BOJ Reports & Research Papers

# Financial System Report

**Bank of Japan**
**March 2010**

This report mainly covers 12 major banks and 108 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 108 regional banks comprise the 64 member banks of the Regional Banks Association of Japan and the 44 member banks of the Second Association of Regional Banks, as of September 30, 2009.

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

This *Report* basically uses data available as of January 31, 2010.



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## Preface

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

The report analyzes the stability of the financial system from two perspectives: the functioning of the system and its robustness. The functioning of the system is assessed in terms of whether it performs the financial intermediation function to promote an efficient allocation of economic resources, thereby contributing to the sustained development of the economy. The robustness is assessed in terms of whether the financial system can absorb factors that might jeopardize its stability. Financial system research and analysis also provide a valuable insight into the assessment of monetary policy's transmission channels.

Amid the global financial crisis that began in the autumn of 2008, Japan's financial system has been stable compared with the U.S. and European financial systems. With this recognition, the March 2010 issue of the *Financial System Report* analyzes and assesses the current state of Japan's financial system, while taking greater account of comparisons with the U.S. and European financial systems and changes in banking behavior after the crisis. In so doing, this *Report* has extended the previous analytical framework. It has also analyzed the feedback effect of the robustness of the financial system on its functioning. Furthermore, this *Report* presents, in the Appendix, new analytical results on the profitability of Japan's banking sector, which had been discussed in the past issues of the *Report*, while taking account of a linkage with the profitability of Japan's corporate sector.

The experience of the global financial crisis has shown again the importance of ensuring the stability of the financial system. In realizing the stability of the financial system, it has become increasingly important to gauge, from a macroprudential perspective, the current state of the financial system and where risks exist amid the interconnection of economic activity and that of global economic and financial developments, in addition to ensuring the soundness of individual financial institutions. Bearing in mind the importance of such a macroprudential perspective, the Bank will continue to conduct research and analysis on Japan's financial system and publish them in the *Financial System Report*.

## The Current State of Japan's Financial System and Challenges: An Overview

### *Assessment of the current state of Japan's financial system*

The global financial system has emerged from the critical situation that began in the autumn of 2008. It is now moving towards stabilization, with profits of major financial institutions in the United States and Europe recovering against the backdrop of improvement in their funding conditions in the financial markets. In this circumstance, Japan's financial system has remained stable as a whole. Increased credit costs and losses due to impairment in stockholdings reflecting the rapid drop in the level of economic activity and the decline in asset prices have been easing off. Recently, Japanese banks have taken measures that contribute to enhancing the stability of Japan's financial system, such as strengthening their capital bases through capital increase and reducing market risk associated with stockholdings.

However, the move towards stabilization of the global financial system has largely been underpinned by various policy measures. The balance-sheet adjustment notably in the household sector still continues in the United States and Europe. Bank lending has been declining. Concerns over sovereign risk have emerged in the international financial markets. Owing to these developments, attention is warranted because the global financial system remains weak.

As for Japan's financial system, while credit costs have been suppressed so far, the loan quality has been deteriorating. Market risk associated with stockholdings is still high at banks. Interest rate risk is looming as the result of increases in long-term investment. In this situation, Japan's financial institutions need to make continuous efforts to improve their risk management and strengthen their capital bases, while properly assessing their risk-return balance.

### *Financial intermediation function*

Since the outbreak of the global financial crisis, growth in bank loans in the United States and Europe has been consistently declining. In contrast, bank loans in Japan significantly increased towards the beginning of 2009 against the backdrop of the decline in firms' sales and the shrinkage of CP and corporate bond markets. Since then, bank loans have started to decline because demand for funds for financing capital investment has decreased and the issuance of corporate bonds has increased. On the whole, the financial intermediation function of Japan's financial system has been maintained while bank lending, depending on the situation, has partly complemented

the role played by the financial markets.

The improvement in firms' funding since the beginning of fiscal 2009 is not only due to an improvement in sales but mainly due to the firms' retrenchment. The capacity utilization rate, while it is rising, has not reached a level sufficiently above the break-even point. Although policy measures such as the government's emergency guarantee program have supported the funding of small and medium-sized firms, smaller firms still face severe financing conditions. Going forward, careful attention is warranted as to whether financial institutions can continue to appropriately perform their financial intermediation function.

*Robustness of the financial system*

Japanese banks' risks relative to Tier I capital have decreased somewhat as a whole since the beginning of fiscal 2009. Funding liquidity risk has been restrained in terms of not only yen currency but also foreign currencies against the backdrop of improving functioning in the global financial markets since the spring of 2009. As for the outlook, banks' capital bases are not likely to decline substantially as a whole, even if credit costs rise and stock prices stagnate under the severer macroeconomic conditions. Thus, the robustness of Japan's financial system has been maintained on the whole. Nevertheless, the capital adequacy ratios might stay at low levels at banks whose profitability and capital strength are relatively weak. Owing to such concerns, some degree of weakness still remains in Japan's financial system.

Looking at the prospect of the financial intermediation function as implied from the robustness analysis of the financial system, it should be noted that banks' cautious stance in their risk-taking could constrain real economic activity in a situation where their capital bases decline as a whole under the severer macroeconomic conditions.

*Profitability of Japan's banking sector*

Japanese banks face two challenges in terms of their profit structure: low profitability and large fluctuations in profits. Profitability of Japanese banks remains far below that of the U.S. and European banks, mainly due to low interest margins on loans. Large fluctuations in banks' profits are attributable to changes in credit costs and realized gains/losses on stocks. It should be noted that the profitability of Japanese firms is also far below that of their counterparts overseas. Banks' low profitability is thus paired with firms' low profitability.

Going forward, in the course of the Japanese economy's search for a new growth path, Japanese banks are expected to provide financial services depending on the

characteristics of their client firms, by discerning the prospective development of each firm. In the long run, the provision of such financial services will promote an efficient allocation of economic resources and strengthen the profit bases on the part of firms as well as banks, thereby contributing to ensuring the stability of Japan's financial system.

# I. Developments Surrounding Japan's Financial System: Global Financial System Moving Towards Stabilization and Balance-Sheet Problem in the United States and Europe

The global financial system has emerged from the critical situation that began in the autumn of 2008 and is moving towards stabilization. In line with the improvement in the funding situation in financial markets,[1] the profits of financial institutions in major countries have been recovering mainly in the area of investment banking. Some major U.S. and European banks have repaid the public funds they received during the global financial crisis. The liquidity shortage in the U.S. dollar funding markets that emerged after the outbreak of the crisis has been resolved. From the perspective of Japanese financial institutions, funding conditions in foreign currency have nearly returned to normal. In this circumstance, Japan's financial system has generally remained stable.

Nevertheless, the move towards stabilization in the global financial system has largely been underpinned by various policy measures around the globe. Banks' balance-sheet adjustment is likely to continue as long as debt reduction is under way in the private non-financial sector, which faces the problem of excess debt. Even at major U.S. and European banks, in contrast with the recovery in profits in investment banking, the level of credit costs is still high. Furthermore, the Dubai shock and the fiscal situation in Greece have heightened concern over sovereign risk.[2] Owing to these developments, attention is warranted because the global financial system remains weak.

This chapter first provides an overview of developments in the global financial system from the perspective of assessing the risks to Japan's financial system. It then reviews the current situation of Japan's financial system in comparison with those of U.S. and European financial systems.

## A. Global Financial System Moving Towards Stabilization

### *Alleviation of funding liquidity constraints*

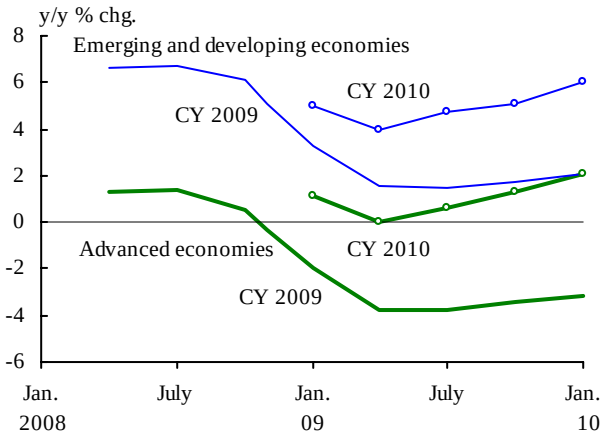
Since 2009, the outlook for global economic growth has been revised upward gradually as uncertainty about contraction in financial and economic activities has subsided (Chart 1-1). In this circumstance, funding liquidity constraints that intensified globally from

[1] For the improvements in financial markets, see the February 2010 issue of the *Financial Markets Report*, Bank of Japan.

[2] In November 2009, a Dubai governmental firm requested debt rescheduling.

the autumn of 2008 have been easing due to a) improvement in the functioning of financial markets, b) the progress in deleveraging by U.S. and European financial institutions, and c) a decline in the private non-banking sector's demand for funds.

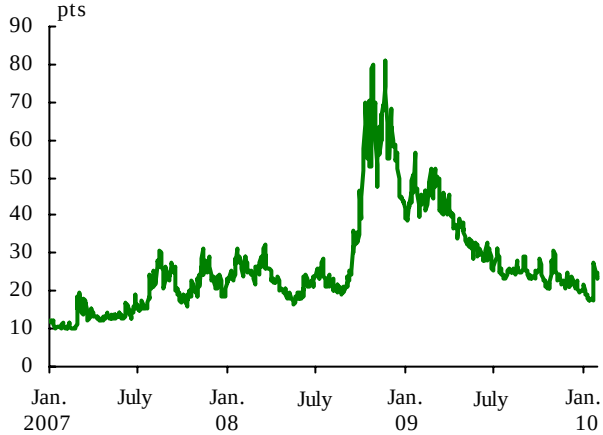
**Chart 1-1: World Economic Outlook**[1]




Note: *1.* Growth rate of real GDP.
Source: IMF, "World Economic Outlook."

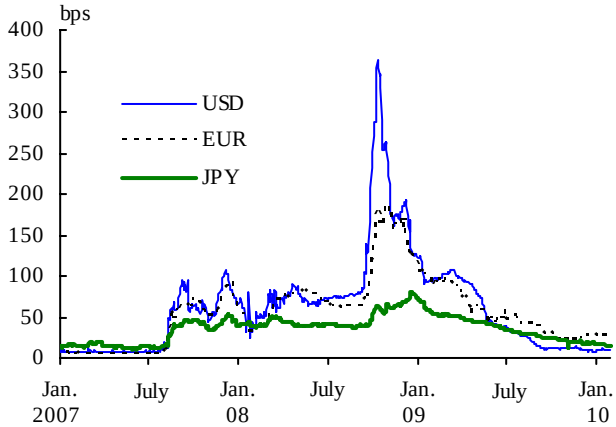
Decline in uncertainty about the contraction in financial and economic activities has led to an improvement in the risk appetite of financial market participants. The VIX index (implied volatility of stock prices), an index of risk appetite, which surged following the outbreak of the financial crisis, declined in 2009 as the expectation for economic recovery rose (Chart 1-2). The Libor-OIS spread, the risk premium associated with market funding, peaked in the autumn of 2008 and has been declining thereafter (Chart 1-3). It has recently returned to the pre-crisis level. With aggressive funds provision by central banks around the globe, financial markets have restored stability to a certain extent, and funding liquidity constraints of U.S. and European financial institutions that relied heavily on market funding have eased materially.

**Chart 1-2: VIX Index**[1]




Note: *1.* Implied volatility of S&P 500 Index.
Source: Bloomberg.

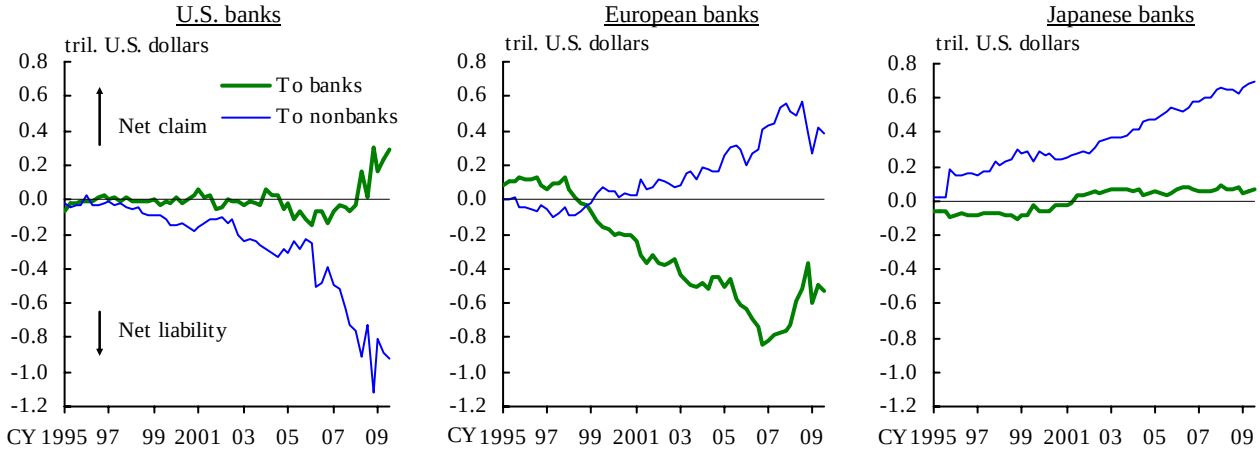
**Chart 1-3: 3-Month Libor-OIS Spreads**




Source: Bloomberg.

In particular, for short-term U.S. dollar funds, market transactions have become smooth since U.S. money market funds (MMFs), the major providers of funds, normalized their funds provisioning stances in the spring of 2009. The reduction of dollar interbank liabilities by European banks appears to have contributed to improving market funding conditions by reducing excess demand for U.S. dollars in the dollar funding market. European banks, which did not have retail dollar deposits, increased massively their short-term interbank liabilities denominated in U.S. dollars as they expanded their businesses in the global financial markets. The dollar liabilities (excluding foreign exchange swaps) of European banks in the interbank markets were significantly large compared with those of Japanese banks, and this caused instability in the dollar funding market (Chart 1-4). Since 2008, European banks have reduced their dollar liabilities and their current funding liquidity risk has been contained (see Section C of Chapter III for U.S. dollar funding condition of Japanese banks).

**Chart 1-4: Banks' Net Foreign U.S. Dollar Claims by Nationality**



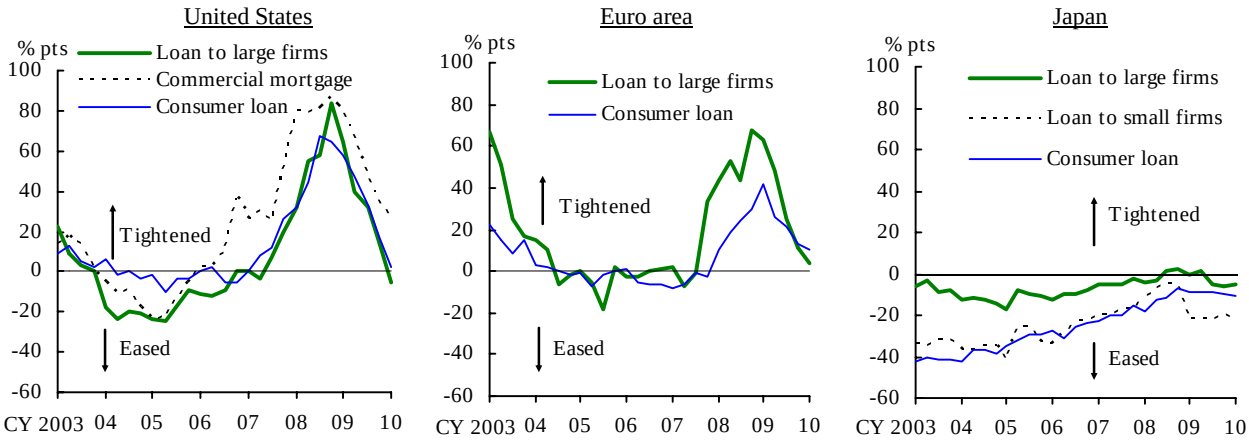

Source: BIS, "International Locational Banking Statistics."

### *Alleviation of lending constraints*

Since the beginning of 2009, the tightening of lending stances by U.S. and European financial institutions has been coming to a halt against a backdrop of spreading expectations for economic recovery and alleviating funding liquidity constraints (Chart 1-5).

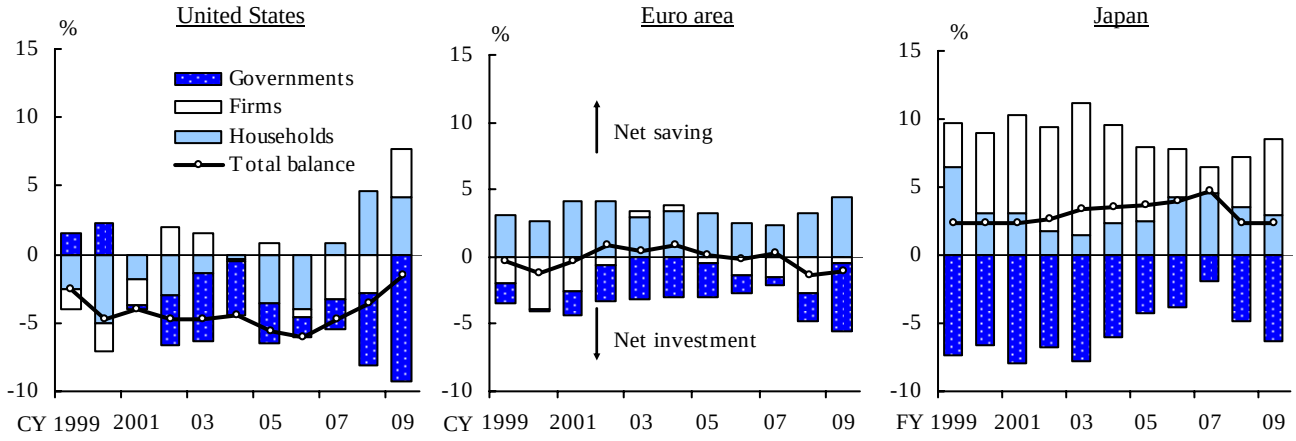
However, the private sector still lacks momentum to lead an expansion in the real economy, and the household and corporate sectors have been restraining their spending (Chart 1-6). It appears that the household sector in the United States and Europe, which faces problems of excess debt, needs to reduce debts further, given the decline in collateral value owing to a fall in housing prices and deterioration in employment and

**Chart 1-5: Lending Attitude of Financial Institutions**




Sources: FRB, "Senior Loan Officer Opinion Survey on Bank Lending Practices"; ECB, "The Euro Area Bank Lending Survey"; BOJ, "Senior Loan Opinion Survey on Bank Lending Practices at Large Japanese Banks."

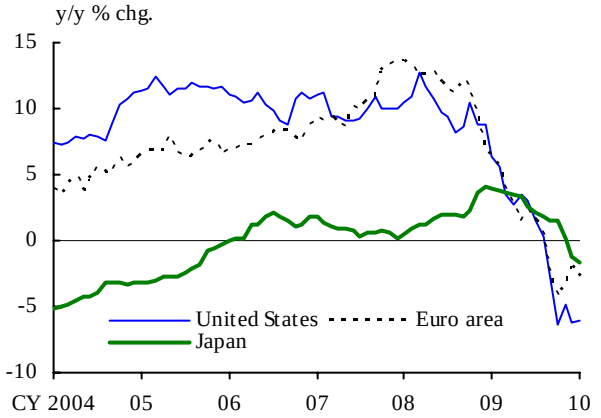
**Chart 1-6: Investment-Saving Balance by Sector**[1, 2]




Notes: *1*. Ratios to nominal GDP.
*2*. The latest data are as of the period from October 2008 to September 2009.
Sources: BEA, "National Income and Product Accounts"; FRB, "Flow of Funds Accounts of the United States"; ECB, "Euro Area Accounts"; Eurostat, "National Accounts"; Cabinet Office, "National Accounts"; BOJ, "Flow of Funds Accounts."

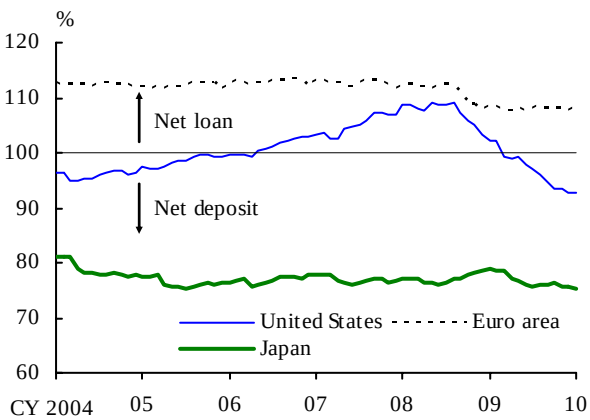
income conditions. At U.S. and European financial institutions, while bank loans have been declining significantly, deposits have been on an increasing trend, and thus the loan-deposit ratio has dropped substantially (Charts 1-7 and 1-8). Especially in the United States, an increase in deposits coupled with a decline in lending has led to a rapid decrease in the loan-deposit ratio.

**Chart 1-7: Loans Outstanding of Financial Institutions**




Sources: FRB, "Assets and Liabilities of Commercial Banks in the United States"; ECB, "Euro Area MFI Balance Sheets"; BOJ, "Principal Figures of Financial Institutions."

**Chart 1-8: Loan-Deposit Ratio of Financial Institutions**




Sources: FRB, "Assets and Liabilities of Commercial Banks in the United States"; ECB, "Euro Area MFI Balance Sheets"; BOJ, "Principal Figures of Financial Institutions."

## B. Characteristics of Financial Institution Performance

### *Performance of Japanese financial institutions*

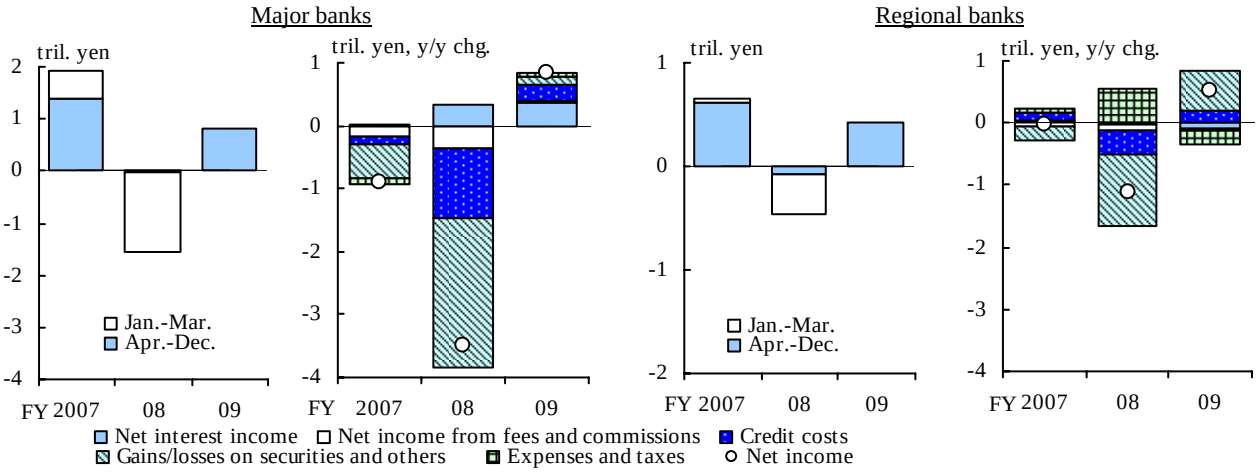
Lending by Japanese banks increased sharply in particular for large firms towards the beginning of 2009. Recently, however, the outstanding amount of loans has declined to a level slightly below a year ago, as demand for funds declined with the recovery in financial market functioning. Concurrently, banks have been extending loans to small and medium-sized firms by employing the government's emergency guarantee program introduced at the end of 2008. Nevertheless, lending to small and medium-sized firms has been below the levels of a year ago, as forward-looking demand for funds has receded substantially due to sluggish economic activity (see Section B of Chapter II for details).

According to Japanese banks' financial results for April-December 2009,[3] net income increased on a year-on-year basis, while they registered net losses for fiscal 2008 due to the effects of financial crisis, such as the rapid drop in economic activity and the decline in stock prices (Chart 1-9). Net interest income and net income from fees and commissions were sluggish for the regional banks, but they improved for the major banks due partly to the expansion of consolidated firms. As for realized gains/losses on securities, losses due to impairment in stockholdings narrowed for both the major banks and the regional banks. For the regional banks, the depletion of equity investment trusts and collateralized debt obligations (CDOs) narrowed as well. Overall, realized gains/losses on securities improved considerably for both the major banks and the regional banks. In addition, credit costs (those of single entities) were contained due mainly to the decline in write-offs (see Section

[3] In principle, this chapter uses data from consolidated financial statements of listed financial institutions.

A of Chapter III for credit costs and Appendix for profitability for details).

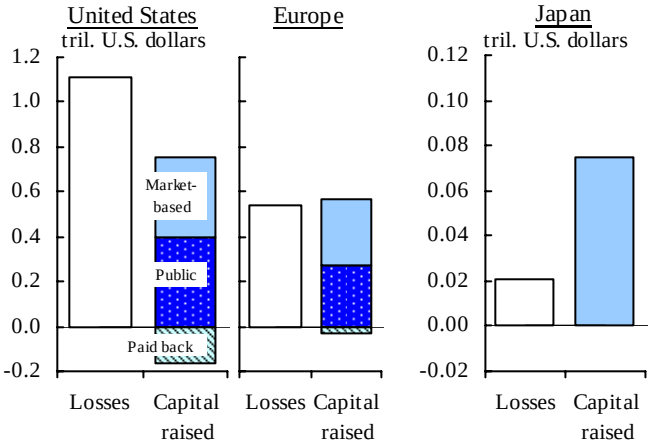
**Chart 1-9: Net Income of Japanese Banks**[1, 2]




Notes: *1.* Credit costs (disposal of nonperforming loans) and expenses (general and administrative) are on a non-consolidated basis.
*2.* The latest data are as of April-December of 2009.
Source: Financial Quest.

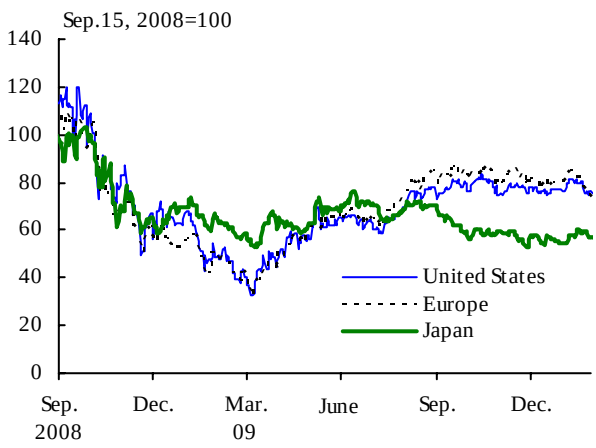
As for the capital policy of Japanese financial institutions, one characteristic observed during fiscal 2009 was that a succession of financial institutions, mainly the major banks, raised capital from the market. While there have been moves to restore impaired capital bases in the United States and Europe, Japanese financial institutions raised capital with the aim to carry out the financial intermediation function smoothly while paying due attention to international discussions on capital adequacy requirements. Indeed, comparing the size of capital reinforcement with that of cumulative losses, the former has been much higher than the latter in Japan since the summer of 2007 (Chart 1-10). Meanwhile, stock prices of Japanese banks have stagnated compared with those of U.S. and European financial institutions (Chart 1-11).

**Chart 1-10: Losses and Capital of Financial Institutions**[1]




Note: *1.* Cumulative amount of losses and capital raised from July 2007.
Source: Bloomberg.

