BOJ Reports & Research Papers

Financial System Report

BANK OF JAPAN

APRIL 2012

12 major banks and 106 regional banks covered in this report are as follows.

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 (Regional banks I) and the 42 member banks of the Second Association of Regional Banks (Regional banks II) as of March 31, 2012.

This *Report* basically uses data available as of March 31, 2012.

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

Preface

The Bank of Japan publishes the *Financial System Report* semiannually, with the objective of comprehensively analyzing and assessing financial system stability and facilitating communication with concerned parties in order to ensure such stability. The Bank previously published the *Financial System Report* and the *Financial Markets Report*; and starting with the October 2011 issue, the Bank integrated the two reports and published the new *Financial System Report*, in view of the recent growing importance of analyzing developments in domestic and overseas financial markets.

The *Report* assesses financial system stability while bearing in mind the importance of the macroprudential perspective. In the macroprudential framework, the stability of the financial system should be ensured by analyzing and assessing risks in the financial system together with the interconnectedness of the real economy, financial markets, and behavior of financial institutions; and then planning institutional designs and policy measures on these assessments.

Based on these, this *Report* analyzes and assesses the financial system in terms of the following perspectives. First, as regards assessing the resilience of the financial system, macro stress testing is conducted by assuming multiple scenarios in which stresses occur in the real economy and financial markets. Second, a feedback loop between the real economy and the financial system is analyzed and assessed by using the Financial Macro-econometric Model. Third, from a cross-sectional dimension of the financial system, various risks in the banking system are examined together with the risks at insurance companies and other nonbank financial institutions, which are closely associated with banks. Fourth, the state of the financial system is assessed from various perspectives by using several indicators of macro financial risk such as the degree of financial imbalances. Fifth, risks that financial markets could pose to Japan's financial system are analyzed and assessed.

The Bank uses the results of the analysis made in the *Report* in planning measures to ensure stability in the financial system as well as in providing guidance and advice to individual financial institutions through on-site examinations and off-site monitoring. Moreover, the Bank makes use of them in international regulatory and supervisory discussions. In relation to the monetary policy, the assessment of financial system stability is also an important input for the Bank to assess risks in economic and price developments from a medium- to long-term perspective.

The Bank will continue to enhance the *Report* and contribute further to ensuring financial system stability.

Contents

I. Overview

The environment surrounding Japan's financial system

Regarding the environment surrounding Japan's financial system, uncertainty about the future has been high, while global financial markets have regained stability to some extent. In Europe, concern over the debt problem has adversely affected banks' funding conditions. In response to deterioration in funding conditions, banks' lending attitudes have grown cautious and reinforced economic stagnation in European countries. In the United States, balance-sheet adjustments by households have continued to weigh on the real economy. In emerging economies as a whole, a slowdown in economic growth and a decline in inflationary pressure have been progressing moderately, but some of the economies face uncertainty as to whether they can achieve price stability and economic growth simultaneously.

In Japan, firms' financial conditions have generally improved, as seen in their high level of interest payment capacity. However, small and medium-sized firms and households with housing loans have continued to face severe financial conditions.

Financial institutions' performance of financial intermediation

Financial conditions of firms and households in Japan have continued to ease amid the low interest rate environment. Issuing conditions for CP and corporate bonds have remained favorable, and banks' lending attitudes have been positive. Banks' loans outstanding turned to an increase, reflecting demand for working capital and funds related to mergers and acquisitions. Nevertheless, borrowing demand for business fixed investment remains sluggish.

In these circumstances, banks' loan interest rates have been declining. This is because banks' funding costs decrease and issuing conditions for CP and corporate bonds remain favorable amid monetary easing. Moreover, banks' loan interest rates have declined, partly because various types of financial institutions have increasingly competed on lending. Due to declining profits on domestic loans, Japan's banks, particularly the major banks, have increased overseas loans, and the share of their loans in the global loan market has started to increase moderately.

Risks in the financial system

In the examination of the financial system to ascertain financial imbalances, there is no indicator that warns of financial imbalances stemming from bullish expectations. The amount of risks financial institutions bear as a whole has been decreasing relative to

capital. Due attention should be paid, however, to a large amount of JGBs held by financial institutions, while Japan's government debts have accumulated considerably.

The outlook for global financial markets has been highly uncertain. In these circumstances, Japan's banks and life insurance companies have increased investment in domestic and foreign securities. In addition, the share of banks' overseas loans in overall loans has been increasing gradually. Therefore, attention should be paid to the fact that business conditions of financial institutions have become susceptible both directly and indirectly to developments not only in Japan's economy and financial markets but also in overseas economies and financial markets. Despite the recent decrease in banks' credit costs arising from domestic loans, the quality of bank loans has not improved considerably. Although banks' capital adequacy ratios have risen reflecting the accumulation of retained earnings, their profitability has declined.

Resilience of the financial system

The macro stress testing shows that the resilience of Japan's financial system has generally strengthened. Banks' capital bases as a whole would be able to avoid significant impairment, even if some degree of stress arises, such as a temporary economic downturn with a plunge in stock prices, or an upward shift of domestic interest rates for all maturities by 1 percentage point. Nevertheless, attention must be paid to the possibility that capital adequacy ratios will remain low for banks with relatively low profitability and weak capital bases.

Based on the results of stress testing under more severe assumptions, the following points warrant vigilance in order to ensure long-lasting stability of the financial system. First, if the economy becomes stagnant for a protracted period, banks' credit costs could continue to exceed their profits. Second, severe shocks in domestic and overseas financial markets, such as a downward shock to stock prices and an upward shock to bond yields occurring simultaneously, would immediately cause deterioration in banks' realized gains/losses on securities holdings. Meanwhile, the deterioration would be amplified through a feedback loop between the financial system and the real economy. Attention should be paid to the possibility of sporadic surges in market interest rates triggered by decreased confidence in fiscal sustainability, as was observed recently in Europe. Third, although banks have generally secured a sufficient amount of foreign currency liquidity, they would need additional funding sources under a situation where a number of measures for foreign currency funding become inoperative simultaneously.

Challenges to ensure stability of the financial system

Japan's financial system as a whole has been maintaining stability. In order to ensure the long-lasting stability of Japan's financial system and to maintain smooth financial intermediation, financial institutions need to address the following three major challenges.

First, financial institutions should enhance the effectiveness of risk management. In order to contain credit risk with respect to domestic lending business, financial institutions should strengthen measures to help ailing borrowing firms improve their business conditions and to appropriately implement credit risk management based on the assessment of borrowers' capacity for self-reconstruction. As for overseas lending business, they need to improve their screening procedures and follow-up monitoring, including those at their overseas entities. To contain market risk, financial institutions should examine the risk from multidimensional perspectives by, for example, taking into account correlations between domestic and overseas financial markets, and then achieve balanced investment portfolios and manage risk in accordance with financial institutions' capital. Furthermore, Japan's banks are required to conduct strict risk management for funding liquidity, including that for foreign currency liquidity.

Second, financial institutions should further strengthen their capital bases. Stable capital bases are indispensable for them to maintain smooth financial intermediation in highly profitable areas, such as overseas lending as well as investment and lending to growing business areas. The new Basel requirements will be applied in an orderly manner to internationally active banks from 2013. Financial institutions will be required to strengthen their capital bases steadily.

Third, financial institutions should construct profit bases suited to changes in the social structure. The profitability of Japan's banks has been declining, and banks in local areas in particular face severe business conditions amid the decreasing population. In order to raise the profitability of credit extension as core business, financial institutions need to prompt firms' restructuring by identifying and supporting firms and business areas with high growth potential. In other types of business, they are expected to create new financial services suited to developments in the social structure, such as the decreasing population and the aging of society. Another possible option to strengthen profit bases is to work on strategic business partnerships and integration, thereby improving business efficiency and expanding their customer network.

II. Examination of the external environment

With a view to assessing the effects on Japan's financial system, this chapter first summarizes risks in the global financial system and then examines economic developments and financial conditions of firms and households in Japan.

Regarding the environment surrounding Japan's financial system, uncertainty about the future has been high, while global financial markets have regained stability to some extent. In Europe, concern over the debt problem has adversely affected banks' funding conditions. In response to deterioration in funding conditions, banks' lending attitudes have grown cautious and reinforced economic stagnation in European countries. In the United States, balance-sheet adjustments by households have continued to weigh on the real economy. In emerging economies as a whole, a slowdown in economic growth and a decline in inflationary pressure have been progressing moderately, but some of the economies face uncertainty as to whether they can achieve price stability and economic growth simultaneously.

Meanwhile, in Japan, firms' financial conditions have generally improved, as seen in their high level of interest payment capacity. However, small and medium-sized firms and households with housing loans have continued to face severe financial conditions.

A. Global economy and financial system

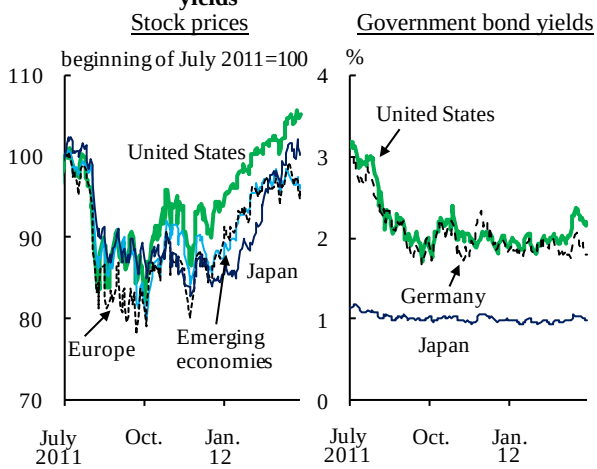
1. Developments in global financial markets

Reflecting concern over the European debt problem, strains in global financial markets intensified toward the end of 2011, and globally active investors increasingly grew risk averse. In Europe, government bond yields rose significantly in countries with fiscal concern, and banks' funding conditions deteriorated. Stock prices declined sharply around the world toward the end of 2011 (the left-hand side of Chart II-1-1). Meanwhile, due to a strong demand for safe-haven assets, the yen and the U.S. dollar appreciated against the euro and emerging economies' currencies, and yields on Japan's, U.S., and German government bonds remained at low levels (the right-hand side of Chart II-1-1).

Since the turn of the year, global financial markets have regained stability to some extent. The liquidity-provisioning measures by the European Central Bank (ECB) and other major central banks have succeeded in mitigating concern over European banks' funding conditions thus far. Stock prices have rebounded in the U.S. and other overseas stock markets, reflecting the improvement in U.S. economic indicators.

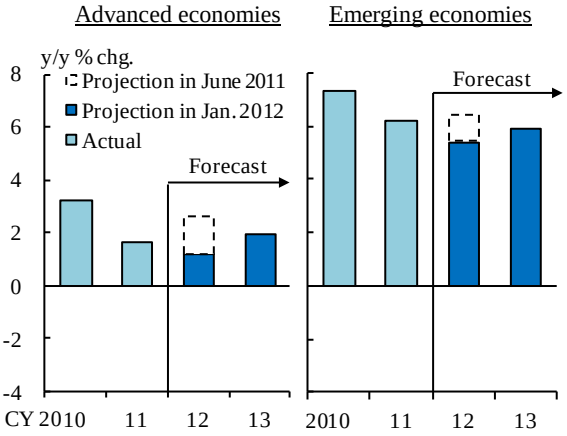
Nonetheless, the prospect of the European debt problem is highly uncertain, and global financial markets remain under a high degree of uncertainty. Furthermore, the European debt problem has exerted downward pressure on European economies and posed concerns about other economies' developments (Chart II-1-2).

Chart II-1-1: Global stock prices and government bond yields[1,2,3]



Notes: *1*. Stock prices are as follows; United States: S&P 500; Emerging economies: MSCI Emerging; Europe: STOXX Europe 600; Japan: TOPIX.
2. Government bonds are 10-year bonds.
3. The latest data are as of March 30, 2012.
Source: Bloomberg.

Chart II-1-2: World economic outlook



Source: IMF, "World economic outlook."

2. European debt problem

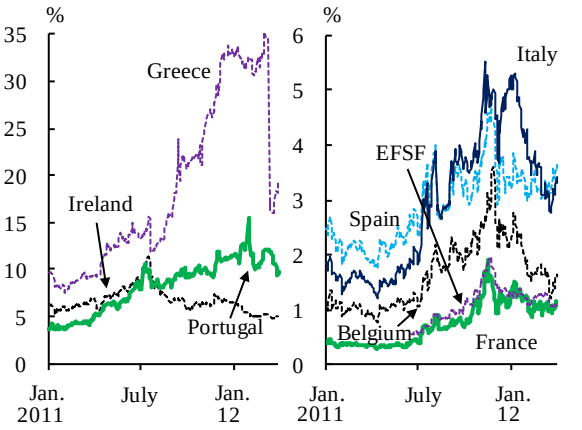
Growing concern over the debt problem

At the EU Summit and the Euro Summit in October 2011, a comprehensive strategy to tackle the debt problem was agreed. Many market participants, however, were so skeptical about the effectiveness of the strategy that concern over the debt problem spread from peripheral European countries such as Greece and Portugal to some major European countries such as Italy. As a consequence, government bond yields rose in most of euro area countries except Germany. The yield spreads of government bonds issued by Italy and Spain over German government bonds widened significantly, and those issued by France and Belgium also widened (Chart II-1-3). The yield spreads of the European Financial Stability Facility (EFSF) bonds, which are backed by the creditworthiness of euro area countries, over German government bonds also widened in line with a rise in yields on government bonds issued by these countries.

Since the turn of the year, however, government bond markets in the euro area have gradually regained stability. The bids in government bond auctions have been met

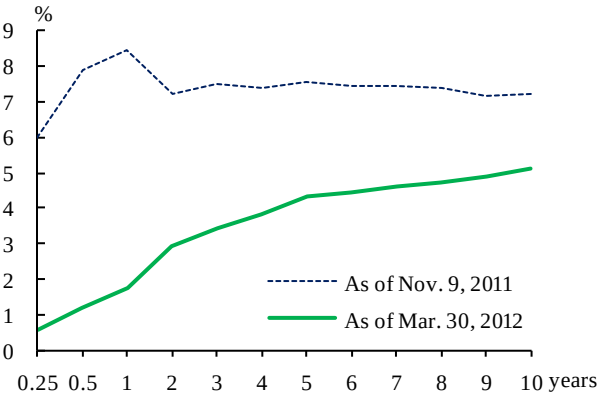
smoothly in euro area countries. Italian short-term interest rates, which temporarily rose as high as the long-term interest rates, have fallen well below the latter (Chart II-1-4). In March 2012, Greek government bond yields declined largely in reaction to the approval of the second aid program that outlined a debt restructuring procedure in Greece. At the same time, collective action clauses (CACs) were activated, forcing debt exchange on all holders of Greek government bonds including bondholders who were against it, but financial markets have not been seriously affected so far.[1] However, market vigilance with regard to the debt problem has been so strong that long-term interest rates in peripheral European countries have remained at high levels.

Chart II-1-3: Government bond yields[1,2]



Notes: *1*. 10-year spreads over German government bond yields.
2. The latest data are as of March 30, 2012.
Source: Bloomberg.

Chart II-1-4: Italian government bond yield curve



Source: Bloomberg.

Deterioration in banks' funding conditions

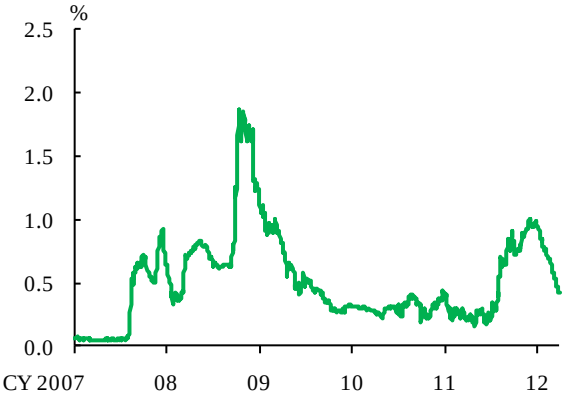
The growing concern over the debt problem has adversely affected the funding of European banks by lowering their creditworthiness. In short-term markets, reflecting heightened concerns over counterparty risk, uncollateralized term funding rates such as the Euribor-to-Eonia spread rose toward the end of 2011 (Chart II-1-5). In the repo market, as margin calls were raised on government bonds issued by Italy, whose creditworthiness was called into question, repo transactions backed by such government bonds decreased (Chart II-1-6). In bond markets, banks had difficulty, although temporarily, in issuing uncovered bonds (Chart II-1-7).

Deterioration in funding conditions has also influenced banks' U.S. dollar funding. The dollar funding premium for European banks widened largely toward the end of 2011

[1] Following the activation of the CACs, the International Swaps and Derivatives Association (ISDA) resolved that a credit event in credit derivatives transactions had occurred.

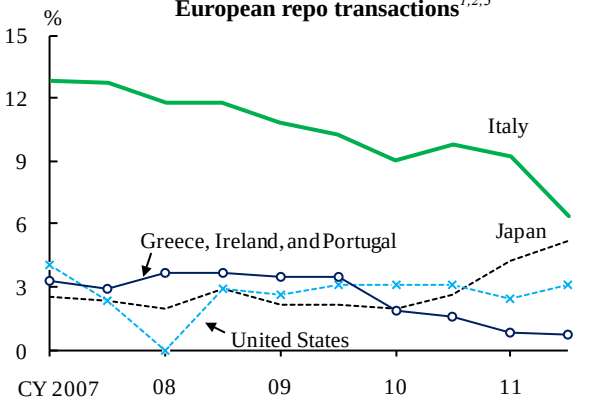
temporarily. In addition, since summer 2011, U.S. money market funds (MMFs) -- major providers of dollars -- have reduced their exposures to European banks substantially (Chart II-1-8).

Chart II-1-5: Spreads between Euribor and Eonia[1,2]



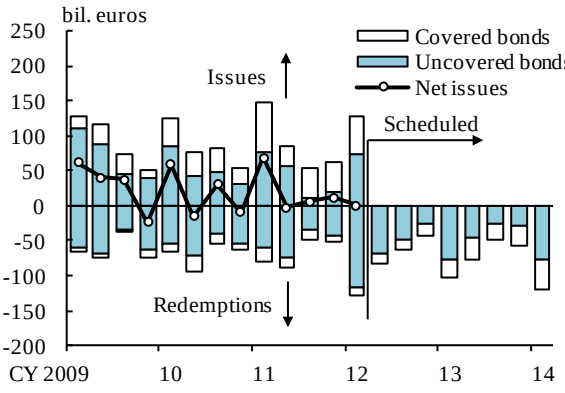
Notes: *1*. Eonia (Euro Overnight Index Average) is the average of uncollateralized overnight rates in the interbank market in the euro area.
2. 3-month-term to maturity. The latest data are as of March 30, 2012.
Source: Bloomberg.

Chart II-1-6: Shares of collateral government bonds in European repo transactions[1,2,3]



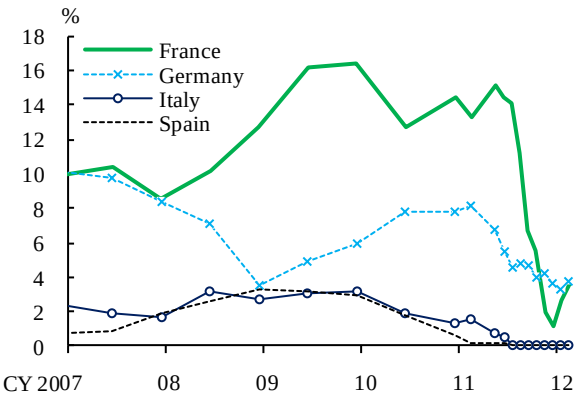
Notes: *1*. Based on surveys conducted in June and December of each year.
2. Japan and the United States include collateral securities other than government bonds.
3. Repo transactions denominated in currencies other than euro are included.
Source: ICMA, "European repo market survey."

Chart II-1-7: Issues and redemptions of bank bonds[1,2]



Notes: *1*. Banks located in the euro area are counted.
2. The signs on the amount of redemptions are reversed.
Source: Dealogic.

Chart II-1-8: Share of investment by U.S. MMFs[1]



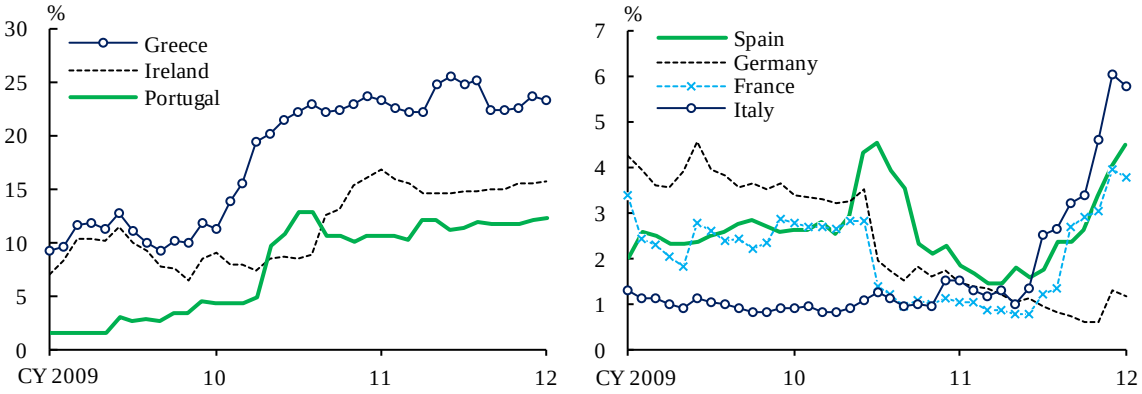
Note: *1*. The latest data are as of February 2012.
Source: Fitch ratings.

Such concern over European banks' funding conditions has temporarily receded due to the coordinated action by the six major central banks (November 2011) as well as the 3-year longer-term refinancing operations with full allotment conducted by the ECB (December 2011).[2] Since the turn of the year, short-term euro funding rates have

[2] In November 2011, the Bank of Canada, the Bank of England, the Bank of Japan, the ECB, the Federal Reserve, and the Swiss National Bank agreed to lower the pricing on the existing temporary U.S. dollar liquidity swap arrangements by 50 basis points. At the December meeting, the Governing

declined and the U.S. dollar funding premium has narrowed. However, since market concern over counterparty risk has not been dispelled, some European banks have continued to rely on funding through the ECB's refinancing operations (Chart II-1-9).

Chart II-1-9: European banks' funding through the ECB's money market operations[1,2]

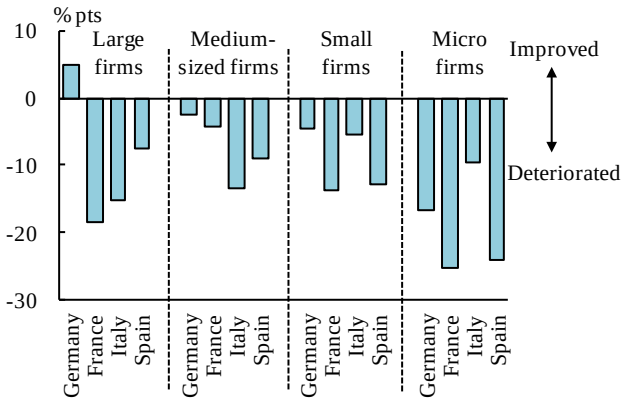


Notes: *1*. Ratio of funding amount through the ECB's money market operations to banks' liabilities.
2. The latest data are as of January 2012.
Source: Eurosystem.

Banks' lending and its effects on financial conditions

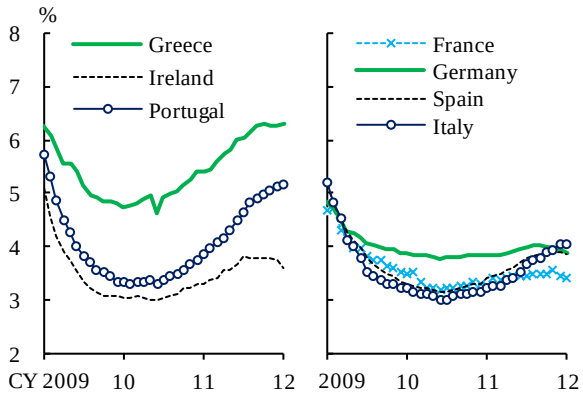
Deterioration in European banks' funding conditions has influenced their lending attitudes (Chart II-1-10). A rise in banks' funding costs has been passed on to loan interest rates. Loan interest rates have already surged in Greece and Portugal, while those in major European countries such as Italy and Spain have started to rise gradually

Chart II-1-10: Lending attitudes of European banks[1]



Note: *1*. Changes in banks' lending attitudes evaluated by firms in the euro area. Survey covers the period from April to September 2011.
Source: ECB, "Survey on the access to finance of SMEs in the euro area."

Chart II-1-11: Interest rates on loans in Europe[1]



Note: *1*. Average interest rate on outstanding loans extended to firms. The latest data are as of January 2012.
Source: ECB, "Euro area MFI interest rate statistics."

Council of the ECB decided to (1) lower the policy interest rate (from 1.25 percent to 1.0 percent), (2) reduce the reserve ratio (from 2 percent to 1 percent), (3) relax the collateral eligibility criteria, and (4) conduct 3-year longer-term refinancing operations with full allotment.

(Chart II-1-11). As for loans outstanding in the euro area, the quarter-on-quarter rate of growth has slowed recently, turning negative in the October-December quarter of 2011 (Chart II-1-12). Banks' cautious lending attitudes, together with the deterioration in issuing conditions for corporate bonds, have adversely affected funding conditions of firms and households in Europe.

Chart II-1-12: Loans outstanding in the euro area[1]

Note: *1*. The latest data are as of the October-December quarter of 2011.
Source: ECB, "MFI loans, deposits and security holdings by sector."

Deterioration in financial conditions in Europe, along with the strengthened fiscal austerity and weakened business and household sentiment, has exerted downward pressure on the real economy. These effects have spilled over to countries outside the euro area through international trade and global financial markets (Chart II-1-2).

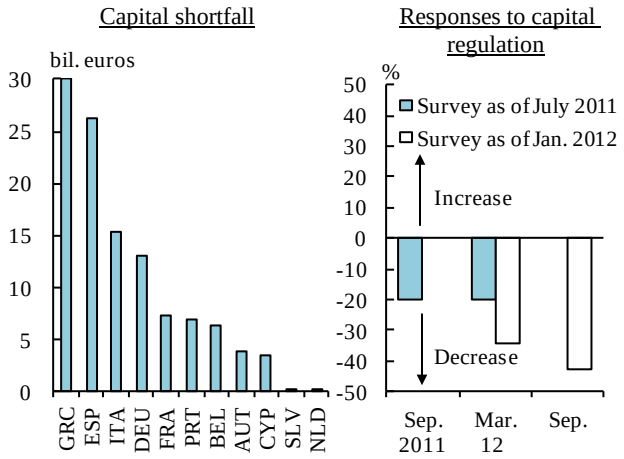
Capital constraints of European banks

European banks' cautious lending attitudes reflect the need to comply with the new Basel requirements and national regulatory requirements, as well as the need to raise the capital adequacy ratio under the new requirements imposed by the European Banking Authority (EBA; Chart II-1-13).[3] Some European banks have already sold non-core business to foreign banks, but the effects of the deleveraging have been limited so far. Nonetheless, European banks hold a large amount of external claims and have significant shares of loans in some emerging economies (Chart II-1-14). Therefore, attention should be paid to the possibility that if deleveraging by European banks is not offset sufficiently by other banks, it could adversely affect financial and economic

[3] Based on the decision at the Euro Summit in October 2011, European banks are required to have a core Tier I capital ratio of 9 percent and to create a buffer after accounting for market valuation of sovereign debt exposures by June 2012.

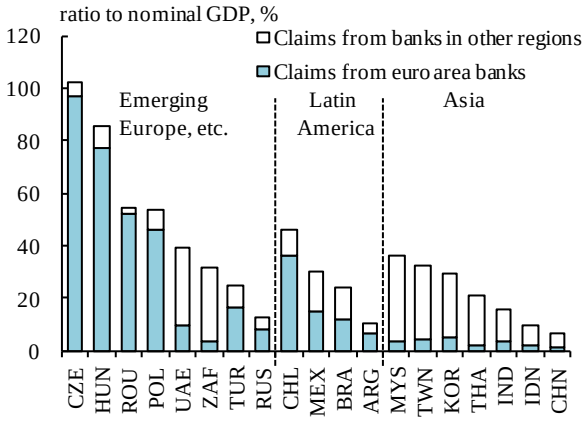
conditions of emerging economies in which European banks have a large share in the loan market.

Chart II-1-13: Capital shortfall and responses to capital regulations in European banks[1,2,3]



Notes: *1*. Figures in the left chart include sovereign capital buffers.
2. The right chart depicts spreads between the ratios of banks that increased risk-weighted assets and those of banks that decreased risk-weighted assets.
3. See Annex 2 for country specification.
Sources: European Banking Authority; ECB, "Euro area bank lending survey."

Chart II-1-14: Cross-border claims on emerging countries[1,2]



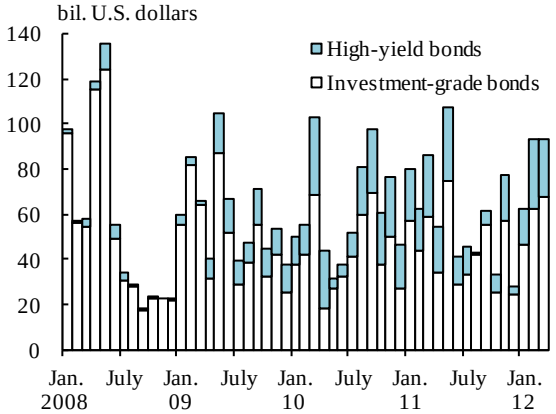
Notes: *1*.Claims are as of end-September 2011. Nominal GDP is as of 2010.
2. See Annex 2 for country specification.
Sources: IMF; BIS, "Consolidated banking statistics."

3. Financial conditions and balance-sheet adjustments by households in the United States

Financial conditions in the United States

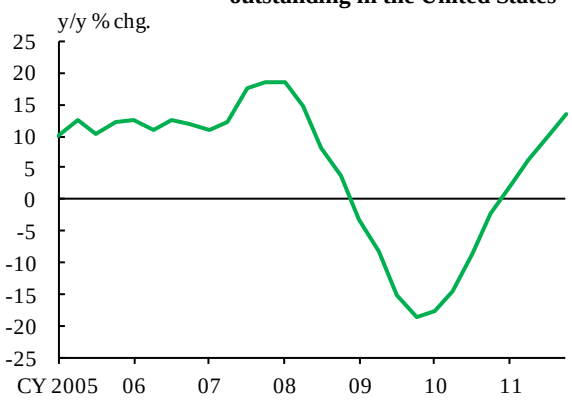
Amid the prolonged monetary easing in the United States, firms' funding conditions have been stable. Although corporate bond issuance decreased toward autumn 2011, when investors became increasingly risk averse, issuance of investment-grade and

Chart II-1-15: U.S. corporate bond issuance[1]



Note: *1*. The latest data are as of March 2012.
Source: Thomson Reuters.

Chart II-1-16: Commercial and industrial loans outstanding in the United States[1]



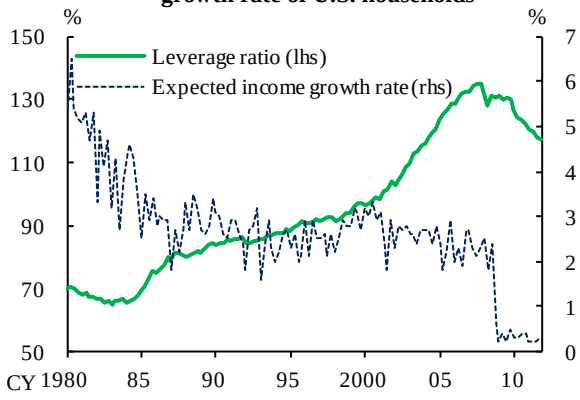
Note: *1*. The latest data are as of December 2011.
Source: FDIC, "Statistics on depository institutions."

high-yield corporate bonds has begun to recover (Chart II-1-15). The outstanding amount of CP issued has recently been on an uptrend. Banks' lending attitudes toward firms have become more accommodative, and commercial and industrial loans turned to an increase in 2011 on a year-on-year basis (Chart II-1-16).

Balance-sheet adjustments by households and the housing market

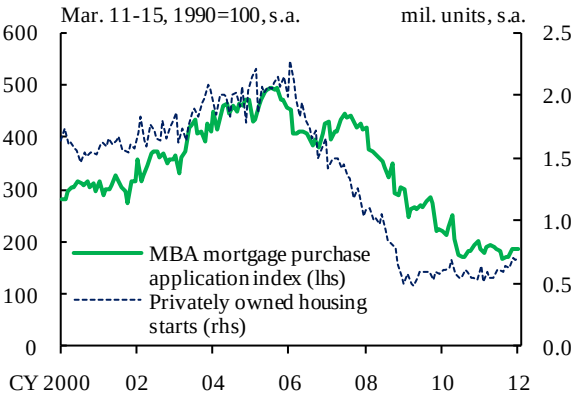
As U.S. households are still in the process of balance-sheet adjustments, the U.S. economy is tending to deviate downward. Since 2008, households' debt outstanding has gradually been adjusted, but is still higher than its historical level (Chart II-1-17). As the employment and income situation of households has recovered slowly, the expected growth rate of income has remained at a rather low level. Therefore, demand for housing loans remains weak, and the growth in housing investment continues to be restrained (Chart II-1-18).

Chart II-1-17: Leverage ratio and expected income growth rate of U.S. households[1,2,3]



Notes: *1*. The latest data are as of December 2011.
2. Leverage ratio is a ratio of debt outstanding to disposable income.
3. Expected income growth rate is a result of a survey on that during the next year.
Sources: BEA, "National economic accounts"; FRB, "Flow of funds accounts of the United States"; Thomson Reuters.

Chart II-1-18: U.S. housing loans and housing construction[1,2]



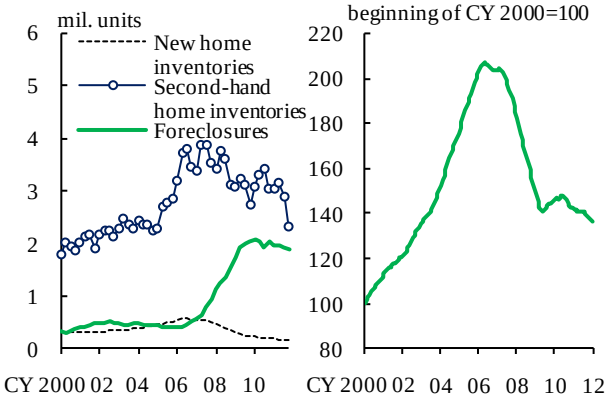
Notes: *1*. The latest data are as of January 2012.
2. MBA mortgage purchase application index is calculated using the number of applications to loans for single-family home purchase. Monthly averages of original weekly data.
Sources: Mortgage Bankers Association; U.S. Census Bureau.

In the U.S. housing market, housing stock, new and secondhand, is decreasing slowly. However, the foreclosure of borrowers' houses by financial institutions has remained at a high level (Chart II-1-19). This potential housing stock could weigh on future housing prices.

U.S. banks' overall nonperforming-loan (NPL) ratio has been decreasing, but the NPL ratio of housing loans remained high even in 2011 (Chart II-1-20). With the slow recovery in the employment and income situation, housing prices are likely to remain

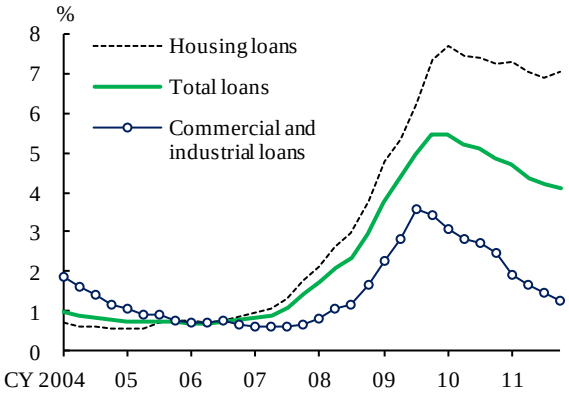
under strong downward pressure, and credit costs arising from housing loans could remain a risk factor for U.S. banks.

Chart II-1-19: U.S. home inventories, foreclosures, and housing prices[1]



Note: *1*. The latest data are as of the October-December quarter of 2011 for the left chart, and January 2012 for the right chart.
Sources: Haver Analytics; National Association of Realtors; U.S. Census Bureau; S&P,"S&P/Case-Shiller home price indices."

Chart II-1-20: NPL ratios at U.S. banks[1]



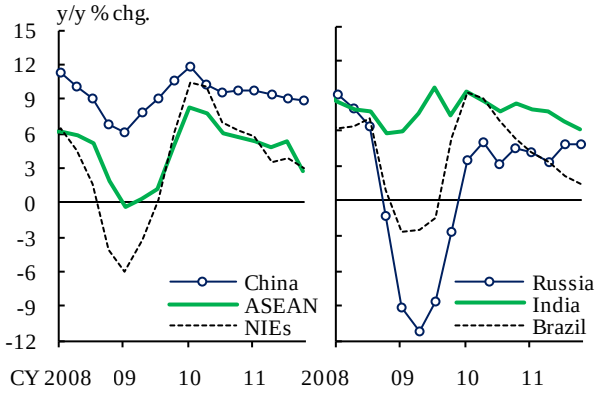
Note: *1*. The latest data are as of December 2011.
Source: FDIC, "Statistics on depository institutions."

4. Developments in emerging economies

Easing signs of economic overheating and variation among emerging economies

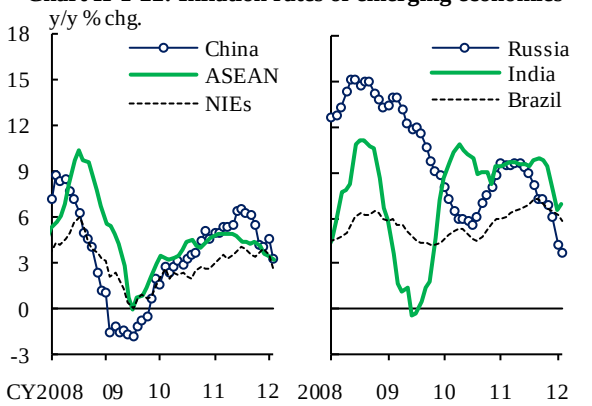
While emerging economies have been maintaining somewhat high growth rates, the pace of growth has been slowing to some extent recently given the past monetary tightening and the slowdown in advanced economies (Chart II-1-21). In addition, inflation rates have generally been on a moderate downtrend (Chart II-1-22).

Chart II-1-21: Real GDP of emerging economies[1]



Note: *1*. The latest data are as of the October-December quarter of 2011.
Sources: Bureau of statistics in each country.

