BOJ Reports & Research Papers

Financial System Report

BANK OF JAPAN

SEPTEMBER 2010

This report mainly covers 12 major banks and 106 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 106 regional banks comprise the 64 member banks of the Regional Banks Association of Japan and the 42 member banks of the Second Association of Regional Banks, as of March 31, 2010.

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

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Financial System Report

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September 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 securing the stability.

The September 2010 issue of the *Financial System 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 fulfills the financial intermediation function to promote an efficient allocation of economic resources, thereby contributing to the sustained growth of the economy under price stability. The robustness is assessed in terms of whether the financial system can absorb factors that might jeopardize its stability. These two interconnected perspectives also provide a valuable insight into the assessment of monetary policy's transmission channels.

Surrounded by growing future uncertainties over the global financial system since the start of 2010, Japan's financial system has maintained stability compared with the U.S. and European systems. In order to secure the stability of the financial system in years to come, it has become increasingly important to gauge, from a macroprudential perspective, the current state of the system and the location of risks amid the interconnectedness of Japan's financial system with economic activity, as well as with global economic and financial developments. In view of this recognition, the *Report* analyzes and assesses the risks and their magnitude in Japan's financial system and presents a comprehensive evaluation, taking greater account of the following two dimensions.

The first dimension is cross-sectional. The financial system consists of not only banks but also other financial institutions, including institutional investors such as life insurance companies. It is also influenced by developments in the global financial system. In assessing the functioning and robustness of Japan's system, this *Report* has sought to broaden the coverage of financial institutions, with the interconnectedness of risks in mind. At the same time, due attention is paid to how the strains in the global financial system spilled over to Japan's system.

The second dimension is time-series. The conditions of the financial system change over time through interacting with developments in real economic activity. This *Report* has attempted to deepen the analysis about the robustness of the financial system going forward when stress hits the economy as a whole. It has also analyzed a feedback effect

of financial institutions' behavior aiming at securing the robustness on the future functioning of financial intermediation and real economic activity.

Bearing in mind the greater importance of such a macroprudential perspective, the Bank will continue to improve research and analysis on Japan's financial system and publish its findings 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

Japan's financial system has maintained its stability as a whole. In terms of financial intermediation, banks have continued to hold an expanded share in the overall credit markets through lending and investment in bonds. Bank loan rates have been declining markedly. Provision of credit to firms and other entities has been carried out smoothly on the whole. Japan's financial system has also enhanced its robustness. Banks have sought to strengthen their capital bases mainly by successively issuing common shares. As a result, the amount of risks held by Japan's banks relative to their capital has decreased.

Nevertheless, due attention should be continuously paid to the spillover risk to Japan of a shock originating in the global financial system amid heightened future uncertainties induced by such incidents as the surfacing of the European sovereign debt problems and growing concerns over the slowdown of the U.S. economy. On the domestic front, banks' core profitability has fallen further due to a narrowing of loan spreads against a backdrop of firms' sluggish demand for funds. In addition, the overall quality of bank loans has continued to decline, particularly for small and medium-sized firms whose recovery in financial standing has been delayed compared with large firms. This also warrants vigilance.

Bearing in mind both the domestic and global financial and economic environments, Japan's financial institutions need to tackle the following challenges. The first challenge is to secure sufficient capital that can cover the losses in case stress impacts the financial system in the future, given the declining quality of bank loans. Banks should strengthen their capital bases, taking account of international moves toward implementing the new capital requirements. The second challenge is to continue a scheduled reduction of market risk associated with stockholdings, bearing risk characteristics in mind. The risk remains that a plunge in stock prices could reduce capital. The third challenge is to secure stable profits. Improvement in core profitability enables Japan's financial institutions not only to accelerate the pace of retained earnings accumulation but also to increase the chances of further capital increases. They are expected to secure profit opportunities by seeking out firms and business areas with high growth potential. This also contributes to the smooth functioning of financial intermediation in future years. At the same time, they need to strengthen profitability on a risk-adjusted basis by enhancing the effectiveness of risk management, particularly for

credit and market risks.

Financial intermediation function

Japanese financial institutions' amount of credit to domestic firms has decreased since fiscal 2009. On the corporate finance front, firms' demand for funds has declined as funding conditions of firms, mainly large firms, have stabilized. Funding conditions of small and medium-sized firms have also continued to improve, evidenced by lower dependence on public guarantee, albeit gradually. Nevertheless, not a few such firms still find themselves in a tight funding condition.

In Japan, financial institutions' amount of credit appears to be approximately balanced with economic activity in light of the long-term trend. By type of intermediary, banks have continued to complement part of the credit provision previously made by other financial institutions, including institutional investors. In the meantime, bank loan rates and issuing rates on corporate bonds, including long-term credits and credits to firms with relatively low credit ratings, have been declining extensively, and the accommodative funding environments has been maintained. As a collective, these factors indicate that Japan's financial system has continued to smoothly carry out the financial intermediation function as a whole.

However, the following points warrant attention from the viewpoint of ensuring an ongoing smooth financial intermediation function. First, room for a further decline in loan rates has seemed to gradually become limited. Second, given the larger share of banks in the credit markets, if a new shock were to hit the banking sector, its effects would likely spread to the overall credit markets somewhat more directly.

Robustness of the financial system

In fiscal 2009, Japanese banks' amount of various risks relative to their capital decreased against a backdrop of banks' efforts to strengthen their capital bases, among other measures. Banks' funding liquidity risk has also been restrained both in yen currency and foreign currency despite growing strains in the global financial markets with the surfacing of the European sovereign debt problems in 2010.

However, a continuous lowering of banks' loan quality and a decline in loan rates have been taking place simultaneously, while banks' core profitability has remained unimproved. Not a few non-manufacturing firms and small and medium-sized firms

have suffered a delay in the recovery of their financial standing, while business performance has improved as a whole. Consequently, large credit costs compared with profits could develop, which may reduce banks' profits in future years. In addition, interest rate risk has accumulated further particularly at the regional banks amid an increased preference for investment in government bonds. Market risk associated with stockholdings remains a significant risk factor, particularly at the major banks, despite their efforts toward progressive reduction.

As for the outlook, banks' capital bases as a whole would avoid being significantly impaired, owing to their recent capital increases and the improvement in the financial standing of large manufacturers in particular, even if a slowdown in economic activity and a plunge in stock prices simultaneously take place under a stress scenario. This simulation result shows that Japan's financial system has enhanced its robustness.

Nevertheless, the capital ratios of banks with relatively weak profitability and a relatively weak capital base could remain at a low level into the future. This suggests that certain factors inherent in Japan's financial system still warrant vigilance. It should also be noted that banks could perform the financial intermediation function to a lesser degree by reducing lending that would constrain real economic activity in the recovery process, in which banks would restore their capital ratios impaired under the stress scenario.

I. Developments surrounding Japan's financial system: Growing future uncertainty about the global financial system

The global financial system has been moving toward stabilization as a trend, albeit moderately. Since entering 2010, uncertainty about the future has heightened due mainly to the surfacing of the European sovereign debt problems and growing concerns over the slowdown of the U.S. economy. Amid the turmoil in global financial markets, Japanese banks' profits have been improving and their funding conditions have also remained relatively stable.

As for the outlook, in case a balance between fiscal consolidation and economic recovery is disrupted in the advanced economies or economic growth slows down considerably in the emerging economies, which are leading the global economy, a risk could develop that the global financial system might become unstable through, for example, an increase in impaired assets. It should be noted that such a risk could affect Japan's financial system through two channels: the financial channel and the economic activity channel.

This chapter summarizes the developments in the global financial system from a perspective of examining risks that could affect Japan's financial system. In addition, the business performance of Japan's financial institutions is reviewed in comparison with that of the U.S. and European financial institutions.

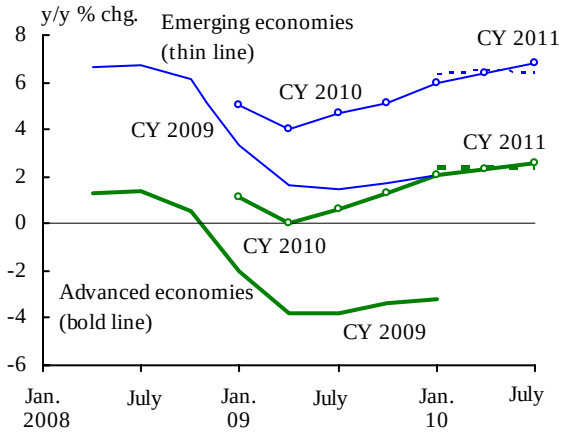
A. Global financial system moving toward stabilization

Recovery of the global economy

The global economy started to recover in the spring of 2009 supported partly by fiscal stimuli and accommodative monetary policy around the globe (Chart 1-1-1).[1] In the advanced economies, the pace of economic recovery has been sluggish due partly to the burden of the balance-sheet problems in the U.S. and European economies and the European sovereign debt problems. In the emerging economies, economic growth has been robust under a virtuous cycle of increased production, income and spending. As a whole, the global economy has been recovering moderately led by emerging economies. In these circumstances, the global financial imbalance that had accumulated through 2008 has been shrinking, as evidenced by the contracted banks' external claims relative

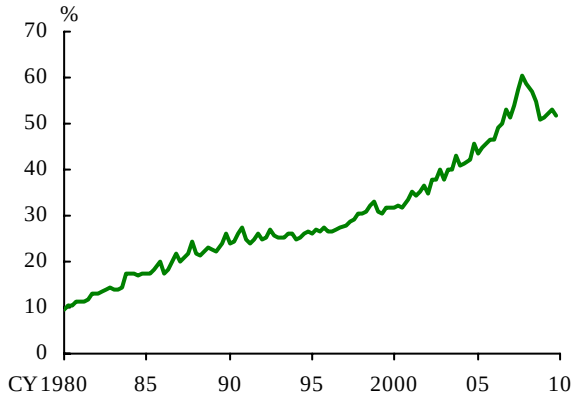
[1] The latest data in Chart 1-1-1 are as of July 2010. Thus, the prospect of the economic slowdown in the United States into 2011 is not reflected in this chart.

Chart 1-1-1: World economic outlook[1]



Note: *1*. Quarterly forecast of real GDP growth. The latest data are as of July 2010. See footnote 1.
Source: IMF, "World economic outlook."

Chart 1-1-2: External claims of banks in the world[1]



Note: *1*. Ratio to global GDP.
Sources: BIS, "International locational banking statistics"; IMF, "World economic outlook."

to global GDP (Chart 1-1-2).

Amid the continued improvement in the macroeconomic environment, there has been improvement in the financial system, mainly among the major financial institutions, through the early spring of 2010 in three areas: profits, capital bases, and the funding environment.

Financial institutions' profits

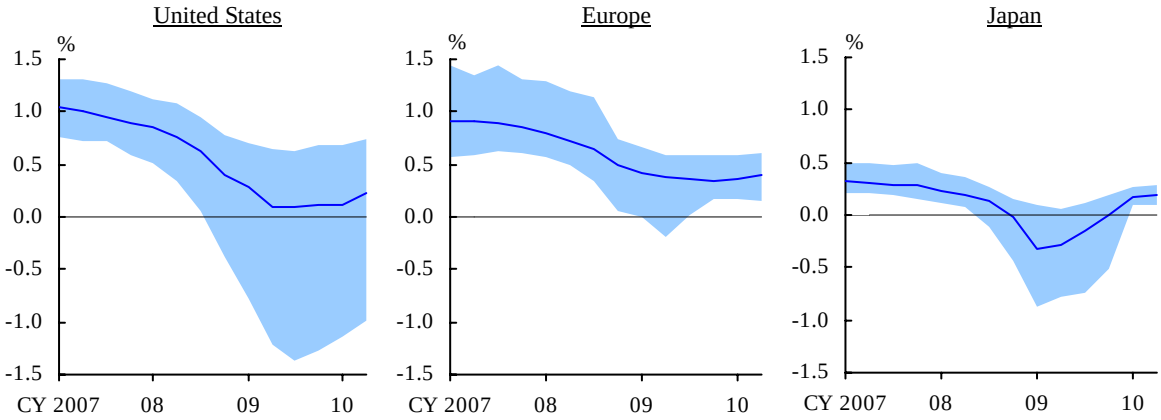
Profits of financial institutions both at home and abroad had been on an increasing trend through the January-March quarter of 2010. In the April-June quarter, profits of U.S. and European financial institutions slowed slightly reflecting the surfacing of the European sovereign debt problems.

As for U.S. and European financial institutions, return on assets (ROA) -- mainly of major financial institutions -- improved through the January-March quarter of 2010, supported by a solid performance in investment banking (Chart 1-1-3).[2] During this period, the financial environment was relatively favorable for financial institutions to secure certain profit margins as yield curves steepened amid declining interest rate volatility. In addition, credit costs declined, although they remained at relatively high levels.

In the April-June quarter of 2010, profits of major financial institutions were better than market expectations due partly to a decline in credit costs. However, an increasing

[2] ROA in Chart 1-1-3 is a 4-quarter moving average, and thus the timing when the ROA shifts between positive and negative territory does not necessarily coincide with the actual timing.

Chart 1-1-3: ROA of financial institutions[1,2]



Notes: *1.* Shaded areas and solid lines indicate interquartile range (25-75 percentile) and median of financial institutions, respectively.
2. Listed financial institutions are counted. ROA is the ratio of net income to total assets using a 4-quarter moving average (see footnote 2). The latest data are as of April-June 2010.
Source: Bloomberg.

number of financial institutions posted lower profits than in the previous quarter. This is due mainly to a decline in profits from trading business reflecting the turmoil in global financial markets associated with the surfacing of the European sovereign debt problems. In the meantime, small and medium-sized U.S. financial institutions have continued to suffer a deficit trend due partly to a deterioration in commercial real estate loans. Therefore, in the United States, profitability, measured by ROA, has continued to vary among financial institutions. This is in contrast to the ROA distribution of Japan's financial institutions, which has been converging.

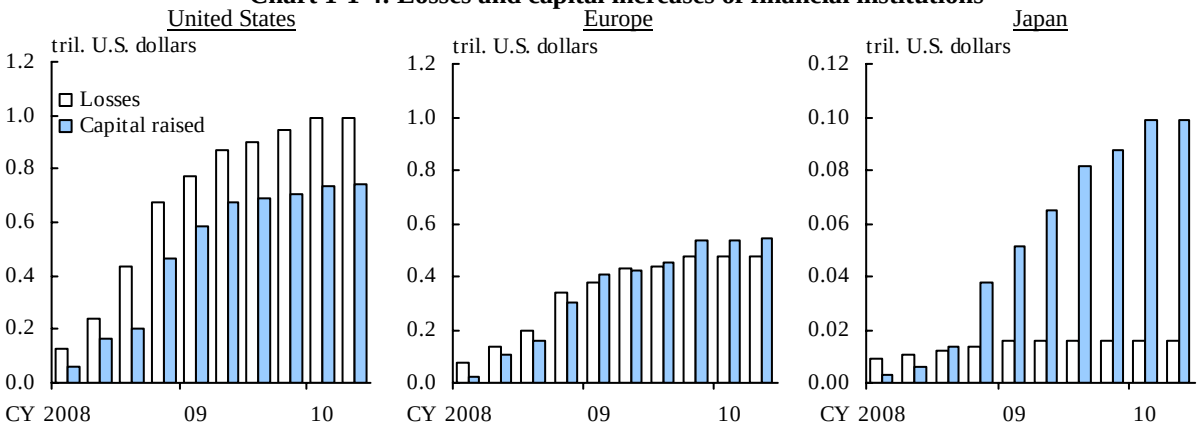
Capital bases

Financial institutions both at home and abroad have strengthened their resilience under stress through measures such as capital increases.

U.S. and European financial institutions have striven to restore their impaired capital bases since the outbreak of the financial crisis by raising capital in the market, together with receiving public funds (Chart 1-1-4). At present, many financial institutions have restored the capital ratios seen prior to the financial crisis, and thus this round of recapitalization has run its course. As for European financial institutions, only a few financial institutions were judged to be short of capital in the stress tests, the results of which were released in July 2010, owing to such recapitalization efforts.

In Japan, internationally active banks in particular raised capital in the market one after another in fiscal 2009, and their capital ratios rose significantly (see Chapter III.D). While restoration of impaired capital was the main purpose for recapitalization in the United States and Europe, Japan's banks did it mainly to build the necessary capital

Chart 1-1-4: Losses and capital increases of financial institutions[1]



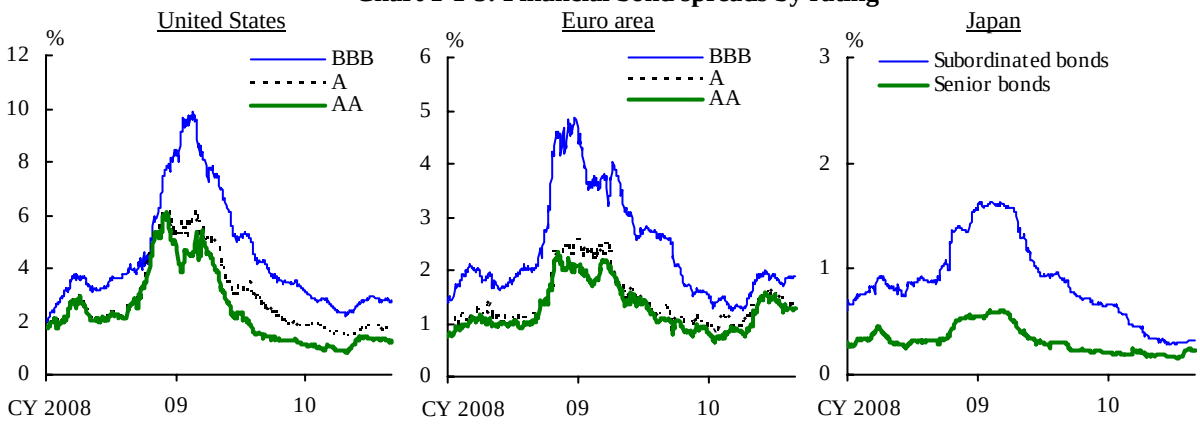
Note: *1.* Listed major financial institutions are counted. Cumulative amount of losses (including write-downs of securitized products) and capital raised from 2008.
Source: Bloomberg.

bases in order to carry out the financial intermediation function smoothly for years to come, also paying due attention to international discussions about stricter capital requirements.

Funding environment

As for funding conditions, financial institutions' funding liquidity constraints as a whole had been improving until the early spring of 2010, against a backdrop of recovery of the global economy and the calming of the financial markets (see the next section for developments after the surfacing of the European sovereign debt problems). As investors' risk taking had become active gradually, risk premiums had fallen both in the money market and the financial bond market (Chart 1-1-5).[3]

Chart 1-1-5: Financial bond spreads by rating[1]



Note: *1.* 5-year spreads over government bond yields.
Source: Bloomberg.

[3] For the recent developments in domestic and global financial markets, see the August 2010 issue of the *Financial Markets Report*, Bank of Japan.

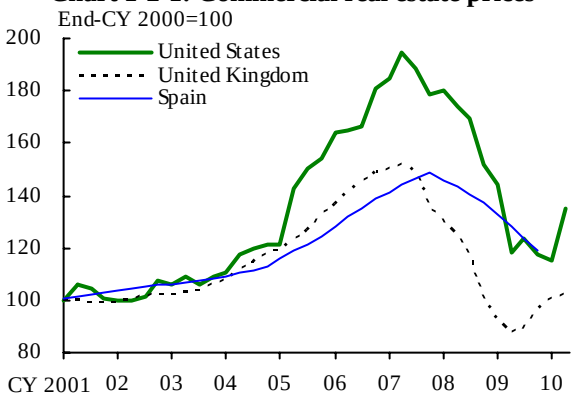
Reflecting the recovery of the financial market functioning, on the central bank policy front, there had been moves since entering 2010 to complete temporary countermeasures adopted in the wake of the financial crisis. For example, central banks once ended U.S. dollar funds-supplying operations based on the swap agreement with the Federal Reserve in February 2010.[4] The Federal Reserve ended in March 2010 the Term Auction Facility and the program of purchasing agency-guaranteed mortgage-backed securities (MBSs). The Bank of Japan completed special funds-supplying operations to facilitate corporate financing in March 2010. As for interest rate policies, a number of central banks in the advanced economies including the Bank are still continuing low interest rate policies to ensure the sustainable economic recovery.

B. Uncertainty about the U.S. and European financial systems

Balance-sheet problems in the U.S. and European economies

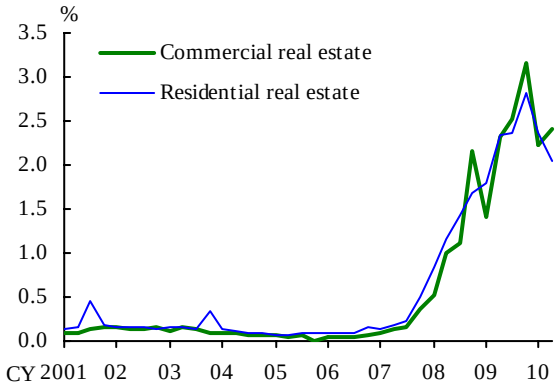
In the United States and Europe, the balance-sheet problems in the household and corporate sectors and the financial sector as their counterparts, as well as in the government sector, continue to weigh on economic activity. In the United States, real estate prices have dropped considerably, and the ratio of charge-offs on commercial real estate loans remains at a high level (Charts 1-2-1 and 1-2-2). The amount of loans relative to the estimated value of real estate collateral, namely, the loan-to-value ratio, also remains high. According to an estimate by the International Monetary Fund (IMF),

Chart 1-2-1: Commercial real estate prices



Sources: IPD, "The IPD index"; MIT Center for Real Estate, "Transaction based index."

Chart 1-2-2: U.S. loan charge-off ratios[1]



Note: *1.* Ratios of net charge-offs to loans.
Source: FRB, "Charge-off and delinquency rates on loans and leases at commercial banks."

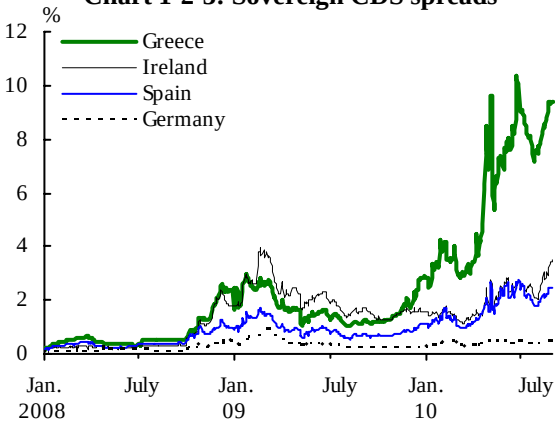
[4] Central banks resumed the U.S. dollar funds-supplying operations in May 2010. See the next section and Chapter III.C.

some small and medium-sized financial institutions active in real estate-related lending would become undercapitalized if real estate prices continue to decline.[5] A similar tendency is seen in European countries like Spain and the United Kingdom, in which real estate prices had continued to rise since the 2000s. According to an estimate by the European Central Bank (ECB), write-downs on loans by major financial institutions in the euro area in 2010 are likely to be higher than in the previous year.[6]

Surfacing of the European sovereign debt problems

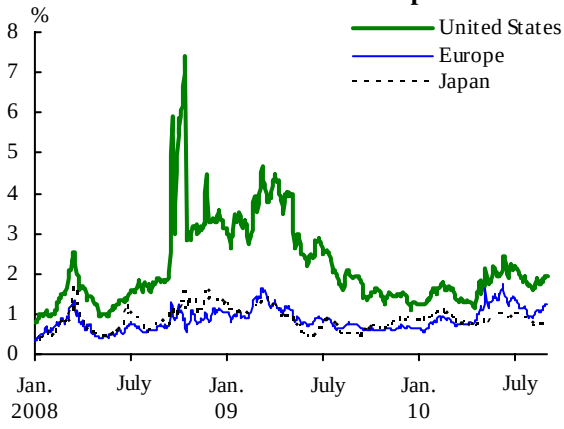
After the outbreak of the financial crisis, the government sector increased fiscal spending while the private sector was exposed to the pressure of balance-sheet adjustments. Consequently, government debt has built up steadily in many economies. Given this situation, triggered partly by the downgrading of Greek government bonds in April 2010, market concerns further heightened over the governments' capability to manage debt in European peripheral countries such as Greece (Chart 1-2-3).[7] The market concerns were directed also to U.S. and European financial institutions in addition to government bonds issued by European peripheral countries (Chart 1-2-4).

Chart 1-2-3: Sovereign CDS spreads[1]



Note: *1.* 5-year spreads.
Source: Bloomberg.

Chart 1-2-4: Financial CDS spreads[1]



Note: *1.* 5-year spreads. See Chart 1-2-5 for referenced financial institutions.
Source: Bloomberg.