**Chart 1-11: Stock Prices of Financial Institutions**[1]

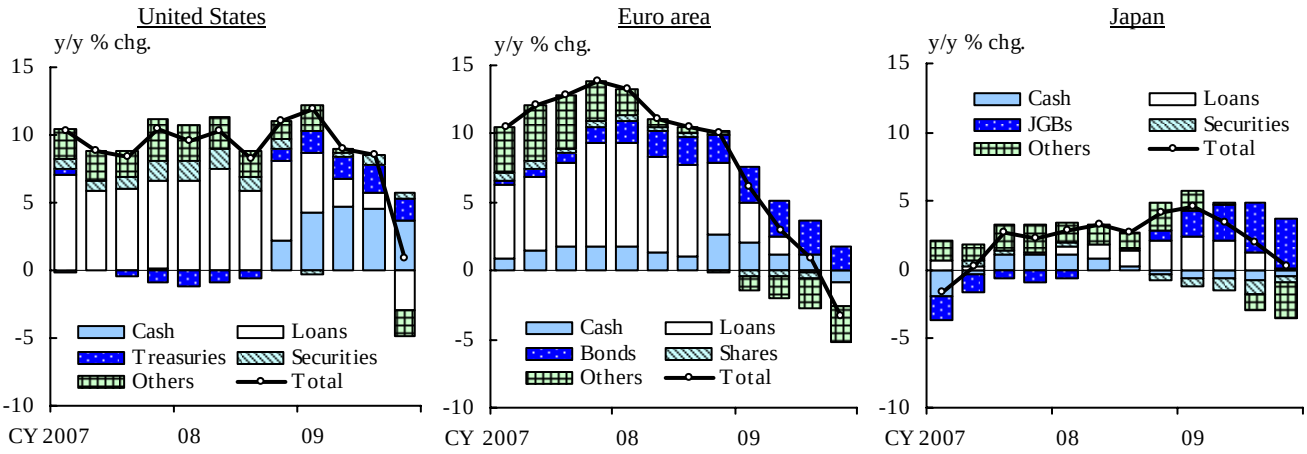



Note: *1.* United States: S&P 500 financials index; Europe: STOXX 600 banks index; Japan: TOPIX banks index.
Source: Bloomberg.

*Performance of U.S. and European financial institutions*

U.S. and European financial institutions confronted extremely severe funding liquidity constraints, since they initially faced an unintended expansion in their balance sheets when the effects of the financial crisis spread and the functioning of financial markets declined.[4] Consequently, these institutions started to tighten their lending standards, reduced their lending, and curtailed their assets (Chart 1-12). As a result, the size of their balance sheets recently declined, while it recorded high growth on a year-on-year basis until the end of 2008.

**Chart 1-12: Changes in Bank Assets**




Sources: FRB, "Assets and Liabilities of Commercial Banks in the United States"; ECB, "Euro Area MFI Balance Sheets"; BOJ, "Financial Institutions Accounts."

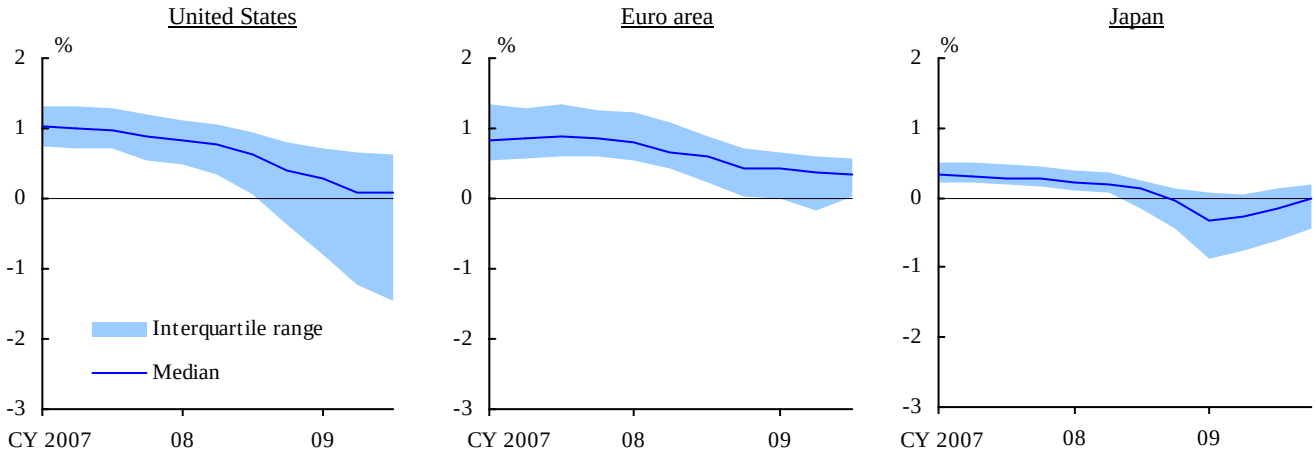
As for profits of U.S. and European financial institutions, most of the major financial institutions that registered massive losses amid the turmoil in financial markets have returned to surplus, supported by an improvement in profits in investment banking business. This contributed significantly to the stability of the global financial system. However, an overview of the financial sector including small and medium-sized financial institutions shows that profits as a whole have not stopped deteriorating, partly because deterioration in loan assets has been continuing (Chart 1-13).[5] In the United States, bipolarization of profitability has been in progress between local small and medium-sized financial institutions that have been in deficit due to deterioration in

[4] The U.S. and European financial institutions carried out "re-intermediation of risk," including responding to withdrawal of commitment lines by firms which increased their demand for funds and providing liquidity support to investment vehicles which faced difficulty in raising funds through securitization markets. This resulted in an increase in their risk assets.

[5] Return on assets (ROA) in Chart 1-13 is calculated based on the information for the most recent four quarters.

commercial real estate loans, and major financial institutions that have registered high profits reflecting the recovery in investment banking.

**Chart 1-13: ROA of Financial Institutions**[1,2]




Notes: *1*. ROA is on a net income basis of listed financial institutions.
*2*. The latest data are as of July-September 2009 in the United States and the euro area and as of October-December 2009 in Japan.
Source: Bloomberg.

There were periods of high uncertainty in the United States and Europe with respect to capital sufficiency of their financial institutions. However, with the implementation of stress testing in many countries, such as the Supervisory Capital Assessment Program for major financial institutions in the United States, uncertainty has declined. Since the second half of 2009, responses by financial institutions have become bipolarized. On one hand, some financial institutions have begun to raise capital from financial markets and repaid the public funds they received. On the other hand, some financial institutions in the United Kingdom have received a second injection of the public funds.

## C. Balance-Sheet Adjustments in the United States and Europe

### *Deleveraging by U.S. and European financial institutions*

The deleveraging by U.S. and European financial institutions has recorded certain progress. However, the appropriate level of leverage could change depending on the economic environment. In the United States and Europe, it has been pointed out that deterioration in corporate loans and real estate-related loans might continue, and thus the resulting balance-sheet adjustments might last for the time being.

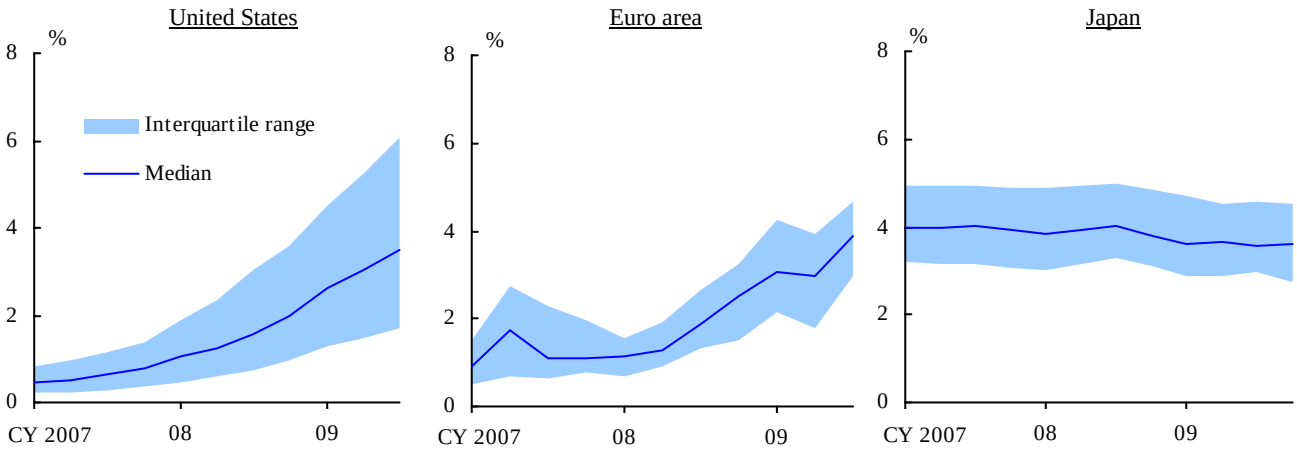
The deleveraging by financial institutions could be a factor restraining economic activity through a decline in the financial intermediation function *via* the banking sector. In particular, the euro area, in which indirect finance is dominant, could be affected by a

decline in the intermediation function of private financial institutions.[6]

### *Corporate loans and real estate-related loans*

The nonperforming-loan (NPL) ratio of financial institutions has recently been rising rapidly in the United States and Europe, becoming an increasing factor in credit costs (Chart 1-14). In these regions, recovery in corporate profits was less than stellar, and the deterioration in loan portfolios progressed rapidly amid an increase in bankruptcies. It has been pointed out that, in the euro area, employment adjustment is relatively mild and the labor share has tended to increase. Therefore, downward pressure on corporate profits might be stronger in the euro area, and the deterioration in corporate loans is expected to continue.

**Chart 1-14: NPL Ratio of Financial Institutions**[1, 2]

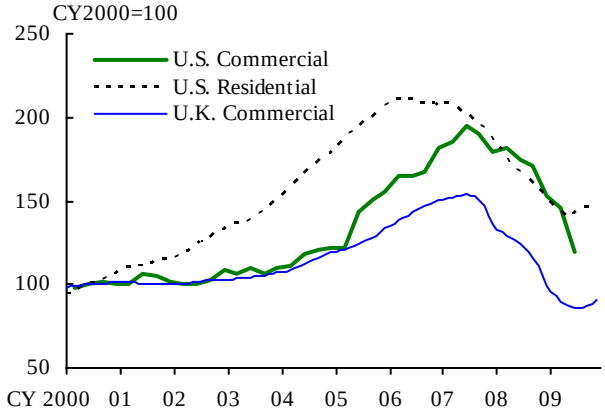



Notes: *1.* NPL ratio of listed banks.
*2.* The latest data are as of July-September 2009 in the United States and the euro area and as of October-December 2009 in Japan.
Source: Bloomberg.

As for real estate-related loans of U.S. and European financial institutions, in the aftermath of the recent financial crisis that was triggered by residential mortgage loans, the development of commercial mortgage loans gained much attention. In the United States, the decline in commercial real estate prices, which followed the decline in housing prices, has not moderated and the deterioration in the quality of commercial real estate loans is in progress (Chart 1-15).

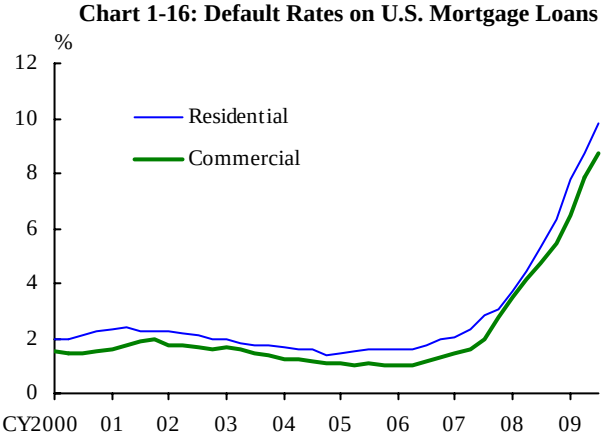
[6] Looking at the proportion of direct financing and indirect financing in firms' funding (the average in 2008), the United States had a high proportion of direct financing at 57 percent. These proportions were 8 percent for the euro area and 19 percent for Japan respectively, suggesting a low proportion of direct financing and a high proportion of indirect financing in firms' funding structure.

**Chart 1-15: Real Estate Prices**




Sources: MIT Centre for Real Estate; Nationwide; Standard and Poor's.

**Chart 1-16: Default Rates on U.S. Mortgage Loans**




Source: FRB.

The proportion of commercial real estate loans in the total loan portfolio is substantially higher in the United States (25 percent) and in the United Kingdom (50 percent) than in Japan (15 percent, the ratio of loans to the real estate industry). Moreover, in the United States, of the loan portfolios of smaller financial institutions with total assets below 10 billion U.S. dollars, more than 70 percent is real estate-related loans -- commercial real estate loans accounting for more than 40 percent and mortgage loans accounting for 30 percent. On the back of progress in bipolarization in profitability among U.S. financial institutions, the delinquency rate and default rate of real estate-related loans provided by these small institutions have recently been increasing rapidly (Chart 1-16). The deterioration in real estate-related loans will exert downward pressure on securitized products, such as commercial mortgage-backed securities (CMBSs) and residential mortgage-backed securities (RMBSs).

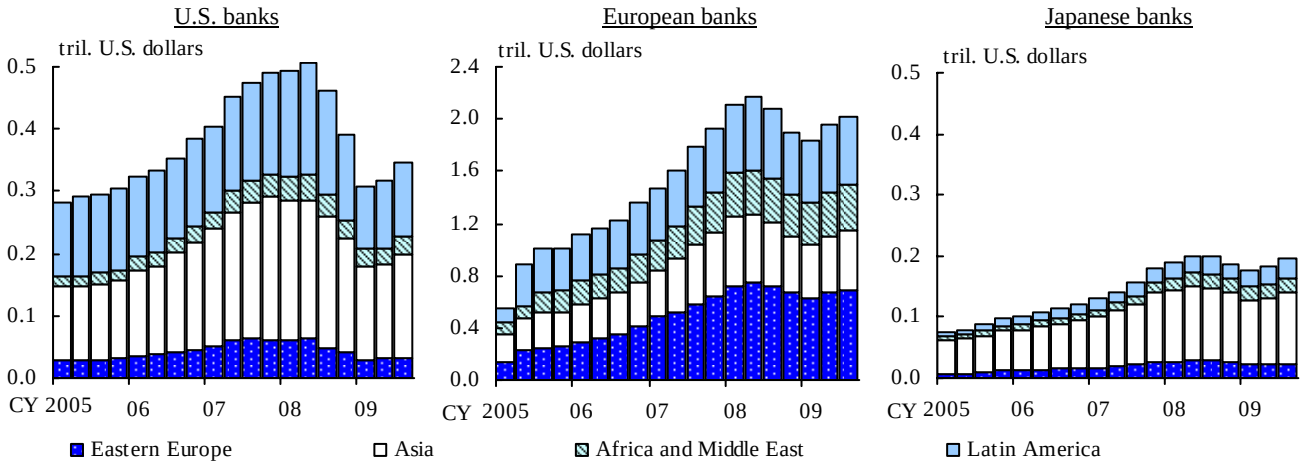
### *Re-expansion in claims on emerging economies*

After 2008, when deleveraging pressure increased, foreign claims of the banking sector declined and there were increasing moves to return funds home. In particular, increased sovereign risk in some emerging European economies amid destabilization in the global economy partly affected the decline in credit exposure to emerging economies (Chart 1-17).

Recently, there have been signs again of an increase in credit exposure to emerging economies. In particular, credit exposure to Asian and Latin American countries has been increasing due to an expectation that those countries will lead the global economy. In the case of China, for example, European banks have a large exposure and Japanese banks also have a fair amount of exposure. In addition, many European banks have placed emerging European economies as areas for strategic investment, and consequently these banks' credit exposure has increased compared with financial

institutions of other regions.

**Chart 1-17: Foreign Claims on Emerging Economies**




Source: BIS, "Consolidated International Banking Statistics."

After the Dubai shock in November 2009, sovereign risk reflecting expansion in the fiscal deficits of Greece and several other European countries has attracted attention since the end of 2009. As credit exposure to emerging economies increases again, the effects of the anomaly in emerging economies have become more likely to spread through the financial sector, and this warrants attention (see Box 1 for the influence of European banks in the international financial network).

### *Increase in interest rate risk*

Overseas central banks have decided to end temporary measures including unconventional monetary policy measures that are judged to have met the intended purposes. To respond to the financial crisis, the government sectors have expanded their balance sheets in place of the private sector. As a result, in some countries yields on government bonds have become unstable, such as in Greece, where the market's interest in sovereign risk has heightened. In these circumstances, the financial authorities in the United States and Europe have alerted financial institutions to the need for interest rate risk management.[7]

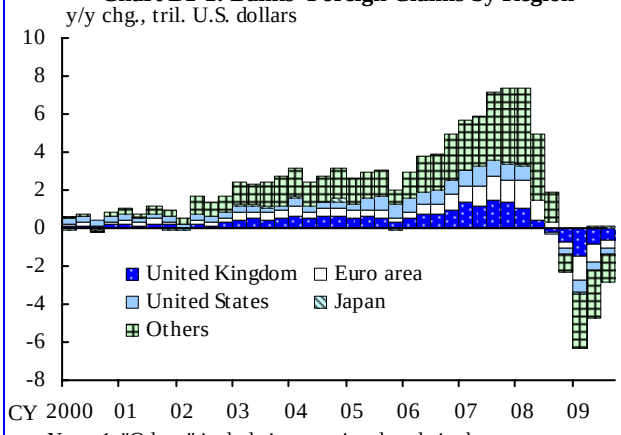
[7] See Kohn, D. L., "Focusing on Bank Interest Rate Risk Exposure," Speech at the Federal Deposit Insurance Corporation's Symposium on Interest Rate Risk Management, January 29, 2010.

## Box 1: Influence of European Banks in the International Financial Network

International banking activity expanded with an increase in the density of the international financial network in which financial institutions conduct cross-border financial transactions. Both the number of cross-border financial links and the amount of cross-border financial transactions per link increased sharply. Because of this, each link in the transactions was strengthened further and the relationship among counterparties became stronger.

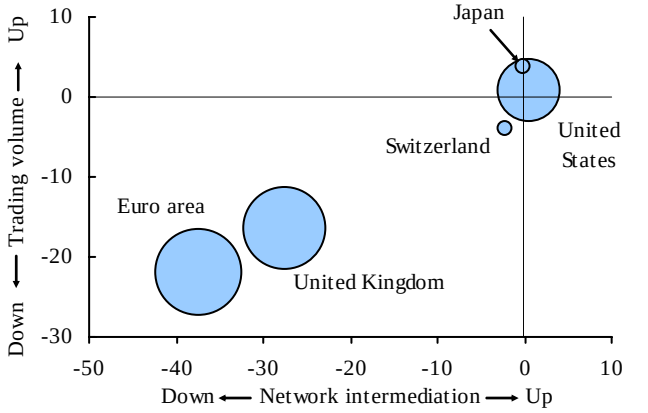
European banks, which form the core of the international financial network, established a strong presence in the international financial markets. They strengthened their links to a greater number of countries in line with the expansion of financial transactions with oil-producing and emerging Asian countries. Funds raised from countries around the globe flowed first into European banks before being reallocated to the United States that became more investable against a backdrop of development in the securitization markets, and to the rapidly growing emerging countries particularly with the resource industry. To maintain and expand these investment activities, European banks boosted their funding in the interbank markets. Foreign claims on Europe accounted for approximately half of the increase in the foreign claims of internationally active banks for the period from 2002 to 2008 (Chart B1-1).

**Chart B1-1: Banks' Foreign Claims by Region**[1]




Note: *1.* "Others" include intra-regional trade in the euro area.
Source: BIS, "Locational International Banking Statistics."

**Chart B1-2: Influence of Banking Sectors in Major Economies**[1]




Note: *1.* Both axes are differences from end-June 2008. Size of a circle indicates banks' *intermediation* at end-September 2009.
Source: BIS, "Locational International Banking Statistics."

Chart B1-2 illustrates the extent of influence of each country's banks in the international financial network. After the financial crisis began, European banks deleveraged cross-border transactions. As indicated by the vertical axis in the chart, the recent amount outstanding of these transactions was reduced by almost 20 percent compared to the level prior to the financial crisis (at the end of June 2008). As indicated by the horizontal axis in the chart, European banks' "influence" in the international financial network also decreased by approximately 30 percent. Here, European banks' "influence" -- the *network*

*intermediation* measure that combines the number and the size of links -- represents the amount of funds that flow among countries *via* the intermediation of European banks.

However, as represented by the size of circles in the chart, European banks are still overwhelmingly influential compared to Japanese or U.S. banks. Should an additional shock force European banks to reduce their current cross-border positions, the systemic impact could spread throughout the overall network including Japan.

## D. Japan's Policy Responses[8]

### *The Japanese Government's responses*

In December 2009, "Act concerning Temporary Measures to Facilitate Financing for Small and Medium-Sized Enterprises (SMEs), etc." was enforced and the supervisory guidelines and inspection manual in line with the act were released. The act requires that financial institutions strive to revise the loan terms such as a moratorium, interest reduction or exemption, and debt waiver, when requested by an SME or a residential mortgage borrower. The act also requires financial institutions to develop internal systems for fulfilling these responsibilities as well as disclosure and reporting.

Based on the experience of the recent financial crisis, in January 2010 the Financial Services Agency (FSA) released the *Development of Institutional Frameworks Pertaining to Financial and Capital Markets*. The FSA presented its proposals regarding consolidated regulation and supervision of securities companies as well as consolidated prudential regulations of insurance companies, hedge funds regulation, and improvement of the stability and transparency of the settlement of over-the-counter derivatives transactions.

### *The Bank of Japan's responses*

The Bank of Japan has also carried out a number of measures on the financial system and monetary fronts since the beginning of fiscal 2009.

From the viewpoint of ensuring financial system stability, the Bank resumed purchases of stocks held by financial institutions to support financial institutions' efforts to reduce their market risk associated with stockholdings (as a temporary measure until April

[8] See Annexes 1 and 2 for policy responses in major countries.

2010). The Bank also introduced the provision of subordinated loans to banks to support financial institutions' capital reinforcement (as a temporary measure until March 2010).[9]

In terms of monetary policy, the Bank maintained the target uncollateralized overnight call rate at around 0.1 percent. In addition, in order to facilitate corporate financing and stabilize financial markets, the Bank conducted outright purchases of financial products including CP and corporate bonds, special funds-supplying operations, and the U.S. dollar funds-supplying operations.[10] Moreover, the Bank further enhanced easy monetary conditions in order for Japan's economy to overcome deflation and return to a sustainable growth path with price stability. In December 2009, the Bank introduced a three-month fixed-rate funds-supplying operation against pooled collateral to encourage a further decline in longer-term interest rates. In March 2010, it decided to expand the measure to encourage a decline in longer-term interest rates by substantially increasing the amount of funds to be provided through the fixed-rate operation. Meanwhile, in December 2009, the Bank clarified its "understanding of medium- to long-term price stability" to strengthen public understanding of the Bank's thinking on price stability.

[9] As of March 10, 2010, the Bank purchased 280 billion yen in stocks held by banks. Auctions for the provision of subordinated loans took place four times, and 20 billion yen were provided.

[10] Outright purchases of CP and corporate bonds expired at the end of 2009. So did the U.S. dollar funds-supplying operations on February 1, 2010. Special funds-supplying operations will remain in effect until the end of March 2010.

## II. Assessment of the Financial Intermediation Function: Improvement in Financial Markets and Sluggish Demand for Funds

Towards the beginning of 2009, bank loans increased sharply against the background of sluggish sales and shrinkage of the CP and corporate bond markets. Since then, the tightened conditions surrounding corporate financing have changed drastically. Since the beginning of fiscal 2009, amid an increase in corporate bond issuance, demand for funds in the corporate sector has fallen significantly, and the growth rate of bank loans has gradually declined. The interest rate on lending has remained low. On the whole, the financial intermediation function of Japan's financial system has been maintained while bank lending, depending on the situation, has partly complemented the role played by the financial markets.

Bank loans to large firms declined to a level below that of the previous year. Demand for funds by large firms has decreased due to a) the improved functioning in the CP and corporate bond markets, b) the decline in uncertainty regarding future developments, and c) a cutback in business fixed investment. Demand for funds by small and medium-sized firms has also decreased due to a decline in the level of economic activity. While banks have been providing loans to small and medium-sized firms with the help of the emergency guarantee program, the amount of outstanding loans has been below that of the previous year. In such a financial environment, although bankruptcies have been subdued, many smaller firms have been facing tight funding conditions reflecting deterioration in their businesses.

### A. Firms' Sluggish Demand for Funds

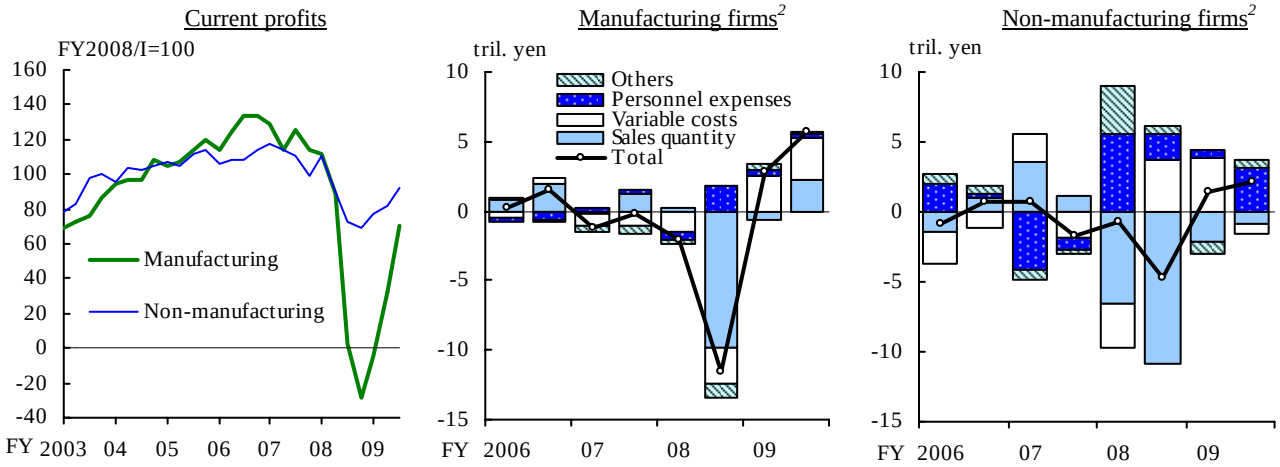
*Demand for funds difficult to increase*

As corporate profits have started to pick up, firms have been striving to secure on-hand liquidity by restraining outlays on, for example, business fixed investment. Overall, demand for funds is unlikely to increase.

Towards the end of fiscal 2008, corporate profits deteriorated, but since fiscal 2009, they have started to pick up moderately, in particular at manufacturing firms. Initially, current profits of manufacturing firms fell significantly since firms' cost reduction could not counterbalance the plunge in sales coming from the economic downturn in the United States and Europe. Thereafter, firms -- irrespective of their size and industrial type -- have reduced costs, mainly by cutting personnel expenses, at a pace faster than

laid out in their business plans. As a result, firms have managed to post profits (Chart 2-1).[11]

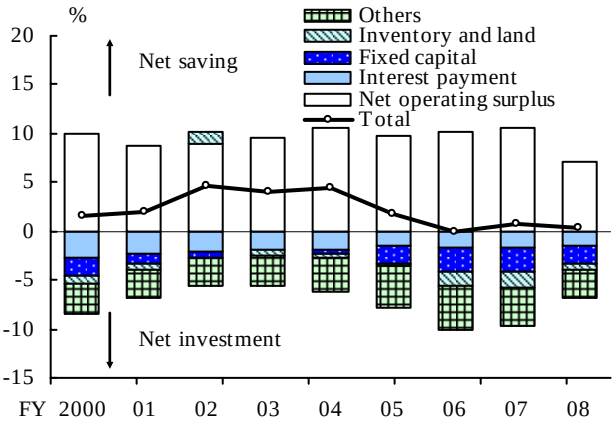
**Chart 2-1: Firms' Current Profits**[1]




Note: *1*. Sample adjusted and seasonally adjusted. The latest data are as of October-December 2009.
*2*. Difference from the previous half year is plotted.
Source: Ministry of Finance, "Financial Statements Statistics of Corporations by Industry, Quarterly."