Chart II-1-22: Inflation rates of emerging economies [1,2]

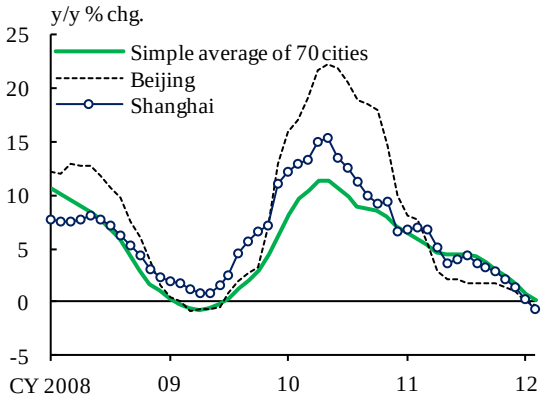


Notes: *1*. The latest data are as of February 2012.
2. Yearly changes in the consumer price index (wholesale price index for India).
Sources: Bureau of statistics in each country.

Nevertheless, the degree of the slowdown in economic growth and the decline in inflationary pressure vary across countries. In emerging economies, monetary easing amid a slowdown in economic growth has started to take place. In India and Brazil, their economic slowdown has recently come to a halt, but inflation rates have remained high. It is uncertain whether they can achieve price stability and economic growth simultaneously.

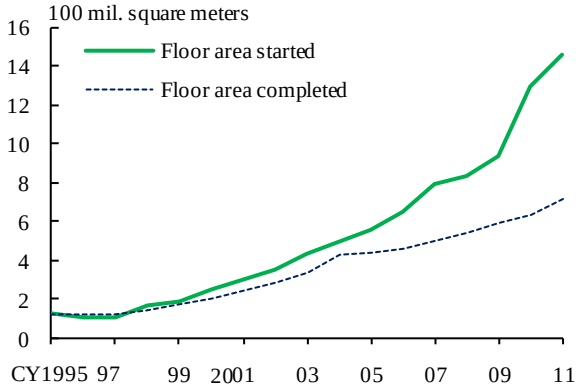
With regard to asset prices, China has taken a number of measures to control real estate transactions since 2010 in response to the strong signs of overheating in the real estate market. As a result, the pace of increase in housing prices has slowed (Chart II-1-23). Nonetheless, the floor area of housing construction starts largely exceeds the area of completed construction. The resulting high level of potential housing stock could exert downward pressure on housing prices further (Chart II-1-24). If housing prices undergo rapid adjustment, the quality of banks' housing loans and the loans to real estate companies could decline. Attention should therefore continue to be paid to developments in China's housing market.

Chart II-1-23: Housing prices in China[1]



Note: *1*. Yearly price changes for new housing. The latest data are as of February 2012.
Source: National Bureau of Statistics of China.

Chart II-1-24: Residential floor area started and completed in China[1]



Note: *1*. The latest data are as of 2011.
Source: National Bureau of Statistics of China.

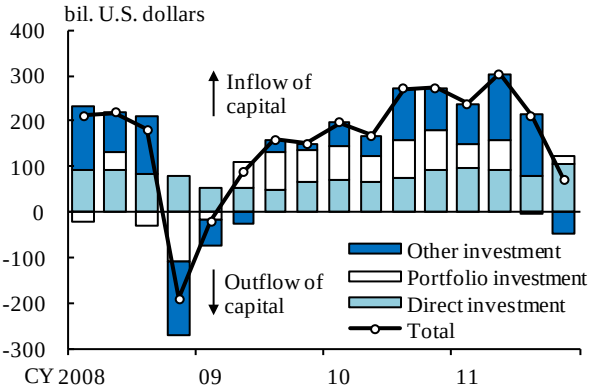
Global capital flows into and out of emerging economies

Reflecting the slow growth of emerging economies, global capital flows into these economies have decelerated since autumn 2011 (Chart II-1-25).[4] As mentioned earlier,

[4] In Chart II-1-25, emerging economies consist of the following: (1) European emerging economies, such as Russia, Turkey, Poland, the Czech Republic, Hungary, the Slovak Republic, Bulgaria, Romania, Estonia, Latvia, and Lithuania; (2) Asian emerging economies, such as South Korea, Taiwan, Singapore, Hong Kong, Indonesia, Thailand, and the Philippines; (3) Latin American economies, such as Brazil, Argentina, and Mexico; and (4) South Africa.

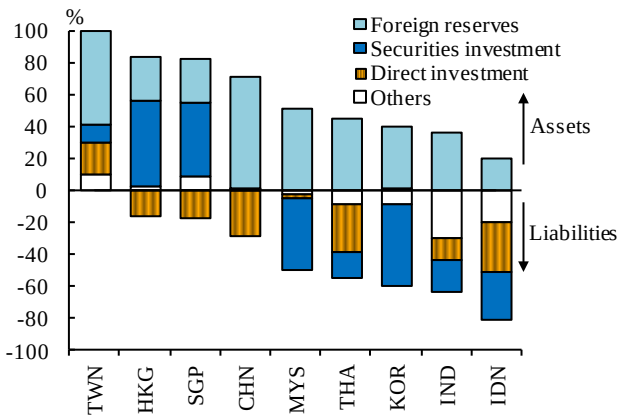
the effects of deleveraging by European banks on global capital flows have generally been limited so far. The capital inflows to some emerging economies, however, consist mainly of short-term funds, such as those for securities investment (Chart II-1-26). Therefore, attention should continue to be paid to changes in risk-taking of globally active investors and the subsequent change in capital inflows to emerging economies from overseas.

Chart II-1-25: Capital flow to emerging countries[1]



Note: *1*. Based on the capital and financial accounts in the balance of payments statistics; the liabilities side of financial accounts excluding financial derivatives is counted. The latest data are as of the October-December quarter of 2011.
Sources: CEIC; Central bank of each country.

Chart II-1-26: External assets and liabilities[1,2]



Notes: *1*. Figures are net values of items in external assets and liabilities divided by the sum of the absolute value of all items. The data are as of end-2010.
2. See Annex 2 for country specification.
Source: CEIC.

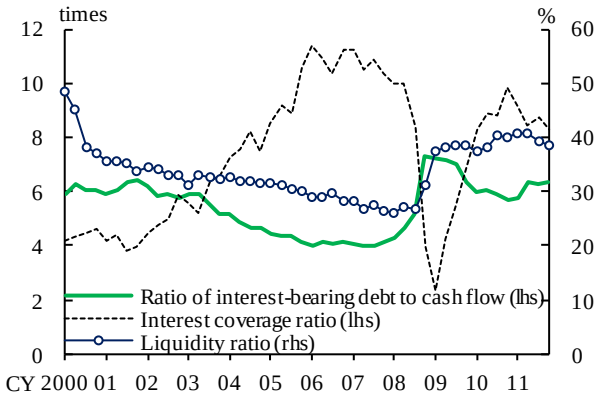
B. Domestic economy and the balance sheets of firms and households

Firms' financial conditions and borrowing demand

As for Japan's economy, domestic demand has been firm, partly due to the restoration of facilities damaged by the Great East Japan Earthquake, while net exports have remained more or less flat reflecting a slowdown in overseas economies and the appreciation of the yen. In these circumstances, although corporate profits have recently been flat, firms' financial conditions have generally improved. Large firms in particular have maintained a high interest coverage ratio (ICR), which represents their capacity for interest payments (Chart II-2-1). In addition, the amount of interest-bearing debt relative to cash flow has been decreasing, and holdings of on-hand liquidity have been sufficient. Reflecting this cautious stance of large firms toward financing, their credit ratings continued to recover through fiscal 2010, and the trend is considered to remain more or less unchanged at present (Chart II-2-2). However, small and medium-sized firms are still faced with severe financial conditions as seen in significantly deteriorated financial indicators such as the ICR for some firms (Chart II-2-3).

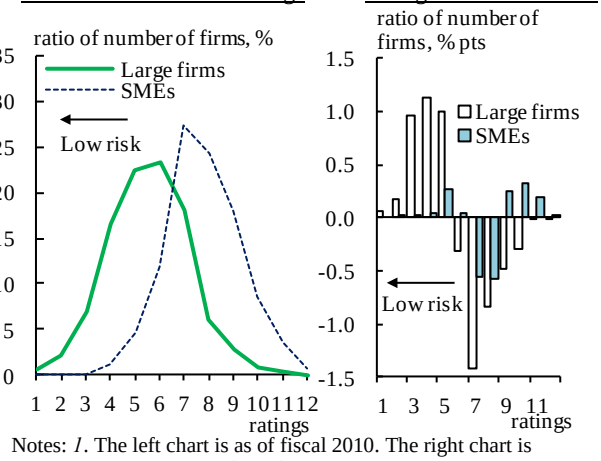
The amount of business fixed investment remains within the range of firms' cash flow, and thus borrowing demand for such investment has been sluggish (Chart II-2-4).

Chart II-2-1: Large firms' debt servicing capacity[1]



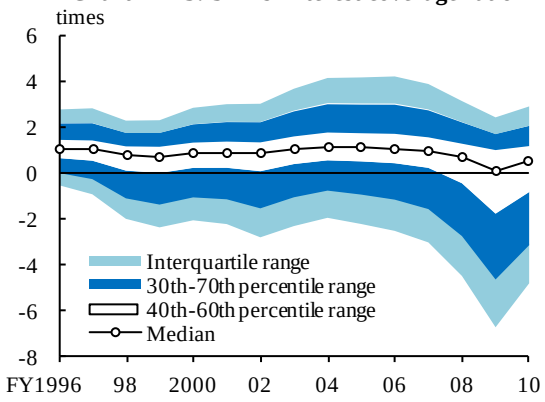
Note: *1*. See Annex 2 for definitions of variables. The latest data are as of the October-December quarter of 2011.
Source: Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly."

Chart II-2-2: Credit ratings[1,2]



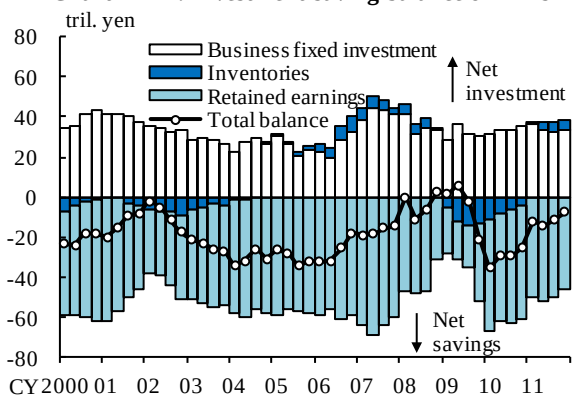
Notes: *1*. The left chart is as of fiscal 2010. The right chart is yearly changes from fiscal 2009 to 2010.
2. "SMEs" stands for small and medium-sized enterprises.
Source: Teikoku Databank, "SPECIA."

Chart II-2-3: SMEs' interest coverage ratio[1,2]



Notes: *1*. See Annex 2 for definitions of variables.
2. See Note 2 in Chart II-2-2.
Source: CRD.

Chart II-2-4: Investment-saving balance of firms[1]



Note: *1*. The latest data are as of the October-December quarter of 2011.
Source: Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly."

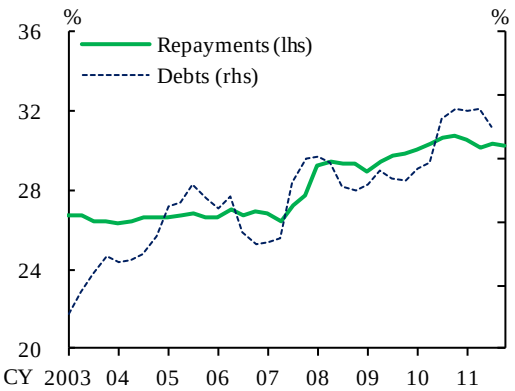
Households' financial conditions and borrowing demand

The employment and income situation has remained severe, although signs of improvement have appeared. In these circumstances, debt servicing capacity of households with housing loans has deteriorated gradually, as the ratio of principal and interest repayments to income has remained relatively high (Chart II-2-5). The amount of debt to income has been on a gradual uptrend, reflecting sluggish income.

Households' borrowing demand remains lackluster in this severe income situation

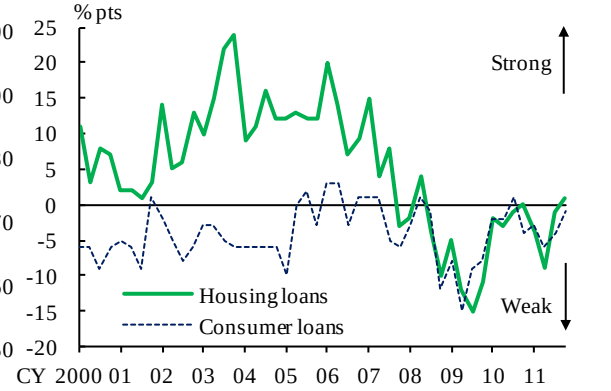
(Chart II-2-6).

Chart II-2-5: Households' debt servicing capacity[1,2,3]



Notes: *1*. The ratios to disposable income. 4-quarter moving averages.
2. Households with housing loans are counted.
3. The latest data are as of the October-December quarter of 2011 for repayments, and the July-September quarter of 2011 for debts.
Source: Ministry of Internal Affairs and Communications, "Family income and expenditure survey."

Chart II-2-6: DIs of households' borrowing demand[1]



Note: *1*. The latest data are as of the October-December quarter of 2011.
Source: BOJ, "Senior loan officer opinion survey on bank lending practices at large Japanese banks."

C. Issues related to Japan's financial system

Changes in the domestic and overseas environment could adversely affect Japan's financial system through two channels: the real economic channel and the financial channel.

With regard to the real economic channel, a further slowdown in the global economy would lower the quality of overseas loans extended by the major banks that are active in overseas lending. Possible spillover of a slowdown in the global economy to Japan's economy would lower the quality of domestic bank loans through deterioration in corporate profits and household income. Credit costs could increase particularly at financial institutions that extend a large amount of loans to small and medium-sized firms and households with severe financial conditions (see Chapter V.A).

As for the financial channel, it is possible that shocks in overseas financial markets will spill over to Japan's financial markets through changes in risk-taking behavior of globally active investors. As for securities held by Japan's banks, stockholdings remain large. Moreover, Japan's banks continue to increase the share of JGB holdings and also hold a large share of foreign bonds, mainly U.S. Treasuries. Life insurance companies have also increased investment in foreign bonds. If shocks occur in overseas financial markets, therefore, it would impair financial institutions' realized gains/losses not only

on foreign securities holdings but also on domestic securities holdings through the spillover effects on domestic market prices (see Chapters V.B and V.C).

Furthermore, attention should be paid to the possibility that if the creditworthiness of European and U.S. banks is called into question, a heightened concern over counterparty risk could adversely affect funding conditions of Japan's banks in foreign currencies (see Chapter V.B).

III. Examination of financial intermediation

This chapter examines funding conditions of firms and households in both financial and loan markets and then scrutinizes financial intermediation in Japan and the related risks.

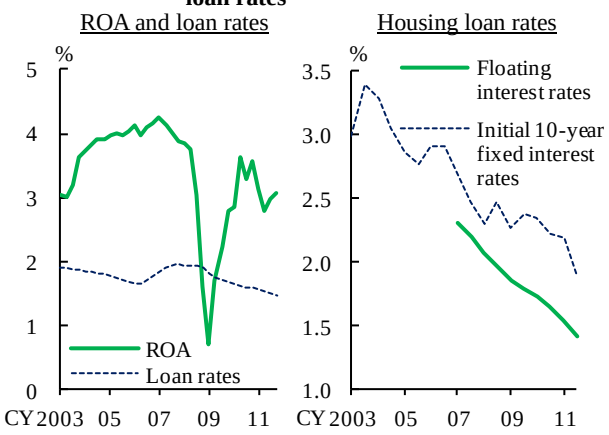
Financial conditions of firms and households in Japan have continued to ease amid the low interest rate environment. Issuing conditions for CP and corporate bonds have remained favorable, and banks' lending attitudes have been positive. In these circumstances, banks' loan interest rates have declined, partly because various types of financial institutions have increasingly competed on lending. Due to declining profits on domestic loans, Japan's banks, particularly the major banks, have increased overseas loans, and the share of their loans in the global loan market has started to increase moderately. In addition, Japan's banks, including the regional banks, have been supporting start-ups and new types of business, but there still is plenty of room for private financial institutions to better perform financial intermediation.

A. Financial conditions of firms and households

The Bank of Japan, as part of its comprehensive monetary easing policy, increased the total size of the Asset Purchase Program in October 2011. With a view to clarifying its policy stance, the Bank enhanced monetary easing in February 2012 by introducing "the price stability goal in the medium to long term" and by increasing the total size of the Asset Purchase Program.[5] In this situation, financial conditions of both firms and households have been easing. Firms' funding costs have been decreasing moderately, and their interest costs have been at a low level relative to corporate profits (the left-hand side of Chart III-1-1). Their funding conditions have generally been improving (Chart III-1-2). Moreover, households have benefited from low housing loan interest rates (the right-hand side of Chart III-1-1).

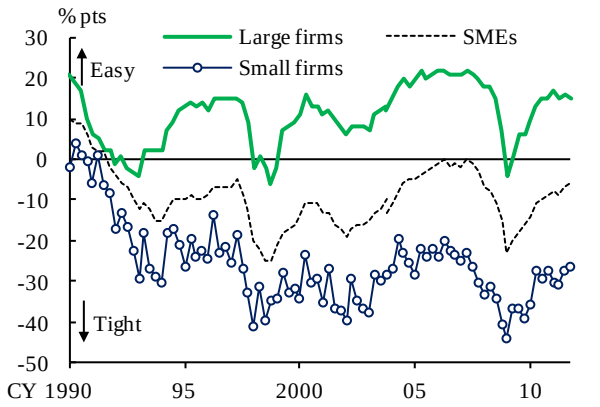
[5] The comprehensive monetary easing policy currently consists of the following: (1) the virtually zero interest policy; (2) a new policy commitment, which says "For the time being, the Bank will continue pursuing powerful monetary easing by conducting its virtually zero interest policy and by implementing the Asset Purchase Program mainly through the purchase of financial assets, with the aim of achieving the goal of 1 percent in terms of the year-on-year rate of increase in the CPI until the goal is in sight"; and (3) the Asset Purchase Program to purchase various types of financial assets and the fixed-rate funds-supplying operation against pooled collateral. After the previous issue of the *Report*, the Bank increased the total size of the Asset Purchase Program twice -- an increase from about 50 trillion yen to about 55 trillion yen in October 2011, and an increase from about 55 trillion yen to about 65 trillion yen in February 2012.

Chart III-1-1: Firms' ROA, loan rates, and housing loan rates[1,2,3]



Notes: *1*. ROA in the left chart indicates the ratio of operating profits to total assets.
2. Housing loan rates in the right chart indicate offered rates minus preferred discounts.
3. The latest data are as of the October-December quarter of 2011 for the left chart, and October 2011 for the right chart.
Sources: Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly"; Japan Financial News, "Nikkin report"; BOJ, "Average contract interest rates on loans and discounts."

Chart III-1-2: DIs of financial positions[1,2]



Notes: *1*. "SMEs" stands for small and medium-sized enterprises.
2. The latest data are as of December 2011 for large firms and SMEs, and as of the October-December quarter of 2011 for small firms.
Sources: Japan Finance Corporation, "Quarterly survey of small businesses in Japan"; BOJ, "*Tankan*."

B. Financial market conditions

CP and corporate bond market conditions

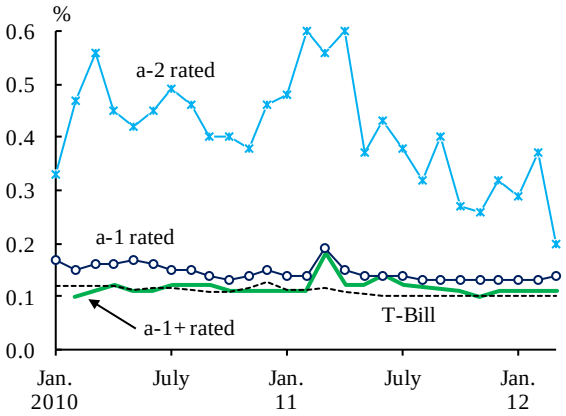
As for firms' market funding, issuing conditions for CP have remained favorable, and issuance rates on CP have been at low levels (Chart III-2-1). The outstanding amount of CP issued, particularly by electrical machinery and equipment companies, continued to increase, but that of CP issued by electric power and gas companies, which temporarily increased after the disaster, was at almost the same level as the previous year at the end of 2011 (Chart III-2-2).

In corporate bond markets, issuing conditions have remained favorable, except for electric power companies that faced difficulties in issuing corporate bonds after the disaster.[6] The issuance amount of corporate bonds except electric power company bonds, including BBB-rated bonds, has been at almost the same level as the previous year (Chart III-2-3). Yield spreads between corporate bonds and government bonds in Japan have generally remained stable at lower levels than those in the United States and Europe, although those of some high-rated corporate bonds such as electric power

[6] In March 2012, Tohoku Electric Power Company became the first of the electric power companies holding nuclear power plants to issue straight corporate bonds following the disaster.

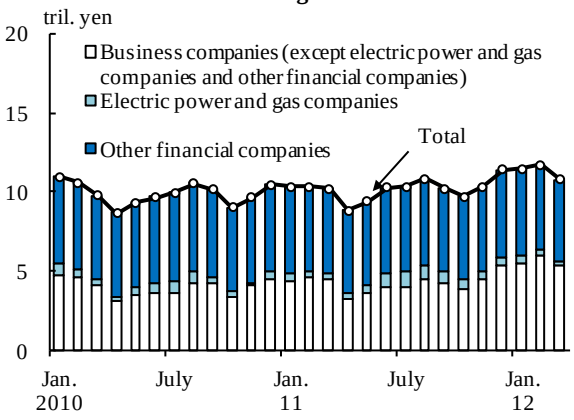
company bonds widened somewhat after the disaster (Chart III-2-4).[7]

Chart III-2-1: CP issuance rates[1,2]



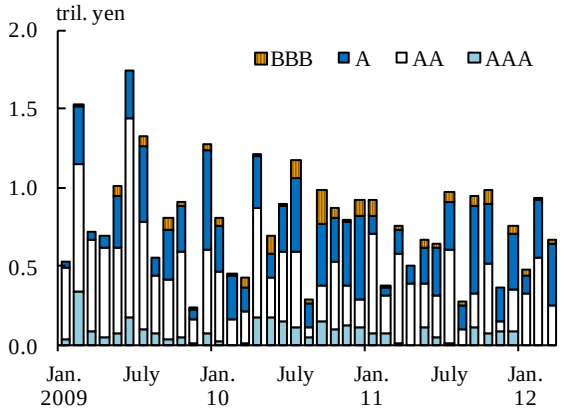
Notes: *1*. Monthly average 3-month rates weighted by issuance volume.
2. The latest data are as of March 2012.
Sources: Bloomberg; Japan Bond Trading; Japan Securities Depository Center.

Chart III-2-2: Outstanding amount of CP issued[1,2,3,4]



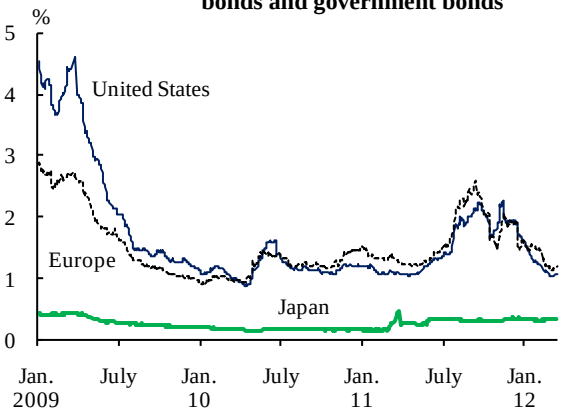
Notes: *1*. Business companies are counted.
2. Average of weekly outstanding amount.
3. "Other financial companies" includes leasing companies, credit card companies, consumer finance companies, and securities finance companies.
4. The latest data are as of March 2012.
Source: Japan Securities Depository Center.

Chart III-2-3: Issuance amount of corporate bonds[1,2]



Notes: *1*. Based on the launch date.
2. The latest data are as of March 2012.
Sources: Capital Eye; I-N Information Systems.

Chart III-2-4: Yield spreads between corporate bonds and government bonds[1,2,3,4]



Notes: *1*. Rated AA by R&I, Fitch, Moody's, and S&P.
2. For Japan, average yield spreads of bonds with a residual maturity of 3 years and over but less than 7 years.
3. For the United States and Europe, average yields spreads of bonds with a residual maturity of 3 years and over but less than 5 years. Bank of America Merrill Lynch, used with permission.
4. The latest data are as of March 30, 2012.
Sources: Bloomberg; Japan Securities Dealers Association; BOJ.

Real estate finance and securitization market conditions

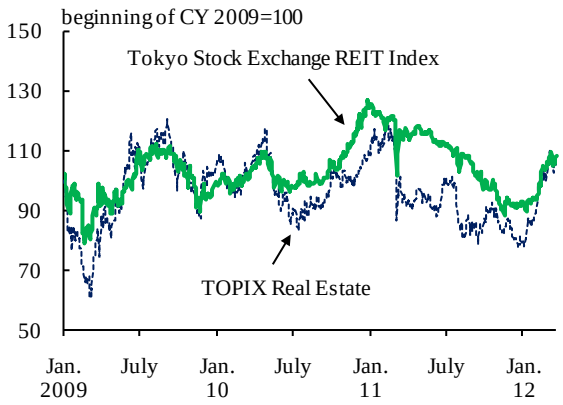
Investment unit prices of Japan real estate investment trusts (J-REITs) continued to decrease after the disaster in line with a decline in stock prices of real estate companies, but have started to rise since the beginning of 2012 due to repurchases mainly by

[7] Credit default swap (CDS) spreads that reflect firms' credit risk widened following those in the United States and Europe until around autumn 2011, but have been narrowing thereafter.

foreign investors (Chart III-2-5). Nonetheless, the fundamentals in the real estate market have recovered only slowly, and there has been concern about oversupply of J-REITs due to capital increases.

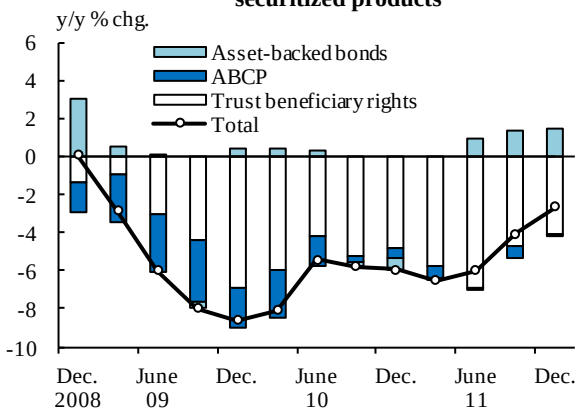
Meanwhile, with regard to securitized products, the outstanding amount -- mainly of trust beneficiary rights and asset-backed CP (ABCP) -- has continued to decrease since the Lehman shock. However, the pace of decrease has slowed since 2011 partly due to an increase in the outstanding amount of mortgage-backed securities (MBSs) issued by the Japan Housing Finance Agency (JHF; Chart III-2-6).

Chart III-2-5: REIT index[1]



Note: *1*. The latest data are as of March 30, 2012.
Source: Bloomberg.

Chart III-2-6: Outstanding amount of securitized products[1,2]



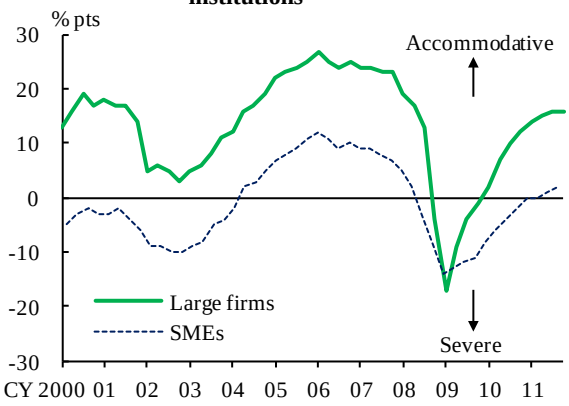
Notes: *1*. Securitized products in the form of securities.
2. The latest data are as of end-December 2011.
Source: BOJ, "Flow of funds account."

C. Loan market conditions

Developments in domestic corporate loans

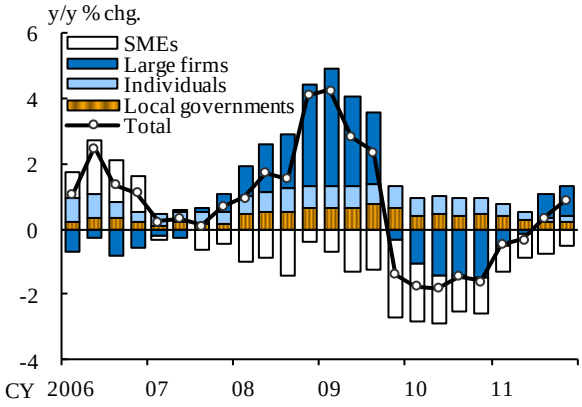
Banks' lending attitudes have been positive, and firms continue to see them as being on

Chart III-3-1: DIs of lending attitudes of financial institutions[1,2]



Notes: *1*. The latest data are as of December 2011.
2. See Note 1 in Chart III-1-2.
Source: BOJ, "*Tankan*."

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

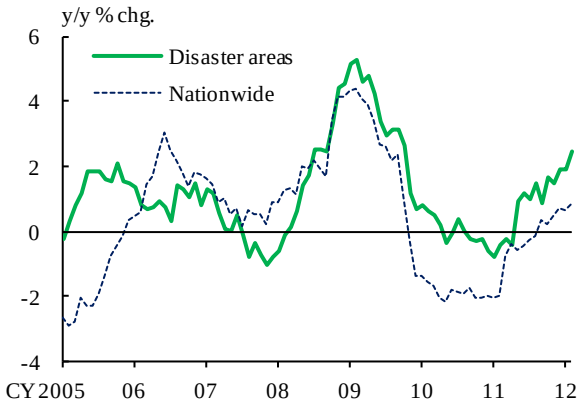


Notes: *1*. The latest data are as of end-December 2011.
2. See Note 1 in Chart III-1-2.
Source: BOJ, "Loans and bills discounted by sector."

an improving trend. The diffusion index (DI) of financial institutions' lending attitudes indicates an increase in net "accommodative" lending for large firms and shows net "accommodative" lending for small and medium-sized firms (Chart III-3-1).

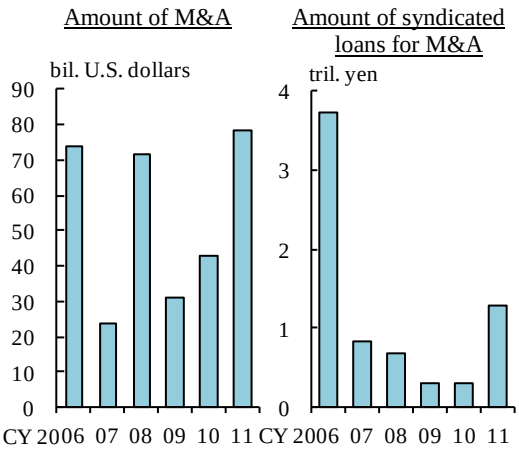
In this situation, banks' loans outstanding, particularly for corporate loans, turned to an increase (Chart III-3-2). Behind the increase in corporate loans lay the shift in funding source by electric power companies from corporate bonds to borrowing and also greater demand for working capital and funds related to mergers and acquisitions. In the disaster areas affected by the Great East Japan Earthquake, bank loans have been growing to meet firms' demand for working capital necessary to continue or resume business (Chart III-3-3). Furthermore, firms have been positive regarding mergers and acquisitions involving overseas firms since 2011, partly reflecting the appreciation of the yen. The firms have financed part of the necessary funds with syndicated loans and other types of borrowing (Chart III-3-4).

Chart III-3-3: Loans outstanding of banks in the disaster areas[1,2]



Notes: *1*. The latest data are as of end-February 2012.
2. "Disaster areas" indicates loans outstanding of banks with head offices in the three severely damaged prefectures. "Nationwide" indicates loans outstanding of the major banks and the regional banks.
Source: BOJ, "Deposits, loans and bills discounted by prefecture (domestically licensed banks)."

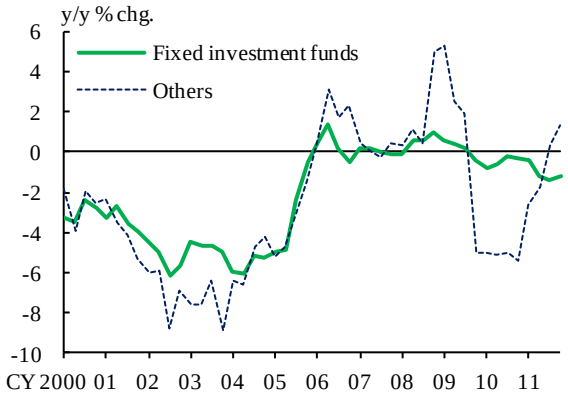
Chart III-3-4: Corporate M&A[1,2]



Notes: *1*. The left chart depicts total amount of M&A in which domestic firms acquired or merged with foreign firms.
2. The right chart depicts syndicated loan amounts extended to domestic firms.
Sources: Bloomberg; Thomson Reuters; RECOF.

As described in Chapter II.B, borrowing demand for business fixed investment remains sluggish, and loans outstanding for the investment continue to be lower than the previous year's level (Chart III-3-5).

Chart III-3-5: Corporate loans outstanding by purpose[1]



Note: *1*. The latest data are as of end-December 2011.
Source: BOJ, "Loans and bills discounted by sector."

Intensified lending competition and the decline in loan interest rates

In these circumstances, banks' loan interest rates have been declining. This is because banks' funding costs decrease and issuing conditions for CP and corporate bonds remain favorable amid the monetary easing. In addition, banks' positive lending attitudes amid sluggish borrowing demand of firms and households have reduced interest rates on loans by intensifying lending competition. For example, the regional banks have increased loans outside their home prefectures to maintain the loan amount, by increasing loans to large firms in metropolitan areas and by expanding their business to neighboring prefectures.[8] Public financial institutions, which set relatively low interest rates on loans, have also been increasing loans (Chart III-3-6).[9] After the Lehman shock, these institutions financed low-rated firms whose business conditions had deteriorated and also extended a noticeable share of loans to high-rated firms. In these circumstances, lending competition has intensified particularly in metropolitan areas, and interest rates on loans have declined especially for high-rated firms (Charts III-3-7 and III-3-8).

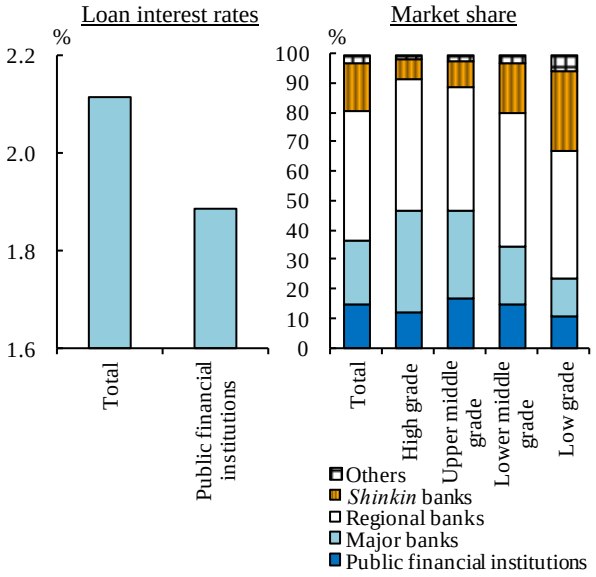
The decline in loan interest rates could adversely affect profits on bank loans further. Loan interest rates in fiscal 2010 for small and medium-sized firms were set at levels above the break-even point, except low-rated firms, for which the rates were already below the break-even point (Chart III-3-9). This is largely because the break-even point

[8] For details, see the October 2011 issue of the *Report*.

[9] The outstanding amount of loans extended by the Japan Finance Corporation (JFC; specifically by its Micro Business and Individual Unit and its Small and Medium Enterprise Unit) and the Shoko Chukin Bank at the end of the first half of fiscal 2011 increased by 7.3 percent from the end of fiscal 2008.

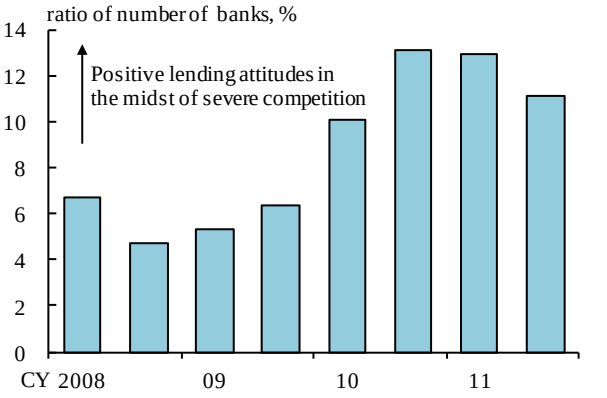
declined by a larger-than-usual degree, due to the reduction of credit costs as a result of

Chart III-3-6: Loan interest rates and market share of lending to SMEs[1,2,3]



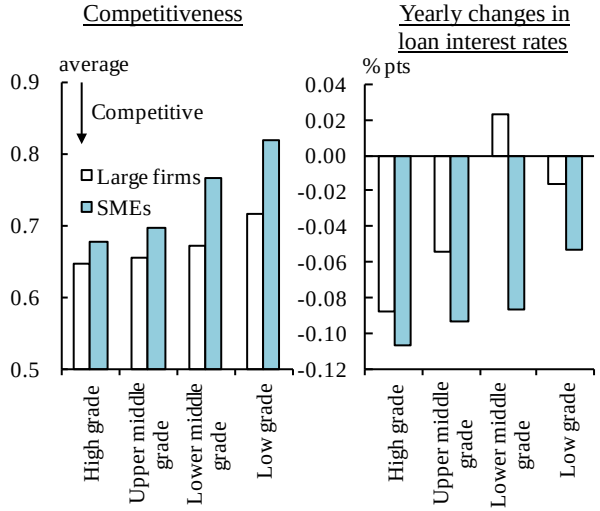
Notes: *1*. The loan interest rate of public financial institutions is defined as a weighted average of those of Shoko Chukin Bank and Japan Finance Corporation (micro business and individual unit, small and medium enterprise unit).
2. The data are as of fiscal 2010.
3. See Note 1 in Chart III-1-2.
Sources: Published accounts of each institution; Teikoku Databank, "SPECIA"; CRD.

Chart III-3-7: Banks' lending attitudes by competitive factor[1]



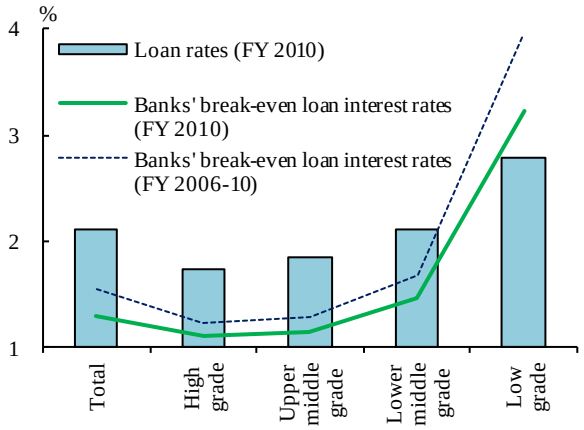
Note: *1*. Figures are the number of banks that tightened their lending attitudes (who replied that less aggressive competition was "important" or "somewhat important") subtracted from that of banks that eased their lending attitudes (who replied that more aggressive competition was "important" or "somewhat important"). Banks that answered "important" and "somewhat important" are counted as 1 and 0.5, respectively.
Sources: BOJ, "Senior loan officer opinion survey on bank lending practices at large Japanese banks"; BOJ calculations.