Such a chain reaction of counterparty risk concerns was marked among U.S. and European financial institutions. The estimation result of cluster analysis on credit

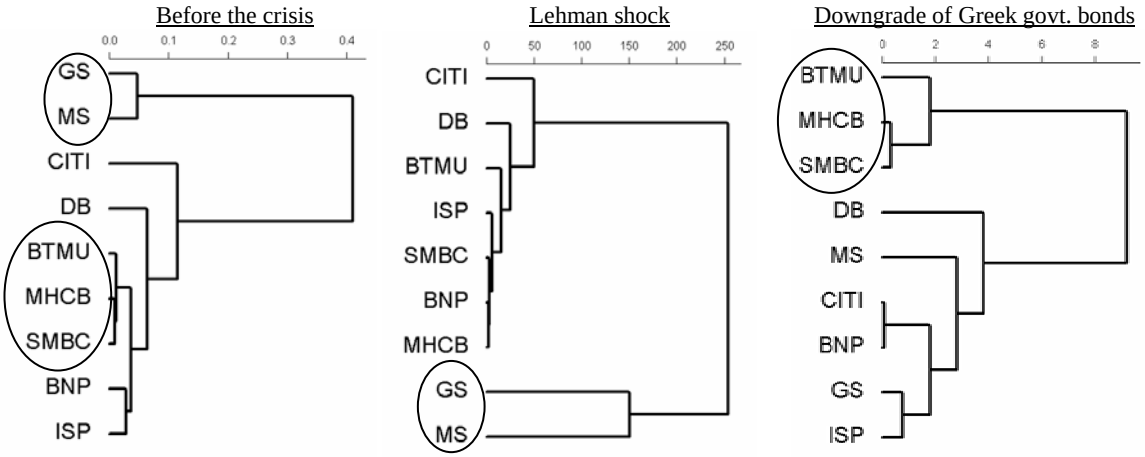
[5] More than 70 percent of loan assets at U.S. financial institutions with total assets less than 10 billion U.S. dollars have been occupied by real estate-related loans. For the IMF estimate, see the IMF, "United States: Financial system stability assessment," July 2010.

[6] See the ECB, *Financial Stability Review*, June 2010.

[7] In this *Report*, European peripheral countries indicate the five countries of Greece, Ireland, Italy, Portugal and Spain.

default swap (CDS) spreads of major financial institutions in the United States, Europe and Japan shows that all the U.S. and European financial institutions were grouped under one cluster in the first week following the downgrading of Greek government bonds, suggesting a possible chain reaction of counterparty risk concerns (Chart 1-2-5).[8] In contrast, Japan's financial institutions formed a unique cluster and apparently remained immune to the contagion of counterparty risk concerns.[9]

Chart 1-2-5: Clusters of financial CDS spreads[1,2]



Notes: *1*. CITI: Citigroup, GS: Goldman Sachs, MS: Morgan Stanley (in the United States), BNP: BNP Paribas, DB: Deutsche Bank, ISP: Intesa Sanpaolo (in Europe), BTMU: The Bank of Tokyo-Mitsubishi UFJ, MHCB: Mizuho Corporate Bank, SMBC: Sumitomo Mitsui Banking Corporation (in Japan).
2. The smaller number in the horizontal axis indicates the closer similarity (distance) among samples.

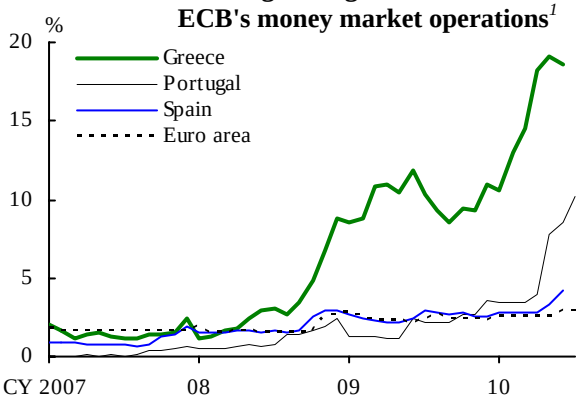
The surfacing of the European sovereign debt problems put the government bonds of European peripheral countries under question in terms of their creditworthiness. In particular, repo transactions backed by Greek government bonds came to be avoided (see Box 1 for details on the transactions in the euro interbank market). Concerns over the creditworthiness of financial institutions in European peripheral countries also heightened, and the euro funding costs of these institutions increased both in terms of market and deposits funding. In early May 2010, European financial institutions temporarily found it difficult to raise funds from markets, regardless of individual

[8] Cluster analysis is a method of grouping similar samples into a subset called a cluster based on a Euclidian distance measure. The result is shown by a tree diagram that visualizes interdependency among whole samples.

[9] In the first half of 2007 prior to the financial crisis, U.S. investment banks and Japan's financial institutions formed an independent cluster, respectively. Even in the first week immediately after the Lehman failure in September 2008, U.S. investment banks, closest to the epicenter of the crisis, still formed a single cluster. European and Japanese financial institutions, on the other hand, were grouped together into a larger cluster, suggesting a possible contagious reaction of counterparty risk concerns.

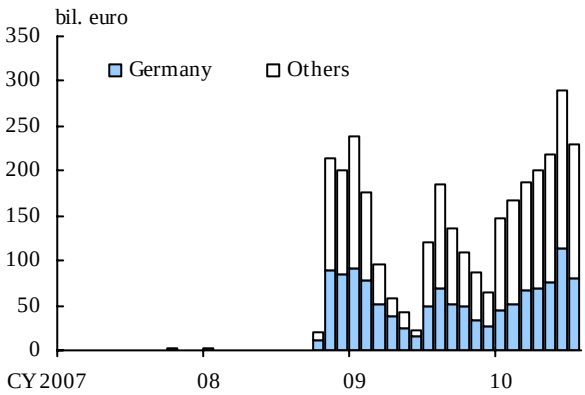
institutions' creditworthiness, and this made cross-border transactions particularly difficult. Normally, cross-border transactions occupy a large share of interbank transactions in the euro area, and thus the narrowing of the cross-border channel tightened funding conditions in the overall euro money markets. At the same time, new issuance of financial bonds and covered bonds backed by, for example, real estate loans declined significantly. Since market funding was impaired, financial institutions in European peripheral countries rapidly increased their reliance on funds provision by the ECB. In particular, Greek financial institutions obtained funds for as much as 20 percent of their total liabilities through the ECB's money market operations (Chart 1-2-6). On the investment side such as German financial institutions, there has been an increasing tendency to hoard cash on hand due mainly to counterparty risk concerns, and such funds have accumulated in the ECB's deposit facility (Chart 1-2-7).[10]

Chart 1-2-6: Funding through ECB's money market operations[1]



Note: *1.* Ratios of financial sector's funding amount through ECB's money market operations to their liabilities.
Source: Eurosystem.

Chart 1-2-7: Usage of ECB's deposit facility[1]



Note: *1.* Usage amount by financial sector in each country.
Source: Eurosystem.

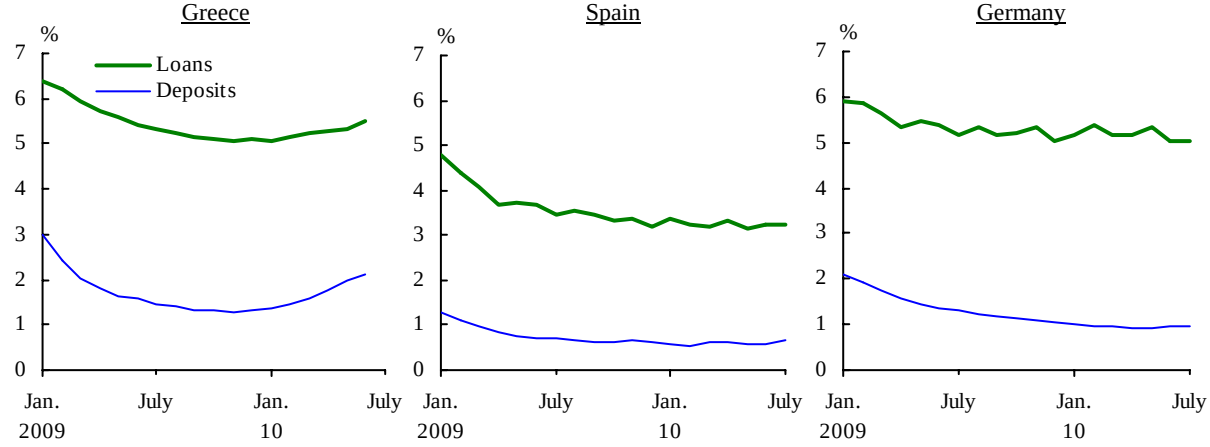
In the meantime, U.S. dollar funding of European financial institutions was put under stress again, and U.S. dollar funding costs increased temporarily (see Box 5 in Chapter III for details on the developments in the U.S. dollar money market). However, since central banks promptly took measures such as resumption of the U.S. dollar funds-supplying operations, the functioning of the U.S. dollar money market has largely been maintained so far.

If funding liquidity is severely constrained while financial institutions are in the process of disposing of impaired assets, constraints on financial institutions' lending would tighten, which could lead to a credit crunch. In fact, since entering 2010, Greek financial

[10] Deposit facility is a measure for a central bank to passively absorb surplus funds on a macro basis.

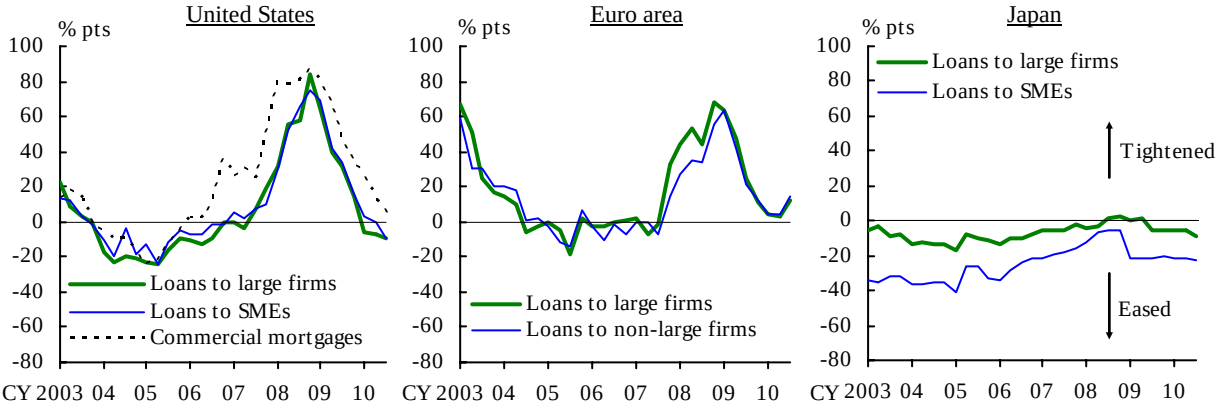
institutions have appeared to pass part of their increased euro funding costs on to loan rates (Chart 1-2-8). Looking at the euro area as a whole, the lending stance of financial institutions tightened again recently, in contrast to U.S. and Japanese financial institutions, whose lending stance was eased (Chart 1-2-9).

Chart 1-2-8: Interest rates on loans and deposits by country[1]



Note: *1.* Newly contracted interest rates.
Source: Eurosystem.

Chart 1-2-9: Lending stance of financial institutions[1]



Note: *1.* SMEs stand for small and medium-sized firms.
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."

Stress tests on European financial institutions

Future uncertainty about financial and economic conditions in Europe was temporarily heightened by the surfacing of the European sovereign debt problems, but was somewhat mitigated due partly to measures taken by the monetary authorities and financial institutions. The European Stabilization Mechanism decided at the European Union (EU) Economic and Financial Affairs Council in May 2010 guaranteed the redemption of government bonds within the EU countries. In addition, the ECB

introduced the Securities Markets Program and began purchasing bonds whose liquidity was lost. In July, the Committee of European Banking Supervisors (CEBS) released the results of the stress tests conducted for 91 European financial institutions. Subsequently, as disclosure of information such as sovereign exposure progressed at the national and individual financial institution level, a widening trend of financial CDS spreads came to a halt. After end-July, signs of improvements in longer-term funding were found as evidenced by Spanish financial institutions' issuance of financial bonds.

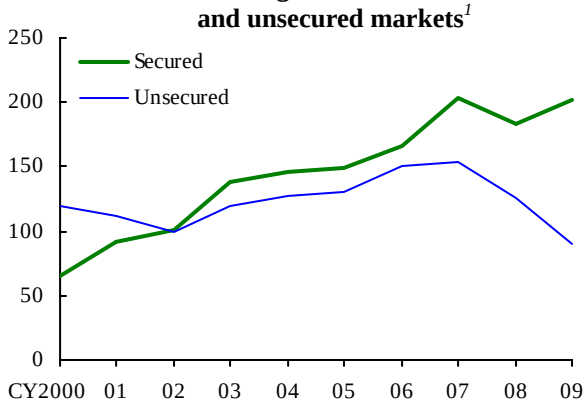
However, since fiscal deficit problems remain at the core, the uncertainty surrounding the European financial system has not yet been fully dispelled. In fact, in response to the downgrading of Ireland at end-August 2010, sovereign CDS spreads for Ireland and Greece, as well as financial CDS spreads, widened again. Whether cross-border interbank transactions within the euro area will fully recover or whether investors will continue to stably provide funds to financial institutions in European peripheral countries warrants further monitoring. Moreover, as large-scale redemption of bonds issued by financial institutions continues, rollover risk associated with refinancing also merits continued vigilance.

Box 1: Functioning of the euro interbank market

Since the subprime mortgage problems came to the surface in the summer of 2007, concerns over counterparty risk have heightened and market participants have explicitly preferred secured transactions to unsecured transactions in the euro interbank market (Chart B1-1). Since 2009, when concerns started to grow over the sovereign debt problems, the creditworthiness, as collateral assets, of government bonds issued by some countries has been called into question. Consequently, repo transactions backed by German government bonds, which are recognized as highly credible and liquid, have been preferred (Chart B1-2). On the other hand, repos backed by European peripheral countries' government bonds decreased further. Following the surfacing of the European sovereign debt problems in 2010, repos backed by Greek government bonds came to be avoided.[11] Particularly in early May, repo funding, mainly backed by European

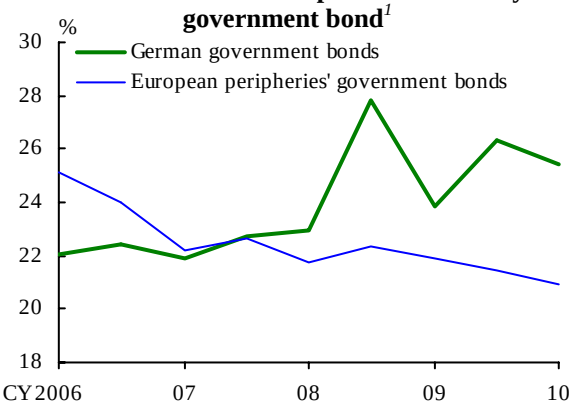
[11] Markets were concerned about whether Greek government bonds could continue to satisfy the collateral eligibility set by the ECB, in which the minimum credit threshold has been temporarily set to BBB-. In early May 2010, the ECB decided to suspend the application of the minimum credit threshold in collateral eligibility requirements to Greek government bonds, and has continued to accept those as eligible collaterals.

Chart B1-1: Funding amount in the secured and unsecured markets[1]



Note: *1.* Survey period is the April-June quarter of every year. Figures are normalized by funding amount in the unsecured market at 2002.
Source: ECB, "Euro money market survey."

Chart B1-2: Shares of repo transactions by government bond[1]



Note: *1.* Survey periods are June and December of every year.
Source: ICMA, "Repo market survey."

peripheral countries' government bonds, almost ceased to work regardless of individual financial institutions' creditworthiness. In this way, the functioning of repo markets became significantly lost for some time.

The developments observed in the euro repo market are similar to those of the U.S. repo market in early 2008, when its functioning was impaired significantly. At that time, the U.S. government-sponsored enterprises (GSEs), such as the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), registered net losses for the October-December quarter of 2007. This led to a fall in prices of GSE bonds including agency bonds and agency-guaranteed MBSs, as the market was overshadowed by concerns over these institutions' deteriorating financial standing. Repos backed by GSE bonds, which had been considered relatively safe and liquid, started to stall amid a stagnation of interbank unsecured transactions against a backdrop of the deepening subprime mortgage problems.

In response to this market malfunctioning, the U.S. monetary authorities (1) implemented a credit facility for investment banks that held inventories of GSE bonds, (2) implemented the Treasury Securities Lending Facility backed by GSE bonds, and (3) placed the two GSEs into conservatorship. The repo markets restored calmness temporarily owing to these measures, but remained unstable afterward. Similarly to the aforementioned U.S. case, the following countermeasures were taken to address the dislocated euro interbank market promptly: (1) the longer-term liquidity provision by the ECB; (2) the purchase of illiquid bonds, namely government bonds, via the Securities Market Program; and (3) the implementation of the European Stabilization Mechanism as a safety net by the EU and the IMF. Note, however, that market concerns have not been fully swept away, as deep-rooted concerns have remained about the

compatibility between the effectiveness of fiscal consolidation plans and economic recovery in the euro area countries.

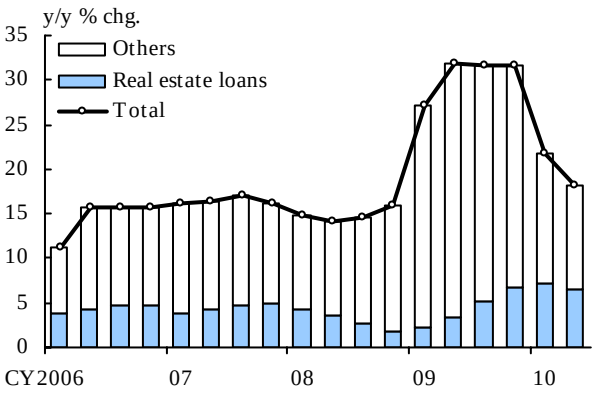
C. Emerging economies: High growth and capital flows

Rise in Chinese real estate prices

Emerging economies, whose growth slowed after the outbreak of the financial crisis, have regained high growth, leading the global economy. In particular, China and India have recorded high growth led mainly by domestic demand. Also, real estate prices have risen in China.

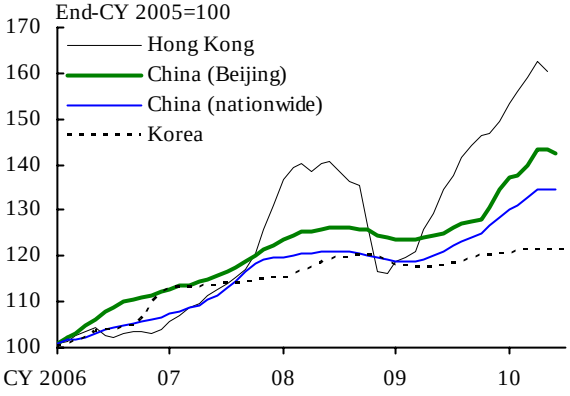
In China, to cope with adverse effects of the global financial crisis on the domestic economy, the policy rate was lowered in sequence, and the ceiling for new bank loans -- regulation on total bank lending -- was abolished to encourage banks to lend more. Consequently, real estate loans started to increase significantly at the beginning of 2009 and real estate prices followed suit (Charts 1-3-1 and 1-3-2).[12] In response to such developments, Chinese authorities took measures after entering 2010 to restrain overheating in the real estate market by restricting real estate transactions, raising the deposit reserve ratio, and conducting window guidance for bank lending. As a result, the rising pace of real estate prices slowed, especially in coastal metropolitan areas, although levels of real estate prices are still within the range of their historical highs. Such a rise in Chinese real estate prices appears to be largely attributable to buoyant

Chart 1-3-1: Real estate loans in China



Source: The People's Bank of China.

Chart 1-3-2: Real estate prices in emerging economies



Source: CEIC.

[12] See Muto, Ichiro, *et al*., "On the recent rise in China's real estate prices," *Bank of Japan Review*, 2010-E-3, April 2010.

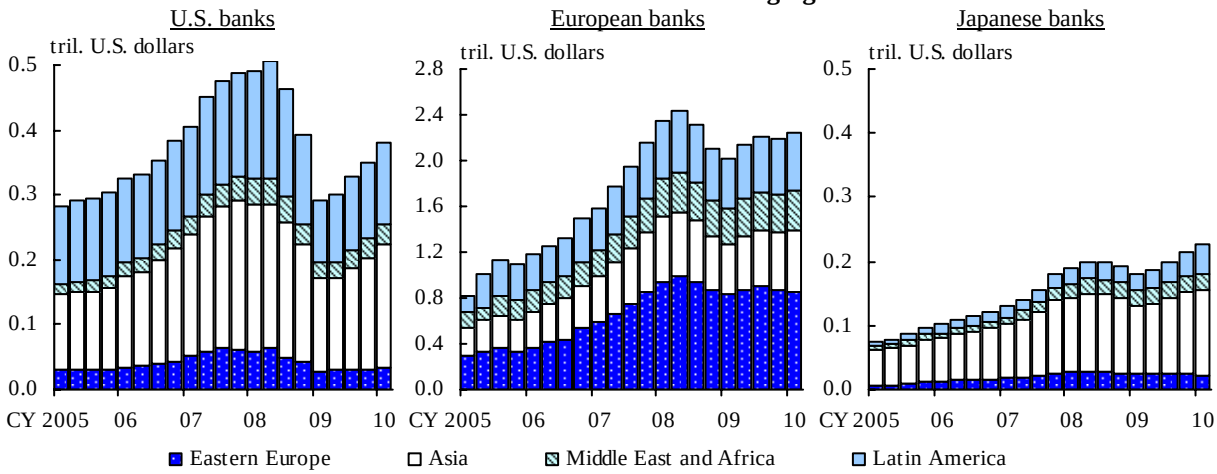
domestic demand for real estate development.

In the meantime, capital inflows, which were temporarily suspended after the outbreak of the financial crisis, started to increase again. Foreign direct investment in real estate accounted for approximately 10 percent of real estate lending in 2009. Such capital inflows from overseas also seem to have been a contributing factor behind a rise in Chinese real estate prices.

Inflows and outflows of overseas capital for emerging economies

Capital inflows from advanced economies to emerging economies with high growth potential decreased immediately after the Lehman shock but have recently increased again. The capital inflows seem to be one factor contributing to the asset price increases in many emerging economies, particularly in Asia and Latin America (Charts 1-3-2 and 1-3-3). Moreover, market has been firming its view that the low interest rate policy in the United States and Europe is likely to continue for a prolonged period against a backdrop of the surfacing of the European sovereign debt problems and growing concerns over the slowdown of the U.S. economy. Protracted accommodative monetary policy in the advanced economies, together with high growth potential in the emerging economies, could encourage a progressive increase in capital inflows to the emerging economies. These could lead to amplifying the business cycle in the emerging economies.

Chart 1-3-3: External claims on emerging economies



Source: BIS, "Consolidated international banking statistics."

D. Issues related to Japan's financial system

Possible effects of external shocks on Japan

European countries are striving to recover financial system stability and simultaneously tackling fiscal consolidation and economic recovery. However, there is a risk that, if the balance between fiscal consolidation and economic recovery is disrupted and economic activity deteriorates, financial institutions' lending constraints would tighten as impaired assets increase, and this might further worsen economic activity. European financial institutions have extended loans to a large extent to European emerging economies -- Eastern European economies, in particular -- and thus one cannot deny the possibility that tightened lending constraints might spread to neighboring emerging economies. Moreover, at present, concerns over the slowdown of the U.S. economy have been growing.

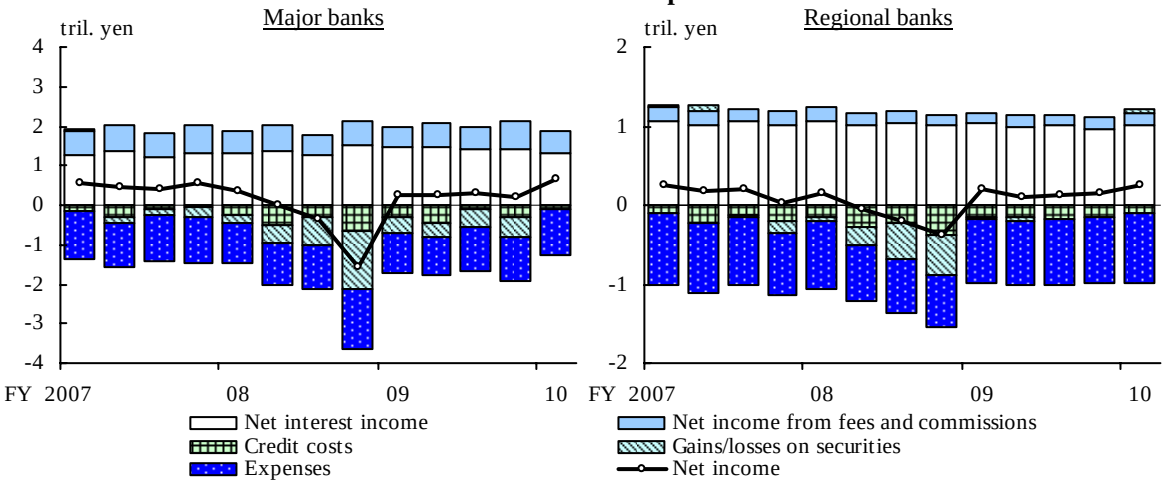
The risk that economic and financial systems in the United States and Europe could lose stability might affect Japan's financial system through two channels: the financial channel and the economic activity channel. Since Japan's financial institutions have little exposure to European sovereign debt, a direct impact on worsening bond-related gains/losses due to a decline in prices of government bonds issued by European peripheral countries appears to be limited. Moreover, the effects on foreign currency funding by Japan's financial institutions have remained relatively small (see Chapter III.C). However, the turmoil in global financial markets could, through a further decline in stock prices and appreciation of the yen, directly affect gains/losses on securities of banks that hold large stockholdings and life insurance companies that invest actively in foreign bonds. Also, deteriorating overseas economic conditions and further appreciation of the yen could lead to increased credit costs through worsening profits of Japan's export-related firms (see Chapter III for the effects of macroeconomic stress on Japan's financial system).

Future developments in the Chinese real estate market also have important implications for the stability of Japan's financial system. Attention should be paid to whether real estate-related lending would be unwound rapidly under the government's measures to restrain overheating, and whether this would give rise to a large-scale adjustment in the real estate market. In this situation, whether the substantial outflows of overseas capital might occur and deepen the impact of the adjustment also merits attention. The risks that the overheating of emerging economies might enter an adjustment phase and outflows of overseas capital might deepen the adjustment warrant vigilance.