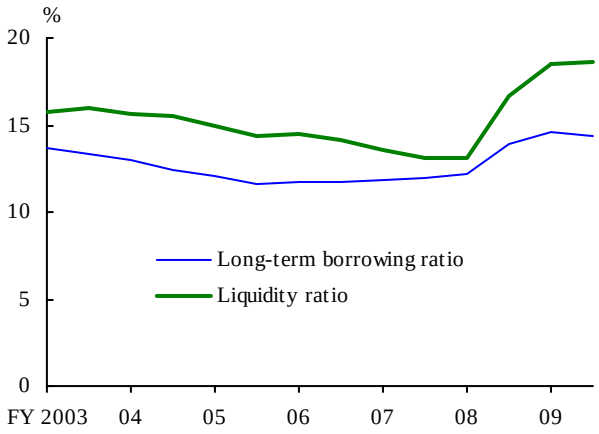
In response to a decline in operating income, firms have been reducing assets by restraining capital and inventory investment as well as securing on-hand liquidity, such as cash and deposits, by raising longer-term funding (Charts 2-2 and 2-3).

**Chart 2-2: Firms' Investment-Saving Balance**[1]




Note: *1*. Ratios to nominal GDP.
Source: Cabinet Office, "National Accounts."

**Chart 2-3: Firms' Financial Ratios**[1]




Note: *1*. Sample adjusted and seasonally adjusted. The latest data are as of October-December 2009.
Source: Ministry of Finance, "Financial Statements Statistics of Corporations by Industry, Quarterly."

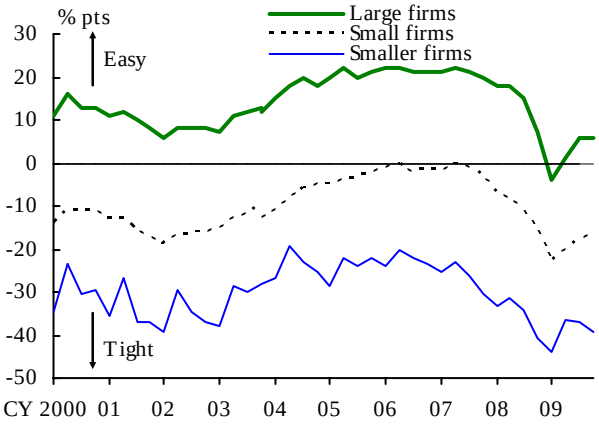
### *Improved funding conditions*

The extent of improvement in funding conditions varies, depending on the size of the

[11] Variable costs in Chart 2-1 include costs of raw materials and personnel expenses related to detachment and outsourcing.

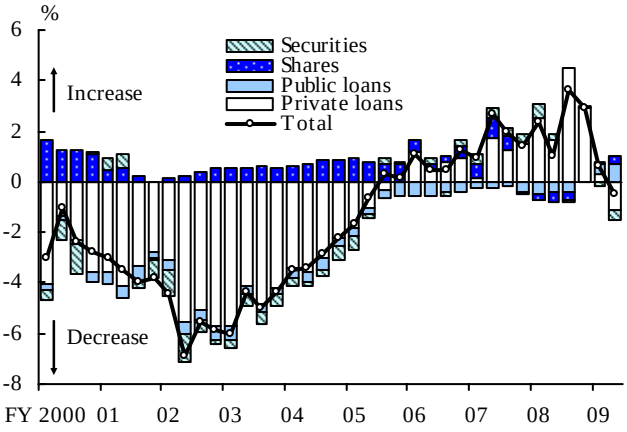
firm and the type of industry. The diffusion index (DI) for firms' financial position has improved in fiscal 2009 mainly for manufacturing firms, and the number of bankruptcies has started to decline. However, the improvement in funding conditions has been limited for non-manufacturing firms, and stagnant for smaller firms (Chart 2-4). As such, funding conditions for firms have been improving as a whole, but remain tight for smaller firms.

**Chart 2-4: D.I. for Financial Positions by Firm Size**[1]




Note: *1.* D.I. for smaller firms is "easier" - "tighter."
Sources: Japan Finance Corporation, "Quarterly Survey of Small Businesses in Japan"; BOJ, *Tankan*.

**Chart 2-5: Firms' Funding**[1, 2]




Notes: *1.* Ratios to nominal GDP (four-term moving average).
*2.* Trade credits are excluded.
Sources: Cabinet Office, "National Accounts"; BOJ, "Flow of Funds Accounts."

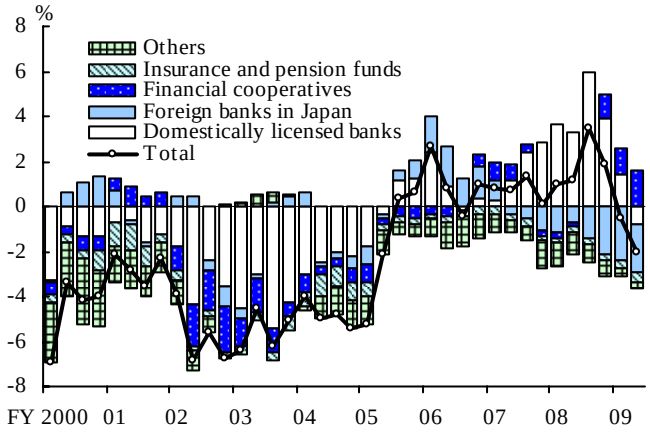
Firms' demand for funds has been declining as a whole, reflecting waning demand for business fixed investment. In addition, the amount of funding has also been on a declining trend, with the exception of borrowing from the public financial institutions and fund-raising in some financial markets (Chart 2-5).

## B. Bank Loans in Response to Declining Demand for Funds

### *Declining bank loans and loan rates*

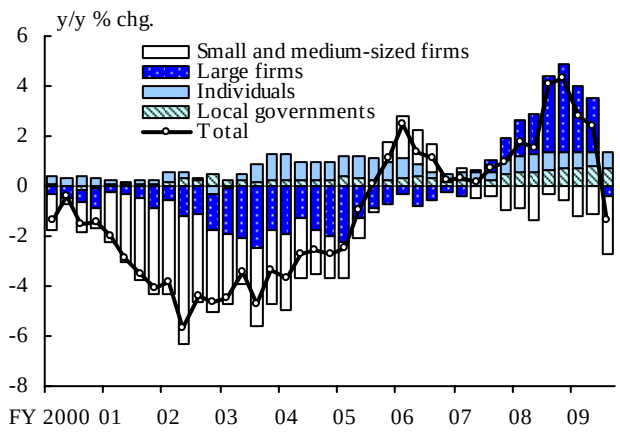
Loans from financial cooperatives such as the *shinkin* banks increased, but overall loans declined (Chart 2-6). Bank loans that increased conspicuously towards the beginning of 2009 due to firms' increased demand for funds declined thereafter and became negative, on a year-on-year basis, at the end of 2009 (Chart 2-7). Breaking down by borrowers' type, loans to large firms became negative, and loans to small and medium-sized firms remained negative.

**Chart 2-6: Corporate Loans by Type of Intermediary**[1, 2]




Notes: *1.* Ratios to nominal GDP (four-term moving average).
*2.* Loans to governments are included.
Sources: Cabinet Office, "National Accounts"; BOJ, "Flow of Funds Accounts."

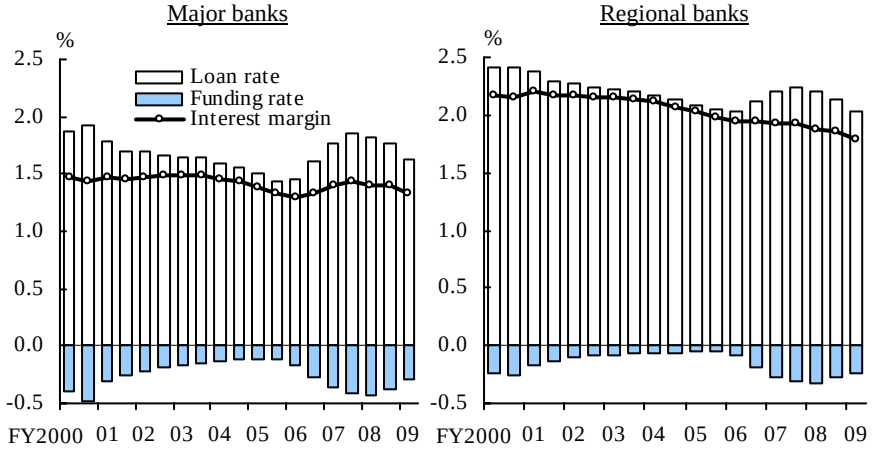
**Chart 2-7: Bank Loans Outstanding**[1]




Note: *1.* "Individuals" include house and room lessors.
Source: BOJ, "Loans and Discounts Outstanding by Sector."

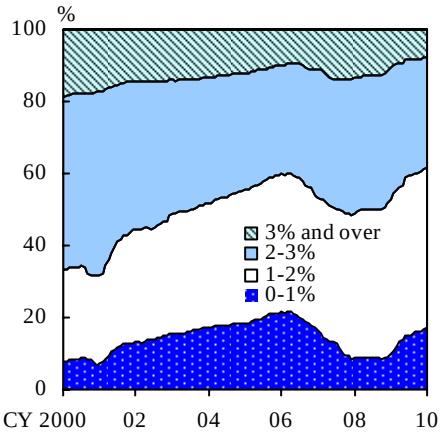
Loan rates have been on a declining trend, and recently the share of loans with relatively lower interest rates has been increasing (Charts 2-8 and 2-9). There are several factors behind this. First, under the accommodative monetary conditions, loan base rates such as Tibor have been declining somewhat. Second, the proportion of loans to large firms, whose spread is low, has increased. Third, while business conditions of banks' borrowers have been deteriorating, banks might have been containing their loan rates to support their ailing borrowers in terms of funding. Finally, the increase in loans with public guarantee might have contained the increase in the spreads relative to credit risk by transferring credit risk outside the banking system (see Appendix for developments in loan rates).

**Chart 2-8: Loan and Funding Rates**[1]




Note: *1.* Domestic operations are aggregated. The latest data are as of the 1st half of fiscal 2009.

**Chart 2-9: Loan Share by Interest Rate**

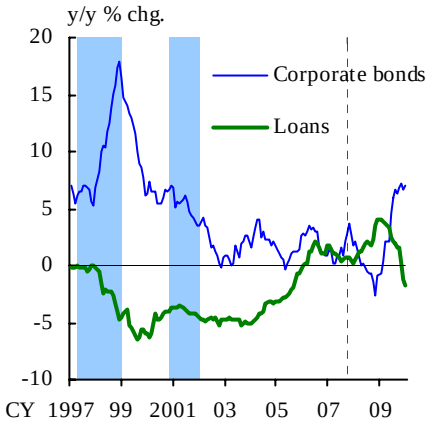



Source: BOJ, "Loans and Discounts Outstanding by Interest Rate."

### *Negative growth rate of bank loans to large firms*

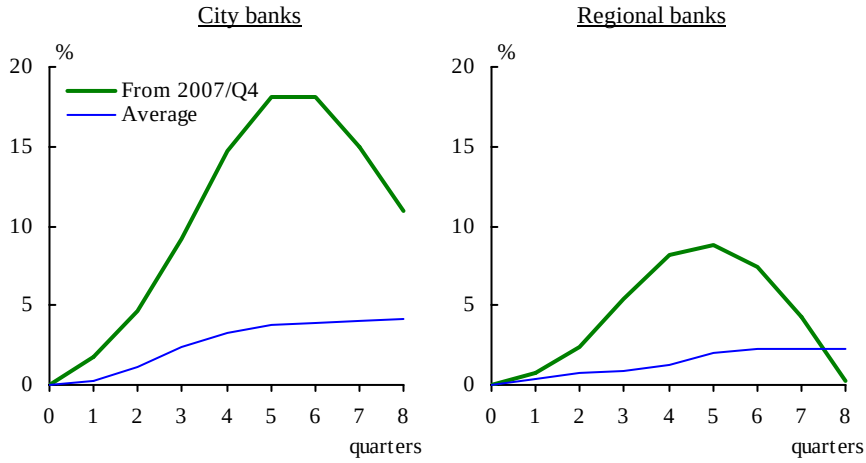
Bank loans to large firms, in terms of the year-on-year rate of change, increased sharply towards the beginning of 2009. The pace of increase gradually slowed thereafter and has recently become negative. This development was attributable to a decline in demand for funds due to a cutback in business fixed investment as well as a decline in precautionary demand for liquidity that had taken place after the autumn of 2008. Firms' shift of their funding source from banks to financial markets also contributed to a recent decline in bank loans (Chart 2-10).

**Chart 2-10: Loans and Corporate Bonds Outstanding**[1]




Note: *1.* Shadows show the economic downturns, and vertical line indicates the latest economic peak.
Source: BOJ, "Monthly Report of Recent Economic and Financial Developments."

**Chart 2-11: Loans to Large Firms by Economic Phase**[1]




Note: *1.* Deviations from the level at each economic peak. "Average" covers economic phases after 1973.
Source: BOJ, "Loans and Discounts Outstanding by Sector."

To examine the relationship between bank loans and business cycles, a cyclical component of growth in bank loans is extracted by subtracting the trend component and a comparison is made between the current phase and the past economic downturns.[12] The result shows that, in the current phase, growth of bank loans to large firms was conspicuously high, but it peaked at the beginning of 2009 and gradually declined thereafter (Chart 2-11).

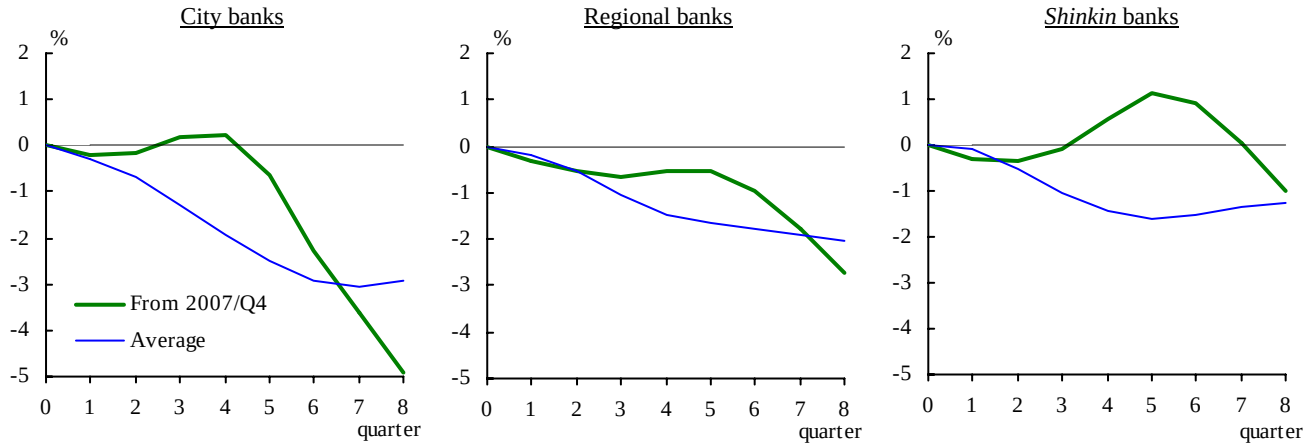
### *Continued negative growth of bank loans to small and medium-sized firms*

Bank loans to small and medium-sized firms have been negative year on year, amid firms' low demand for funds. Cyclical changes of bank loans to these firms since the end of 2007 show that, unlike in the past economic downturn, the pace of decline has

[12] See Box 2 of the September 2009 issue of the *Report* for analytical methodology.

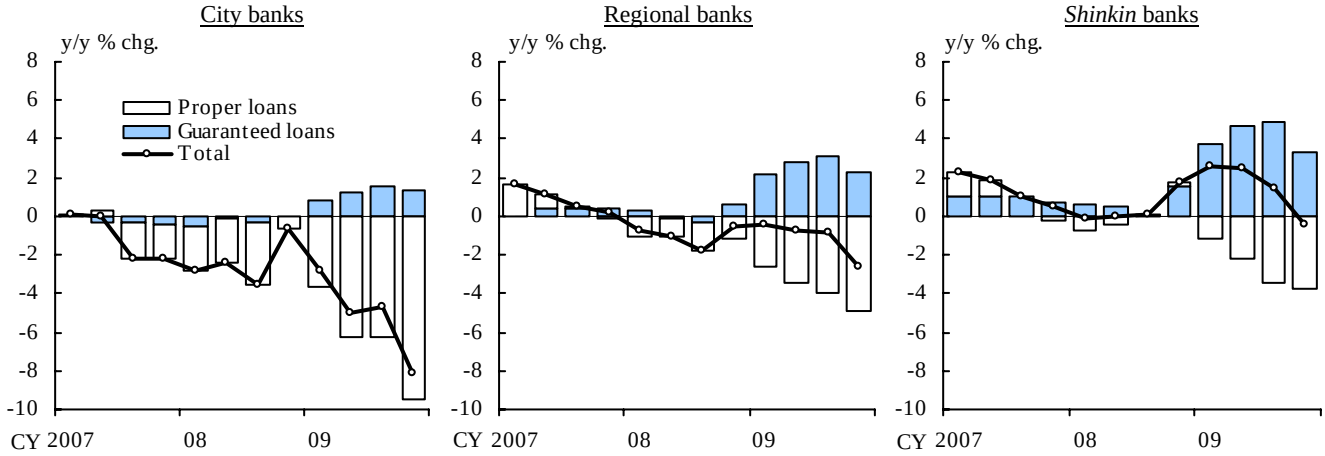
been contained (Chart 2-12). Underlying this, public guarantees such as the emergency guarantee program have stabilized the funding of such firms by preventing the loans from declining (Chart 2-13). Recently, however, the rate of decline in loans has accelerated among all groups of banks (i.e., city banks, regional banks, and *shinkin* banks), reflecting a decline in demand for funds. In particular, some smaller firms show little improvement in their debt repayment capacity, and face tight funding conditions (see Box 2 for developments in the funding of smaller firms).

**Chart 2-12: Loans to Small and Medium-sized Firms by Economic Phase**[1]




Note: *1*. Deviations from the level at each economic peak. "Average" covers economic phases after 1973.
Source: BOJ, "Loans and Discounts Outstanding by Sector."

**Chart 2-13: Loans to Small and Medium-sized Firms**



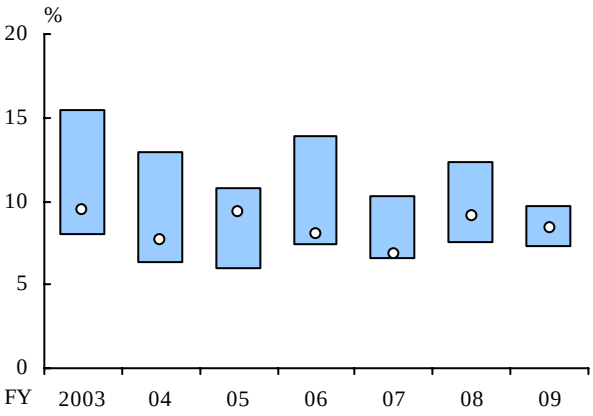

Sources: National Federation of Credit Guarantee Corporations; BOJ, "Loans and Discounts Outstanding by Sector."

In sum, among small and medium-sized firms, some firms have secured on-hand liquidity by cutting spending and reduced their demand for funds, while others -- mainly smaller firms -- have increased their demand for funds against the background of deteriorating financial conditions.

*Loan concentration*

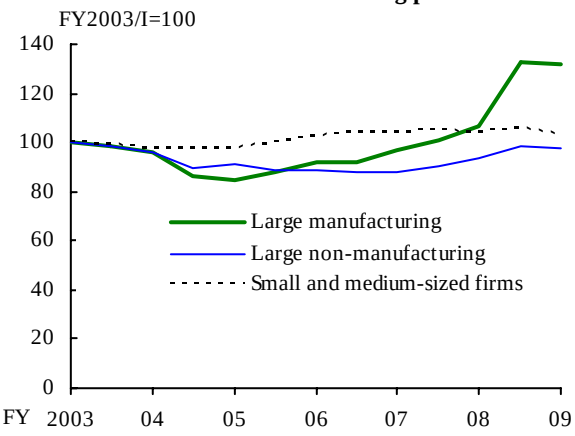
The dispersion of the rate of increase in loans by sector for each bank appears to be declining somewhat compared with those in the early 2000s (Chart 2-14). Examining outstanding loans per firm, there is no evidence that the size of loans to small and medium-sized firms in any sector has been increasing, though it remains large for loans to large firms in the manufacturing sector (Chart 2-15). This could be the result of banks' active provision of loans for large firms to meet their demand for funds at a time when corporate financing became tight after the autumn of 2008. Since an increase in the size of loans could increase banks' credit risk, it is important that banks follow up business conditions of those borrowers with large-amount of loans.

**Chart 2-14: Dispersion of Loan Growth**[1,2]




Notes: *1.* Standard deviation of loan growth by sector for each bank. Bars and circles represent the range and the median of the standard deviation, respectively.
*2.* The latest data are as of December 2009.
Source: BOJ, "Loans and Discounts Outstanding by Sector."

**Chart 2-15: Loans Outstanding per Borrower**[1,2]




Notes: *1.* Financial industry is excluded.
*2.* The latest data are as of the 1st half of fiscal 2009.
Source: BOJ, "Loans and Discounts Outstanding by Sector."

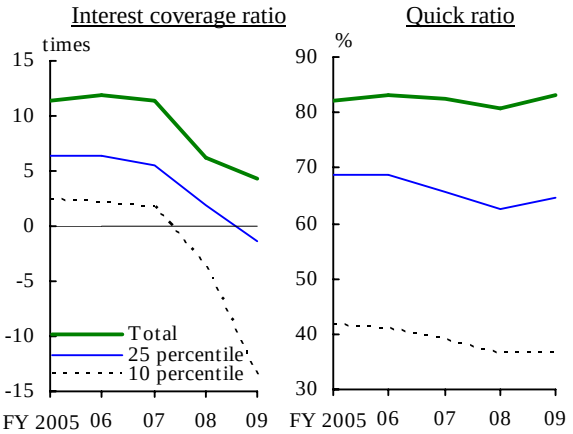
## Box 2: Recent Trends in Funding of Smaller Firms

Firms' financial conditions, which deteriorated significantly from the autumn of 2008, are improving as a whole. However, there exist a few firms without showing signs of improvement in the financial indicators that represent their repayment capacity, such as the interest coverage ratio (ICR) and the quick ratio (Chart B2-1). Some of the smaller firms, in particular, are facing difficulties in funding.

The survey of the smaller firms indicates that their demand for funds increased from 2008 (Chart B2-2). The percentage of firms that replied "they would increase their borrowing" increased in 2008 and exceeded the historical average level in the December 2009 survey.

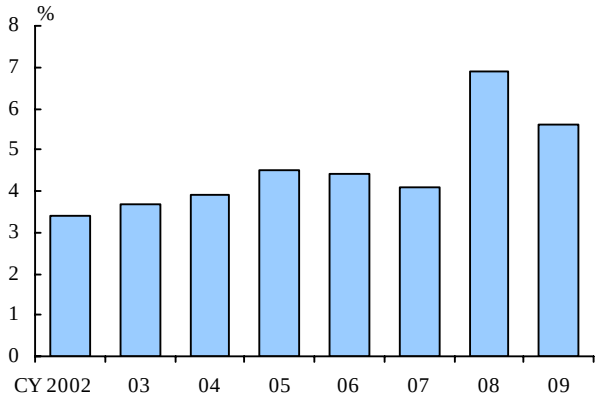
While loans to small and medium-sized firms continue to decrease on a year-on-year basis, the growth rate of loans of *shinkin* banks with which smaller firms mainly deal has been relatively high, reflecting the strong demand of smaller firms for loans (Chart 2-13).

**Chart B2-1: Distribution of Firms' Repayment Capacity**




Source: Financial Quest.

**Chart B2-2: Borrowing Attitude of Smaller Firms**[1]




Note: *1.* Proportions of firms answering increasing loans.
Source: Japan Finance Corporation, "Survey on Lending Situation of Small Enterprises."

## C. Improvement in the Financial Markets

### *Improving financial markets*

Since the beginning of fiscal 2009, owing to the effects of ample liquidity provision by the Bank of Japan and operations to facilitate corporate financing by the Government and the Bank, the outstanding balance of corporate bonds issued mainly by high-rated firms has turned positive on a year-on-year basis. The financial intermediation function through financial markets has been improving (Chart 2-10).[13] Recently, there have been moves by financial institutions, including major bank-affiliated securities firms, to strengthen their securities business and to increase the share of underwriting in stock and corporate bonds (see Box 3 for recent developments in the Japanese securities industry). Going forward, attention is warranted as to how such moves will strengthen the financial intermediation function *via* the financial markets.

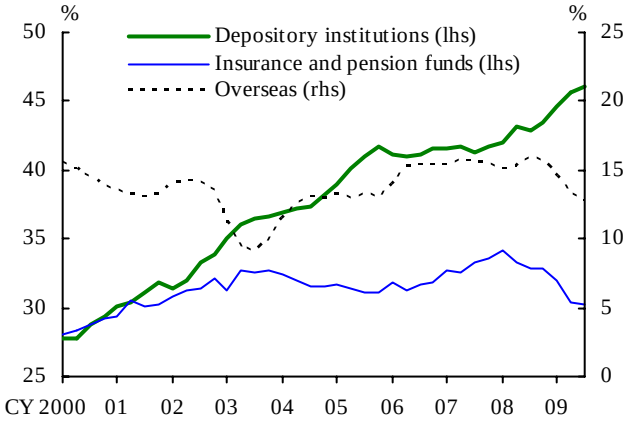
[13] For a detailed discussion, see the February 2010 issue of the *Financial Markets Report*, Bank of Japan.

### *Issuing conditions in the CP and corporate bond markets*

The outstanding balance of CP issued has recently been declining, reflecting a decline in firms' funding need for working capital and their preference for long-term funds to secure their funding. The issuance rate of CP showed an increase in some industries after the Dubai shock, but it has recently been at low levels as a whole.

In the corporate bond market, while low-rated firms and other firms in some sectors still face severe issuing conditions, the market as a whole has been improving as indicated by the fact that the outstanding balance issued has risen above that of the previous year. As for investors of corporate bonds, foreign investors and institutional investors such as insurance companies and pension funds seem to have been somewhat cautious in their risk taking. In contrast, regional banks with surplus funds have been purchasing corporate bonds actively. As a result, the share of bondholdings by depository institutions has been on the rise since 2008 (Chart 2-16).

**Chart 2-16: Investors' Shares of Corporate Bonds**




Source: BOJ, "Flow of Funds Accounts."

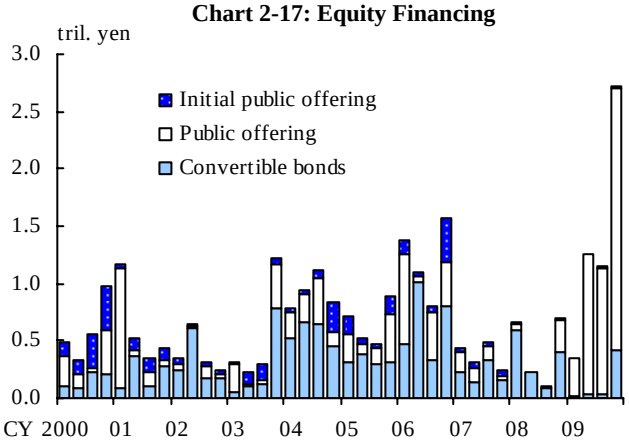
### *Public stock offerings*

Equity finance has been buoyant since a succession of financial institutions increased their capital, and firms conducted large-scale public offerings and issued convertible bonds to strengthen their financial bases (Chart 2-17). As a result, public stock offerings in 2009 reached 4.9 trillion yen, far above the recent peak recorded in 2006 (1.6 trillion yen).

*Securitization market and other markets*

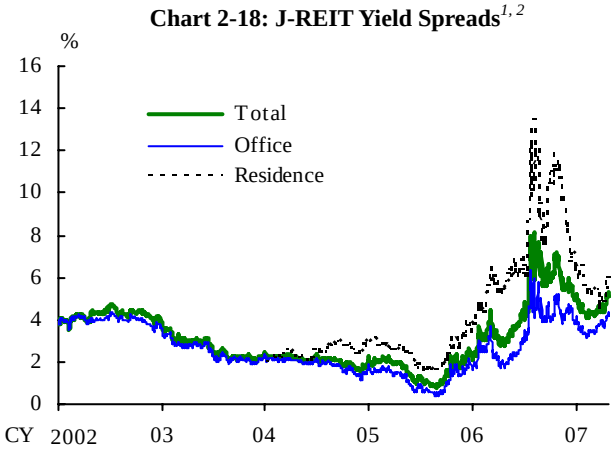
In Japanese real estate funds and the securitization market, recovery in the flow of funds has stagnated. As for real estate funds, while yield spreads on J-REITs declined compared with those immediately after the Lehman shock, they still remain at relatively high levels (Chart 2-18). In the J-REIT market, amid lingering anxiety over the future of real estate rental prices, the inflow of funds to the real estate market through real estate funds has been leveling off and funding conditions have remained tight. As a result, it has become difficult to adopt an exit strategy by selling properties to REIT, and many investment properties seem to have accumulated in the form of private offering funds (Chart 2-19).