Chart III-3-8: Competitiveness of loan market and loan interest rates[1,2,3]



Notes: *1*. The degree of competitiveness is evaluated using Herfindarl indices.
2. The left chart is the average from fiscal 2008 to 2010. The right chart is yearly changes from fiscal 2009 to fiscal 2010.
3. See Note 1 in Chart III-1-2.
Source: Teikoku Databank, "SPECIA."

Chart III-3-9: Profitability of loans to SMEs[1,2,3]

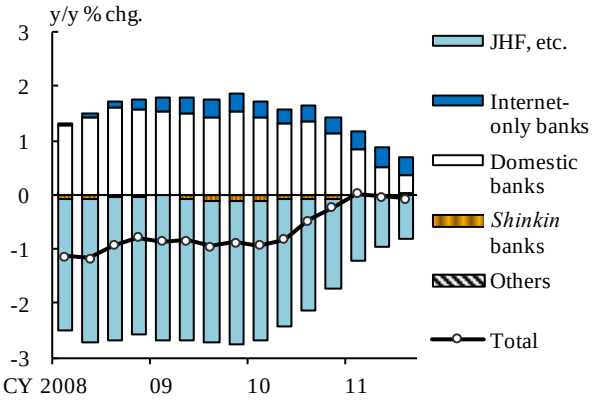


Notes: *1*. The break-even loan rates are the sum of the credit cost ratio, funding rate, and general expense rate.
2. The credit cost ratio for each grade is estimated by proportionally dividing actual credit costs based on default probabilities in each grade.
3. See Note 1 in Chart III-1-2.
Source: CRD; BOJ.

the recent policy measures, to be described in Chapter IV.C. If credit costs increase to the level of the average since fiscal 2006, net losses on bank loans to low-rated firms would expand based on the assumption of unchanged loan interest rates. Net profits on bank loans to small and medium-sized firms as a whole would decrease by about 30 percentage points, reflecting deterioration in profits on loans to high-rated firms, for which lending competition is relatively intense.

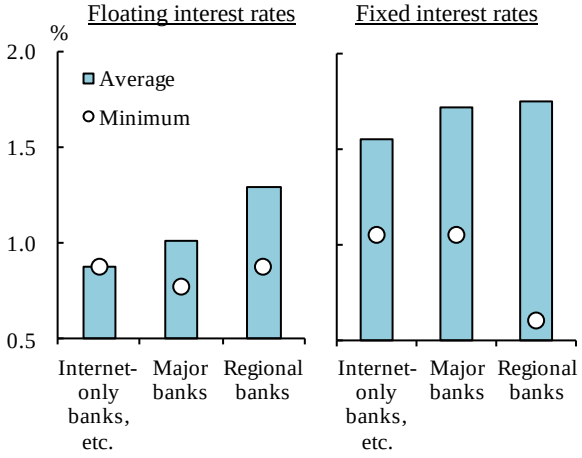
Interest rates have declined not only on corporate loans but also on housing loans (the right-hand side of Chart III-1-1). As for housing loans outstanding, the decline in housing loans extended by the JHF has decelerated, and the rise in loans extended by Internet-only banks has accelerated recently (Chart III-3-10).[10,11] In contrast, the growth in housing loans outstanding of both the major banks and the regional banks has slowed. Internet-only banks set loan interest rates lower than those of the major banks and the regional banks on average due to a lower ratio of general and administrative expenses to deposits (Chart III-3-11). Some of the major banks and the regional banks set loan interest rates far lower than others. With lackluster demand for housing loans,

Chart III-3-10: Housing loans outstanding[1,2]



Notes: *1*. The latest data are as of end-September 2011.
2. Internet-only banks are the sum of four major banks.
Sources: Japan Housing Finance Agency; BOJ, "Loans and bills discounted by sector," "Flow of funds accounts."

Chart III-3-11: Interest rates on housing loans[1,2]



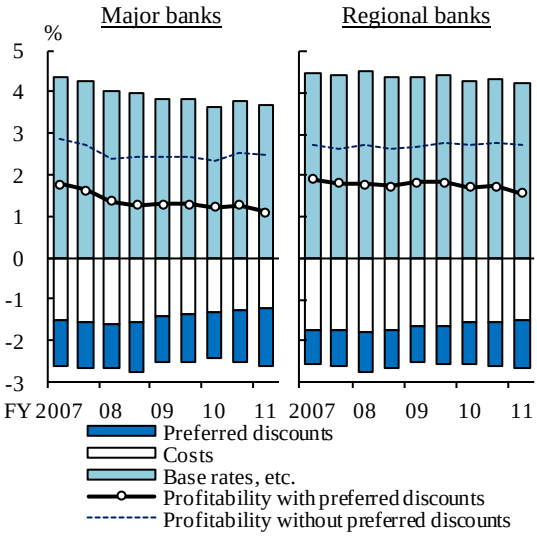
Notes: *1*. Figures are effective interest rates (offered rates minus preferred discounts) as of October 1, 2011.
2. Fixed interest rates are simple averages of initial 2-year, 3-year, 5-year, 7-year, 10-year, 15-year, and 20-year fixed interest rates.
Source: Japan Financial News, "Nikkin report."

[10] The JHF offers long-term fixed-rate housing loans, such as the "Flat 35 housing loan." It also offers the "Flat 35S Basic housing loan" for high-quality homes, and from February 2010 through September 2011 it expanded preferred discounts on loan interest rates from 0.3 percent to 1.0 percent for the first 10 years of the loan term. Furthermore, from December 2011 it has started to offer a new type of loan called the "Flat 35S Eco housing loan" with preferred discounts of 0.7 percent on loan interest rates for the first 5 years of the loan term.

[11] Internet-only banks include banks that offer services mainly through electronic media, such as the Internet and the telephone system, and banks that offer services mainly with ATMs and stores at commercial facilities.

intensified competition over loan interest rates among various types of financial institutions has mitigated the burden of households' interest payment but also worsened banks' profits from housing loans (Chart III-3-12).

Chart III-3-12: Profitability of housing loans[1,2]

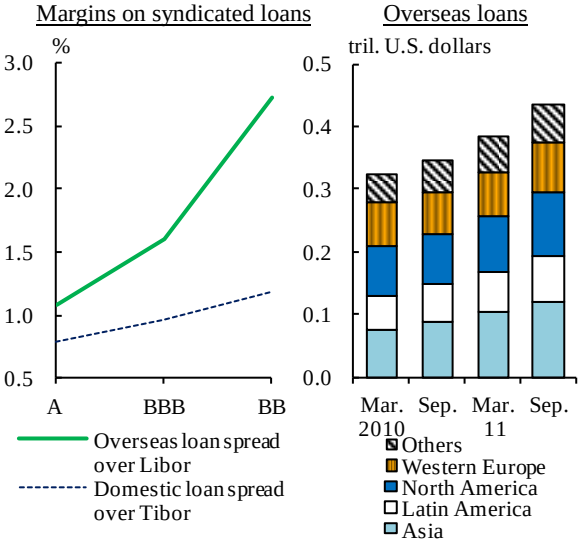


Notes: *1*. Profitability at the time of origination. The latest data are as of the first half of fiscal 2011.
2. Costs are the sum of the funding rate, the premium of group credit life insurance (assumed to be 0.3 percent), and the general expense rate (assumed to be the same as that for the whole business). Base rates, etc., are the sum of base rates, fees, and commissions.
Sources: Japan Financial News, "Nikkin report"; Japan Housing Finance Agency, "Survey of private mortgage loans"; Ministry of Land, Infrastructure, Transport and Tourism, "Survey of true state of private mortgage loans"; BOJ calculations.

Overseas loans

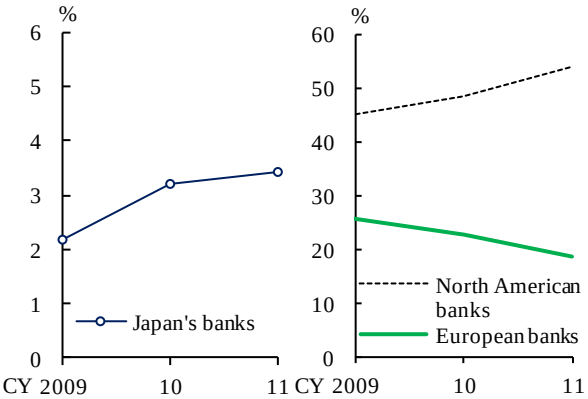
Given the declining profits on domestic loans, the major banks have increased overseas loans with relatively high interest rate margins (the left-hand side of Chart III-3-13).

Chart III-3-13: Margins on syndicated loans and overseas loans of the major banks[1,2]



Notes: *1*. The left chart: weighted average of transactions from 2009 to 2011. Average maturity of loans is from 2 to 5 years for each rating. The three major financial groups are counted.
2. The right chart: the three major financial groups are counted on a non-consolidated basis.
Sources: Thomson Reuters, "DealScan"; Published accounts of each group.

Chart III-3-14: Share in the global syndicated loan market[1,2,3]

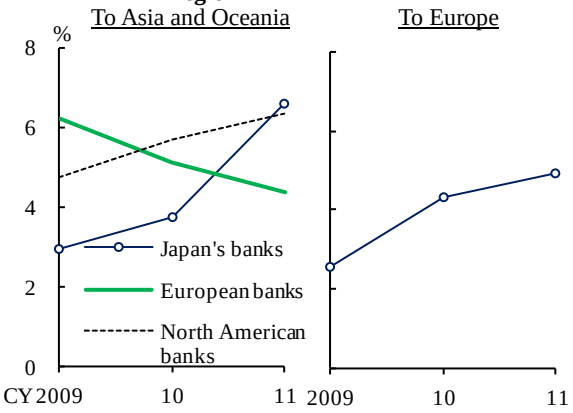


Notes: *1*. European banks are financial institutions located in the eurozone.
2. Loans extended from financial institutions other than banks are included.
3. Shares in newly extended loans in each year.
Source: Thomson Reuters.

The share of the major banks' overseas loans in their total loans increased from about 10 percent in 2005 to 17 percent in September 2011.[12] In addition to the rise in loans to emerging economies such as Asia, loans to the United States have been growing recently (the right-hand side of Chart III-3-13).

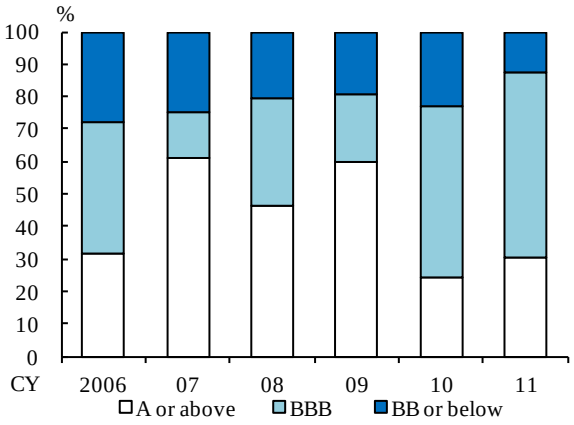
Under these circumstances, the share of loans extended by Japan's banks in the global loan market has started to increase gradually. In the global syndicated loan market, the share of loans by North American banks and Japan's banks expanded, while the share of loans by European banks shrank (Chart III-3-14).[13] By region, Japan's banks have started to increase the market share of syndicated loans particularly in Asia and Europe (Chart III-3-15). With respect to the amount of syndicated loans by credit rating, the proportion of investment-grade syndicated loans has risen gradually and reached about 90 percent in 2011 (Chart III-3-16). These developments show that Japan's banks are generally active in overseas lending, while they are relatively selective in choosing their investments.

Chart III-3-15: Share in the global syndicated loan market by region[1]



Note: *1.* See the notes in Chart III-3-14.
Source: Thomson Reuters.

Chart III-3-16: Syndicated loans extended by Japan's banks by credit rating[1]



Note: *1.* The three major financial groups are counted.
Source: Thomson Reuters, "DealScan."

Financial conditions of start-ups

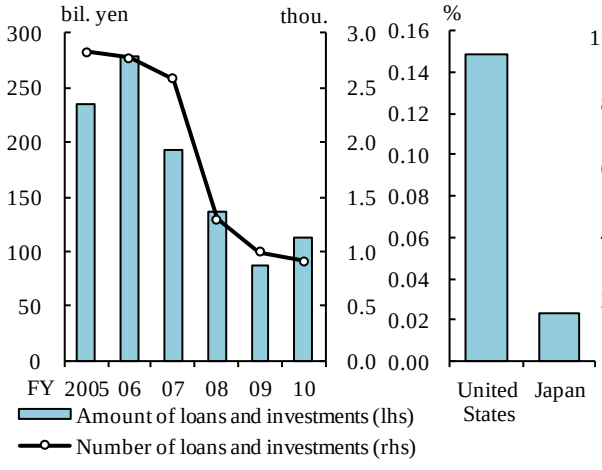
Financial conditions of start-ups have been weak, because the amount of funds invested by venture capital funds has been small in Japan unlike in the United States, and also because the number of start-ups becoming listed on a stock exchange has recently been small (Chart III-3-17). The regional banks have gradually increased loans to start-ups and to support new types of business. However, the amount of such loans outstanding

[12] The figures are for the three major financial groups in Japan.

[13] The share of loans by Japan's banks excludes syndicated loans they extended within Japan. The inclusion of such syndicated loans increased the share to about 10 percent in 2011.

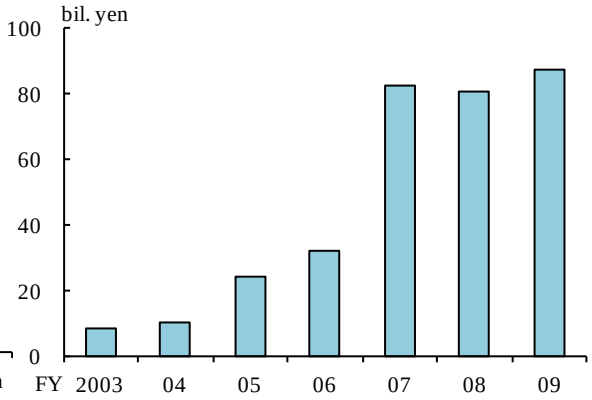
remains relatively small due to a high risk of shutdown or bankruptcy of borrowing firms in the start-up period and owing to the key role played by public financial institutions in this type of lending (Chart III-3-18).[14]

Chart III-3-17: Amount of funds invested by venture capital funds[1]



Note: *1*. The right chart depicts ratios of amount of loans and investments to nominal GDP in 2010.
Sources: BEA, "National Economic accounts"; National Venture Capital Association; Venture Enterprise Center; Cabinet Office, "National accounts."

Chart III-3-18: Loans to start-ups extended by the regional banks



Source: Financial Services Agency, "Report on promotion of region-based relationship banking in fiscal 2009."

The Bank has implemented since June 2010 a funds-provisioning measure to support strengthening the foundations for economic growth, in order to support lending and investment by financial institutions in growing business areas (hereafter "the Growth-Supporting Funding Facility"). With this measure, financial institutions have so far extended loans and made investment mostly in the areas of the environment and energy business and the medical and nursing care business, but only a few have invested in start-ups (Chart III-3-19). In these circumstances, the Bank decided to establish a new credit line for equity investment and asset-based lending (ABL) in June 2011.[15] Subsequently, it decided to enhance the Growth-Supporting Funding Facility, which was implemented by increasing the total amount of loans in March 2012.[16] With regard

[14] The JFC, for example, provided loans under the lending program for new businesses on about 12,300 occasions for an aggregate amount of about 42 billion yen (average for fiscal 2008 through fiscal 2010). According to the December 2010 survey on start-ups that the Small and Medium Enterprise Agency outsourced to the Teikoku Databank, 17 percent of respondents used subsidies from public institutions and borrowings from public financial institutions to finance start-up costs, while 12 percent used borrowings from the regional banks and 8 percent from *shinkin* banks and credit cooperatives (multiple answers were allowed).

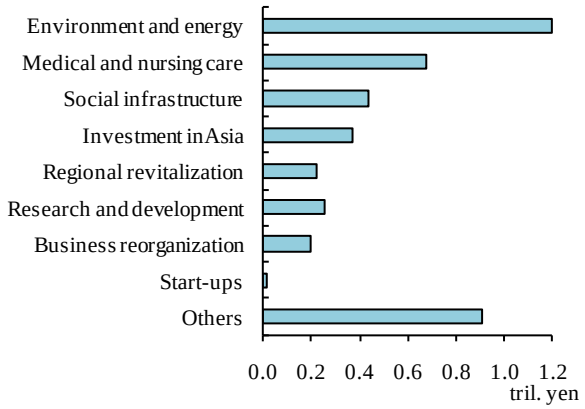
[15] Through the Growth-Supporting Funding Facility, the Bank supplies long-term funds at a low interest rate against eligible collateral to financial institutions in accordance with their lending and investment efforts to strengthen the foundations for economic growth.

[16] In March 2012, the Bank decided to enhance the Growth-Supporting Funding Facility as follows.

to ABL, the Bank provided funds on three occasions for an aggregate amount of 89.1 billion yen as of March 2012.

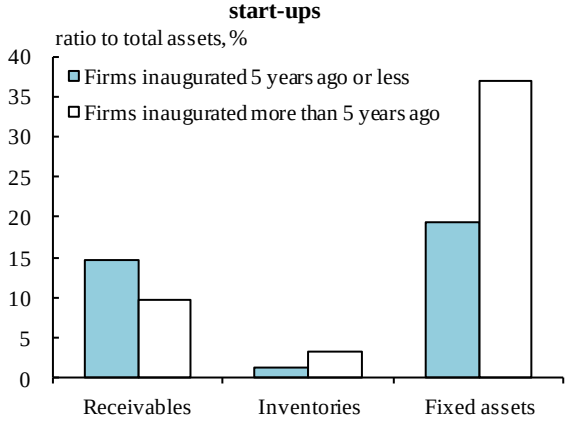
Start-ups generally have little real estate collateral and hold a relatively large amount of receivables (Chart III-3-20). Receivables are closely linked to changes in inventories. Therefore, if small and medium-sized firms, including start-ups, are allowed to use their movable assets and monetary claims as collateral for smoother financing, their borrowing constraints would ease. In order to better perform financial intermediation for start-ups and new types of business with growth potential, Japan's banks need to devise such a lending measure and increase their capability to explore new lending and investment opportunities by better grasping firms' growth potential. It is also important for banks to actively provide valuable information that contributes, for example, to explore new markets for borrowing firms' business.

Chart III-3-19: Distribution of investment and lending in growing business areas[1,2]



Notes: *1*. Based on reports made to the BOJ by financial institutions.
2. Accumulated amount from April 2010 to December 2011.
Source: BOJ.

Chart III-3-20: Financial characteristics of start-ups



Source: CRD.

The total amount of loans extended through the facility will increase by 2 trillion yen, from 3.5 trillion yen to 5.5 trillion yen. Besides this, first, the Bank decided to establish special rules for a new arrangement for loans of 500 billion yen for small-lot investments and loans that had not been deemed eligible in the main rules for the facility introduced in June 2010. Second, the Bank will establish special rules for a new arrangement for loans in the U.S. dollar of 1 trillion yen equivalent for investments and loans denominated in foreign currencies that should contribute to Japan's economic growth. The new loans will be made using the U.S. dollar reserves already held by the Bank. Third, with regard to the main rules for the facility introduced in June 2010, the Bank decided to extend the deadline for applications for new loans by 2 years to March 31, 2014 and to increase the ceiling for the total amount of loans by 500 billion yen, from 3 trillion yen to 3.5 trillion yen. Fourth, regarding the special rules for the arrangement for loans for equity investments and ABL established for the facility, the Bank decided to extend the deadline for applications for new loans by 2 years to March 31, 2014 while keeping the ceiling for the total amount of loans at the current 500 billion yen.

IV. Risks in the financial system

This chapter examines several indicators of macro financial risk and then considers risks observed in financial markets. It also summarizes risks to which banks and other types of financial institutions are exposed.

In the examination of the financial system to ascertain financial imbalances, there is no indicator that warns of financial imbalances stemming from bullish expectations. The amount of risks financial institutions bear as a whole has been decreasing relative to capital. Due attention should be paid, however, to a large amount of JGBs held by financial institutions, while Japan's government debts have accumulated considerably.

Japan's banks and life insurance companies have increased investment in domestic and foreign securities, and the share of banks' overseas loans in overall loans has been on an increasing trend. Business conditions of financial institutions have become more susceptible to developments not only in Japan's economy and financial markets but also in overseas economies and financial markets. Despite the recent decrease in banks' credit costs arising from domestic loans, the quality of bank loans has not improved considerably. Moreover, credit costs may increase if borrowing firms' business conditions do not recover as expected. In addition, although banks' capital adequacy ratios have risen reflecting the accumulation of retained earnings, their profitability has declined.

A. Macro risk indicators

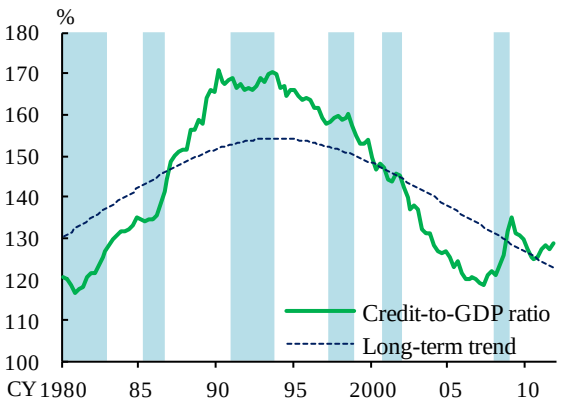
Total credit from financial institutions and risk-taking of firms and households

In Japan, total credit from financial institutions to firms and households relative to GDP continues to hover around its long-term trend (Chart IV-1-1). Risk-taking indicators are examined to assess the macro risk associated with the investment behavior of firms and households.[17] The risk-taking indicator for firms declined from the bursting of the Heisei bubble through the mid-2000s and since then has remained steady (the vertical

[17] The risk-taking indicator for firms is calculated by multiplying the ratio of corporate investment spending to operating profits by the amount of corporate spending. The indicator for households is calculated by multiplying the ratio of household investment spending (housing investment and durable goods consumption) to disposable income by the amount of household spending. The indicator for banks is the ratio of loans outstanding to operating profits from core business. In all the cases, the larger the risk-taking indicators, the more active the risk-taking in investment. In Chart IV-1-2, a move to the upper right side implies that both firms/households and banks are actively taking on risks and thus the macro financial risk is accumulating.

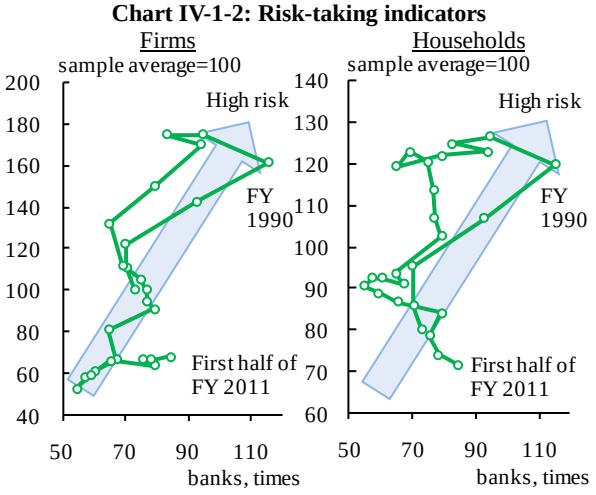
axis on the left-hand side of Chart IV-1-2). The indicator for households has been on a moderate downtrend since 1990 (the vertical axis on the right-hand side of Chart IV-1-2). The indicator for banks, counterparts of firms and households, has recently risen slightly due to the increase in loans outstanding, but generally has been restrained (the horizontal axis in Chart IV-1-2).

Chart IV-1-1: Total credit-to-GDP ratio[1]



Note: *1*. Shaded areas indicate recession periods. The latest data are as of the October-December quarter of 2011.
Sources: Cabinet Office, "National accounts"; BOJ, "Flow of funds accounts."

Chart IV-1-2: Risk-taking indicators



Sources: Cabinet Office, "National accounts"; Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly."

Signs of financial overheating and systemic risk observed in stock markets

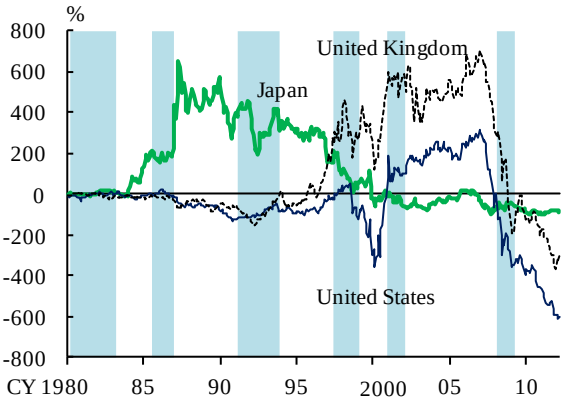
Financial overheating can be inferred from market data. For example, the cumulative excess return (CER) on bank stocks relative to the index of all stock prices shows the market evaluation of banks' profits. Since the Lehman shock, the CERs on U.S. and U.K. financial stocks have continued to decline. On the other hand, the CER on Japan's bank stocks has been flat and suggests an evaluation of banks' profits that is neither excessively bullish nor bearish (Chart IV-1-3).

Next, stock markets have not shown an increase in awareness of systemic risk in the financial sector. The conditional value-at-risk (CoVaR) and marginal expected shortfall (MES) are used to examine how stock market participants recognize the extent of contagion effects of the risk that a financial institution bears on other financial institutions. As CoVaR increases, propagation of stresses occurring at individual financial institutions to the entire financial sector becomes stronger.[18] On the other

[18] CoVaR shows changes in VaR of aggregate financial stocks if a stock price of a financial institution plunges. Specifically, the following are estimated: (1) how much of an extraordinary risk that a financial institution bears would spill over to the entire financial sector (the effects of VaR of the institution's stocks with a 5 percent probability of occurrence on VaR of aggregate financial stocks); and (2) how much of a normal risk that the institution bears would spill over to the entire

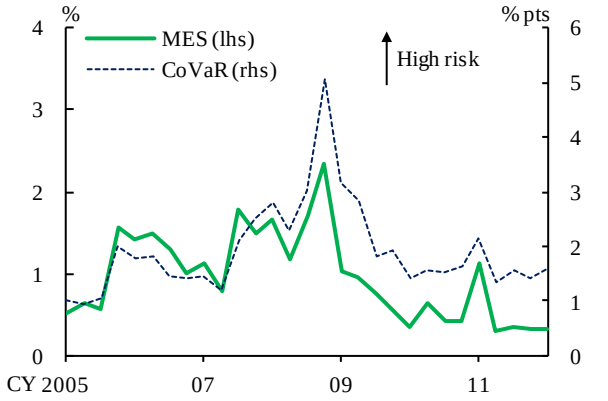
hand, as MES rises, adverse effects of the entire financial sector's stresses on individual financial institutions' corporate value increase.[19] Both indicators rose temporarily due to the disaster, but have recently been at low levels (Chart IV-1-4).

Chart IV-1-3: Cumulative excess returns on financial stocks[1,2,3]



Notes: *1*. Differences between the cumulative returns on financial stocks (bank stocks for Japan) and those on the corresponding market index.
2. Shaded areas indicate recession periods for Japan.
3. The latest data are as of March 2012.
Source: Global Financial Data.

Chart IV-1-4: Systemic risk indicators[1,2]



Notes: *1*. The latest data are as of the January-March quarter of 2012.
2. Listed banks and major securities companies are counted. Ratios to Tier I capital.
Sources: Bloomberg; BOJ calculations.

Financial Cycle Indexes and Financial Activity Index

The Financial Cycle Indexes are DIs used to identify signs of future instability in the financial system.[20] A change in the leading index from a positive figure to a negative one indicates that the financial system may become unstable in the near future. The

---

financial sector (the effects of VaR of the institution's stocks with a 50 percent probability of occurrence on VaR of aggregate financial stocks). CoVaR of the financial institution is the amount of (1) minus that of (2). CoVaR in Chart IV-1-4 is the average of CoVaR of all financial institutions. The estimation period is from January 1997 to December 2011 under the quantile regression. For details, see Adrian, Tobias and Markus K. Brunnermeier, "CoVaR," Federal Reserve Bank of New York Staff Report, No. 348, September 2011.

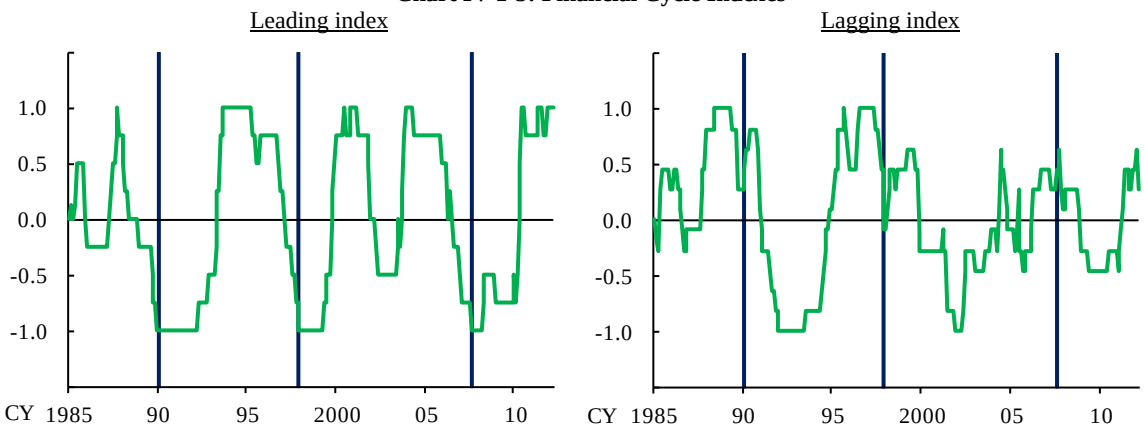
[19] MES shows expected losses at an individual financial institution if the VaR of the entire financial stock exceeds a certain threshold. Specifically, an individual financial institution's MES is the rate of change in market value of the stock on the day when the market value of the entire financial stock falls below the value with the lowest 5 percent probability of occurrence. MES in Chart IV-1-4 is the average of MES of all financial institutions. For details, see Acharya, Viral V., Lasse H. Pedersen, Thomas Philippon, and Matthew Richardson, "Measuring systemic risk," Federal Reserve Bank of Cleveland Working Paper, No. 10-02, March 2010.

[20] The Financial Cycle Indexes have been developed by the Bank of Japan's Financial System and Bank Examination Department, based on a concept similar to that of the index of business conditions. The indexes combine a number of financial and economic indicators, such as stock prices and DIs for lending attitudes of financial institutions, to assess the phase of the financial cycle. For details on the indexes, see Kamada, Koichiro and Kentaro Nasu, "The Financial Cycle Indexes for early warning exercise," Bank of Japan Working Paper, No. 2011-E-1, April 2011.

same movement in the lagging index indicates that the financial system might have already become unstable. Recently both indexes have been positive, and neither shows a sign of instability in the financial system (Chart IV-1-5). In addition, the Financial Activity Index does not show any sign of financial overheating (see Box 1 for details).

No solid evidence of instability in the financial system is observed in these indicators. However, the above macro risk indicators are designed to capture potential financial imbalances mainly in Japan's private sector. It should be noted that they do not cover all financial activities, such as activities of the foreign sector and the public sector.

Chart IV-1-5: Financial Cycle Indexes[1,2]



Notes: *1*. The left, middle, and right vertical lines indicate the collapse of Japan's asset price bubble, the default of Sanyo Securities, and the outbreak of the U.S. subprime problem, respectively.
2. The latest data are as of March 2012.
Source: BOJ calculations.

Box 1: Financial Activity Index

Central banks, financial supervisory authorities, and international institutions have employed a number of measures to assess macro financial risk. This box introduces the Financial Activity Index (FAIX) as a new measure to capture macro financial risk.[21] Monitoring the FAIX on a regular basis enables us to detect "overheating" or "overcooling" in financial activity in a variety of aspects.

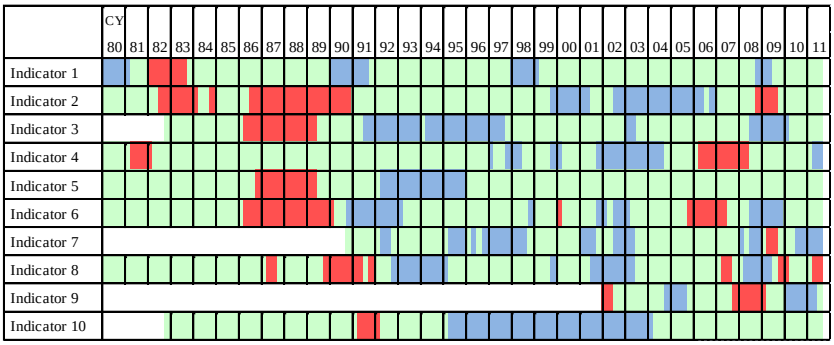
The FAIX consists of ten financial indicators and judges whether financial activity is overheating or overcooling, based on how far individual indicators deviate from their historical trend. A "heat map" displays the movement of all indicators toward overheating or overcooling. It shows that overheating of financial activity spread from financial institutions to firms/households and financial markets in the early 1990s (Chart

[21] For details on the FAIX, see Ishikawa, Atsushi, Koichiro Kamada, Kazutoshi Kan, Ryota Kojima, Yoshiyuki Kurachi, Kentaro Nasu, and Yuki Teranishi, "The Financial Activity Index," Bank of Japan Working Paper, No. 2012-E-4, April 2012.

B1-1).[22] Conversely, many indicators showed the overcooling of financial activity following the bursting of Japan's Heisei bubble, with the exception of the time just before the Lehman shock when a few indicators showed signs of overheating.

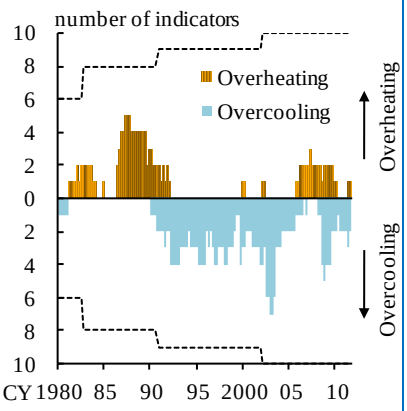
A "stretch chart" counts the number of indicators moving toward overheating or overcooling and shows how overheating/overcooling stretch over the economy (Chart B1-2). It shows that the overheating of financial activity peaked in the late 1980s, and that the overcooling of financial activity was strengthened particularly in the first half of the 2000s after the bursting of the Heisei bubble. Currently, there is little sign of overheating of financial activity, with only one indicator showing signs of overheating.

Chart B1-1: Heat map[1,2]



Notes: *1*. See footnote 22 on page 34.
2. The latest data are as of the July-September quarter of 2011.
Sources: BOJ, "Flow of funds accounts," "Monetary base," "Money stock," "*Tankan*"; Cabinet Office, "National accounts"; Japan Post Holdings, "The former Japan Post statistical data"; Japan Real Estate Institute, "Urban land price index"; Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly"; Ministry of Internal Affairs and Communications, "Consumer price index"; Ministry of Postal Services, "Annual statistical report of postal services," "Annual statistical report of postal service administrations"; Bloomberg; Thomson Reuters; BOJ calculations.

Chart B1-2: Stretch chart[1,2]



Notes: *1*. Dotted lines indicate the number of indicators.
2. The latest data are as of the July-September quarter of 2011.
Source: BOJ calculations.

[22] Indicators in Chart B1-1 represent the following: indicator 1 denotes the DI of financial institutions' lending attitudes; indicator 2 the ratio of total credit to GDP; indicator 3 the equity weighting in institutional investors' portfolios; indicator 4 the money multiplier (the ratio of M2 to the monetary base); indicator 5 the gross rent multiplier (the ratio of land prices to rent); indicator 6 the stock price; indicator 7 the spread between expected equity yields and government bond yields; indicator 8 the ratio of business investments to operating profits; indicator 9 the ratio of firms' CP outstanding to their liabilities; and indicator 10 households' debt-to-cash ratio. Shaded areas in the chart represent the following: (1) areas shaded in red (the darkest shaded areas) show that an indicator has risen by more than one standard deviation from the trend, that is, it is tilted to overheating; (2) areas shaded in blue (the second darkest shaded areas) show that an indicator has declined by more than one standard deviation from the trend, that is, it is tilted to overcooling; (3) areas shaded in green (the most lightly shaded areas) show everything in between; and (4) areas in white show the periods without data.

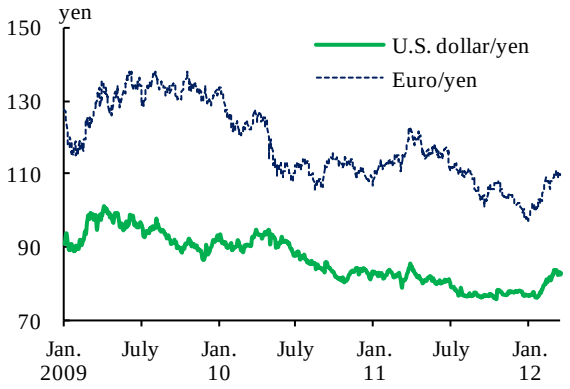
B. Risks observed in financial markets

Domestic financial markets are generally stable for now, as overseas financial markets have regained some stability. In the past 6 months, however, market participants' risk recognition of price fluctuations sometimes strengthened in Japan's stock, government bond, and foreign exchange markets, comoving with price fluctuations in the overseas markets. Since the outlook for global financial markets has been highly uncertain, the effects of overseas market developments on Japan's markets warrant attention.

1. Developments in financial markets

Domestic stock prices declined sharply in summer 2011 in line with U.S. and European stock prices, and toward the year-end moved in the lowest range since the Lehman shock. Since the beginning of 2012, however, domestic stock prices have started to rise (the left-hand side of Chart II-1-1). Meanwhile, 10-year JGB yields have been stable at around 1 percent (the right-hand side of Chart II-1-1). The yen appreciated against the U.S. dollar, setting a new record high several times until October 2011. The yen also appreciated against the euro to below 100 yen toward the year-end, but has depreciated since the turn of the year (Chart IV-2-1).

Chart IV-2-1: U.S. dollar/yen and euro/yen rates[1]



Note: *1*. The latest data are as of March 30, 2012.
Source: Bloomberg.