Japanese financial institutions' profits

Japanese banks' profits have been on an improving trend under the global financial environments reviewed above and the recovering domestic economic environment. Net income for fiscal 2009 improved for the first time in 4 years due to an improvement in realized gains/losses on securities and a decline in credit costs, ensuring positive net profits both at the major banks and regional banks (see Annex 3 for fiscal 2009 financial results of major financial sectors in Japan). Net income for the April-June quarter of 2010 also marked an increase, with year-on-year growth of 180 percent at the major banks and 27 percent at the regional banks (Chart 1-4-1). Realized gains on bonds increased as prices of government bonds rose, and credit costs continued to decline. Such developments were common at the major banks and the regional banks.

Chart 1-4-1: Net income of Japanese banks[1]



Note: *1*. Credit costs (losses on disposal of nonperforming loans) and expenses are on a non-consolidated basis. See Annex 2 for definitions on variables.
Source: Financial Quest.

It should be noted, however, that banks' core profitability has deteriorated continuously. As for the operating profits from core business at the major banks, whereas interest income from the international business increased reflecting a fall in funding costs of foreign currencies, interest income from the domestic business fell for 2 consecutive years. As a whole, the level of their operating profits from core business remained at around 70 percent of the recent peak in fiscal 2005. In addition, the operating profits from regional banks' core business declined for 4 consecutive years. Such lackluster core profitability resulted from the decrease in outstanding loans due to the sluggish loan demand, and the continuous narrowing in interest rate margins on loans partly because of severe competition for high-grade borrowers among banks.

II. Assessment of the financial intermediation function: Changes in the role of banks in credit markets

This chapter examines financial intermediation in Japan from the two perspectives of the amount of credit and the interest rate.

Financial institutions' amount of gross credit, which has decreased against a backdrop of firms' declining demand for external funds since fiscal 2009, appears to be approximately balanced with economic activity in light of the long-term trend. By type of intermediary, the share of banks' credit has continued to be high, and partly complements the credit provision previously made by nonbank financial institutions such as institutional investors. On the other hand, bank loan rates and issuing rates on corporate bonds have been declining extensively, and the accommodative funding environment has been maintained. As a collective, these factors indicate that Japan's financial system has continued to smoothly carry out the financial intermediation function as a whole mainly through banks' credit provision.

However, from the viewpoint of ensuring an ongoing smooth financial intermediation function, the following points warrant attention: (1) room for a further decline in loan rates has seemed to gradually become limited; (2) a decline in loan rates amid a continuous lowering of banks' loan quality could become a factor reducing banks' profits; and (3) given the larger share of banks' credit not only in the loan market but also in the other credit markets, if a new shock were to hit the banking sector, its effects would likely spread to the overall credit markets somewhat more directly. Moreover, while Japan's economy is searching for the transition to a new sustainable growth path, an increasing number of firms are likely to embark on new businesses. Japan's financial institutions are expected to appropriately provide such corporate sector with financial and information services (see Chapter IV.C and D).

A. Credit cycle and business cycle

Financial imbalances and amplified business cycle

The recent instability in the global financial system emerged during the process of the rapid unwinding of global credit expansion that began around 2003. One of the background factors behind a large-scale global financial crisis triggered by the Lehman shock was that excessive credit expansion compared to economic activity had continued for a relatively long period in the United States and Europe. To the extent that financial

imbalances had accumulated, the effects of their unwinding became grave. As a lesson from the financial crisis, there has been a growing recognition that the correction phase of the financial imbalances would considerably affect economic activity. Therefore, the monetary authorities around the globe have been considering measures to contain the procyclicality.[13]

Financial imbalances should be evaluated comprehensively based on various indicators. If focusing on the relationship between the credit cycle and the business cycle, then one such indicator to assess imbalances is the ratio of gross credit to GDP and its divergence from the long-term trend, namely, the credit ratio gap (see Box 2 for details on the expansion phases of financial imbalances in the United States and Japan, and the notes on the credit ratio gap).[14] If the ratio of credit to GDP does not significantly diverge upward from the long-term trend, this would be an indication that financial imbalances do not accumulate much. In what follows, recent developments are examined using this indicator.

Balance between gross credit and economic activity

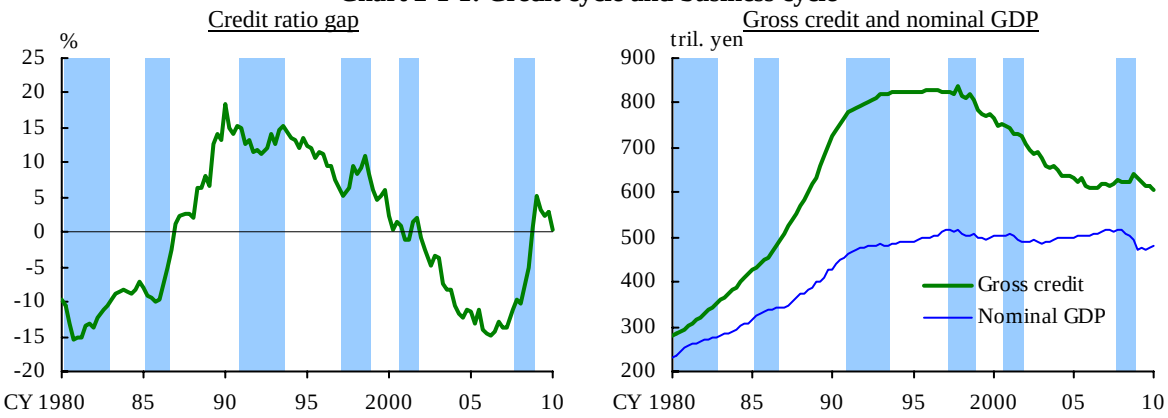
There are three distinct developments in Japan's financial intermediation since the economic downturn that started in November 2007.

First, the balance between gross credit (loans and bond investment) and economic activity changed substantially due to a plunge in economic activity in fiscal 2008 (Chart 2-1-1). In the recent economic downturn, economic activity contracted on an unprecedented scale. On the other hand, gross credit increased and underpinned firms' funding conditions. After the Lehman shock, Japan's economy was able to enter into an expansion phase within a relatively short period, and this was partly attributable to the fact that financial intermediation was functioning smoothly. Since entering an economic expansion phase in April 2009, the ratio of credit to GDP has been hovering around the long-term trend, and gives no indication that financial imbalances are accumulating, as

[13] See the previous *Report*.

[14] Following the method suggested by the Basel Committee on Banking Supervision (BCBS), the *Report* uses the divergence of the ratio of financial institutions' gross credit (loans and bond investment) to the nonfinancial sector (excluding the government sector) to nominal GDP from its long-term trend as an indicator of financial imbalances. The trend line is drawn using a common assumption (the HP filter with a smoothing parameter of 400,000). For more details, see BCBS, "Countercyclical capital buffer proposal," Bank for International Settlements, July 2010.

Chart 2-1-1: Credit cycle and business cycle[1]

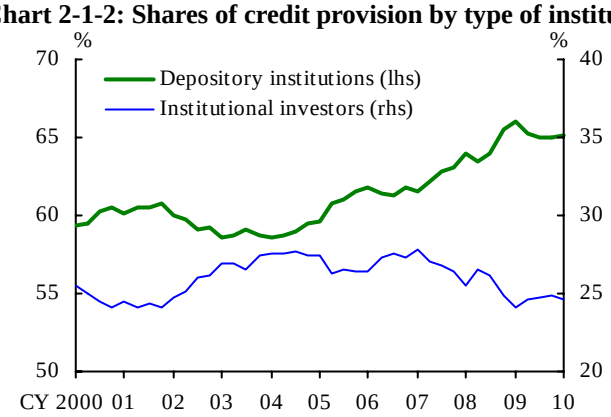


Note: *1.* Shaded areas indicate recession periods. See footnote 14 for details on calculations.
Sources: Cabinet Office, "National accounts"; BOJ, "Flow of funds accounts."

far as this indicator is concerned.[15] Looking at the development in the credit ratio gap in detail, the negative gap shrank in fiscal 2008 as gross credit increased amid stalling economic activity. Therefore, credit costs could increase if financial conditions of borrowing firms, especially small and medium-sized firms, do not improve sufficiently.

Second, banks have continued to hold an expanded share in the overall credit markets (Chart 2-1-2). After the Lehman shock, credit risk-taking by institutional investors such as investment trusts and life insurance companies receded and their share of credit contracted. Banks' credit provision offset the decline. Banks' share in the loan market reached about 70 percent at the peak in the beginning of 2009. In addition, in the corporate bond and CP markets, banks, particularly the regional banks, enlarged their

Chart 2-1-2: Shares of credit provision by type of institution[1]



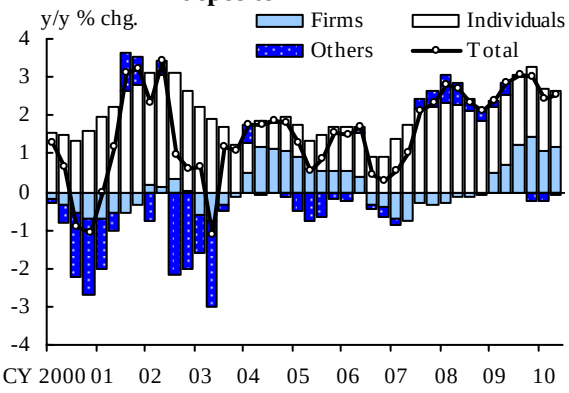
Note: *1.* Institutional investors include investment trusts, insurance companies, and securities firms.
Source: BOJ, "Flow of funds accounts."

[15] In the case of Japan, there is no significant difference in assessments of financial imbalances using the credit ratio gap and simply comparing gross credit and nominal GDP. In contrast, the above two assessments differ substantially in the recent U.S. case. See Box 2 for details.

share of credit. After the Lehman shock, banks' credit share increased by 4 percentage points in the corporate bond market and by 11 percentage points in the CP market. Recently, while funds from institutional investors such as life insurance companies have started to return to the short-term CP market, banks' credit share remains at a high level.

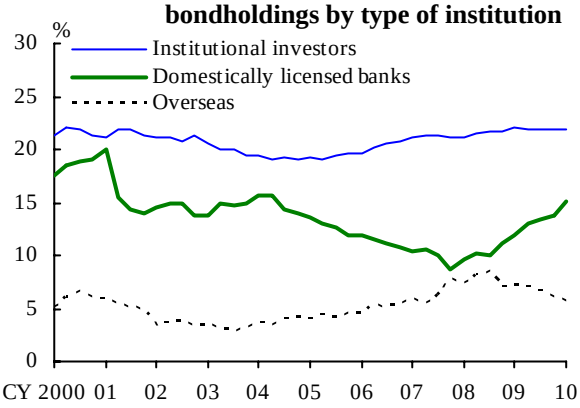
Such an increase in banks' credit share has been underpinned, on the funding front, by corporate deposits reflecting a cautious funding stance of firms, and by an increased inflow of households' deposits that have shifted in part from investment trusts (Chart 2-1-3). The increase in banks' credit share in each credit market means that banks have been partially complementing the credit risk-taking previously assumed by other financial institutions, and has contributed to maintaining the smooth financial intermediation function in the recent adjustment phase. On the flip side of the coin, since banks' credit share has increased in each credit market, it should be noted that if a new shock were to hit the banking sector, there might be a growing likelihood that the consequent effects could spread somewhat more directly to the overall credit markets, including not only the loan market but also the corporate and CP markets.

Chart 2-1-3: Outstanding deposits by type of depositor



Source: BOJ, "Amounts outstanding of deposits by depositor."

Chart 2-1-4: Shares of government bondholdings by type of institution



Source: BOJ, "Flow of funds accounts."

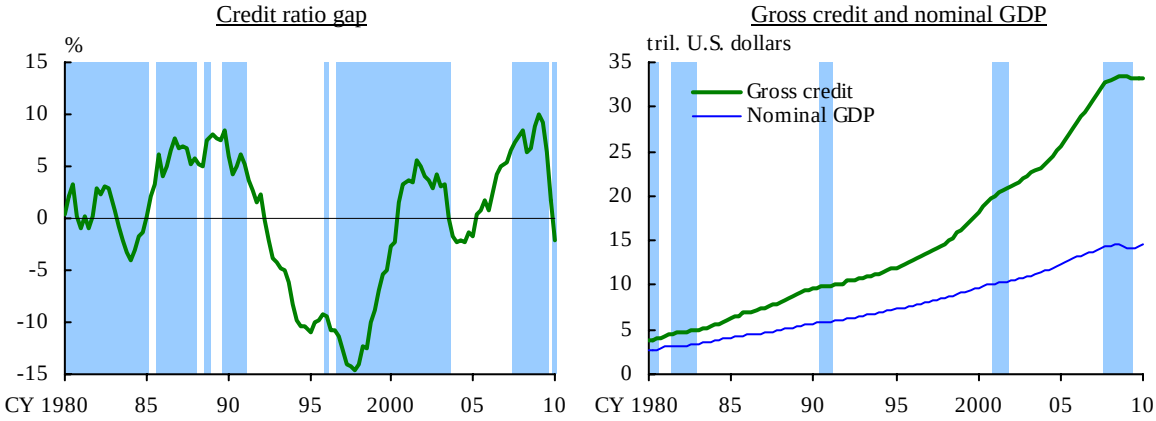
Third, credit to the government sector has increased. Since the Lehman shock, corporate and household sectors have restrained spending while the government sector has increased spending by increasing issuance of government bonds to finance it. The government bond market saw an inflow of funds from institutional investors that became cautious in credit risk-taking and from banks that faced an inflow of deposits (Chart 2-1-4). In the process, Japanese financial institutions' overall holdings of government bonds reached a record high, and thus interest rate risk has been accumulating in the private financial sector (see Chapter III.B for details on the interest rate risk associated with the holdings of government bonds).

Box 2: Credit ratio gap in the United States and Japan

The accumulation of the financial imbalance ahead of the financial crisis was observed in the 2000s for the United States as well as in the latter half of the 1980s for Japan. Below, the process of the accumulation and correction of the financial imbalances is reviewed based on the credit ratio gap, together with notes to bear in mind when using this indicator.

In the United States, the credit ratio gap began to expand in a positive direction in around 2003 (the left-hand side of Chart B2-1). Under an accommodative financial environment, housing prices rose along with an increase in residential investment. This boosted personal consumption through the wealth effect. The debts that households built up when expanding their expenditure were used as the underlying assets of securitized products. Such products were sold to global investors that searched for yields under a low interest rate environment. Financial institutions not only lent to and invested in hedge funds and their affiliated investment vehicles that held such securitized products but also expanded their own investments in those products.

Chart B2-1: Credit cycle and business cycle in the United States[1]



Note: *1.* Shaded areas in the left chart indicate high-volatility periods (see footnote 16). Those in the right chart indicate recession periods. See footnote 14 for details on calculations.
Sources: BEA, "National economic accounts"; FRB, "Flow of funds accounts of the United States."

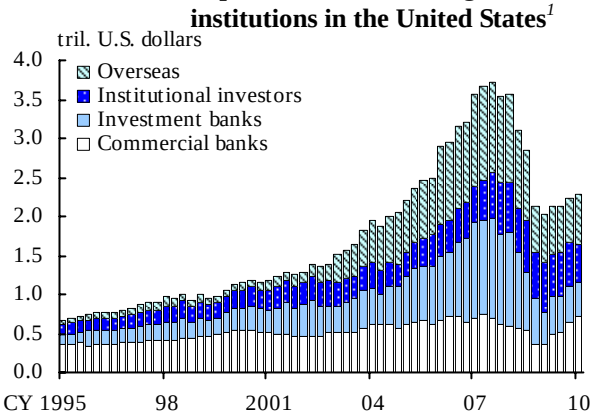
Such behavior by financial institutions was encouraged by the low-volatility environment both on the real economic and financial fronts. Under the benign economic and accommodative financial environments, the low-volatility period that started around the beginning of 2003 lowered future uncertainties and helped form bullish expectations for a prolonged period (the left-hand side of Chart B2-1).[16] Such bullish expectations,

[16] The shaded area on the left-hand side of Chart B2-1 represents the high-volatility period of the S&P 100 stock index. Here, three regimes of crisis, turmoil, and stability in the implied volatility

amid abundant liquidity on a global basis, induced economic agents to loosen their risk evaluation, leading to greater leverage, a larger degree of maturity mismatch between investment and funding, and higher asset prices. Consequently, assets whose risks were not appropriately evaluated accumulated on financial institutions' balance sheets.

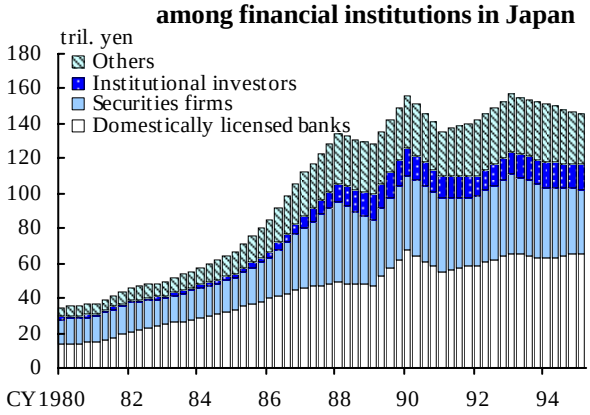
To maintain and expand their credit provision, financial institutions increased credit provision within the transaction network of financial institutions. With the rise of securitized products, a complex and long-chained transaction network was formed. This linked a wide range of financial institutions consisting of not only commercial banks but also investment banks and money market funds (MMFs), thereby expanding the market-based financial intermediation.[17] The transaction data within such a network suggest that noncommercial-bank financial institutions, typically investment banks, were the chief supporters of the expansion of the credit ratio gap (Chart B2-2).

Chart B2-2: Repo transactions among financial institutions in the United States[1]



Note: *1.* Absolute value of net positions.
Source: FRB, "Flow of funds accounts of the United States."

Chart B2-3: Call money and repo transactions among financial institutions in Japan



Source: BOJ, "Flow of funds accounts."

The market-based financial intermediation, coupled with the growing dependence on the credit rating, made excessively high leverage accumulate in the U.S. financial system. Once the asset prices fell sharply in the wake of the Lehman shock, however, MMFs, which were among the largest suppliers of funds, suffered a considerable cash outflow and repatriated their funds from the markets (see Box 5 in Chapter III for details on U.S. MMFs). As a consequence, financial institutions found it difficult to maintain their highly leveraged investment positions and were forced to unwind such

(VXO) are identified using the regime-switching model. The high-volatility period in the chart corresponds to the crisis and turmoil regimes.

[17] For details, see Adrian, Tobias and Hyun Song Shin, "The changing nature of financial intermediation and the financial crisis of 2007-09," Federal Reserve Bank of New York staff reports, No. 439, March 2010.

positions drastically. The credit extended by financial institutions other than commercial banks thus shrank more rapidly than in the expansion phase. On the other hand, a large number of commercial banks had to re-intermediate risk, through such forms as withdrawal of commitment lines by firms and provision of liquidity support to their investment vehicles. As a result, the credit ratio gap remained wide before it shrank rapidly from the beginning of 2009.

However, a simple comparison between gross credit and nominal GDP shows that the former still exceeds the latter to a large extent (the right-hand side of Chart B2-1). This is in sharp contrast to the observation that the credit ratio gap returned to a relatively small range close to the past trend. In the U.S. case, the credit ratio gap alone may not be able to appropriately assess the accumulation of financial imbalances.

In the latter half of the 1980s, Japan's credit ratio gap widened in a positive direction (Chart 2-1-1). The real estate transactions for a speculative purpose increased substantially with the surge in land prices. Banks, through the bank-based financial intermediation, not only increased their real estate collateralized loans but also expanded their loans to nonbanks that financed the real estate business. In Japan, unlike the recent U.S. case, loan trading, the securitization market, and the repo market were underdeveloped and the transactions within broadly defined financial institutions including nonbanks were not that active in the money market (Chart B2-3).

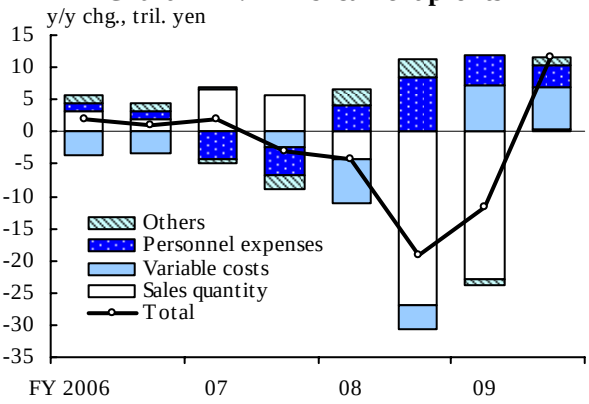
In Japan, credit unwinding did not proceed promptly and the credit ratio gap remained wide for a long period even after the bubble economy had collapsed. This was attributed to the fact that Japan's banks, with their unrealized profits on securities holdings, were able to afford to take time to await their borrowers' financial improvement, and had extended additional loans to ailing firms under the nonfinancial sector's high dependence on the bank-based financial intermediation.

B. Firms' sluggish demand for funds

Improvement in firms' cash flows

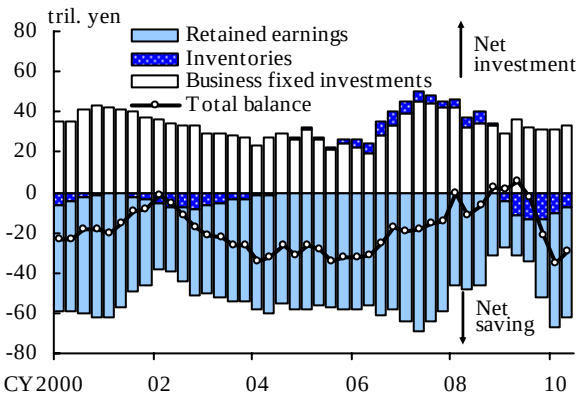
Japan's economy has been recovering moderately, and corporate profits have also been improving (Chart 2-2-1). Firms, regardless of size and industry, have been striving to improve their profitability by lowering their break-even points through reducing costs. Moreover, manufacturers' sales have clearly picked up, supported by recovery in exports

Chart 2-2-1: Firms' current profits



Source: Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly."

Chart 2-2-2: Investment-saving balance of firms



Source: Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly."

to Asian countries. Firms' cash flows, which plunged immediately after the Lehman shock, have been improving as a whole, albeit with some variations depending on the size and the industry.

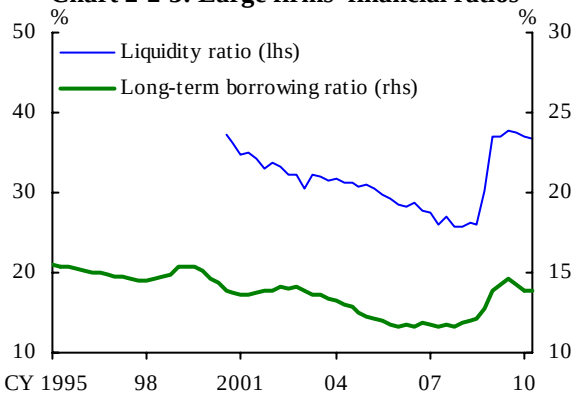
In the meantime, excess production capacity remains, although it has been perceived as declining. Under such a circumstance, firms have preferred accumulating retained earnings to making new business fixed investment (Chart 2-2-2). Firms' investment-saving balance has been at record-high excess saving, which makes it unlikely that firms will increase their demand for external funds in the near future (see Box 3 for the current assessment on firms' demand for external funds viewed from firms' debt ratio).

Firms' cautious funding

As for firms' funding, since the outbreak of the financial crisis, large firms in particular have accumulated and are maintaining a high level of on-hand liquidity, including cash and deposits, relative to sales (Chart 2-2-3). The outstanding balance of long-term borrowing has also remained high relative to that of total assets, at a level almost equivalent to that seen during the financial crisis at the end of the 1990s.

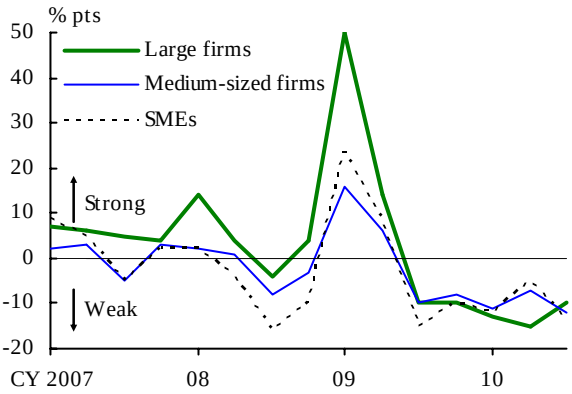
Such a cautious funding stance by firms stems from the fact that, immediately after the Lehman shock, firms temporarily increased their borrowing demand as their cash flow rapidly decreased and funding conditions became unstable. Firms endeavored to strengthen their resilience against a rapid change in the funding environment by increasing longer-term borrowing. Thereafter, as corporate profits improved and firms' funding conditions stabilized, their borrowing demand has been declining. In the case of large and medium-sized firms, the improvement of issuance conditions in the corporate

Chart 2-2-3: Large firms' financial ratios[1]



Note: *1*. See Annex 2 for definitions of variables.
Source: Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly."