**Chart 2-17: Equity Financing**



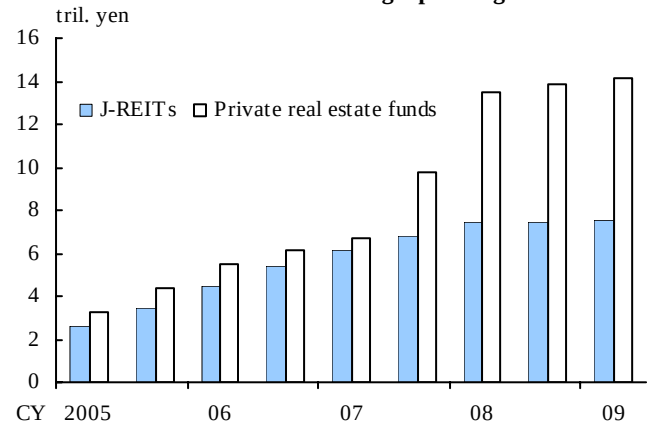

Source: Japan Securities Dealers Association, "Equity Financing by Corporations."

**Chart 2-18: J-REIT Yield Spreads**[1, 2]



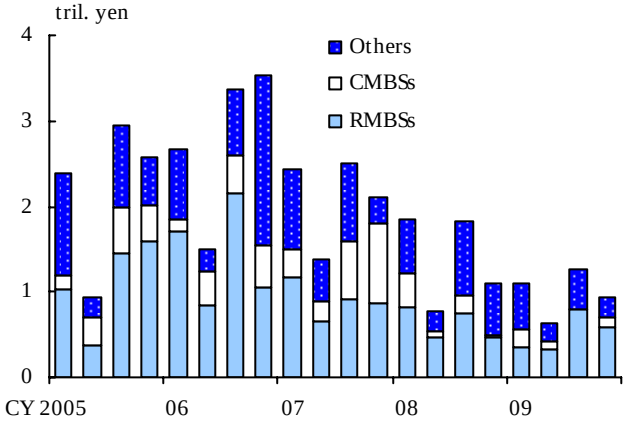

Notes: *1*. Spreads of expected dividend yields over 10-year JGB yields.
*2*. The latest data are as of end-November 2009.
Sources: Bloomberg; STB Research Institute.

**Chart 2-19: Outstanding Operating Assets**




Source: STB Research Institute.

**Chart 2-20: Securitized Products Issuance**




Source: Deutsche Securities, "Securitization."

Meanwhile, issuance of securitized products in the securitization market -- mainly residential mortgage backed securities -- has been stagnant (Chart 2-20).

## Box 3: Developments in the Japanese Securities Industry

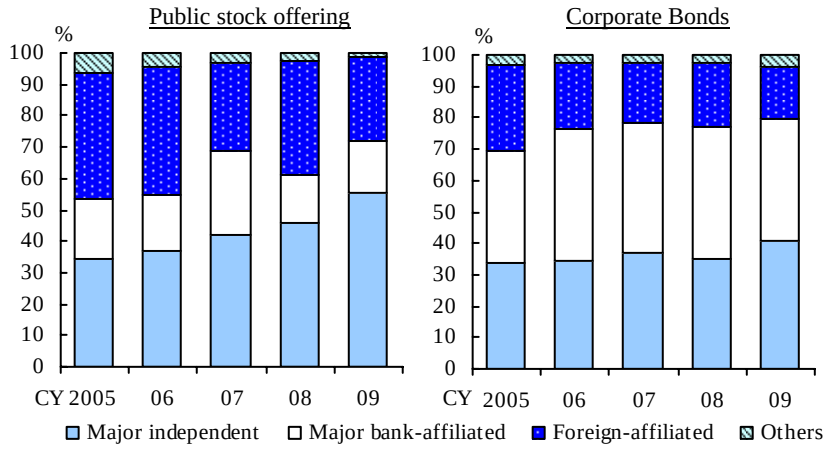
Amid the global financial turmoil triggered by the subprime mortgage problem, there has been a notable trend among Japanese securities companies to strengthen their securities business and reorganize the securities industry, led by major financial groups (Chart B3-1).

**Chart B3-1: Reorganization of the Securities Industry**

| | |
|---|---|
| Nomura | Oct. 2008: Inheritated the euro area and Asian section of *Lehman Brothers* |
| Mizuho | May 2009: Merged with *Shinko securities* |
| Nikko | Oct. 2009: Separated from *Citigroup* and joined *Mitsui-Sumitomo Financial Group* |
| Daiwa | Dec. 2009: Dissolved a consortium with *Mitsui-Sumitomo Financial Group* in the wholesale segment |
| MUFJ | May 2010: Planning to integrate securities business in Japan with *Morgan Stanley* |

In line with these developments in the industry, there have been changes in market presence among major bank-affiliated securities companies, major independent securities companies, and foreign-affiliated securities companies. For example, with respect to the amount of equities and corporate bonds underwritten in Japan, the foreign-affiliated companies that suffered relatively large losses are losing their market shares as their operations have been downsized (Chart B3-2). In contrast, both the major bank-affiliated and the major independent companies have equally increased their share, especially in terms of bond underwriting. It should be noted how the reorganization in the securities industry will strengthen the financial intermediation function *via* the securities market.

**Chart B3-2: Shares of Bookrunners in Equities and Bonds**[1, 2]

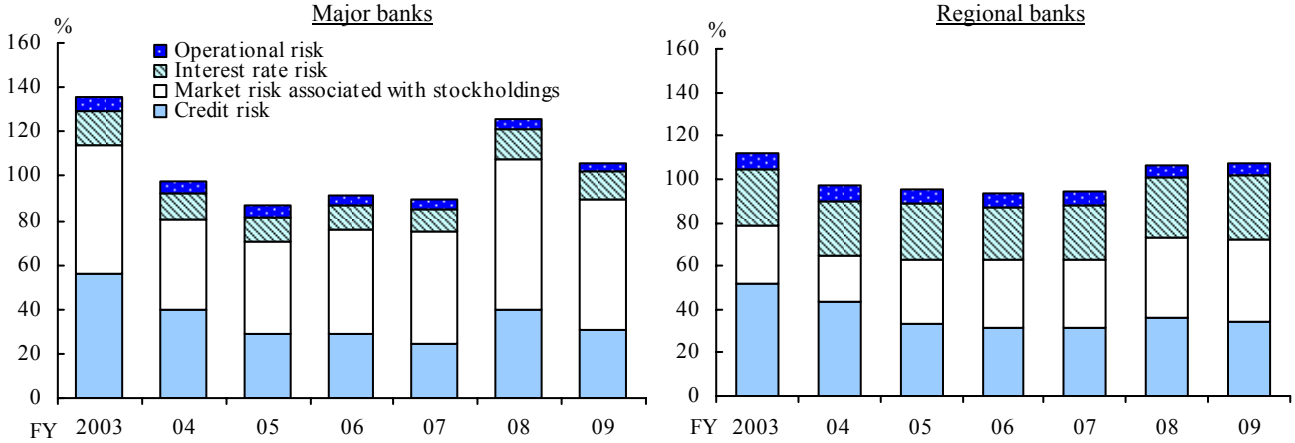



Notes: *1.* Major independent: Nomura and Daiwa; Major bank-affiliated: Mizuho (Shinko included before their merger in May 2009) and Mitsubishi UFJ; and Foreign-affiliated: Nikko included.
*2.* Public offering of equities includes CBs.
Source: Thomson Financial.

## III. Robustness of the Financial System: Kindling Credit Risk and Looming Interest Rate Risk

The robustness of Japan's financial system has been maintained on the whole. Japanese banks' risks relative to Tier I capital have decreased somewhat as a whole since the beginning of fiscal 2009 (Chart 3-1). Looking back at the past six months, firms' business conditions have been improving and it appears unlikely that the surge in credit costs impairs the robustness of the financial system while the economy picks up. Japan's financial institutions largely completed the disposal of securitized products in fiscal 2008. Now the risk inherent in those products has become marginal as the market condition has been improving in fiscal 2009. Furthermore, many Japanese banks have started taking concrete steps to reduce market risk associated with stockholdings, as it has become their priority to reduce such risk. All things considered, the risk factor that might jeopardize the stability of Japan's financial system has been largely contained.

**Chart 3-1: Risks Relative to Tier I Capital**[1, 2]




Notes: *1.* Credit risk: unexpected loss with a 99 percent confidence level; Market risk associated with stockholdings: value at risk with a 99 percent confidence level and 1-year holding; Interest rate risk: 100 basis point value; and Operational risk: 15 percent of gross profits.
*2.* The latest data are as of the 1st half of fiscal 2009.

Nevertheless, some degree of weakness still remains in the financial system. First is the development of credit costs going forward. The last *Report* pointed out that when the aggregate supply and demand balance was in a state of large excess supply, it might be difficult to prevent deterioration in firms' financial conditions even if the economy recovered at a moderate pace, and then credit costs might increase. Although credit costs have been suppressed thus far, it is too early to conclude that deterioration in banks' loan quality has actually stopped. Indeed, increasing pace of firms' bankruptcies has come to a halt since the autumn of 2008 against the background of the rapid and massive decline in economic activity, but such development in bankruptcies is

attributable not only to the firms' own efforts but also to various policy measures. Indeed, according to the scenario analysis, under the severer macroeconomic conditions, the capital adequacy ratios of banks whose profitability and capital strength is relatively weak might stay at low levels. Second involves changes in banks' asset allocation. Reflecting the weak demand for funds, bank loans are decreasing and securities investments are increasing. As a result, interest rate risk is looming.

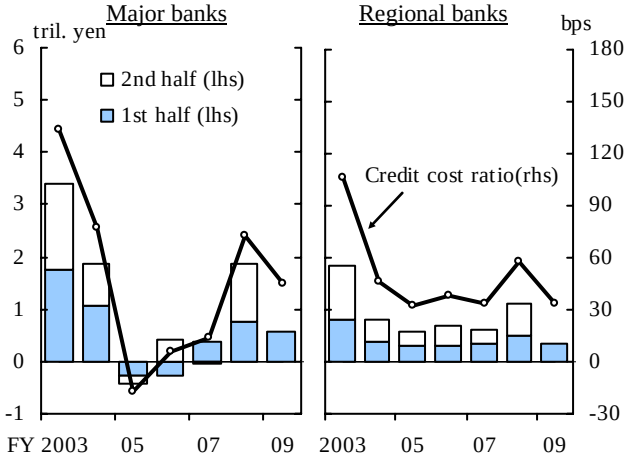
In addition to assessing the robustness of the financial system, this *Report* has estimated the degree of changes in banks' credit risk-taking behavior, and thus the impact of such behavior on the real economy, if downward pressure on banks' capital materializes. The results indicate that, under a situation where the robustness of Japan's financial system is maintained, the impact stemming from a decline in the financial intermediation function on the real economy is limited. However, under the severer macroeconomic conditions, the cautious risk-taking behavior of banks could constrain real economic activity.

The scenario analysis in this chapter does not aim to project the future of the financial system. Rather, it aims to a) clarify the risk characteristics faced by banks, b) assess the robustness of the financial system, and c) see the feedback effect arising from the robustness analysis to the financial intermediation function. The estimates are thus based on assumptions and should be treated with care.

## A. Kindling Credit Risk and Remaining Market Risk Associated with Stockholdings

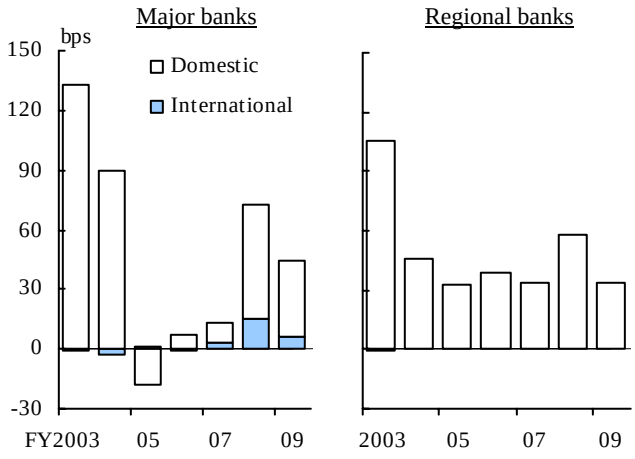
On an annualized basis, the credit cost ratio for the major banks declined in the first half of fiscal 2009 to 45 basis points from 60 basis points in the first half of fiscal 2008, while that for the regional banks declined to 34 basis points from 52 basis points (Chart 3-2). These results were due mainly to a decline in write-offs that significantly raised

**Chart 3-2: Credit Costs**[1]




Note: *1.* The latest ratios are annualized as of the 1st half of fiscal 2009.

**Chart 3-3: Credit Cost Ratios by Sector**[1]




Note: *1.* The latest data are annualized as of the 1st half of fiscal 2009.

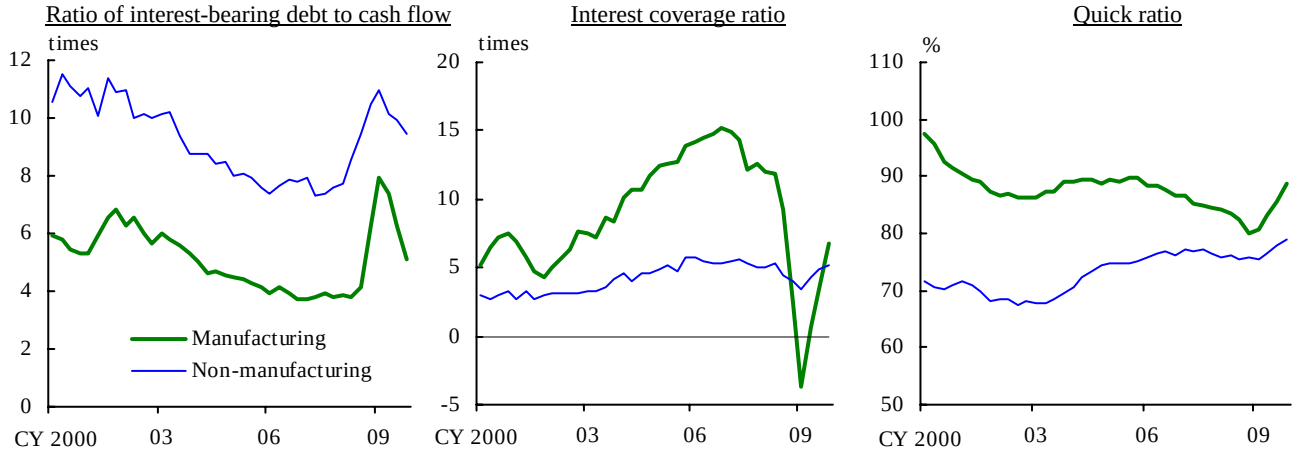
the credit cost ratio of the previous year. By sector, credit costs declined from the previous year in both the domestic business sector and the international business sector (Chart 3-3). Thus far, the frequent occurrence of major bankruptcies and a surge in credit costs have been avoided. However, the deterioration in banks' loans has yet to show signs of coming to a halt, and a situation continues in which credit costs are prone to arise.

### *Improvement in firms' financial conditions through cost reduction*

In fiscal 2008, a number of firms recorded largest deficits, but in fiscal 2009, firms have succeeded in recording profits owing to cost-cutting efforts. More recently, an improvement in sales is also taking place.

Consequently, firms' repayment capacity has been improving. An increase in the ratio of interest-bearing debt to cash flow has been under control due mainly to the improvement in corporate profits through cost reductions and the decline in interest payments (Chart 3-4). For the manufacturing sector, the interest coverage ratio (ICR) -- which shows interest payment capacity relative to profits -- turned negative, but has become positive again as profits have started to recover. Moreover, the quick ratio, which shows short-term repayment capacity, has been showing signs of improvement because firms have actively carried out longer-term funding including the conversion of funding from short term to long term and have secured sufficient cash on hand. As a whole, firms have taken steps to improve their cost and funding structures to protect against deterioration in funding. However, the cost reduction such as a cut in personnel expenses does not necessarily lead to a sustainable recovery of firms' profitability, and uncertainty remains over future funding.

**Chart 3-4: Firms' Repayment Capacity**[1]



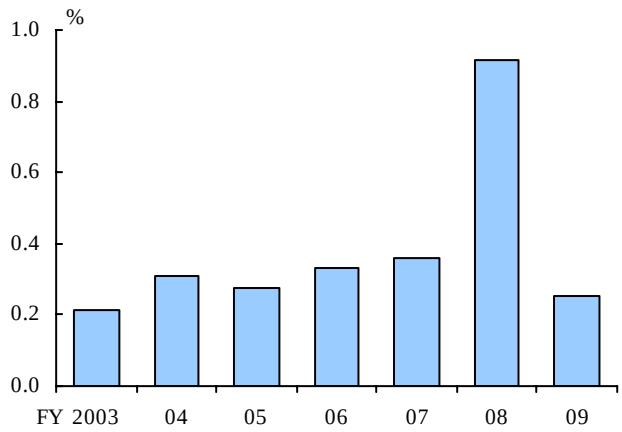

Note: *1.* Sample adjusted and seasonally adjusted.
Source: Ministry of Finance, "Financial Statements Statistics of Corporations by Industry, Quarterly."

*Containing credit costs*

The previous *Report* pointed out two risks with respect to future credit costs. The first was a risk that expansion of lending size per borrower would lead to a surge in banks' credit risk. Since the autumn of 2008, the size of loans has increased as a result of the surge in banks' loans to large manufacturing firms, whose funding conditions have tightened. The second was a risk that deterioration in banks' loan quality might remain for the time being. The effects of demand shock in the autumn of 2008 might spread to subcontractor firms and non-manufacturing firms through production, inventory, and employment adjustments at large manufacturing firms.

Looking at the first risk more closely, the size of outstanding bank loans to some large manufacturing firms remains large at present, while their repayment capacity has been improving (Chart 2-15). In addition, firms' downward transition in banks' self assessment from "normal" to "in danger of bankruptcy" or lower -- namely, a downgrade of two notches or more including a sudden default -- surged in fiscal 2008, but declined to a level below the previous average in the first half of fiscal 2009 (Chart 3-5). Consequently, a situation of a surge in credit costs has been avoided.

**Chart 3-5: Downgrade from "Normal" to "In Danger of Bankruptcy" or Lower**[1, 2]




Notes: *1.* Ratio to total loans outstanding.
*2.* The latest ratio is as of the 1st half of fiscal 2009.

Regarding the second risk, the pace of deterioration in banks' loan quality has, on an actual results basis, moderated somewhat. The nonperforming-loan (NPL) ratio of the major banks increased slightly even after fiscal 2009, but the ratio of loans turning into NPLs declined from the previous year (Chart 3-6). This was attributable to not only an improvement in firms' financial conditions as a whole but also an expansion of the definition of loans that are not treated as NPLs following relaxation of the requirement

for restructured loans.[14] In addition, the credit guarantee corporations' outstanding guarantee and subrogation amounts have been increasing. This also suggests that the credit risk of small and medium-sized firms has been transferred outside the banking system by public guarantee (Chart 3-7).

**Chart 3-6: NPL Ratios and Downgrade Ratios to NPLs**

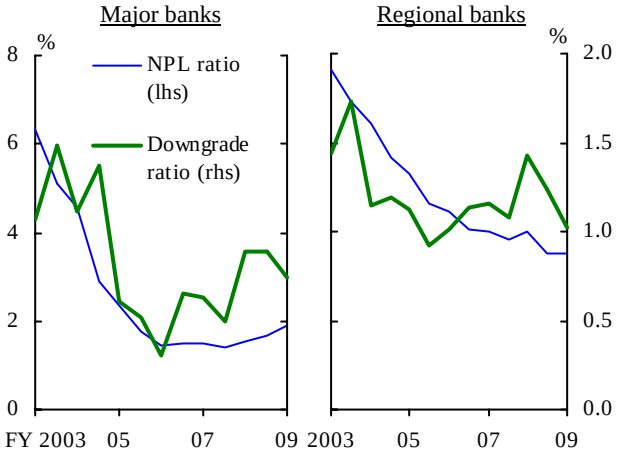
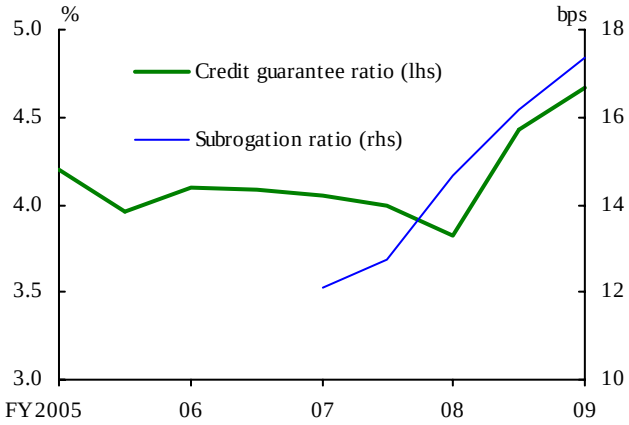



**Chart 3-7: Credit Guarantee Corporations' Guarantee and Subrogation**[1]




Note: *1*. Subrogation ratio is relative to average outstanding loans.
Sources: National Federation of Credit Guarantee Corporations; BOJ.

Owing to the series of measures, the pace of deterioration in banks' loan quality has been moderate compared with that pointed out in the previous *Report*. As a result, credit costs since the beginning of fiscal 2009 have been contained.

### *Robustness against macroeconomic shock*

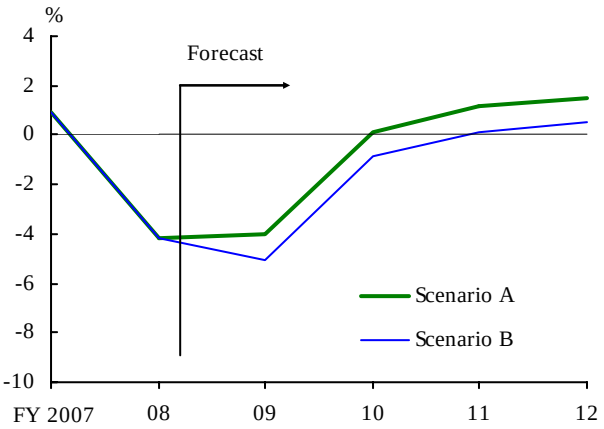
While credit cost ratios have declined recently, the quality of bank loans has not improved, and thus a situation continues in which credit costs are prone to arise.

In the following, by using the extended credit cost model introduced in the previous issue of the *Report*, credit costs under two types of macroeconomic scenarios are estimated based on banks' loan portfolios (excluding personal loans) as of the end of September 2009. In Scenario A, the future nominal GDP growth rate moderately increases in line with private forecasts and converges to the past average level over time (Chart 3-8). Regarding firms' financial conditions, the quick ratio and the ICR are

[14] Restructured loans are not treated as loans requiring "special attention," if borrowing firms have in place sufficient reconstruction programs. The Financial Services Agency relaxed the above requirements for restructured loans in November 2008. The decline in the NPL ratio of regional banks since fiscal 2008 is largely attributable to the relaxation (Chart 3-6).

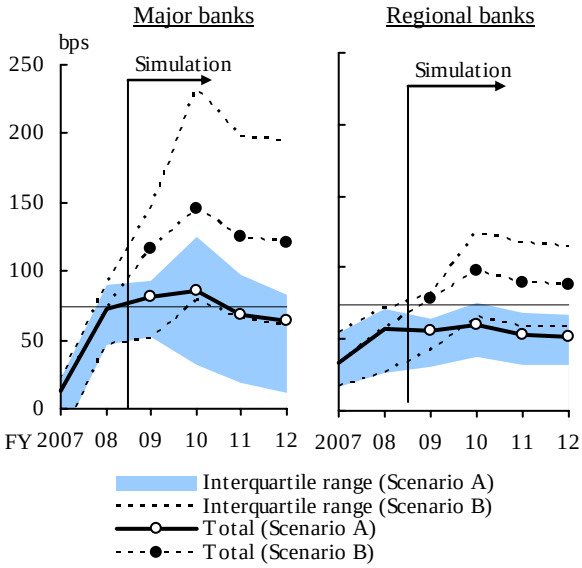
assumed to change in accordance with changes in the economy.[15] In Scenario B where macroeconomic conditions are severer, the nominal GDP growth rate is assumed to be 1 percentage point below Scenario A each year. Assuming that firms' financial restructuring cannot catch up with such additional shocks, the quick ratio and the ICR are assumed to decline by 5 and 100 percentage points below those in Scenario A.

**Chart 3-8: Nominal GDP Growth Rate for Scenarios**




Sources: Cabinet Office, "National Accounts";
Economic Planning Association, "ESP Forecasts."

**Chart 3-9: Credit Cost Ratios and Break-Even Point[1]**




Note: *1.* The horizontal line represents the break-even point as of the 1st half of fiscal 2009.

While the development of nominal GDP growth rates is almost the same in this *Report* as in the previous one, the credit cost ratio under Scenario A is lower than that in the previous *Report* (Chart 3-9). This is because the frequency of large-scale defaults will be limited against a backdrop of improved firms' funding conditions due to cost reduction and other factors.

The estimate shows that, until fiscal 2011, when the economic recovery becomes evident, the credit cost ratio will be high at around 80 basis points for the major banks and slightly above 50 basis points for the regional banks. This suggests that credit costs could rise to levels comparable to fiscal 2008, when there were successive large-scale bankruptcies. According to loans outstanding by borrowers' classification, the share of "normal" loans continues to decline, while that of "need attention" loans increases. This suggests that the quality of loans is deteriorating (Chart 3-10). If a loan is downgraded from the "need attention" category to the NPL category, for which a high provision rate is required, the credit cost is likely to increase as a consequence.

[15] The previous *Report* assumed firms' financial conditions as constant.

**Chart 3-10: Loans Outstanding by Borrower Classification**

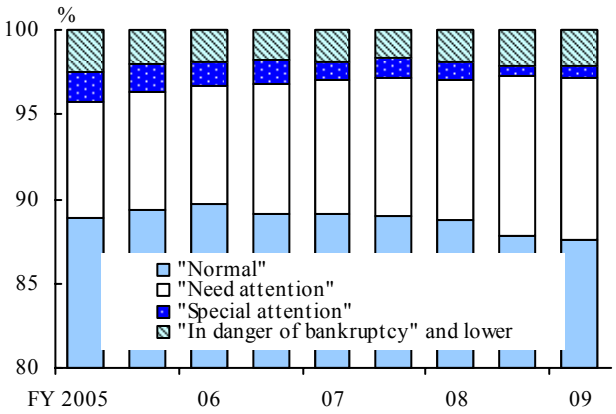
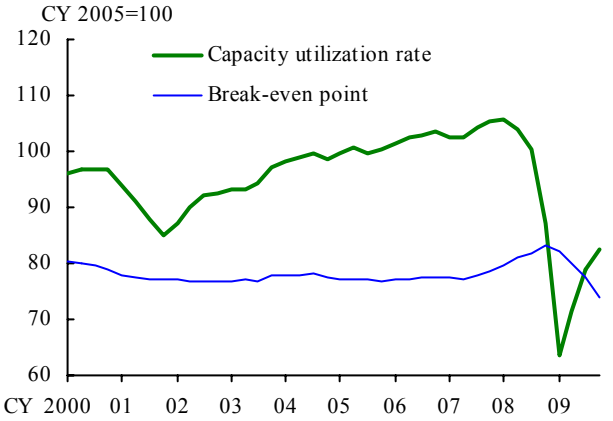



**Chart 3-11: Rates of Manufacturing Capacity Utilization**[1,2]




Notes: *1.* Sample adjusted and seasonally adjusted.
*2.* Break-even point is four-term moving average.
Sources: Ministry of Economy, Trade and Industry, "Indices of Industrial Production"; Ministry of Finance, "Financial Statements Statistics of Corporations by Industry, Quarterly."