2. Risks implied in stock markets

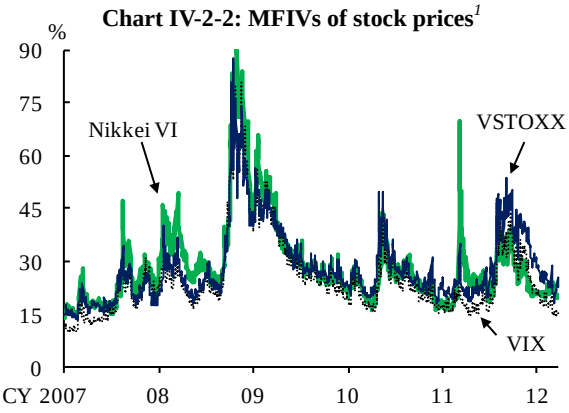
Volatility and global correlations of stock prices

In summer 2011, when stock prices declined sharply in major economies, market participants' uneasiness grew considerably over the volatility of future stock prices in each economy. Such market uneasiness remained high until the year-end but seems to

have eased thereafter following the recovery in stock prices. Market participants' uneasiness -- which is gauged by the volatility index (VIX) in the United States and the corresponding model-free implied volatilities (MFIVs) of European and Japan's stock prices -- has recently declined to the level that existed before the surge in summer 2011 (Chart IV-2-2).[23] Risk reversals (the difference in implied volatilities between call and put options) of stock prices in Japan, the United States, and Europe -- which indicate the direction of future stock fluctuations recognized by options market participants -- became considerably negative in summer 2011. This shows that the market participants had increasingly taken positions in anticipation of a decline in stock prices. Thereafter, the sharp decline diminished gradually (Chart IV-2-3).

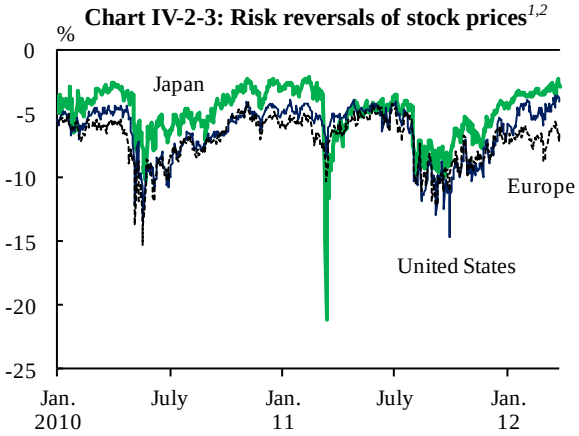
It should be noted that market participants' risk recognition observed in such indicators is highly correlated globally. In other words, the MFIVs and risk reversals of Japan's, U.S., and European stock prices have comoved closely except for the time immediately after Japan experienced the disaster. This implies that domestic stock prices remain susceptible to developments in U.S. and European stock markets.

Chart IV-2-2: MFIVs of stock prices[1]



Note: *1*. The latest data are as of March 30, 2012.
Source: Bloomberg.

Chart IV-2-3: Risk reversals of stock prices[1,2]



Notes: *1*. Nikkei 225 options for Japan; S&P 500 options for the United States; EURO STOXX 50 options for Europe.
2. The latest data are as of March 30, 2012.
Sources: Bloomberg; BOJ calculations.

Volatility risk of domestic stock prices

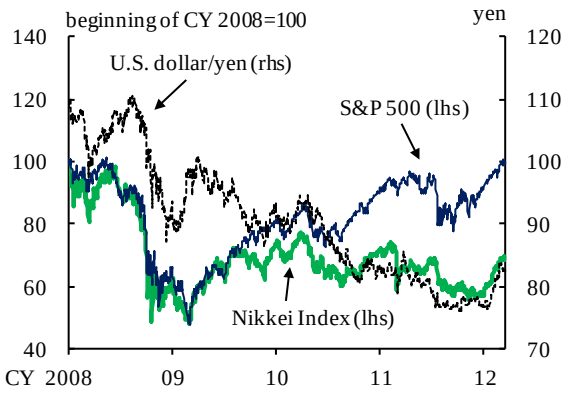
Domestic stock prices have been affected by natural disasters, such as the Great East Japan Earthquake and the flooding in Thailand, and fluctuations in foreign exchange markets as well as developments in U.S. and European stock markets. In particular, a

[23] The VIX of the Chicago Board Options Exchange, the VSTOXX of the Eurex, and the Nikkei Stock Average Volatility Index (VI) of Nikkei Inc. are MFIVs calculated by using the price information on S&P 500 options, EURO STOXX 50 options, and Nikkei 225 options, respectively. They are broadly equivalent to options market participants' expected rate of change in stock prices for the next month. Unlike the standard implied volatility, MFIVs capture the recognition of tail risk.

difference in the pace of recovery in stock prices between Japan and the United States after the Lehman shock seems to have been affected largely by the appreciation of the yen (Chart IV-2-4). After declining in summer 2011, U.S. stock prices recovered but Japan's stock prices remained sluggish partly because the appreciation of the yen to below 80 yen against the U.S. dollar weighed on corporate profits. As the yen has started to depreciate against the dollar since the beginning of 2012, domestic stock prices have at last followed suit and started to rise.

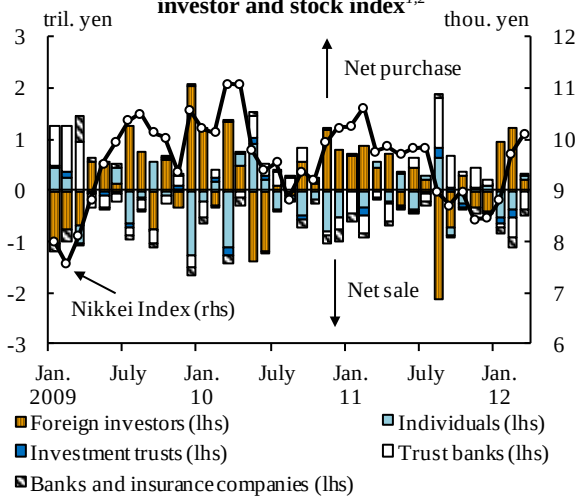
Looking at stock trading by type of investor, trading of foreign investors accounted for about 60 percent of total trading in 2011 and had a large influence over stock markets (Chart IV-2-5). Individuals and trust banks (pension funds) could have supported the markets as large net buyers when stock prices were on a downtrend from summer 2011. Meanwhile, banks and insurance companies as well as investment trusts have been net sellers, but the amount of their net sales has been limited relative to the size of overall trading (see Box 2 for recent developments in stock investment trusts).

Chart IV-2-4: Stock indexes and FX rate[1]



Note: *1*. The latest data are as of March 30, 2012.
Source: Bloomberg.

Chart IV-2-5: Japanese stock trading by type of investor and stock index[1,2]



Notes: *1*. Data include spot and futures transactions.
2. The latest data are as of March 2012.
Sources: Osaka Securities Exchange; Tokyo Stock Exchange.

Box 2: Recent developments in stock investment trusts

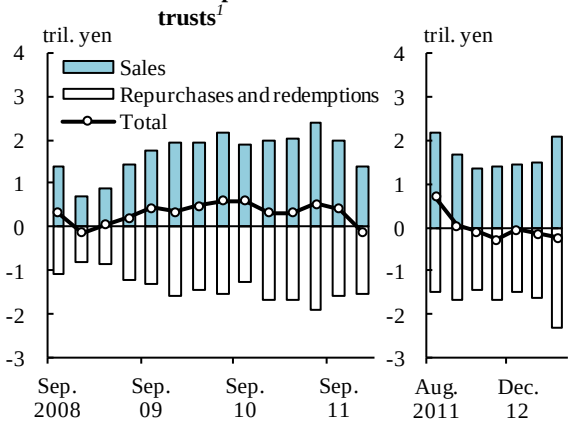
Net capital inflows/outflows of stock investment trusts in Japan (that is, sales [new purchases] minus repurchases and redemptions) remained negative (net outflows) from October 2011. By quarter, net capital flows in the October-December quarter of 2011 turned negative for the first time in 3 years since the October-December quarter of

2008, when the effects of the Lehman shock were observed (Chart B2-1).[24] A breakdown shows that a decrease in capital inflows due to sluggish sales rather than an increase in capital outflows due to repurchases and redemptions contributed to net outflows. This seemed to occur against a background of weak sentiment of individual investors given the heightening concern over the European debt problem and the losses on the products that had been popular until the first half of 2011.

Meanwhile, capital outflows, particularly of synthetic exchange-traded funds (ETFs), continued in European ETF markets from summer 2011, and the effects on Japan's stocks used as collateral have been a matter of concern.[25] Synthetic ETFs are products that try to replicate the index returns by trading derivatives, without owning securities included in the index. The underlying index for investment often tracks emerging assets that are illiquid and incur large transaction costs, while many Japan's stocks are used in the collateral basket. Thus, an increase in repurchases of these ETFs would exert downward pressure on Japan's stock prices through sales of corresponding collateral assets and could help raise correlations between emerging and Japan's stock prices.

The effects of the above developments in stock investment trusts on trading activity in Japan's stock market as a whole have been limited thus far, but attention should be paid to the future product development and market expansion.

Chart B2-1: Net capital flows into stock investment trusts[1]



Note: *1*. The latest data are as of February 2012. The left chart is quarterly base, and the right chart is monthly base.
Source: Investment Trusts Association of Japan.

[24] Stock investment trusts are trust funds that are allowed to include stocks under the provision and do not necessarily include stocks in the actual portfolio.

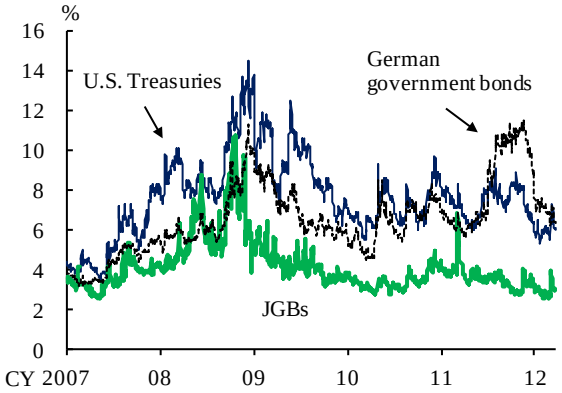
[25] For synthetic ETFs, see Ramaswamy, Srichander, "Market structures and systemic risks of exchange-traded funds," BIS Working Paper, No. 343, Bank for International Settlements, April 2011.

3. Risks implied in government bond markets

Volatility and global correlations of government bond yields

Since summer 2011, government bond yields in many euro area countries other than Germany have risen due to the European debt problem, while U.S. and German government bond yields have declined due to stronger demand for safe-haven assets. In these circumstances, JGB yields have remained stable at low levels. In order to capture market participants' risk recognition of future price (yield) fluctuations, MFIVs of 10-year government bond prices in Japan, United States, and Germany are calculated as was done for stock prices. The difference in the level and movements of individual MFIVs shows that the MFIVs of government bond prices do not comove as closely as those of stock prices (Chart IV-2-6).[26] In particular, these MFIVs moved differently from summer 2011: the MFIV of German government bond prices continued to rise until the end of November, while the MFIV of U.S. Treasury prices rose in August but soon started to decline moderately. The MFIV of JGB prices did not show any significant change in August and has remained stable at a low level.

Chart IV-2-6: MFIVs of government bond prices[1,2]



Notes: *1*. Options on JGB futures traded on the Tokyo Stock Exchange for JGBs; Options on U.S. Treasury futures traded on the Chicago Board of Trade for U.S. Treasuries; Options on Euro-Bund futures traded on Eurex for German government bonds.
2. The latest data are as of March 30, 2012.
Sources: Bloomberg; BOJ calculations.

However, attention should be paid to the possibility that risk recognition of price fluctuations would be correlated globally in government bond markets, given the fact that MFIVs of various government bond prices rose in unison when a tail event such as

[26] MFIVs of government bond prices are calculated by using price information from futures options markets. The results are broadly equivalent to options market participants' expected change in government bond prices for the next 3 months.

the Lehman shock occurred. Recently, the MFIV of JGB prices rose slightly in tandem with that of German government bond prices, when there was undersubscription in the German government bond auction in late November 2011 (see Box 3 for the possibility of higher comovements across countries due to the extension of trading hours in government bond futures markets).

Box 3: Extension of trading hours and accelerated transactions in government bond futures markets

Following the introduction of the night session for stock index futures and options at the Osaka Securities Exchange from July 2011, the Tokyo Stock Exchange significantly extended the trading hours for JGB futures and options for its evening session from November. In addition, the two exchanges have begun operating a new trading platform equipped with the same order processing capacity as major overseas exchanges.[27] These developments will help boost trading opportunities for a wide range of investors including those abroad and could boost the correlation between domestic and foreign market prices (including government bond prices).

In general, increases in trading opportunities and advancement of trading technology are conducive to efficient resource allocation and enhanced economic welfare through the improvement of market liquidity and price discovery functions. At the same time, in regard to financial system stability, attention should be paid to the possible risk of amplifying the effects of herding behavior and noise traders in the market.[28]

Holders of JGBs

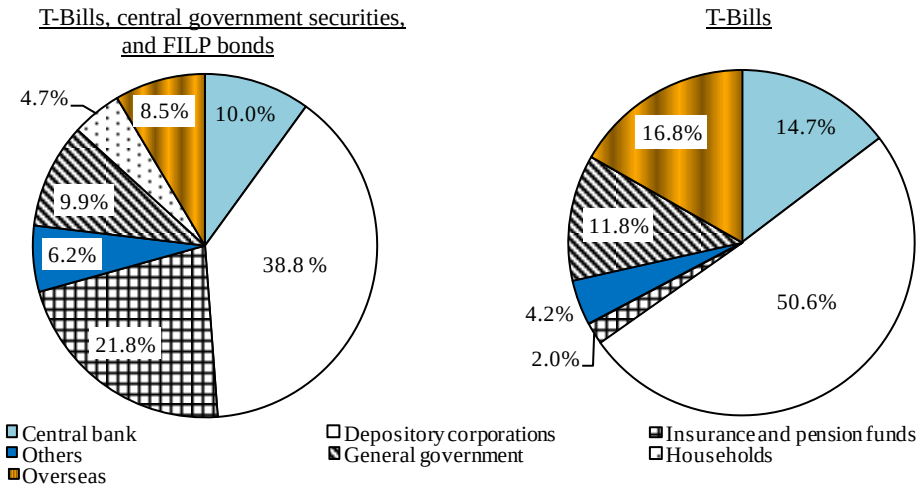
Market participants' risk recognition of JGB price fluctuations has been stable at a low level compared with that of U.S. and German government bond prices, and a factor behind this is that JGBs are held mostly by domestic investors (Chart IV-2-7).

[27] In the U.S. stock market and foreign exchange markets, high-frequency trading has been conducted since the early 2000s and there are traders who specialize in it.

[28] For a discussion of the welfare effects of financial innovation, see Masaaki Shirakawa, "What is so special about financial innovation?" keynote address at the conference on "Welfare effects of financial innovation" held by the De Netherlandsche Bank (via videoconference), November 2011. For a discussion of risks to the financial system associated with the advancement of technology such as high-frequency trading, see International Organization of Securities Commissions (IOSCO), "Regulatory issues raised by the impact of technological changes on market integrity and efficiency," Final Report, October 2011.

Institutional investors such as life insurance companies and pension funds mostly hold JGBs as long-term investments and are loyal holders.[29] Banks have been increasing their holdings of JGBs with stable inflows of deposits, as will be described in Chapter IV.C.[30]

Chart IV-2-7: JGB holdings by type of investor[1]



Note: *1*. The latest data are as of end-December 2011.
Source: BOJ, "Flow of funds account."

Recently, however, foreign investors have again increased their JGB holdings, and their holdings of JGBs, Fiscal Investment and Loan Program (FILP) agency bonds, and treasury discount bills (T-Bills) account for more than 8 percent of the total (Charts IV-2-7 and IV-2-8).[31,32] Domestic financial institutions that increased investment in foreign bonds have also adjusted their investment portfolios of JGBs and foreign bonds. In these circumstances, given the growing attention of market participants paid to advanced economies' government debts, the possibility of higher comovements in risk

[29] For example, life insurance companies hold bonds for long-term investment (sum of "policy-reserve-matching bonds" and "held-to-maturity bonds"), which accounted for slightly less than 70 percent of all bondholdings (the nine major companies, as of the end of the first half of fiscal 2011, and the bondholdings include JGBs as well as municipal bonds and corporate bonds).

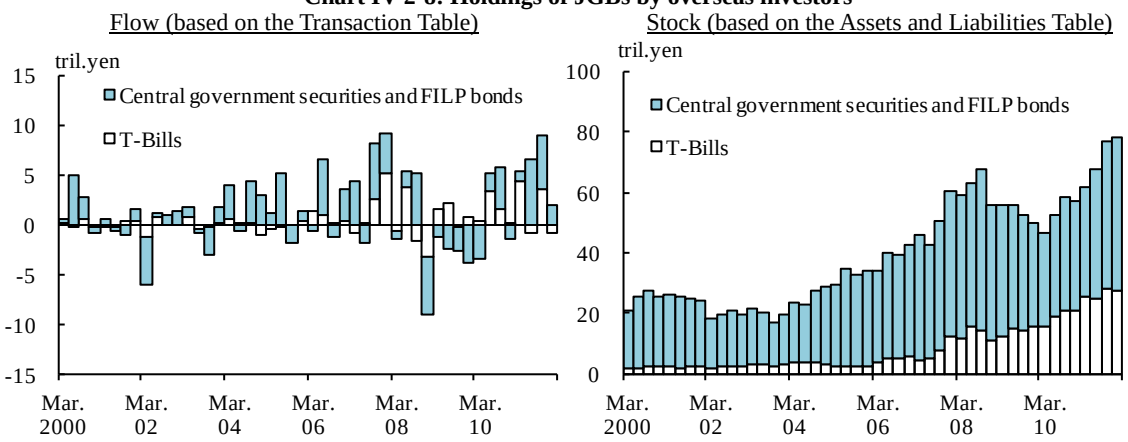
[30] Deposits at Japan's banks are about 80 percent of their liabilities, while market funding accounts for about 10 percent. The funding structure of Japan's banks is relatively stable compared with that of banks in the euro area, whose deposits are about 60 percent and market funding is slightly less than 20 percent of their liabilities.

[31] In particular, in late 2011 the growing concern over the European debt problem induced overseas investors' flight to quality and inflows of funds were evident from overseas to T-Bills in Japan. From the beginning of 2012, such capital inflows have become moderate reflecting the easing of strains in Europe.

[32] According to the Tokyo Stock Exchange, the share of foreign investors in the trading volume of (standard medium-, long-, and super-long-term) JGB futures accounted for about 38 percent in 2011.

recognition of domestic and overseas government bond prices requires close monitoring.

Chart IV-2-8: Holdings of JGBs by overseas investors[1]



Note: *1*. The latest data are as of end-December 2011.
Source: BOJ, "Flow of funds account."

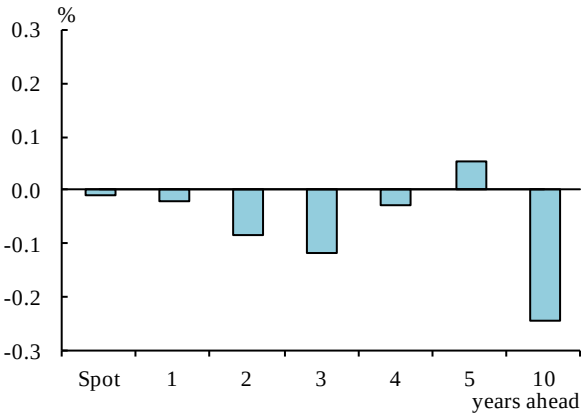
Volatility risk of JGB yields

The abovementioned MFIV of government bond prices shows short-term risk recognition for about the next 3 months. In what follows, market participants' risk recognition of JGB price (yield) volatility is examined from a longer-term perspective of several years ahead. First, looking at the changes from autumn 2011 in the forward rates (1-year interest rate for the period from *t* to *t* + 1 years ahead), many of them with an expiry up to 10 years have further declined (Chart IV-2-9). Next, the probability of the 6-month yen Libor 2 years ahead to be 3 percent or higher (the probability of a high interest rate) -- calculated by using price information on an interest rate cap (an option to hedge the future interest rate rise) -- has recently increased somewhat but remains below 1 percent (Chart IV-2-10). On the other hand, the probability of Libor to be 0.5 percent or lower (the probability of a low interest rate) has been high at around 75 percent. This shows that in Japan's markets for interest rate derivatives, expectations that low interest rates would continue remain dominant.

Furthermore, the implied volatility of swaptions (options on future interest rate swaps), which captures foreign investors' positions on future fluctuations in Japan's interest rates, rose slightly after the turn of the year but has generally been at the level of 2011 (Chart IV-2-11). Japan's sovereign CDS spreads, which capture the recognition of interest rate risk arising from concern over fiscal imbalances, have been widening gradually in Japan given the growing awareness of sovereign risk overseas, but remain at a low level

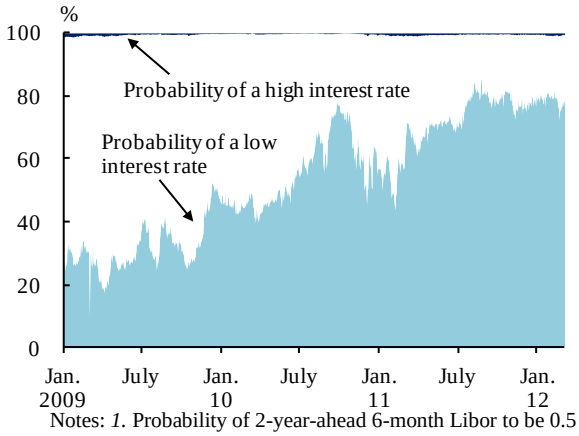
compared with those in European countries (Chart IV-2-12).[33] As these market indicators show, there is currently no sign of growing vigilance against large fluctuations, particularly a surge, in JGB yields.[34]

Chart IV-2-9: Forward rate changes[1]



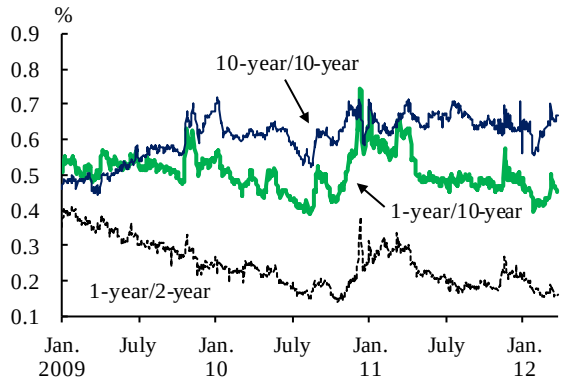
Note: *1*. Changes in 1-year forward rates (interest rates beginning *t* years ahead and ending *t* + 1 years ahead) from the end of September 2011 to the end of March 2012.
Source: Bloomberg.

Chart IV-2-10: Probability of high and low interest rates[1,2]



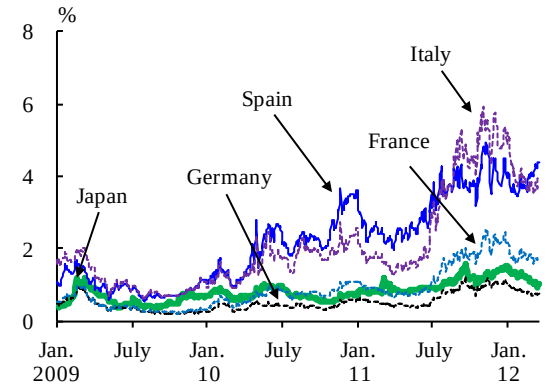
Notes: *1*. Probability of 2-year-ahead 6-month Libor to be 0.5 percent or lower is defined as the probability of a low interest rate, and that to be 3 percent or higher is defined as the probability of a high interest rate.
2. The latest data are as of March 30, 2012.
Sources: Bloomberg; Japan Bond Trading; BOJ calculations.

Chart IV-2-11: Implied volatility of swaptions[1,2]



Notes: *1*. *m*-year/*n*-year means the implied volatility of a swaption (options to enter into swap contracts) with *m*-year expiry period and *n*-year swap tenor.
2. The latest data are as of March 30, 2012.
Source: Bloomberg.

Chart IV-2-12: Sovereign CDS spreads[1,2]



Notes: *1*. The latest data are as of March 30, 2012.
2. 5-year CDSs.
Source: Bloomberg.

[33] Since market liquidity is not necessarily high for instruments such as swaptions and sovereign CDSs, indicators based on markets for these instruments should be interpreted with some latitude in the above analysis.

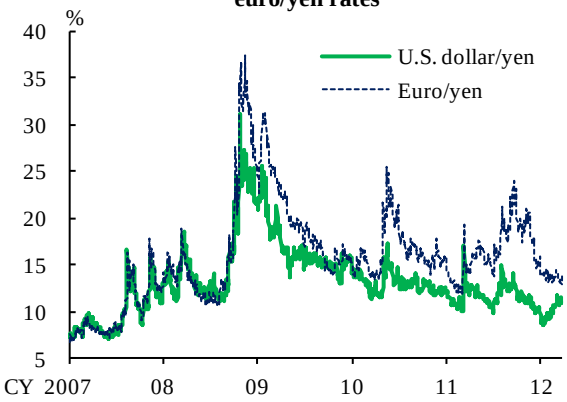
[34] According to the survey of JGB market participants (the December 2011 QUICK Survey System Report), factors that could cause Japan's long-term interest rates to rise above 2 percent were noted as the "current account deficit" by 39 percent of the respondents and the "increased issuance of JGBs" by 10 percent of the respondents.

4. Risks implied in foreign exchange markets

Volatility of foreign exchange rates

After the sharp decline in major economies' stock prices in summer 2011, the yen hovered in the range of historical highs against the U.S. dollar. The MFIVs of the dollar/yen rate and the euro/yen rate are calculated to explore market participants' risk recognition of future foreign exchange rate fluctuations. The MFIVs of these exchange rates have shown broadly the same developments as those of various economies' stock prices such as the VIX (Chart IV-2-13).[35] This seems to reflect the following trend: growing uneasiness in various countries' stock markets spurs demand for the yen as a safe-haven currency and leads to appreciation of the yen, resulting in higher volatility of the dollar/yen rate and the euro/yen rate.

Chart IV-2-13: MFIVs of U.S. dollar/yen and euro/yen rates[1,2]



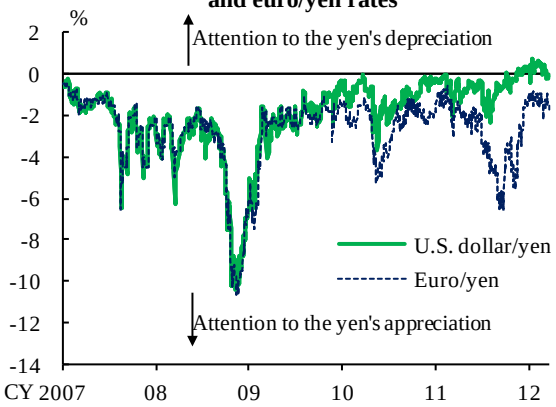
Notes: *1*. The latest data are as of March 30, 2012.
2. 3-month option prices are used.
Sources: Bloomberg; BOJ calculations.

It should be noted, however, that the MFIV of the U.S. dollar/yen rate continued to decline moderately from August 2011, although the level of the VIX and MFIV of the euro/yen rate remained high until autumn 2011 amid growing concern over the European debt problem. The 1-month dollar/yen risk reversal -- which indicates the direction of future currency rate changes recognized by options market participants -- turned dollar call-over in November 2011, due to the reduced recognition of risk associated with the yen's appreciation (a decline in the volatility of dollar-put options; Charts IV-2-14 and IV-2-15). Factors behind these developments are considered to be the continued anxiety among market participants over a possible foreign exchange

[35] MFIVs of the U.S. dollar/yen rate and the euro/yen rate are calculated by using data on 3-month over-the-counter option prices. The results are broadly equivalent to options market participants' expected change in foreign exchange rates for the next 3 months.

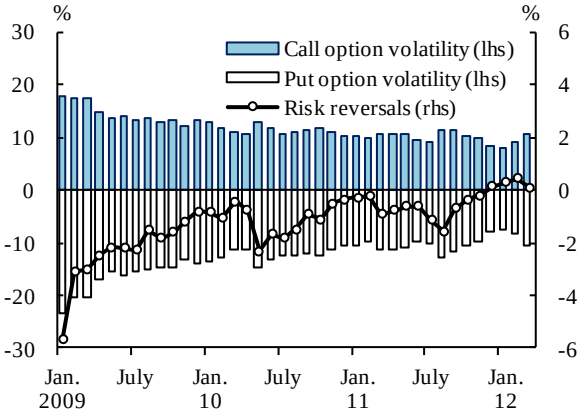
intervention following the large-scale interventions conducted in August and October 2011, and a halt in the narrowing of interest rate differentials between Japan and the United States (Charts IV-2-16 and IV-2-17).[36]

Chart IV-2-14: Risk reversals of U.S. dollar/yen and euro/yen rates[1,2]



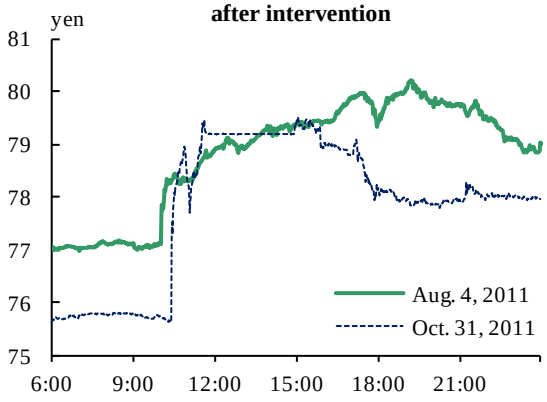
Notes: *1*. The latest data are as of March 30, 2012.
2. 1-month risk reversals.
Source: Bloomberg.

Chart IV-2-15: Changes in U.S. dollar/yen risk reversals[1,2,3,4]



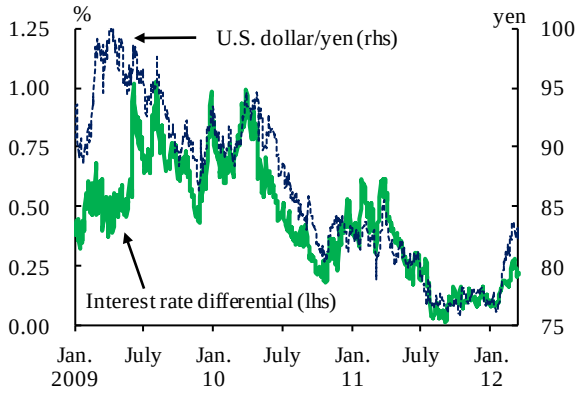
Notes: *1*. The latest data are as of March 2012.
2. 1-month risk reversals.
3. Risk reversals are decomposed into the call option volatilities and the put option volatilities.
4. Put option volatilities are expressed in opposite signs.
Sources: Bloomberg; BOJ calculations.

Chart IV-2-16: U.S. dollar/yen rate before and after intervention



Source: Bloomberg.

Chart IV-2-17: U.S. dollar/yen rate and interest rate differential[1,2]



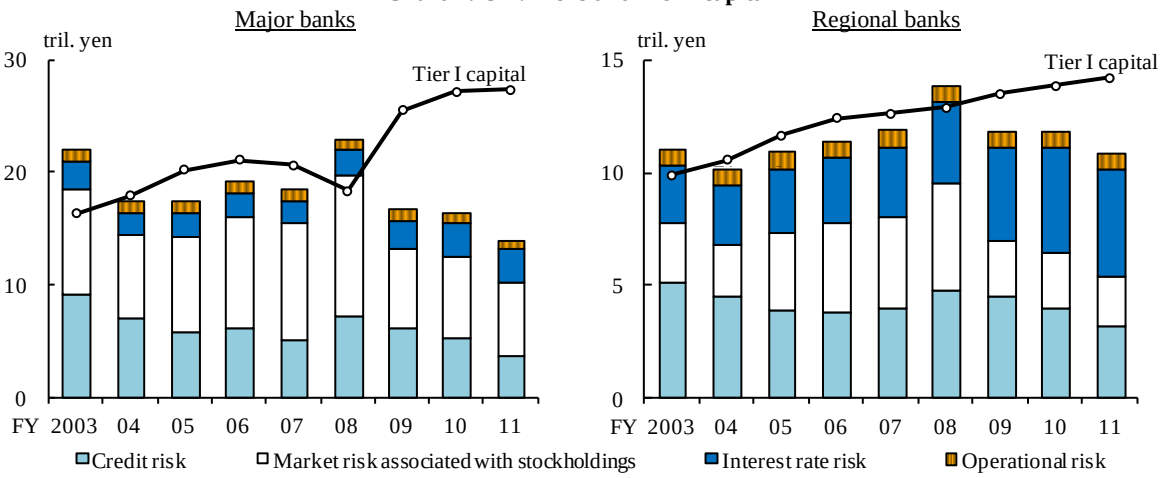
Notes: *1*. The latest data are as of March 30, 2012.
2. Interest rate differential is the 2-year yield of U.S. Treasuries over JGBs.
Source: Bloomberg.

[36] From February 2012, the MFIV of the U.S. dollar/yen rate started to rise reflecting the rapid depreciation of the yen against the dollar, and the risk recognition of the yen's depreciation has particularly grown (the volatility of dollar-call options has increased). Concurrently, interest rate differentials have started to expand.

C. Risks in the banking system

In this section, risks borne by Japan's banks are examined. The amount of the risks relative to capital has continued to decrease (Chart IV-3-1). Their capital bases have been steadily strengthened through accumulated retained earnings. Funding liquidity risk has been restrained for both domestic and foreign currencies. However, despite the low credit costs, the quality of bank loans has not improved substantially. Moreover, market risk associated with stockholdings has been large, and interest rate risk has been heightening reflecting the increase in JGB investment. Furthermore, although banks' capital adequacy ratios have risen reflecting the accumulation of retained earnings, their profitability has declined.

Chart IV-3-1: Risks and Tier I capital[1,2]



Notes: *1*. Credit risk: unexpected loss with a 99 percent confidence level. Market risk associated with stockholdings: value-at-risk with a 99 percent confidence level and 1-year holding. Interest rate risk: 100 basis point value. Operational risk: 15 percent of gross profits.
2. The latest data are as of the first half of fiscal 2011.
Source: BOJ.

1. Credit risk

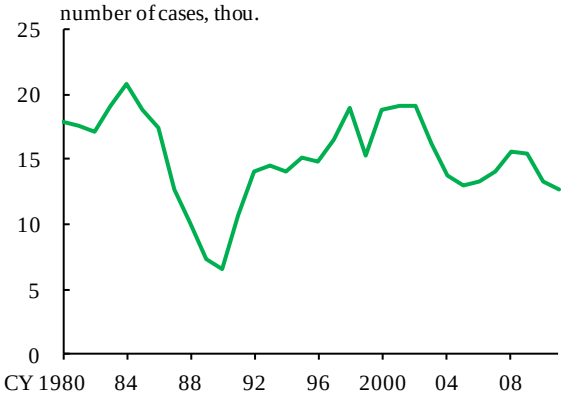
Decrease in corporate bankruptcies

The number of corporate bankruptcies was 12,734 in 2011, falling to its lowest level in 20 years (Chart IV-3-2). This reflects the improvement in firms' debt servicing capacity, as described in Chapter II.B. In addition, various policy measures have been implemented to encourage financial institutions to support funding of small and medium-sized firms since the Lehman shock and contributed to restrain corporate bankruptcies.

For example, the relaxed requirements for restructured loans in 2008 have enabled banks to support firms that had a good prospect for recovery but faced deteriorating

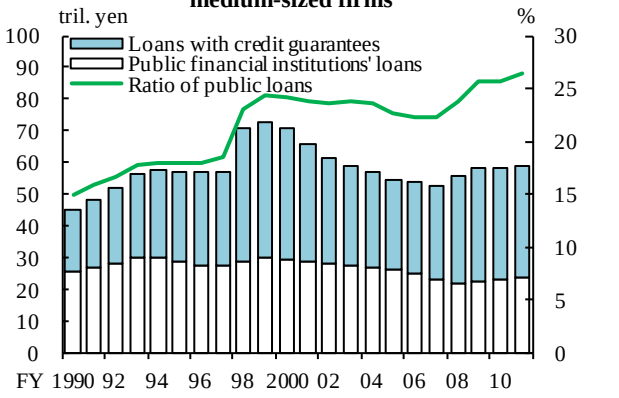
business conditions temporarily.[37] In addition, the Emergency Guarantee Program introduced by the Credit Guarantee Corporation in 2008 has encouraged banks to support funding of small and medium-sized firms strongly by offering full credit guarantee on bank credits (previously the guarantee was 80 percent).[38] The outstanding amount of loans guaranteed by the corporation has continued to increase since the mid-1980s. The corporation introduced the special guarantee system in the late 1990s and the aforementioned Emergency Guarantee Program.[39] As a result, the corporation's total guarantee has now reached about 35 trillion yen, 18 percent of overall loans to small and medium-sized firms. Summing up the outstanding loans guaranteed by the corporation and the outstanding loans of public financial institutions, the amount of publicly offered credits exceed 50 trillion yen, 26 percent of overall loans to the firms (Chart IV-3-3).

Chart IV-3-2: Corporate bankruptcies



Source: Tokyo Shoko Research Ltd., "Tosan Geppo (Monthly review of corporate bankruptcies)."

Chart IV-3-3: Ratio of public loans to small and medium-sized firms[1,2,3]



Notes: *1.* Public financial institutions' loans are defined as the sum of those of Shoko Chukin Bank and Japan Finance Corporation (micro business and individual unit and small and medium enterprise unit).
2. Ratio of public loans is defined as the ratios of the sum of loans with public guarantees and public financial institutions' loans to total loan amount to small and medium-sized firms.
3. The latest data are as of the first half of fiscal 2011.
Sources: Published accounts of each institutions; National Federation of Credit Guarantee Corporations; BOJ, "Loans and discounts outstanding by sector."

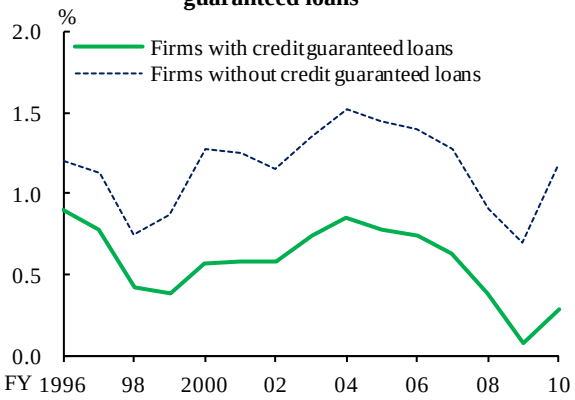
[37] The Financial Services Agency relaxed requirements for restructured loans in November 2008 as follows. Restructured loans are not treated as loans requiring "special attention" if borrowing firms have reasonable and feasible fundamental reconstruction programs. Furthermore, in December 2009 the requirements were relaxed for restructured loans to borrowers without such programs. That is, loans to borrowers that satisfied certain conditions are not treated as restructured loans during the first year of restructuring. The latter was extended until end-March 2012 and again until end-March 2013.

[38] The Emergency Guarantee Program concluded at the end of March 2011. Even from April 2011, the Credit Guarantee Corporation continues to provide full guarantee by offering the refinancing and small loan guarantee programs targeting small firms and a safety net guarantee program.

[39] The special guarantee system refers to the special credit guarantee system for stabilizing the finances of small and medium-sized firms valid from October 1998 through March 2000.