Chart 2-2-4: DI for demand for loans[1]

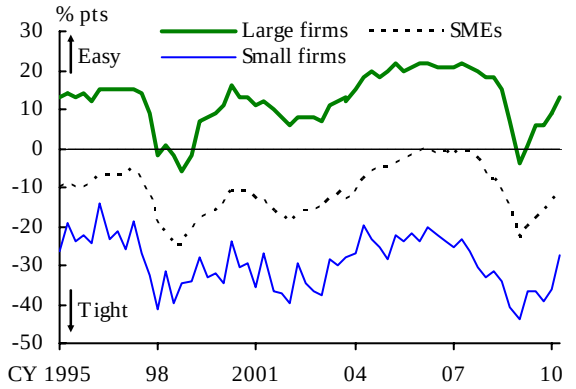


Note: *1*. SMEs stand for small and medium-sized firms.
Source: BOJ, "Senior loan officer opinion survey on bank lending practices at large Japanese banks."

bond and CP markets has also contributed to the decline in borrowing demand (Chart 2-2-4).

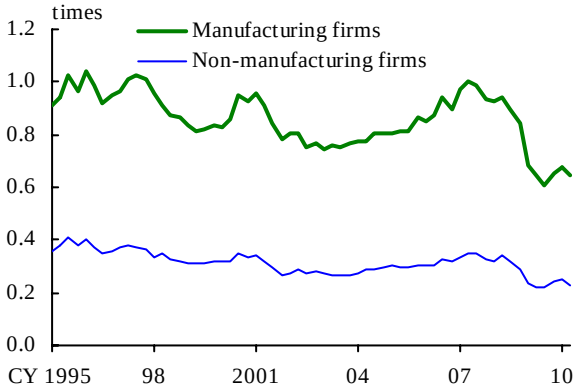
However, firms' funding conditions continue to vary (Chart 2-2-5). As for smaller firms, while funding conditions have been perceived as continuously improving, a relatively large number of firms still judge that conditions have remained tight. In the meantime, given that credit management of business-to-business credit has remained tight, the ratio of business-to-business credit to the amount of sales has remained at a low level compared with that prior to the financial crisis (Chart 2-2-6).

Chart 2-2-5: DI for financial positions[1]



Note: *1*. SMEs stand for small and medium-sized firms.
Sources: Japan Finance Corporation, "Quarterly survey of small businesses in Japan"; BOJ, *Tankan*.

Chart 2-2-6: Business-to-business credit[1]



Note: *1*. Ratios to sales.
Source: Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly."

Box 3: Firms' choice between debt and equity

Toward the end of fiscal 2008, when the financial crisis hit Japan's economy the hardest, the ratio of debt to assets (the debt ratio) rose for Japan's firms listed on the first section of the Tokyo Stock Exchange, reaching a level above that attained during the financial crisis of the late 1990s. The debt ratio remains relatively high even quite recently.

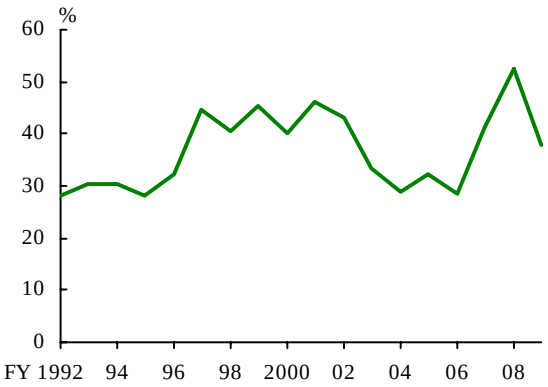
In anticipating firms' demand for funds down the road, it is useful to assess how the current level of the debt ratio should be evaluated from firms' perspective. This issue has been discussed as a choice of optimal capital structure in economics. The Modigliani-Miller theorem states that under the assumption of market completeness the choice of financing methods between debt and equity does not affect the value of a firm and thus is indifferent for the firm. Once market incompleteness such as bankruptcy costs or taxes is taken into consideration, however, the choice of financing methods does affect the firm's value. This enables the firm to pin down its optimal combination of debt and equity (the optimal debt ratio).

In theory, the optimal debt ratio is determined based on a trade-off between marginal costs and benefits from debt financing; namely, costs from increased financial risk premiums through a reduction of the firm's residual value at the time of bankruptcy and benefits from reduced fund-raising costs through corporate tax saving. Other factors may also influence the optimal debt ratio (theoretical debt ratio), including (1) the firms' possible incentive to increase debt financing in preparation for a liquidity shortage caused by decreased retained earnings and (2) the firm's possible increased preference of debt to equity when uncertainty about the equity value of the firm increases, leading to a higher cost for equity financing due to a higher degree of information asymmetry amid increased precautionary demand for liquidity.

Each firm is supposed to rebalance the weight between debt and equity, as well as adjust its asset size to bring the actual debt ratio closer to the theoretical ratio. The estimation result shows that the theoretical debt ratio started to drop at the beginning of the 2000s, with an upturn in the profit-earning ratio chiefly resulting from the firms' restructuring efforts, but then rose sharply after fiscal 2007 (Chart B3-1).[18] This sharp rise in the

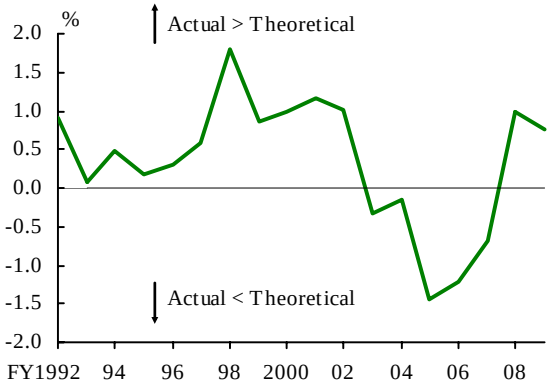
[18] The partial adjustment model of debt ratio is estimated for firms listed on the first section of Tokyo Stock Exchange since fiscal 1992 using the dynamic generalized method of moments. The explanatory variables include debt cost, profit-earnings ratio, volatility of stock prices, firm size, fixed asset ratio, and market-to-book ratio. The 1 and 2-year lags of explanatory variables are used as instrument variables. For details on the model, see Nishioka, Shinichi and Naohiko Baba, "Dynamic capital structure of Japanese firms: How far has the reduction of excess leverage progressed in Japan," Bank of Japan working paper series, No.2004-E-16, November 2004.

Chart B3-1: Firms' theoretical debt ratio[1]



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

Chart B3-2: Firms' debt ratio gap[1]



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

theoretical debt ratio reflects an increase in deficit-covering or precautionary demand for debt induced by reduced retained earnings proxied by a drop in the profit-earning ratio, as well as growing uncertainties against the backdrop of the deteriorating global financial system. Toward the end of fiscal 2009, the theoretical debt ratio reversed its course downward, reflecting the improved profit-earning ratio and subdued uncertainty about the firms' equity value.

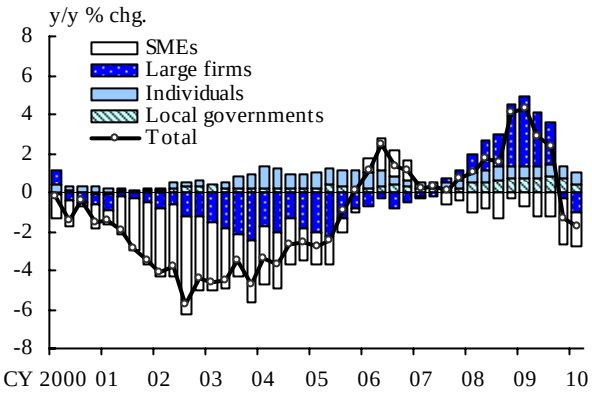
However, the debt ratio gap defined as the differential between the actual and theoretical debt ratio still remains wide in positive territory (Chart B3-2). Although Japan's firms started reducing their borrowing, the pace of the actual reduction is still moderate compared with the pace of decrease in the theoretical debt ratio. Under such circumstances, listed firms are likely to put priority on reducing the amount of debt into the near future, all else being equal, and thus demand for debt financing such as borrowing is unlikely to expand.

C. Financial intermediation amid declining fund demand

Declining bank loan rates

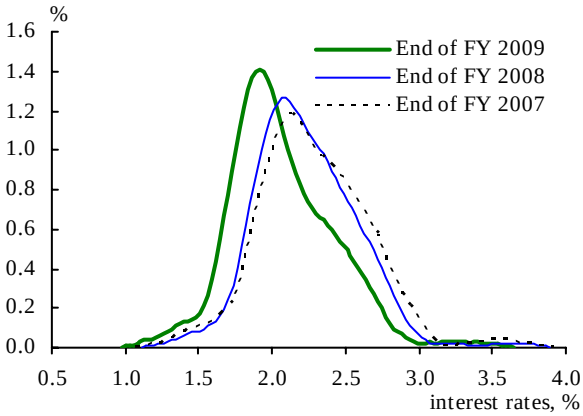
As firms have secured ample on-hand liquidity and remained cautious about business fixed investment, their external funding, especially bank borrowing, has been declining. By borrower type, loans to small and medium-sized firms have registered negative growth on a year-on-year basis, and the pace of decline in loans to large firms has accelerated (Chart 2-3-1). An assessment of the financial intermediation in such a situation requires examining both the loan amount and interest rates.

Chart 2-3-1: Bank loans outstanding[1,2]



Notes: *1*. SMEs stand for small and medium-sized firms.
2. Individuals include house and room lessors.
Source: BOJ, "Loans and discounts outstanding by sector."

Chart 2-3-2: Distribution of average loan rates[1]



Note: *1*. The vertical axis indicates share of banks by average interest rate on loans.

Since the outbreak of the Lehman shock, the declining trend of bank loan rates has become increasingly evident. Under the accommodative financial environment, loan base rates such as Tibor have been gradually declining, and the loan spread has also been narrowing due to firms' improved profitability and decreased borrowing demand. Another noteworthy point is that banks, to support borrowers' funding, have been containing the widening of loan spreads by revising the loan terms and using public guarantees, among other measures.

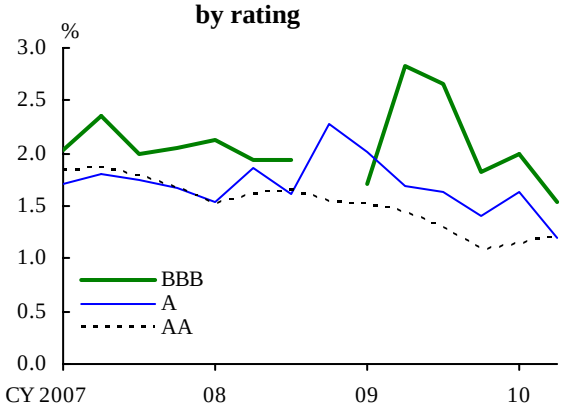
The distribution of average loan rates by bank also shows a marked declining trend in such rates. The distribution of loan rates centered on 2.1 percent at the end of fiscal 2008 and shifted to one centering on 1.9 percent at the end of fiscal 2009 (Chart 2-3-2). From the end of fiscal 2007 through the end of fiscal 2008, the decline in loan rates was limited due to increased borrowing demand driven by the financial crisis. The substantial downward shift in the loan-rate distribution toward the end of fiscal 2009 is consistent with a decline in firms' borrowing demand due to improvement in their cash flow. As a collective, these factors indicate that banks' financial intermediation function seems to have been working smoothly.

However, it should be noted that the decline in loan rates has been taking place while bank loans' quality has been declining (see Chapter III.A for the quality of bank loans and Chapter III.D for its future effects on the financial intermediation function). Moreover, the loan rates at the end of fiscal 2009 became more vertically-distributed to the left and more sharpened. Such changes in the shape of distribution might suggest that room for a further decline in future loan rates has gradually become limited.

In financial markets such as the corporate bond and CP markets, as in the loan market, the declining trend in issuing rates has become marked. In the corporate bond market,

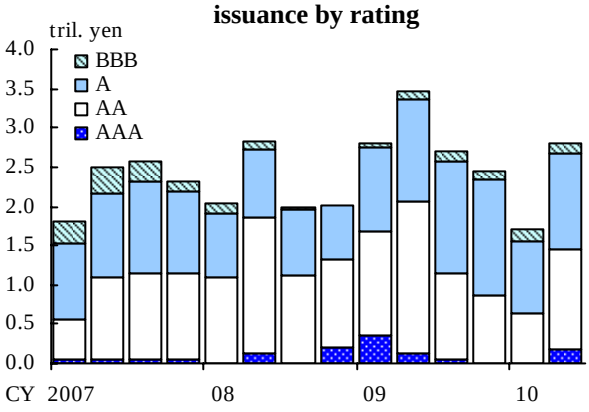
issuing rates have recently been declining across all ratings and maturities (Chart 2-3-3). Although the spreads temporarily widened mainly in the U.S. and European credit markets, influenced by the surfacing of the European sovereign debt problems, issuing conditions in Japan have generally been stable except in May 2010, when some firms decided to temporarily defer issuance (Chart 2-3-4).

Chart 2-3-3: Issuing rates of corporate bonds by rating



Source: Japan Securities Dealers Association, "Issuance of bonds' list."

Chart 2-3-4: Amount of corporate bonds issuance by rating



Source: Japan Securities Dealers Association, "Issuance of bonds' list."

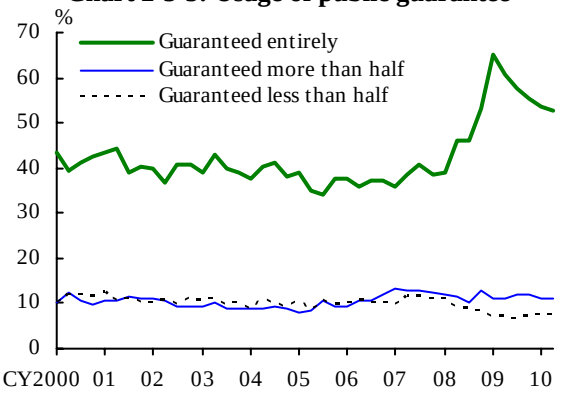
Bank loans to small and medium-sized firms and public guarantee

Compared with larger firms, small and medium-sized firms' improvement in cash flow has been somewhat delayed, and not a few such firms still state that their funding conditions are tight. However, partly because financial institutions have been actively accepting the revision of loan terms, small and medium-sized firms' funding conditions as a whole have been in the direction of easing (Chart 2-2-5).[19]

The number of applications for public guarantee reached a peak of more than 200,000 per month at the end of 2008, but since entering 2010 it has been below 100,000 per month except for the final month of every quarter, when settlements concentrate. In addition, loans to small and medium-sized firms with full public guarantee reached nearly 70 percent of total loans toward the end of fiscal 2008, but recently declined to some 50 percent (Chart 2-3-5). As a result, the growth of outstanding balance of loans with public guarantee has shown a marked slowdown (Chart 2-3-6). Moreover, the growth rate of loans outstanding to firms by public financial institutions has been slowing somewhat.

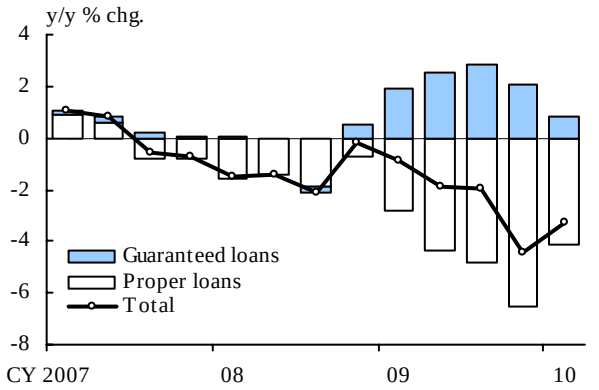
[19] Under the "Act concerning temporary measures to facilitate financing for small and medium-sized enterprises (SMEs), etc.," financial institutions are encouraged to revise upon request the terms of SME loans and mortgages as much as possible. By the end of fiscal 2009, 80 percent of the requests from the SMEs to revise loan terms had been accepted.

Chart 2-3-5: Usage of public guarantee[1]



Note: *1*. Percentage of small and medium-sized firms' borrowing with public guarantee in each quarter.
Source: Japan Finance Corporation, "Surveys of financial trends among SMEs subject to guarantees."

Chart 2-3-6: Loans to small and medium-sized firms[1]

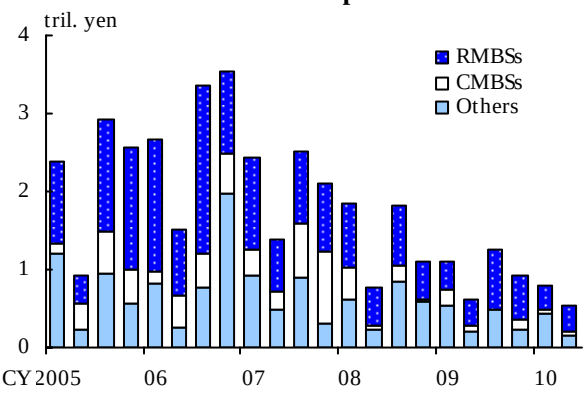


Note: *1*. Loans outstanding of city banks, regional banks, and *shinkin* banks.
Sources: National Federation of Credit Guarantee Corporations; BOJ, "Loans and discounts outstanding by sector."

Real estate finance

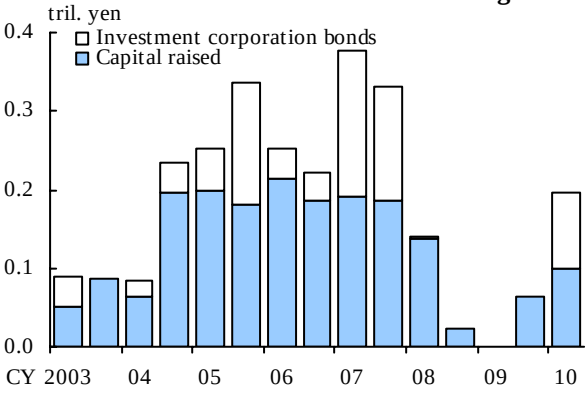
In the area of real estate finance, issuing conditions for securitized products backed by real estate-related loans have continued to be tight. In particular, issuance of residential mortgage-backed securities, which are traded mainly by the major banks, and commercial mortgage-backed securities, which are traded mainly by foreign financial institutions, have remained sluggish (Chart 2-3-7).

Chart 2-3-7: Securitized products issuance



Source: Deutsche Securities, "Securitization."

Chart 2-3-8: REITs' market funding



Source: Mizuho Securities.

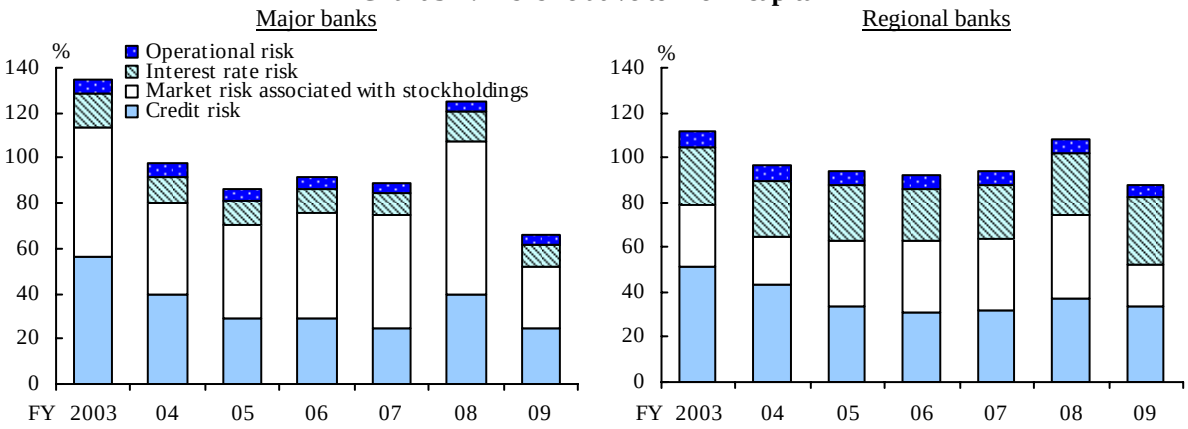
By contrast, there have been signs of improvement in funding conditions of real estate investment trusts (REITs). Following the Lehman shock, foreign financial institutions, which had been the major fund providers to the REITs, withdrew the funds and thus the funding conditions of the REITs deteriorated. Moreover, since one of the listed REITs went bankrupt in October 2008 while maintaining an investment grade rating, concern over the funding conditions of REITs heightened further. However, as a public-private

real estate market stabilization fund was established to support REITs' funding in September 2009, and declining prices have made real estate more affordable, concern over the REITs has recently been on the wane. Under these circumstances, public stock offerings by REITs and issuance of investment corporation bonds resumed in November 2009 and January 2010, respectively (Chart 2-3-8).

III. Robustness of the financial system: Strengthening the capital base and accumulating risks

Japan's financial system has enhanced its robustness. Banks' capital bases have been reinforced through measures such as capital increases since fiscal 2009. Japanese banks' amount of various risks relative to Tier I capital decreased in fiscal 2009 to levels seen prior to the Lehman shock both at the major banks and the regional banks (Chart 3-1).[20] Since entering 2010, the banks' credit costs have continued to be contained due to improvement in firms' business performance as well as policy effects of, for example, the "Act concerning temporary measures to facilitate financing for small and medium-sized enterprises, etc." Furthermore, market risk associated with stockholdings has been reduced along with the progressive reduction of stockholdings by many Japan's banks. Even since the surfacing of the European sovereign debt problems, funding liquidity risk has been restrained at a low level both in yen and foreign currency.

Chart 3-1: Risks relative to Tier I capital[1]



Note: *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. Operational risk: 15 percent of gross profits.

Nevertheless, the financial system still has some points that warrant vigilance. First, the financial standing of not a few non-manufacturing firms and small and medium-sized firms has been relatively weak. The loan quality of banks, especially those whose business transactions center on those with such firms, has been declining. Thus, if a new shock were to occur while core profitability remains unimproved, credit costs that are large compared with their profits could arise. Second, many financial institutions have been increasing their holdings of government bonds and thus interest rate risk has been

[20] The capital ratio described in this chapter is based on the capital requirements as of September 2010.

accumulating further in the private financial sector. Third, market risk associated with stockholdings still occupies a large share of overall risks, especially at the major banks.

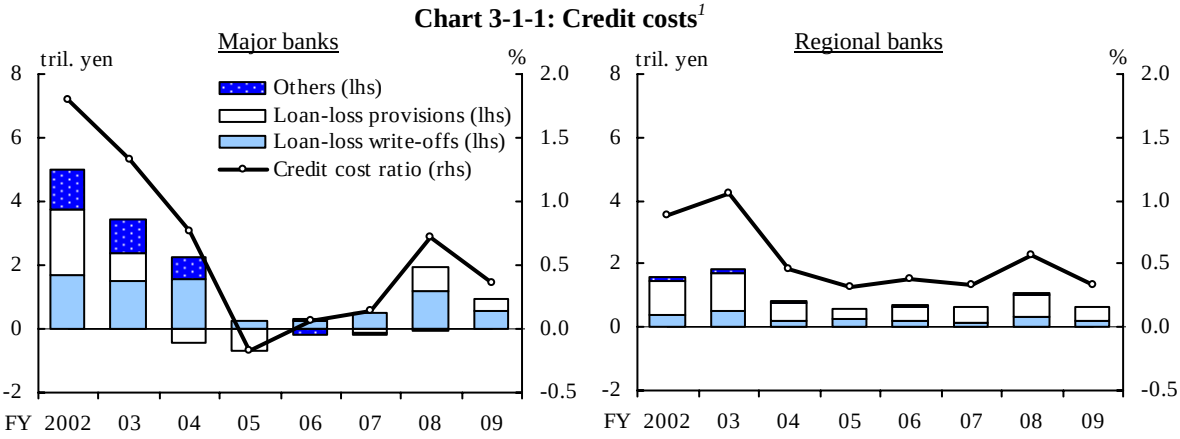
In what follows, after examining the current state of various risks, the *Report* uses scenario analysis to assess, in the event of a new shock occurring, the robustness of Japan's financial system and the shock's possible future effects on the financial intermediation function.

The scenario analysis in this chapter does not aim to project the future of the financial system. Rather, it aims to clarify the risk characteristics banks would face and assess the robustness of the financial system. Since the estimates are based on assumptions and some elements are not considered in the analysis, the results should be viewed accordingly.

A. Accumulating credit risk amid declining credit costs

The credit cost ratio for the major banks and the regional banks in fiscal 2009 declined from the previous fiscal year due mainly to a drop in write-offs and provisions for loan losses (Chart 3-1-1). By sector, the credit cost ratio declined from the previous fiscal year in both the domestic business sector and the international business sector.

Chart 3-1-1: Credit costs[1]

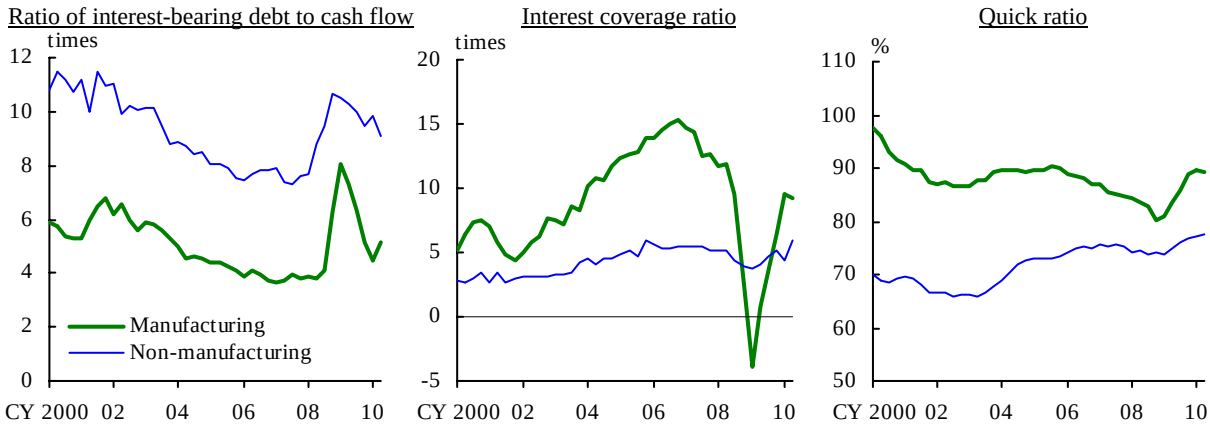


Note: *1.* See Annex 2 for definitions on variables.