In addition, firms' profitability and debt repayment capacity remain somewhat vulnerable. While the capacity utilization rate of the manufacturing sector that plunged after the autumn of 2008 has been rising, led by a recovery in exports, it has not reached a level sufficiently above the break-even point (Chart 3-11). In the non-manufacturing sector, improvement in profits has been due largely to cost reduction and profits from core business remain sluggish. As such, Japan's economic activity remains weak. In these circumstances, if the additional macroeconomic shock assumed in Scenario B occurs, credit costs could rise sharply, and the credit cost ratio could nearly double from that in fiscal 2008 for both the major banks and the regional banks.

At present, however, credit costs have been contained, owing to measures such as relaxation of the requirement for restructured loans. Therefore, even if banks' loan quality deteriorates further, it has become difficult to observe an actual deterioration in the quality in the form of rising credit costs. Nevertheless, firms' profitability and debt repayment capability remain somewhat vulnerable, and continued attention is warranted for future development of credit risk.

### *Robustness of the capital base*

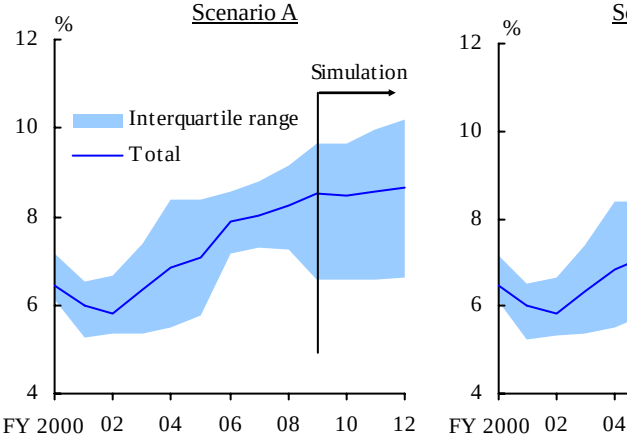
The *Report* assumes further that, under Scenarios A and B of the credit cost analysis, the TOPIX will remain at 700 points -- the lowest level after the bubble economy period -- and estimates the effects on banks' capital when an increase in credit costs and

unrealized losses on stocks occur simultaneously.[16] This reflects the increasing correlation between credit costs and stock-related losses in the 2000s.

According to the estimates, due to a decline in stock prices, there could be net unrealized losses from stockholdings at the end of September 2009 reducing the Tier I capital ratio by 0.7 percentage point.[17] As such, banks' capital continues to be susceptible to stock price fluctuations.

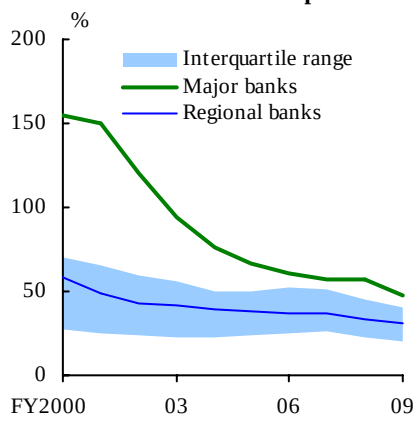
In Scenario A, an increase in credit costs and net unrealized losses on stocks occur simultaneously, and these impacts nearly offset the effects of capital reinforcement mainly by the major banks in the first half of fiscal 2009, initially reducing the Tier I capital ratio. Thereafter, the decline in capital is limited since the credit cost ratio hovers around a break-even point, but the capital ratio does not increase. Throughout the estimation period, the Tier I capital ratio is maintained at a level equivalent to that of fiscal 2008 (Chart 3-12).

**Chart 3-12: Tier I Capital Ratios**[1]




Note: *1.* The dispersion is weighted by each bank's loan ratio to total bank loans.

**Chart 3-13: Stockholdings to Tier I Capital**[1]




Note: *1.* Based on acquisition prices. The latest data are as of the 1st half of fiscal 2009.

In the severer Scenario B, the number of banks whose credit cost ratios exceed break-even points will increase even after fiscal 2011, when the economic recovery

[16] Capital is assumed to decline when credit costs exceed operating profits from core business, or when net unrealized losses on stocks -- the difference between market value and book value -- are incurred.

[17] In estimating net unrealized losses on stocks, the previous *Report* assumed that market prices of stocks held by financial institutions were completely linked to the TOPIX. Under this assumption, the difference in the effects of a decline in the TOPIX on each bank stemming from a difference in the composition of stockholdings was disregarded. Therefore, this *Report* refined the approach to estimate the sensitivity of stock prices to the TOPIX for each bank by using information on major shareholders of listed firms. As a result, the sensitivity of the estimated value of stockholdings to the TOPIX at each bank is distributed approximately in the range of 0.8 and 1.1 (with the midpoint at 1.0).

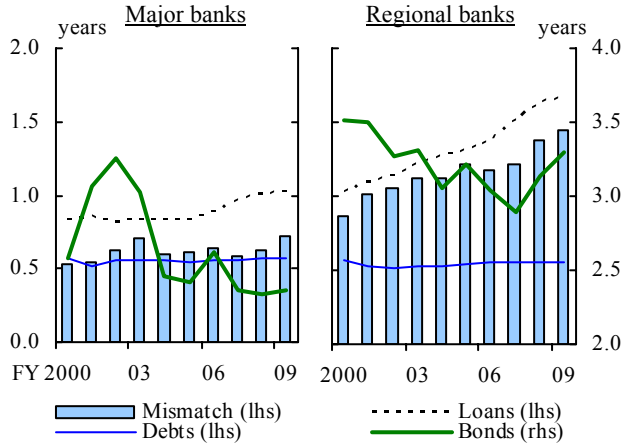
becomes clear. Therefore, banks' Tier I capital will decline over the simulation period. While banks' capital bases are not likely to decline substantially, the capital adequacy ratios might stay at low levels at banks whose profitability and capital strength are relatively weak.

Japanese banks' profits tend to be influenced by credit costs and stock-related gains/losses. Under such a profit structure, downward pressure on banks' capital is likely to emerge as a result of the surfacing of credit risk and market risk associated with stockholdings. Moreover, the market's view on assessing banks' soundness may have changed, as discussions are ongoing internationally to introduce new capital adequacy requirements. In these circumstances, an increasing number of banks are taking steps to reduce market risk associated with stockholdings through, for example, sales of stockholdings and strengthen their capital bases through capital increase (Chart 3-13).

## B. Looming Interest Rate Risk

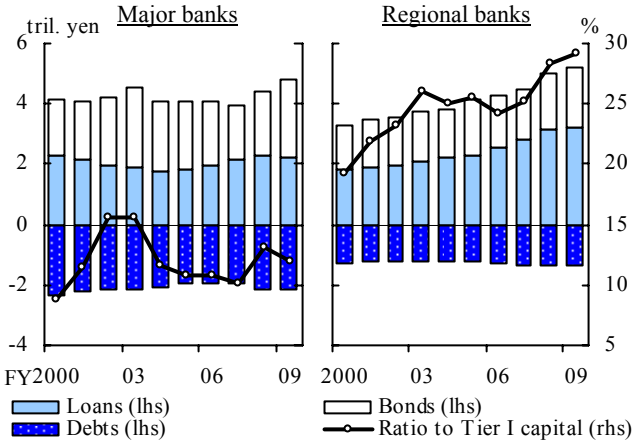
The major banks and the regional banks increased their bondholdings, and as a result interest rate risk is looming. On the investment side, the average time until the renewal of the interest rate has steadily lengthened mainly for the regional banks (Chart 3-14). On the funding side, the funding period has shortened somewhat reflecting an inflow of firms' cash on hand in the form of liquid deposits. As a result, the 100 basis point value of interest rate risk, based on the assumption that interest rates rise by 1 percentage point for all maturities, increased to 3 trillion yen for the major banks and 4 trillion yen for the regional banks, respectively, as of the end of September 2009 (Chart 3-15). The ratio of interest rate risk relative to Tier I capital continues to remain below the recent peak in fiscal 2003 and is 10-15 percent for the major banks, which have made

**Chart 3-14: Average Maturity**[1]




Note: *1.* The latest data are as of the 1st half of fiscal 2009.

**Chart 3-15: Interest Rate Risk (100 bpv)**[1]




Note: *1.* The latest data are as of the 1st half of fiscal 2009.

large-scale capital reinforcements, while the ratio reached about 30 percent for the regional banks.

### *Lengthening investment period*

On the banks' investment front, since the demand for loans has leveled off amid a stable inflow of deposits, the banks' preference for investing in bonds such as government bonds has increased uniformly. For the major banks and the regional banks, the outstanding balance of bondholdings as of the end of September 2009 exceeded the level during the period of quantitative easing policy, when banks invested heavily in government bonds (Chart 3-16). By maturity, the major banks have limited their incremental investment in short to medium-term bonds. On the other hand, the regional banks have shown signs of expanding their range of investments to long-term bonds of more than five years under a situation in which short to medium-term interest rates have declined further.[18] Consequently, the grid point sensitivity of interest rate risk associated with bondholdings, based on the assumption that each maturity rises by 1 percentage point, reached a peak range for the major banks, due mainly to increased risk in the short to medium-term range, and for the regional banks, due mainly to increased risk in the long-term range (Chart 3-17).

**Chart 3-16: Outstanding Amount of Bondholdings**

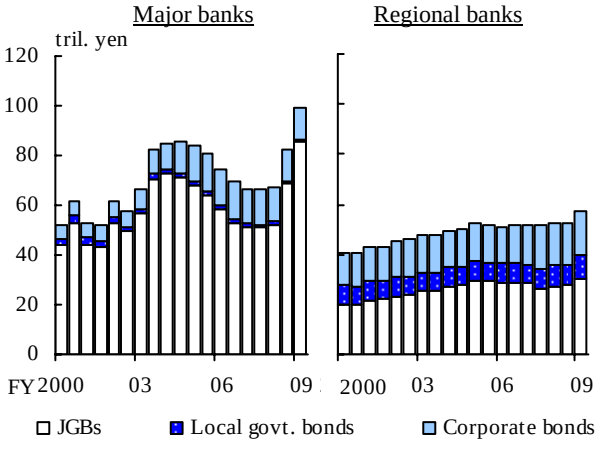
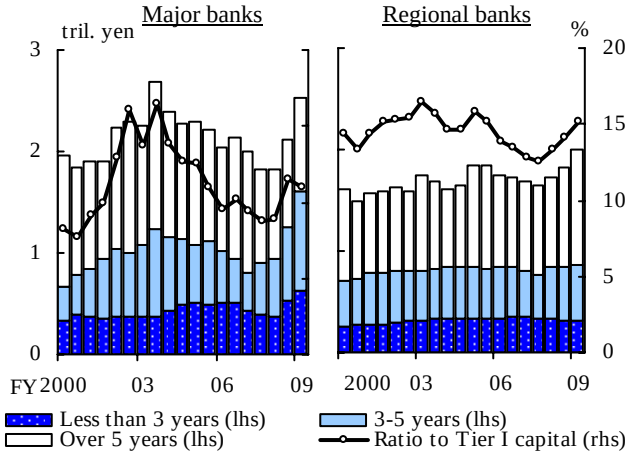



**Chart 3-17: Grid Point Sensitivity of Bondholdings**




On the lending front, in order for firms to ensure stable funding, it became obvious from the beginning of fiscal 2009 that firms had shifted their funding from short-term to long-term borrowing. Together with active provision of publicly guaranteed loans to

[18] Domestic banks are allowed not to deduct unrealized losses on some securities, such as government bonds, from Tier I capital until March 2012.

small and medium-sized firms, the loan period tended to lengthen. From a longer-term perspective, another factor that contributed to the lengthening of the average time until the renewal of loan rates is related to the fact that the proportion of relatively long-term loans such as mortgage loans and loans to local governments has been increasing mainly at the regional banks. As for mortgage loans, since the proportion of mortgage loans with a fixed rate for the first ten years is still about 30 percent of the total, the average time until renewal of interest rates of newly extended mortgage loans is still somewhat long at over five years (see Box 4 for issues pertaining to mortgage loans). As for loans to local governments, under the measure allowing redemption before maturity from the Fiscal Loan Fund (of maximum 30 years) without compensation, demand for refinancing through bank loans with low interest rate has been increasing. The lending period for such bank loans seems to be long term, comparable to the period for fiscal loans.

In sum, banks actively invested in government bonds reflecting an inflow of funds searching for investment opportunity, and the lengthening of the lending period progressed as firms' demand for short-term funds waned. Thus, interest rate risk stemming from the lengthening investment period is looming mainly at the regional banks.

### *Robustness against rise or fluctuation in interest rates*

In the following, using the same methodology as in the previous *Report*, changes in interest income and bond market prices under scenarios of an interest rate hike are estimated, based on the balance-sheet structure of the banks at the base point of end-September 2009. Four scenarios of a rise in the yield curve are considered:[19] (1) a baseline scenario in which the future interest rates follow the path factored in the market yield curve at the base point; (2) a parallel shift scenario in which interest rates of all maturities shift upward from the baseline scenario by 1 percentage point; (3) a steepening scenario in which the 10-year rate shifts upward from the baseline scenario by 1 percentage point; and (4) a flattening scenario in which the overnight rate shifts upward from the baseline scenario by 1 percentage point (Chart 3-18). While the actual investment-funding structure of banks could change according to the shape of the yield curve, here it is assumed to remain constant.

[19] In the scenario analysis, the spread between time deposit/lending rate and the corresponding market rate converges on its historical average in the long run, and ordinary deposit rates hover around the 25 percent level of 1-month Libor. See the March 2007 issue of the *Report* for details.

As for net interest income, there is downward pressure at the early stage of a rise in interest rates, as the increase in interest payment of short-term funding exceeds interest received from loans and bondholdings (Chart 3-19). Compared with the previous *Report*, the investment-funding maturity mismatch increased further, and the pace of increase in interest rates of longer term moderated. Therefore, downward pressure on interest income becomes large in all periods, and remains for a longer period. For example, in the baseline case, operating profits from core business are estimated to decline by about 10 percent for the major banks and about 20 percent for the regional banks, respectively, during the estimation periods. Such effects become more conspicuous for the regional banks with a larger maturity mismatch than the major banks.

**Chart 3-18: Upward Shift in Spot Rate Curves for Scenarios**

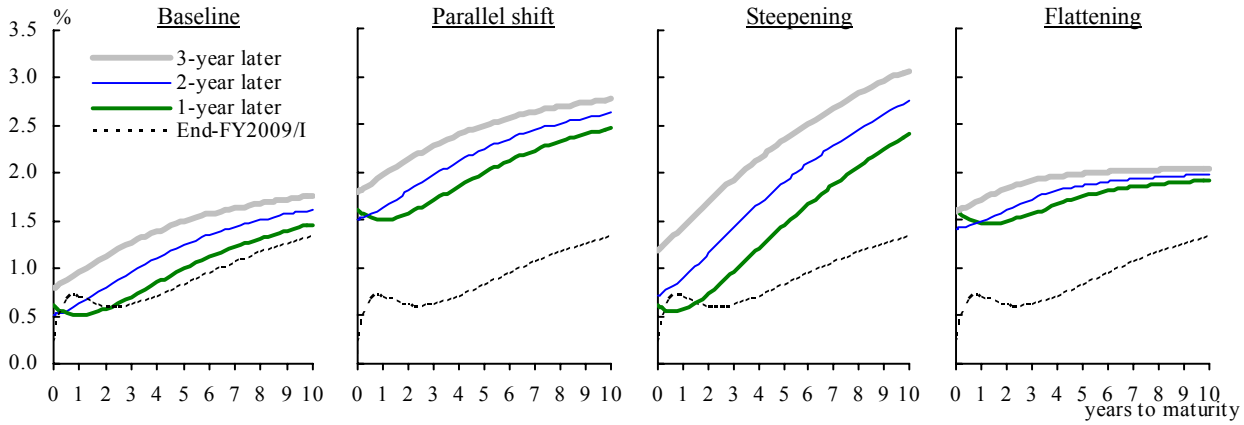
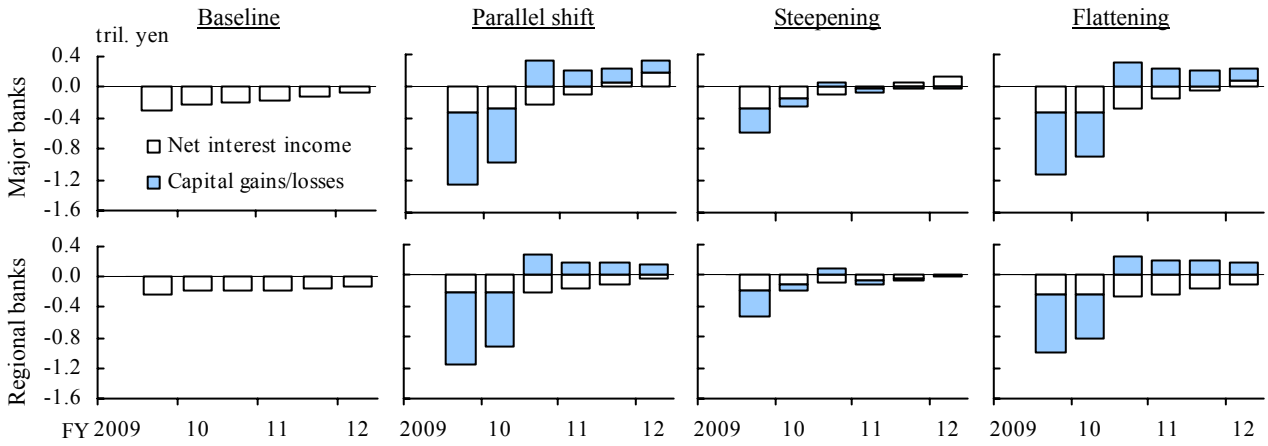



**Chart 3-19: Net Interest Income and Capital Gains/Losses on Bondholdings**[1]




Note: *1*. Figures for net interest income are changes from the actual level in the 1st half of fiscal 2009. Those for capital gains/losses on bondholdings are changes from the baseline scenario.

Since outstanding bondholdings increased both for the major banks and the regional banks, downward pressure on market value of bondholdings also increased. As for the

regional banks, while their outstanding balance of bondholdings is almost half of the major banks, their maturity of bondholdings is about one year longer than the major banks. Therefore, the regional banks are exposed to downward pressure on market value of bondholdings of a magnitude almost equivalent to that for the major banks. Such an effect is more apparent in the parallel shift and flattening scenarios, in which hedging the interest rate hike by floating rate notes is less effective.

In addition, assuming a phase in which interest rates become unstable and their volatility rises, the amount of bond selling to maintain the value at risk (i.e., market risk associated with bondholdings based on past price changes) will increase. Large-scale bond selling might induce a pickup in interest rates, as observed in 2003 when the so-called "VaR shock" hit the bond market.[20] In particular, the regional banks that significantly increased longer-term bondholdings have become more susceptible to instability in market interest rates.

Each bank should continue to properly manage interest rate risk by, for example, moving interest rate risk off the balance sheet, using derivatives for risk hedging, and making use of management of market risk that takes into account the correlation between risks.

### Box 4: Risks Associated with Mortgages

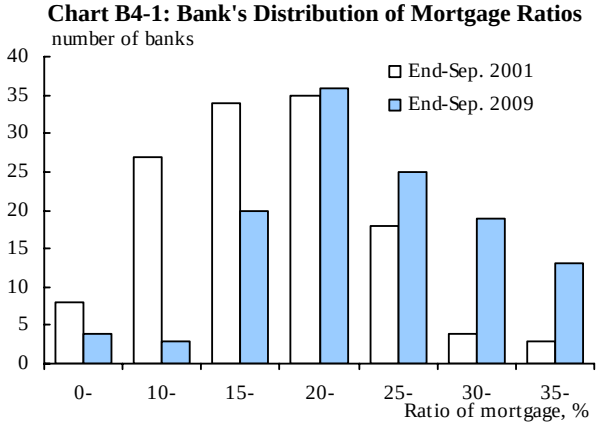
Japanese banks, in particular the regional banks, have been working to increase their share in the mortgage market since 1994, when mortgage loan rates were deregulated. As of the end of fiscal 2008, the major banks and the regional banks held a dominant share of 30 percent in the market, respectively. In addition, the ratio of mortgages to total bank loans rose to 25 percent from 17 percent in the 2000s, and the ratio exceeded 30 percent for nearly 30 percent of the banks (Chart B4-1). Under sluggish growth of the mortgage market, competition has been intensifying among banks with surplus funds. Banks are offering mortgages at increasingly better rates, thereby deteriorating profitability for mortgages (Chart B4-2).

The recent increase in the default rate amid significant deterioration in employment and income environments has also deteriorated the profitability for mortgages (Chart B4-3). The default rate for mortgages is increasing at a pace not experienced before, although it is

[20] In the summer of 2003, banks, which managed their risk according to the value at risk, judged that their VaR exceeded the ceiling and started selling government bonds. As a result, the 10-year government bond yield rose sharply from 0.4 percent to 1.5 percent, accompanied by increasing volatility.

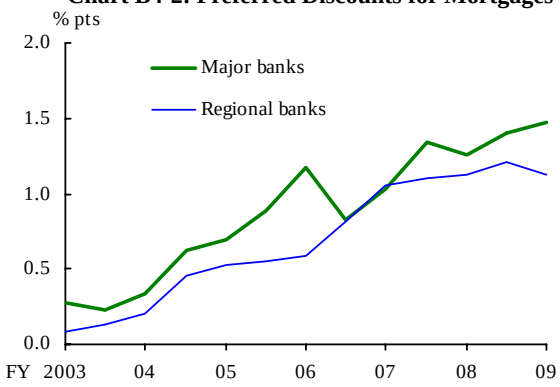
likely to rise with time. The default rate for the mortgages launched in fiscal 2008 exceeded, in only less than one year, a level usually reached in three years on average. Mortgages are usually considered to be safer than corporate loans since most of the mortgages are guaranteed. However, most of the banks use the credit guarantee companies in their groups and therefore the credit costs should be more than 10 basis points on a consolidated basis.

**Chart B4-1: Bank's Distribution of Mortgage Ratios**



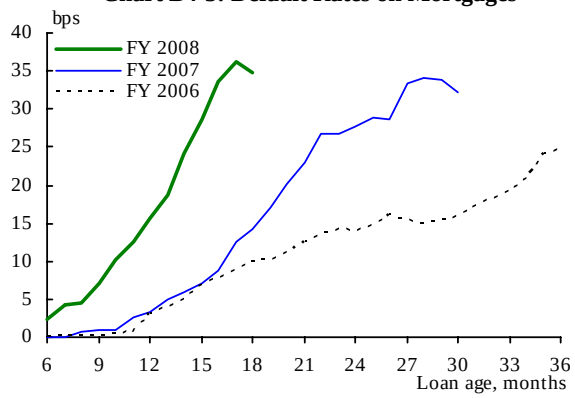

Source: BOJ, "Loans and Discounts Outstanding by Sector."

**Chart B4-2: Preferred Discounts for Mortgages**[1]



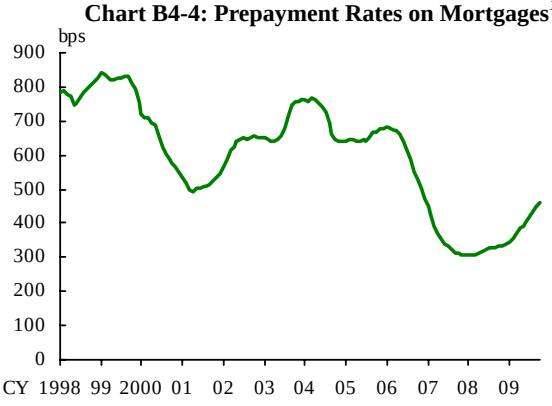

Note: *1.* Fixed rate type for the first 10 years.
Source: Japan Financial News, "Nikkin Report."

**Chart B4-3: Default Rates on Mortgages**[1, 2]




Notes: *1.* Defaulted loans include more than six months overdue.
*2.* 12-month moving average of annualized rates.
Sources: Japan Housing Finance Agency, "Published Accounts."

**Chart B4-4: Prepayment Rates on Mortgages**[1, 2]




Notes: *1.* Rate of optional redemption.
*2.* 12-month moving average of annualized rates.
Sources: Japan Housing Finance Agency, "Published Accounts."

Banks' commitment to mortgage businesses is one of the factors that interest rate risk is looming for the banks. The average maturity of loans as a whole is lengthening as a result of an increasing trend of the ratio of mortgages to total loans. Recently, the prepayment rate of mortgages has been below the average level of the past ten years, partly because it is widely expected that interest rates will remain low for the time being, and because the repayment capacity has declined in the household sector due to the worsening income environment (Chart B4-4). In addition, it remains difficult to issue residential mortgage-backed securities (RMBSs) from 2007 due to the financial market turmoil (Chart 2-20). All of these factors have contributed to increasing the tendency for mortgages to remain in the banks' assets.

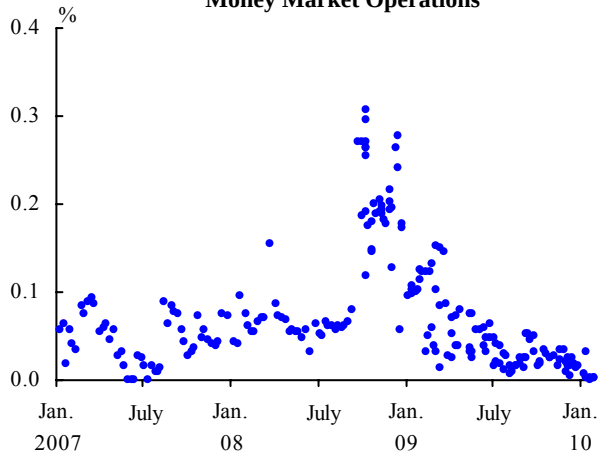
## C. Waning Funding Liquidity Risk

Funding liquidity risk is restrained both in terms of yen currency, in which stable inflow of deposits continues, and of foreign currency, in which the loan-deposit ratio is improving.

### *Developments in yen funding*

Funding liquidity risk in yen currency, which surged temporarily in the autumn of 2008, has been restrained at a low level in fiscal 2009. The spread between the successful bid rate in the Bank of Japan's money market operations and the overnight index swap (OIS) rate, which shows the risk premium of funding, had been relatively high towards the end of fiscal 2008, reflecting increased demand for funds (Chart 3-20). Thereafter, the spread started to decline and it has recently been at a level even lower than that prior to the Lehman shock.

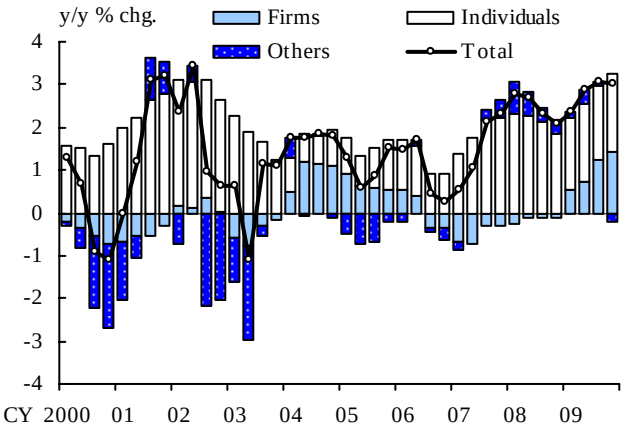
**Chart 3-20: Spread of Successful Bid Rates of Money Market Operations**[1]




Note: *1*. Spread of the successful bid rates of funds-supplying against pooled collateral (at all offices with rate competition) over the corresponding OIS rates.
Sources: Bloomberg; BOJ.