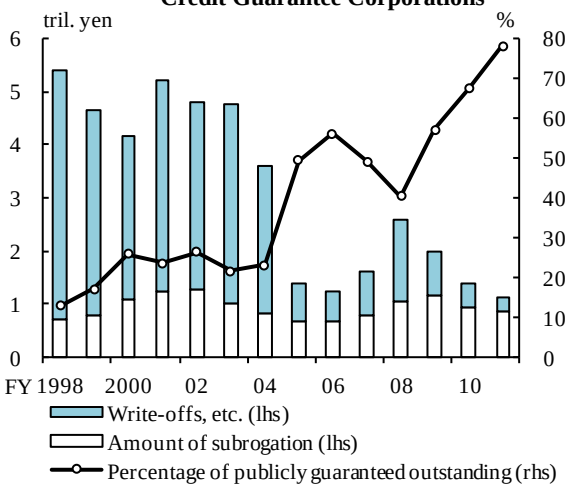
Various policy measures seem to have reduced the downward pressure on Japan's economy, as many small and medium-sized firms that faced severe business conditions after the Lehman shock were able to continue their business as their funding conditions improved by the credit guarantee. However, profitability of small and medium-sized firms that have loan guarantees from the corporation is lower than that of firms without such guarantees, and the gap between their profitability is gradually widening. The pace of recent recovery in profits is slower at firms that have loan guarantees from the corporation (Chart IV-3-4). Furthermore, although banks' credit costs have declined recently, the corporation has implemented subrogation continually (Chart IV-3-5). Attention should be paid to the possibility that if firms with loan guarantees from the corporation fail to improve their business conditions, the associated costs would ultimately become a burden on the public sector.

Chart IV-3-4: Current profit ROA of firms with credit guaranteed loans[1]



Note: *1*. Median.
Source: CRD.

Chart IV-3-5: Banks' write-offs and subrogation by Credit Guarantee Corporations[1,2]



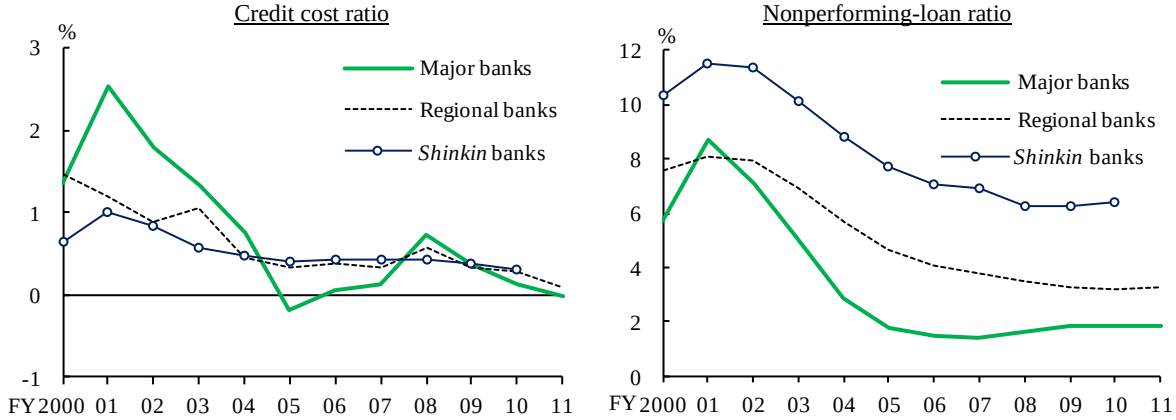
Notes: *1*. Write-offs, etc., is the sum of write-offs, realized losses on bulk sales and others.
2. The latest data are as of the first half of fiscal 2011.
Sources: Financial Services Agency; National Federation of Credit Guarantee Corporations.

Banks' credit costs and the NPL ratio

Banks' credit cost ratios have declined. The ratio of the major banks turned negative in the first half of fiscal 2011; and that of the regional banks fell below 0.1 percent (Chart IV-3-6). In addition, banks' NPL ratio remained at a low level. This is attributable to the decrease in the number of corporate bankruptcies and the relaxed requirements for restructured loans. However, the NPL ratio of *shinkin* banks has been rising, although moderately, since fiscal 2008.

Restructured bank loans are not classified as such if borrowing firms have feasible

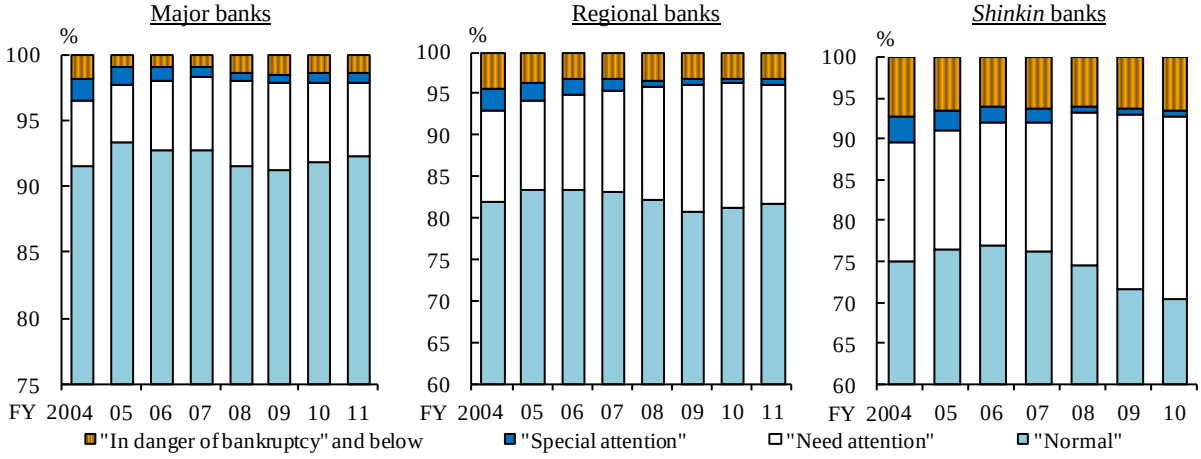
Chart IV-3-6: Credit cost ratio and nonperforming-loan ratio[1,2]



Notes: *1*. *Shinkin* banks are 262 *shinkin* banks that hold accounts at the BOJ, as of March 31, 2011.
2. The latest data are as of the first half of fiscal 2011 for the major banks and the regional banks, and fiscal 2010 for the *shinkin* banks.
Source: BOJ.

fundamental reconstruction programs, and the requirements for such restructured loans were relaxed in 2008. Specifically, application of the programs' criterion that requires improvement in borrowing firms' classification to normal in about 3 years was extended in accordance with the size of firms, to reflect the characteristics of small and medium-sized firms. This change has partly contributed to the reduction of loans that need "special attention" and the increase in loans that "need attention" (Chart IV-3-7).

Chart IV-3-7: Loans outstanding by borrower classification[1,2]



Notes: *1*. See Note 1 in Chart IV-3-6.
2. The latest data are as of the first half of fiscal 2011 for the major banks and the regional banks, and end-fiscal 2010 for the *shinkin* banks.
Source: BOJ.

However, the quality of restructured loans could deteriorate, if borrowing firms fail to improve their business conditions as was expected when the relaxed requirements for restructured loans were applied to them. In such a case, banks would have to build up loan-loss provisions and suffer profit losses accordingly. Although financial institutions have supported borrowing firms' improvement of business conditions; for example, in

formulating the reconstruction programs, estimation was made of how seriously banks' business conditions would deteriorate under the extremely pessimistic assumption that all firms with relaxed requirements for restructured loans failed to recover their business conditions.[40,41] The estimation was solely based on the financial data of small and medium-sized firms. The results show that the impact on banks' business conditions would be marginal: the NPL ratio of banks would rise about 1 percentage point from the current level, but additional credit costs would be about 0.2 percentage point of the outstanding amount of loans and the Tier I capital ratio would be lowered by about 0.3 percentage point. In relation to profits, if banks incur such costs in 1 year, the additional credit costs would amount to 25 percent of banks' annual operating profits from core business.[42] Nevertheless, the credit costs are expected to be within the range of banks' profits. This is a result of banks' steady accumulation of capital as well as their actions since fiscal 2008 to raise the coverage ratio by means of loan-loss provisions and guarantees as part of credit risk management concerning their borrowing firms that "need attention" (Chart IV-3-8). A caveat is that the results of the estimation should be interpreted with some latitude, since they were calculated based on certain assumptions.

As noted in Chapter II.B, small and medium-sized firms' financial conditions have deteriorated and bank loans extended to them have not improved materially in quality. Moreover, in an increasing number of cases, borrowing firms' business conditions are

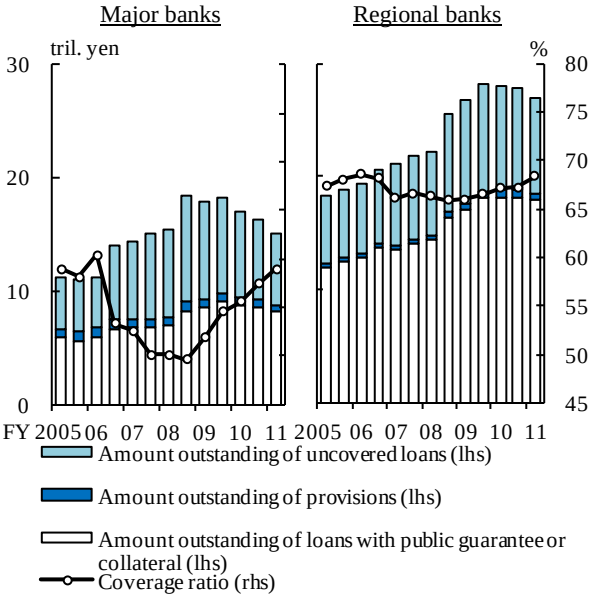
[40] According to the Financial Services Agency, of borrowing firms whose requirements for restructured loans were relaxed following the measure in December 2009, over 80 percent can pay the basic loan interest rate or have formulated the programs, and thus are expected to improve their business conditions.

[41] In estimating the additional credit costs, the amount of bank loans by type of borrower classification was calculated as below. First, credit scores (ranging from 0 to 100) on small and medium-sized firms by the Credit Risk Database (CRD) were arranged to be generally consistent with borrower classification by banks (borrowers that are "normal," "need attention," need "special attention," or are "in danger of bankruptcy" or below) as of the end of fiscal 2007 before requirements for restructured loans were relaxed. Second, from fiscal 2008 onward, based on assumptions that requirements for restructured loans remain unchanged and borrowing firms' classification moves in line with changes in credit scores, the amount of bank loans for each type of borrower classification was calculated in view of changes in credit scores. Third, the amount of bank loans by type of borrower classification for fiscal 2010 was used to estimate the amount of necessary loan-loss provisions. However, attention should be paid to the following. The distribution of bank loans by borrower classification based on the CRD in this estimate does not necessarily match the actual distribution at banks. The same situation holds for the CRD's credit scores and banks' borrower classification, since the CRD's credit scores were based only on borrowing firms' financial data whereas banks' borrower classification was based on borrowing firms' financial data and various other credit data.

[42] For the definition of operating profits from core business, see Annex 2.

diverging greatly from their reconstruction plans.[43] Financial institutions need to enhance the effectiveness of reconstruction plans by supporting borrowers to improve business conditions, for example, encouraging borrowers to drastically reconstruct their businesses or change their business fields. In addition, it has become important for banks to manage credit risk appropriately, revising banks' borrower classification and loan-loss provisions, based on the assessment of the borrowers' capacity for self-reconstruction.[44]

Chart IV-3-8: Coverage ratio for loans that "need attention" *1*



Note: *1*. The latest data are as of end-September 2011.
Source: BOJ.

Credit risk on housing loans

The ratio of nonperforming household loans, including housing loans, remains at a low level as a whole, although it has been on a moderate rising trend (Chart IV-3-9). Credit costs from housing loans are marginal at present, as housing guarantee corporations' subrogation ratio (the amount of subrogation relative to outstanding guaranteed loans) has declined recently (Chart IV-3-10).

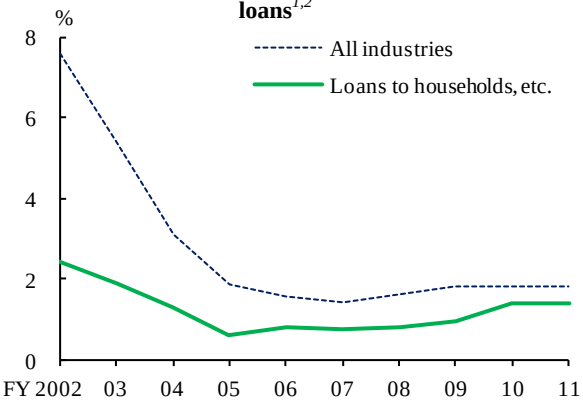
Debt servicing capacity of households with housing loans, however, is gradually deteriorating, as described in Chapter II.B (Chart II-2-5). Both the major banks and the regional banks have been increasing housing loans with floating interest rates. Therefore,

[43] For details, see the Bank of Japan, "On-site examination policy for fiscal 2012," March 2012.

[44] For details on financial institutions' measures taken to improve business conditions of borrowing firms, see the October 2011 issue of the *Report*.

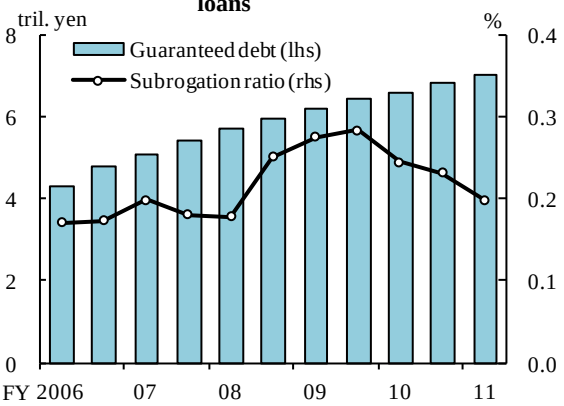
if market interest rates rise, this would increase the burden of households' loan repayment (Chart IV-3-11). The default rate of housing loans tends to rise in line with the number of years following extension of the loans. If the amount of housing loans decreases due in part to a decline in the number of households, the effects of deterioration in the existing housing loans on banks' housing loan portfolios could grow and the credit cost ratios could increase. Attention should thus be paid to the possibility that a further deterioration of income would reduce the quality of bank loans and increase credit costs (Chart IV-3-12).

Chart IV-3-9: Ratio of nonperforming household loans[1,2]



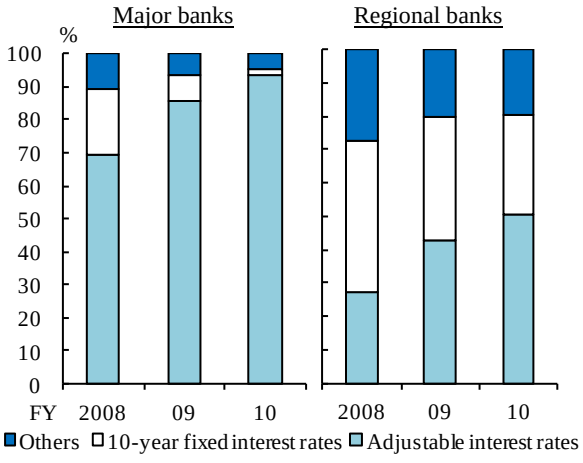
Notes: *1*. The latest data are as of the first half of fiscal 2011.
2. The three major financial groups are counted on a non-consolidated basis.
Sources: Published accounts of each group.

Chart IV-3-10: Subrogation ratio on housing loans[1]



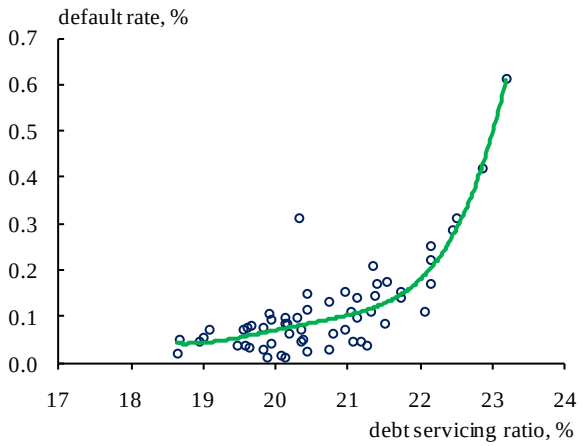
Note: *1*. The latest data are as of the first half of fiscal 2011.
Source: Zenkoku Hosho.

Chart IV-3-11: Rate of the housing loan by type of interest rate[1]



Note: *1*. Newly extended loans.
Source: Japan Housing Finance Agency, "Survey of private mortgage loans."

Chart IV-3-12: Debt servicing ratio and default rate[1,2]



Notes: *1*. Debt servicing ratio = repayment / average annual income. Defaults are defined as loans delinquent for 6 months or more.
2. Loans extended from March 2001 to August 2008 are counted.
Source: Japan Housing Finance Agency.

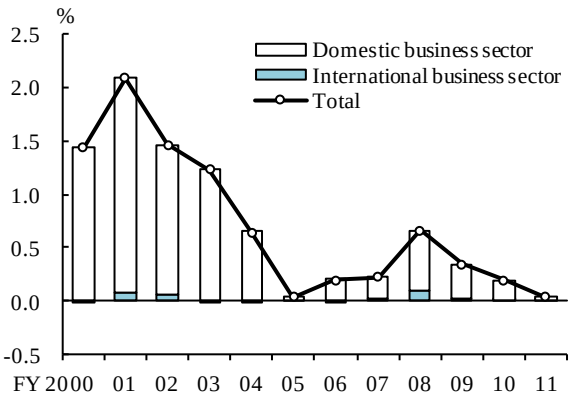
Credit risk on overseas loans

The effects of banks' credit costs from overseas loans on their overall credit costs have

remained small recently (Chart IV-3-13). The ratio of nonperforming overseas loans has declined gradually, to around 1 percent recently, which is lower than the NPL ratio of around 2 percent for the major banks' total loans (Chart IV-3-14). As for nonperforming overseas loans by region, the NPL ratio of loans to the United States increased rapidly immediately after the Lehman shock, but has since declined. The NPL ratio of loans to Asian economies has been at a low level. In contrast, the NPL ratio of loans to Europe and other areas, where uncertainty over financial and economic conditions has grown, has been relatively large.

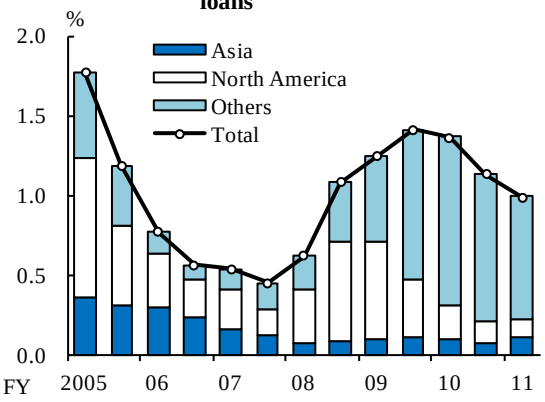
As described in Chapter III.C, banks have so far been relatively selective in their choice of borrowers. Nonetheless, the share of overseas loans in overall loans has been increasing, and it could increase further, depending on the consequence of deleveraging by European banks. Attention should therefore be paid to a decline in loan quality due to an overseas economic slowdown.

Chart IV-3-13: Credit cost ratio by sector[1,2]



Notes: *1*. The major banks and the regional banks are counted.
2. The latest data are as of the first half of fiscal 2011.
Source: BOJ.

Chart IV-3-14: Ratios of nonperforming overseas loans[1]



Note: *1*. The three major financial groups are counted on a non-consolidated basis. The latest data are as of the first half of fiscal 2011.
Sources: Published accounts of each group.

2. Interest rate risk and market risk associated with stockholdings

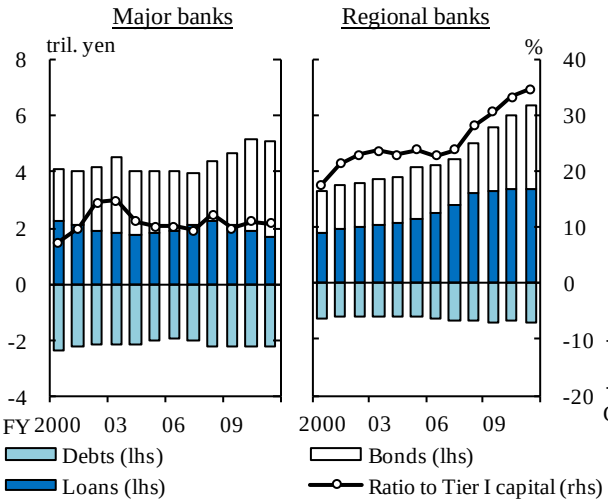
Accumulation of interest rate risk

The amount of interest rate risk borne by banks has been increasing. The 100 basis point value of interest rate risk, calculated under the assumption that interest rates of all maturities would rise simultaneously by 1 percentage point, tends to increase mainly for the risk associated with bond investment (Chart IV-3-15).[45]

[45] In measuring interest rate risk associated with funding, outflows of demand deposits are assumed

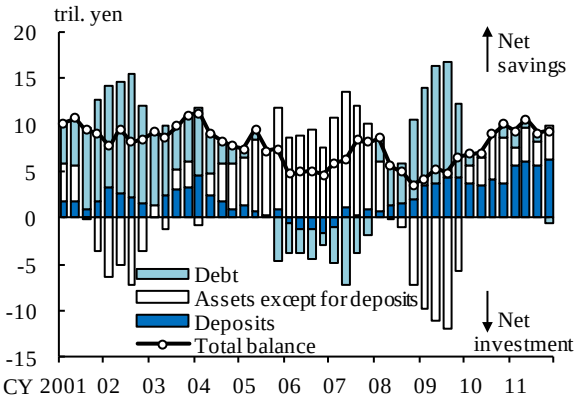
Increases in interest rate risk associated with bond investment are attributed to an increased amount of bond investment and a lengthened maturity of the investment. Since the Lehman shock, deposits of firms and households, both of which hold excess savings, have been on an increasing trend (Chart IV-3-16). At banks, growth in lending remains low and excess deposits are mainly invested in bonds. The major banks in particular have considerably increased their investment in bonds, and their ratio of securities to deposits (ratio of outstanding amount of securities invested relative to that of deposits received) has recently approached 50 percent (Charts IV-3-17 and IV-3-18). Also at the regional banks and *shinkin* banks, their ratios of securities to deposits are higher than before.

Chart IV-3-15: Interest rate risk (100 bpv)[1,2]



Notes: *1*. 100 basis point value in the banking book.
Off-balance sheet transactions are not included.
2. The latest data for interest rate risk and Tier I capital are as of end-December and end-September, respectively.
Source: BOJ.

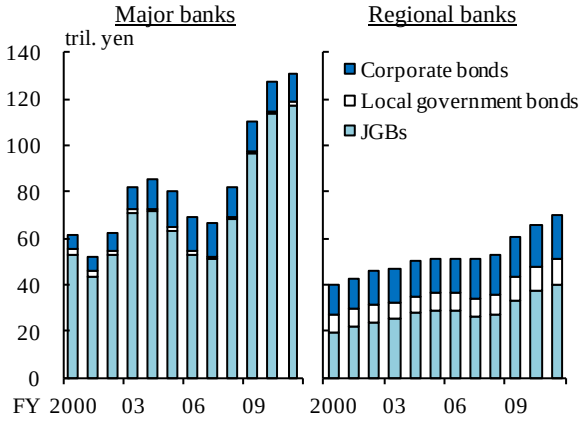
Chart IV-3-16: Investment-saving balance of firms and households[1]



Note: *1*. The latest data are as of the October-December quarter of 2011.
Source: BOJ, "Flow of funds accounts."

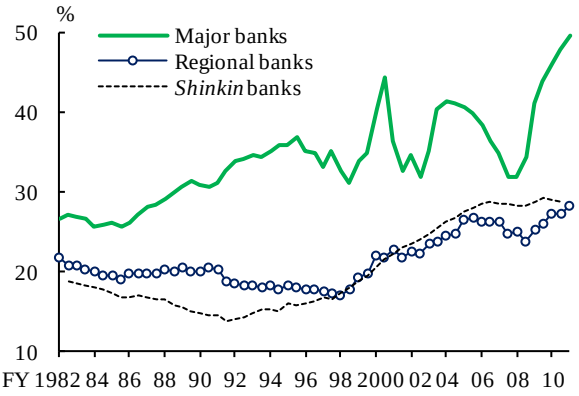
to take place within 3 months from the rise in interest rates.

Chart IV-3-17: Bondholdings[1]



Note: *1*. The latest data are as of the first half of fiscal 2011.
Source: BOJ.

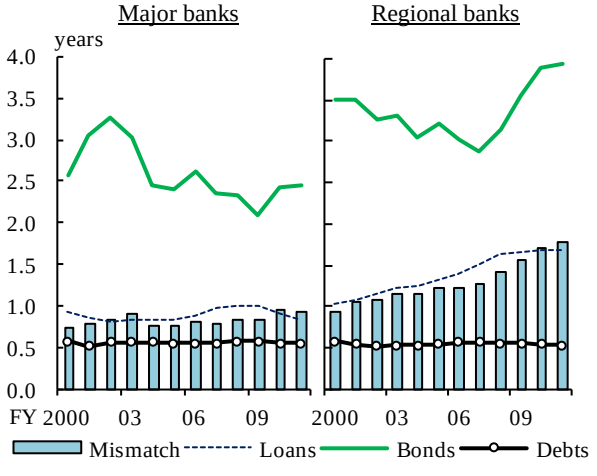
Chart IV-3-18: Ratio of securities to deposits[1,2,3]



Notes: *1*. The latest data are as of the first half of fiscal 2011 (as of fiscal 2010 for *shinkin* banks).
2. Domestic operations are aggregated for the major banks and the regional banks.
3. See Note 1 in Chart IV-3-6.
Source: BOJ.

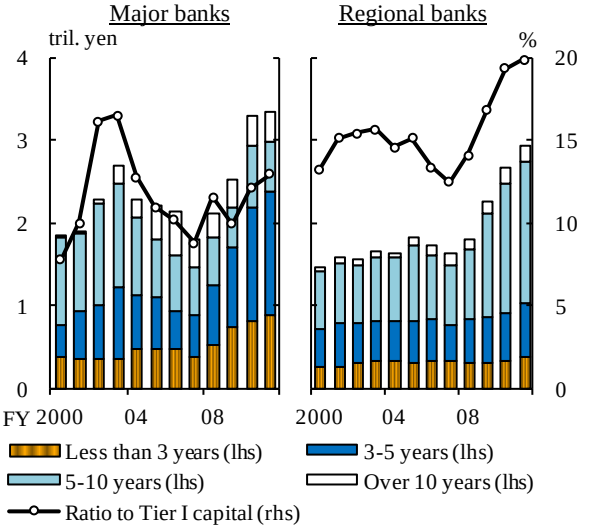
The average remaining maturity of the major banks' bond investment has remained at around 2.5 years, because these banks have continued to invest mainly in short- to medium-term bonds in order to restrain interest rate risk (Chart IV-3-19). On the other hand, the average remaining maturity of the regional banks' bond investment has lengthened to around 4 years recently, as the banks have continued to invest large amounts in long-term bonds.

Chart IV-3-19: Average maturity and maturity mismatch[1]



Note: *1*. The latest data are as of end-December 2011.
Source: BOJ.

Chart IV-3-20: GPS associated with bondholdings[1]



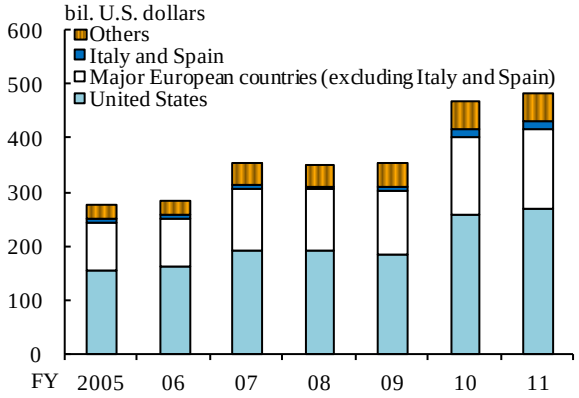
Note: *1*. The latest data for bondholdings and Tier I capital are as of end-December and end-September 2011, respectively.
Source: BOJ.

Consequently, both the major banks and the regional banks have been accumulating the amount of interest rate risk from bond investment. If interest rates on invested bonds of all maturities rise by 1 percentage point simultaneously, the amount of interest rate risk would be 3.4 trillion yen for the major banks and 3.0 trillion yen for the regional banks as of end-December 2011 (Chart IV-3-20).[46] A breakdown shows that the major banks have accumulated interest rate risk from short- to medium-term bonds, whereas the regional banks have accumulated the risk from long-term bonds.

Developments in foreign bond investment

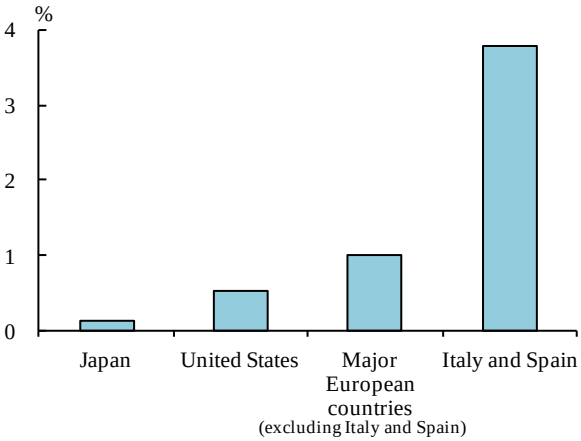
Banks have also increased the outstanding amount of foreign bond investment (Chart IV-3-21). Their investment is composed mainly of government bonds of advanced economies, such as the United States and Germany, with relatively little in the bonds of European countries with fiscal concern. However, attention should be paid to an increase in interest rate risk from holding foreign bonds, since yields on them tend to be more volatile than those on JGBs (Chart IV-3-22).

Chart IV-3-21: Outstanding amount of foreign bond investment by region[1,2,3,4]



Notes: *1*. The major banks and the regional banks are counted.
2. The latest data are as of the first half of fiscal 2011.
3. The outstanding amount is converted to U.S. dollars using the exchange rate at the end of each fiscal year (for the 2011 data, the rate at end-September 2011 is used).
4. The amounts outstanding and regional breakdowns are estimated from banking sector's debt securities investment in OECD countries in the balance of payments statistics. "Major European countries" consists of Belgium, Germany, Luxembourg, the Netherlands, Sweden, Switzerland, and the United Kingdom.
Sources: BOJ, "Balance of payments statistics"; BOJ calculations.

Chart IV-3-22: Historical volatility on government bond yields[1,2,3]



Notes: *1*. Historical volatilities are calculated from the daily changes of 3-year government bond yields. The sample period is 130 business days prior to end-December 2011.
2. Figures of "major European countries" and "Italy and Spain" are averaged by using the share of banks' bond investment in each country.
3. See Note 4 in Chart IV-3-21 for regional specification.
Sources: Bloomberg; BOJ, "Balance of payments statistics."

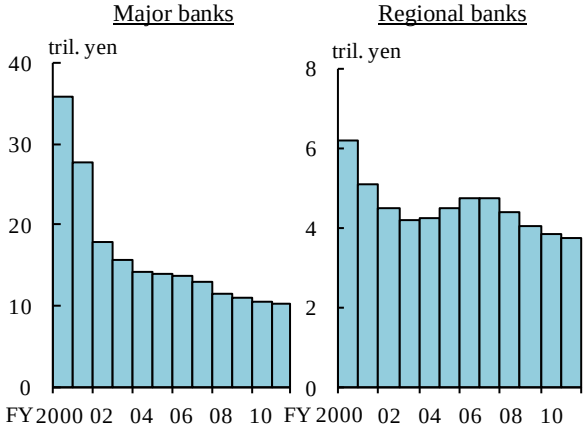
[46] The grid point sensitivity (GPS) in Chart IV-3-20 indicates capital losses on bondholdings when interest rates of all maturities rise individually by 1 percentage point. The aggregate of the GPS matches with 100 basis point value.

Delayed reduction in market risk associated with stockholdings

Many banks have regarded a reduction in market risk associated with stockholdings as an important management challenge and have been making efforts in this regard. However, the pace of reduction in banks' market risk associated with stockholdings has been slower than planned, partly due to the sluggish stock prices (Chart IV-3-23).

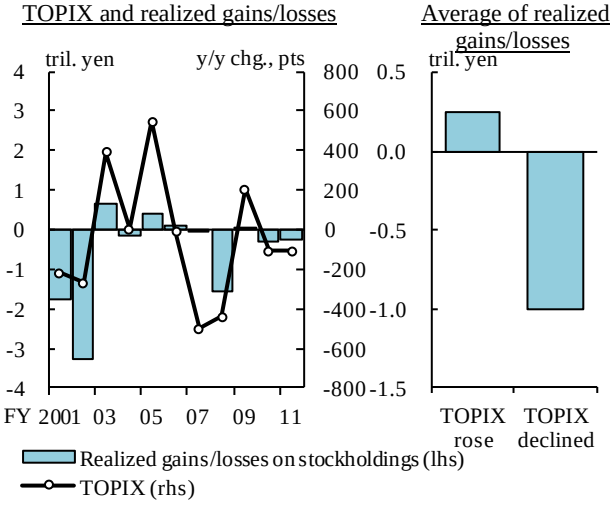
Banks' stockholdings aimed at maintaining business ties with firms (strategic stockholdings) could affect their profits and risks in several ways. First, in the case of strategic stockholdings, banks as loyal investors are supposed to hold their customers' stocks for a long time. This means that banks cannot sell these stocks quickly in response to price movements and thus that they tend to suffer realized losses on these stockholdings (Chart IV-3-24). In other words, banks hesitate to sell strategic stockholdings to maintain business ties with firms when stock prices rise, and they suffer large losses from impairment of stocks when stock prices plummet. Therefore, their realized losses tend to be greater than realized gains.

Chart IV-3-23: Stockholdings[1,2]



Notes: *1*. On an acquisition or amortized price basis. Banks are counted on a consolidated basis.
2. The latest data are as of the first half of fiscal 2011.
Source: BOJ.

Chart IV-3-24: Realized gains/losses on stockholdings[1,2,3]

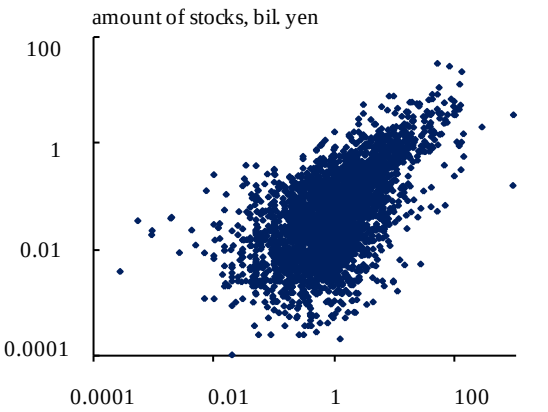


Notes: *1*. Right chart: annual average of realized gains/losses on stockholdings while the TOPIX rose and declined, respectively.
2. The major banks are counted.
3. The latest data are annualized as of the first half of fiscal 2011.
Sources: Bloomberg; BOJ.

Next, banks tend to hold a large amount of stocks issued by firms to which they extend a large amount of loans (Chart IV-3-25). This is evident at the major banks, which have business ties with many listed firms. Banks bear higher loan concentration risk from such firms with large borrowings. Moreover, when borrowing firms undergo deterioration in their business conditions, banks with a small share of lending to the firms may request banks with a large share to take their place and the latter banks may

end up extending an even larger amount of loans. Furthermore, if banks hold a large amount of such borrowing firms' stocks, banks' credit concentration risk would be amplified (see Box 4 for details on the associated risk).

Chart IV-3-25: Amount of loans and stocks[1]



Note: *1*. The data are as of fiscal 2010.
Source: Teikoku Databank, "SPECIA."

Box 4: Risks of holding stocks issued by firms with large borrowings

Banks have extended large amounts of loans to firms with which they have close business ties, and they often maintain strategic holdings of the stocks of such firms. The number of firms whose stocks are strategically held by banks has decreased in recent years as the banks have unwound their cross-stockholdings. However, there are still many borrowing firms whose stocks are held by banks (borrowing firms with capital ties). More than 20 percent of large firms with borrowings have such a relationship with banks (Chart B4-1).

As for large firms, the loan concentration risk is greater for borrowing firms with capital ties: that is, their average borrowing of 5.4 billion yen is larger than the 3.7 billion yen of borrowing firms without capital ties (Chart B4-2). If banks' stockholdings are counted (totaling 1.3 billion yen on average), the concentration risk of total credit would be even higher. In fact, banks' expected losses from the bankruptcy of borrowing firms with capital ties are estimated to be more than double the losses from the bankruptcy of borrowing firms without capital ties (the left-hand side of Chart B4-3). One reason for this is that losses on loans are partly covered by collateral and guarantees, whereas there is no such protection for stocks, which are subordinated in liquidation.

Despite the large amount of losses, no special gain from such stockholdings has been apparent in the ROEs. The ROEs of borrowing firms with capital ties rarely differ from those without such ties (the right-hand side of Chart B4-3). This implies that the banks'

stockholdings do not raise the probability of repayments of the loans. Taking into consideration high price volatility risk and amplified credit concentration risk, banks should cautiously revaluate their policy of holding stocks issued by firms with large borrowings.

Chart B4-1: Number of borrowers[1,2]

number of borrowers

	Large firms	SMEs	Total
Borrowers without capital ties	5,712	135,045	140,757
Borrowers with capital ties	1,634	1,152	2,786
Total	7,346	136,197	143,543

Notes: *1*. As of fiscal 2010. Excluding subsidiaries with a capital contribution of more than 50 percent.
2. "SMEs" stands for small and medium-sized enterprises.
Source: Teikoku Databank, "SPECIA."

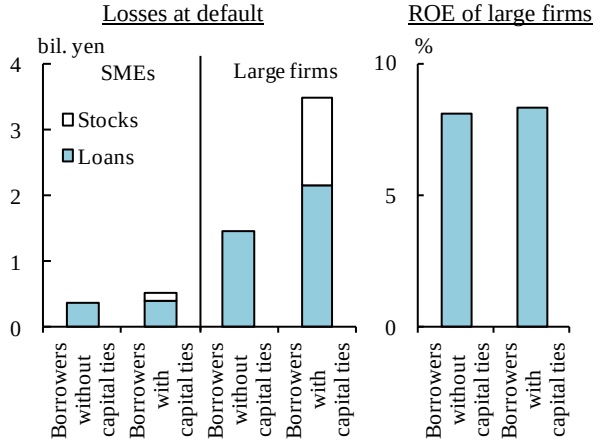
Chart B4-2: Amounts of loans and equity investments (per borrower)[1,2]

bil. yen

	Large firms		SMEs	
	Loans	Stocks	Loans	Stocks
Borrowers without capital ties	3.7	0.0	1.0	0.0
Borrowers with capital ties	5.4	1.3	1.0	0.1

Notes: *1*. Losses on stocks at default are the lower of either net assets or capital stock multiplied by capital contribution ratios.
2. See the notes in Chart B4-1.
Source: Teikoku Databank, "SPECIA."

