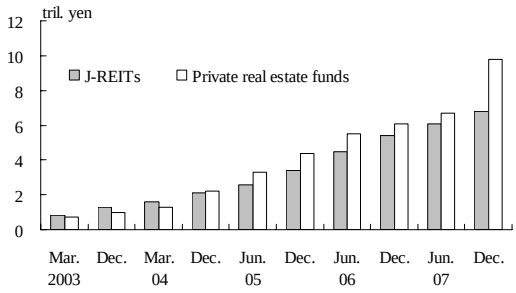
Note: *1.* The Tokyo Stock Exchange REIT Index is a capitalization-weighted index based on all REITs listed on the Tokyo Stock Exchange.
Source: Tokyo Stock Exchange.

Chart 2-30: Trading Volume of Foreigners (J-REIT) [1]



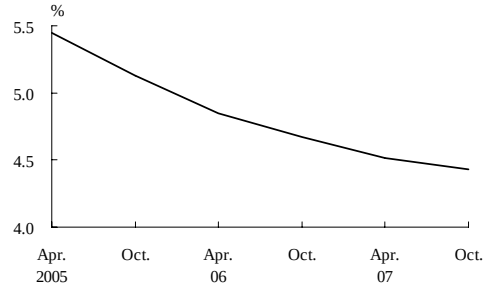
Note: *1.* Composition ratio is the ratio of volume of foreigners' sales and purchases to total trading volume of market participants whose capitals are above 3 billion yen.
Source: Tokyo Stock Exchange.

Chart 2-31: Size of the J-REIT and the Private Real Estate Fund Market[1]



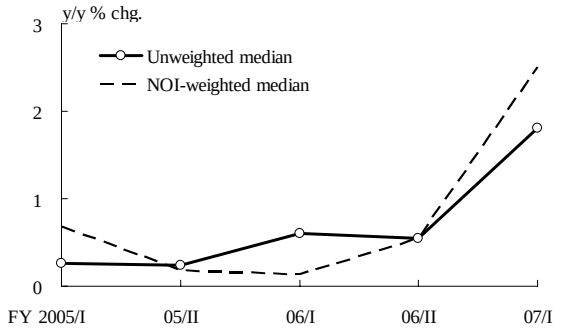
Note: *1.* Figures for private real estate funds do not include foreign funds doing business in Japan. According to the STB Research Institute, if foreign funds were included, the figure for December 2007 would reach 13.0 trillion yen.
Source: STB Research Institute.

Chart 2-32: Cap Rate of Typical Class A Office Building in Tokyo[1]



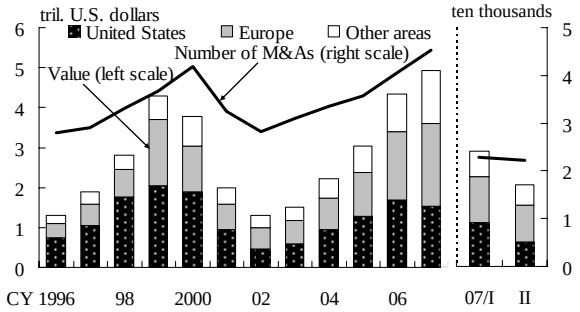
Note: *1.* The average of cap rates of average-sized class A office building in Tokyo business area.
Source: Japan Real Estate Institute, "Japanese Real Estate Investor Survey."

Chart 2-33: The Rate of Change in Net Operating Incomes (NOIs) of Office Type Properties Owned by J-REITs in Tokyo[1,2,3,4]



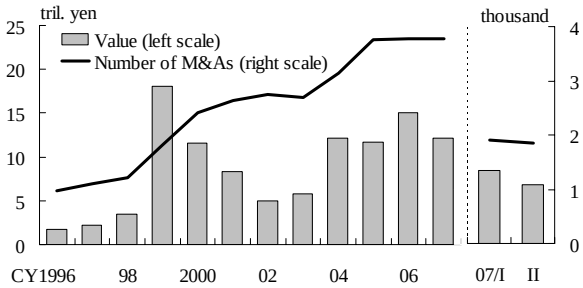
Notes: *1*. Bank of Japan estimation.
2. NOIs are adjusted by dividing NOIs per one square meter by the number of business days in a half-year period.
3. Excludes the office type properties that do not disclose their floor space or those whose operating period is short.
4. NOI-weighted median is derived by weighting the rate of change in NOIs by the level of each NOI.
Source: The Association for Real Estate Securitization.

Chart 2-34: Size of M&A Market Worldwide



Source: Thomson Financial.

Chart 2-35: Size of M&A Market in Japan



Source: RECOF.

channels. To properly gauge the risks for nonrecourse loans and equity participation to real estate funds, it is necessary to examine the effects of such changes in the business environment on the projection of rents and the feasibility of exit plans.

3. M&A financing

Global M&A activity marked a new record high in 2007 following 2006, partly reflecting the increase in the inflow of funds through private equity funds (Chart 2-34). However, a closer look at the developments in 2007 indicates that the activity in the second half of 2007 (July–December 2007) slowed substantially, compared with the first half of 2007, as evident in the United States, against a backdrop of the worsening U.S. subprime mortgage problem.

M&A activity in Japan showed steady growth in line with the global trend since 2002. Although the pace of growth slowed somewhat in the past few years (Chart 2-35), domestic M&A activity in the second half of 2007 was relatively stable, in contrast with global M&A activity. The size of domestic M&A market was slightly larger than 10 trillion yen, accounting for only 2 to 3 percent of the global market.

To analyze the risks associated with M&A financing in Japan, the leverage ratio (debt/earnings before interest, taxes, depreciation, and amortization [EBITDA]) of acquired firms is compared between Japan, the United States and Europe (Chart 2-36). The median of three countries/regions stayed at an almost identical level of around 5 multiples on average. Looking at the 90th percentile of the sample distribution, however, the leverage ratio of acquired firms in the United States was considerably high at around 60 multiples whereas those in Japan and Europe remained at a relatively low level of around 20 multiples.

The leverage ratio of Japanese firms on the whole, calculated based on the "Financial Statements Statistics of Corporations by Industry, Annually," continued to decline from their peak in fiscal 2001, and it marked 9 multiples in fiscal 2007 (Chart 2-37). The median of the leverage ratio for acquired firms in Japan stayed around 5 multiples, which was below the overall level.

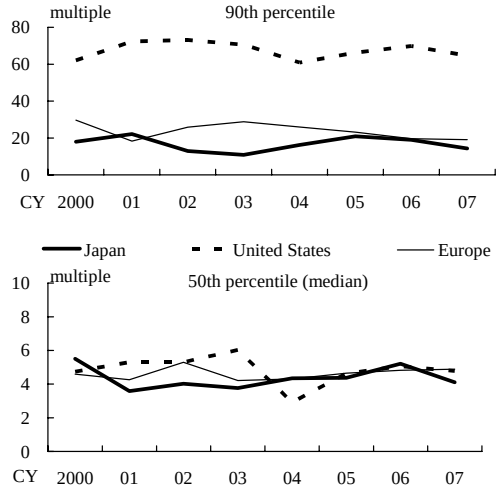
Those observations show that firms to be acquired in domestic M&A were those with relatively low leverage and high recovery rate. Given the increasing trend of M&A transactions in Japan, however, risks associated with M&A financing warrant careful attention.

For example, it appears loans for leveraged buy-outs (LBOs) – one form of M&A financing – are increasingly replaced at relatively low interest rates by conventional corporate loans shortly after the buyout. Except for the case of a significant reduction of the firm's leverage ratio after an initial buyout, the screening process during the course of refinancing needs to be carried out cautiously, for example, by applying the same screening standard as that for the initial buyout.

4. Syndicated loans

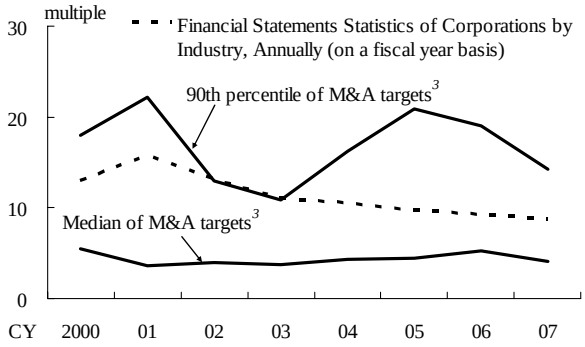
Although the volume of syndicated loans in Japan showed an increasing trend in the past few years, it marked a year-on-year decrease in 2007 (Chart 2-38, see also Box 6 in the September 2007 issue of the *Financial System Report* for the outline of syndicated loan market in Japan). Telecommunications and manufacturing sectors experienced a significant increase from 2005 to 2006, although demand for syndicated loans in those sectors came to a halt in 2007, reflecting a decrease in the number of large-scale M&A deals. Consequently, that led to a decrease in the

Chart 2-36: Leverage Ratio of M&A Targets[1]



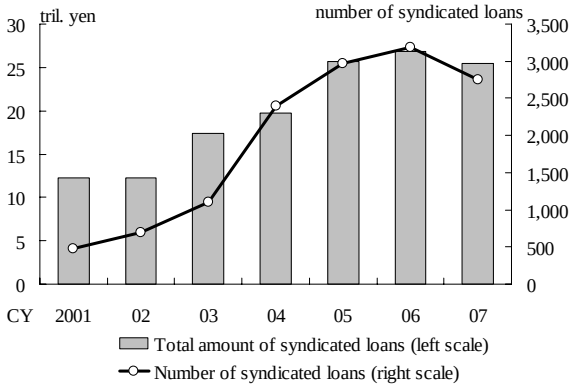
Note: *1*. Leverage ratio = debt/ EBITDA.
Source: Thomson Financial.