Improvement in firms' financial conditions

As a background to the decline in credit costs, there is improvement in firms' debt servicing capacity that is attributable to recovery in corporate profits, mainly of large manufacturing firms (Chart 3-1-2). On the back of improved cash flow, the amount of interest-bearing debt relative to cash flow has been on a decreasing trend. The interest

Chart 3-1-2: Firms' debt servicing capacity[1]

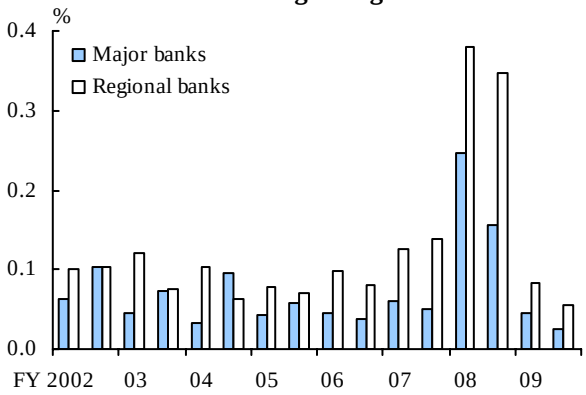


Note: *1.* See Annex 2 for definitions on variables.
Source: Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly."

coverage ratio (ICR), which represents interest payment capacity relative to profits, has further improved for the manufacturing sector, and profits now stably exceed interest payment. The quick ratio -- quick assets relative to short-term debt -- which shows short-term debt servicing capacity, has further improved as firms preferred long-term borrowing while reducing short-term borrowing with a view to stabilizing their funding conditions. Compared with the past 10 years, the quick ratio has recently been at a relatively high level.

In the meantime, the number of bankruptcies has been declining in many business sectors. In particular, bankruptcies due to funding difficulties, which surged in fiscal 2008, have decreased rapidly since the start of fiscal 2009. Reflecting such calmness on the bankruptcy front, firms' downward transition in banks' self-assessment of firms' creditworthiness from "normal" to "bankrupt/de facto bankrupt" -- namely, a sudden default with a downgrade by three notches or more -- fell in fiscal 2009 below the previous average on a value basis (Chart 3-1-3).

Chart 3-1-3: Credit downgrading from "normal"[1]



Note: *1.* Ratios of loans downgrading from "normal" at the end of the previous period to "de facto bankrupt" or lower at the end of the current period (on a value basis).

Accumulating credit risk

However, it should be noted that banks' loan quality has been declining, and banks are prone to incur relatively large credit costs when a new shock occurs. While firms' financial indicators have been in the direction of easing as a whole, some non-manufacturing firms and small and medium-sized firms have generally been facing weak financial conditions. Such a situation is reflected in a decline in the "normal" loan ratio and an increase in the "need attention" loan ratio (Chart 3-1-4).

Chart 3-1-4: Loans outstanding by borrower classification

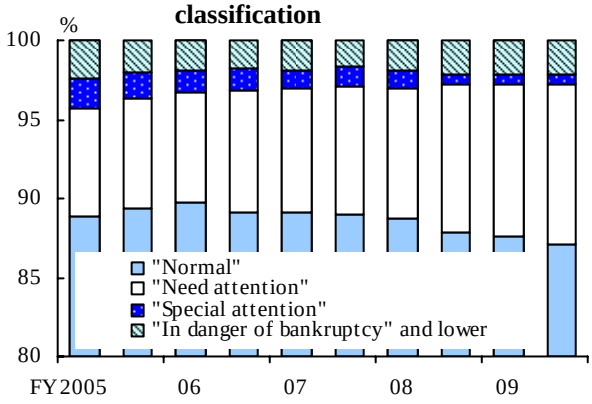
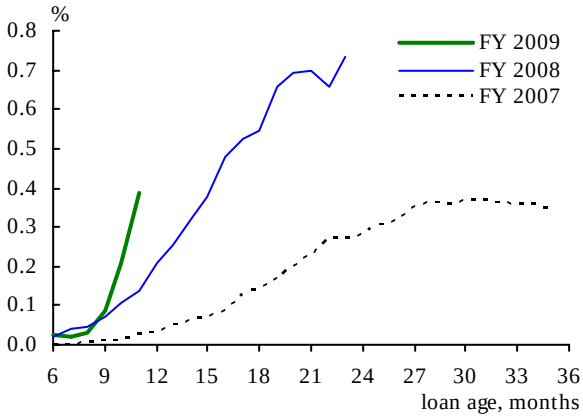


Chart 3-1-5: Default rates on mortgages[1,2]



Notes: *1.* Defaults are defined as loans delinquent for 6 months or more including those made so by restructuring (in terms of cases). Mortgages purchased by the Japan Housing Finance Agency are counted by vintage year.
2. 12-month moving averages of annualized rates.
Source: Japan Housing Finance Agency, "Published accounts."

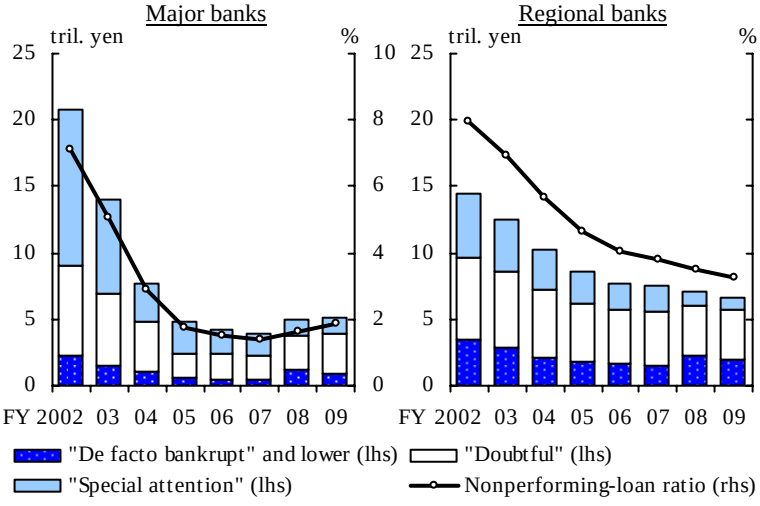
The decline in banks' loan quality appears to be inconsistent with the decline in credit costs from fiscal 2009. One reason for this could be that the relaxation of the requirements for restructured loans implemented from fiscal 2008 might have contained figures for credit costs. This relaxation expanded the range of loans that would not be classified as "special attention," i.e., part of nonperforming loans (NPLs).[21] For example, the default rate on mortgage loans purchased by the Japan Housing Finance Agency has recently been surging (Chart 3-1-5). The pace of increase in the default rate on mortgage loans made in fiscal 2009 has been significantly outpacing that in fiscal 2008, a year that marked an unprecedented increase. Those defaults are defined as loans

[21] Restructured loans are not treated as loans requiring "special attention" if borrowing firms have reasonable and feasible fundamental reconstruction programs. The Financial Services Agency relaxed such requirements for restructured loans in November 2008. Furthermore, in December 2009 the requirements for restructured loans to borrowers that satisfied certain conditions were relaxed. As a result, such loans are not treated as loans requiring "special attention" for the first year of borrowing.

delinquent for 6 months or more including those made so by restructuring. It became difficult to reflect such loans in the credit costs on the financial statements even though the loan quality had actually been declining.

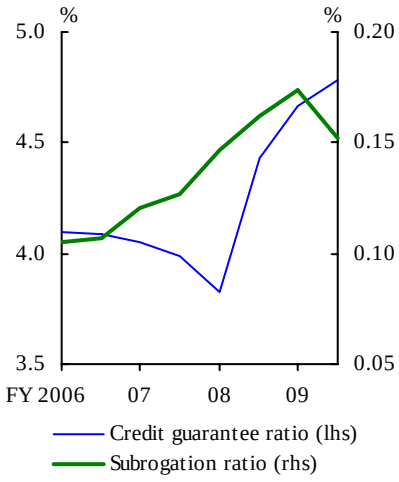
In the meantime, the NPL ratio has been stable, with the ratio of the regional banks declining for 8 consecutive years since fiscal 2002 and the ratio of the major banks increasing only slightly since fiscal 2008 (Chart 3-1-6). It should be noted, however, that the seemingly stable NPL ratio was partly attributable to the effects of the aforementioned relaxation of the requirements for restructured loans.

Chart 3-1-6: Nonperforming-loan ratios[1]



Note: *1.* Nonperforming-loan ratio is the ratio of the amount of nonperforming loans to total loans outstanding.

Chart 3-1-7: Credit guarantee corporations' guarantee and subrogation[1]



Note: *1.* Ratios to loans outstanding.
Sources: National Federation of Credit Guarantee Corporations; BOJ.

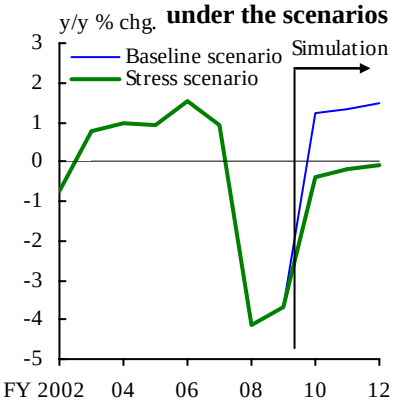
In addition, the ratio of the credit guarantee corporations' guarantee to bank loans outstanding has been high (Chart 3-1-7). While the ratio of the credit guarantee corporations' subrogation to bank loans outstanding has recently leveled off, it remains high. This suggests that a certain portion of credit risk associated with small and medium-sized firms has been transferred outside the banking system via public guarantee.

Effects of macroeconomic shocks on credit costs

In what follows, credit costs under two macroeconomic scenarios are estimated based on banks' loan portfolios (excluding personal loans) as of the end of fiscal 2009. The baseline scenario assumes that the future nominal GDP grows at 1.0-1.5 percent per annum in line with private forecasts and converges to the past average level over time.

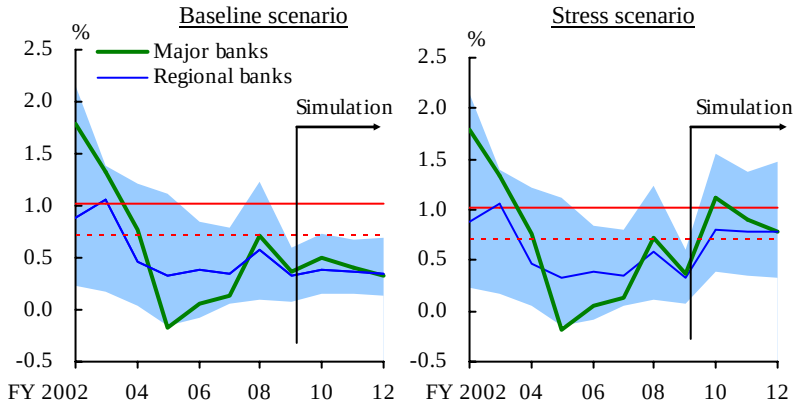
The stress scenario of shocks to the economy and stock prices assumes a simultaneous negative shock, which occurs with a probability of 5 percent -- that is, a frequency of once in 5 years on a quarterly basis -- to the economy and stock prices, respectively (see Annex 4 for the scenario analysis framework of shocks to the economy and stock prices). The stress scenario consists of the following three responses to the initial shock: an economic downturn, a fall in stock prices, and a decline in long-term loan rates.[22] Of these, the negative growth rate of nominal GDP, accompanied by firms' deteriorated financial indicators such as the ICR and the quick ratio, is assumed to contribute to an increase in credit costs (Chart 3-1-8).

Chart 3-1-8: Nominal GDP growth under the scenarios



Sources: Economic Planning Association, "ESP forecasts"; Cabinet Office, "National accounts."

Chart 3-1-9: Credit cost ratios[1]



Note: *1.* Shaded areas indicate 10-90th percentile range. The horizontal lines indicate the break-even points of the major banks (solid line) and the regional banks (dashed line) at fiscal 2009.

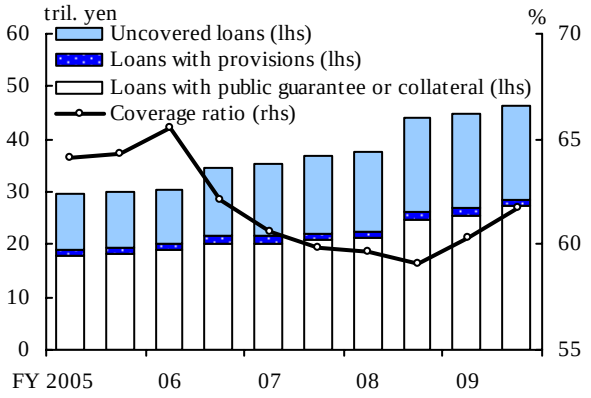
Under the stress scenario, the estimated credit cost ratio for the major banks would rise in fiscal 2010 slightly above their break-even point measured by operating profits from core business and would be below the break-even point in fiscal 2011 onward (Chart 3-1-9).[23] As for the regional banks, the increase in the estimated credit cost ratio would be contained at a slightly higher level than their break-even point. This is to a large extent attributable to the improvement in large firms' financial conditions in the past

[22] The stress scenario was set by taking the following steps: (1) estimate the vector autoregression model with five variables -- the real effective exchange rate, real GDP, GDP deflator, average contracted interest rate on long-term loans, and TOPIX -- for the period from the April-June quarter of 1983 through the January-March quarter of 2010 (Cholesky decomposition is made in this order); (2) add a negative shock that takes place with a 5 percent probability to the quarterly data of real GDP and TOPIX; and (3) calculate the future paths of the five variables under this negative shock.

[23] In the previous issues of this *Report*, the sample period for estimating the credit cost model started in fiscal 2002. This period includes fiscal 2002 and 2003, when the disposal of nonperforming assets accelerated, and thus the estimated credit cost ratio tended to become high. To avoid such a bias, this *Report* shortened the sample period. Since the panel dataset is used, the degree of freedom in estimation is secured even with the shortened sample period. For details on the credit cost model, see the September 2009 issue of the *Report*.

half year. The effects of the global demand shock in the autumn of 2008 spread rapidly to subcontractors and non-manufacturing firms through large manufacturing firms' adjustments in production and inventory. Such effects have recently been waning amid moderate economic recovery. Banks, including the regional banks, have been making efforts to strengthen their resilience in a stress phase by, for example, raising the loan coverage ratio -- the proportion of protection by provisioning and other measures -- through utilizing provisions and public guarantee (Chart 3-1-10).

Chart 3-1-10: Coverage ratios of loans classified in "need attention"[1]



Note: *1.* Coverage ratio is the ratio of loans outstanding with public guarantee, collateral or provisions to the loans outstanding classified in "need attention."

However, compared with the past stress phases, the credit cost ratio under the stress scenario would exceed the level at the time of the Lehman shock in fiscal 2008 when write-offs for loans mounted both at the major banks and the regional banks. This is attributable to the fact that the activity level of Japan's economy has been in the midst of recovery from the significantly lowered level. The quality of banks' loans has still been declining, and thus banks could incur larger credit costs if a negative shock were to materialize.

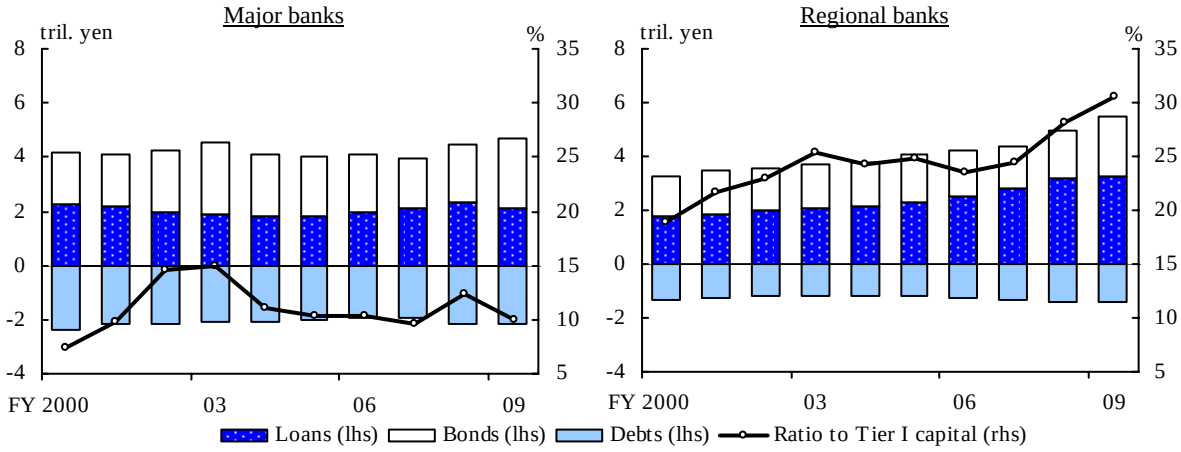
The credit cost ratio under the baseline scenario would remain almost unchanged in fiscal 2010 onward. A series of relaxations of the requirements for restructured loans have made it difficult to reflect credit costs associated with the relaxed requirements in the financial statements. However, since this *Report*'s scenario analysis does not take into account such institutional factors, part of such potential credit costs is likely to materialize as estimated credit costs.

Each individual bank is expected to pursue proper credit risk management by enhancing the effectiveness of measures taken toward corporate rehabilitation, as well as examining loan-loss provisions that are based more accurately on the reality of firms' financial conditions, among other measures.

B. Accumulating interest rate risk and remaining market risk associated with stockholdings

The major banks and the regional banks have been further accumulating interest rate risk since fiscal 2009 (Chart 3-2-1). The 100 basis point value of interest rate risk, calculated under the assumption that interest rates rise simultaneously by 1 percentage point for all maturities, rose in fiscal 2009 by slightly less than 250 billion yen at the major banks and about 500 billion yen at the regional banks, respectively. However, in terms of the ratio of interest rate risk to Tier I capital, a marked contrast is found between the major banks and the regional banks. At the major banks, which rapidly strengthened their capital bases, the ratio of interest rate risk to Tier I capital was contained around the average level seen in the past 10 years. On the other hand, at the regional banks, the ratio further increased to exceed 30 percent relative to Tier I capital.

Chart 3-2-1: Interest rate risk (100 basis point value)



As for the market risk associated with stockholdings, many Japan's banks have been reducing stockholdings. However, mainly for the major banks whose stockholdings are relatively large, such risk could still contribute to an impairment of their capital through unrealized losses from stockholdings (Chart 3-1).

Interest rate risk-taking through government bond investment

A wide range of Japan's private financial institutions have increased their holdings of government bonds. At present, banks' holdings of government bonds add up to more than 100 trillion yen, followed by life insurance companies. The increase in interest rate risk of life insurance companies is mainly attributable to their incentive to reduce the duration mismatch between assets and liabilities (see Box 4 for details). By contrast, banks' increase in bond investment, particularly in government bonds, has resulted from

the circumstances faced by banks in which deposits have been flowing while lending has been declining. Banks' outstanding balance of government bonds as of end-fiscal 2009 marked a record high, substantially exceeding that during the quantitative easing policy.[24]

At present, the interest rate risk associated with the major banks' total assets including loans has increased slightly, with an increase in risk on bondholdings partly offset by a slight decrease in risk on loans. On the other hand, the total interest rate risk of the regional banks has increased due to an increase in risk on bondholdings amid an almost unchanged risk on loans.

A stark contrast can be found in the maturity of bonds between the major banks and the regional banks. The major banks, which are relatively cautious about interest rate risk-taking, have shortened their average maturity of bondholdings to about 2 years by increasing investment in short- to medium-term bonds (Chart 3-2-2). On the other hand, the regional banks further increased their investment in bonds with maturities longer than 5 years, and the average maturity of their bondholdings has lengthened to more than 3.5 years. The grid point sensitivity (GPS) of interest rate risk associated with bondholdings, under the assumption that each maturity rises independently by 1 percentage point, increased both at the major banks and the regional banks in fiscal 2009 (Chart 3-2-3). Most of the incremental risk was in the range of 3 years or less at the major banks, while it was in the longer-term range at the regional banks.

Chart 3-2-2: Average maturity and maturity mismatch

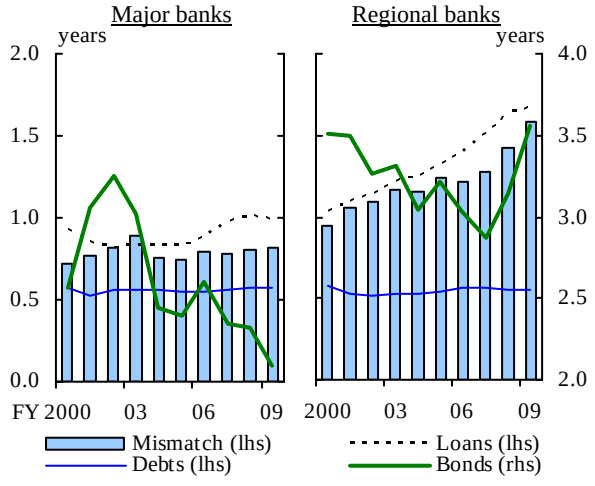
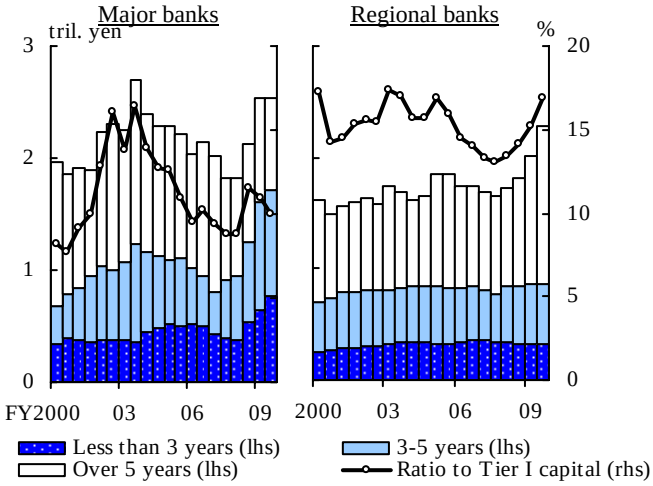


Chart 3-2-3: GPS associated with bondholdings

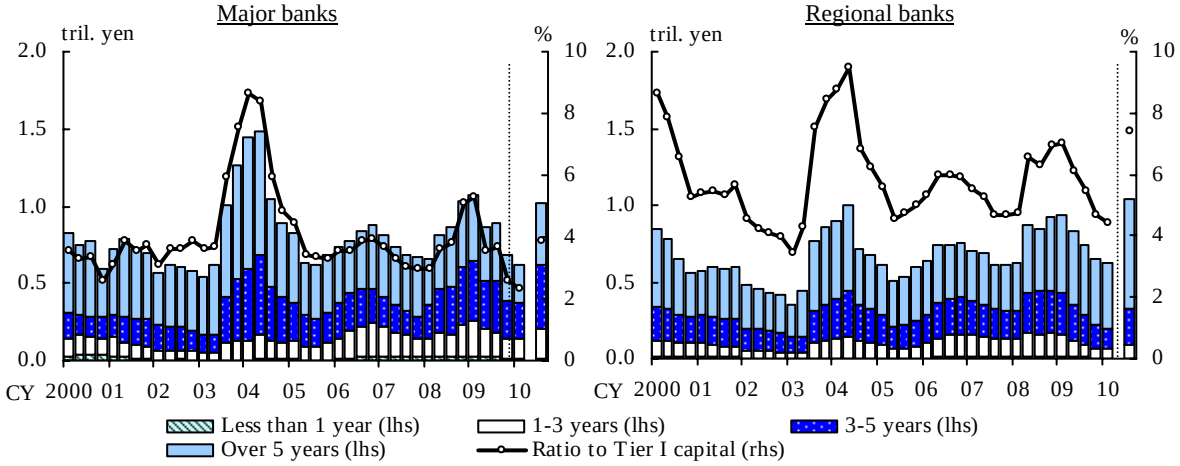


It should be noted that assessment of interest rate risk could vary depending on

[24] Domestic banks are exempted from deducting unrealized losses on some securities, such as government bonds, from Tier I capital until March 2012.

measurement methods. For example, interest rate risk on bondholdings has evidently been increasing when measured by the aforementioned 100 basis point value. On the other hand, value at risk -- market risk associated with bondholdings based on the previous price changes -- has been on the decline reflecting a fall in volatility (Chart 3-2-4). The value at risk could change depending on the observation periods and changes in volatility during the period, even though the outstanding balance and its composition remain the same. However, even if the value at risk declines in accordance with a fall in volatility, and more room is created in terms of risk management limits on a value-at-risk basis, this does not necessarily mean that financial institutions' available capacity for interest rate risk-taking has increased. For example, assuming a volatility level as seen at the time of the so-called "VaR shock" in 2003, the value at risk could increase substantially.[25] When such stress takes place, the value at risk in particular for the regional banks, which are actively investing in long-term bonds, could rise to approximately 1 trillion yen, a level higher than that observed in 2003.

Chart 3-2-4: Value at risk associated with bondholdings[1]



Note: *1.* A 99 percent confidence level and 1-month holding. The figure on the right-hand side of the dashed line is the VaR calculated using banks' bondholdings at the end of fiscal 2009 and the volatility at the "VaR shock" at the end of September 2003.