Chart B4-3: Losses at default and ROEs (per borrower)[1,2]

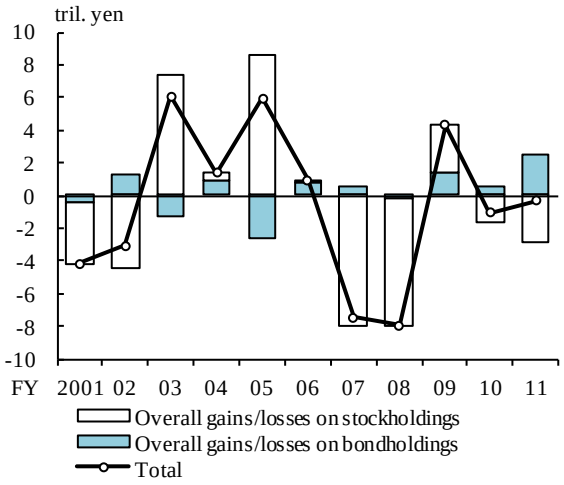


Notes: *1*. See the notes in Chart B4-1 and Chart B4-2.
2. The covered ratio is assumed to be 60 percent for loans.
Source: Teikoku Databank, "SPECIA."

With regard to market risk associated with stockholdings, attention should be paid to the correlation with market risk associated with bondholdings (see Box 5 for the quantitative relationship between the risks). Recently in Japan, stock prices and interest rates have tended to move in the same direction (stock prices and bond prices in the opposite direction), and this has made overall gains/losses on stockholdings and those on bondholdings offset each other (Chart IV-3-26). Although the outstanding amount of banks' stockholdings is smaller than that of bondholdings, stock prices are much more volatile than bond prices. Consequently, overall gains/losses on stockholdings more than offset those on bondholdings. In other words, the amount of banks' stockholdings is large even after taking into consideration the hedging effects that exist between stocks and bonds. Moreover, if overall financial markets are exposed to a large shock, the positive correlation between stock prices and interest rates could be disrupted and changed to a negative one. In such a case, fluctuations in realized gains/losses on securities holdings would be amplified. Attention should be paid to the fact that Japan's banks are materially exposed to such a risk because of their large holdings of both

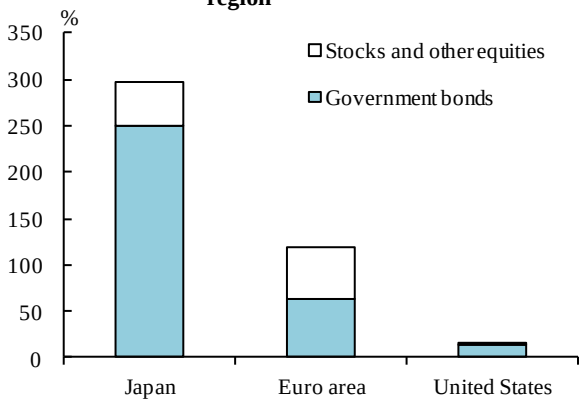
stocks and JGBs (Chart IV-3-27).

Chart IV-3-26: Overall gains/losses on stockholdings and bondholdings[1,2,3]



Notes: *1*. The major banks and the regional banks are counted.
2. The latest data are annualized as of the first half of fiscal 2011.
3. See Annex 2 for definitions of variables.
Source: BOJ.

Chart IV-3-27: Stockholdings and government bondholdings at banks in each region[1,2,3]



Notes: *1*. Relative to capital. As of September 2011.
2. Domestic banks for Japan, commercial banks for the United States, and monetary financial institutions excluding central banks for the euro area are counted.
3. Government bonds are those issued in the domestic markets.
Sources: ECB; FDIC; BOJ, "Flow of funds accounts."

Box 5: Correlations between market risks associated with stockholdings and bondholdings

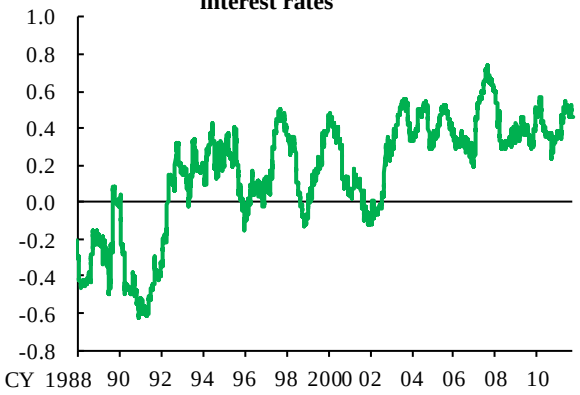
From 2000 in Japan, stock prices and interest rates tend to move together with an average positive correlation of 0.33 (Chart B5-1). This suggests a hedging effect between stockholdings and bondholdings. Based on this positive correlation, banks' gains/losses on securities holdings are estimated under a stress inducing a negative shock on stock prices with a 1 percent probability of occurrence. The result shows that banks in Japan as a whole would suffer losses on stockholdings, up to an amount equal to 15-20 percent of Tier I capital, which cannot be hedged by bondholdings (Chart B5-2). This indicates that banks' stockholdings are large even when the hedging effect between stockholdings and bondholdings is taken into account.

Recently in Europe, interest rates have frequently risen due to increasing fiscal concern, while stock prices have declined.[47] Furthermore, previously in Japan, correlations between stock prices and interest rates were not always stable. In market conditions in which stock prices and interest rates move in opposite directions (stock and bond prices in the same direction), the hedging effect would disappear. If a drop in stock prices and

[47] For example, in Italy, correlation between stock prices and interest rates was a negative figure of about minus 0.4 from July to December 2011.

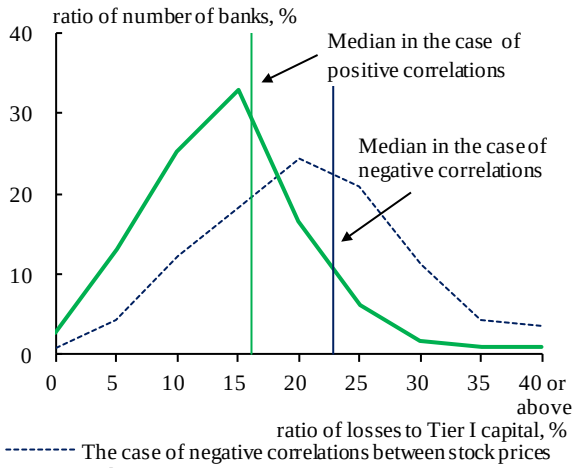
a rise in interest rates occur simultaneously, losses on securities holdings as a whole would be magnified, because banks would suffer losses on both stockholdings and bondholdings. Under the assumption of the largest negative correlation (minus 0.63) observed in the period from 1990 onward in Japan, banks as a whole would suffer substantial losses on securities holdings, amounting to around 25 percent of Tier I capital, while more than 20 percent of banks would incur losses of over 30 percent of Tier I capital.

Chart B5-1: Correlations between stock prices and interest rates[1]



Note: *1*. Correlation coefficients between daily returns on the Nikkei 225 Stock Average and daily changes in the 10-year JGB yields for the past 130 days.
Source: Bloomberg.

Chart B5-2: Losses on securities holdings[1,2]



Notes: *1*. The major banks and regional banks are counted. The data are as of the first half of fiscal 2011.
2. Correlation coefficients between stock prices and interest rates are set to 0.33 and minus 0.63 in the cases of positive and negative correlations, respectively.
Source: BOJ calculations.

3. Funding liquidity risk

Funding conditions for the yen

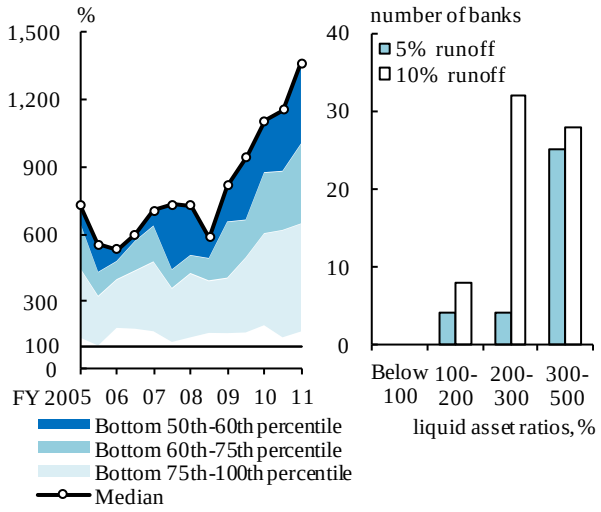
Funding liquidity risk for the yen has been restrained at Japan's banks. Growth in bank deposits has been high at around 2 percent per annum supported by the increase in personal deposits. Banks' short- and long-term market funding, through the issuance of bonds, CP, and certificates of deposit (CDs), indicates that funding conditions have been favorable.

In terms of banks' asset portfolios, liquid asset ratios have been rising both at the major banks and at the regional banks, due to the considerable increase in the outstanding amount of bondholdings. As a result, even under an assumption of a strong liquidity

shock in which market funding comes to a complete stop for 3 months, these banks would have sufficient liquid assets to satisfy short-term funding demand (the left-hand side of Chart IV-3-28). Furthermore, even if a more severe liquidity shock is assumed in which 10 percent of deposits are drained out of those whose term until the renewal of the deposit rate is 3 months or less, all banks would be able to weather the shock as they hold sufficient liquid assets (the right-hand side of Chart IV-3-28).

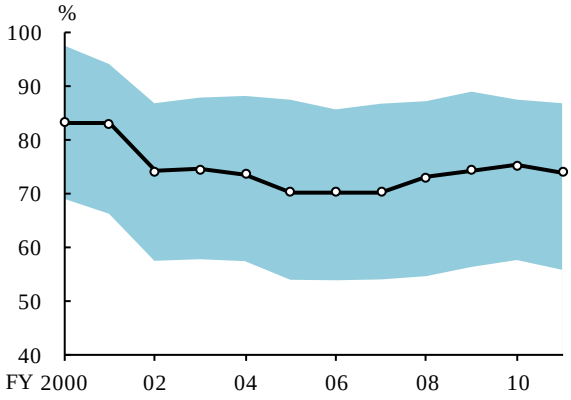
In terms of banks' funding structure, the ratio of long-term funds has declined slightly after rising through fiscal 2010 (Chart IV-3-29). A reason behind this was a slower growth rate of time deposits in view of a decline in interest rates on these deposits to near 0 percent. To maintain a secure funding structure, attention should be paid to inflows and outflows of time deposits and to developments in long-term fixed assets, and the source of long-term market funding should be enlarged by means of issuing corporate bonds and equities.

Chart IV-3-28: Liquid asset ratios[1,2,3]



Notes: *1*. See Annex 2 for definitions of variables.
2. The latest data are as of the first half of fiscal 2011. The right chart indicates distributions of liquid asset ratios under the assumption that the deposit runoff occurred at end-September 2011.
3. The major banks and the regional banks (excluding trust banks) are counted. The right chart excludes banks whose funding is less than market investment and those with liquid asset ratios over 500 percent.
Source: BOJ calculations.

Chart IV-3-29: Long-term funding ratios[1,2,3]



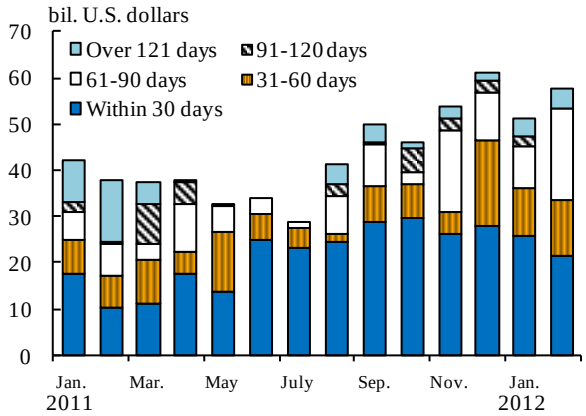
Notes: *1*. See Annex 2 for the definition of the variable.
2. The shaded area and solid line indicate the 10th-90th percentile range and the median, respectively.
3. The data are as of the first half of each fiscal year.
Source: BOJ.

Funding conditions for foreign currencies

Banks' funding for foreign currencies has functioned properly without any serious problem. Since summer 2011, U.S. MMFs -- the major providers of U.S. dollars -- have increased dollar investment in Japan's banks and have lengthened the maturity (Chart

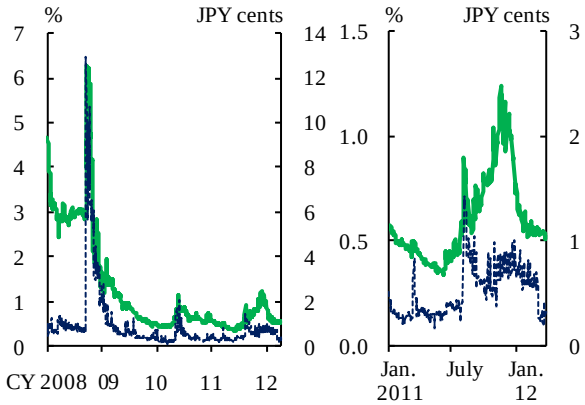
IV-3-30). In the foreign exchange swap market, dollar funding costs have been decreasing after the turn of the year, following the increase toward the end of 2011 (Chart IV-3-31). Liquidity in the market decreased temporarily as evident from the expansion in the bid-ask spread toward the end of 2011, although the degree of decrease was smaller than that observed at the time of the Lehman shock. Since the turn of the year, the market has been functioning smoothly on the whole as evident from the mild contraction in the bid-ask spread.

Chart IV-3-30: U.S. MMFs' assets under management by remaining maturity[1]



Note: *1.* U.S. major MMFs' investment in Japan's financial institutions are counted.
Sources: Published accounts of MMFs.

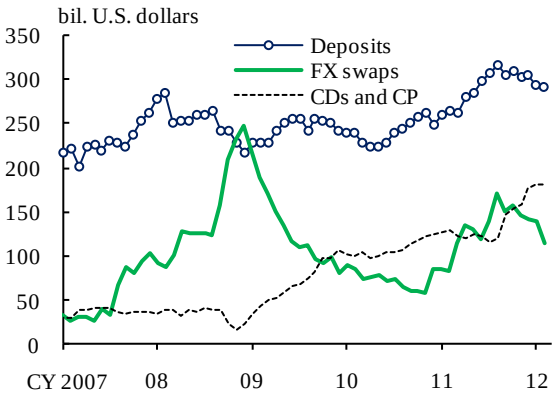
Chart IV-3-31: FX swap implied U.S. dollar funding rate from the yen and bid-ask spread[1]



Note: *1.* Bid-ask spreads are the daily average in the 3-month FX swap market. The latest data are as of March 30, 2012.
Source: Bloomberg.

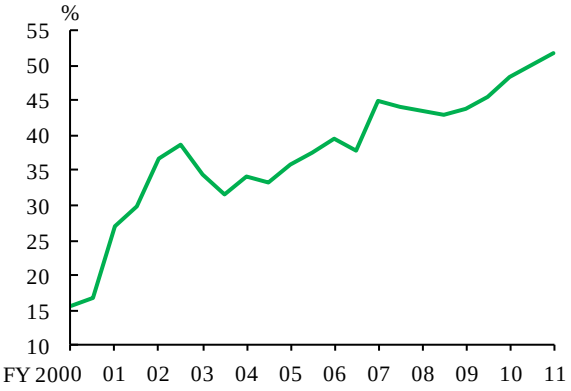
In this situation, overseas entities of Japan's banks have noticeably increased market funding by converting yen funds into U.S. dollar funds through foreign exchange swaps, and they have also expanded other means of funding including deposits, CDs, and CP. The funding structure of Japan's banks has changed greatly from that at the time of the Lehman shock, when they depended heavily on funding through foreign exchange swaps (Chart IV-3-32). Foreign currency funding of Japan's banks, however, still depends heavily on the short-term market. Therefore, attention should be paid to their susceptibility to changes in market conditions (Chart IV-3-33).

Chart IV-3-32: Funding amount in overseas branches[1,2]



Notes: *1*. FX swaps indicate net liabilities of interoffice accounts.
2. The latest data are as of Feburary 2012.
Source: BOJ, "Financial institutions accounts."

Chart IV-3-33: Ratio of short-term market funding to total foreign currency funding[1,2]



Notes: *1*. Short-term market funding is the sum of FX swaps, repos, CDs, and CP.
2. The latest data are as of the first half of fiscal 2011.
Source: BOJ.

4. Banks' capital and profitability

New Basel requirements

The Tier I capital ratio of Japan's banks (Basel II) at the end of the first half of fiscal 2011 was 13.6 percent for internationally active banks and 9.8 percent for domestic banks, increases of 0.7 percentage point and 0.5 percentage point from the end of fiscal 2010, respectively (the left-hand side of Chart IV-3-34). Internationally active banks particularly have been steadily increasing their Tier I capital in the run-up to the implementation of new Basel requirements by accumulating retained earnings. In addition, the ratio of Tier I capital to banks' total assets, which indicates their leverage, is increasing moderately with the increase in Tier I capital (the right-hand side of Chart IV-3-34).[48]

In March 2012, new Basel requirements to be applied to internationally active banks from end-March 2013 were made public.[49] The requirements (the so-called Basel III)

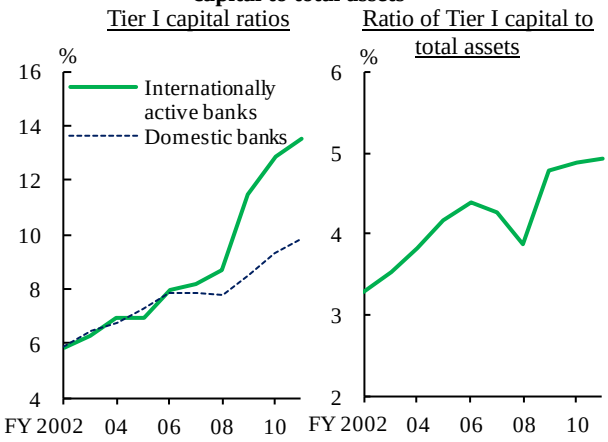
[48] Under the new Basel requirements, the leverage ratio is planned to be introduced to supplement the capital adequacy ratio that sets capital requirements on risk by type of asset and transaction. The leverage ratio is expected to be calculated by Tier I capital divided by overall exposures consisting of total assets and off-balance-sheet items such as commitments. Under the new Basel requirements, the treatment of the capital adequacy ratio is reviewed. Moreover, regulatory levels are planned to be set for newly introduced leverage ratio, and for the liquidity coverage ratio and the net stable funding ratio, both of which are new indicators of funding liquidity.

[49] Partial revision to the existing Basel requirements (the so-called Basel 2.5) had already been implemented at the end of December 2011.

stipulate the minimum level of common equity Tier I capital, which is the highest-quality capital, and tighter criteria for inclusion of various instruments in the capital. If preferred investment securities and hybrid debt capital instruments, which will be disallowed from capital, are not refinanced by eligible capital instruments under the new Basel requirements, the category of "other Tier I capital," including preferred investment securities, would decrease (Chart IV-3-35).[50] In this case, the other Tier I capital will decline gradually, due to the grandfathering measures for the existing preferred investment securities.

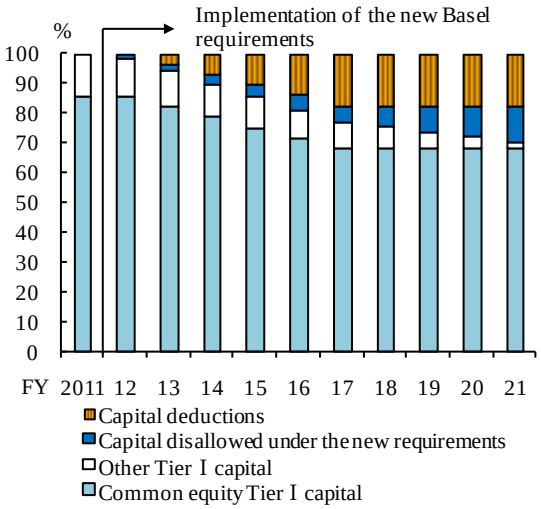
The new Basel requirements also stipulate that -- among instruments excluded from capital -- intangible fixed assets and deferred tax assets are deducted from the common

Chart IV-3-34: Tier I capital ratios and ratios of Tier I capital to total assets[1,2,3,4]



Notes: *1.* Based on the Basel II regulation.
2. Left chart: on a consolidated basis.
3. Right chart: on a non-consolidated basis.
4. The latest data are as of the first half of fiscal 2011. The major banks and the regional banks are counted.
Source: BOJ.

Chart IV-3-35: Tier I capital under the new Basel requirements[1,2,3,4]



Notes: *1.* Internationally active banks are counted.
2. BOJ calculations based on questionnaires about financial conditions at end-September 2011.
3. Grandfathering measures are considered based on "amendment to administrative notice on capital adequacy rules for internationally active banks based on Basel III" issued by the Financial Services Agency in March 2012.
4. Capital deductions are those from common equity Tier I capital.
Source: BOJ.

[50] Chart IV-3-35 is estimated based on Tier I capital as of the end of September 2011. The new Basel requirements state prerequisites for including preferred investment securities and hybrid debt capital instruments in other Tier I capital as follows. When the common equity Tier I capital ratio falls below a certain threshold, the terms and conditions for the issuance of the instruments have a provision that requires them to be either written off or converted into common equity. The requirements also state prerequisites for including preferred investment securities and hybrid debt capital instruments in other Tier I capital and Tier II capital as follows. At the point of non-viability, the terms and conditions for the issuance have a provision that requires the instruments to be either written off or converted into common equity, or the jurisdiction over resolution to conform to the clause.

equity Tier I capital, instead of Tier I capital. Because of the grandfathering measures, the amount of the deduction will increase gradually. Therefore, Tier I capital will decrease substantially, although the pace of annual decline will be slow.

In the calculation of risk assets, the coverage of counterparty risk will be strengthened (see Box 6 for counterparty risk in derivatives transactions). When the new Basel requirements are applied to the current amount of risk assets, the amount is likely to increase by around 10 percent on average, which would contribute to a reduction in the capital adequacy ratio.

To prepare for the new Basel requirements, banks need to continue to strengthen their capital bases in a planned manner by, for example, accumulating retained earnings and increasing instruments to be included in capital, in order to improve the quality of their capital and raise their capital adequacy ratios.

Box 6: Counterparty risk in derivatives transactions

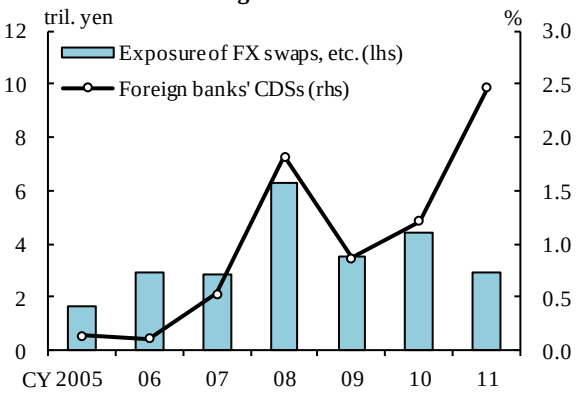
In the case of over-the-counter derivatives transactions, there is a risk of loss if the counterparty defaults. This risk is called counterparty risk and categorized as a type of credit risk. The amount of counterparty risk, as with credit risk, can be derived by multiplying the credit exposure to the counterparty by the default rate of the counterparty. Unlike credit risk, however, the exposure to a counterparty varies with changes in market price. For example, in the case of funding U.S. dollars against yen in a foreign exchange swap, if the yen appreciates against the dollar during the transaction, then the value of the yen returned by the counterparty would relatively increase. Such an increase in value is a potential gain and at the same time an exposure to the counterparty, because the gain is not realized if the counterparty fails. Thus, exposures in foreign exchange swaps are influenced by changes in exchange rates.

A noteworthy characteristic of counterparty risk management is that the amount of the risk multiplies when the counterparty's default rate rises together with the increase in the exposure to the counterparty generated by the change in market price. This multiplication of risk via a correlation between the market price and the counterparty's default rate is termed "wrong-way risk." For instance, in the foreign exchange swap market in the face of the Lehman shock, the amount of risk faced by Japan's banks increased considerably, as their exposures grew with the appreciation of the yen against the U.S. dollar together with the rise in the default rates of their U.S. and European

counterparts (Chart B6-1).[51] Recently, the supply of credit to financial institutions in a country through reverse repo transactions collateralized by its government bonds whose creditworthiness has deteriorated significantly has also been recognized as wrong-way risk.

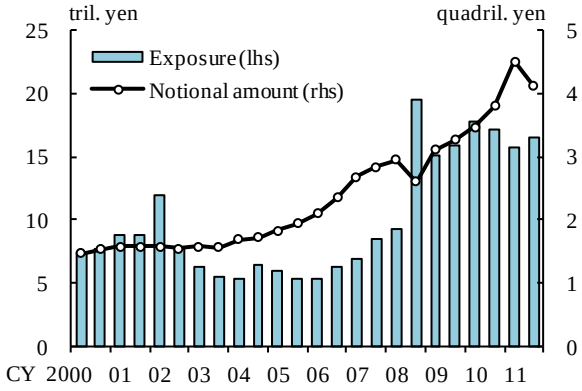
One method for reducing wrong-way risk is to agree on CSA and pledge additional collateral according to changes in market price and counterparties' credit risk.[52] Trade compression is another way to cut back on the amount of transactions among market participants.[53,54] Given the rise in the outstanding amount of derivatives transactions in Japan, financial institutions need to enhance their capability to manage counterparty risk (Chart B6-2).

Chart B6-1: Exposure of FX swap transactions, etc., and foreign banks' CDSs[1,2]



Notes: *1*. Exposure includes options in addition to FX swaps. Converted into the yen using exchange rates at the end of December each year.
2. Foreign banks' CDSs are the simple average of overseas financial institutions with subsidiaries or branches in Japan.
Sources: Bloomberg; BOJ, "Regular derivatives market statistics in Japan."

Chart B6-2: Market size of Japan's OTC derivatives market[1,2,3]



Notes: *1*. Exposure includes all OTC derivatives after netting.
2. Eighteen of the major domestic banks and securities companies are counted. Converted into yen using exchange rates at the end of June and December each year. There are discontinuities at the end of December 2007 and June 2009 due to changes in banks surveyed.
3. The latest data are as of December 2011.
Sources: Bloomberg; BOJ, "Regular derivatives market statistics in Japan."

Banks' profitability

Regardless of the decrease in credit costs, net income of Japan's banks for the

[51] In the United States, the wrong-way risk materialized also in the CDS market when the Lehman shock hit.

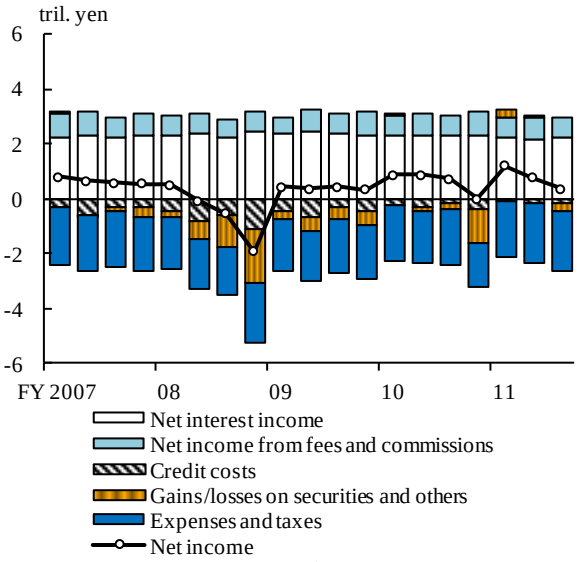
[52] Credit Support Annex (CSA) is a contract of mutually posting collateral assets between two counterparties.

[53] Trade compression is a service that identifies transactions in which risk can be offset among participants and dissolves such transactions after reconciliation.

[54] The Financial Stability Board recommended in October 2010 that over-the-counter derivatives should be standardized and cleared through central counterparties.

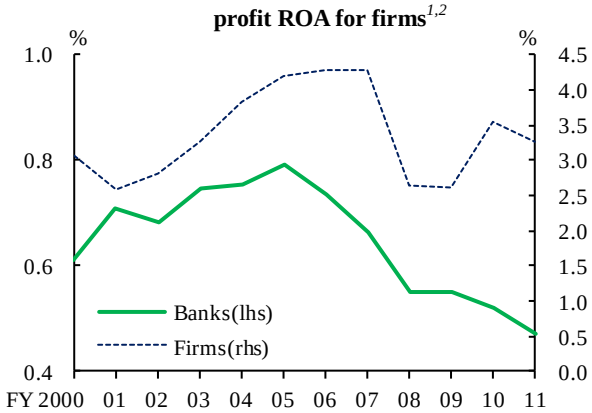
October-December quarter of 2011 declined, due to the deterioration in realized gains/losses on stockholdings and the charge-off of deferred tax assets following the lowering of corporate tax (Chart IV-3-36).

Chart IV-3-36: Net income[1,2,3]



Notes: *1*. The latest data are as of the October-December quarter of 2011.
2. The major banks and the regional banks are counted.
3. On a consolidated basis. Credit costs (losses on disposal of nonperforming loans) and expenses are on a non-consolidated basis. See Annex 2 for definitions of variables.
Source: Financial Quest.

Chart IV-3-37: Operating profit ROA from core business for banks and current profit ROA for firms[1,2]



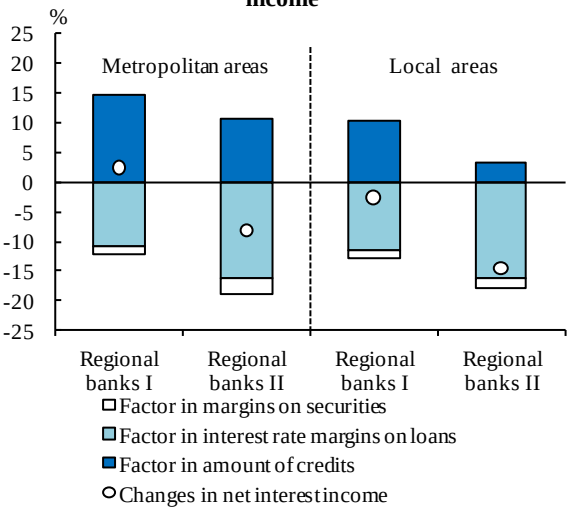
Notes: *1*. The latest data are as of the first half of fiscal 2011.
2. See Annex 2 for the definition of operating profits from core business.
Sources: Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly"; BOJ.

Banks' operating profits from core business, which show their core profitability as indicated by net interest income and net non-interest income, have been declining relative to their overall assets (Chart IV-3-37). This decline is attributed to the decrease in domestic net interest income such as from loans. The decrease in domestic net interest income reflects the following: in terms of margins, the pace of decline in funding costs has slowed as short-term market interest rates have approached 0 percent; while loan interest rates and yields on securities investment have continued to fall amid prolonged monetary easing. In these circumstances, although banks have strived to maintain the loan amount, the decrease in net interest income has not come to a halt due to sluggish domestic demand for funds.

The regional banks, whose source of earnings is mostly domestic business, have been facing severe business conditions (see Box 7 for details). In local areas, demand for funds of small and medium-sized firms that are major borrowers of the regional banks has been declining reflecting the decrease in the population. As a result, the regional banks have sought to maintain their amount of loans since the mid-2000s by expanding business outside their home prefectures and extending loans to large firms and local

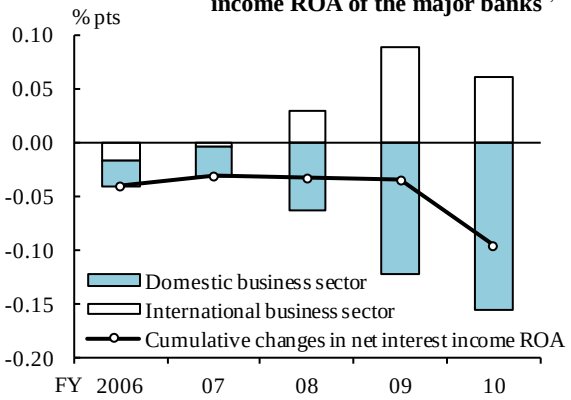
governments.[55] However, at many regional banks, since credit margins have declined more than the profits from the credit increase, their net interest income has also declined (Chart IV-3-38). At the major banks, profits from overseas business have contributed to overall earnings, although they have not increased enough recently to fully compensate for the decline in ROA from domestic business (Chart IV-3-39).

Chart IV-3-38: Changes in net interest income[1,2]



Notes: *1*. Changes from fiscal 2005 to fiscal 2010. Amount of credits includes both loans and securities.
2. Figures for metropolitan areas depict the net interest income of the regional banks whose head offices are located in the south Kanto, Tokai, and Kinki regions. Figures for local areas depict that of the regional banks whose head offices are located in other areas.
Source: BOJ.

Chart IV-3-39: Cumulative changes in net interest income ROA of the major banks[1,2]



Notes: *1*. Cumulative changes in net interest income ROA from fiscal 2005.
2. Bar indicates contributions.
Source: BOJ.

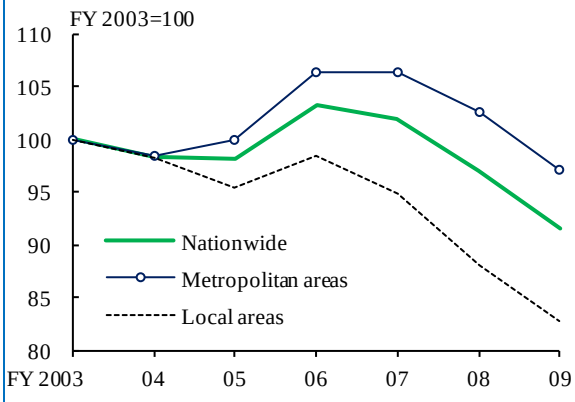
Box 7: Business conditions of the regional banks

The business conditions of the regional banks have been severe reflecting the decrease in the population, although the severity differs by region. Sales in local areas of small and medium-sized firms that are major borrowers of the regional banks declined by about 20 percent from fiscal 2003 to fiscal 2009 (Chart B7-1). As a result, loans extended to such firms by regional banks in the local areas have dropped. The drop was evident in loans to nonmanufacturing businesses, such as the retail and service industries, relative to such loans by regional banks in metropolitan areas (Chart B7-2). In these circumstances, the regional banks have expanded their outstanding amount of housing loans by meeting demand for loans in place of the former Government Housing Loan Corporation. Such demand, however, could peak sooner or later because the number of people aged in their 30s and 40s who are most likely to acquire homes is

[55] For details, see the October 2011 issue of the *Report*.

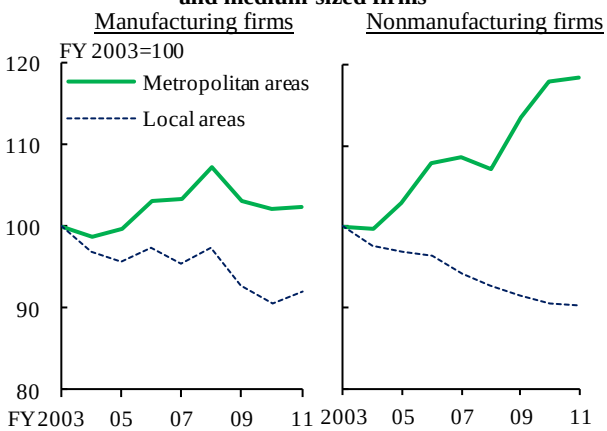
expected to decline gradually in local areas (Chart B7-3). While inflows of deposits by individuals have remained steady, the amount of deposits could decrease over the long term, as the elderly withdraw financial assets and as financial assets flow out to metropolitan areas due to inheritance.

Chart B7-1: Sales of small and medium-sized firms[1]



Note: *1*. Metropolitan areas consist of the south Kanto, Tokai, and Kinki regions.
Source: Small and Medium Enterprise Agency, "Basic survey on small and medium enterprises."

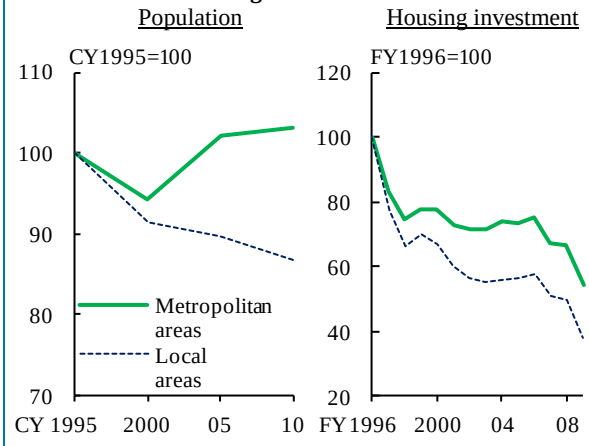
Chart B7-2: Regional banks' loans outstanding to small and medium-sized firms[1]



Note: *1*. See Note 1 in Chart B7-1. The latest data are as of end-December 2011.
Source: BOJ, "Loans and bills discounted by sector."

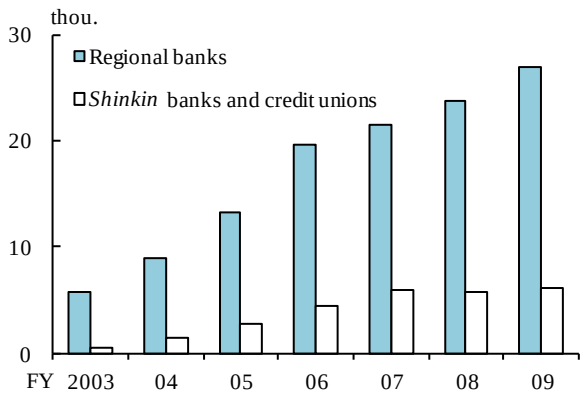
Faced with these severe conditions, the regional banks have sought to develop new fields of business. For example, they have urged small and medium-sized firms to improve their business by strengthening corporate tie-ups in local areas and developing new markets including those abroad (Chart B7-4). In addition, the regional banks have recently begun to support elderly owners seeking mergers or acquisitions to ensure the

Chart B7-3: Population in their 30s and 40s and housing investment[1]



Note: *1*. See Note 1 in Chart B7-1.
Sources: Cabinet Office, "Prefectural accounts"; Ministry of Internal Affairs and Communications, "National population census."

Chart B7-4: Number of deals in business matching



Source: Financial Services Agency, "Report on promotion of region-based relationship banking in fiscal 2009."

succession of their business and started to extend loans to start-ups and new types of business (Chart III-3-18).[56] These efforts, however, have yet to succeed in enhancing the banks' profits markedly. Since the ongoing demographic changes will affect the financial environment considerably, it is essential for the regional banks to innovate in services to adapt to the decline in the working-age population and the aging of society.

D. Risks borne by the nonbank financial sector

In this section, risks in the nonbank financial sector, such as insurance companies, securities companies, and consumer finance companies, are examined.

1. Insurance companies

Asset management of life insurance companies

At life insurance companies, duration mismatches, in which the maturity of insurance policies on their liabilities exceeds the maturity of investment on their assets, have been narrowing gradually (Chart IV-4-1). This is attributed to the fact that life insurance companies have extended the maturity of assets by increasing their investment largely in super-long-term JGBs, while refraining from investment in JGBs with a maturity of 10 years or less (the left-hand side of Chart IV-4-2). Therefore, the share of life insurance companies' investment in the super-long-term JGB market reached 40 percent (the right hand side of Chart IV-4-2).