Chart 2-37: Leverage Ratio of Macro Average and M&A Targets in Japan[1,2]



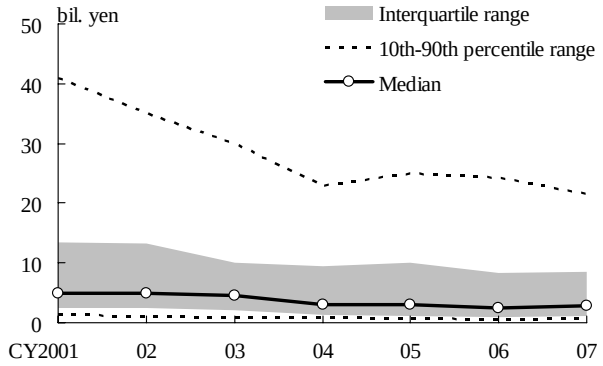
Notes: *1*. Leverage ratio of Financial Statements Statistics of Corporations = total debt/(earning before taxes + interest rate + depreciation).
2. Figure of Financial Statements Statistics of Corporations in fiscal 2007 is estimated using data from the first quarter to third quarter of 2007.
3. 90th percentile and median in Japan are the same as those of Chart 2-36.
Sources: Thomson Financial; Ministry of Finance, "Financial Statements Statistics of Corporations by Industry, Quarterly," "Financial Statements Statistics of Corporations by Industry, Annually."

Chart 2-38: Syndicated Loans Arranged in Japan[1,2]



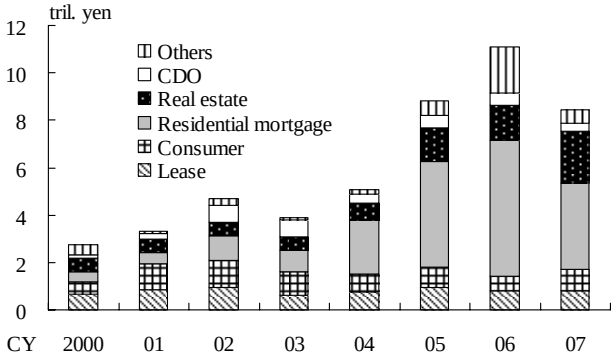
Notes: *1*. Figures from fiscal 2001 to 2003 are from Thomson Financial, and those for other years are from the Bank of Japan.
2. Figures cover syndicated loans arranged by the major banks and the regional banks in any currencies.
Sources: Thomson Financial; Bank of Japan, "Loans Syndicated and Loans Transferred."

Chart 2-39: Size of Syndicated Loans[1]



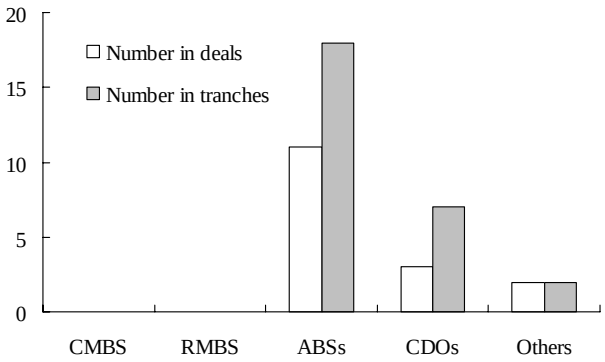
Note: *1.* Figures for syndicated loans arranged in Japan.
Source: Thomson Financial.

Chart 2-40: The Outstanding Issue of Structured Credit Products by Type of Underlying Assets



Source: Deutsche Securities Inc.

Chart 2-41: Number of Downgrades of Structured Credit Products by Type of Underlying Assets during 2007[1,2]



Notes: *1.* ABSs are all backed by consumer finances.
2. Figures include multiple downgrades in one tranche or one deal.
Source: Credit Suisse.

volume of syndicated loans in 2007.

In addition, deals in the syndicated loan market were downsizing (Chart 2-39). The downsizing of a deal was characterized by the decline in the number of large-size deals and the concentration into small-size deals.

In light of increasing M&A deals and further implementation of credit portfolio management in Japan, the syndicated loan market is likely to be a more important market in meeting various needs in financing activity. Thus, ongoing efforts by market participants to enhance market infrastructure are all the more important in the development of the market.

5. Domestic structured credit market

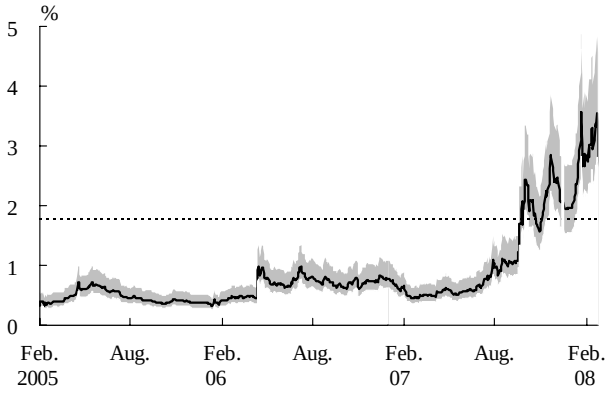
The amount of issues in the domestic structured credit market continued to increase in recent years; however, it decreased significantly in 2007 compared with the previous year (Chart 2-40). Behind that was a substantial decline in the issuance of residential mortgage-backed securities (RMBS), as a result of weaker demand for domestic residential mortgages. The downgrading of domestic structured credit products in 2007 was concentrated on consumer loan asset-backed securities (ABS) and small and medium-sized enterprise collateralized debt obligation (CDO) (Chart 2-41). That suggests that domestic factors were the driving force behind the downgrading. The effect of the U.S. subprime mortgage problem on the market was thus considered limited at this point.

As for consumer finance companies, triggered by the medium-sized consumer finance company's filing for civil rehabilitation proceedings in September 2007, the market view of consumer finance business has deteriorated. The market implied default probabilities,

computed from CDS premiums of major consumer finance companies, surged significantly from the second half of 2007 (Chart 2-42), although caution is in order in interpreting the level of the market implied default probabilities because it might be influenced by the presence of market liquidity premiums.

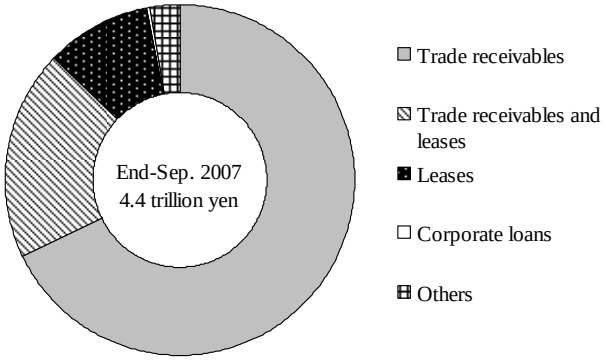
Lastly, the current condition of Japanese ABCP market is reviewed. In the wake of the U.S. subprime mortgage problem, liquidity risk manifested itself in the U.S. ABCP market. In Japan, the underlying assets of the ABCPs, mainly sponsored by banks, were mostly composed of trade receivables (Chart 2-43). By contrast, the underlying assets of the ABCPs in the United States comprised a great variety (Chart 2-44). Among them, residential mortgages and CDOs occupied large shares. In other words, the structure of Japanese ABCP programs was mainly funding-oriented, responding to firms' demand for working capital. Thus, the maturity gap between assets and liabilities in Japanese ABCP programs was considered limited.