On the funding front, assessment of interest rate risk could vary depending on how to evaluate the maturity of liquid deposits. Bearing various phases of interest rate fluctuations in mind, this *Report* assumes conservatively that liquid deposits will drain in 3 months and thus their average maturity is 1.5 months. This assumed maturity is shorter than the maturity used in the Financial Services Agency's method for calculating

[25] In the summer of 2003, banks that managed their interest rate risk with value at risk came to judge that their value at risk exceeded the preset ceiling due to increased volatility, and started selling government bonds. As a result, the 10-year government bond yield rose sharply from 0.4 percent to 1.6 percent.

the outlier ratio or the maturity estimated by the internal model each bank adopts independently.[26]

Some banks have endeavored to make their risk management methods more sophisticated by, for example, adopting stress tests based on the experience of previous phases of interest rate fluctuation, and not relying solely on value at risk. It is important, especially for the regional banks that have been further accumulating holdings of government bonds in the long-term maturity zone, to establish a risk management framework that gauges risk from multiple perspectives, since the risk assessment could vary considerably depending on the measurement methods and the assumptions.

Robustness against a rise in yield curve

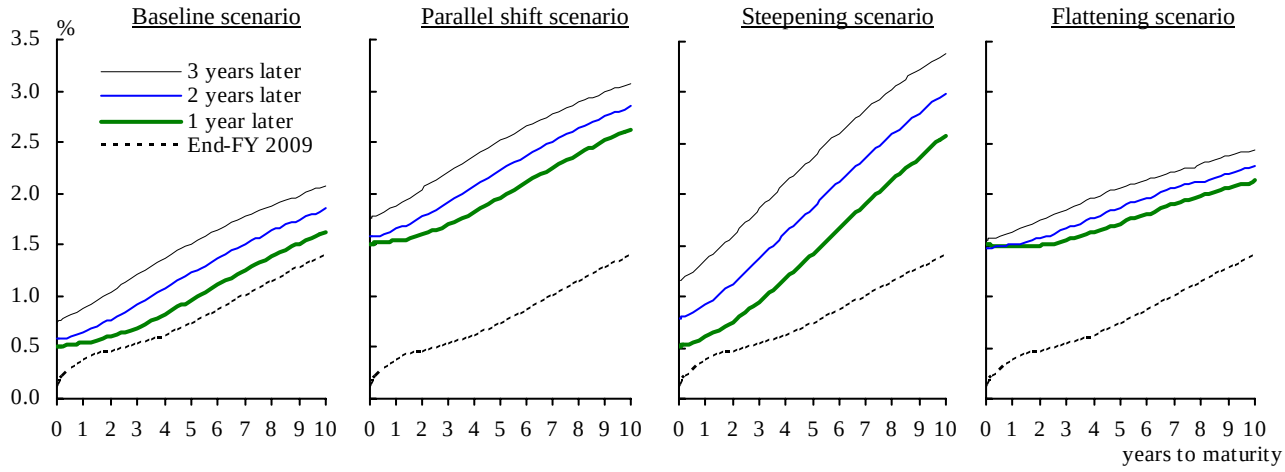
In what follows, using the same methodology of scenario analysis as in the previous issues of this *Report*, interest income and changes in the market value of bondholdings under various scenarios of an interest rate hike are estimated, given the balance-sheet structure of the banks at the base point of end-fiscal 2009. Four scenarios of a rise in the yield curve are considered:[27] (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 3-2-5). While the actual investment-funding structure of banks could change according to the shape of the yield curve, it is assumed to remain constant here.

Even if market interest rates change, interest rates on investment and funding would not change evenly (basis risk), reflecting the difference in the term structure between investment and funding and in the follow-up ratio to market rates. Since the correlation between interest rates on investment and funding is not perfect, banks would face a risk

[26] The Financial Services Agency's method assumes that, of the liquid deposits, core deposits that remain for a relatively long period will drain within 5 years and their average maturity is 2.5 years or less. Many internal models seem to set the maximum maturity of core deposits at 10 years, due to sluggish fund flows under prolonged low interest rates, and the estimated average maturity of liquid deposits tends to be about 5 years.

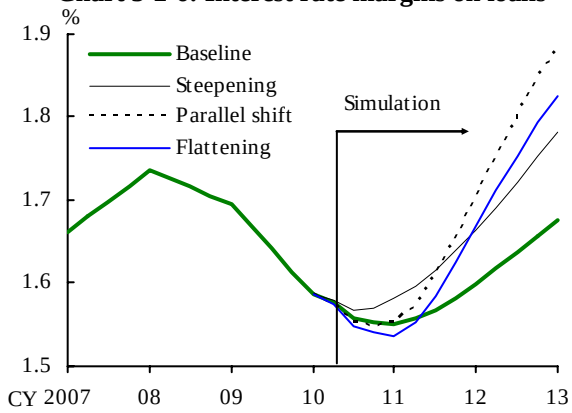
[27] In the scenario analysis, the spread between the time deposit/lending rate and the corresponding market rate is assumed to converge to its historical average in the long run, and ordinary deposit rates are assumed to hover around the 25 percent level of 1-month Libor. See the March 2007 issue of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

Chart 3-2-5: Upward shift in spot rate curves for scenarios



that interest rate margins on loans might change. Reflecting a maturity mismatch between longer-term investment and shorter-term funding, the estimation results show that the effects of a rise in funding rates would be slightly larger at the early stage of a rise in market rates (Chart 3-2-6). Particularly under the flattening scenario, in which a rise in short-term interest rates is relatively large, the interest rate margins on loans would decline temporarily and increase afterward.

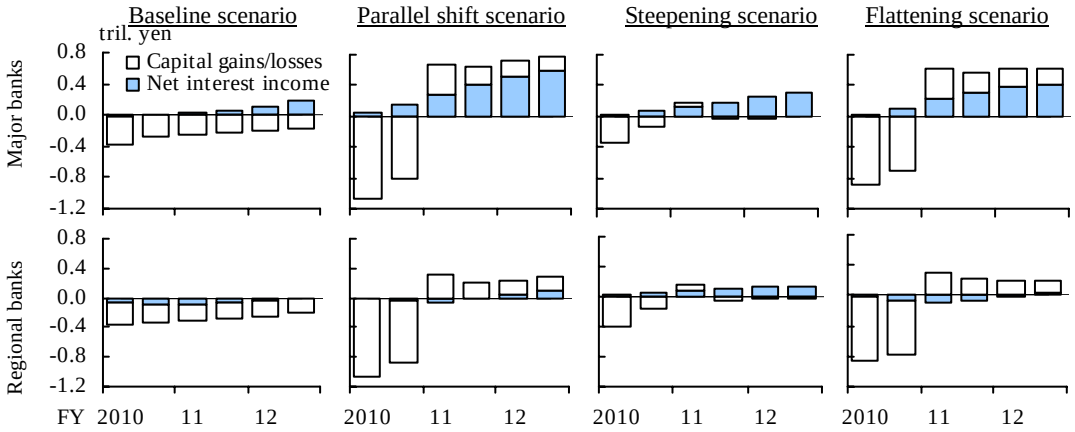
Chart 3-2-6: Interest rate margins on loans[1]



Note: *1.* Spreads of loan rate over deposit rate.

The scenario analysis shows that, reflecting the basis risk, the increase in the interest payment for short-term funding would exceed interest received from loans and bondholdings at the early stage of a rise in interest rates (Chart 3-2-7). Therefore, interest income would decline temporarily before it increases under the baseline scenario, in particular. For the regional banks that have an increased maturity mismatch, under the flattening scenario, the downward pressure on interest income would become larger. On the other hand, the interest income of the major banks, which have shortened the average maturity of bondholdings, is likely to increase due to a rise in interest received from bondholdings under the parallel shift and flattening scenarios.

Chart 3-2-7: Net interest income and capital gains/losses on bondholdings at the market price[1]



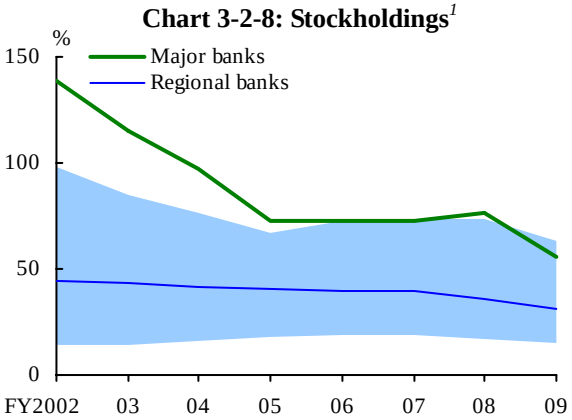
Note: *1.* Figures for the baseline scenario are changes from the actual levels in the second half of fiscal 2009. Figures for the other three scenarios are changes from those for the baseline scenario.

Since the bondholdings increased both at the major banks and the regional banks, the effects of a decline in market value on unrealized gains/losses of bondholdings would also increase. Such an effect would be larger under the parallel shift and flattening scenarios, in which hedging the interest rate hike by floating rate notes is less effective.

Remaining market risk associated with stockholdings

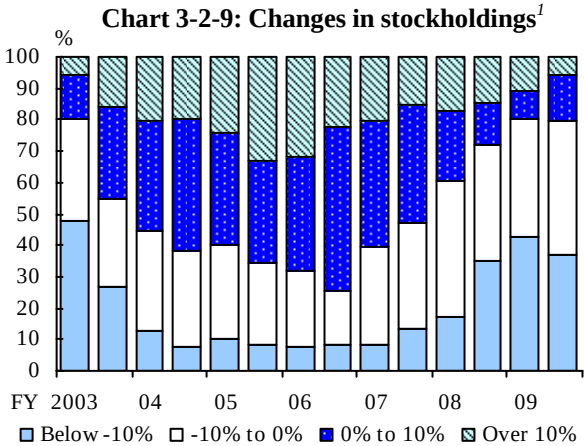
Market risk associated with stockholdings is a risk distinctive to Japan's banks. Since the start of the 2000s, unrealized losses on stockholdings have often been a factor pushing down banks' Tier I capital ratio. Recently, in view of the international discussions on the reform of the capital requirements, many banks have been making specific efforts by putting managerial priority on reducing this risk (Chart 3-2-8).

Chart 3-2-8: Stockholdings[1]



Note: *1.* Ratios to Tier I capital (on an acquisition price basis). Shaded area indicates 10-90th percentile range.

Chart 3-2-9: Changes in stockholdings[1]



Note: *1.* Distribution of banks by percentage change in stockholdings (on an acquisition price basis).

In fact, many banks have been reducing their stockholdings. The distribution of changes

in stockholdings shows that, since fiscal 2008, the majority of banks have reduced stockholdings -- at present, almost 80 percent of banks have done so (Chart 3-2-9). In the meantime, stock purchase of the Banks' Shareholdings Purchase Corporation and the Bank of Japan reached more than 860 billion yen on a cumulative basis from February 2009 through the end of August 2010.[28]

Under the stress scenario of simultaneous shocks to the economy and stock prices used in the credit cost analysis, net unrealized losses on stockholdings could arise. Due to a decline in the TOPIX to 752 points -- within the lowest range reached after the collapse of the bubble economy -- toward the end of fiscal 2011, the Tier I capital ratio could be reduced by about 0.4 percentage points, despite the recent reduction in stockholdings. This impact is larger than that caused by an increase in credit costs under the same scenario. In particular, since the major banks hold relatively large holdings of strategic stocks that are chiefly aimed at maintaining business relationships with their customers, the decline in the Tier I capital ratio would amount to 0.6 percentage points. Strategic stockholdings, in times of declining stock prices, could generate not only net unrealized losses and losses due to impairment but also credit costs from loans to such firms. Banks are expected to continue the scheduled reduction of market risk associated with stockholdings, taking into account risk characteristics of strategic stockholdings.

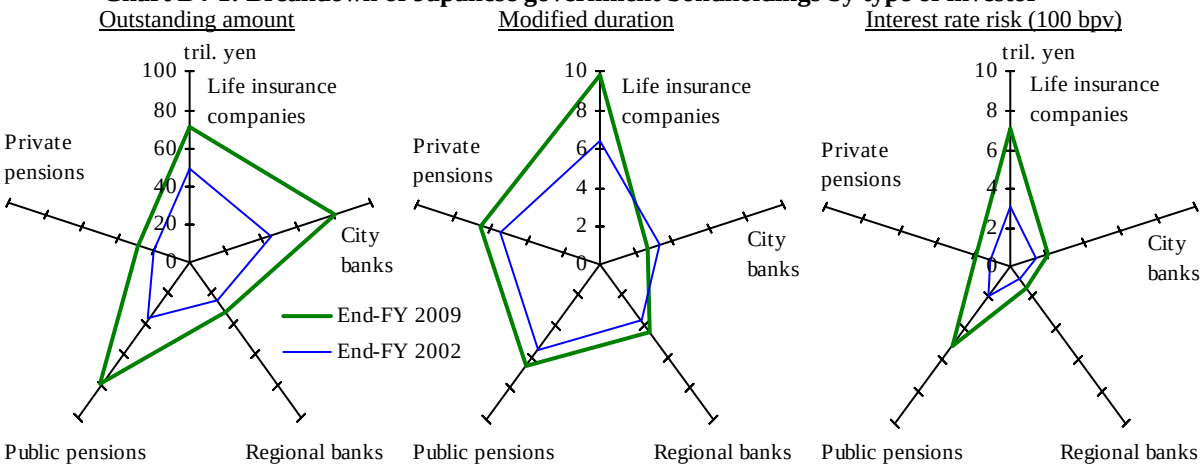
Box 4: Market risk of life insurance companies

Of all Japan's private financial institutions, life insurance companies are the second largest entity after banks in terms of the holdings of government bonds (Chart B4-1). Their outstanding balance of government bonds has been on a gradual uptrend and recently constituted 30 percent of assets.

The target maturity zone in which life insurance companies prefer to invest centers on super-long maturities such as 20 years. Although the outstanding balance held by life insurance companies corresponds to about 60 percent of the balance held by banks, their 100 basis point value of interest rate risk associated with the holdings of government bonds exceeds that of banks by more than 3 trillion yen. Life insurance companies have the largest interest rate risk associated with the holdings of government bonds in Japan.

[28] The Bank of Japan purchased a total of 387.8 billion yen through its stock purchasing program from February 2009 through the end of April 2010.

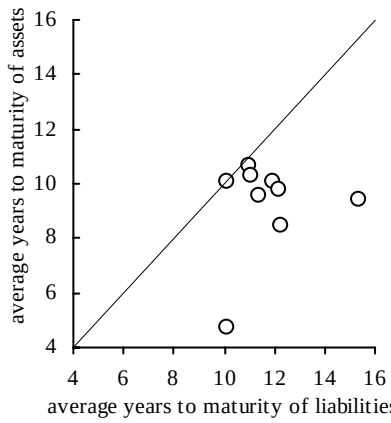
Chart B4-1: Breakdown of Japanese government bondholdings by type of investor[1]



Note: *1.* Modified duration indicates the impact of interest rate changes on bond prices and is proportional to the average maturity.
Source: Mizuho Securities.

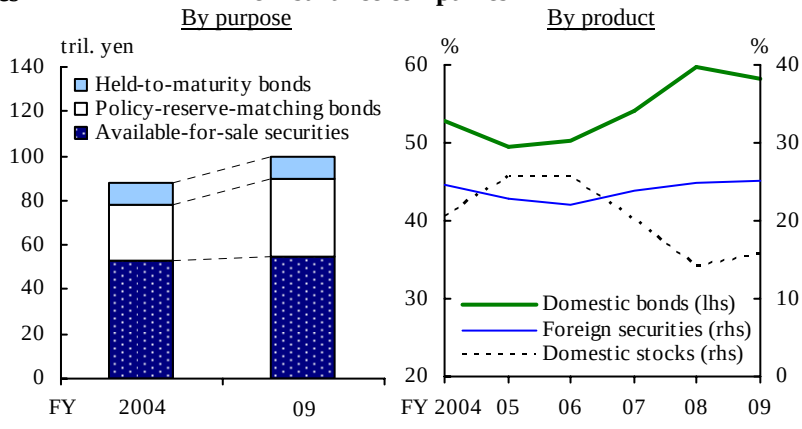
The average maturity of liabilities for life insurance companies, unlike banks, is longer than 10 years, which exceeds the average maturity of assets (Chart B4-2). Therefore, they have attempted to reduce the duration mismatch between assets and liabilities by lengthening the average maturity of their domestic securities portfolio. It should be noted that almost all the increments in the securities held by life insurance companies in the last 5 years are attributed to the increase in the "policy-reserve-matching bonds," which are exempt from mark-to-market accounting. The outstanding balance of "available-for-sale securities," which are required to be evaluated with mark-to-market accounting, shows only a slight increase during the same period (the left-hand side of Chart B4-3).

Chart B4-2: Asset-liability structure of life insurance companies



Sources: Mizuho Securities; Published accounts of the 9 major domestic life insurance companies.

Chart B4-3: Outstanding amount of securities holdings by life insurance companies



Sources: Published accounts of the 9 major domestic life insurance companies.

Life insurance companies have continued to undergo a negative spread between the

yield guaranteed to insurance policyholders and the actual investment yield.[29] At present, the guaranteed yield exceeds that of 20-year government bonds, which have relatively high yields among Japanese government bonds, by approximately 1 percentage point. Under these circumstances, they put greater emphasis on investment in foreign bonds to raise the yields of their portfolios (the right-hand side of Chart B4-3). Recently, some companies have reduced the weight of foreign bonds whose foreign exchange risk is hedged. Thus, foreign exchange risk could materialize if the yen appreciates amid the turmoil of global financial markets. In addition, their stockholdings and thus the associated market risk are still large, although the portfolio weight of stocks has been reduced.

C. Funding liquidity risk restrained at a low level

Japanese financial institutions' funding liquidity risk is restrained both in yen currency and foreign currency at a low level even after the European sovereign debt problems surfaced in 2010. In September, in response to the failure of the Incubator Bank of Japan, the first failed bank resolution under the limited protection of deposits was executed.[30] Nevertheless, funding conditions have remained stable for other financial institutions.

However, it should be noted that in terms of yen funding, the functioning of the domestic money market has been declining, and as for foreign currency funding, the funding structure has continued to rely on market funding to a large extent. In light of the experience of the global financial crisis, Japan's financial institutions need to further increase their resilience under stress in order to continue to restrain funding liquidity risk at a low level.[31]

[29] In 2003, the Insurance business act was amended, allowing life insurance companies to change the guaranteed yield within the range with a lower bound of 3 percent.

[30] Under Japan's deposit insurance framework, deposits for payment and settlement purposes are fully protected and other deposits are partially protected up to a maximum principal of 10 million yen plus accrued interest hereon per depositor. In the case of the failure of Ashikaga Bank in 2003, however, all kinds of deposits were fully protected under the special crisis management with temporary nationalization.

[31] See the Bank of Japan, "Liquidity risk management in financial institutions following the global financial crisis," July 2010.

Robustness against yen liquidity shocks

Funding liquidity risk in yen currency has been further restrained, supported by the stable inflow of deposits and ample liquidity assets.

The stable inflow of corporate and personal deposits has been continuing both at the major and the regional banks, and this has become a contributing factor to the stabilization of yen funding (Chart 2-1-3). Firms' cautious funding stance has further lowered banks' ratios of loans to deposits through an increased inflow of corporate deposits and reduced bank lending (Chart 3-3-1). The major banks have been expanding excess deposits amid stagnant lending since the early 2000s, when they turned to excess deposits. At present, the major banks' excess deposits surpass those of the regional banks.

Chart 3-3-1: Loan-deposit ratios

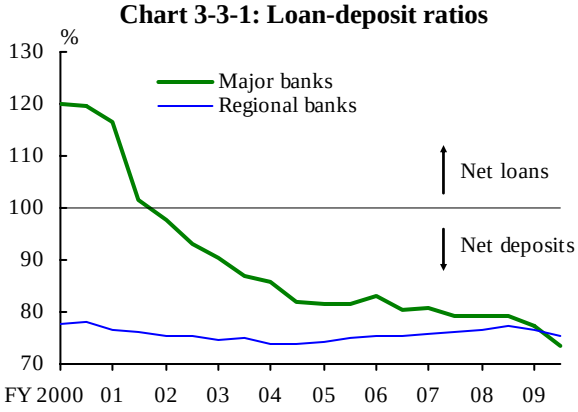
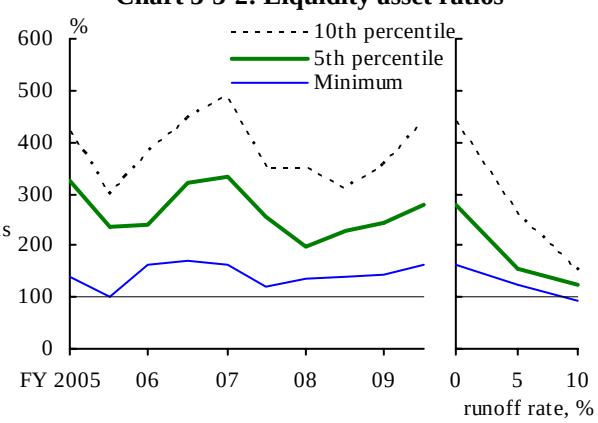


Chart 3-3-2: Liquidity asset ratios[1]



Note: *1.* Left chart: distribution of the liquidity asset ratio when the deposit runoff rate is 0 percent. Right chart: distribution of the ratio when the runoff rate changes from 0 to 10 percent based on the level at the end of fiscal 2009.

Moreover, the major banks and the regional banks have enhanced their robustness against liquidity shocks. Banks' liquidity asset ratio -- a ratio of liquid assets (such as deposits with the Bank of Japan, government bonds, and cash) to liquid liabilities (market funding with a renewal time within 3 months) -- has been edging up (the left-hand side of Chart 3-3-2). Therefore, even under an assumption of a strong liquidity shock in which market funding stops completely for 3 months to come, both the major banks and the regional banks would continue to secure a sufficient level of liquid assets to meet short-term demand for funds, which corresponds to the amount of funds shortage when market transactions cannot be rolled over. While the Bank has been providing ample liquidity, the outstanding balance of banks' deposits with the Bank has been at a high level. Furthermore, as banks continue to invest their funds in government

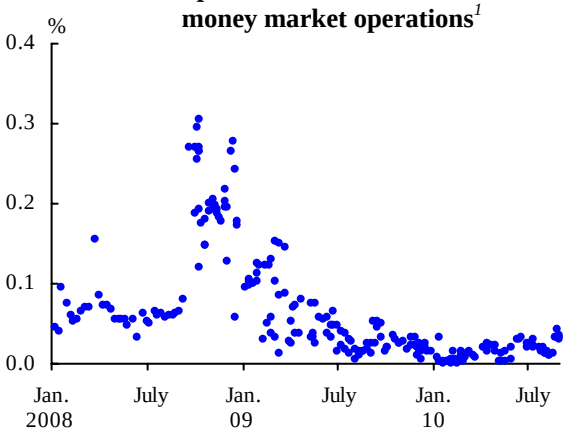
bonds due to an expansion in excess deposits, the share of the government bonds in banks' total assets has reached a record-high level.

Given the liquidity asset ratio as of the end of fiscal 2009, the *Report* assumes a stronger liquidity shock in which markets freeze completely and a certain portion of deposits (from 0 to 10 percent), whose time until the renewal of the deposit rate is equal to or less than 3 months, is drained. Even in such a case, most banks would hold sufficient levels of liquid assets to weather the shock (the right-hand side of Chart 3-3-2).

Functioning of the yen money market

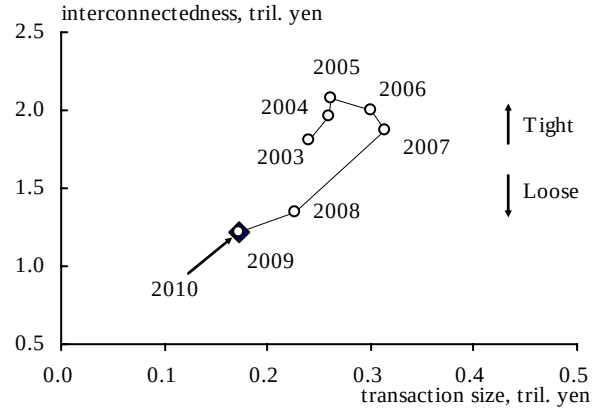
The risk premium of funding liquidity proxied by the spread between the successful bid rate on the Bank of Japan's money market operations and the overnight index swap (OIS) rate has been stable at a low level (Chart 3-3-3). In the meantime, the Bank has been providing ample liquidity, particularly in longer-term maturities. In a phase in which strains have heightened in the overseas money markets triggered by the European sovereign debt problems, the Bank carried out same-day fund provisioning 3 times. Such ample and flexible fund provision by the Bank seems to have contributed to the stability in Japan's money markets.

Chart 3-3-3: Spread of successful bid rates on 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, "Money market operations conducted by the Bank of Japan."

Chart 3-3-4: Transaction network in the call market[1,2]



Notes: *1.* Interconnectedness is the composite indicator of the diversity of counterparties and the size of transactions. The higher interconnectedness indicates the closer network in the market.
2. Institution's daily averages of transactions every June.

However, the functioning of money markets such as the call money market has not fully returned to normal. In the call money market, the size of transactions and the interconnectedness between financial institutions have been declining, and it has

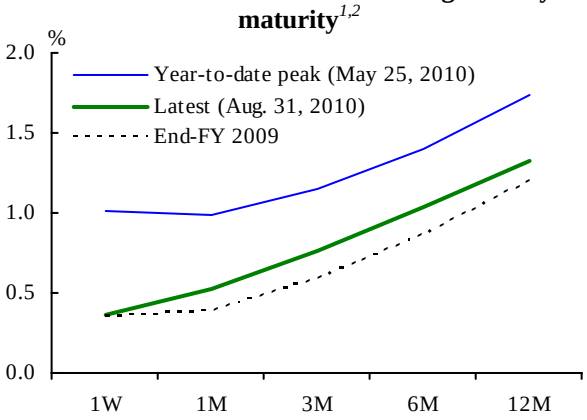
become difficult for funds to spread into every corner of the fund transaction network (Chart 3-3-4). The call money market has further lost its depth even compared with the period of quantitative easing. By transaction entity, fund demand of the major banks and foreign financial institutions has been sluggish, while incentives for investment have been lacking amid prolonged low interest rates.[32] In these circumstances, when a financial institution suddenly becomes in need of funds, it might not be able to raise funds sufficiently and flexibly due to factors such as its counterparties reducing or cutting credit lines while ceasing to raise funds in markets. Financial institutions should continue their carefully crafted liquidity management, including regularly checking whether credit lines are secured.