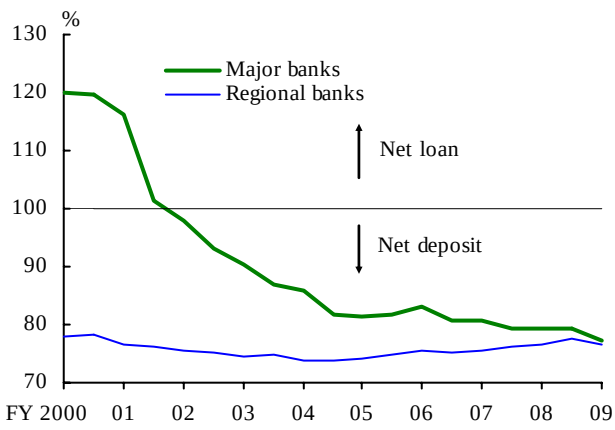
The decline in firms' demand for funds has had the effect of containing banks' funding liquidity risk by mitigating banks' funding pressure and reducing uncertainty about banks' investment-funding position. Meanwhile, firms' cash on hand obtained or raised through various measures flowed into banks in the form of deposits, and this, together with the continued inflow of personal deposits, rapidly increased banks' deposits as a whole (Chart 3-21). Consequently, the loan-deposit ratio both at the major banks and the regional banks has stably shown an excess of deposits, partly reflecting the decline in demand for loans (Chart 3-22). Moreover, the major banks' actions in obtaining longer-term funds through the Bank of Japan's money market operations together with collecting deposits seem to have contributed to reducing the uncertainty of funding positions.

**Chart 3-21: Outstanding Deposits by Type of Depositor**




Source: BOJ, "Amounts Outstanding of Deposits by Depositor."

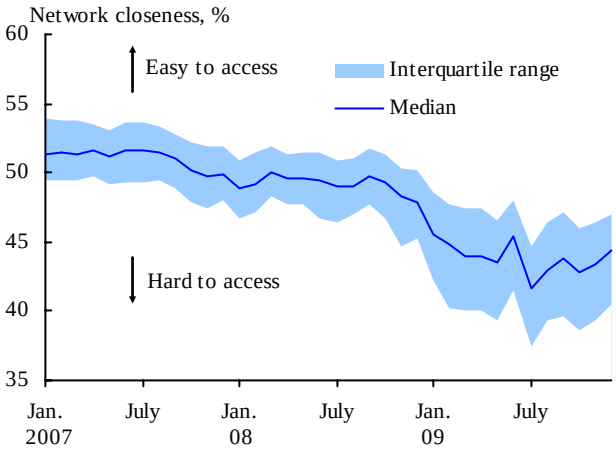
**Chart 3-22: Loan-Deposit Ratio**




## *Robustness against yen liquidity shock*

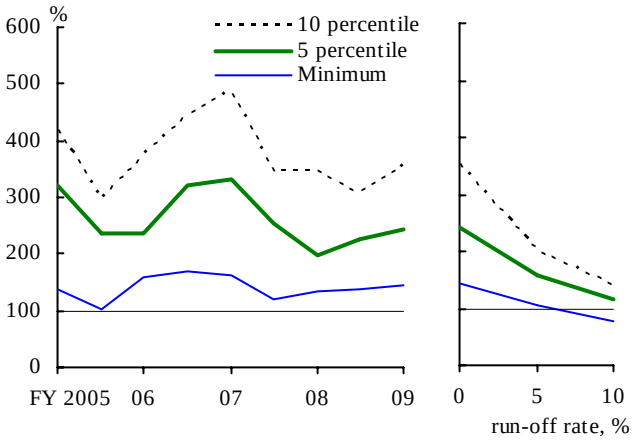
While the inflow of deposits stabilized banks' funding, the functioning of money markets such as the call money market has not fully returned to normal. In the money markets, investment by the regional banks and funding by foreign financial institutions are both declining. It has become difficult to make large-order transactions in the market, and interest rates have been subject to upward pressure, depending on the stance of funds providers. Looking at the functioning of the money markets in terms of accessibility to the market, it has become difficult for funds to spread into every corner of the fund transaction network in the money markets since the outbreak of the financial crisis (Chart 3-23).[21]

**Chart 3-23: Functioning of Money Market**[1]




Note: *1*. Distribution of participants in the call money market.

**Chart 3-24: Distribution of Liquid Asset Ratio**[1]




Note: *1*. Left chart: distribution when runoff rate of deposits is zero percent. Right chart: distribution when runoff rate rises from 0 to 10 percent based on the level at end-September 2009.

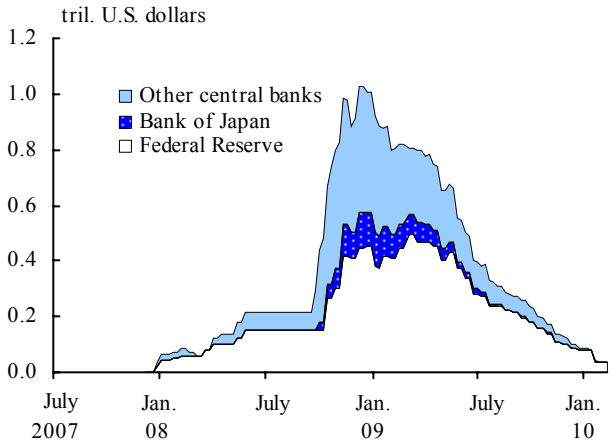
[21] Here, *network closeness* among financial institutions is regarded as accessibility to the market. It is conceivable that the weaker the linkage among institutions, the scarcer their funding opportunity.

In these circumstances, the major banks and the regional banks remain robust against liquidity shock. Even under an assumption of a strong liquidity shock in which funding from the financial markets stops completely for three months, both the major banks and the regional banks would continue to secure a sufficient level of liquid assets, such as deposits at the Bank of Japan, cash, and government bonds, to meet short-term demand for funds, which is the amount of funds shortage when market transactions cannot be rolled over (Chart 3-24). Moreover, the *Report* assumes a stronger liquidity shock in which markets freeze and a certain portion of deposits (from 0 to 10 percent), whose time until the renewal of the deposit rate is within three months, are drained. Even in such a case, most banks have sufficient levels of liquid assets to weather the shock.

### *Developments in foreign currency funding*

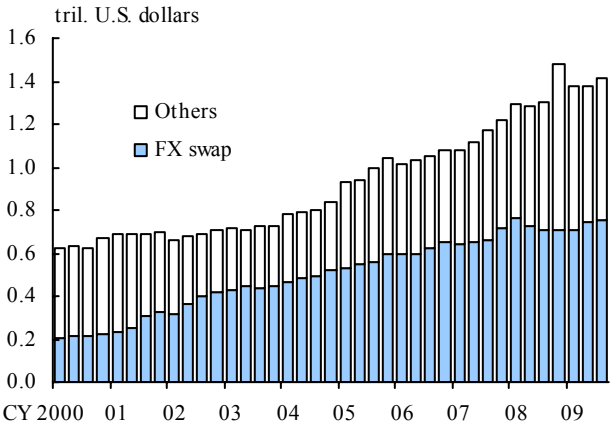
The functioning of U.S. dollar funding markets such as foreign exchange swap market and the U.S. interbank market has been improving. In these circumstances, dependency on central banks' dollar funds-supplying operations has declined rapidly (Chart 3-25). The final offer in the dollar funds-supplying operation by the Bank was made in January 2010.

**Chart 3-25: U.S. Dollar Funds-Supplying Operations**




Sources: FRB, "Factors Affecting Reserve Balances"; BOJ, "Money Market Operations Conducted by the Bank of Japan."

**Chart 3-26: U.S. Dollar Funding Position**




Source: BIS, "Locational International Banking Statistics."

For Japanese banks' loan-deposit ratio in foreign currency, the extent of excess lending has been decreasing as overseas loans have leveled off since the Lehman shock and banks have been collecting deposits. Given improvement in the U.S. dollar funding environment, funding liquidity risk in foreign currency has been contained.

However, Japanese banks' investments in U.S. dollars, mainly in U.S. Treasuries, have recently been increasing again. Most of the investment positions are covered by market

funding such as converting yen funds into dollar funds *via* foreign exchange swaps, and there are certain maturity mismatches between investment and funding (Chart 3-26). Therefore, once the functioning of financial markets declines as observed during the recent financial crisis, its impact would be difficult to avoid. To prepare for future anomalies in the markets, it is inevitable to further diversify counterparts and instruments for funding as well as to control the maturity mismatch between investment and funding at an appropriate level.

## D. Prospects for Financial Intermediation Function Based on Robustness Assessment

Decline in banks' capital could adversely affect the real economy through banks' cautious stance in credit risk-taking. Such adverse effects might be limited under a scenario where the robustness of Japan's financial system is maintained. Nevertheless, in a severer macroeconomic scenario, banks' cautious risk-taking activity could constrain economic growth.

### *Feedback to the financial intermediation function*

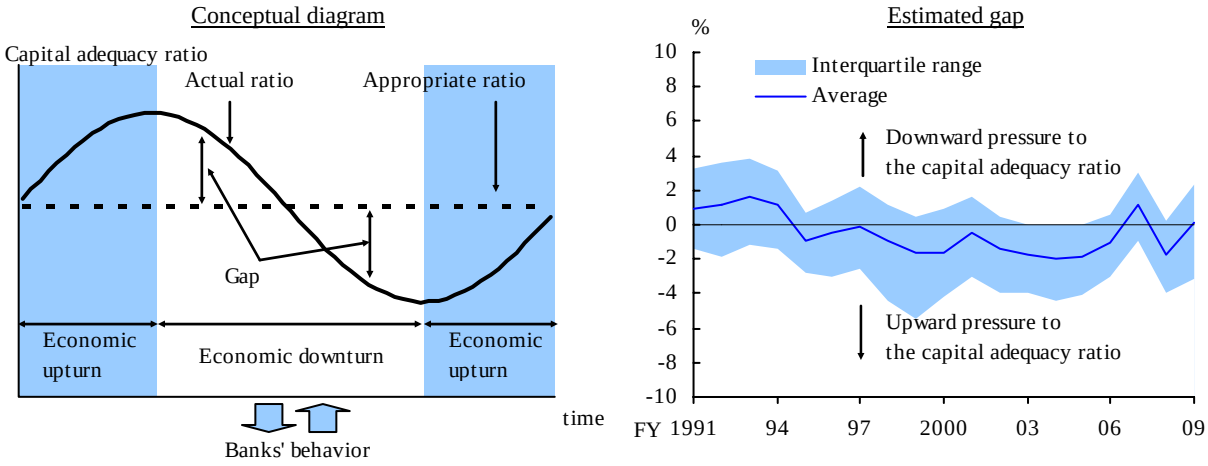
The effect of the robustness of the financial system on the future financial intermediation function is examined based on scenario analysis (see Box 5 for details).

For a bank, it is rational to rebalance its investment portfolio or fortify its capital base to bring the "actual capital adequacy ratio" close to the "appropriate capital adequacy ratio" based on its own risk profile. If the external environment, including the economic environment and regulatory system, changes and the bank's own risk recognition is altered, the bank will change its "appropriate capital adequacy ratio," and "actual capital adequacy ratio" accordingly. However, change in the "actual capital adequacy ratio" requires time, as it entails changes in the asset-liability structure or implementation of the capital policy.

Latitude in a bank's managerial capability is gauged as the capital adequacy ratio gap, a disparity between the "actual capital adequacy ratio" and the "appropriate capital adequacy ratio" (the left-hand side of Chart 3-27). If the capital adequacy ratio gap widens in a negative direction, namely, if there is little latitude in the bank's managerial capability, the bank will try to close the negative gap by reducing risk assets or fortifying capital to restore the latitude in its managerial capability. Typically, the bank will promote rebalancing towards safe assets while containing risk assets such as lending. If the supply-demand balance of loans is tight, there will be constraints on the

real economic growth from the financial front.

**Chart 3-27: Capital Adequacy Ratio Gap**




Based on this analytical framework, the capital adequacy ratio gap of Japanese banks is estimated (the right-hand side of Chart 3-27). The negative gap widened from the beginning of the 1990s and hovered in a negative range from the end of the 1990s (i.e., during the financial crisis) to the beginning of the 2000s when the disposal of banks' impaired assets peaked. Meanwhile, bank lending was restrained partly due to weak demand for funds by firms that faced excess debt problem. In the phase of economic expansion from the beginning of the 2000s to 2007, banks restored the latitude in their managerial capability. However, in 2008 when the effects of the financial crisis spread, banks actively provided loans to meet firms' demand for funds and thus the negative gap widened again. The gap has recently been shrinking partly due to large-scale capital reinforcement by the major banks.

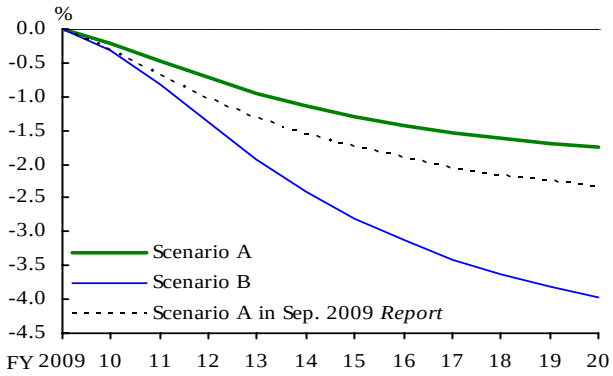
### *Prospects for the financial intermediation function*

Based on the results obtained thus far and drawing on the results of robustness assessment on future capital, an examination is made of how the capital adequacy ratio gap will evolve in the future and the type of pressure it will put on the financial intermediation function. In Scenarios A and B, which include the decline in stock prices, as discussed in Section A of this chapter, banks' capital will be deducted since net losses are registered. Thereafter, following the past average pattern, banks would accumulate capital through retained earnings and the reduction of risk assets, and restore the capital

adequacy ratio gap to the level at the base point in approximately ten years.[22]

During the process in which Japanese banks' restore the capital adequacy ratio gap, there would be pressure to reduce risk assets (Chart 3-28).[23] Since pressure to reduce risk assets would remain in both scenarios, financial constraints might bind real economic activity from fiscal 2011 onward, when nominal GDP will return to a positive growth and demand for funds will increase. However, in Scenario A, pressure to reduce risk assets is merely minus 0.2 percent per year, and it declines to about two-thirds of that in Scenario A of the previous *Report*. On this basis, it can be assessed that financial constraints against the real economic growth have weakened. However, in the severer Scenario B, pressure to reduce risk assets will double in magnitude compared with Scenario A. Depending on the changes in financial and economic environment, the appropriate capital adequacy ratio could rise, adding further pressure to raise capital adequacy ratio on the part of banks. Such development warrants continued attention.

**Chart 3-28: Pressure to Reduce Risk Assets**[1]




Note: *1*. Cumulative effects are plotted.

[22] From the second half of fiscal 2009 to fiscal 2012, credit costs and unrealized losses on stock will be registered in each scenario, and from fiscal 2012 onward the credit cost ratio will be at the break-even point. Appropriate capital adequacy ratio will be assumed to remain constant at the level equivalent with that of the base point.

[23] If a bank tries to raise the capital adequacy ratio, in response to either the rise in credit costs or in preparation for the introduction of new capital adequacy requirements, the pressure to rebalance the portfolio towards government bonds and other low risk assets will increase.

## Box 5: Framework for Analyzing the Impact of the Robustness on the Financial Intermediation

To aid an understanding of the feedback loop between financial sector and real economy, a new framework is used to analyze the impact of the financial system robustness on the financial intermediation function.[24] This framework consists of the following three steps.

### *Estimation of the capital adequacy ratio gap*

For a bank, it is theoretically rational to bring the "actual capital adequacy ratio" close to the "appropriate capital adequacy ratio" that is based on its own risk profile. However, the change in the "actual ratio" requires time as it entails internal decision-making process, assessment of market environments, and negotiation with borrowers. Therefore, the bank gradually closes the capital adequacy ratio gap to zero. Let the gap, $Z$, be a deviation of the "actual ratio," $k$, from the "appropriate ratio," $k^*$, and the relationship between these two variables is modeled as follows.

$$k_t = \lambda \cdot k_{t-1} + (1-\lambda) \cdot k_t^* = \lambda \cdot k_{t-1} + (1-\lambda) \cdot \kappa \cdot X_{t-1} + \varepsilon_t ,$$

where $k_t^* = \kappa \cdot X_{t-1} + \eta_t$. $\lambda$ and $\kappa$ indicate an adjustment factor and a parameter, respectively. $\varepsilon$ and $\eta$ are disturbance terms.

In this model, the gradual adjustment process is represented by the autoregressive term of $k$. Furthermore, the unobserved $k^*$ is expressed as a function of the observable determining factors, $X$. As the determining factors, the output gap (GDP gap), which shows the degree of slack in economy, and the return on asset (ROA) of each bank are used.[25]

According to the results of estimation using the dynamic panel method covering the major banks and the regional banks in the sample period from fiscal 1989, the coefficient of the autoregressive term is significantly positive at a one-percent level (Chart B5-1). It verifies the existence of a gradual adjustment mechanism. The coefficient of the GDP gap is

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[24] The Federal Reserve and the U.K. Financial Services Authority, in addition to the 2008 September issue of the *Report*, employ a similar framework to estimate the impact of the restrictions on banks' balance sheets and that of the capital adequacy regulation on real economic activity.

Berrospide, J. M. and R. M. Edge, "Linkages between the Financial and Real Sectors: Bank Credit and Capital over the Crisis," mimeo, 2009.

Francis, W. and M. Osborne, "Bank Regulation, Capital and Credit Supply: Measuring the Impact of Prudential Standards," Occasional Paper Series 36, U.K. Financial Services Authority, 2009.

[25] One-period lag of the determining factors is adopted in the model, partly because of addressing the endogeneity bias in the estimation. It is therefore assumed that expectation is derived from the past variables, although the $k^*$ is considered to be determined by projection on future economic conditions.

estimated to be significantly negative. It implies a bank's conservative behavior to set its $k^*$ at a higher level as its borrowers' default probability and loss given default increase under sluggish economic conditions. The coefficient of the ROA is significantly positive.

**Chart B5-1: Estimation of Capital Ratio**

| | Independent variables |
|---|---|
| | Capital adequacy ratio |
| k(t-1) | 0.757 [0.12] |
| GDPGAP(t-1) | -0.061 [0.02] |
| ROA(t-1) | 0.598 [0.25] |
| Arellano-Bond AR(2) test(p) | 0.35 |
| Hansen test(p) | 0.13 |

Figures in parenthesis are standard errors.
Sample: 1989/I-2009/I.
Method: Dynamic panel system GMM.
Constant term, seasonal dummy, and dummies of risk regulation (after FY1998) and Basel II (after 1998) is used.
Instrumental variables are lags of dependent variables and exogenous variables.

**Chart B5-2: Estimation of Balance-Sheet Channel**

| | Dependent variables | |
|---|---|---|
| | Δcapital base | Δrisk assets |
| Z(t) | -0.515 [0.106] | 0.175 [0.058] |
| ΔGDP(t-1) | 0.003 [0.002] | 0.005 [0.001] |
| ΔGDP(t-2) | -0.009 [0.005] | -0.001 [0.001] |
| ΔCALL(t-1) | 0.005 [0.004] | 0.005 [0.001] |
| ΔCALL(t-2) | -0.011 [0.005] | -0.004 [0.001] |
| ΔCPI excludes Foods and Energy (t-1) | 0.146 [0.035] | 0.018 [0.010] |
| ΔCPI excludes Foods and Energy (t-2) | 0.082 [0.027] | -0.005 [0.009] |
| F-test(p) | 0.00 | 0.00 |

Figures in parenthesis are standard errors. Sample: 1990/II-2009/I.
Method: Fixed-effect model. The null hypothesis of F-test is Z=0.
Independent variables except for *Z* are added to avoid the omitted variables bias by controlling the determining factors such as funds demand. To address the endogeneity bias, one-period lag is adopted.
The same set of dummies as Chart B5-1 are used.

### *Estimation of the linkage between the bank's capital adequacy ratio gap and its behavior*

If the capital adequacy ratio gap, $Z$, widens/tightens through variations of $k$ or $k^*$, the bank will try to rebalance its capital and risk assets through the balance-sheet channel in order to close the gap.

The estimation results of the balance-sheet channel shows that the coefficients of the capital adequacy ratio gap are negative for the capital base and positive for risk assets at a significant level, respectively (Chart B5-2). It indicates that if the gap widens in a negative direction, the bank will close the gap by fortifying capital and reducing risk assets.

### *Scenario analysis based on robustness assessment*

A simulation is performed as follows, using the estimated coefficients and the robustness assessment on future capital. (1) Let the future $k^*$ be constant at the level of the base point and $k$ be given as of the beginning of the period. (2) The capital adequacy ratio gap is calculated under the scenario in which downward pressure on the capital base emerges based on the robustness assessment. (3) Changes in the bank's behavior, i.e., rebalancing its capital and risk assets, are derived from variations of the gap, and then $k$ is calculated at the beginning of the following period. The procedure of (1) to (3) is repeated during the simulation period. Chart 3-28 depicts the pressure to reduce risk assets, one of the changes in banks' behaviors derived from the procedure (3).

## IV. Towards the Stability of the Financial System

Discussion is currently taking place around the globe concerning the strengthening of the capital adequacy requirements. The Bank of Japan is also making continued efforts to ensure the stability of Japan's financial system from micro and macro perspectives, taking account of developments surrounding the financial system and its robustness.

### A. International Discussions to Review Financial Regulation

In December 2009, the Basel Committee on Banking Supervision (BCBS), based on the G-20 Statements (released in April and September 2009), published two consultative proposals: "Strengthening the resilience of the banking sector" concerning capital adequacy requirements, and "International framework for liquidity risk measurement, standards and monitoring" concerning liquidity risk regulation (see Box 6 for the proposals of international regulatory framework).

The BCBS identified the following issues behind the recent financial crisis. First, banks had not sufficiently recognized risks involved in re-securitization and trading activities. Second, there was a build-up of excessive on and off-balance-sheet leverage. And third, the banking sector was holding insufficient buffers in terms of both the capital base and liquidity. In the view of the BCBS, the financial crisis was further amplified by an insufficient capital base and liquidity as well as by the deleveraging process.

Based on this recognition, the proposals aimed to strengthen the risk coverage of the capital framework and raise the quality of the capital base to withstand substantial losses. The proposals also introduced a leverage ratio as a supplementary measure to help contain the build-up of excessive leverage, and a series of measures to mitigate procyclicality. Also included in the proposals was the introduction of a minimum liquidity standard requiring banks to maintain a sufficient liquidity buffer.

A new set of standards will be phased in as financial conditions improve and the economic recovery is assured, with the aim of implementation by the end of 2012. These standards are aimed for banks which engage in international operations. The BCBS will put in place appropriate phase-in measures and a grandfathering arrangement for a sufficiently long period to ensure a smooth transition to the new standards.

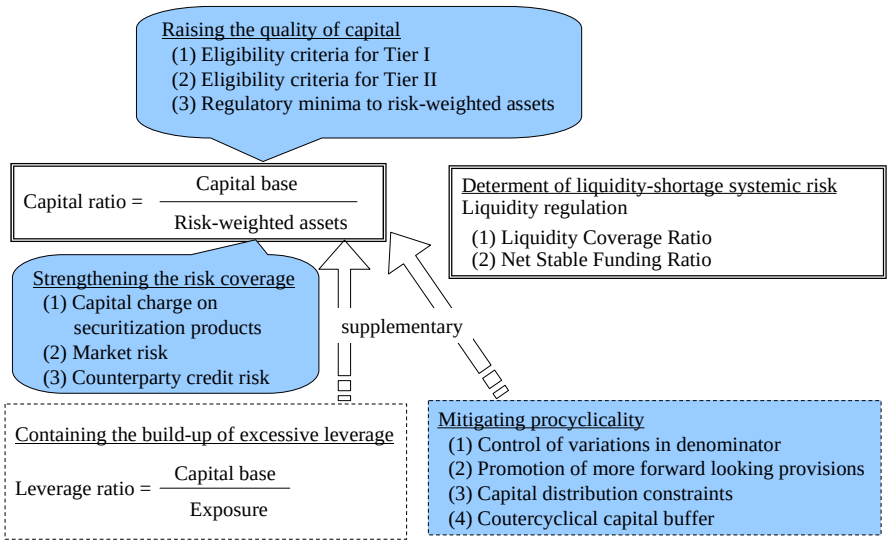
## BOX 6: Proposals of International Regulatory Frameworks

The Basel Committee on Banking Supervision (BCBS) released two consultative proposals on capital adequacy and liquidity regulations, which are summarized below. These documents are open to comments from private financial institutions in the BCBS and non-BCBS member countries by April 16, 2010. On the basis of comments and assessment of the quantitative impact of the proposals on financial institutions, the BCBS will issue by the end of 2010 a fully calibrated and comprehensive set of proposals.

### *Review of Regulatory Capital Framework*

With regard to the regulatory capital framework, the consultative documents propose: (1) to raise the quality, consistency and transparency of the capital base, which constitutes the "numerator" in calculation of the capital adequacy ratio, i.e., "raising the quality of capital"; (2) to strengthen the coverage of counterparty credit risk on risk-weighted assets, which are the "denominator" of the ratio, as well as the coverage of market risk and securitization product-related risk, for which the final proposal has been issued; (3) to introduce a leverage ratio as a supplementary measure to the regulatory capital framework; and (4) to introduce measures to address the effect of amplifying business cycles, i.e., "procyclicality," brought by factors including the regulatory capital framework (Chart B6).

**Chart B6: Overview of Regulatory Package**




As for the quality of capital, the recent financial crisis has reminded the importance of Common Equity. Common Equity has a clear function to absorb losses through unpiling retained earnings and capital funds while a bank remains going concern. In addition, it contributes to mitigating moral hazard of shareholders to focus on the actual interest of

common shareholders.

Tier I capital is defined as the capital base which is fully available to absorb losses on a going concern basis, and eligible instruments for Tier I capital are limited to common shares and other instruments with as high ability to absorb losses as common shares. Tier II capital is defined as the capital base which can absorb losses on a gone concern basis. In addition, with regard to the capital adequacy ratio, the regulatory minima to the risk-weighted assets are proposed for three categories of Common Equity, Tier I capital, and the total capital including Tier II capital.

As for the risk coverage, it is scheduled to increase capital charges on securitization products and to strengthen market risk regulations from the end of 2010. With a view to strengthening the coverage of counterparty credit risk, the consultative documents require: (1) to apply a multiplier of 1.25 to the asset value correlation of exposures of a bank with the internal ratings-based approach to financial firms, and (2) to impose disparities on risk weights of exposures to the central counter party depending on the compliance with the "Recommendations for Central Counterparties" established by the CPSS/IOSCO.

Based on the experience during the course of the recent financial crisis, such as the massive losses on financial institutions expanding leverage and the amplification of crisis as a result of deleveraging, the consultative documents propose to introduce a leverage ratio to supplement the risk-based regulatory capital framework.

Furthermore, based on the recognition that the regulatory capital framework and the accounting standards amplified business cycles, the consultative documents insist that it is necessary to introduce a series of measures to promote the build-up of capital buffers in good times that can be drawn upon in periods of stress. The documents propose that, in order to reduce procyclicality, (1) to dampen any excess cyclicality of the minimum capital requirement, (2) to promote more forward looking provisions under the expected loss approach, (3) to introduce a framework to prevent cash leakage such as dividend payments and directors' remunerations in case the actual level of capital is below the target level of capital buffer, and (4) to introduce a regime to adjust the capital buffer range depending on the macroeconomic environment. The BCBS plans to review the documents by mid-2010.

### *Introduction of Liquidity Standard*

The consultative documents propose to develop the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) in order to further strengthen liquidity risk management as well as to internationally harmonize the supervisory standards of liquidity risk. The LCR is intended to require banks to have high-quality liquid assets that can cover

in the financial markets the cash outflow including deposits run-off during the stress period. The NSFR is intended to address vulnerable structure of funding and investment, such as the combination of unstable short-term funding and long-term fixed investment.

## B. The Bank of Japan's Approach

The Bank carries out on-site examination and off-site monitoring to gauge individual financial institutions' business conditions and their risk management. For liquidity risk management, the Bank monitors in detail the state of management including daily funding. The Bank will continue to confirm that financial institutions' efforts in liquidity risk management are carried out in an appropriate manner and encourage improvement where necessary.

The Bank analyzes and assesses the financial system as a whole from a macroprudential perspective by making use of information on financial market developments and information from individual financial institutions, and publishes the findings in the *Financial System Report*. Such analyses and assessment on financial system stability from a macro perspective have been reflected in the on-site examinations and off-site monitoring to gauge individual financial institutions' business conditions and their risk management, and in the activities of the Center for Advanced Financial Technology that support private financial institutions' efforts to address advanced financial technology, thereby encouraging financial institutions to improve and enhance their risk management system.