Chart 2-42: Market Implied Default Probabilities of Major Consumer Finance Companies[1,2,3]



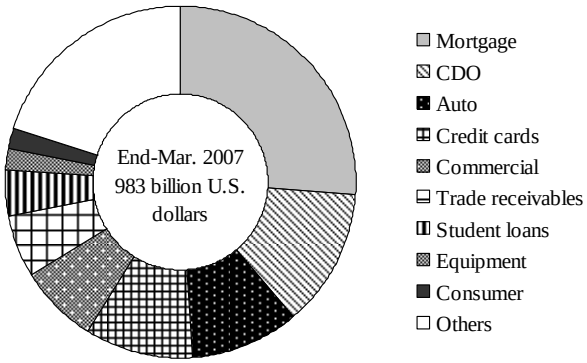
Notes: *1.* Bank of Japan estimation.
2. Figures are the average of market implied default probabilities of five consumer finance companies (Acom, Aiful, Promise, Sanyo Shinpan Finance, and Takefuji) estimated using the premium of three- and five-year credit default swap. The bold line indicates the estimated probability based on the assumption of 45 percent recovery rate. The shadow bound is the area between the estimated probabilities based on the assumption of 30 percent recovery rate and 60 percent recovery rate.
3. The dashed line located between 1.5 and 2.0 percent represents the historical default rate of companies rated below BB by Rating and Investment Information in July 2007.

Chart 2-43: The Outstanding Issue of ABCPs Sponsored by Japanese Banks by the Type of Underlying Assets[1]



Note: *1.* Bank of Japan estimation.
Sources: Japan Securities Depository Center Inc.; Japan Securities Dealers Association; Published accounts of credit rating agencies.

Chart 2-44: The Outstanding Issue of ABCPs in the United States by the Type of Underlying Assets[1,2]

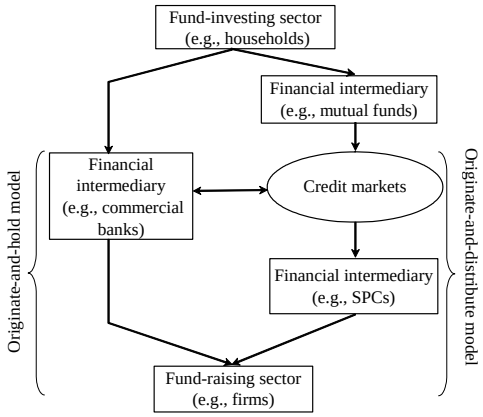


Notes: *1.* Dollar-based ABCPs rated or surveyed by Standard and Poor's.
2. Covers 90 percent of ABCPs surveyed by the FRB.
Source: Standard and Poor's.

Box 8: Originate-and-Distribute Model: Flow of Funds Perspectives

In Japan's financial system, the "originate-and-distribute model," in which various financial intermediaries including banks transfer and re-allocate funds and risks through credit markets, has prevailed in addition to the "originate-and-hold model," in which banks assume the whole intermediary services between the fund-investing sector and the fund-raising sector.

Chart B8-1: Financial Intermediation



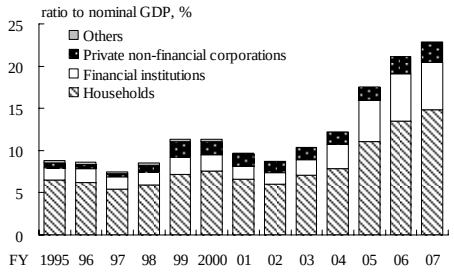
In the originate-and-distribute model, investors purchase indirect securities issued by financial intermediaries, and investors' funds will be channeled through credit markets in order to invest in structured credit products that have been originated by other financial intermediaries. The funds are ultimately transferred to the fund-raising sector (the right-hand side of Chart B8-1). Compared with the originate-and-hold model (the left-hand side of Chart B8-1), which has prevailed over the years, the originate-and-distribute model has the following characteristics: (i) credit markets are used in the process of financial intermediation; (ii) different types of financial intermediaries are involved that are intended to channel funds between the fund-investing sector and the fund-raising sector; and (iii) risks will be shared among a wide range of investors and intermediaries.

(Financial intermediation through the originate-and-distribute model: Japan-U.S. comparison)

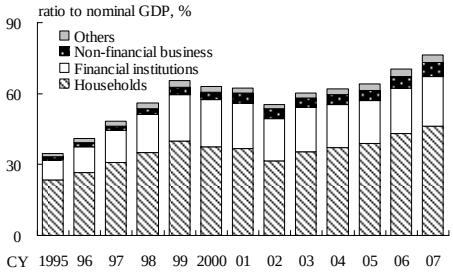
This section compares the originate-and-distribute models in Japan and the United States based on the flow of funds statistics. First, in terms of the channel between the fund-investing sector and the financial intermediary, the outstanding balance of mutual funds reached 22.8 percent of nominal GDP (117.6 trillion yen) at the end of September 2007 in Japan (Chart B8-2). That was mainly due to an increase in households' investment in mutual funds. During the same period in the United States, the outstanding balance of mutual funds marked 76.5 percent of nominal GDP (10.7 trillion dollars), a size far exceeding that of Japan. That also reflected households' increasing appetite for mutual funds.

Chart B8-2: Mutual Funds Investment by Sectors[1,2]

Japan



United States

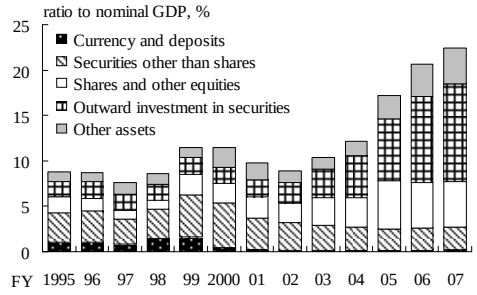


Notes: *1.* Charts in 2007 are as of the end of September 2007. That applies to all the Charts in this box.
2. The U.S. mutual funds are the sum of money market mutual fund shares and mutual fund shares. Households include private nonprofit institutions serving households in Japan and nonprofit organizations in the United States respectively.
Sources: Bank of Japan, "Flow of Funds Accounts"; FRB, "Flow of Funds Accounts of the United States."

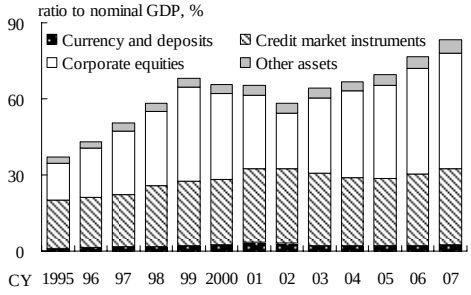
Second, in terms of the channel between the financial intermediaries, the assets held by mutual funds in Japan reached 22.5 percent of nominal GDP (115.7 trillion yen) at the end of September 2007. That was mainly due to a rapid increase in outward securities after fiscal 2002. In the United States, while outward securities investment is not available, the mutual funds mainly invested in corporate equities (Chart B8-3).

Chart B8-3: Assets Held by Mutual Funds[1]

Japan



United States

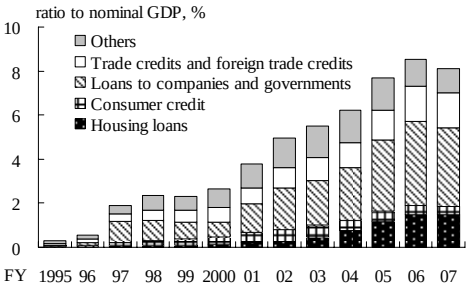


Note: *1*. The U.S. mutual funds are the sum of money market mutual fund shares, mutual fund shares, and closed-end and exchange-traded funds.
Sources: Bank of Japan, "Flow of Funds Accounts"; FRB, "Flow of Funds Accounts of the United States."

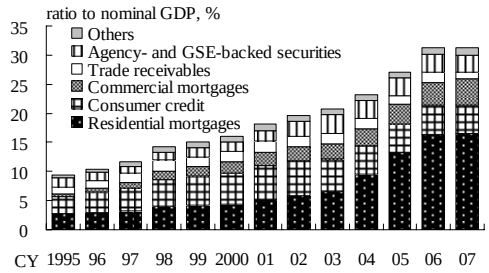
Finally, in terms of the channel between the financial intermediary and the fund-raising sector, the asset composition of the special purpose companies (SPCs) is markedly different between Japan and the United States (Chart B8-4). The SPCs in Japan mainly hold loans to companies as underlying assets, and the total assets outstanding stood at 8.1 percent of nominal GDP (41.8 trillion yen) at the end of September 2007. By contrast, the major part of underlying assets of the SPCs in the United States is residential mortgages, and the total assets outstanding registered 30.6 percent of nominal GDP (4.3 trillion dollars). That suggests that the securitization of mortgage-type assets had been more active in the United States.

Chart B8-4: Assets Held by Special Purpose Companies[1]

Japan



United States



Note: *1*. The special purpose companies in the United States are the issuers of asset-backed securities. Residential mortgages in the United States comprise home mortgages and multifamily residential mortgages.
Sources: Bank of Japan, "Flow of Funds Accounts"; FRB, "Flow of Funds Accounts of the United States."

Globalization and progress in information and communications technology will drive Japan's financial sector to incorporate the originate-and-distribute model in its current business model based on long-term customer relationships. Based on the experience and lessons learned from the recent U.S. subprime mortgage problem, it remains a challenge to enhance its intermediary function by building resilient market infrastructure that helps market discipline function more effectively.