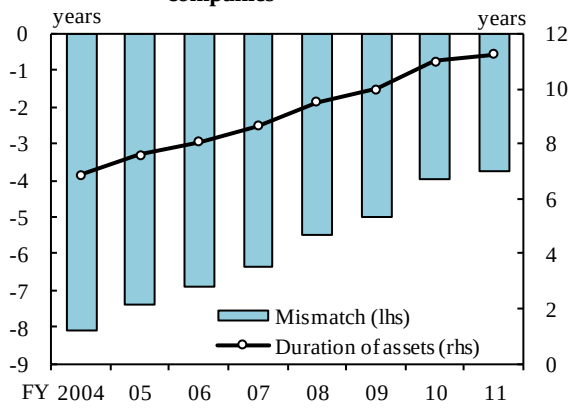
In addition, life insurance companies have gradually reduced market risk associated with stockholdings. The weighting of asset investment risk in portfolios will change with a new regulation governing the solvency margin ratio to be applied from financial results for fiscal 2011 (ending in March 2012).[57] In view of this, the nine major life insurance companies reduced their domestic stockholdings by about 1 trillion yen in fiscal 2010 and then about 0.3 trillion yen in the first half of fiscal 2011 by selling

[56] Between fiscal 2007 and fiscal 2009, local financial institutions supported 420 mergers and acquisitions to ensure business succession according to the survey by the Financial Services Agency.

[57] Due to the revision of the solvency margin ratio applied to insurance companies from financial results for fiscal 2011 (ending in March 2012), the coefficient for risks associated with domestic stock price fluctuations will be raised from 10 percent to 20 percent. This will cause life insurance companies to reduce the share of domestic stocks in their portfolios and increase the share of foreign bonds, whose coefficient for the associated risks including foreign exchange risk is relatively low at 11 percent.

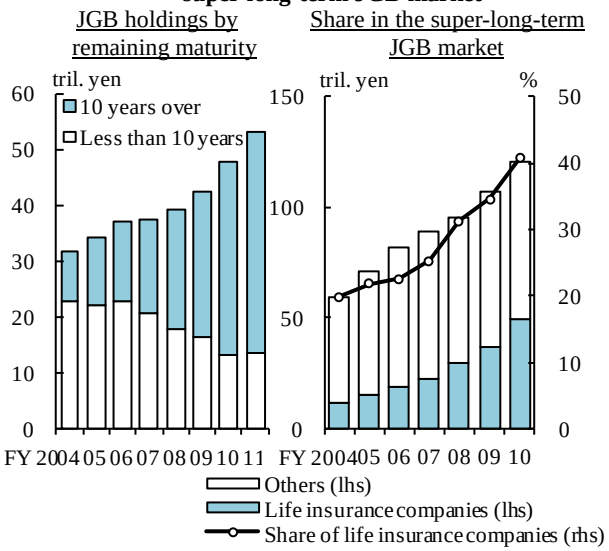
stocks that have a high risk weight. The amount of stockholdings relative to real net assets remained at a high level, although it has declined gradually since fiscal 2009 (Chart IV-4-3).[58]

Chart IV-4-1: Duration mismatch of life insurance companies[1,2]



Notes: *1*. The nine major domestic life insurance companies are counted. The latest data are as of the first half of fiscal 2011.
2. Duration of liabilities is assumed to be constant at 15 years.
Sources: Published accounts of life insurance companies.

Chart IV-4-2: JGB holdings and share of life insurance companies in the super-long-term JGB market[1,2,3]

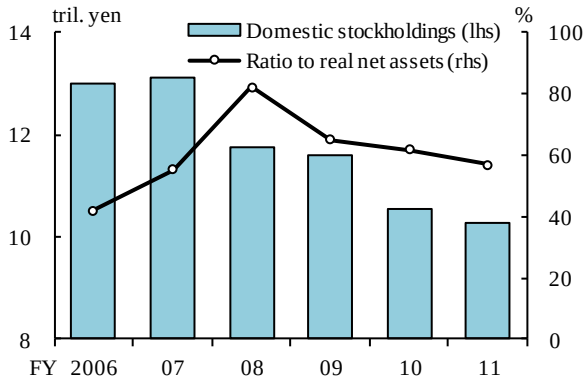


Notes: *1*. Left chart: the latest data are as of the first half of fiscal 2011. The nine major domestic life insurance companies are counted.
2. Right chart: members of the Life Insurance Association of Japan except for Japan Post Insurance are counted.
3. The term composition of JGB holdings held by the member companies noted above is assumed to be the same as those held by the nine major life insurance companies. Bars indicate outstanding amounts.
Sources: Life Insurance Association of Japan; Japan Post Insurance; Ministry of Finance.

Meanwhile, life insurance companies have actively invested particularly in foreign bonds to improve yields on their investment (Chart IV-4-4). As for foreign bonds by region, they invested mainly in government bonds issued by advanced economies, such as the United States and Germany, and relatively little in the bonds of European countries with fiscal concern. On the other hand, the hedge ratio against foreign exchange risk in their foreign currency-denominated investment has declined gradually since fiscal 2009, although remaining at a high level of around 60 percent. Therefore, attention should be paid to the fact that life insurance companies' profits have become more susceptible to changes in yields on foreign bonds and in foreign exchange rates.

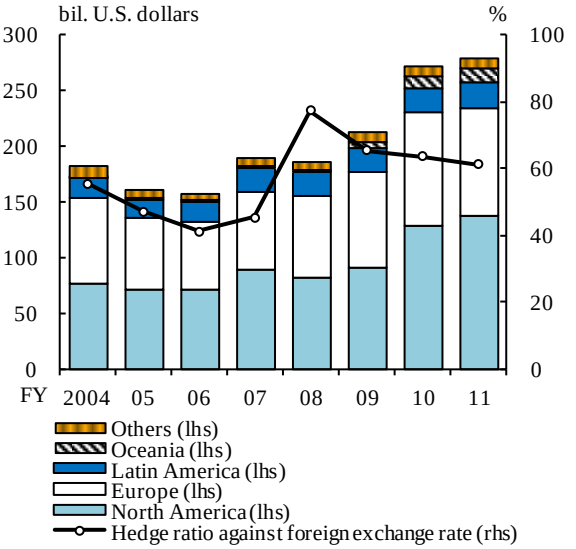
[58] Real net assets are the market price of assets minus liabilities that are not capital instruments.

Chart IV-4-3: Stockholdings of life insurance companies[1,2,3]



Notes: *1*. On a book-value basis.
2. The latest data are as of the first half of fiscal 2011.
3. The nine major domestic life insurance companies are counted.
Sources: Published accounts of life insurance companies.

Chart IV-4-4: Foreign bondholdings of life insurance companies and hedge ratio against foreign exchange risk[1,2]



Notes: *1*. The nine major domestic life insurance companies are counted. The latest data are as of the first half of fiscal 2011.
2. The hedge ratio against foreign exchange risk is defined as the sum of notional amount of the net short positions of forward contracts and the long positions of put options divided by the total assets denominated in foreign currency.
Sources: Published accounts of life insurance companies.

Effects of insurance payments related to disasters

The amount of insurance claims met by life insurance companies for the damage related to the Great East Japan Earthquake is about 150 billion yen.[59] This amount is largely below the policy reserves and therefore has a very minor impact on business conditions of the insurance companies.

On the other hand, the amount of insurance claims met by major nonlife insurance companies for earthquake-related damage reached about 1.2 trillion yen for households and about 600 billion yen for firms.[60] Moreover, the insurance payments by three major nonlife insurance groups are expected to reach about 900 billion yen for damage from the flooding in Thailand in summer 2011. These insurance payments are partly covered by the government and reinsurance companies. But the nonlife insurance companies

[59] The amount of insurance payments by life insurance companies for the disaster was surveyed by the Life Insurance Association of Japan as of February 2012.

[60] The amount of insurance payments for households was surveyed by the General Insurance Association of Japan as of February 2012, while that for firms made by five major nonlife insurance companies was surveyed by the Financial Services Agency as of May 2011.

recorded net losses in fiscal 2011, incurring particularly large net losses in the October-December quarter.[61] The solvency margin ratio of nonlife insurance companies at the end of December 2011 was about 670 percent, declining by about 90 percentage points from the end of March 2011, as they used their reserves to make insurance payments.[62] While the solvency margin ratio remains significantly higher than the required level of 200 percent at present, it is important for the nonlife insurance companies to maintain sufficient solvency margins, taking account of recent frequent large-scale disasters.

2. Securities companies

Some securities companies have expanded their overseas business to enhance their profitability since the Lehman shock. Total assets of major securities companies have increased since fiscal 2009, and the number of employees in overseas subsidiaries increased widely across regions, including the United States, Europe, and Asia, until fiscal 2010 (Charts IV-4-5 and IV-4-6).[63] Notwithstanding mounting labor costs, their overseas business expansion has not necessarily boosted profits thus far, partly because of lackluster trading in domestic and overseas financial markets. As for profits, major securities companies continued to record net losses in the first half of fiscal 2011 following fiscal 2010 (see Annex 3). As a result, they have not accumulated retained earnings as fast as the growth in total assets, and hence their leverage ratios have increased gradually (Chart IV-4-5).

Securities companies need to improve the profitability of their business including overseas subsidiaries by restructuring unprofitable divisions. Furthermore, given the heightened uncertainty overseas, they should manage market risk and counterparty risk more strictly. In addition, while they have not faced a serious problem as regards foreign currency funding, securities companies should maintain strict management of liquidity

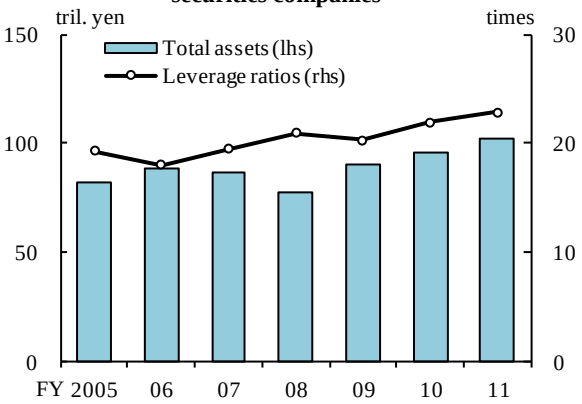
[61] The payments for the earthquake-related damage on households are mostly covered by the government and the Japan Earthquake Reinsurance Company, while the payments for the earthquake-related and flooding damage on firms are partly covered by reinsurance companies. Nonlife insurance companies had already recorded the payments for the earthquake-related damage as losses in their financial results for fiscal 2010 and their profits for fiscal 2011 have not been reduced by the payments.

[62] The solvency margin ratio is the sum of the three major nonlife insurance groups calculated based on the standard before a revision of the ratio. Factors that caused the decline in the ratio included unrealized losses on securities holdings.

[63] Major securities companies consist of four groups: Nomura Holdings; Daiwa Securities Group; Mitsubishi UFJ Securities Holdings; and Mizuho Securities.

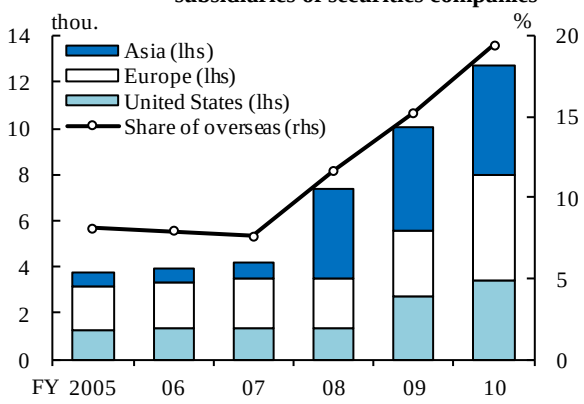
risk, given the high uncertainty over foreign currency funding markets.

Chart IV-4-5: Total assets and leverage ratios of securities companies[1,2,3]



Notes: *1*. The four major securities companies are counted on a consolidated basis.
2. Leverage ratios are ratios of total assets to net assets.
3. The latest data are as of the first half of fiscal 2011.
Sources: Published accounts of securities companies.

Chart IV-4-6: Number of employees in overseas subsidiaries of securities companies[1,2]



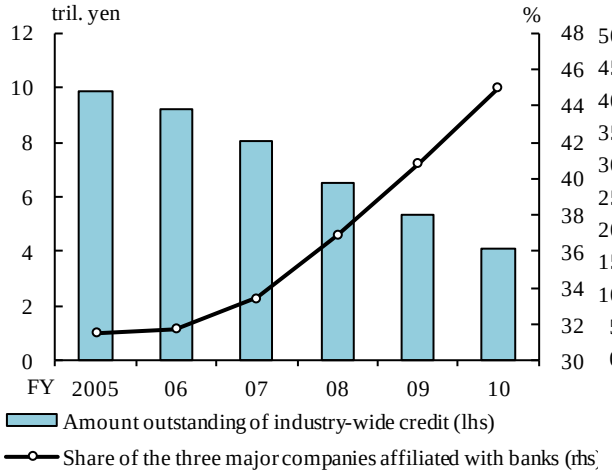
Notes: *1*. See Note 1 in Chart IV-4-5.
2. Share of overseas is the ratio of employees in overseas subsidiaries divided by total employees (including temporary workers).
Sources: Published accounts of securities companies.

3. Consumer finance companies and credit card companies

The amount of credit provided by consumer finance companies as a whole has been on a decreasing trend since the amendment of the Money Lending Business Act in 2006.[64] On the other hand, the major banks, which have regarded consumer finance as a strategically important business since the early 2000s, have continued to undertake equity investment in affiliated consumer finance companies even while the number of companies in the industry has decreased. As a result, consumer finance companies affiliated with banks have rapidly increased their market share in the consumer finance business (Chart IV-4-7). Meanwhile, consumer finance companies, which had suffered net losses, showed a slight improvement in net losses after the turn of fiscal 2011 (see Annex 3). This was because they reduced general and administrative expenses and the amount of provisions for borrowers' claims for refunds on overpaid interest was limited following the decline in such claims from the peak in February 2011 (Chart IV-4-8).

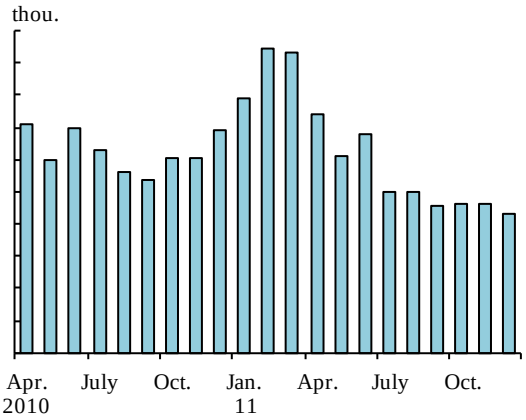
[64] The amendment made a number of changes, such as (1) ensuring the appropriateness of money-lending business activities through stricter requirements for entering the business; (2) curbing excessive lending through introduction of an aggregate debt limit at one-third of the borrower's annual income; and (3) ensuring the appropriateness of the interest rate through abolishment of the gray-zone interest rate under the pre-amended Money Lending Business Act, and lowering it to the 20 percent level of the interest rate cap under the Act on Regulation of Receiving of Capital Subscription, Deposits, and Interest Rates.

Chart IV-4-7: Share of consumer finance companies affiliated with banks



Sources: Published accounts of consumer finance companies; Japan Consumer Credit Association, "Consumer credit statistics of Japan."

Chart IV-4-8: Number of borrowers' claims for refunds on overpaid interest[1]



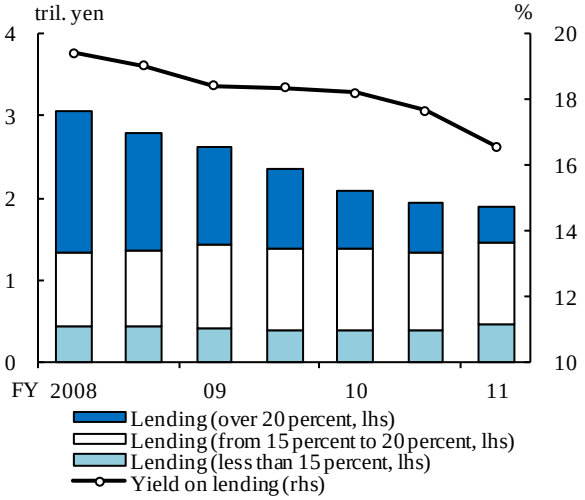
Note: *1.* The three major consumer finance companies are counted.

Sources: Published accounts of consumer finance companies.

Consumer finance companies' business conditions remained severe, as the amended law worked to lower loan interest rates and the NPL ratio remained high while the market shrank due to regulations on total loan volume (Charts IV-4-9 and IV-4-10). Credit risk borne by consumer finance companies is likely to affect banks' business conditions through bank loans or equity investment. Therefore, the repercussions of borrowers' claims for refunds on overpaid interest continue to warrant vigilance.

Meanwhile, credit card companies have recorded net profits with only small provisions for borrowers' claims for refunds on overpaid interest, but their profits are being squeezed as interest rate margins edge down (see Annex 3).

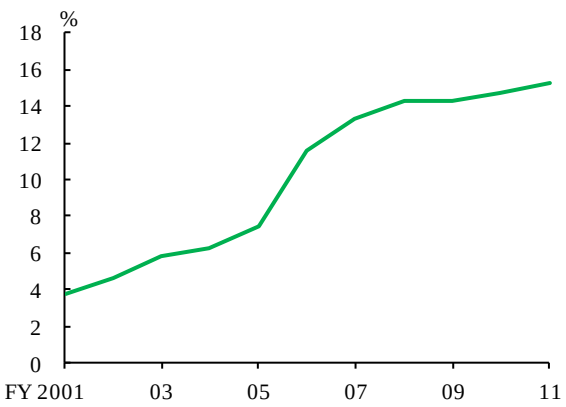
Chart IV-4-9: Loan rates of consumer finance companies[1]



Note: *1.* The three major companies are counted. The latest data are as of the first half of fiscal 2011. Figures in brackets in the legend indicate the range of loan interest rates.

Sources: Published accounts of three major consumer finance companies.

Chart IV-4-10: Nonperforming-loan ratio of consumer finance companies[1,2]



Notes: *1.* The three major companies are counted.
2. The latest data are as of the first half of fiscal 2011.

Sources: Published accounts of consumer finance companies.

V. Resilience of the financial system

This chapter assesses the resilience of Japan's financial system and the possible future effects on financial intermediation by conducting macro stress testing under scenarios of fluctuations in the macroeconomy and financial markets.

The macro stress testing shows that the resilience of Japan's financial system has generally strengthened. Banks' capital bases as a whole would be able to avoid significant impairment, even if some degree of stress arises, such as a temporary economic downturn with a plunge in stock prices, or an upward shift of domestic interest rates for all maturities by 1 percentage point. Nevertheless, attention must be paid to the possibility that capital adequacy ratios will remain low for banks with relatively low profitability and weak capital bases.

Based on the results of stress testing under more severe assumptions, the following points warrant vigilance in order to ensure long-lasting stability of the financial system. First, if the economy becomes stagnant for a protracted period, banks' credit costs could increase considerably relative to their profitability. Second, severe shocks in domestic and overseas financial markets, such as a downward shock to stock prices and an upward shock to bond yields occurring simultaneously, would immediately cause deterioration in banks' realized gains/losses on securities holdings. Meanwhile, the deterioration would be amplified through a feedback loop between the financial system and the real economy. Furthermore, attention should be paid to the possibility of sporadic surges in market interest rates triggered by decreased confidence in fiscal sustainability, as was observed recently in Europe. Third, although banks have generally secured a sufficient amount of foreign currency liquidity, they would need additional funding sources under a rather severe situation where a number of measures for foreign currency funding become inoperative simultaneously.

It should be noted that the macro stress testing conducted in this chapter does not aim to predict the future of the financial system. Rather, it seeks to clarify the characteristics of risks banks face and assess the resilience of the financial system. The results of stress testing should be interpreted with some latitude, since they are calculated based on certain assumptions and omit some elements for the sake of simplicity.

A. Resilience against macroeconomic shocks

Baseline scenario and stress scenarios

In what follows, a baseline scenario -- the starting point of analysis -- and two stress scenarios -- an economic downturn scenario and a protracted stagnation scenario -- are set (see Annex 4 for the framework of macro stress testing). First, the baseline scenario sets the end of the first half of fiscal 2011 as the base point and assumes that, in line with private-sector forecasts made as of February 2012, the nominal GDP growth rate would be slightly weaker than minus 2 percent in fiscal 2011 and then turn up to around 1.5 percent in fiscal 2012 (Chart V-1-1).[65]

Second, the economic downturn scenario assumes that the economy and stock prices fall simultaneously from the baseline scenario mainly in fiscal 2011.[66] This is a harsh scenario, because it assumes that a shock would coincide with the serious effects of the disaster in fiscal 2011. Under the economic downturn scenario, the following changes would occur. The nominal GDP growth rate would be around minus 3 percent in fiscal 2011 and would then turn positive and be around 1 percent in fiscal 2012. Stock prices (TOPIX) would decline from 761 points at the end of the first half of fiscal 2011 to 673 points at the end of fiscal 2011, and would rebound toward the end of fiscal 2014. Also toward the end of fiscal 2014, long-term loan interest rates would decline by about 0.1 percentage point.

Finally, the protracted stagnation scenario assumes that the nominal GDP growth rate would decline to be negative in fiscal 2011 and stay at 0 percent thereafter. Such a scenario would occur if the U.S. and European balance-sheet adjustments continue for an even longer period. Particularly for Japan's regional banks, further stagnation of the local economy following its current low growth rate is an alternative interpretation of such a scenario (Chart V-1-2). Under this scenario, the nominal GDP growth rate in fiscal 2011 would be slightly weaker than minus 2 percent, which is identical to the growth rate under the baseline scenario, and would remain 0 percent in fiscal 2012 onward (Chart V-1-1).[67]

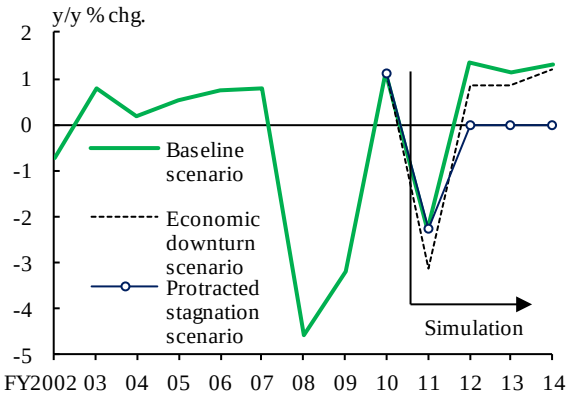
---

[65] In the baseline scenario, stock prices and long-term loan interest rates are assumed to remain constant at the levels of the base point.

[66] The stress scenario is set by estimating the five-variable vector autoregression model: the real effective exchange rate, real GDP, the GDP deflator, the long-term loan interest rate, and stock prices (TOPIX), and then by assuming negative shocks with a 5 percent probability -- that is, at a frequency of once every 5 years on a quarterly basis -- to the real GDP and stock prices in the October-December quarter of 2011.

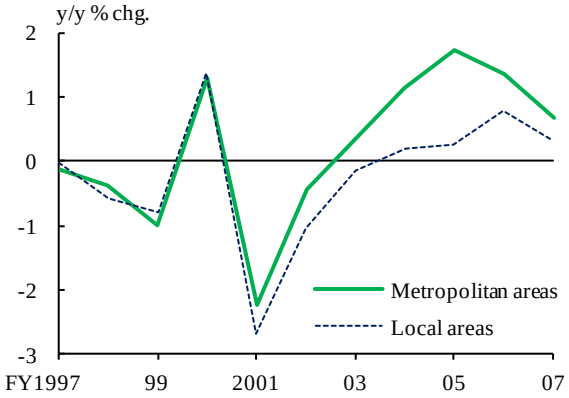
[67] Stock prices and long-term loan interest rates assumed in the protracted stagnation scenario are considered to be the same as those assumed in the economic downturn scenario.

Chart V-1-1: Nominal GDP growth under the scenarios



Sources: Japan Center for Economic Research, "ESP forecasts"; Cabinet Office, "National accounts."

Chart V-1-2: Nominal GDP growth (metropolitan areas and local areas)



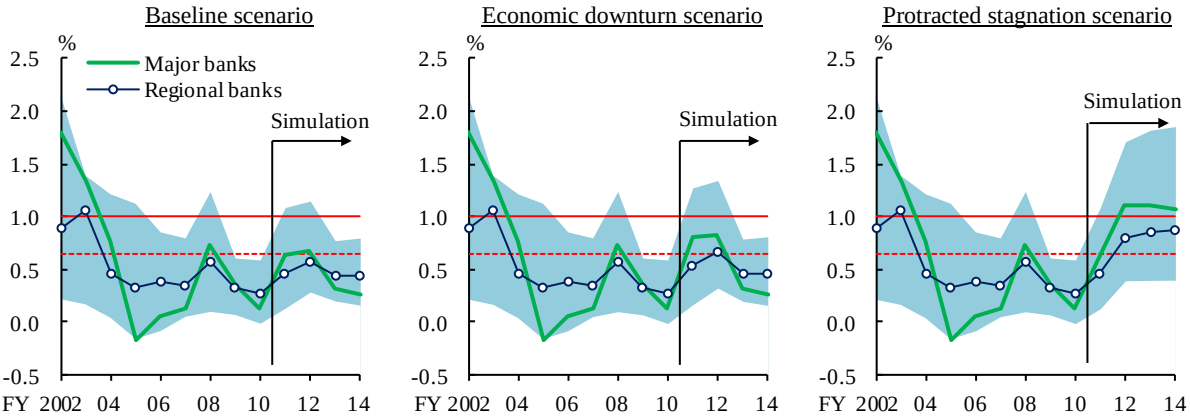
Source: Cabinet Office, "Prefectural accounts."

Effects on banks' credit costs

Banks' credit costs under each scenario are estimated as follows. Under the baseline scenario, the estimated credit cost ratios for the major banks and the regional banks would both increase through fiscal 2012, and the ratios would then decline as the economy recovers (the left-hand side of Chart V-1-3).

Under the economic downturn scenario, the estimated credit cost ratio for the regional banks would increase slightly beyond the break-even point in fiscal 2012, but fall afterward below the break-even point as the economy recovers (the middle of Chart V-1-3). Meanwhile, the estimated credit cost ratio for the major banks would remain below the break-even point through fiscal 2014.

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



Note: *1*. Shaded areas indicate the 10th-90th percentile range. The horizontal lines indicate the break-even points of the major banks (solid line) and the regional banks (dashed line) in the first half of fiscal 2011.
Source: BOJ calculations.

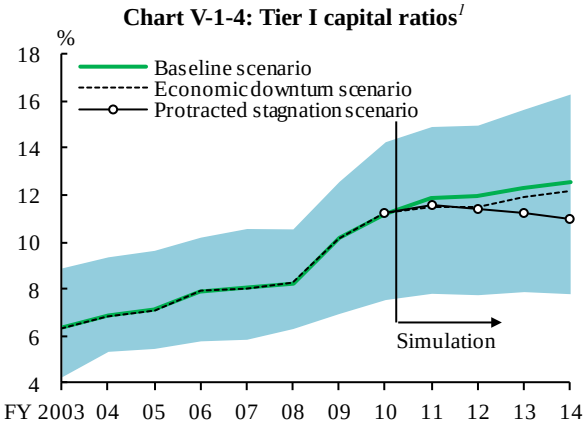
Under the protracted stagnation scenario, the estimated credit cost ratios would remain above the break-even point through fiscal 2014 both for the major banks and the

regional banks (the right-hand side of Chart V-1-3). The ratio for the regional banks in particular would remain high during this period. If the economy stagnates further, the regional banks are prone to a sequential downgrading of borrowers' ratings since loans to borrowers classified as normal are low in proportion to their overall loan portfolios.

Effects on banks' capital

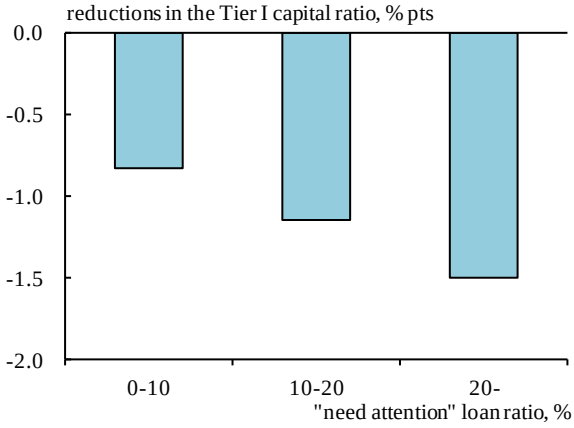
Banks' Tier I capital ratio is calculated, based on estimated credit costs, unrealized losses on stockholdings, and operating profits from core business under each scenario. The Tier I capital ratio under the baseline scenario would increase moderately, as operating profits from core business would exceed the estimated credit costs (Chart V-1-4).

Chart V-1-4: Tier I capital ratios[1]



Note: *1*. Shaded area indicates the 10th-90th percentile range under the economic downturn scenario.
Source: BOJ calculations.

Chart V-1-5: Reductions in the Tier I capital ratio[1]



Note: *1*. The regional banks are categorized by the share of "need attention" loan amount in total loans outstanding. Distribution of each regional bank's difference between the Tier I capital ratio under the protracted stagnation scenario and that under the economic downturn scenario as of end-fiscal 2014.
Source: BOJ calculations.

Under the economic downturn scenario, the Tier I capital ratio would level off through fiscal 2012, and then increase moderately. The distribution of Tier I capital ratios shows that many of Japan's banks would maintain the ratios above 8 percent. However, the banks at the lower tail of the distribution could not raise their capital ratios through fiscal 2014. Attention should thus be paid to the possibility that the Tier I capital ratios of banks with relatively low profitability and weak capital bases will remain low.

On the other hand, under the protracted stagnation scenario, the Tier I capital ratios would decline through fiscal 2014 both for the major banks and the regional banks, as the estimated credit costs would continue to exceed operating profits from core business.

The ratio for banks as a whole, however, would not fall below 10 percent, and the banks' capital bases would be able to avoid significant impairment even under the severe economic conditions. Nonetheless, there is the possibility that the Tier I capital ratios would plunge for banks whose quality of loans is relatively low if the economy remains stagnant for a protracted period (Chart V-1-5).

B. Resilience against financial market fluctuations

Capital gains/losses on bondholdings amid a rise in interest rates

Four scenarios of an upward shift in the yield curve are assumed, based on banks' investment-funding balance at the base point of the end of the first half of fiscal 2011, to calculate capital gains/losses on bondholdings and net interest income, and assess the effects on the Tier I capital ratios. This section assumes a baseline scenario and three stress scenarios, as follows. First, the baseline scenario assumes that future interest rates follow the path factored into the market yield curve at the base point. Next, three stress scenarios are set: (1) a parallel shift scenario in which interest rates for all maturities shift upward from the baseline by 1 percentage point; (2) a steepening scenario in which the 10-year rate shifts upward from the baseline by 1 percentage point; and (3) a flattening scenario in which the overnight rate shifts upward from the baseline by 1 percentage point (Chart V-2-1). Such upward shifts in interest rates are assumed to take place within 1 year, from the base point of the end of the first half of fiscal 2011 up to that of fiscal 2012. Banks' investment-funding balance essentially changes according to the shape of the yield curve, but here it is assumed to remain constant.

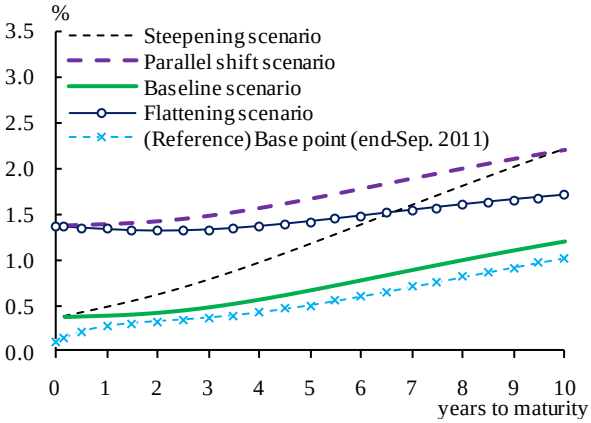
Capital losses on banks' bondholdings are estimated based on the above scenarios. As banks invest mostly in short- to medium-term bonds, the losses would be affected largely under the parallel shift and flattening scenarios, in which a rise in interest rates on these bonds would be relatively strong (Chart V-2-2).[68] In contrast, under the steepening scenario, in which a rise in short- to medium-term interest rates is relatively small, capital losses on bondholdings are relatively small.

Banks' net interest income would also change with a rise in interest rates. The net interest income of the major banks would increase in tandem with the rise in interest rates, because they hold a large amount of loans extended at floating interest rates and for a short term, and so such loan interest rates immediately reflect the rise in interest

[68] Chart V-2-2 shows the sum of individual banks' capital gains/losses on bondholdings divided by the sum of individual banks' Tier I capital.

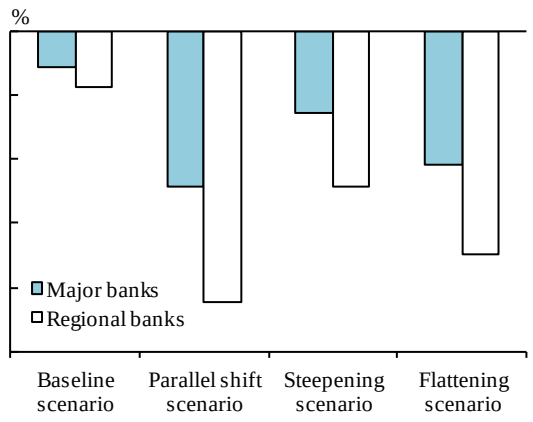
rates.[69] On the other hand, the regional banks hold a large amount of loans extended at fixed interest rates and for a longer term, and so such loan interest rates do not increase immediately following the rise in interest rates. Therefore, net interest income of the regional banks would decrease, as the rise in interest rates would push up funding costs more than investment returns.

Chart V-2-1: Upward shift scenarios of interest rates *1*



Note: *1*. 1-year-later projected spot rate curves from the base point.
Sources: Bloomberg; BOJ calculations.

Chart V-2-2: Capital gains/losses on bondholdings *1*



Note: *1*. The ratios of capital gains/losses on bondholdings to Tier I capital for a 1-year period after the base point (end-September 2011).
Source: BOJ calculations.

In a case where net interest income increases from a rise in interest rates, the amount of increase would be smaller than the amount of capital losses on bondholdings in about a year after the upward shift in interest rates. Therefore, in the short run, the rise in interest rates would exert downward pressure on the Tier I capital ratio. Under the parallel shift scenario, after taking profits into account, the ratios at the major banks and the regional banks would decline by around 0.3 and 0.4 percentage point, respectively, at the end of the first half of fiscal 2012.[70] Nevertheless, over 30 percent of the regional banks would experience a decline of more than 1 percentage point in their Tier I capital ratios (Chart V-2-3). The regional banks are susceptible to a rise in interest rates as they bear a large amount of interest rate risk relative to their capital.

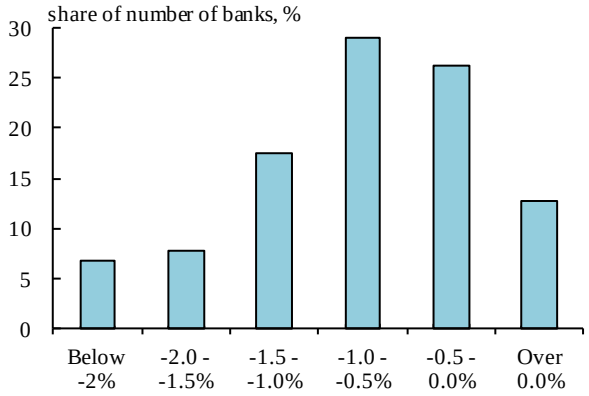
The above stress scenarios assume that interest rates would increase over a 1-year

[69] For example, under the parallel shift scenario, in a year after the upward shift of interest rates, the change in net interest income relative to Tier I capital would be an increase of 0.3 percent for the major banks and a decrease of 0.9 percent for the regional banks.

[70] As described in Chapter IV.C, capital losses on bondholdings under the parallel shift scenario would be 3.4 trillion yen for the major banks and 3.0 trillion yen for the regional banks. On the other hand, for the estimate of the Tier I capital ratio, the profits, the capital gains/losses on all securities holdings, and the tax effects are taken into account. The profits are defined as operating profits from core business minus credit costs and corporate tax. Net interest income is estimated under the parallel shift scenario. Net non-interest income, general and administrative expenses, and credit costs are assumed to remain unchanged from the first half of fiscal 2011.

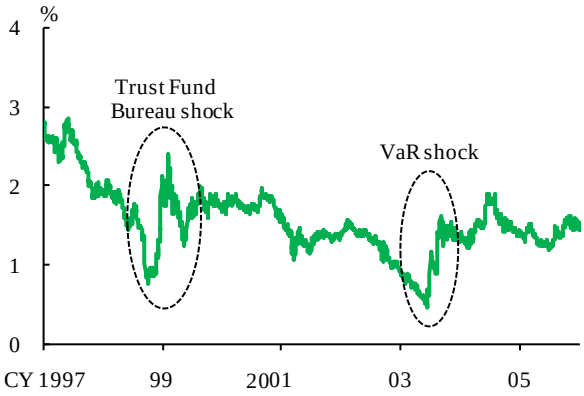
period. However, the past experience, such as the Trust Fund Bureau shock that occurred at the end of 1998 and the VaR shock that occurred in summer 2003, warns that JGB yields could surge quickly (Chart V-2-4). As recently seen in Europe, government bond yields soared when confidence in fiscal sustainability declined. Therefore, due attention should be paid to the possibility that market interest rates would surge sporadically.

Chart V-2-3: Distribution of changes in the Tier I capital ratio[1,2]



Notes: *1*. The horizontal axis indicates reductions in the Tier I capital ratio due to capital gains/losses on bondholdings under the parallel shift scenario. The vertical axis indicates share of the number of banks among the regional banks.
2. The regional banks are counted.
Source: BOJ calculations.

Chart V-2-4: Government bond yields[1]



Note: *1*. 10-year yield.
Source: Bloomberg

Capital losses on securities holdings caused by a shock in overseas markets

As mentioned in Chapter IV.B, severe shocks in overseas markets could immediately spill over to domestic markets. If a shock occurred in overseas markets, Japan's banks would not only suffer direct losses on their foreign securities holdings but also incur indirect losses through their domestic securities holdings.