Turmoil in overseas money markets

Japanese financial institutions' funding liquidity risk in foreign currency has been generally restrained even though foreign currency money markets have become somewhat unstable.

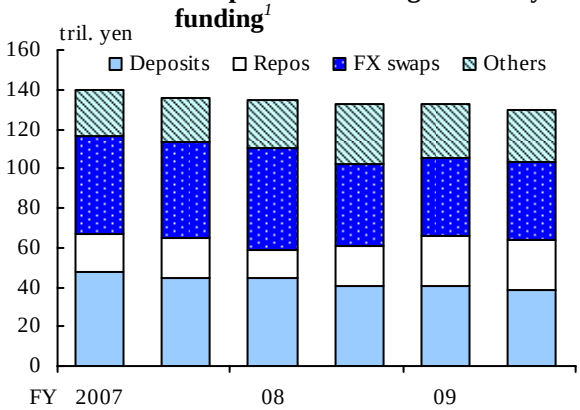
Following the surfacing of the European sovereign debt problems, strains heightened in overseas money markets. There has been a rise in risk premiums in market funding not only in euro currency, which was the source of the shock, but also in U.S. dollars (Chart 3-3-5). However, the extent of the rise has been smaller than the time of the Lehman shock. One reason for this could be the prompt resumption of U.S. dollar funds-

Chart 3-3-5: U.S. dollar funding rates by maturity[1,2]



Notes: *1.* FX swap-implied U.S. dollar funding rates from Japanese yen.
2. The peak day is the day when the 3-month rate hit the highest.
Source: Bloomberg.

Chart 3-3-6: Composition of foreign currency funding[1]



Note: *1.* International operations of the major banks, regional banks, and central organizations for financial cooperatives.

[32] At the major banks, which were the main fund borrowers until the beginning of the 2000s, excess deposits relative to loans have increased on the back of stable inflow of deposits. Foreign financial institutions have reduced their yen currency assets since the Lehman shock, and thus their presence in the yen money market as a whole has been declining.

supplying operations by central banks. In addition, U.S. MMFs -- which are the major dollar providers -- have not faced a substantial drain in funds and have not set back their dollar investment stance much. This seemed to have also contributed to the stability in the dollar money markets (see Box 5 for details on fund investment by U.S. MMFs).

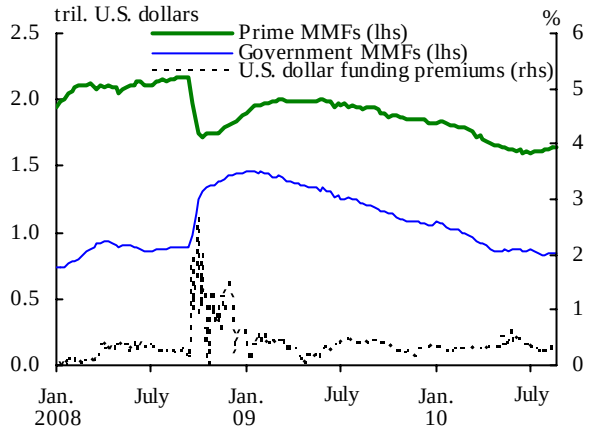
In the meantime, Japanese financial institutions' foreign currency investment, including investment in euroyen, has leveled off due mainly to a decline in overseas lending but still maintains a level of more than 100 trillion yen. The bulk of foreign currency investment has been financed through foreign exchange swaps and repos, and thus such investment has continued to rely on market funding (Chart 3-3-6). Therefore, to prepare for a situation in which uncertainty about global financial markets were to rise again, it is necessary to secure sufficient liquid assets as a buffer against liquidity shocks. In addition, it is vital to establish a more robust management framework for foreign currency on a global basis, including strengthening the funding capacity of foreign currency at overseas bases.

Box 5: MMFs' U.S. dollar investments

U.S. MMFs represent one of the largest providers of funds in the U.S. dollar money market. Changes in their asset allocation exerted significant effects not only on the money market in the United States but also on the offshore dollar money market.

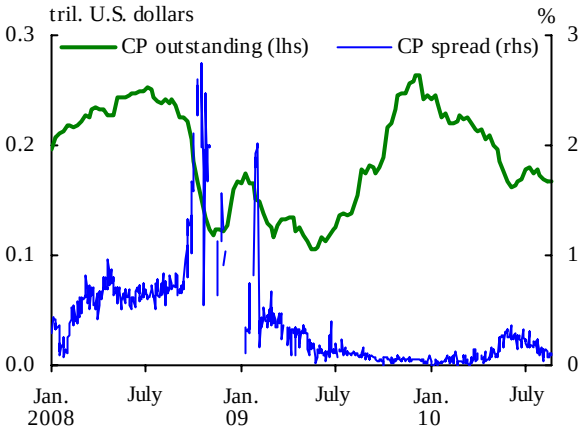
In the autumn of 2008, one of the so-called "prime MMFs," which are funds investing primarily in financial-sector debts, "broke the buck" after incurring losses from exposure to notes and bonds issued by Lehman Brothers, and suspended redemptions. This led to a considerable shift of investors' fund from the prime MMFs into bank deposits and the so-called "government MMFs," which invest in public-sector debts (Chart B5-1). Under such circumstances, prime MMFs became more risk-averse in their asset allocation, thereby causing rapid and significant declines in the issuance amount of financial-sector CP and CDs, which are their main investment targets, together with a sharp rise in issuing rates (Chart B5-2). European financial institutions, which relied upon issuance of U.S. dollar-denominated CP and CDs for their dollar funding, crowded into the foreign exchange swap market to raise dollars amid the malfunctioning of interbank markets. Consequently, even in the foreign exchange swap market, dollar supply and demand conditions tightened, and the dollar funding premiums soared,

Chart B5-1: U.S. MMFs' assets under management[1]



Note: *1.* U.S. dollar funding premiums are 3-month spreads of FX swap-implied U.S. dollar rates from the euro over U.S. dollar Libor.
Sources: Investment Company Institute, "Weekly money market fund assets"; Bloomberg.

Chart B5-2: Issuance of U.S. dollar CP[1,2]



Notes: *1.* CP outstanding: outstanding amount issued by foreign financial institutions.
2. CP spread: 3-month spread of financial CP rates over OIS rates.
Sources: FRB, "Commercial paper on rates and outstanding"; Bloomberg.

resulting in the global crisis of dollar liquidity.[33]

At the time of surfacing of the European sovereign debt problems in 2010, U.S. MMFs' risk-taking stance grew moderately cautious, thereby reducing the issuance amount of U.S. dollar-denominated CP and raising the issuing rates. Nevertheless, under the stricter regulation for liquidity management of MMFs, combined with a small cash outflow from MMFs, prime MMFs' risk-taking stance did not become as cautious as at the time of the Lehman shock.[34] Therefore, in the dollar money market as a whole, the funding conditions did not deteriorate much, unlike the case of the Lehman shock. The dollar funding premiums in the foreign exchange swap market did not rise much and the use of the U.S. dollar funds-supplying operations, which were resumed by central banks in May 2010, remained moderate.

D. Robustness of banks' capital and financial intermediation

Since the start of the 2000s, large credit costs and stock-related losses have tended to be generated simultaneously at Japan's banks. In addition, the operating profits from core

[33] See Baba, Naohiko, Robert N. McCauley, and Srichander Ramaswamy, "U.S. dollar money market funds and non-US banks," *BIS Quarterly Review,* March 2009.

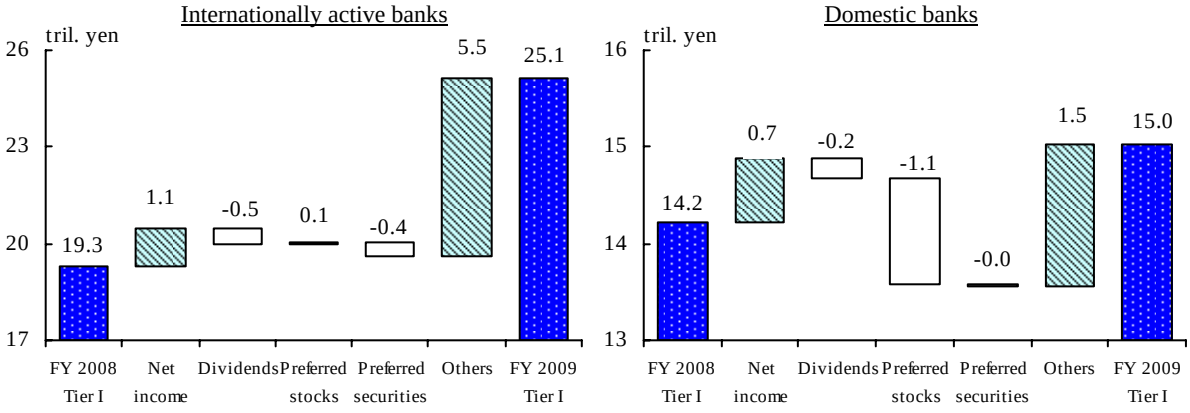
[34] The U.S. Securities and Exchange Commission (SEC) reinforced regulations on MMFs in May 2010. U.S. MMFs are required to reduce funding liquidity risk by holding a minimum percentage of liquid securities in their assets, and to reduce interest rate risk by shortening the average maturity of a fund's portfolio.

business (core profitability) have been declining. In the meantime, banks have been strengthening their capital bases, bearing in mind the ongoing international regulatory reform. Taking these issues into account, the *Report* examines the effects on Tier I capital when credit costs, unrealized gains/losses on stockholdings, and a fluctuation in operating profits from core business crystallize at the same time. Moreover, the effects of a decline in Tier I capital on the financial intermediation function through a reduction in risk assets are also examined.

Strengthening the capital base

To fulfill the smooth financial intermediation function into the future, paying due attention to the consequences of discussions on international regulatory reform, Japan's banks have striven to increase their capital. For banks as a whole, Tier I capital increased by 20 percent in fiscal 2009 (Chart 3-4-1). In particular, internationally active banks, which are subject to international capital requirements, increased Tier I capital by 30 percent through not only an accumulation of retained earnings but also large-scale issuance of common shares.

Chart 3-4-1: Changes in Tier I capital[1,2]

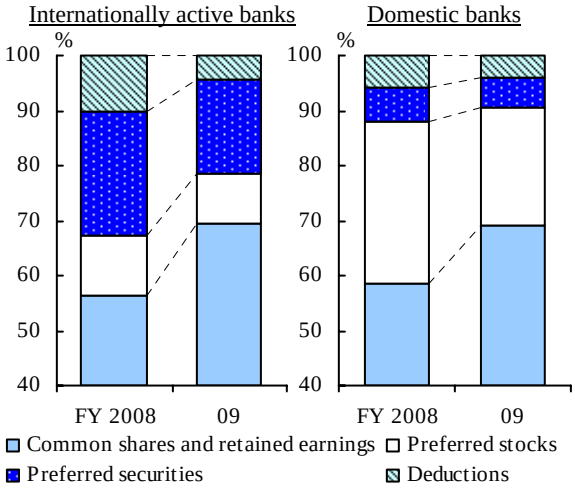


Notes: *1*. Shaded and white bars are the increasing factor and the decreasing factor of Tier I capital, respectively.
2. "Others" includes common shares and deductions.

The September 2009 issue of the *Report* presented a view that, from the standpoint of strengthening the capital bases, banks should strike the right balance between capital outflows through dividends, for example, and accumulation of retained earnings. After the 2000s began, the major banks continued to face a situation in which retained earnings did not accumulate due to capital outflows in excess of net income. However, in fiscal 2009, banks as a whole accumulated 1 trillion yen of retained earnings while increasing their dividend amount.

Based on the experience of the recent financial crisis and the discussions on regulatory reform, an idea that further emphasizes the "improvement in the quality of bank capital" has been spreading globally. In the new framework of capital requirements, common equity consisting of common shares and retained earnings are ranked as the highest-quality capital that can absorb losses on a going-concern basis. For both internationally active banks and domestic banks, the proportion of common equity has increased from slightly below 60 percent to 70 percent (Chart 3-4-2).

Chart 3-4-2: Composition of Tier I capital[1]



Note: *1.* Deductions are unadjusted.

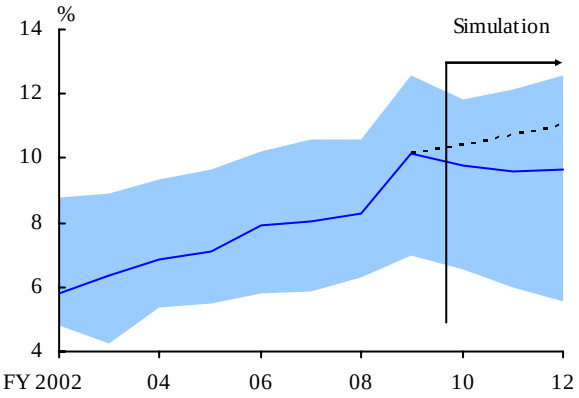
A certain portion of Japanese banks' Tier I capital consists of equity instruments other than common shares such as preferred stocks and preferred investment securities. Among these, preferred stocks are considered to have a high loss-absorbing capacity, next to common equity, and thus are allowed to be counted in Tier I capital under the new requirements. Many domestic banks have received public funds in the form of preferred stocks pursuant to laws such as the "Act on special measures for strengthening financial functions." Therefore, the proportion of preferred stocks for domestic banks is larger than that for internationally active banks (the right-hand side of Chart 3-4-2). On the other hand, preferred investment securities have a relatively high probability of being redeemed and thus are subordinate to common shares from the viewpoint of perpetuity as capital. As the efforts to improve the quality of capital have been continuing, the proportion of preferred investment securities in Tier I capital of internationally active banks declined from 23 percent to 17 percent in fiscal 2009 (the left-hand side of Chart 3-4-2).

Robustness of the capital base

Under the stress scenario of shocks to the economy and stock prices used in the credit cost analysis, the *Report* estimates the future Tier I capital ratio and examines the robustness of the capital base.[35] Under this stress scenario, the nominal GDP would slightly decline by 0.4 percent per annum in fiscal 2010 and by 0.2 percent in fiscal 2011. TOPIX would decline to 752 points, which corresponds to the lowest range since the bursting of the bubble economy, toward the end of fiscal 2011, and rebound to 801 points toward the end of fiscal 2012. The long-term loan rates would decline by 0.1 percentage points toward the end of fiscal 2012, leading to a decline in loans-related interest income through narrowing interest rate margins on loans.[36]

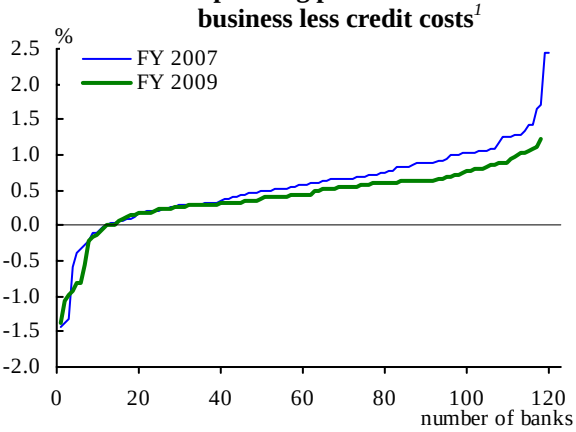
Under the stress scenario, the estimated Tier I capital ratio would decline by 0.6 percentage points by the end of fiscal 2011 but could still maintain a level of 9 percent, which is substantially higher than that at the end of fiscal 2008 (Chart 3-4-3). The overall distribution shows that the Tier I capital ratios of more than half the banks would

Chart 3-4-3: Tier I capital ratios[1,2]



Notes: *1.* Simulation results under the stress scenario. Shaded area indicates 10-90th percentile range measured by each bank's share of loans.
2. The dashed line indicates the result under the baseline scenario.

Chart 3-4-4: Operating profits from core business less credit costs[1]



Note: *1.* Ratios to loans outstanding. The distribution of each bank is arranged in ascending order.

[35] It is assumed here that credit costs exceeding operating profits from core business and net unrealized losses on stocks lower banks' capital.

[36] In the previous issues of this *Report*, operating profits from core business were assumed to be constant at the level of the base point. This *Report* assumes that lending rates and funding rates fall in conjunction with a decline in the average contracted interest rates on long-term loans, and loan-related net interest income will change. Since the follow-up ratio of the lending rates to market rates is higher than that of the funding rates, the interest rate margins on loans will narrow in the long term as interest rates decline. In reality, there is a possibility that interest rate margins on loans will expand in the short term due to the maturity mismatch between investment and funding. There is also a possibility that banks would sell bonds to realize profits. Such cases are not considered here for the sake of simplicity. Under the baseline scenario, TOPIX and operating profits from core business are assumed to be constant at the level of the base point.

exceed 8 percent. Partly because capital reinforcement has progressed through capital increases, since fiscal 2009, the robustness of the capital base against macroeconomic shocks has been steadily enhanced.

However, the distribution of the ratio of operating profits from core business after deduction of credit costs has shifted downward reflecting the decline in banks' core profitability through the end of fiscal 2009 (Chart 3-4-4). Given such profit conditions, if an increase in credit costs and a fall in operating profits from core business were to take place at the same time, the Tier I capital ratio could decline substantially as an increasing number of banks' credit cost ratios would exceed their break-even points measured by operating profits from core business. Under the stress scenario, the estimated distribution by bank shows that the tail of the Tier I capital ratio distribution would decline moderately throughout the estimation period, and at some banks the Tier I capital ratio falls below 6 percent. Therefore, even though banks' capital bases as a whole would avoid being significantly impaired even under the stress scenario, there is a possibility that the Tier I capital ratios of banks with relatively weak profitability and a relatively weak capital base could remain at a low level in the future.

Financial intermediation under stress

A decline in banks' capital could adversely affect the real economy through their cautious stance in credit risk-taking. From such a perspective, the *Report* examines how stress could affect the future financial intermediation function by using the results obtained from a robustness assessment of banks' capital bases.

The analysis employs the capital ratio model used in the previous *Report*.[37] Under the stress scenario of shocks to the economy and stock prices, Tier I capital declines because banks' retained earnings decrease temporarily. Thereafter, following the past average pattern, banks are assumed to accumulate capital through retained earnings and reduce risk assets, and restore the Tier I capital ratio to the level at the base point.[38]

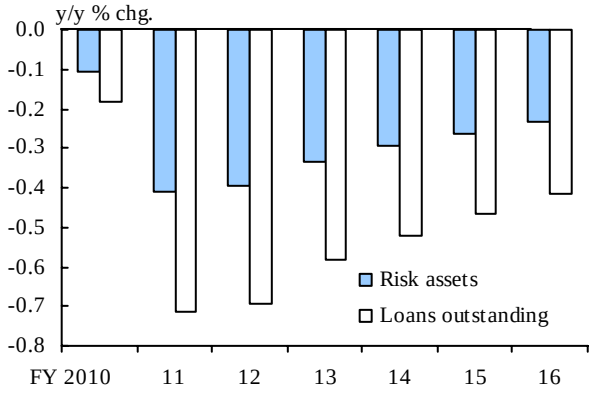
Under the stress scenario, banks would reduce risk assets throughout the estimation

[37] A partial adjustment model is used, in which a bank gradually makes adjustments by increasing capital and reducing risk assets to bring its actual capital ratio closer to the target level. For details, see the previous *Report*.

[38] This is the same method used internationally by the Basel Committee on Banking Supervision (BCBS) when it examined the impact of the strengthening of capital requirements on economic activity. See the Macroeconomic Assessment Group, "Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements," Bank for International Settlements, August 2010.

period (Chart 3-4-5). If a reduction in risk assets is made solely by a reduction in loans outstanding, then loans outstanding could decline by 0.7 percent on a year-on-year basis in fiscal 2011 and 2012, when the nominal GDP growth rate would approximate zero. Therefore, in the recovery process of the Tier I capital ratio, constraints could be put on real economic activity through a reduction in risk assets such as loans.

Chart 3-4-5: Pressure to reduce risk assets



IV. Challenges for Japan's financial institutions and the Bank of Japan's approach

Since the outbreak of the financial crisis, the regulatory and supervisory authorities, as well as central banks, have discussed international financial regulatory reform including the strengthening of capital requirements and the implementation of a liquidity standard to ensure the stability of the financial system. The Bank of Japan, together with the Financial Services Agency and the Ministry of Finance, has participated in this examination through various international forums. A series of agreements are expected to be reported at the G20 Summit scheduled in November 2010. International discussions about containing systemic risk in the financial system as a whole are also in process.

Taking into account the experience of the financial crisis, as well as looking ahead to the new international regulations, Japan's financial institutions have also been making their own efforts. In what follows, the *Report* reviews the current state of regulatory reform discussed by international regulatory and supervisory authorities toward ensuring the stability of the financial system, as well as challenges for Japan's financial institutions. Lastly, the Bank of Japan's approach is presented.

A. International discussions toward enhancing the soundness of banks

International financial regulatory reform

At various forums such as the G20, the Financial Stability Board (FSB), and the Basel Committee on Banking Supervision (BCBS), discussions about international financial regulatory reform toward enhancing the soundness of banks are now in the final stage. The group of Central Bank Governors and Heads of Supervision released the agreements on new capital requirements, leverage regulations, and the liquidity standard in July and September 2010 (see Annex 5 for each quantitative requirement and the phase-in schedule).[39] The new capital requirements will be implemented on internationally active banks. First, the minimum requirement will be set at 4.5 percent for common equity, 6.0 percent for Tier I capital, and 8.0 percent for total capital. Second, a capital conservation buffer will be set at 2.5 percent with a view to ensuring a buffer that can absorb losses when the financial system and the economy enter into a

[39] See "The Group of Governors and Heads of Supervision reach broad agreement on Basel Committee capital and liquidity reform package," July 2010, and "Group of Governors and Heads of Supervision announces higher global minimum capital standards," September 2010, both of which are posted on the Bank for International Settlements' website.

stress phase. In such a stress phase, banks can use the buffer. However, as the capital ratio approaches the minimum requirement level, banks face greater constraints on capital outflows such as dividend payouts. Third, a countercyclical buffer will be set within a range of 0 to 2.5 percent according to national circumstances. Moreover, from a perspective of improving the quality of banks' capital, regulatory capital was defined strictly. At the same time, to achieve a smooth transition toward the new regulations, various transitional periods and grandfathering for the deduction items from capital and the existing methods of raising capital were agreed from 2013 through 2019 when the transition to the new regulations will be completed.

To supplement the aforementioned capital requirements, a non-risk-based leverage ratio will be implemented. This requires that the ratio of capital to total assets stay above a certain level. In the parallel run period through early 2017, a minimum Tier I leverage ratio of 3 percent will be tested. Any final adjustments will be carried out in the first half of 2017 with a view to migrating to a Pillar I treatment.

From a viewpoint of enhancing resilience against funding liquidity risk, the liquidity coverage ratio (LCR) will be introduced. The LCR requires banks to maintain a ratio of eligible liquid assets to an estimated cash outflow during the stress period -- 30 days -- at 100 percent or more.[40]

Banks' management under the new regulations

Toward 2019, when new requirements will be fully implemented, Japan's internationally active banks will secure required capital by issuing common shares and accumulating retained earnings. Improving core profitability will be crucial to accumulating retained earnings. This will be important not only for accelerating the pace of retained earnings accumulation but also for facilitating additional capital increases. Since the relative scarcity of capital will become more pronounced with the adoption of the new requirements, banks also need to further enhance their effective use of capital. Inclusive of a reduction in market risk associated with stockholdings, banks would be held to a stricter requirement to conduct asset allocation and business expansion such that they can gain returns compatible with risks.

As for the LCR, Japan's banks have a relatively stable deposit base, as mentioned earlier.

[40] The net stable funding ratio (NSFR), which is intended to address the vulnerability stemming from the funding and investment structure such as the combination of unstable short-term funding and long-term fixed investment, is still under consideration.

Moreover, they have been reinforcing their approaches to managing funding liquidity risk by utilizing stress testing, for example, based on the experience of the recent financial crisis.

B. International discussions toward containing systemic risk

Preventing crystallization of systemic risk is one future challenge gleaned from the experience of the recent financial crisis. However, no methods to accurately gauge the magnitude of systemic risk itself have yet been established. Therefore, as a second-best measure, the regulatory and supervisory authorities have discussed the possible prevention of crystallization of systemic risk by identifying systemically important financial institutions (SIFIs) and reinforcing the regulation and supervision on such institutions.[41]

The FSB and BCBS have discussed policy measures to address the risks stemming from SIFIs. Such measures consist of *ex ante* policy measures to prevent a SIFI's behaviors based on its motive for the moral hazards and resultant failure, and *ex post* policy measures to prevent a SIFI's failure from leading to systemic risk. Specifically, various policy options have been discussed. These include imposing a surcharge on capital or funding liquidity, concentrated supervision, utilizing contingent capital and bail-in debt, and preparing a framework for "recovery and resolution" of ailing SIFIs.[42]

Each country has a different view on which policy options are appropriate as measures to cope with SIFIs, depending on SIFIs' business models. In addition, the framework of crisis management differs considerably by country and region. Another issue is the degree of emphasis between *ex ante* and *ex post* policy measures. If the regulatory framework focuses too much on the international level playing field and financial institutions consequently are burdened by the unnecessarily large regulatory costs, this might destabilize the financial system through lowering the financial intermediation

[41] In measuring financial institution's systemic importance, the IMF, BIS and FSB have proposed the following three criteria. The first is the size of the financial institution. The second is the substitutability of the financial institutions. The third is the interconnectedness between financial institutions. However, there is a limit to gauging exhaustively the systemic importance based solely on these three criteria. For example, a financial institution that does not necessarily have a large size of transactions could be the trigger to crystallization of systemic risk through a channel in which concerns of market participants, households, and companies about a financial institution's financial standing spill over to concerns about other financial institutions one after another.