At present, the specific designs of financial regulation and supervision that incorporate a macroprudential perspective are being discussed on a global basis. The Bank has been taking active part in the discussions at a number of international forums such as the BCBS and the Financial Stability Board, and is reviewing regulation and supervision. However, a macroprudential perspective is necessary not only in the design of regulation and supervision (see Box 7 for details). In the conduct of monetary policy, it is necessary to make wide-ranging assessments of risk factors, including accumulation of financial imbalances. In fact, in the Bank's monetary policy conduct, such an assessment of financial system stability from a macro perspective is an important element in risk assessment of economic activity and prices from medium to long-term perspectives.

The Bank of Japan, by strengthening the coordination between on-site examination and off-site monitoring, will continue to supply advice and guidance where necessary to

individual financial institutions with respect to, for example, risk management. Furthermore, from a macroprudential perspective, the Bank intends to properly assess the current state of the financial system and the challenges facing it, and reflect such assessment in its policymaking. Through such activities, the Bank will strive to ensure the stability of Japan's financial system.

### Box 7: Macroprudential View

Based on the experience from the recent financial crisis, a common understanding to incorporate macroprudential perspectives in the regulatory and supervisory frameworks as well as the policy actions is gradually developing around the globe.

The idea of macroprudence involves analyzing and assessing risks in the entire financial system by taking account of not only conditions of individual financial institutions but also various factors comprising the financial system and their interconnectedness. It then involves designing institutional frameworks and policy responses based on such assessments. In this regard, the following two dimensions are particularly important.

(1) The "cross-sectional dimension" concerns the entire financial system at a particular point in time and assesses the risks inherent in the financial system.

According to the conventional regulatory and supervisory frameworks, if the management of individual financial institutions is sound, the financial system as a whole should be stable. While measures to ensure the sound management of individual financial institutions are still necessary, it is also important to pay attention to the interconnectedness of each financial institution's risk-taking behavior. Even if the risk of individual financial institutions is limited, once many financial institutions take similar risks at the same time, then the financial system as a whole assumes large risks.

(2) The "time dimension" concerns dynamic changes in risks inherent in the financial system.

Under benign economic conditions, economic agents including financial institutions become aggressive in risk-taking, and this is likely to trigger further risk-taking through a rise in asset prices and an increase in leverage. However, once their risk tolerance decreases due to a shock, a decline in asset prices prompts a reduction of leverage and further unwinding of their positions. This is called "procyclicality."

The idea of macroprudence is widely shared. However, there is as yet any uniform understanding of its details such as definition and implementation of policy frameworks and

concrete measures under macroprudence.

One approach is to focus on regulations and systems and emphasize the specific measures as macroprudential that are consistent with financial stability from a macro perspective. These measures include, for example, restrictions on loans to the value of mortgage collateral and dynamic provisioning that promotes the build-up of provisions in good times in preparation for future default. Another approach is to focus on a wider range of policy actions such as analyzing and assessing the financial system and conducting various measures and then emphasize the "macroprudential perspective."

The idea of macroprudence will be further discussed in various international fora. In this light, the Bank of Japan, based on Japan's experience, currently summarizes its idea as follows and incorporates such a perspective in its policy making.

- A risk to the stability of the entire financial system is likely to emerge *via* a different route in each time.
- Therefore, it is not appropriate to label specific policy frameworks or measures as "macroprudential policy" or "macroprudential measures," and to assign specific institutions to undertake these operations. Such an approach could entail the possibility of overlooking new risks that might threaten financial stability.
- It is more important for central banks and regulators/supervisors to keep in mind a "macroprudential perspective" in analyzing and assessing financial stability and in planning and conducting a wide range of policy measures.
- The Bank has incorporated the macroprudential perspective in conducting the following measures.

  *Monetary policy*

  In conducting monetary policy, the Bank takes into account long-term risks such as effects of financial imbalances on economic activity and prices, with the aim of achieving medium and long-term price stability. The Bank has explained this publicly as its policy framework based on an "understanding of medium- to long-term price stability" and the "two perspectives." While the main instrument of monetary policy is the setting of the policy interest rate, the Bank may also provide ample liquidity and expand the range of eligible collateral and assets to be purchased, when necessary.

  *Role of the "lender of last resort"*

  The Bank can contribute to ensuring financial stability by providing liquidity as the

"lender of last resort" when it judges this to be necessary. It may extend uncollateralized loans based on the so-called "four principles for special loans."

*Communication through the Financial System Report and On-Site Examination Policy*

The *Financial System Report* presents a comprehensive analysis and assessment on the stability of Japan's financial system. The *On-Site Examination Policy* describes the concepts and the focus in conducting on-site examinations. By releasing those documents, the Bank attempts to enhance the common understanding of risks to financial stability.

*Risk-based on-site examinations*

The Bank has adopted "risk-based on-site examinations" that prioritize frequency and scope based on a comprehensive assessment from two perspectives: (1) the impact that each individual financial institution's risks would have on the financial system, should they surface; and (2) actual management conditions of the financial institution, such as its capital strength. If the Bank identifies a marked accumulation of risks with a financial institution, it encourages the financial institution to improve its risk management. In addition, the Bank reviews its examination/monitoring policy as needed, to check the similar case for the entire financial system.

*Other approaches*

The Bank may take temporary and extraordinary measures such as purchasing stocks held by financial institutions and providing subordinated loans to banks when necessary to ensure financial stability from a macro perspective.

The recent financial crisis has shown internationally that it is indispensable for central banks to be involved in ensuring financial stability and that central banks should play a significant role in the area of macroprudence. In Japan, the Financial Services Agency in charge of financial administration and the Bank of Japan, a central bank, cooperate with each other to ensure financial stability. Japan's financial system has remained relatively stable compared with those of the United States and Europe during the recent crisis. The Bank will continue to strive to ensure financial stability with the more profound view of macroprudence.

## Appendix: Profitability of Japanese Banks

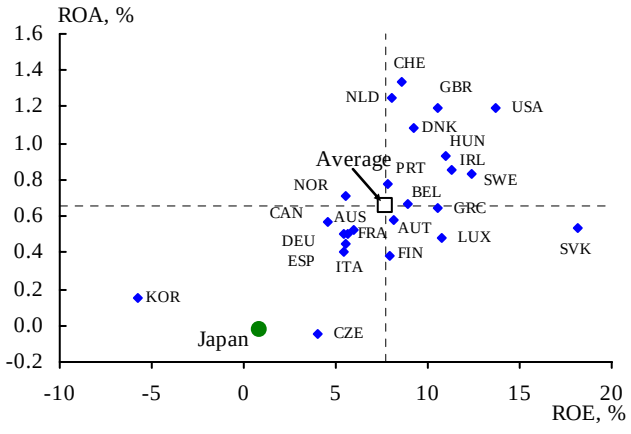
The previous *Report* pointed out challenges for Japan's financial institutions, namely, to ensure stable profitability, reduce market risk associated with stockholdings, strengthen the capital base, and develop a system to exert a self-sustained financial intermediation function. To augment the understanding of Japanese banks' profitability, this Appendix attempts to highlight the main characteristics of these banks' profit structure by comparison with their counterparts overseas and their customers (i.e., Japanese firms).

Banks' profitability is naturally influenced by a number of factors. One of the most important is the effort by banks' management to strengthen profitability. Also vital for banks' profitability are economic and financial conditions, profitability in the corporate sector, financial architecture, and a competitive environment in the long run.[26] Thus, the following results should be treated with care, bearing in mind that they can be subject to different interpretations and evaluations.

### A. Profitability of Japanese Banks in a Global Context

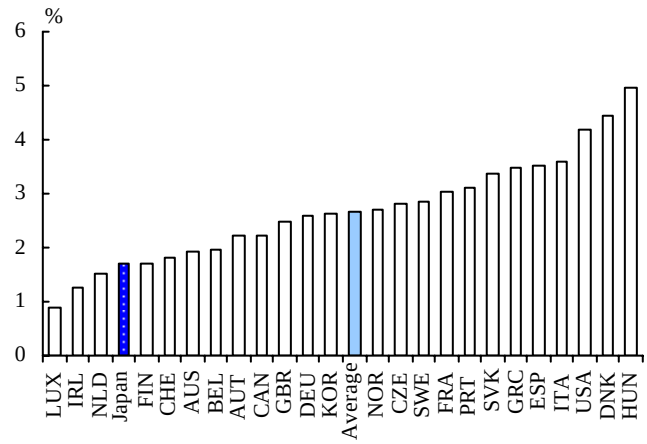
A comparison of the profitability of the banking sector of major countries for the past 20 years (1988-2007) shows that Japan is substantially below the average of major countries both in terms of return on assets (ROA) and return on equity (ROE) (Chart A-1).[27] This is due partly to the substantial losses Japanese banks suffered in the aftermath of the bubble economy. Apart from that, it reflects the fact that their

**Chart A-1: Profitability of Banks**[1]




Note: *1.* Averaged on a net income basis for the past 20 years.
Source: World Bank, "Financial Structure Dataset."

**Chart A-2: Interest Margins in Major Countries**[1]




Note: *1.* Averages for the past 20 years.
Source: World Bank, "Financial Structure Dataset."

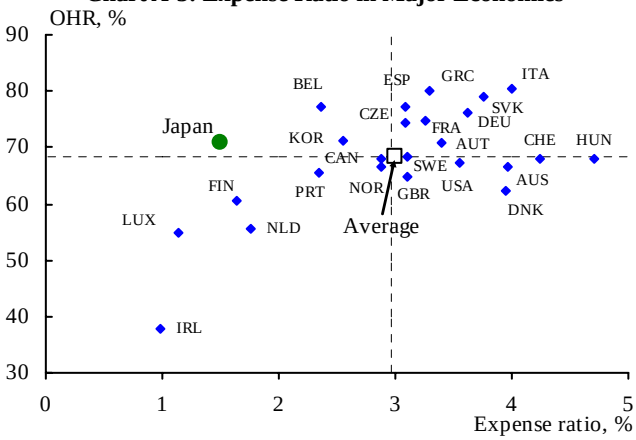
[26] See the September 2008 issue of the *Report*.

[27] See the September 2007 and September 2008 issues of the *Report*.

profitability from core business is low.

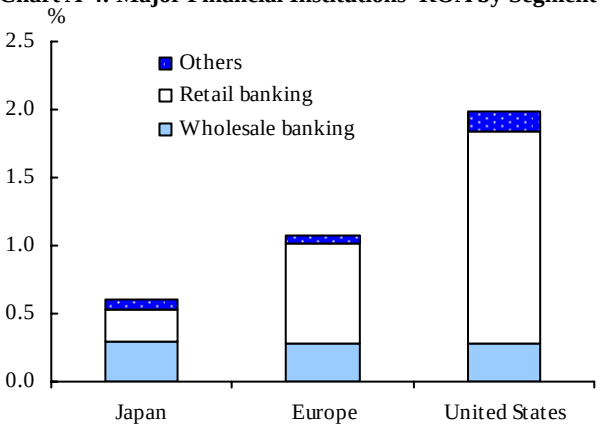
Assessing the low profitability of Japanese banks relative to cost, a few observations emerge. First, Japan's interest rate margin on loans is 1.7 percent, which is significantly below the major countries' average of 2.7 percent (Chart A-2). Second, Japan's expense ratio, obtained by dividing expenses by total assets, is 1.5 percent, which is below the major countries' average of 2.9 percent. However, the overhead ratio (OHR), obtained by dividing expenses by operating profits from core business, is slightly above the average of the major countries (Chart A-3). In short, in Japan's banking sector, the profitability from core business is significantly low; hence the overhead ratio becomes above the average, even though the expense ratio is below the major countries' average.

**Chart A-3: Expense Ratio in Major Economies**[1]




Note: *1.* Averages for the past 20 years.
Source: World Bank, "Financial Structure Dataset."

**Chart A-4: Major Financial Institutions' ROA by Segment**[1]




Note: *1.* Averaged on operating profit basis from 2006 to 2008. Japan covers two financial groups listed on NYSE. Europe and the United States cover 6 and 3 financial groups, respectively.
Source: Each published account.

Looking at banks' profitability from each business segment in a global context, the result highlights that Japanese major banks have markedly low profitability in the retail sector, which targets individuals and small and medium-sized firms, compared with major banks in the United States and Europe (Chart A-4).[28]

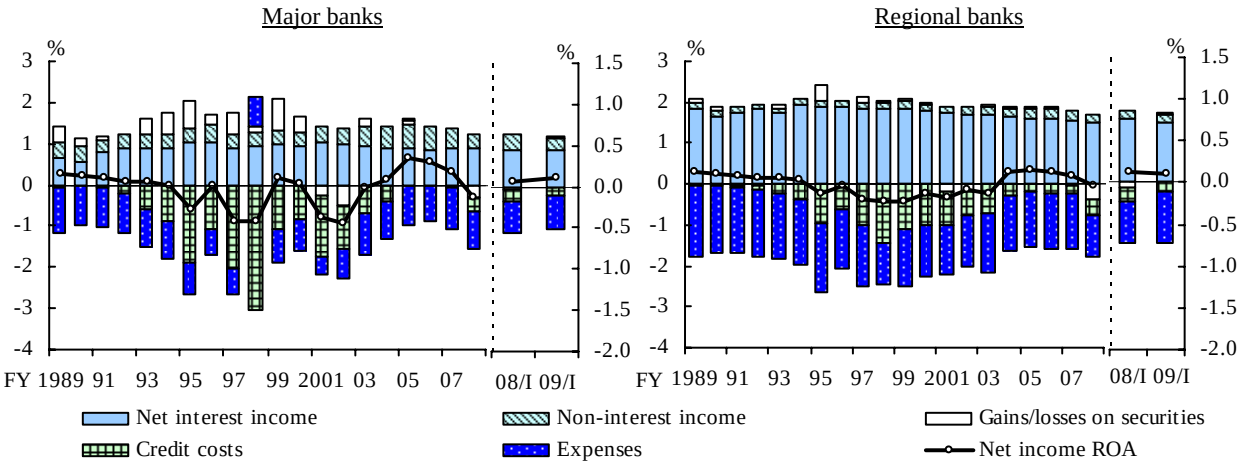
[28] The comparative analysis here is admittedly constrained, because it only covers a small number of large banks that disclose profits from the retail sector and wholesale sector. During the recent financial crisis, the profitability of the U.S. and European financial institutions has shown signs of decline. Therefore, it cannot simply be argued that copying the profit structures and business models of these overseas financial institutions would lead to a rise in the profitability of Japanese banks. The comparison in this section is aimed at the trend characteristics of Japanese banks' profits and does not seek to summarize the kind of business model each bank has adopted after the financial crisis.

## B. Characteristics of Japanese Banks' Profits

An examination of the profits of Japanese banks for the past 20 years (from fiscal 1989 to fiscal 2008) shows the following characteristics.

First, the banks' average profitability remains at a low level and it shows large fluctuations. The average of net income ROA of the banks is slightly negative, and both the major banks and the regional banks often registered net losses (Chart A-5). This was due to significant fluctuations in realized losses on stocks and credit costs amid low core profitability (see Chart 4-2 of the previous *Report*).

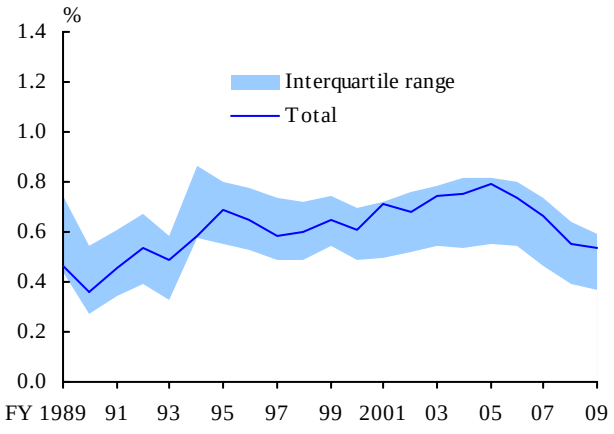
**Chart A-5: Net Income ROA**[1]




Note: *1*. "Expenses" include general expenses and tax.

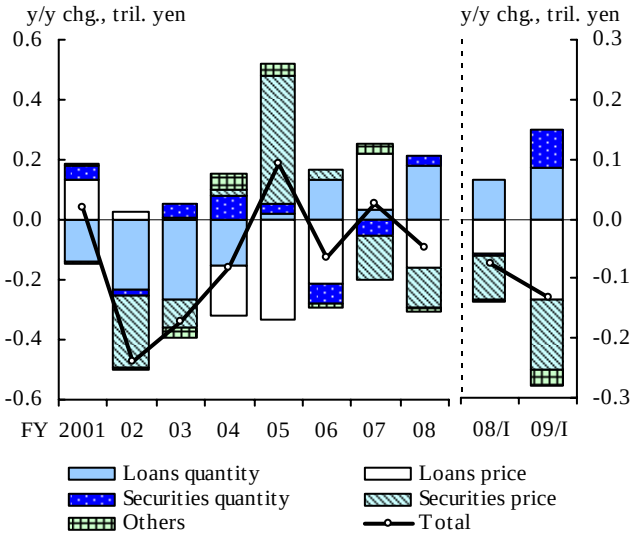
Second, the core profitability appears to indicate a further decline. Operating profits from core business ROA for the past 20 years were on a moderate uptrend until fiscal 2005 (Chart A-6). They declined thereafter, and many banks are now at levels seen in the first half of the 1990s. The banks' financial results after fiscal 2009 show that while

**Chart A-6: ROA of Operating Profits from Core Business**[1]




Note: *1*. The latest data are as of the 1st half of fiscal 2009.

**Chart A-7: Net Interest Income**

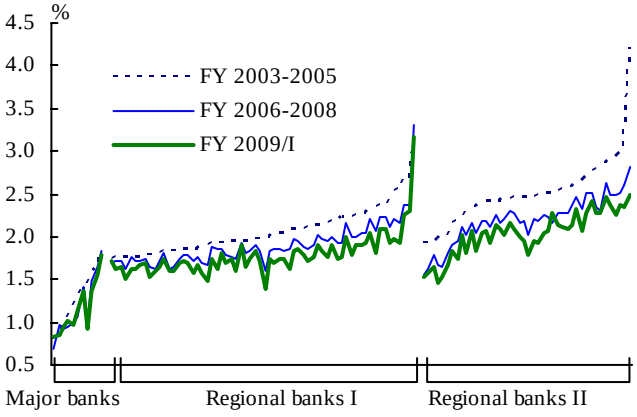


net income has registered gains, this is attributable mainly to improvement in realized gains/losses on securities and a decline in credit costs, while net interest income and non-interest income remain sluggish.

A review of the year-on-year difference in net interest income in the domestic sector sheds light on the factors behind declining profitability. Recently, expansion in the volume of loans and securities investment has contributed to increasing profits, while a decline in interest rate margins on loans has become conspicuous in offsetting such volume expansion (Charts A-7 and 2-8).

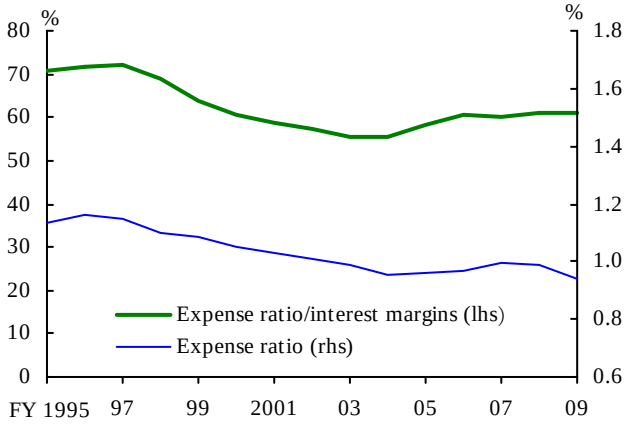
Looking at the interest rate margins on loans in more detail, they have recently been declining for almost all banks, and banks that had relatively high interest rate margins in the past tend to show a large decline (Chart A-8). In addition, the expense ratio relative to interest rate margins on loans has remained high (Chart A-9). As a result, interest rate margins after subtracting the expense ratio have been on a moderate downtrend for almost all banks (Chart A-10).

**Chart A-8: Interest Margins of Individual Banks**[1]



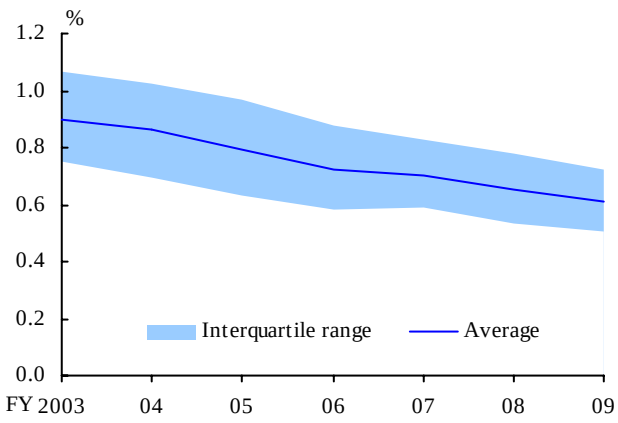

Note: *1*. Plotted in increasing order of margins in fiscal 2003-2005 within each banking group.

**Chart A-9: Expense Ratio Relative to Interest Margins**[1, 2]




Notes: *1*. The latest data are as of the 1st half of fiscal 2009.
*2*. Expense represents general and administrative expenses.

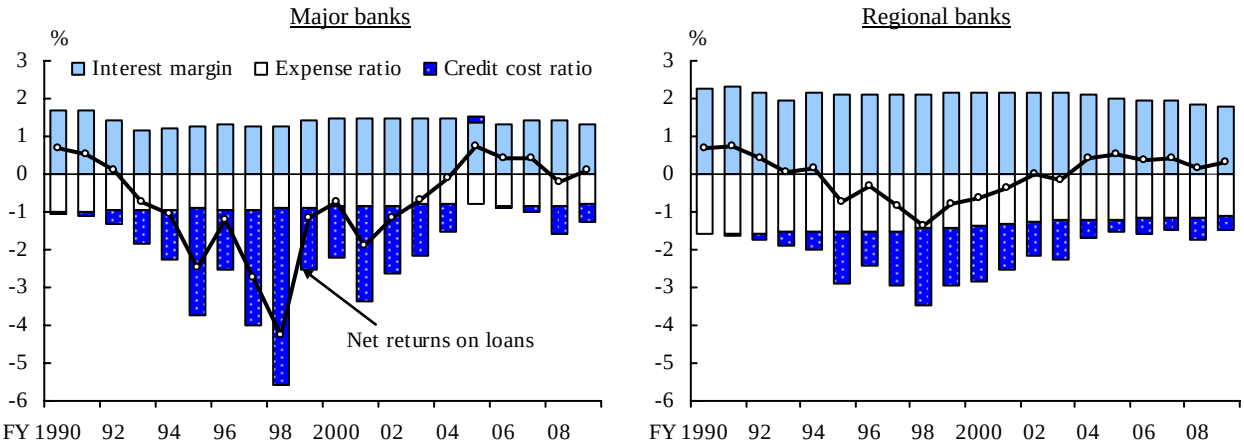
**Chart A-10: Interest Margins Excluding Expense Ratio**[1, 2]




Notes: *1*. The latest data are as of the 1st half of fiscal 2009.
*2*. Expense represents general and administrative expenses.

Third, low profitability and large fluctuations of profits are due mainly to the profitability of domestic loan businesses. The profitability of loan businesses, as measured by interest rate margins on loans minus the expense ratio minus the credit cost ratio, swings significantly due to fluctuation in credit costs, while interest rate margins on loans remain low. Consequently, banks are prone to falling below their break-even point (Chart A-11). While the loan profitability at present has improved compared with that from the second half of the 1990s to the first half of the 2000s, when banks incurred large credit costs, it continues to be sluggish due mainly to the shrinkage in interest rate margins on loans.

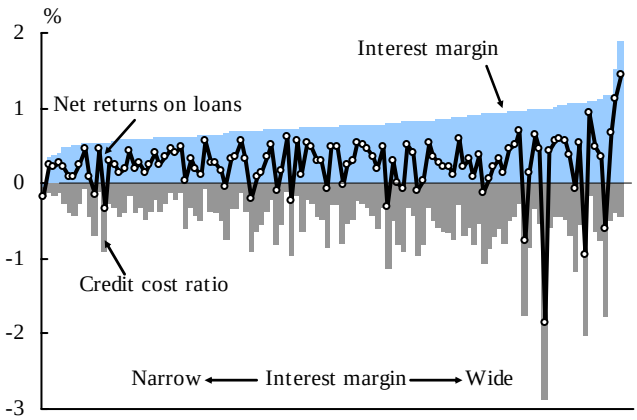
**Chart A-11: Net Returns on Domestic Loans**[1]




Note: *1.* The latest data are as of the 1st half of fiscal 2009. Expense represents general and administrative expenses.

Fourth, no significant relationship is observed between the interest rate margins on loans and loan profitability after subtracting credit costs (Chart A-12). This result suggests that banks with wide interest rate margins do not necessarily enjoy high profitability.

**Chart A-12: Net Returns of Individual Banks**[1]



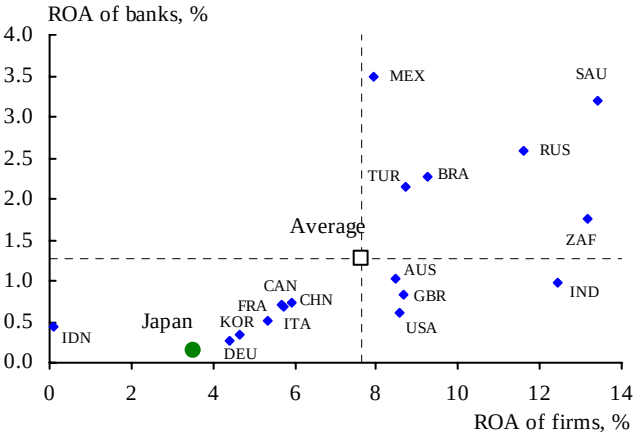

Note: *1.* Averages after fiscal 2003. Plotted in increasing order of margins less the general and administrative expense ratio. Trust banks are excluded.

## C. Profitability of the Banking Sector and the Corporate Sector

### *Profitability of the corporate sector*

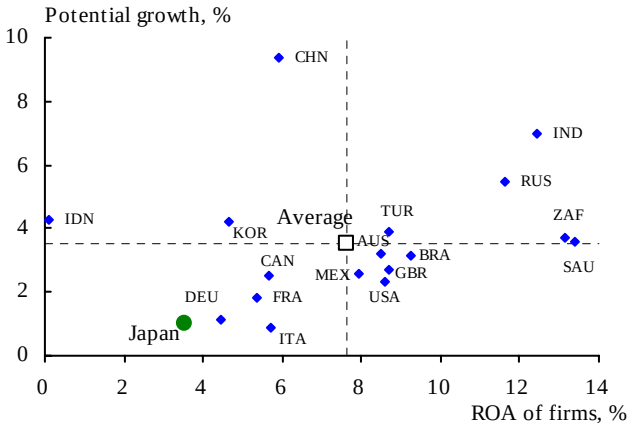
An international comparison of profitability of the banking sector and the corporate sector based on ROA shows that profitability of both Japanese banking sector and the corporate sector is relatively low as against that in other major countries (Chart A-13). The positive correlation between the ROA of nonfinancial firms and potential output growth, which is observed internationally, suggests that profitability of the Japanese corporate sector reflects the low growth of Japan's total economy (Chart A-14).

**Chart A-13: International Comparison of ROA**[1]




Note: *1.* Averaged on a net income basis for the past 10 years.
Source: Bloomberg.