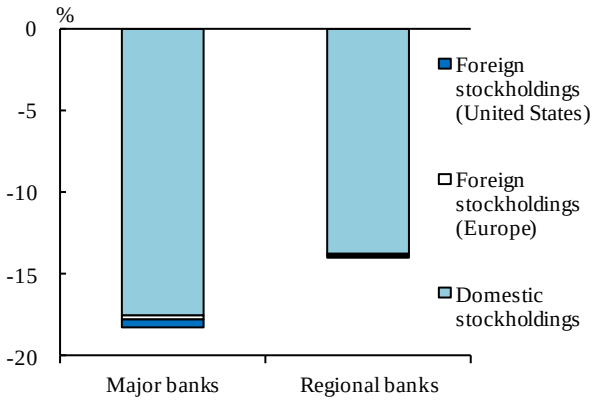
This section estimates capital losses on domestic and foreign securities held by Japan's banks under a stress scenario in which shocks occur in overseas stock or government bond markets. Specifically, two cases of stress scenarios are assumed to assess the impact on financial markets in Japan, the United States, and Europe: one in which a downward shock hits European stock prices and the other in which an upward shock hits yields on German government bonds.[71] First, a downward shock that induces a

[71] A 1 percent probability of occurrence is assumed for both a downward shock (a decline of about 50 percent) in European stock prices and an upward shock (an increase of about 2 percentage points) in German government bond yields, where the period of holding stocks or government bonds is set as 1 year. The effects of the shocks are calculated as followed. As for the effects on stock markets, the three-variable vector autoregression model is estimated, based on stock prices in Japan, the

decline of about 50 percent in European stock prices would cause a fall of the same degree in stock prices in Japan and the United States by cross-market correlation. Japan's banks would suffer only a small amount of capital losses on foreign stockholdings because they hold few foreign stocks (Chart V-2-5). However, they would suffer relatively large capital losses on domestic stockholdings. In particular, such losses at the major banks, which hold a relatively large amount of domestic stocks, would be approximately 18 percent of Tier I capital.

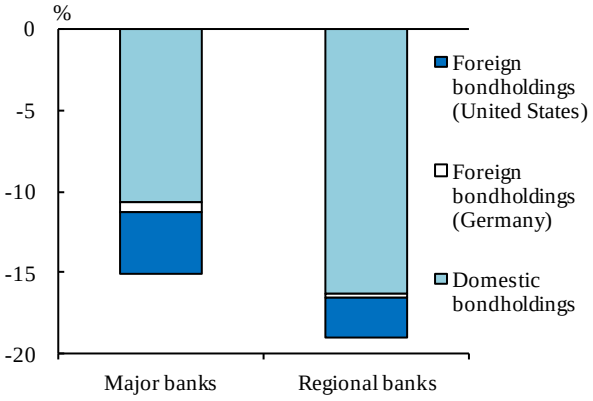
Next, an upward shock that induces an increase of about 2 percentage points in German government bond yields would lead to a rise of about 0.9 percentage point in JGB yields and 2.5 percentage points in U.S. Treasury yields. In this case, Japan's banks would suffer capital losses on both domestic and foreign bondholdings (Chart V-2-6). The major banks are likely to incur losses on foreign bondholdings, because their exposure to foreign bonds is larger than that of the regional banks. On the other hand, the regional banks would suffer larger capital losses than the major banks on JGB holdings, and the losses would amount to about 19 percent of Tier I capital.

Chart V-2-5: Banks' capital losses on stockholdings under the stock price shock[1,2,3]



Notes: *1*. The amount outstanding of foreign stockholdings is estimated by using the banking sector's investment by region in the "balance of payments statistics."
2. Ratio to Tier I capital.
3. Tax effects and unrealized gains/losses before the shock are not considered.
Sources: BOJ, "Balance of payments statistics"; BOJ calculations.

Chart V-2-6: Banks' capital losses on bondholdings under the interest rate shock[1,2,3]

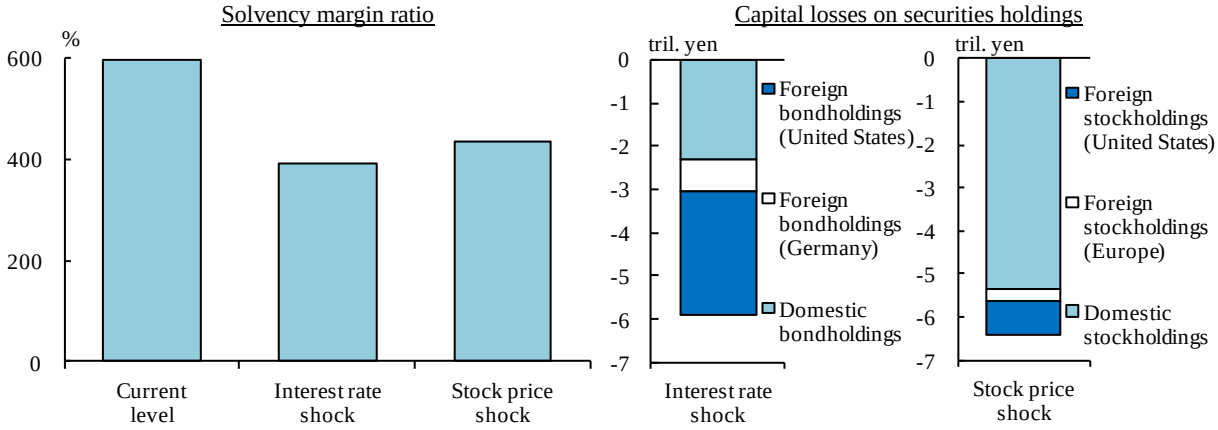


Notes: *1*. The amount outstanding of foreign bondholdings is estimated by using the banking sector's bond investment in OECD countries by region in the "balance of payments statistics."
2. Durations of foreign bondholdings are assumed to be the same as those of domestic bondholdings.
3. See Notes 2 and 3 in Chart V-2-5.
Sources: BOJ, "Balance of payments statistics"; BOJ calculations.

United States, and Europe using daily return rates on the TOPIX, S&P 500, and STOXX Europe 600, respectively. Parameters are estimated using the data from August 2010 through August 2011, when the three variables showed the strongest correlation in the period from 2000 onward. With regard to the effects on government bond markets, the three-variable vector autoregression model is estimated, based on 10-year government bond yields in Japan, the United States, and Germany. Parameters are estimated using the data from October 2003 through October 2004, when the three variables showed the strongest correlation in the period from 2000 onward.

Life insurance companies as well would incur realized losses on securities holdings from a shock in overseas markets. Under each of the two scenarios, assuming the downward shock in European stock prices and the upward shock in German government bond yields, the impact of capital losses on the solvency margin ratios of life insurance companies is estimated. Under each of these scenarios, their solvency margin ratios would decline by about 150 to 200 percentage points through capital losses on securities holdings, but life insurance companies would still be able to maintain the ratios above the required level of 200 percent (Chart V-2-7). As for the composition of the losses, life insurance companies would incur a larger share of losses on holdings of foreign bonds and stocks than banks. In particular, the losses on foreign bondholdings would comprise about 70 percent of those on their overall bondholdings.

Chart V-2-7: Solvency margin ratio and capital losses on securities holdings of life insurance companies[1,2,3,4]



Notes: *1*. The composition of foreign stockholdings by currency in "available-for-sale securities" is assumed to be the same as that in the general account. This assumption is the same for foreign bondholdings.
2. Durations of bonds in "available-for sale securities" are assumed to be the same as those of bonds in the general account assets.
3. The nine major domestic life insurance companies are counted. The data are as of end-September 2011.
4. The solvency margin ratio is on the new regulation base.
Sources: Published accounts of life insurance companies; BOJ calculations.

Resilience against foreign currency liquidity risk

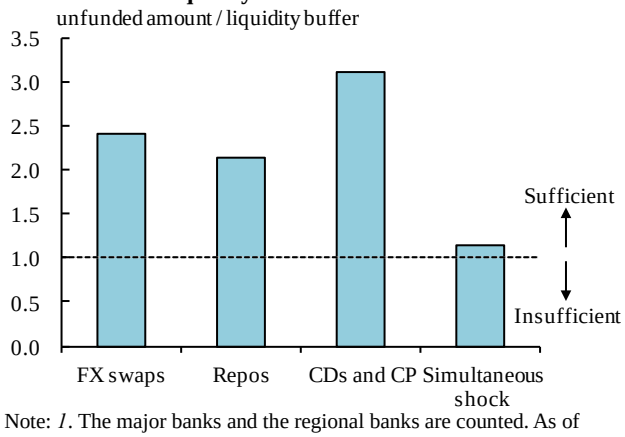
While concern lingers over the European debt problem, vigilance persists against counterparty risk of European banks. If the creditworthiness of European banks attracts increased concern, Japan's banks could also face difficulty in funding foreign currencies owing to deterioration in the functioning of foreign currency funding markets. This section evaluates the adequacy of foreign currency liquidity buffers at Japan's banks against funding shortages under a stress scenario in which the foreign currency funding markets become dysfunctional for a certain period.

The stress scenario assumes that one of the major sources of foreign currency funding for Japan's banks -- the foreign exchange swap market, the repo market, and the CD and

CP markets -- becomes dysfunctional for 1 month. The estimate shows that Japan's banks have an amount of foreign currency liquidity buffers to cover funding shortages that may occur in any of the markets (Chart V-2-8).[72] This indicates that even if banks' funding of foreign currencies from any of these markets suddenly grows difficult, banks could retain foreign currency liquidity by selling their foreign currency-denominated securities and using their foreign currency deposits.

However, under an extremely severe stress scenario in which all of the abovementioned markets become dysfunctional for 1 month, funding shortages would amount to almost the same level as the current foreign currency liquidity buffers. Japan's banks have been promoting overseas lending and foreign bond investment, while they depend heavily on short-term markets for foreign currency funding. If overseas short-term markets remain dysfunctional for a long time, Japan's banks would need to find alternative funding sources.

Chart V-2-8: Stress testing against foreign currency liquidity shock[1]



Note: *1*. The major banks and the regional banks are counted. As of end-September 2011.
Sources: Published accounts of U.S. MMFs; BOJ, "Regular derivatives market statistics in Japan"; BOJ calculations.

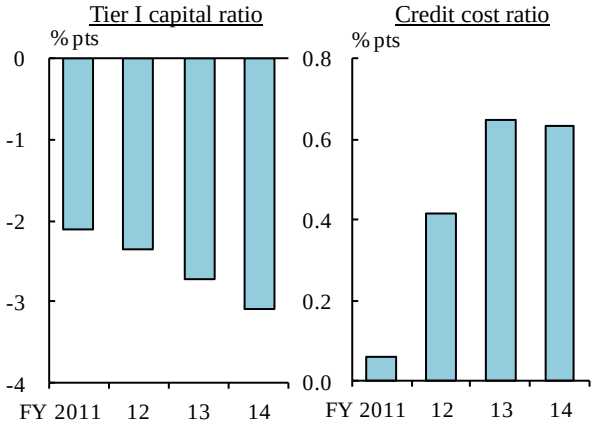
[72] Funding shortages due to the disruption of each market are the amount of debts due within a month. Foreign currency liquidity buffers include foreign currency-denominated securities (excluding held-to-maturity securities and securities used as collateral in repo transactions) and foreign currency deposits. The estimate is based on the amount of foreign currency-denominated assets and liabilities as of the end of September 2011. Funding shortages are calculated based on the maturity structure estimated as follows: the amount of foreign exchange swaps as well as CDs and CP to be redeemed within a month is estimated based on the data on the transaction balance, while all repo transactions are presumed to be redeemed within a month. If the foreign exchange swap market and the CD and CP markets are put under stress, banks would retain foreign currencies by using their foreign currency deposits, and selling foreign currency-denominated securities or financing against the collateral of the securities. On the other hand, if the repo market is put under stress, banks would retain foreign currencies by using their foreign currency deposits and selling the securities. In each scenario, the outstanding amount of funds investment or securities borrowing in repo transactions is excluded from liquidity buffers.

C. Feedback loop between the financial system and the real economy

A severe shock in financial markets could adversely affect the real economy by restraining banks' financial intermediation. The Financial Macro-econometric Model (FMM) is employed to see how the real economy would be affected by fluctuations in domestic interest rates and stock prices and changes in financial intermediation when severe shocks hit global financial markets.[73]

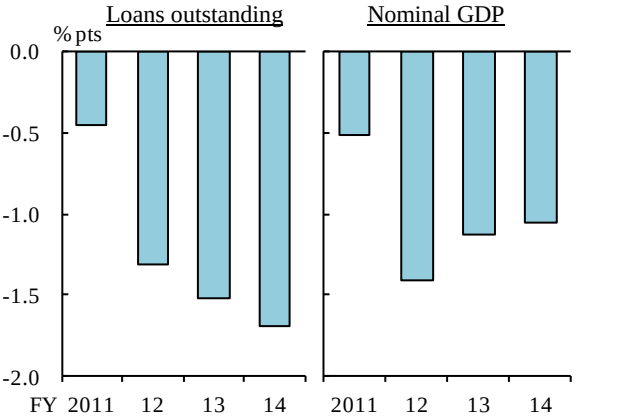
This section assumes a case of severe stress scenario in which a downward shock to European stock prices and an upward shock to German government bond yields occur simultaneously, as described in Chapter V.B.[74] In such a scenario, JGB yields would rise by 0.9 percentage point, while stock prices would drop almost by half. Japan's banks would therefore suffer losses both on stockholdings and on domestic and foreign government bondholdings, and their Tier I capital ratio would decline by about 2 percentage points in fiscal 2011 (the left-hand side of Chart V-3-1). Following the decline in the Tier I capital ratio, Japan's banks would reduce their loans and raise loan interest rates, thereby restraining borrowing opportunities for firms and households. Moreover, the drop in stock prices would cause deterioration in business and household sentiment, exerting downward pressure on business fixed investment and private consumption. Consequently, in fiscal 2014 the growth rate of loans outstanding would fall by 1.7 percentage points and that of the nominal GDP would fall by 1.1 percentage

Chart V-3-1: Tier I capital ratio and credit cost ratio under the stock price and interest rate shocks *1*



Note: *1*. Figures indicate the deviation from the baseline scenario.
Sources: Japan Center for Economic Research, "ESP forecasts"; BOJ calculations.

Chart V-3-2: Loans outstanding and nominal GDP under the stock price and interest rate shocks *1*



Note: *1*. Figures indicate the deviation from the baseline scenario.
Sources: Japan Center for Economic Research, "ESP forecasts"; BOJ calculations.

[73] For details on the FMM, see Ishikawa, Atsushi, Koichiro Kamada, Yoshiyuki Kurachi, Kentaro Nasu, and Yuki Teranishi, "Introduction to the Financial Macro-econometric Model," Bank of Japan Working Paper, No. 2012-E-1, January 2012.

[74] The effects of a decline in stock prices and a rise in bond yields occurring simultaneously are also described in Box 5.

points in comparison with the baseline scenario described in Chapter V.A (Chart V-3-2). The decline in the Tier I capital ratio would expand to about 3 percentage points in fiscal 2014 due to the increase in credit costs caused by the economic slowdown (Chart V-3-1).

The results imply that severe shocks in financial markets, such as concern about fiscal sustainability in advanced economies, could affect the resilience of the financial system to an extent of the shocks through the adverse feedback loop between the financial system and the real economy. Such a risk warrants due attention, since Japan's banks hold a massive amount of stocks and government bonds.

VI. Approach toward ensuring stability of the financial system

This chapter presents a comprehensive assessment of the stability of Japan's financial system based on the earlier discussions. It then summarizes the challenges for Japan's financial institutions in terms of further ensuring stability in the system.

A. Assessment of the financial system stability

Japan's financial system as a whole has been maintaining stability.

In the examination of the financial system to ascertain financial imbalances, there is no indicator that warns of financial imbalances stemming from bullish expectations.

The amount of risks financial institutions bear as a whole has been decreasing relative to capital. The credit cost ratio and the NPL ratio of Japan's financial institutions remain low, due to the improvement in debt servicing capacity of borrowing firms and the effects of policy measures. Although funding conditions of European banks have deteriorated, the funding liquidity risk of Japan's financial institutions, including that for foreign currencies, has been restrained. This is partly because the loan-to-deposit ratio and the market funding ratio are low and the funding structure is relatively stable at Japan's banks as compared with European banks. The estimation shows that even if some degree of stress arises in the external environment, such as a temporary economic downturn with a plunge in stock prices, or an upward shift of domestic interest rates for all maturities by 1 percentage point, financial institutions' capital bases as a whole would avoid significant impairment.

Nevertheless, the future environment for Japan's financial system is highly uncertain, as is the outcome of the European debt problem. In order to ensure the long-lasting stability of Japan's financial system and to maintain smooth financial intermediation, the following points warrant attention. First, the outlook for global financial markets has been highly uncertain. Japan's banks and life insurance companies are still exposed to a high degree of market risk associated with stockholdings and have been increasing their holdings of JGBs and foreign bonds. Thus, if severe shocks occur in overseas stock markets and government bond markets and such effects spill over to Japan's markets, Japan's banks could immediately incur damage to realized gains/losses on not only foreign securities holdings but also domestic ones. Furthermore, these effects could be amplified through the feedback loop between the financial system and the real economy. Therefore, attention should be paid to the possibility of sporadic surges in market interest rates

triggered by decreased confidence in fiscal sustainability, as was observed recently in Europe.

Second, although financial institutions' credit costs have decreased on the whole, the quality of loans has not improved noticeably. The profitability of their loans has been declining. If an economic downturn with a plunge in stock prices occurs, capital adequacy ratios are likely to remain low at banks with relatively low profitability and weak capital bases. Moreover, if the economy remains stagnant for a protracted period, banks could be exposed to additional credit risk and incur credit costs that exceed their profits for several fiscal years. Such a risk warrants attention particularly at banks that hold a relatively large proportion of loans to small and medium-sized firms, because many of these firms have faced difficulties in improving their financial conditions.

Third, although Japan's financial institutions have generally secured a sufficient amount of foreign currency liquidity, they would need additional funding sources under a rather severe situation where a number of measures for foreign currency funding become inoperative simultaneously. In view of these possibilities, it has become more important for financial institutions to strengthen their capital bases and conduct strict risk management for funding liquidity.

B. Challenges for Japan's financial institutions

In order for financial institutions to maintain smooth financial intermediation while ensuring their readiness to respond to possible financial and economic shocks, they need to address the three major challenges discussed below. In view of these challenges, the Bank of Japan will continue to conduct on-site examinations and off-site monitoring, hold seminars at the Bank's Center for Advanced Financial Technology, and participate in international discussions.

Enhancing the effectiveness of risk management

Financial institutions should continue to enhance the effectiveness of risk management, such as credit and market risks. Their appropriate risk management is expected to stabilize their profits on a risk-adjusted basis, by restraining credit costs and realized losses on securities holdings. Of importance is that the financial institutions should conduct risk management comprehensively by paying attention to the spillover of risks from overseas economies and financial markets, and by considering correlations among the various risks.

As for credit risk on domestic loans, the quality of bank loans has not improved

noticeably given the severe financial conditions of small and medium-sized borrowing firms. Financial institutions need to improve the effectiveness of reconstruction programs by strengthening measures to help ailing borrowing firms improve their business conditions. At the same time, financial institutions need to appropriately manage credit risk, revising their borrower classification and loan-loss provisions, based on the assessment of the borrowers' capacity for self-reconstruction. Financial institutions should carefully monitor the balance between credit risk-taking and the setting of loan interest rates since profits on loans continue to deteriorate.

On the other hand, for the major banks especially, managing risks associated with overseas lending business has become more important. In particular, the deleveraging by European banks due to capital constraints could give Japan's banks opportunities to expand their credit share, for example, in Asia, while the European debt problem could adversely affect other economies through the financial channel and the real economic channel. In these circumstances, Japan's banks need to prepare and strengthen their credit screening for overseas lending business and enhance their monitoring capability. Specifically, this requires Japan's banks to develop screening procedures and follow-up monitoring at their overseas entities, and to improve screening capability for new types of borrowers such as foreign firms.

Financial institutions should examine market risk associated with securities investment from multidimensional perspectives with the use of stress testing and other methods, in order to achieve balanced investment portfolios and manage risk in accordance with financial institutions' capital. Domestic financial markets are vulnerable to shocks propagated from overseas markets and could become unstable within a short period. Given the lingering concern over the European debt problem, if overseas markets undergo severe shocks and market risks associated with stockholdings and bondholdings materialize, Japan's banks would suffer large losses. Japan's banks are likely to be exposed to such risks because they hold a large amount of stocks and government bonds. Furthermore, Japan's banks are exposed to higher credit concentration risk because they have extended a large amount of loans to firms with which they have close business ties and hold these firms' stocks strategically. Japan's banks would suffer losses on both loans and stockholdings if such firms' business conditions deteriorate. Therefore, Japan's banks should reexamine the merits arising from business ties strengthened by strategic stockholdings and then reduce their risk associated with stockholdings at a measured pace.

Japan's banks are also required to conduct strict risk management for funding liquidity,

including that for foreign currency liquidity. Since the Lehman shock, Japan's financial institutions have diversified financing tools to secure their foreign currency funding. Nevertheless, they remain heavily dependent on short-term markets for foreign currency funding and are therefore susceptible to changes in market conditions. Overseas loans and foreign bond investment have been increasing. Based on these considerations, Japan's financial institutions should constantly reexamine the capacity of funding in individual market and the term structure of foreign currency assets, and then continue their strict foreign currency liquidity management, including measures to secure stable funding.[75]

A series of risk management processes should be implemented not only by the risk management department of financial institutions but also with the active involvement of corporate management. Amid growing future uncertainty over the external environment, it is vital for financial institutions to examine risks from a company-wide perspective as well as enhance their readiness to respond to sudden changes occurring in the business environment, such as a major change in financial and economic conditions or a massive disaster, and improve their *ex post* responses.[76]

Strengthening capital bases

Financial institutions should further strengthen their capital bases. For the conduct of smooth financial intermediation well into the future, stable capital bases are indispensable.[77] Financial institutions may face considerable credit costs as they advance into new business areas related, for example, to overseas lending as well as investment and lending to growing business areas, because they cannot apply to these new areas their experience gained in existing ones. To be fully capable of advancing into new and highly profitable areas, therefore, they need to secure sufficient capital to

[75] The Bank continues to monitor the foreign currency funding of Japan's financial institutions that are internationally active and the yen funding of foreign banks resident in Japan. The Bank has also continually conducted U.S. dollar funds-supplying operations in cooperation with major overseas central banks and lowered the loan interest rates by 0.5 percentage point in December 2011. Financial institutions are expected to utilize the operations to avoid market instability if the market functioning of foreign currency funding deteriorates.

[76] For details on issues of operational risk management, such as business continuity arrangements and risk management with regard to computer systems, see the Bank's "On-site examination policy for fiscal 2012," April 2012.

[77] The conditions for injection of public funds were eased for financial institutions in need of additional capital to smoothly extend credit following the Great East Japan Earthquake. At present, in the disaster areas, public funds have been injected into three regional banks, four *shinkin* banks, and two credit cooperatives.

cover losses in case a stress occurs.

The new Basel requirements will be applied in an orderly manner to internationally active banks from 2013. Subsequently, grandfathering measures regarding deductions from banks' capital and methods of funding will be phased out. Financial institutions will be required to strengthen their capital bases steadily by, for example, accumulating retained earnings and using instruments includable in the capital under the new requirements, with a view to improving the quality of their capital and increasing their capital adequacy ratios.[78]

Constructing profit bases suited to changes in the social structure

Another challenge for Japan's financial institutions is to secure stable profit sources to accumulate retained earnings or to issue equities smoothly to strengthen their capital bases. However, the profitability of Japan's banks has been declining reflecting the sluggish borrowing demand of firms and households. Regional banks in local areas in particular face more severe business conditions, as loans to small and medium-sized firms continue to decrease, and in the longer term housing loans and the deposits are likely to peak out amid the decreasing population. In order to raise the profitability of credit extension as core business, financial institutions need to prompt firms' restructuring by identifying and supporting firms and business areas with high growth potential, financing mergers and acquisitions of foreign firms, and supporting the succession of local firms with special expertise. In other types of business, financial institutions are expected to create new financial services suited to developments in the social structure, such as the decreasing population and the aging of society. Another possible option to strengthen profit bases is to work on strategic business partnerships and integration, thereby improving business efficiency and expanding their customer network.

Japan's banks have the advantages of stable deposit bases and close relationships with customers. Drawing on these advantages, they should support firms' and households' economic activity through the provision of financial and information services that meet customer needs, thereby gaining their own profit opportunities.

[78] Some financial institutions have issued a new capital instrument called contingent capital in view of the new Basel requirements to be applied. On contingent capital, see Kamada, Koichiro, "Understanding contingent capital," Bank of Japan Working Paper, No. 2010-E-9, October 2010.

Annex 1: List of charts

II. Examination of the external environment

III. Examination of financial intermediation

IV. Risks in the financial system

V. Resilience of the financial system

Annex 2: Glossary

Financial statements of financial institutions

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

Net interest income = interest income – interest expenses

Net non-interest income = net fees and commissions + profits on specified transactions + other operating profits – realized gains/losses on bondholdings

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

Realized gains/losses on bondholdings = 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

Overall gains/losses on stockholdings = realized gains/losses on stockholdings + changes in unrealized gains/losses on stockholdings

Overall gains/losses on bondholdings = realized gains/losses on bondholdings + changes in unrealized gains/losses on bondholdings

Credit costs = loan-loss provisions + write-offs + losses on credit sales – recoveries of write-offs

Credit cost ratio = credit costs / total loans outstanding

Tier I capital ratio = Tier I capital / risk assets

Tier I capital is the core capital including common equities and retained earnings.

Risk assets are financial institutions' risk-weighted assets.

Liquid asset ratio = (current accounts at the Bank of Japan + cash + government bonds) / (net market funding maturing within 3 months + runoff of deposits with a renewal time within 3 months)

Long-term funding ratio = (time deposits from nonfinancial institutions + equity capital + funding amounts by corporate bonds) / (loans to nonfinancial institutions + stocks + corporate bonds)

Financial statements of firms

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

On-hand liquidity ratio = (cash and deposits + securities) / sales

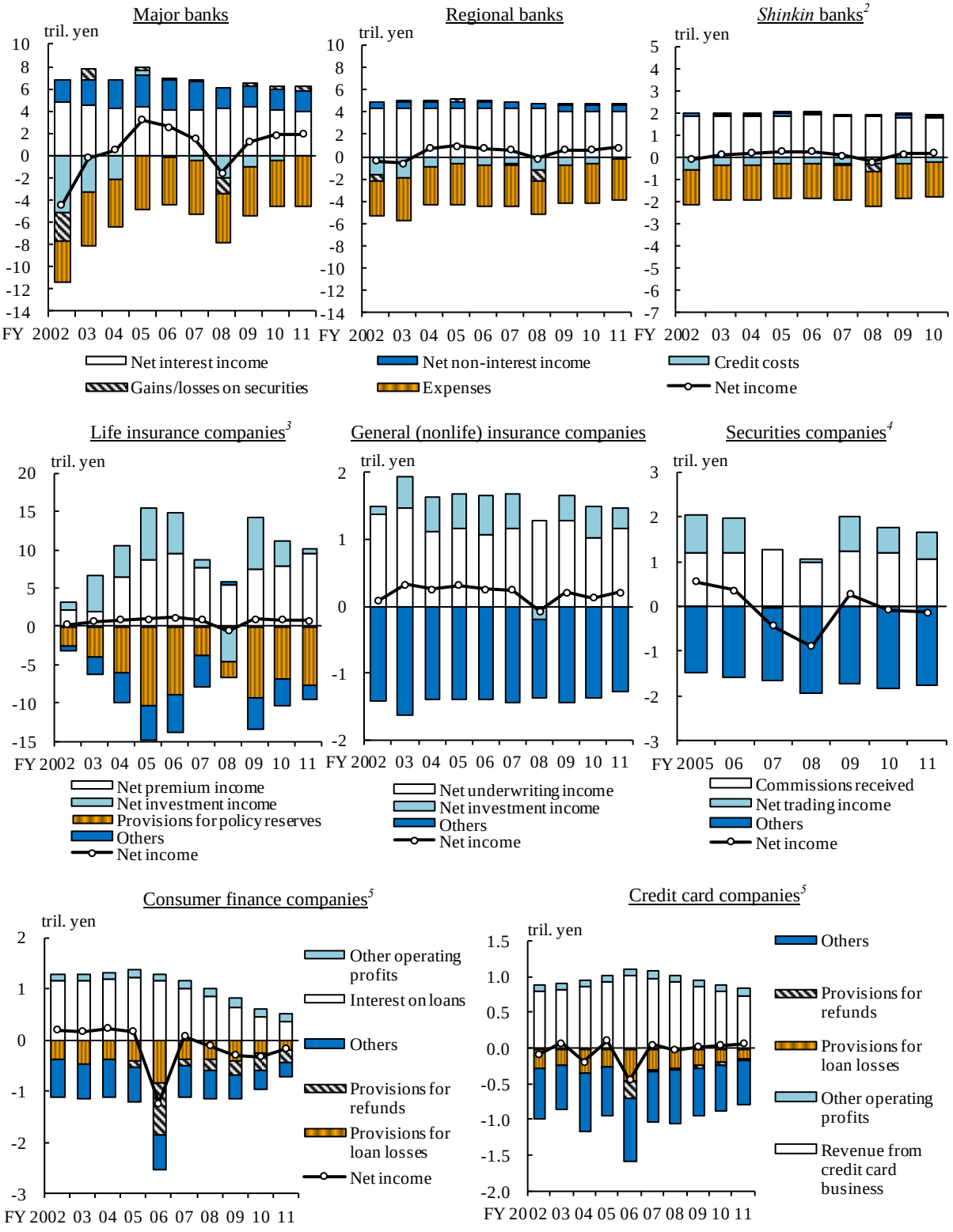
Ratio of interest-bearing debt to cash flow = (borrowings + corporate bond debt) / (current profits / 2 + depreciation)

Quick ratio = quick assets / short-term debt

Country specification (*three-letter code*)

ARG: Argentina, AUT: Austria, BEL: Belgium, BRA: Brazil, CHL: Chile, CHN: China, CYP: Cyprus, CZE: Czech Republic, DEU: Germany, ESP: Spain, FRA: France, GRC: Greece, HKG: Hong Kong, HUN: Hungary, IDN: Indonesia, IND: India, ITA: Italy, KOR: South Korea, MEX: Mexico, MYS: Malaysia, NLD: Netherlands, POL: Poland, PRT: Portugal, ROU: Romania, RUS: Russia, SGP: Singapore, SLV: Slovenia, THA: Thailand, TUR: Turkey, TWN: Taiwan, UAE: United Arab Emirates, ZAF: South Africa.

Annex 3: Financial results of Japan's financial institutions[1]



Notes: *1*. The latest data are as of the first half of fiscal 2011 except for *shinkin* banks, consumer finance companies, and credit card companies. The latest data are as of the October-December quarter of 2011 for consumer finance companies, and as of the third quarter of fiscal 2011 for credit card companies.

2. *Shinkin* banks stand for 262 *shinkin* banks that hold accounts at the Bank of Japan, as of end-fiscal 2010.

3. Net premium income = premium income and others - insurance benefits paid. Net investment income = investment income - investment expenses.

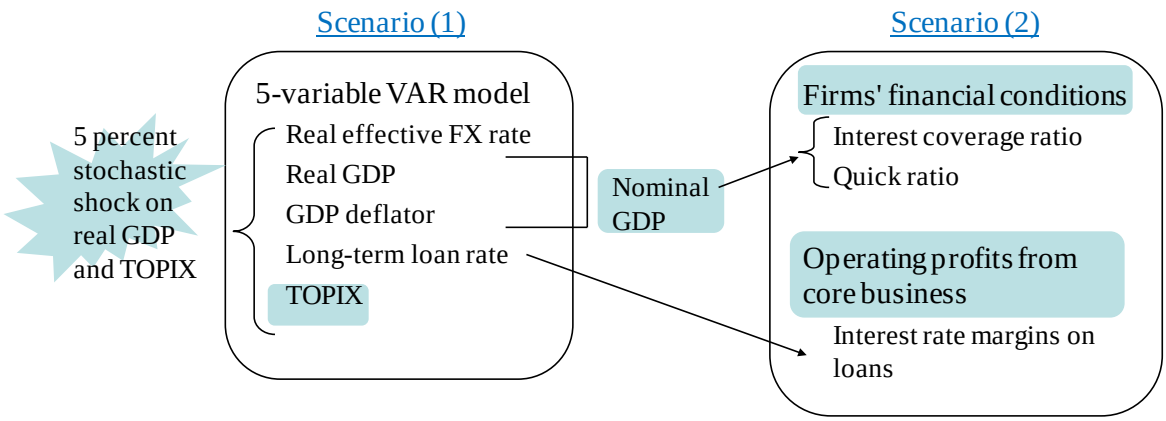
4. The four major companies are counted for securities companies.

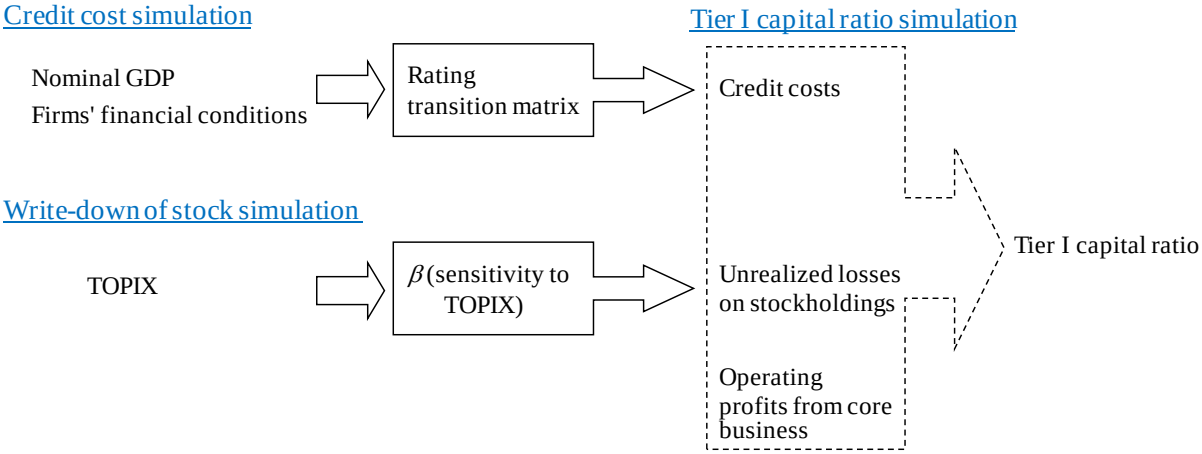
5. The three major companies are counted for consumer finance companies. The six major companies are counted for credit card companies.

Sources: Published accounts of securities companies, consumer finance companies, and credit card companies; Life Insurance Association of Japan, "Summary of life insurance business"; General Insurance Association of Japan, "Business result."

Annex 4: Framework of macro stress testing

Evaluation of resilience against macroeconomic shock





Annex 5: Major events in the financial system (since October 2011)

Oct. 6, 2011	Europe: ECB decided to launch a new covered bond purchase programme (CBPP2).
Oct. 18	Japan: Bank of Japan issued the "The Bank of Japan's Initiatives on the Macroprudential Front."
Oct. 26	Europe: EU and European Council agreed on a capital enhancement measure for banks and extension of the capacity of the EFSF.
Oct. 27	Japan: Bank of Japan decided to enhance monetary easing.
Nov. 4	G20 issued a communiqué.
Nov. 7	U.S.: FRB, Office of the Comptroller of the Currency, Securities and Exchange Commission, and FDIC published a proposed rule for implementation of the "Volcker Rule."
Nov. 22	IMF announced the establishment of liquidity and emergency lending windows.
Nov. 29	Europe: Eurogroup agreed to extend the capacity of EFSF.
Nov. 30	Six central banks including Bank of Japan agreed on a measure to extend the U.S. dollar funds supply.
Dec. 1	Europe: European Commission extended crisis rules for banks.
Dec. 8	Europe: ECB decided to decrease the policy interest rate, conduct the 3-year longer-term refinancing operation (LTRO), and increase collateral availability, etc.
	Europe: European Banking Authority (EBA) published final figures related to banks' recapitalization needs.
	Japan: Financial Services Agency decided on the injection of public funds into one bank located in the earthquake disaster area.
Dec. 9	Europe: European Council agreed on acceleration of the entry into force of the European Stability Mechanism (ESM) and additional support for the increase in IMF's resources.
Dec. 21	Europe: ECB offered its first 3-year LTRO.
Dec. 22	Italy: The austerity package was approved by the Senate.
Dec. 27	Japan: Final extension of expiration of the Act on Temporary Measures to Facilitate Financing for Small and Medium-sized Enterprise, etc. was announced.
Jan. 13, 2012	S&P downgraded nine euro area countries, including France.
Jan. 17	U.S.: FDIC approved a final rule requiring resolution plans for insured depository institutions over 50 billion U.S. dollars.
Feb. 2	Japan: Financial Services Agency announced its injection of public funds, together with Shinkin Chukin Bank, into four *shinkin* banks affected by the Great East Japan Earthquake.
Feb. 10	Europe: Greek cabinet approved the EU/IMF bailout plan.
Feb. 14	Japan: Bank of Japan decided to enhance monetary easing and introduced the price stability goal in the medium to long term.
Feb. 27	S&P downgraded Greece to selective default.
Feb. 28	Europe: ECB decided to temporarily suspend the eligibility of Greek bonds used as collateral in Eurosystem monetary policy operations.
Feb. 29	Europe: ECB offered its second 3-year LTRO.
Mar. 9	Europe: Greece reached its target of debt swap participation in sovereign restructuring.
Mar. 12	Europe: Eurogroup approved the second Greek bailout.
Mar. 13	Japan: Bank of Japan established special rules of for small-lot investments and loans to enhance the fund-provisioning measures to support strengthening the foundations for economic growth.
	U.S.: FRB announced summary results of the latest round of stress tests for large 19 U.S. banks.
Mar. 30	Japan: Financial Services Agency announced the amendment to administrative notice on capital adequacy rules for internationally active banks based on Basel III.

Annex 6: Financial system related speeches and reports

-- Publications by the Bank of Japan after the October 2011 issue of the *Report*.

Speeches and remarks

Masaaki Shirakawa, Governor, "Central Banking: Before, During, and After the Crisis," Remarks at a Conference Sponsored by the Federal Reserve Board and the International Journal of Central Banking, March 24, 2012.

Kiyohiko G. Nishimura, Deputy Governor, "What Should We Learn from the Eurozone Crisis? A Regulatory-Reform Perspective," Speech at the Institute of International Bankers 2012 Annual Washington Conference, March 5, 2012.

Masaaki Shirakawa, Governor, "Finance in Asia: Banking Business and Capital Markets," Keynote Address at the Dinner Reception Hosted by the Japan Securities Dealers Association Preceding the International Conference, February 9, 2012.

Kiyohiko G. Nishimura, Deputy Governor, "Asian Markets at the Crossroads," Keynote Address at the OECD-ADBI 12th Roundtable on Capital Market Reform in Asia, February 8, 2012.

Masaaki Shirakawa, Governor, "Deleveraging and Growth: Is the Developed World Following Japan's Long and Winding Road?" Lecture at the London School of Economics and Political Science Co-hosted by the Asia Research Centre and STICERD, LSE, January 10, 2012.

Ryuzo Miyao, Member of the Policy Board, "A Macroprudential Perspective in the Conduct of Monetary Policy," Speech at the 2011 Asia Economic Policy Conference in San Francisco, November 30, 2011.

Kiyohiko G. Nishimura, Deputy Governor, "Financial Factors in Commodity Markets," Speech at the Paris EUROPLACE International Financial Forum in Tokyo, November 28, 2011.

Masaaki Shirakawa, Governor, "What Is So Special about Financial Innovation?" Keynote Address at the Conference on "Welfare Effects of Financial Innovation" Held by the De Netherlandsche Bank, November 11, 2011.

Bank of Japan Reports

Bank of Japan, "On-Site Examination Policy for Fiscal 2012," April 3, 2012.