Box 9: Quantitative Risk Valuation of Real Estate-Related Exposure

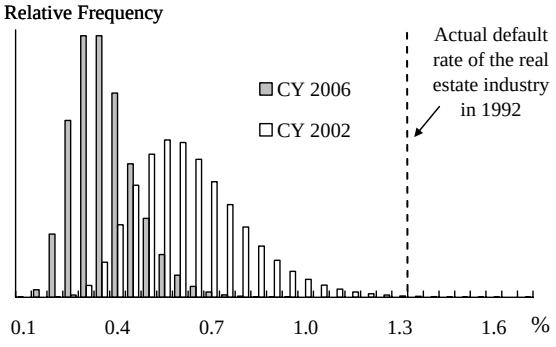
Banks have various kinds of exposure related to real estate such as loans to real estate businesses, real estate nonrecourse loans, and CMBS. That calls for assessing the risks related to real estate businesses in a comprehensive manner. This Box considers a framework to assess the default rate of real estate-related exposure quantitatively by using the variation in real estate prices as a common risk factor. As an example, the box uses loans to real estate businesses and real estate nonrecourse loans which account for a substantial portion of banks' total real estate-related exposure.

First, the case of loans to real estate businesses is considered. There is a negative correlation between the default rate of the real estate industry and the single-year capital return on real estate investment (see Chart 2-25). That suggests that its default rate can be modeled as a function of the variation in real estate prices. The following incorporates the rate of change in real estate prices as an explanatory variable into the framework of the firm value model (so-called, conditionally independent credit risk model). According to that model, default occurs when the firm value, which is a random variable, falls below a certain level (threshold). In applying the model in business practice, it is often assumed, for simplicity, that the firm value is a latent variable following normal distribution. Applying McNeil and Wendin (2007), however, it is assumed here that the firm value of the real estate industry is composed of the rate of change in real estate prices and a latent variable following normal distribution. By doing so, the variation in real estate prices can be explicitly incorporated into the default risk of real estate businesses. Serial correlation is incorporated into the latent variable in order to take account of inertia in the default rate.

The following numerical study uses default data of real estate business from Teikoku Databank and the rate of change in real estate prices provided by MTB-IKOMA. The observation period is 22 years from 1985 to 2006. The Markov Chain Monte Carlo method is used in estimating parameters.

The posterior distribution of the estimated parameters shows that the posterior probability of the coefficient regarding the rate of change in real estate prices being less than zero is below 5 percent, which suggests that the coefficient is significant.

Chart B9-1: Distribution of One-Year-Ahead Conditional Default Rate of the Real Estate Industry[1]



Note: *1*. Bank of Japan estimation.

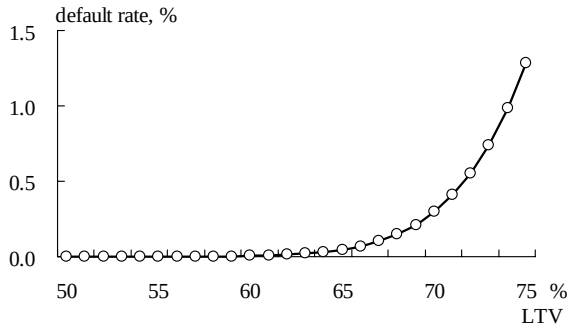
Based on the estimation results above, the posterior distribution of the conditional default rate of one year ahead is calculated at the end of 2002 and 2006 respectively, in order to check the effects of changes in real estate prices on the default rate of the real estate industry (Chart B9-1). The conditional default rate at 99th percentile is derived in order to examine the behavior in the right tail area. At the end of 2006, the default rate at 99th percentile was 0.66 percent, reflecting favorable conditions such as the rise in real estate prices observed in 2006. However, at the end of 2002, when the rise in real estate prices had not started yet, the default rate at 99th percentile was 1.15 percent, a level close to the actual default rate of the real estate industry at the time of the collapse of the bubble economy.

Next, the default rate of real estate nonrecourse loans is examined. Since there are few default cases of real estate nonrecourse loans due to their short history in Japan, it is difficult to directly calculate the default rate of those loans. However, treating nonrecourse loans as "put option whose underlying asset is real estate," the default risk of those loans against the drop in real estate prices can be evaluated. Consider a simple case of a lender's payoff at the time of maturity for a real estate nonrecourse loan (zero-coupon loan for simplicity) without amortization. If the real estate price at maturity P_T exceeds the principal D ($P_T>D$), the principal will be repaid to the lender, while if the price is below the principal ($P_T<D$), the amount repaid to the lender will be equivalent with the real estate price P_T. Therefore, the amount of payoff that the lender receives at maturity will be min[P_T, D], and the cashflow of that real estate nonrecourse loan is the principal D minus the cashflow of a put option with real estate as underlying assets (Chart B9-2). Given that relationship, the default rate of a real estate nonrecourse loan (the probability that the real estate price P_T falls below principal D at maturity) can be expressed as a function of the rate of change in real estate prices.

Chart B9-2: Lender's Payoff at the Time of Maturity

$$\min[P_T, D] = D + \min[P_T - D, 0]$$
$$= D - \max[D - P_T, 0]$$

Chart B9-3: Default Rate by LTV at the Time of Lending[1,2,3]



Notes: *1*. Bank of Japan estimation.
2. Geometric Brownian motion is adopted as underlying stochastic process of real estate prices.
3. Parameters of the process are estimated using the data "single-year capital appreciation return" of MTB-IKOMA.

Based on that concept, the default rate of one year ahead is calculated for various levels of LTV. The result shows that the default rate becomes higher as the LTV at the time of lending becomes high, due to the increase in the probability that the real estate prices drop below the principal at the time of maturity (Chart B9-3). In practice, however, the recovery of the principal will depend on various structures to protect preferential debts (e.g., financial covenants based on LTV or DSCR [debt service coverage ratio] that can trigger a change in the priority of the payment). The effects of those conditions should be taken into account in evaluating the amount of risk.

In sum, the risk related to real estate-related exposure can be captured by using the rate of change in real estate prices as a common risk factor. It is necessary to further sophisticate and improve not only risk assessment and management of individual projects but portfolio management of real estate-related exposure as a whole.

Reference:
McNeil, Alexander J., and Wendin, Jonathan P., "Bayesian Inference for Generalized Linear Mixed Models of Portfolio Credit Risk," *Journal of Empirical Finance*, vol.14, no.2, 2007, pp.131-149.

Chart 3-1: Basic Structure of Banks' Income Simulation Model

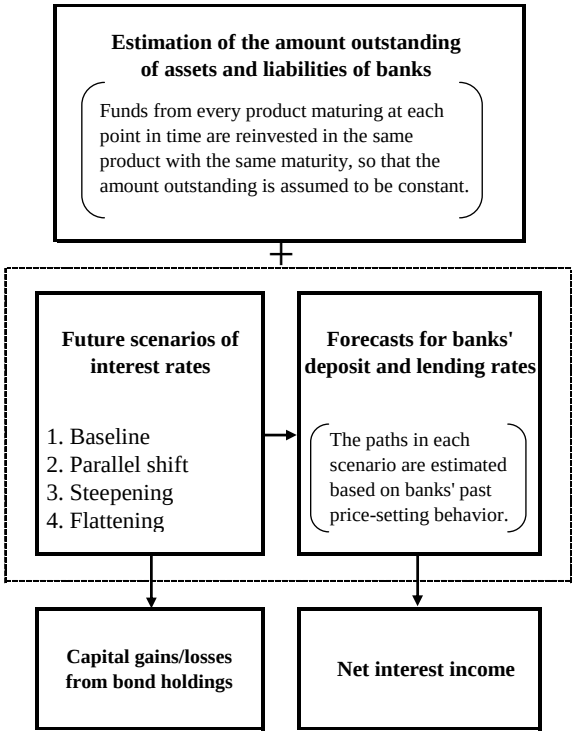
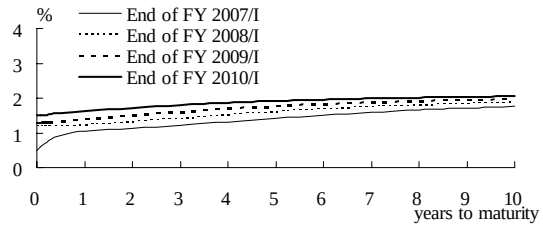
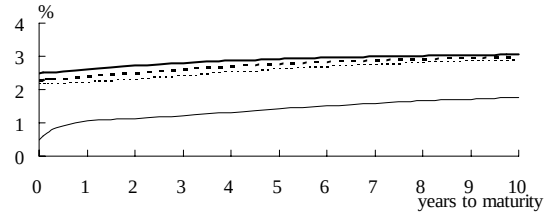


Chart 3-2: Spot Rate Curves[1]

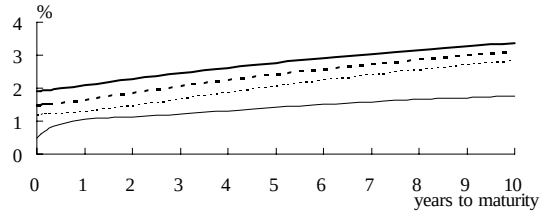
[1] Baseline Scenario



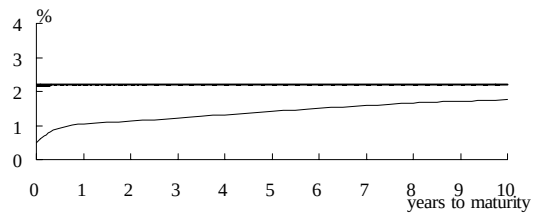
[2] Parallel Shift Scenario



[3] Steepening Scenario



[4] Flattening Scenario



Note: *1.* Bank of Japan estimation.