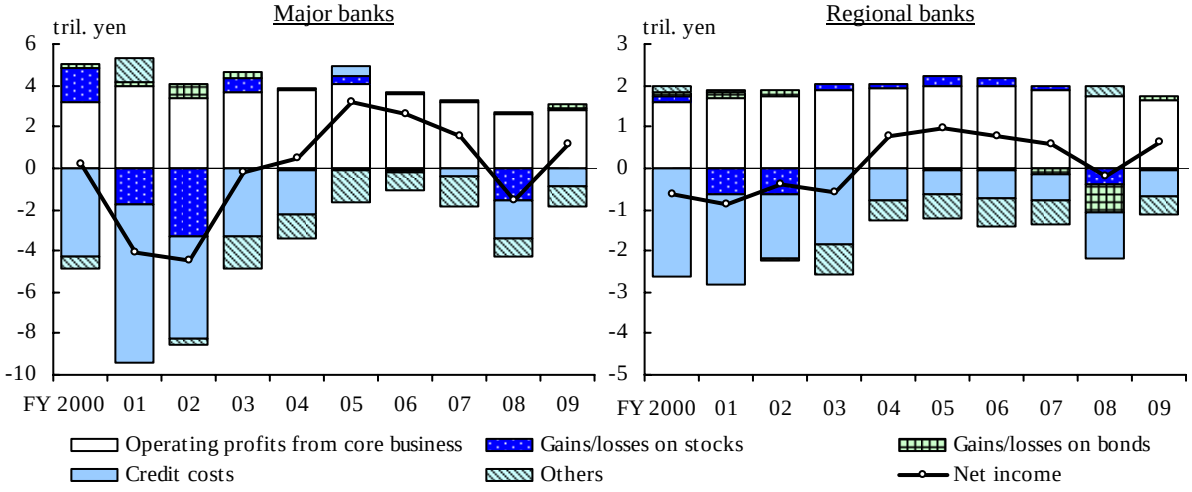
[42] Contingent capital is hybrid debt that converts into equity when certain triggers are met. Bail-in debt is debt that has a structure in which losses incurred when a bank fails effectively will be absorbed by general creditors.

function. In this regard, the FSB issued a report in June 2010 stating that there may be a case for a degree of national discretion in the application of requirements to SIFIs, after the international level playing field is secured.[43]

C. Challenges for the management of Japan's financial institutions

This *Report* has reviewed the efforts made by Japan's financial institutions to tackle their challenges as well as their results thus far, taking into account the developments in international financial regulatory reform. Japan's banks in particular have been steadily progressing with the reduction in market risk associated with stockholdings and strengthening the capital bases. However, amid a continued stagnation in core profitability, banks' profits still tend to be susceptible to stock-related losses and credit costs (Chart 4-3-1). Such a tendency of stagnant profitability might weaken their resilience against new financial and economic shocks. With this in mind, the *Report* sums up the remaining challenges for the management at Japan's financial institutions.

Chart 4-3-1: Profits of Japan's banks



The first challenge is to further strengthen the capital bases. Japan's banks strengthened their capital bases in fiscal 2009 both in terms of quantity and quality. Given the present balance sheets and profitability, the financial system as a whole could maintain its robustness even against a relatively severe macroeconomic shock. However, banks' loan quality has continued to decline, and core profitability, which is the major source of retained earnings, has remained unimproved. Therefore, banks need to prepare for possible changes in financial and economic conditions, and secure sufficient capital that

[43] See the FSB, "Reducing the moral hazards posed by systemically important financial institutions: Interim report to G20 Leaders," June 2010.

could cover losses and thereby fulfill their smooth financial intermediation function into the future. Banks are expected to secure sufficient capital while paying due attention to the ongoing developments in the new international capital requirements.

The second challenge is to continue a scheduled reduction of market risk associated with stockholdings. Banks have been making progress in reducing the risk. However, the risk remains that a plunge in stock prices could impair the capital bases. In Japan as well, changes in the fair value of equities will be posted as part of other comprehensive income on consolidated financial statements from fiscal 2010 onward.[44] This might induce a shift in market participants' perspective to a comprehensive income basis when assessing banks' soundness. Given banks' current stockholdings of banks, their profits on a comprehensive income basis are expected to fluctuate more than those on a net income basis. Taking these issues into account, banks should continue to reduce their market risk associated with stockholdings systematically after thoroughly examining the merits of business transactions arising from stockholdings in contrast with the associated costs. This would also be beneficial for internationally active banks in dealing with the capital requirements.

The third challenge is to ensure stable profits.[45] For Japan's banks to fulfill the smooth financial intermediation function into the future, it has become all the more important to ensure stable profits. As described in Chapter II, a decline in the outstanding balance of loans and a fall in loan rates have been taking place simultaneously, and there has been no sign that a decline in core profitability has come to a halt. As pointed out in the previous *Report*, it may be difficult for financial institutions to substantially increase their domestic net interest income and net fee income under a situation where the profitability of Japan's industries as a whole is low. For this reason, financial institutions are expected to ensure their profit opportunities by seeking out firms and business areas with high growth potential and supporting their activities by appropriately providing financial and information services. This would also contribute to smoothly fulfilling the financial intermediation function in future years. Another related challenge for financial institutions is to strengthen profitability on a risk-adjusted basis by enhancing the effectiveness of risk management for credit and market risks. For example, many financial institutions have a greater preference for investment in government bonds, and thus interest rate risk has been accumulating further. Under such a circumstance,

[44] See Accounting Standards Board of Japan, "Accounting standard for presentation of comprehensive income," ASBJ Statement No. 25, June 2010.

[45] For details on banks' profitability, see the previous issues of the *Report* (September 2007, September 2008, September 2009, and March 2010).

enhancing the effectiveness of risk management requires not only measuring and understanding risks comprehensively by conducting stress tests, for example, but also utilizing such information for the purpose of producing specific actions to control those risks.

D. The Bank of Japan's approach

Fund provision to support strengthening the foundations for economic growth

To raise the growth potential of Japan's economy, the Bank of Japan decided in June 2010 to implement a fund-provisioning measure to support strengthening the foundations for economic growth. This is a temporary measure intended to supply long-term funds at a low interest rate against eligible collateral to financial institutions depending on their efforts toward lending and investment with a view to strengthening the foundations for economic growth.[46] It aims to act as a catalyst for promoting the financial institutions' efforts to strengthen the foundations for economic growth. As of September 16, 2010, 101 financial institutions participated in this fund-provisioning measure. Participating institutions span a wide range of entities including the major banks, regional banks, *shinkin* banks, and financial cooperatives. In addition, many institutions in local areas, as well as those in metropolitan areas, are included. The Bank would like to support a variety of financial institutions' initiatives as broadly as possible. Through such initiatives, financial institutions are also expected to ensure their profit opportunities by seeking out firms and business areas with high growth potential.

The Bank of Japan's approach to stability of the financial system

In light of the experience of the recent financial crisis, there have been moves in advanced economies to enhance the roles of central banks in ensuring the stability of the financial system. The contents to be reviewed vary from country to country. They include a microprudential aspect of strengthening a role as a supervisor or overseer to individual financial institutions, as well as a macroprudential aspect of strengthening a role in the area of risk assessment and analysis of the financial system as a whole, and of the policy responses. In particular, each country has the common tendency to

[46] The Bank takes care to ensure that it will not become directly involved in the allocation of funds to individual firms and industries and, in terms of the amount and the maturity of funds provided, the measure will not hamper the smooth implementation of interest rate policy and money market operations.

emphasize the role of central banks on the macroprudential front. First, central banks have been endeavoring to rigorously comprehend the developments in macro economy, financial markets, and financial transactions through implementing monetary policy and operating payment and settlement systems. Second, central banks have a function as the lender of last resort for individual financial institutions to secure the stability of the financial system. Third, while playing such roles, central banks have had an organizational culture of comprehending and analyzing the developments in the real economy and financial system, including their interactions from a macro perspective. The recent moves toward enhancing the roles of central banks are based on the notion that it is appropriate for central banks to assume greater roles on the macroprudential front, taking account of such aforementioned characteristics and functions.

The Bank has assumed and enhanced these roles in prudential policy from both micro and macro perspectives. On the microprudential front, the Bank gauges business conditions of counterparty financial institutions through on-site examinations and off-site monitoring, and provides guidance where necessary. On the macroprudential front, the Bank undertakes research, analysis, and assessment of the financial system as a whole utilizing micro and macro information obtained from various activities as a central bank.[47] In analyzing the financial system, the Bank has been expanding its efforts both in a cross-sectional dimension and a time-series dimension. The Bank summarizes and publishes the findings in its *Financial System Report*. Such macro analysis of the financial system stability is reflected in on-site examinations and off-site monitoring, which aim at gauging the business conditions and risk management of each financial institution, as well as in the activities of the Bank's Center for Advanced Financial Technology, which supports private financial institutions' initiatives to upgrade their risk management systems. Moreover, the Bank contributes actively to international discussions about regulatory and supervisory reform by carrying out and providing various analyses based on the experience of the crystallization of systemic risk following the bursting of the bubble economy.

As for monetary policy, it is necessary to examine broadly the risk factors, including the accumulation of financial imbalances to achieve sustainable growth under price stability. In fact, in the Bank's conduct of monetary policy, such macro assessment of financial stability is one important element in undertaking risk assessment of economic and price developments, including from medium- to long-term perspectives.

The Bank of Japan will continue, through on-site examinations and off-site monitoring

[47] See the previous *Report* for the Bank's current macroprudential approach.

of a broad range of financial institutions, to provide advice and guidance about risk management where necessary to individual financial institutions. At the same time, from a macroprudential perspective, the Bank will appropriately assess the current state and challenges of the financial system and utilize its assessment in policy conduct. Through such activities, the Bank will strive to ensure the stability of Japan's financial system.

Annex 1: Major events in the financial system (since March 2010)

Mar. 18, 2010	Basel Committee on Banking Supervision (BCBS) issued "Report and recommendations of the Cross-border Bank Resolution Group."
May 2	Europe: Eurogroup agreed to activate stability support to Greece.
May 3	Europe: ECB decided to suspend the application of the minimum credit threshold in collateral eligibility requirements to debt instruments issued or guaranteed by the Greek government.
May 7	Europe: Heads of State and Government of the EU announced a joint support package with the IMF for Greece.
May 10	Europe: Ecofin Council announced measures to preserve financial stability, including a European Financial Stabilization Mechanism.
	Europe: ECB decided to introduce the "Securities Markets Program" and resumed the U.S. dollar funds-supplying operations.
May 12	Japan: The bill for amendment of the Financial instruments and exchange act, etc. was enacted.
May 18	Europe: Ecofin Council agreed on new rules for alternative investment funds and adopted a conclusion on financial stability and crisis management, and budgetary frameworks.
	Germany: Federal Financial Supervisory Authority (BaFin) announced prohibitions of naked short-selling transactions and naked CDS in government bonds in the euro area.
May 25	IOSCO published "Principles on cross border supervisory cooperation."
May 26	Europe: European Commission proposed the establishment of an EU network of bank resolution funds.
Jun. 2	Europe: European Commission proposed improved EU supervision of credit rating agencies.
Jun. 16	U.K.: The Chancellor of the Exchequer announced plans to change the system of U.K. financial regulation.
Jun. 18	BCBS announced certain adjustments to the document "Revision to the Basel II market risk framework."
Jun. 21	U.S.: Federal Reserve, OCC, OTS, and FDIC issued final guidance on incentive compensation.
Jun. 22	U.K.: The Chancellor announced that the government will introduce a bank levy.
	The governments of France, Germany, and the U.K. proposed to introduce bank levies on banks' balance sheets.
Jun. 27	The G20 issued a communiqué.
Jul. 7	Europe: European Parliament approved new rules on bankers' bonuses.
Jul. 9	Germany: The parliament approved a bill prohibiting naked short-selling transactions.
Jul. 13	U.K.: The government launched a consultation on the design and implementation of a bank levy.
Jul. 16	BCBS issued an announcement regarding the regulatory reform package and "Countercyclical capital buffer proposal."
Jul. 21	U.S.: President signed the financial reform bill into law.
Jul. 23	Europe: Committee of European Banking Supervisors released the results of the EU-wide stress test.
Jul. 26	Group of Central Bank Governors and Heads of Supervision issued an announcement regarding broad agreement on the Basel Committee capital and liquidity reform package.
	U.K.: The government launched a consultation on financial regulatory reform.
Aug. 16	Europe: European Commission proposed the revision of the Financial conglomerates directive.
Aug. 18	Financial Stability Board and the BCBS issued "Assessing the macroeconomic impact of the transition to stronger capital and liquidity requirements."
Aug. 25	Germany: Cabinet approved a bank restructuring bill including the establishment of financial market stabilization fund.
Sep. 10	Japan: The first failed bank resolution under the limited protection of deposits was executed in response to the failure of the Incubator Bank of Japan.
Sep. 12	Group of Central Bank Governors and Heads of Supervision announced higher global minimum capital standards.
Sep. 15	Europe: The European Commission adopted proposals for regulations on OTC derivatives market and on short selling and credit default swaps.
Sep. 22	Europe: The parliament approved the financial supervision reform package including the establishment of the European Systemic Risk Board.

Annex 2: 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 bonds.

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

Credit cost ratio = credit costs / total loans outstanding.

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

Tier I capital is the core capital including the common shares and retained earnings

Risk-weighted assets are bank's assets weighted according to credit risk.

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

Financial statements of firms

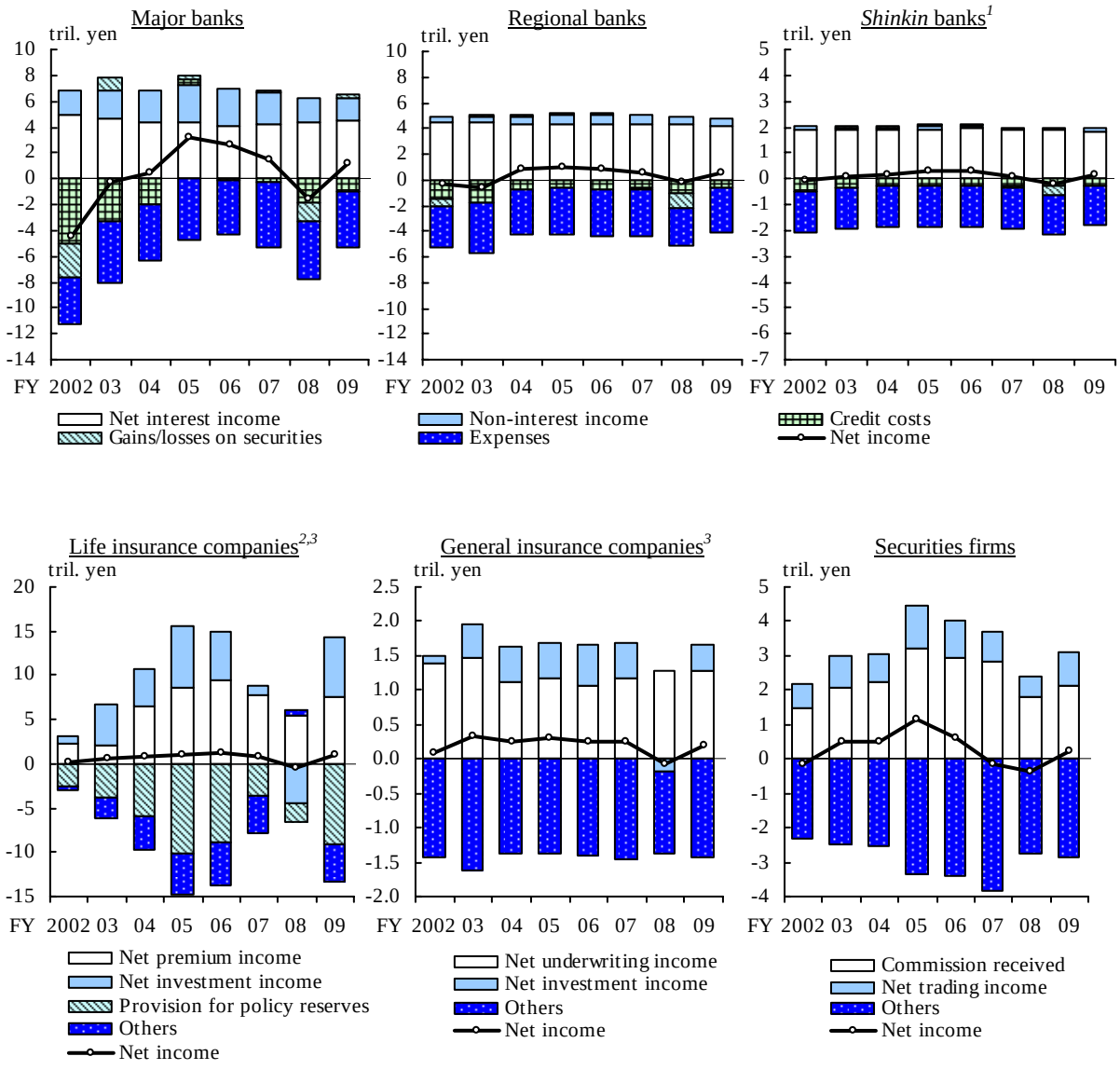
Quick ratio = quick assets / short-term debt.

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 + net assets).

Annex 3: Financial results of Japan's financial institutions for fiscal 2009

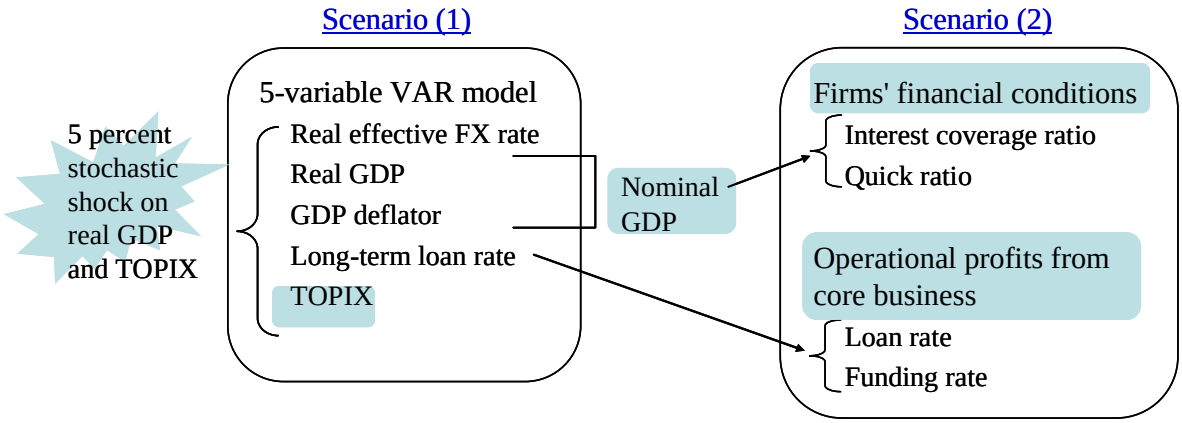


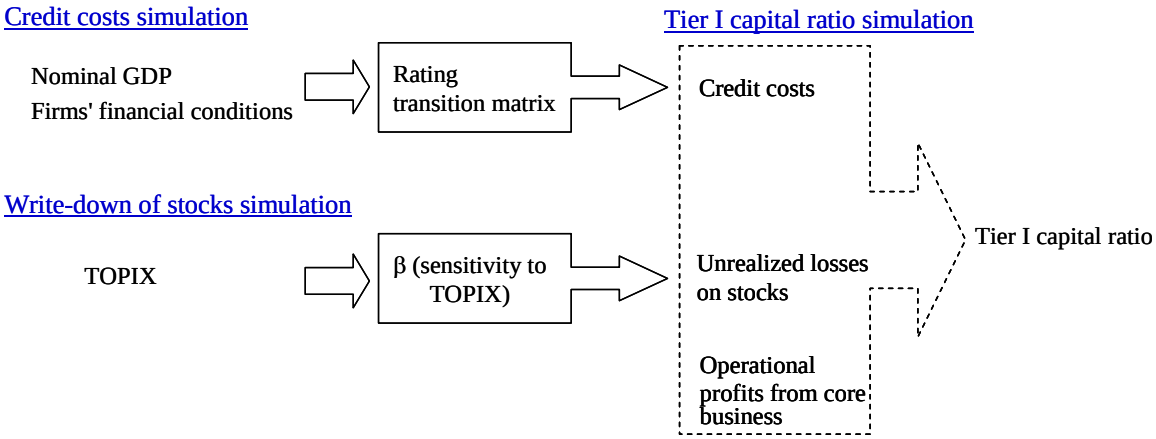
Notes: *1*. *Shinkin* banks stand for 263 s*hinkin* banks that hold accounts at the Bank of Japan, as of March 31, 2010.
2. Net premium income = Premium income and others - Insurance benefits paid.
3. Net Investment income = Investment income - Investment expenses.

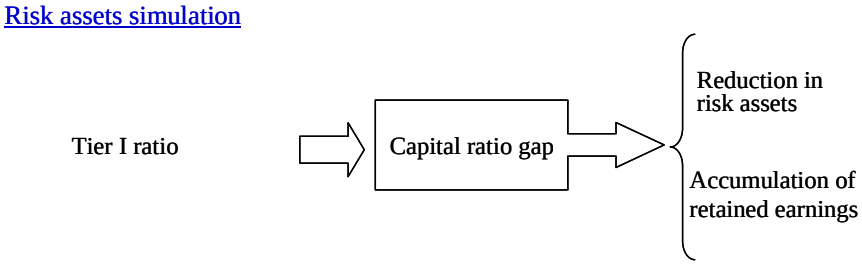
Sources: The Life Insurance Association of Japan, "Summary of life insurance business"; The General Insurance Association of Japan, "Business result"; Japan Securities Dealers Association, "Financial overview of regular members."

Annex 4: Framework of scenario analysis

Scenario analysis of shocks on economy and stock prices







Note: See the September 2009 issue of the *Report* for the credit costs simulation and the March 2010 issue of the *Report* for the risk assets simulation.

Annex 5: Financial regulatory reform

Capital requirements and buffers

	Common Equity	Tier I capital	Total capital
Minimum	4.5%	6.0%	8.0%
Conservation buffer	2.5%		
Minimum plus conservation buffer	7.0%	8.5%	10.5%
Countercyclical buffer range[*1]	0-2.5%		

Phase-in arrangements

	2011	2012	2013	2014	2015	2016	2017	2018	2019
Leverage ratio	Supervisory monitoring		Parallel run 2013 - 2017 Disclosure starts 2015					Migration to Pillar 1	
Minimum Common Equity capital ratio			3.5%	4.0%	4.5%	4.5%	4.5%	4.5%	4.5%
Capital conservation buffer						0.625%	1.25%	1.875%	2.5%
Minimum Common Equity plus capital conservation buffer			3.5%	4.0%	4.5%	5.125%	5.75%	6.375%	7.0%
Phase-in of deductions from Common Equity Tier I Capital[*2]				20%	40%	60%	80%	100%	100%
Minimum Tier I capital			4.5%	5.5%	6.0%	6.0%	6.0%	6.0%	6.0%
Minimum Total capital			8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Minimum Total capital plus conservation buffer			8.0%	8.0%	8.0%	8.625%	9.25%	9.875%	10.5%
Grandfathering[*3]			Phased out over 10-year horizon beginning 2013						
Liquidity coverage ratio	Observat-ion period begins				Introduce minimum standard				
Net stable funding ratio		Observat-ion period begins						Introduce minimum standard	

*1: Common Equity or other fully loss-absorbing capital.
*2: Deductions include amounts exceeding the limit for deferred tax assets from timing differences, mortgage servicing rights, and financials.
*3: Capital instruments that no longer qualify as non-core Tier I capital or Tier II capital.
Note: All dates are as of 1st January. Shaded areas indicate transition periods.
Source: BIS, "Group of Governors and Heads of Supervision announces higher global minimum capital standards."

Annex 6: 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, "Roles for a central bank -- Based on Japan's experience of the bubble, the financial crisis, and deflation --," Speech at the 2010 fall meeting of the Japan Society of Monetary Economics, September 26, 2010.

Kiyohiko G. Nishimura, Deputy Governor, "Macro-prudential lessons from the financial crises: A practitioner's view," Speech at the ADBI-BNM conference on macroeconomic and financial stability in Asian emerging markets in Kuala Lumpur, Malaysia, August 4, 2010.

Kiyohiko G. Nishimura, Deputy Governor, "Financial regulations: Asian perspectives," Remarks at the panel session "Financial development and regulatory coordination under new circumstances" at Lujiazui Forum annual meeting 2010, June 26, 2010.

Masaaki Shirakawa, Governor, "Future of central banks and central banking," Speech at 2010 International conference hosted by the Institute for Monetary and Economic Studies, May 26, 2010.

Masaaki Shirakawa, Governor, "Revisiting the philosophy behind central bank policy," Speech at the Economic Club of New York, April 22, 2010.

Financial system policy

"Liquidity risk management in financial institutions following the global financial crisis," May 27, 2010.

Bank of Japan working paper series

Kato, Ryo, Shun Kobayashi and Yumi Saita, "Calibrating the level of capital: The way we see it," 2010-E-6, May 27, 2010.