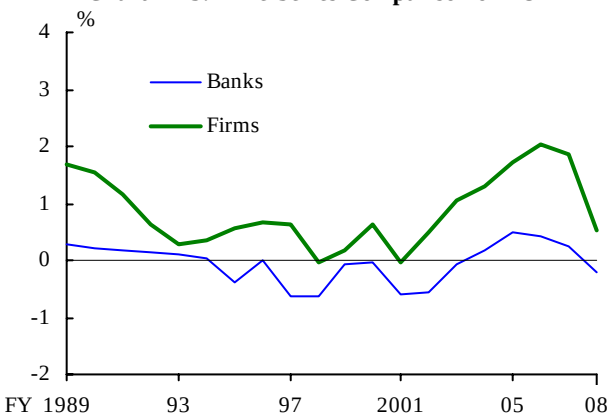
**Chart A-14: Firms' ROA and Potential Growth Rate**[1]




Note: *1.* Averaged on a net income basis for the past 10 years.
Sources: Bloomberg; IMF, "International Financial Statistics."

The profitability of Japanese banks and firms has moved almost in parallel (Chart A-15). This suggests that the corporate sector and the banking sector affect each other.

**Chart A-15: Time-Series Comparison of ROA**[1]

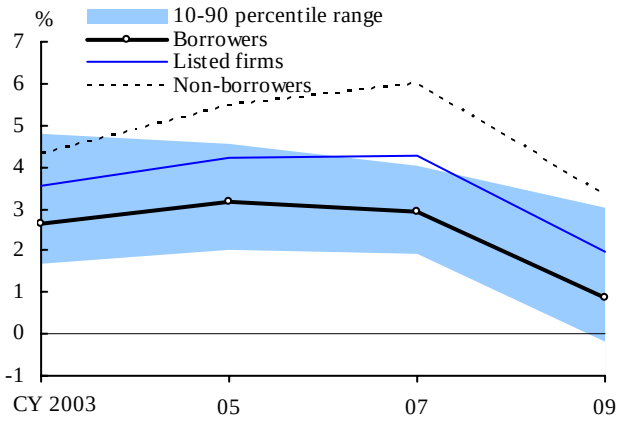



Note: *1.* On a net income basis.
Source: Ministry of Finance, "Financial Statements Statistics of Corporations by Industry."

### *Profitability of borrowing firms*

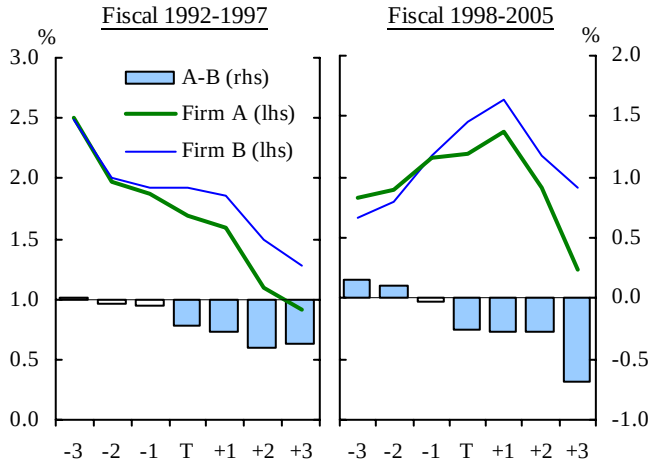
To investigate the above point, the corporate sector is divided between a group of firms with bank loans and a group of firms without bank loans and the profitability of these groups is compared. A group of firms without bank loans shows higher profitability than that of firms with bank loans (Chart A-16). This is partly due to the fact that Japanese firms with high credit rating tend to shift their funding source from bank loans to financial markets. As for large firms' borrowing behavior, they reduce bank loans accompanying the enhancement of financial markets' functions (Chart 2-10). In contrast, they increase bank loans during a period of decline in financial markets' functions. As such, bank loans change countercyclically. Such behavior might also lie behind the rapid increase in large firms' bank loans that was observed towards the beginning of 2009.

**Chart A-16: Borrowing Firms' Operational Profits ROA**[1]




Note: *1.* Borrowing firms' ROA is averaged by their loan weights for each bank.
Source: Financial Quest.

**Chart A-17: Firms' ROA**




Source: Financial Quest.

Financial data of all listed firms since fiscal 1989 are used to divide firms into a group that increased its financial institution borrowing (Firm A in Chart A-17) and a group that reduced such borrowing (Firm B in Chart A-17) at a point in time, and to compare profitability between the two groups after the borrowing. As a result, the group of firms that increased its borrowing shows a larger decline in profitability than the group that reduced its borrowing.

### *Banks' stockholdings and firms' profitability*

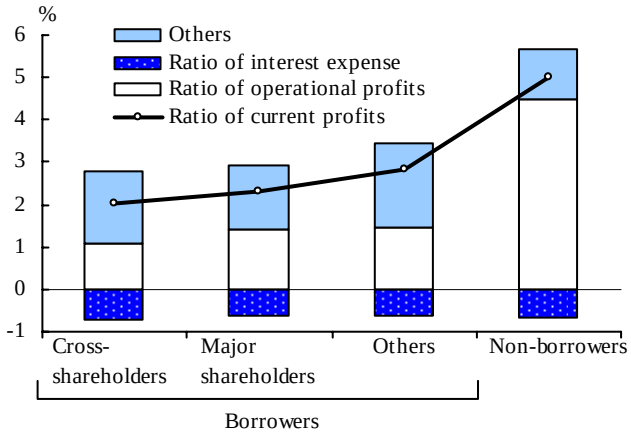
Finally, the relationship between banks and firms is summarized from the perspective of capital ties through stockholdings, and then the profitability of these firms is considered

(see Box 8 for the current state of banks' stockholdings and developments in banks' lending to firms with strong capital ties to banks).

Specifically, bank borrowers are classified into a) cross-shareholding firms ("cross-shareholders"), b) major shareholding firms ("major shareholders," namely that banks are major shareholders of borrowers and cross-shareholders are excluded), and c) other firms, and then the profitability of these firms is compared with that of d) non-borrowing firms ("non-borrowers"). The results highlight the following characteristics.

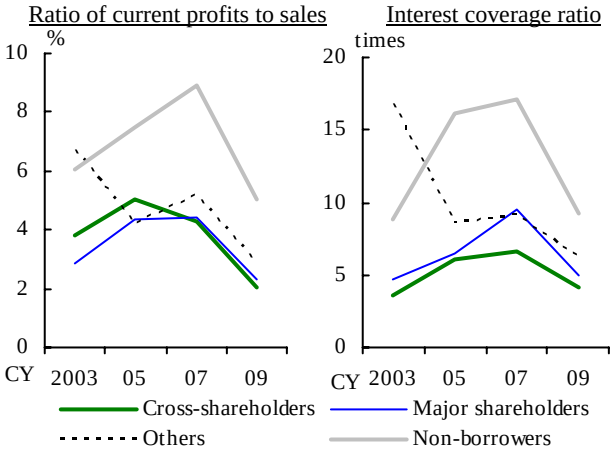
First, in 2009 after the financial crisis, bank borrowers had a lower ratio of current profits to sales, ratio of operating profits to sales, and interest coverage ratio (ICR) than non-borrowers (Charts A-18 and A-19). In particular, firms with strong capital ties such as cross-shareholders and major shareholders had relatively lower profit ratios and ICRs.

**Chart A-18: Ratio of Current Profits to Sales**[1]




Note: *1*. As of 2009. "Others" include dividend received.
Source: Financial Quest.

**Chart A-19: Ratio of Current Profits to Sales and ICR**




Source: Financial Quest.

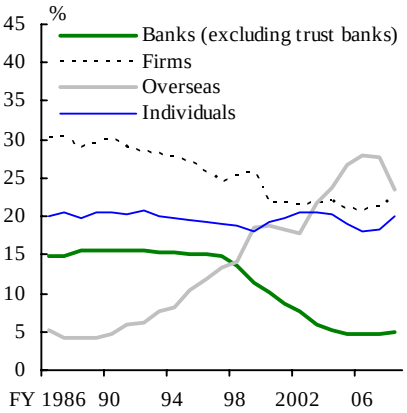
Second, during the four years (i.e., 2003, 2005, 2007 and 2009), the ratio of current profits to sales and the ICR of the firms with strong capital ties were lower than those of the non-borrowers (Chart A-19). In particular, the profit ratios of cross-shareholders decreased even in the economic recovery phase during 2005 to 2007.

As such, firms with strong capital ties to banks have tended to have relatively low profitability through the 2000s.

## Box 8: Banks' Stockholdings and Lending to Firms with Strong Capital Ties

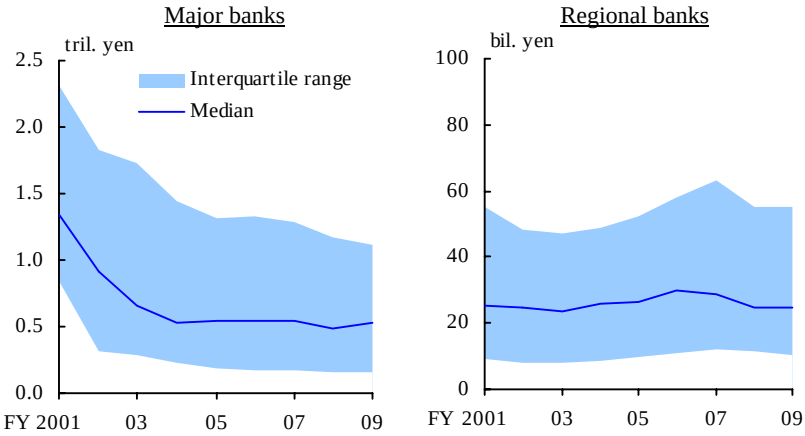
According to the stockholding ratio by sector in Japan, banks' stockholding ratio trended down from the end of the 1990s to the first half of the 2000s, and remained largely unchanged thereafter (Chart B8-1). Each bank's outstanding stockholdings show that many banks -- both major and regional -- have been more or less unchanged from the middle of the 2000s (Chart B8-2). At present, however, more banks are clarifying their plans to reduce market risk associated with stockholdings by selling stocks.

**Chart B8-1: Stockholdings by Type of Investors**




Source: Tokyo Stock Exchange, "Shareownership Survey."

**Chart B8-2: Distribution of Stockholdings[1]**




Note: *1.* The latest data are as of the 1st half of fiscal 2009.

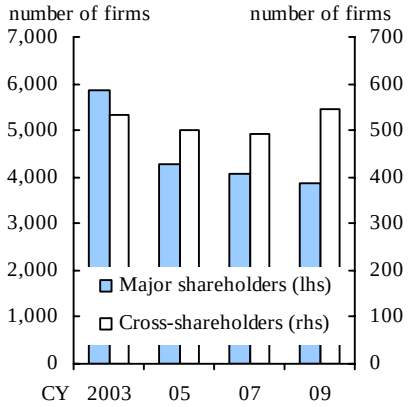
One reason why banks hold client firms' shares is that, by establishing long and stable relationships with clients, they can earn returns such as interest on loans, dividends from shares, and fees and commissions. There are many cases in which banks and client firms establish strong capital ties -- for example, banks become major shareholders of borrowing firms and banks and firms hold each other's shares.

Data since 2003 are used to check the state of stockholdings of major shareholders and cross-shareholders. While the number of major shareholders has been on a declining trend as a whole, the number of cross-shareholders increased from 2007 to 2009 (Chart B8-3). Data for each bank suggest that there might be a difference in banks' stance in terms of stockholdings and that many banks have maintained or enhanced their strong capital ties with specific firms (Chart B8-4).

There are many cases in which banks extend loans to firms with strong capital ties such as major shareholders and cross-shareholders. In particular, before and after the current financial crisis, lending to major shareholders and cross-shareholders increased significantly and the loan amount per firm also rose rapidly (Chart B8-5). This confirms that in the

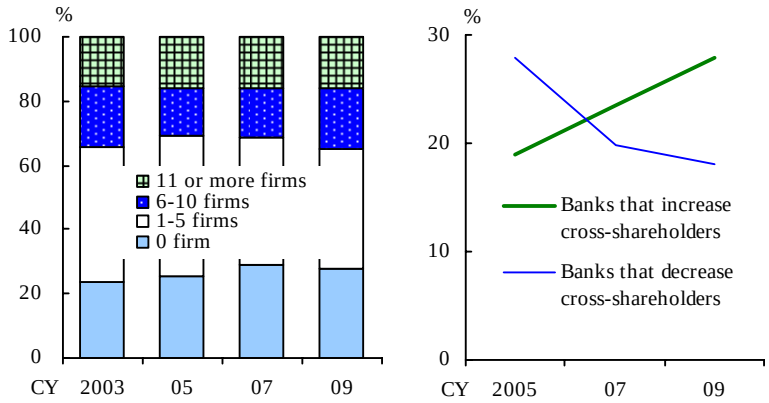
current economic downturn banks have also been actively supporting firms with strong capital ties on the lending front.

**Chart B8-3: Firms with Strong Capital Ties**



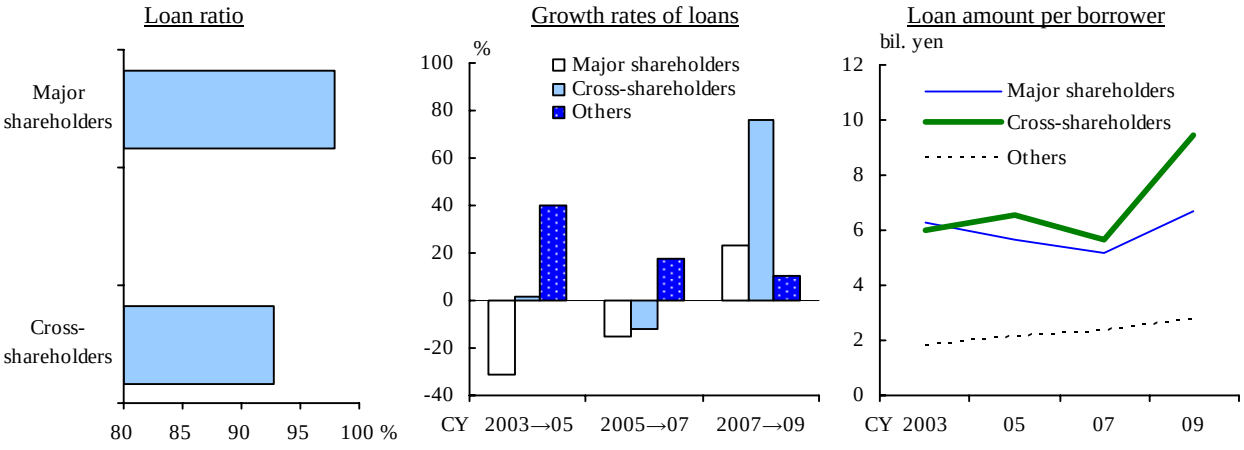

Source: Financial Quest.

**Chart B8-4: Banks' Shares by the Number of Cross-Shareholders[1]**




Note: *1*. Left chart: the composition ratio of banks by the number of cross-shareholders (e.g., "11 or more firms" represents the ratio of banks which have 11 or more cross-shareholders). Right chart: the composition ratio of banks which increase (or decrease) the cross-shareholders during the previous two years.
Source: Financial Quest.

**Chart B8-5: Bank Loans to Firms with Strong Capital Ties**




Source: Financial Quest.

## D. Concluding Remarks

Japanese banks face two challenges in terms of their profitability: low profitability and large fluctuations of profits. Due to narrowing interest rate margins on loans, profitability of Japanese banks remains far below that of the U.S. and European banks. Large fluctuations in banks' profits are attributable to changes in credit costs and realized gains/losses on stocks. It should be noted that the profitability of Japanese firms is also far below that of their counterparts overseas. Thus, banks' low profitability is paired with firms' low profitability. While banks extend loans to firms with strong capital ties, the profitability of these firms is relatively lower compared to other firms. Naturally, banks' profitability is influenced not only by the banks' management efforts but also by various external factors. In these circumstances, Japanese banks need to continue their efforts to ensure the stability of their profitability.

As the global economy makes the transition to a sustainable new growth path following the financial crisis, Japan's economy faces a challenge of how to achieve sustainable growth while carrying out structural change. In lines with these processes, an increasing number of firms in the Japanese corporate sector are likely to restructure their business models. The issue for Japanese banks will be whether they can support these structural changes in the corporate sector by accurately assessing firms' growth potential and providing financial services depending on the characteristics of their client firms. Banks will play an important role in promoting such changes. In the long run, the provision of such financial services will promote an efficient allocation of economic resources and strengthen the profit bases on the part of firms as well as banks, thereby contributing to ensuring the stability of Japan's financial system.

# Annex 1: Major Events in the Financial System (Since September 2009)

| | |
|---|---|
| Sep. 5, 2009 | The G-20 released a joint statement. |
| Sep. 6 | The Group of Central Bank Governors and Heads of Supervision issued "Comprehensive Response to the Global Banking Crisis." |
| Sep. 11 | Japan: The Financial Services Agency (FSA) announced the injection of public funds into three regional banks and one credit cooperative based on Act on Special Measures for Strengthening Financial Functions. |
| Sep. 17 | The Basel Committee on Banking Supervision issued "Report and Recommendations of the Cross-border Bank Resolution Group." |
| Sep. 25 | The G-20 issued Leaders' Statement. |
| Sep. 29-Oct. 14 | France: BNP Paribas (Sep. 29), Société Générale (Oct. 6), and Credit Agricole (Oct. 14) announced the repayment of public funds. |
| Oct. 1 | EU: The Committee of European Banking Supervisors released the results of the EU-wide stress test. |
| Oct. 5 | U.K.: The Financial Services Authority (FSA) published its rules on the liquidity requirements. |
| Oct. 15 | The Basel Committee on Banking Supervision issued "Analysis of the trading book quantitative impact study." |
| Nov. 3 | U.K: HM Treasury announced additional support for Royal Bank of Scotland and Lloyds Banking Group. |
| Nov. 9 | U.S: The FRB and the government issued an announcement regarding the Capital Assessment Program. |
| Nov. 19 | U.K. HM Treasury introduced to Parliament the Financial Services Bill that proposed the establishment of the Council for Financial Stability. |
| | Netherlands: The government announced the injection of public funds related to the integration of Fortis Bank Nederland and parts of ABN AMRO. |
| Nov. 21 | U.K.: The Bank of England published "The role of macroprudential policy." |
| Nov. 24 | Germany: West LB announced its application for the injection of public funds and establishing a "bad bank." |
| Nov. 25 | Dubai: The government announced debt restructuring of Dubai World Group. |
| Nov. 26 | U.K.: HM Treasury issued the report on corporate governance in U.K. financial industries (Walker Review). |
| Dec. 2 | U.S.: Bank of America announced the repayment of TARP investment. |
| | EU: The Ecofin Council (1) agreed on a general approach on draft regulations aimed at establishing three new authorities for financial services, and (2) announced that the Greek response to the budgetary deficit had been insufficient. |
| Dec. 9 | U.S.: The Treasury announced the extension of TARP until October 2010. |
| | U.K.: The government announced a special levy on bonuses paid by banks. |
| | Japan: The FSA announced the injection of public funds into two regional banks. |
| Dec. 11 | U.S.: The House of Representatives passed financial regulatory reform legislation. |
| Dec. 14 | U.S.: Wells Fargo and Citigroup announced the repayment of TARP investment (Citigroup repaid a portion of TARP). |
| Dec. 17 | The Basel Committee on Banking Supervision issued consultative proposals to strengthen the resilience of the banking sector. |
| Dec. 24 | U.S.: The Treasury announced the amendment of the terms of its agreements with Fannie Mae and Freddie Mac to support their ongoing stability. |
| Dec. 30 | U.S.: The Treasury announced the restructuring of commitment to GMAC, which included the additional injection of public funds. |
| Jan. 14, 2010 | U.S.: The government proposed a Financial Crisis Responsibility Fee. |
| Jan. 20 | France: The Cabinet approved a special levy on bonuses paid by banks. |
| Jan. 21 | U.S.: The government proposed new restrictions on the size and scope of banks and other financial institutions. |
| | Germany: Hypo Real Estate Holding AG announced its application for establishing a "bad bank." |
| | Japan: The FSA published "Development of Institutional Frameworks Pertaining to Financial and Capital Markets." |
| Feb. 9 | Germany: The Cabinet approved a draft law setting standards for bank-executive pay. |
| Feb. 11 | EU: Heads of State or Government of the EU stated they supported the efforts and commitment of the Greek government to reduce the budgetary deficit. |
| Feb. 17 | The Basel Committee on Banking Supervision announced it would conduct a comprehensive quantitative impact study (QIS). |
| Mar. 8 | U.K.: The FSA announced that it would delay the application of the tightened quantitative liquidity requirements. |
| Mar. 15 | U.S.: The Senate Committee on Banking, Housing, and Urban Affairs proposed the financial regulatory reform bill, which included new restrictions on the size and scope of banks and other financial institutions. |

# Annex 2: Initiatives to Stabilize the Financial System in Selected Countries[1]

As of March 10, 2010

| | | U.S.<br>(GDP: 14 trillion dollars)[2] | U.K.<br>(1.4 trillion pounds) | Germany<br>(2.5 trillion euros) | France<br>(1.9 trillion euros) | Japan's measures in and after the 1990s (to 2006)<br>(GDP: 508 trillion yen) |
|---|---|---|---|---|---|---|
| Support for liquidity and financing | A. Guarantee for market-based funding<br>[application deadline] | Yes<br>Senior unsecured debt whose maturity is 30 days or more<br>[end of April 2010] | Yes<br>Short- and medium-term bonds<br>[end of June 2009] | Yes<br>Mainly medium-term debt<br>[end of June 2009] | Yes<br>Mainly medium-term debt<br>[end of June 2009] | Yes<br>Full protection for all debts including deposits[3]<br>(from 1996 to 2002) |
| | B. Expansion for deposit protection<br>[application deadline] | Yes<br>100,000 dollars→ 250,000 dollars<br>Full protection for a certain deposit transaction account<br>[end of June 2010] | Yes<br>35,000 pounds→ 50,000 pounds | Yes<br>Full protection for personal deposits →50,000 euros as of the end of June 2009 and 10,000 euros as of the end of 2010 | —<br>(maintaining the ceiling of 70,000 euros) | |
| Write-off of nonperforming assets and recapitalization | C. Public capital injection<br>Size of funds | Yes<br>Up to 700 billion dollars | Yes<br>50 billion pounds | Yes<br>Up to 80 billion euros | Yes<br>Up to 40 billion euros | Total 12.4 trillion yen (results) |
| | Example<br>[application deadline] | The government:<br>Injected approximately 250 billion dollars into about 700 institutions as preemptive measures. [end of 2009]<br>Injected capital as measures to support individual institutions<br>Conducted supervisory capital assessment for 19 large bank holding companies. | The government:<br>Injected 37 billion pounds into three major banks.<br>Announced additional capital injection (31 billion pounds) into the banks above. | The SoFFin (the Financial Market Stabilization Fund) injects public funds on request. | The government:<br>Injected 10.5 billion euros into six major banks at once as preemptive measures.<br>Prepared public funds for capital injection on request (maximum of 13.5 billion euros). | Financial Function Stabilization Law: 1.8 trillion yen into 21 banks<br>Early Strengthening Law:<br>8.6 trillion yen into 32 banks<br>Deposit Insurance Law:<br>2 trillion yen into one bank<br>Law on Organizational Restructuring: 6 billion yen into one bank<br>Law on Strengthening Financial Functions:<br>40.5 billion yen into two banks<br>Three banks were nationalized based on the special laws. |
| | D. Temporary nationalization and public management | — | Two banks were nationalized based on the special law. | One bank was nationalized based on the special law. | — | |
| | E. Measures to determine the amount of losses | Yes<br>Financed by the funds stated in C above | Yes | Yes<br>Financed by the funds stated in C above | — | Yes |
| | Example<br>[application deadline] | (Asset purchase)<br>Originally considered asset purchase plan under the Bush Administration was retracted.<br>Establishment of the public-private investment program was announced under the Obama Administration.<br>(Loss guarantee)<br>The government provides loss guarantee as measures to support individual institutions. [end of 2009] | (Loss guarantee)<br>The government provides a loss guarantee program for nonperforming assets.<br>[end of March 2009] | (Asset purchase, Loss guarantee)<br>Asset purchase by the SoFFin<br>[end of 2009]<br>Introduction of the "bad bank scheme" in order to remove nonperforming assets/non-strategic businesses from banks.<br>[end of 2010] | — | (Asset purchase)<br>Cooperative Credit Purchase Corporation:<br>15.4 trillion yen<br>Asset purchase based on the Financial Revitalization Law, Article 53: 4 trillion yen<br>(The amounts are those of loans purchased <principal>.) |

Notes: *1.* For initiatives to stabilize the global financial system and comparison with Japan's measures in and after the 1990s, see the Appendix in the March 2009 issue of the *Report*.

*2.* Nominal GDP of 2008 (the source is the IMF).

*3.* Full protection for a certain deposit transaction account as a permanent measure from April 2003.

## Annex 3: Glossary

### *Financial statements of banks*

Operating profits from core business = net interest income + non-interest income – general and administrative expenses.

Net interest income = interest income – interest expenses.

Non-interest income = net fees and commissions + profits on specified transactions + other operating profits – realized gains/losses on bonds.

Overall gains/losses on securities = realized gains/losses on securities + changes in unrealized gains/losses on securities.

Realized gains/losses on securities = realized gains/losses on stocks + realized gains/losses on bonds.

Realized gains/losses on stocks = gains on sales of stocks – losses on sales of stocks – losses on devaluation of stocks.

Realized gains/losses on bonds = gains on sales of bonds + gains on redemption of bonds – losses on sales of bonds – losses on redemption of bonds – losses on devaluation of stocks.

Credit costs = loan loss provisions + write-offs – recoveries of write-offs.

Credit cost ratio = credit costs / total loans outstanding.

Capital adequacy ratio = capital / risk-weighted assets.

Tier I capital ratio = Tier I capital / risk-weighted assets.

Net income ROA = net income / total assets.

Liquid asset ratio = (deposits with the Bank + cash + government bonds) / (market funding + deposits).

### *Financial statements of firms*

Quick ratio = quick assets / short-term debt.

Interest coverage ratio = (operating income + interest and dividends received) / interest expenses.

Liquidity ratio = (cash and deposits + securities) / sales.

Long-term borrowing ratio = Long-term borrowings / liabilities and net assets.

### *Three letter code of countries*

AUS: Australia, AUT: Austria, BEL: Belgium, BRA: Brazil, CAN: Canada, CHE: Switzerland,

CHN: China, CZE: Czech, DEU: Germany, DNK: Denmark, ESP: Spain, FIN: Finland,

FRA: France, GBR: United Kingdom, GRC: Greek, HUN: Hungary, IDN: Indonesia,

IND: India, IRL: Ireland, ITA: Italia, KOR: Korea, LUX: Luxemburg, MEX: Mexico,

NLD: Netherlands, NOR: Norway, PRT: Portugal, RUS: Russia, SAU: Saudi Arabia,

SVK: Slovakia, SWE: Sweden, TUR: Turkey, USA: United States, ZAF: South Africa

## Annex 4: Financial System Related Reports and Speeches

-- All reports and speeches released by the Bank of Japan since the previous *Report*.

### *Speeches and Remarks*

Masaaki Shirakawa, Governor, "Macroprudence and the Central Bank," Speech at the Seminar of the Securities Analysts Association of Japan in Tokyo, December 22, 2009.

Masaaki Shirakawa, Governor, "Reforming the Framework of Financial Regulation and Supervision: An International and Asian Perspective," Speech at the Bank Negara Malaysia-Bank for International Settlements High Level Seminar in Malaysia, December 11, 2009.

Hirohide Yamaguchi, Deputy Governor, "Challenges for Japanese Financial Institutions after the Financial Crisis," Speech at the Retail Finance Strategy Conference 2009 in Tokyo, November 25, 2009.

Kiyohiko G. Nishimura, Deputy Governor, "Unconventional Policies against Fear of *Unknown Unknowns*," Remarks at the Panel Session "The Repositioned Role of Central Banks in Today's Economic Environment" at the CME Group's Global Financial Leadership Conference, November 2, 2009.

### *Bank of Japan Research Paper Series*

Financial Systems and Bank Examination Department, "Summary of Overseas Street Wide Training," March 23, 2010 (Japanese only).

Financial Systems and Bank Examination Department, "Effective Business Continuity Management about Back-up Computer Center," March 11, 2010 (Japanese only).

### *Bank of Japan Working Paper Series*

Kamada, K. and K. Nasu, "How Can Leverage Regulations Work for Stabilization of Financial Systems?" March 19, 2010.