III. Robustness of the Banking System

This chapter examines the robustness of Japan's banking sector against changes in interest rate risk and credit risk associated with economic fluctuations.

A. Simulation Analysis of Interest Rate Risk

In the same way as the previous *Financial System Reports*, the interest rate risk of the banks is analyzed by using a simulation model that incorporates the actual balance-sheet structure of the major banks and the regional banks at the end of first half of fiscal 2007 as well as their interest-rate-setting behavior in the past (see Chart 3-1 for the outline).

First, assets and liabilities according to products and maturities at the end of September 2007 are estimated for both the major banks and the regional banks. In addition, it is assumed that every product is rolled over upon maturity and thus the composition of assets and liabilities will remain unchanged.

Second, with respect to the future path of market interest rates, four scenarios are considered (Chart 3-2): [1] a baseline scenario (future short-term interest rates follow the path implied by the forward rate curve at the end of September 2007), [2] a parallel shift scenario (interest rates at all maturities shift upward compared with the baseline scenario by 1 percentage point over one year), [3] a steepening scenario (the 10-year spot rate shifts upward compared with the baseline scenario by 1 percentage point, and upward shift becomes smaller as time-to-maturity shortens, and [4] a flattening scenario (the overnight rate shifts upward compared with the baseline scenario by 1 percentage point, upward shift becomes smaller as time-to-maturity lengthens, and flattens at the level of the long-term forward rate). It should be noted that the

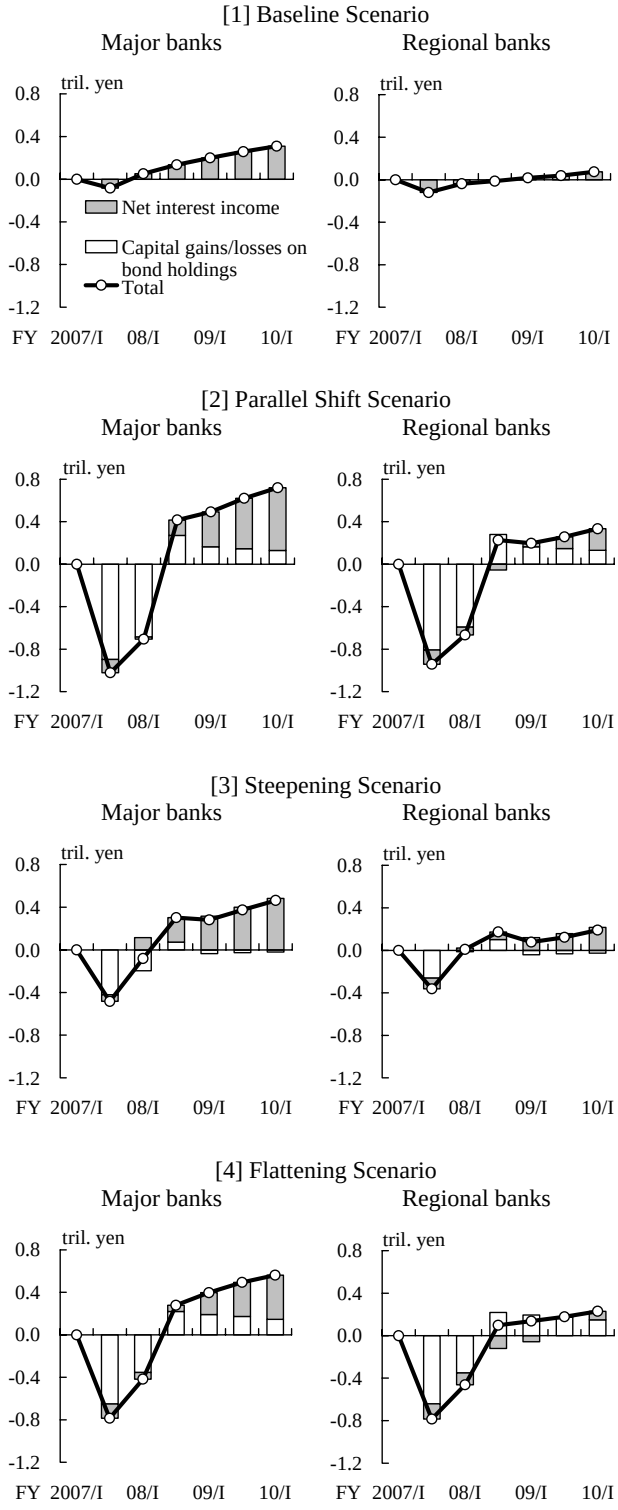
interest rate scenarios here are set to crystallize the risks of the banking sector and do not necessarily mean that they are likely to manifest themselves.

Third, banks' interest-rate-setting behavior for various products is estimated, using the past values of deposit/lending rates and market rates. In the estimation, it is assumed that (i) the spread between time deposit/lending rates and the corresponding market rate with a similar maturity converges on its historical average in the long term, and (ii) based on the past performance, the ratio of the ordinary deposit rate to the 1-month LIBOR is about 25 percent.

Finally, using the scenarios of future interest rates and the estimation results mentioned above, out-of-sample forecasts for banks' deposit/lending rates are obtained and the future paths of net interest income as well as the capital gains/losses from bond holdings are calculated. From this *Report*, the treatment of the capital gains/losses from bond holdings in the baseline scenario is altered due to the fact that the changes in the present value of bond holdings are associated with the expected yield curve shifts at the end of September 2007. By contrast, in three scenarios of upward shifts in yield curves, unexpected yield curve shifts lead to the unexpected changes in the present value of bond holdings, which are treated as capital gains/losses from bond holdings as before.

The overall picture of the impact of a rise in market interest rates on banks' net profits can be summarized as follows (Chart 3-3). First, looking at net interest income, the increase in interest payments on short-term debts such as deposits and market-based financing tends to exceed the increase in interest income from lending and bond holdings in the short term. Therefore, in all the scenarios, net interest income for both the major banks and the regional banks slightly declines

Chart 3-3: Impact of Rises in Market Interest Rates on Banks' Profit[1,2]



Notes: *1.* Bank of Japan estimation. Figures for net interest income are changes from actual results in the first half of fiscal 2007.
2. Net interest income from domestic operations in the first half of fiscal 2007 was 1.9 trillion yen for the major banks and 2.1 trillion yen for the regional banks.

from the initial level of the first half of fiscal 2007, where net interest income from domestic operations was 1.9 trillion yen for the major banks and 2.1 trillion yen for the regional banks. In the medium term, net interest income for the major banks exceeds the initial level at a relatively early stage, while for the regional banks it does not reach the initial level for a while. That is because the maturity of both lending and bonds is longer for the regional banks than for the major banks, and the negative impact of the regional banks' past lending and bond investment with low interest rates on their future interest income remains longer (Chart 1-27).

Second, looking at the capital gains/losses from bond holdings in three scenarios of upward shifts in yield curves, the capital losses occur in the short term, while they diminish in the medium term. The magnitude of the losses and their diminishing pace depend on the changes in the shape of the yield curve.

The results of each scenario can be summarized as follows. In the baseline scenario for the major banks and the regional banks, the increase in interest payments on short-term debts exceeds that in interest income from lending and bond holdings in the short term as the yield curve rises gradually, and thus net interest income for the major banks and the regional banks both decreases slightly. One year later, however, for the major banks, net interest income restores the initial level of the first half of fiscal 2007. As for the regional banks, since the pace of recovery in interest income from lending and bond holdings remains slow, it takes two years for its net interest income to regain the initial level. In both scenarios, the impact is marginal relative to the size of net interest income during the first half of fiscal 2007.

In the parallel shift scenario, the capital losses from bond holdings both for the major banks and the regional banks are the largest in the short term among the three scenarios of upward shifts in yield curves. Those losses are, nevertheless, less than the amount of net interest income recorded in the first half of fiscal 2007. In addition, net interest income declines in the short term both for the major banks and the regional banks. That is due to the increase in interest payments on short-term debts, since the rise in short-term interest rates is larger than that in the steepening scenario described later. In the medium term, however, the amount of increase in interest income from lending exceeds that in interest payments on deposits.

In the steepening scenario, capital losses from bond holdings occur in the short term both for the major banks and the regional banks. In the medium term, the increase in interest income from lending gradually exceeds that in interest payments on deposits, as is the case in the parallel shift scenario.

Finally, in the flattening scenario, significant capital losses from bond holdings occur in the short term both for the major banks and the regional banks. In the medium term, net interest income for the major banks increases, as in the other scenarios, while that for the regional banks recovers at the slowest tempo among the four scenarios due to the large gap between the maturity of their assets and liabilities.

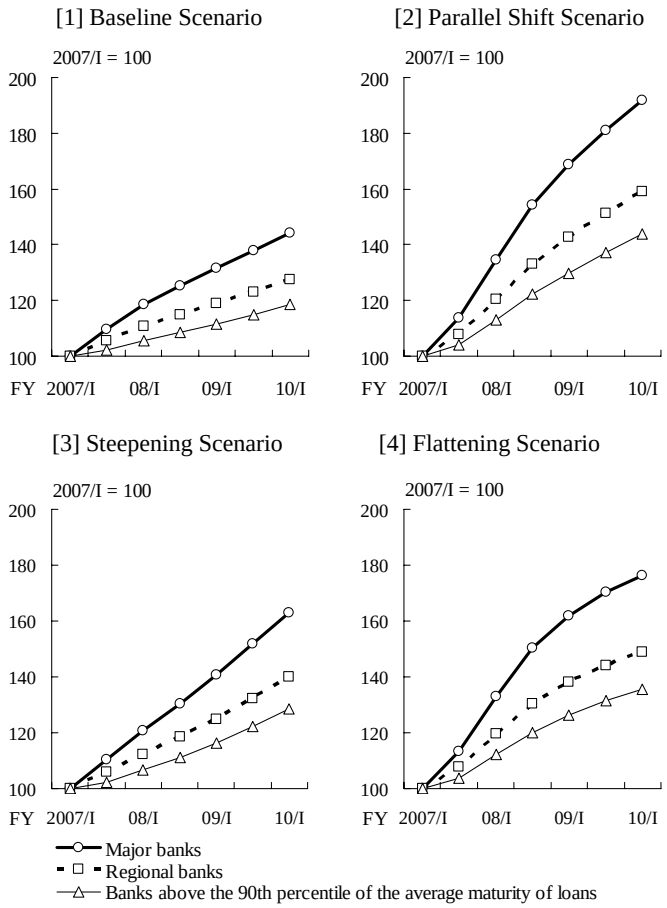
In sum, when the yield curve shifts upward gradually, as implied in the baseline scenario, the changes in net interest income and net capital gains from bond holdings have only a marginal impact on profits for both the major banks and the regional banks. In the other three scenarios of upward shifts in yield curves, capital losses from bond holdings arise in the short term, while the amount of capital losses remains below half-year net interest income. In the medium term, net

interest income for the major banks recovers in all of the three scenarios of upward shifts in yield curves. Recovery of net interest income for the regional banks, however, remains small and gradual due to the long maturity of their assets. The negative impact on net interest income in the simulation period (over three years) becomes particularly large in the flattening scenario.

To quantitatively analyze the effects of the prolonged average maturity of loans on the recovery of interest income on loans, loan portfolios of banks above the 90th percentile of the average maturity of loans among the regional banks are aggregated. Then, the pace of the recovery for the aggregated portfolio is compared under the four scenarios with the major banks and the regional banks (Chart 3-4).

The analysis shows that, in all the scenarios, the recovery pace of interest income on loans for banks with long average maturity of loans is at about 70 percent of that of the regional banks as a whole. As pointed out in Chapter I, amid lengthening the average maturity of loans, the differences among banks tended to widen in recent several years (Charts 1-27 and 1-29). Lengthening the average maturity of loans and widening the differences among banks are likely to be one of the key factors in explaining why there is a difference in the pace of loan interest margins' improvement (Chart 1-30). For banks whose average maturity of loans were lengthening, proper management of interest risk of the entire portfolio is needed through, for example, interest rate swap, off-balancing the loans, and utilizing long-term liabilities such as time deposits, based on their own expectation for the future course of interest rates.

Chart 3-4: Interest Income on Loans[1]



Note: *1.* Bank of Japan estimation.

B. Macro Stress-Testing of Credit Risk and Risk Associated with Stockholdings

This section assesses the robustness of Japan's financial system against a severe and prolonged economic downturn from the viewpoints of credit risk and risk associated with stockholdings.

1. Macro stress-testing of credit risk

As was done in the September 2007 issue of the *Financial System Report*, the robustness against credit risk is assessed by using a framework incorporating a mechanism in which an economic downturn increases credit risk by downgrading firms' creditworthiness (see Chart 3-5 and Box 8 of the September 2007 issue of the *Financial System Report*).

It should be noted, however, that in the macro stress-testing of this *Report*, the way to assess credit risk is altered. The ratio of a maximum loss to Tier I capital is calculated for both stress and baseline scenarios, and the difference between the two ratios is used to assess credit risk (in the following, this indicator is referred to as "excess credit risk," Chart 3-6).

The September 2007 issue of the *Report* used data on loan portfolios at two different points of time, and focused on the maximum loss in the stress scenario to assess the robustness against stress. However, it is difficult for this approach to gauge the impact of credit risk on banks' capital under stress.

The maximum loss in the baseline scenario is likely to be covered, with an expected loss (EL) portion by provisions and an unexpected loss (UL) portion by allocated risk capital. Therefore, the difference of the maximum loss to Tier I ratio between the baseline scenario and the stress scenario can be interpreted as

Chart 3-5: Steps of Macro Stress-Testing

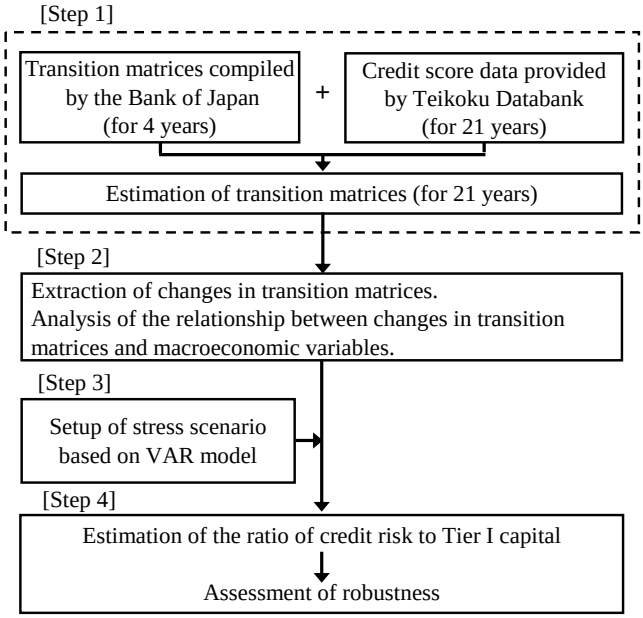
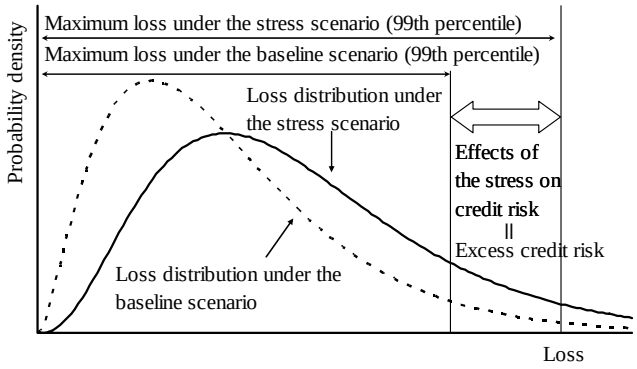


Chart 3-6: Effects of Stress on Credit Risk



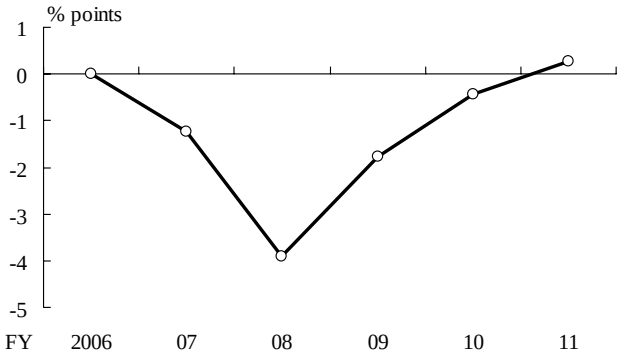
the indicator of an increase in credit risk which imposes an additional burden on Tier I capital. In the following, the indicator is used to assess the robustness.

As for the path of the real GDP growth rate, in line with the September 2007 issue of the *Financial System Report*, a vector autoregression (VAR) model is constructed using five variables – real GDP, the CPI (excluding fresh food), the amount outstanding of bank lending, the nominal effective exchange rate, and the overnight call rate. The baseline scenario assumes no external shock after the fourth quarter of 2007 to compute a path of real GDP growth rate. The stress scenario assumes an adverse shock to GDP in the fourth quarter of 2007 of a size that is likely to occur with a probability of 1 percent in an annualized base, and the shock will subside by half in three quarters. The real GDP growth rate in the stress scenario is lower than that in the baseline scenario by about 4 percent points in fiscal 2008, and subsequently recovers to the baseline in about two to three years (Chart 3-7). However, it should be noted that the stress scenario is set to crystallize the risks in Japan's banking sector, and does not necessarily mean that they are likely to manifest themselves.

Chart 3-8 shows the amount of excess credit risk for the major banks and the regional banks in the stress scenario using data on loan portfolios at the end of September 2007. According to the estimate, the increase in the amount of excess credit risk induced by the decline in real GDP growth rate peaks out in fiscal 2008, subsequently subsides as GDP growth rate recovers, and approaches the baseline level.

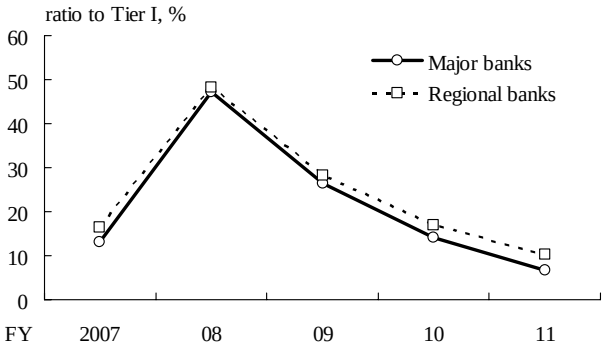
In the meantime, the maximum excess credit risk to Tier I capital is estimated at about 50 percent. Credit risk in the major banks and the regional banks to Tier I

Chart 3-7: GDP Growth Rate under Stress Scenario: Deviation from Baseline Scenario[1,2]



Notes: *1*. Stress scenario is the real GDP growth rate under the assumption of an adverse shock to GDP in the third quarter of fiscal 2007.
2. Bank of Japan estimation.

Chart 3-8: Excess Credit Risk[1]



Note: *1*. Bank of Japan estimation.

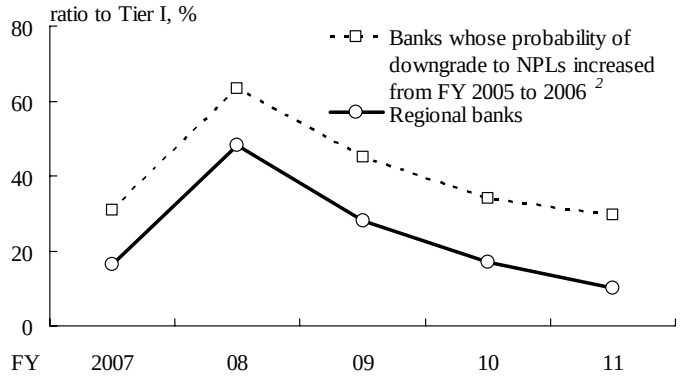
capital is currently contained at the level of 25 to 35 percent as a whole, as pointed out in Chapter I. Excess credit risk under the stress scenario is estimated to put the additional impact on banks' capital larger than the current level of UL for credit risk. Judging from the current profit levels and the capital positions including Tier II capital in the banking sector, it appears that the level of excess credit risk remains under control.

Since the purpose of macro stress-testing is to crystallize the risk inherent in the banking sector, it continues to be important for banks to keep an eye on changes in the risk-return balances of their loan portfolios. While the quality of banks' loan portfolios seems to have remained sound as a whole, the transition in borrower classifications indicates some signs of deterioration, albeit limited, as pointed out in Chapter II.

In order to examine the above point in depth, those regional banks are picked, whose probability of downgrade to NPLs increased 2 percent points or more in fiscal 2006. Then macro stress-testing for those banks is conducted (Chart 3-9). The results show that, for the banks whose probability of downgrade to NPLs increased, the increase in excess credit risk is larger and the declining pace of excess credit risk is slower than the regional banks as a whole when the shock subsides. That result implies that the pace of increase in excess credit risk is faster than that for the regional banks on the whole. In addition, when the shock subsides, the pace of decrease in excess credit risk is slower as well. Such an asymmetric property between an economic downturn and an economic recovery is likely to be more significant for those regional banks whose probability of downgrade to NPLs increased than the regional banks as a whole.

In general, the lower the borrower classification in the

Chart 3-9: Excess Credit Risk for Banks Whose Probability of Downgrade to NPLs Increased[1]



Note: *1*. Bank of Japan estimation.
2. Probability of downgrade to NPLs is calculated by the same method as in Chart 2-19.

transition matrix is, the stronger the borrower's specific factor influences, and the weaker the economic fluctuation factor influences. In an economic downturn, the probability of downgrading from upper to lower classification goes up. In a recovery, by contrast, the probability of upgrading from lower to upper classification does not change as much. Thus, once the borrower's classification is being downgraded in a severe economic downturn, the borrower tends to remain in lower classification and the borrower's classification improves only gradually in an economic recovery.

2. Macro stress-testing of risk associated with stockholdings

Next, macro stress-testing for risk associated with stockholdings is introduced in this *Report*.

The previous *Financial System Reports* pointed out that, when the stress of a severe and prolonged economic downturn was imposed on the financial system, not only credit risk would increase by way of firms' defaults and deterioration in borrowers' classification but also risk associated with stockholdings would manifest itself through the plunge in stock prices. In addition, as pointed out in Chapter I, market risk associated with stockholdings, along with credit risk, accounted for a substantial portion of the overall amount of risks held by the banking sector. It is therefore deemed important to assess the banking sector's robustness against risk associated with stockholdings during an economic downturn.

This *Report* analyzes risk associated with stockholdings under stress by assuming the two mechanisms below (see Box 10 for the outline of the analysis). First, a severe shock to the economy is likely to worsen the prospects of corporate profits and

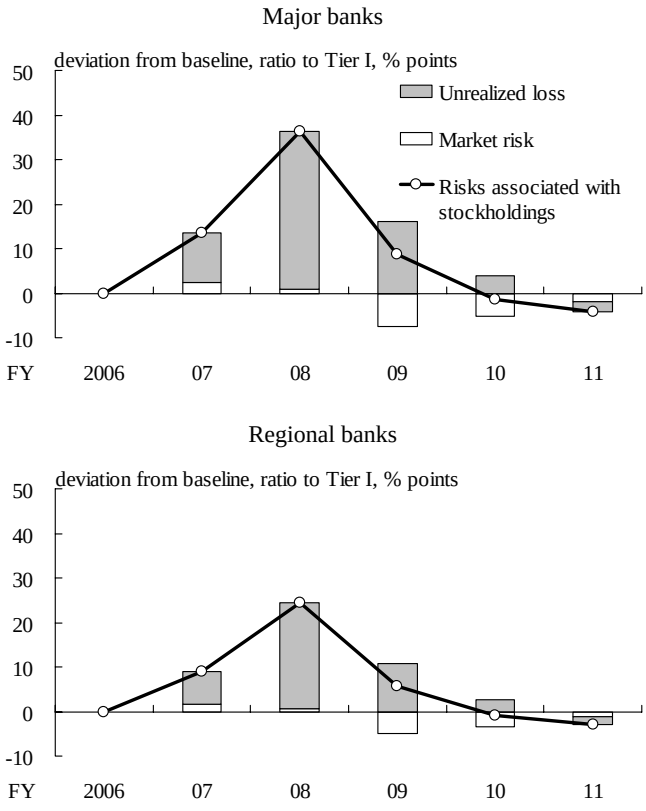
increase default probability, thereby lower corporate ratings as well as stock prices. Second, a sever shock to the economy is also likely to increase the uncertainty of the stock market and its volatility.

The same stress scenario is used for macro stress-testing of credit risk to estimate the future path of stock prices (TOPIX) and their volatility. Given the estimated paths of the level and the volatility of stock prices, the ratios of unrealized gains/losses and market risk to Tier I capital are estimated as deviations from those in the baseline scenario. Then, the additional impact of stress is assessed by deducting unrealized gains/losses from market risk, since the risk associated with stockholdings is likely to manifest itself in these two forms under stress.

The results show that unrealized gains of stock holdings substantially decline, compared with those in the baseline scenario due to a plunge in stock prices (Chart 3-10). By contrast, changes in market risk are limited since the decline in outstanding balance of stockholdings because of the plunge in stock prices offsets the rise in volatility.

Based on those results, due attention needs to be paid to the possibility that, in the stress scenario of a severe and prolonged economic downturn, risk associated with stockholdings manifests itself in the form of a decline in unrealized gains of stockholdings stemming from the substantial fall in stock prices, in addition to the increase in credit risk. As shown in Chart 1-34, market risk associated with stockholdings had a high proportion in the overall risk both for the major banks and the regional banks, and thus it is critical to assess and manage risk-return balances of stockholdings.

Chart 3-10: Risk Associated with Stockholdings under Stress Scenario[1,2]



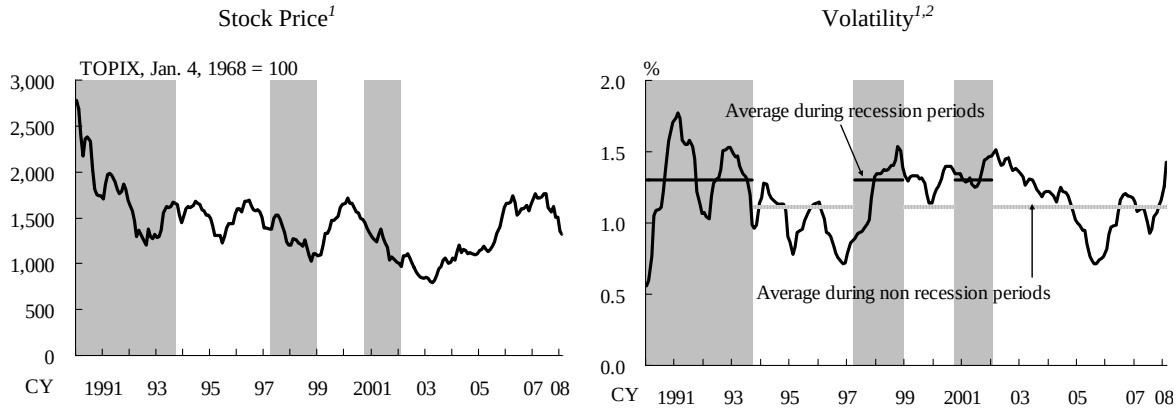
Notes: *1*. Bank of Japan estimation.
2. Risk associated with stockholdings is the sum of market risk and unrealized gains/losses.

Box 10: Macro Stress-Testing of Risk Associated with Stockholdings

The previous *Financial System Reports* assessed the robustness of the financial system by macro stress-testing that deals solely with credit risk. However, as the *Reports* repeatedly pointed out, when the stress of an economic downturn is imposed on the economy, not only credit risk increases by way of firms defaults and deterioration of borrower classification, but also risk associated with stockholdings is also likely to manifest itself due to a fall in stock prices. As pointed out in Chapter I, market risk associated with stockholdings, along with credit risk, accounted for a substantial portion of the overall amount of risk held by banks. Therefore, macro stress-testing against risk associated with stockholdings is conducted to assess the robustness of the financial system.

First, the relationship between stock prices and the business cycle is summarized. During an economic downturn, there is a tendency that stock prices fall and volatility rises (Chart B10-1). That relationship reflects a mechanism in which the shock of an economic downturn, through a decline in prospects for corporate profits and an increase in probability of default, lowers stock prices and increases stock market uncertainty, leading to a rise in volatility. That implies that it is important to analyze credit risk and risk associated with stockholdings together in assessing the stress of an economic downturn on the financial system.

Chart B10-1: Business Cycle and Stock Price



Notes: *1*. Shaded areas indicate recession periods.
2. Historical volatility is computed using daily returns during one year.
Source: Tokyo Stock Exchange.

Second, the robustness of the financial system against risk associated with stockholdings during an economic downturn needs to be assessed from two viewpoints; unrealized gains/losses and market risk measured by value-at-risk (VaR) associated with stockholdings. A fall in stock prices will reduce the unrealized gains. However, the direction of change in market risk is unable to be determined a priori, since market risk is likely to increase with a rise in volatility due to a fall in stock prices, while it is also likely to decrease with a decline in the market value of banks' stockholdings.

Given the relationship between business cycle, stock prices, and volatility, the simulation of unrealized gains/losses and market risk is carried out as follows (see Chart B10-2 for the overview of the entire process). First, the portfolio of stockholdings is assumed to be constant at the level of the latest period throughout the forecast period. Second, the future path of stock prices is estimated by common factor components in transition

matrices for borrower classification, which is also used in the macro stress-testing of credit risk (Chart B10-3). The transition of borrower classification captures changes in firms' creditworthiness, and stock prices are also considered to change, reflecting the prospects of corporate profits and default probability. Therefore, the transitions of borrower classification and stock prices have a strong positive correlation.

Finally, the future path of stock price volatility is estimated. By using the past relationship between stock price changes and volatility, the level of volatility is computed from stock price changes estimated by common factor components in transition matrices (Chart B10-4). The stock price changes and the volatility are used to compute the future paths of unrealized gains/losses and market risk. The robustness is assessed, based on the results of the predictions of unrealized gains/losses and market risk.

Chart B10-2: Basic Structure of Macro Stress-Testing of Risk Associated with Stockholdings

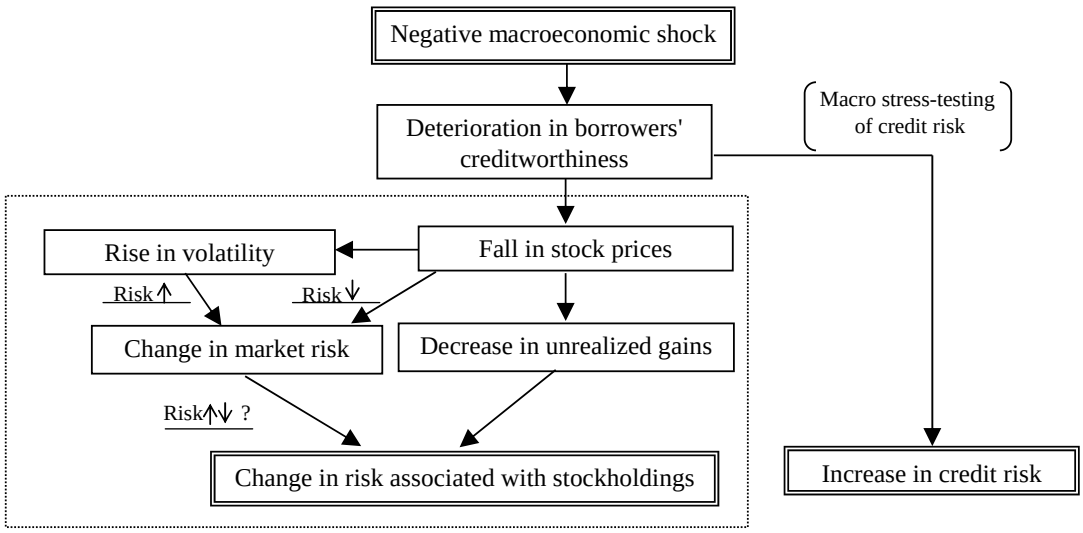
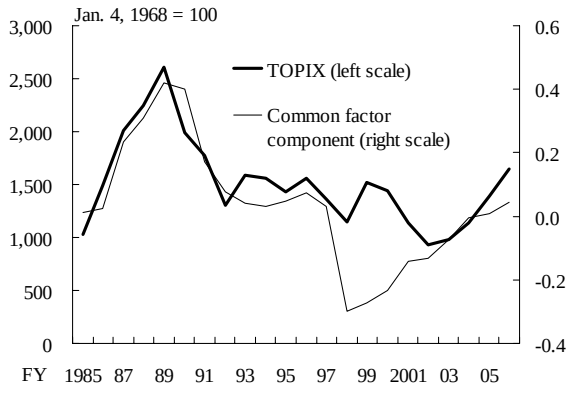
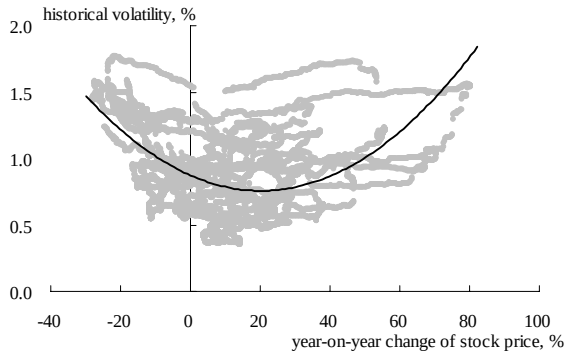


Chart B10-3: Stock Price and Common Factor Components[1]



Note: *1.* Common factor component is estimated by the Bank of Japan.
Source: Tokyo Stock Exchange.

Chart B10-4: Stock Price Change and Volatility[1,2]



Notes: *1.* Year-on-year change of stock price is computed using average of daily price level data during last one year for each period.
2. Historical volatilities are computed using daily returns during one year.
Source: Tokyo Stock Exchange.