

Financial
System
Report

Visual Summary

October 2012
Bank of Japan



Assessment of Japan's 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. Due attention should be paid, however, to a further increase in the amount outstanding of Japanese government bonds (JGBs) held by financial institutions.
- ◆ The amount of risks banks and *shinkin* banks bear as a whole has been decreasing relative to capital. The resilience of financial institutions is generally strong. Nevertheless, the following points warrant particular attention.
 - ✓ First, if shocks such as a further worsening of the European debt problem lead to a significant downturn in the global economy and these shocks spill over to Japan's economy, capital of financial institutions with relatively low quality of loans and large stockholdings could become impaired. Furthermore, banks could require additional funding sources under a particularly severe situation in which a number of measures for foreign currency funding become inoperative simultaneously.
 - ✓ Second, if JGB yields rise significantly due to a rise in overseas interest rates and a decline in market confidence regarding fiscal sustainability, banks' capital could decline to a noticeable extent and such effects could be amplified through an adverse feedback loop between the financial system and the real economy.
 - ✓ Third, financial institutions' core profitability has steadily decreased, amid the decreasing population and the aging of society particularly in nonmetropolitan areas. If the downtrend in financial institutions' profitability continues for a prolonged period, an increasing number of financial institutions would face impairment of their capital due to materialization of credit

risk and market risk.

Challenges for Japan's financial institutions

- ◆ Financial institutions need to enhance the effectiveness of credit and market risk management.
- ◆ Financial institutions need to further strengthen their capital bases.
 - ✓ It is indispensable for them to enhance their capital to continue financial intermediation in areas with high risk and return through investments and loans to growing business areas at home and abroad.
- ◆ Financial institutions need to construct stable profit bases.
 - ✓ Financial institutions' customer networks are large compared with other industries. There is room for them to more effectively support local firms' exploration of new markets and business succession by utilizing their own customer networks.
 - ✓ Strategic business partnerships and integration among financial institutions could not only improve business efficiency but also expand their customer networks and in turn strengthen their profit bases.

Features of the October 2012 issue of the *Report*

- ◆ In the October 2012 issue of the *Report*, the analysis has been enhanced in the following points:
 - (1) developments in growing overseas loans by Japan's banks;
 - (2) assessment of the capability of financial institutions' customer networks and the utilization of these networks;
 - (3) business conditions of regional banks and *shinkin* banks; and
 - (4) macro stress testing that reflects the adverse feedback loop between the financial system and the real economy.

Contents

1. Examination of the external environment

- i. Developments in the global financial system and overseas economies
- ii. Domestic economy, financial conditions of firms and households, and fiscal conditions

2. Examination of financial intermediation

- i. Loan market conditions
- ii. Major banks' overseas loans
- iii. Regional financial institutions' efforts

3. Risks in the financial system

- i. Macro risk indicators and the amount of risks at financial institutions
- ii. Credit risk
- iii. Market risk

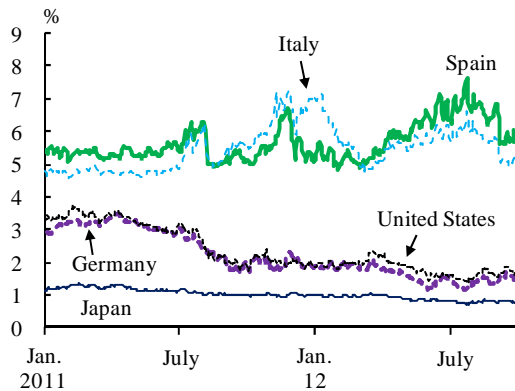
4. Resilience of the financial system

- i. Resilience against shocks in the economy and financial markets
- ii. Resilience against funding liquidity risk

Developments in the global financial system and overseas economies: Europe

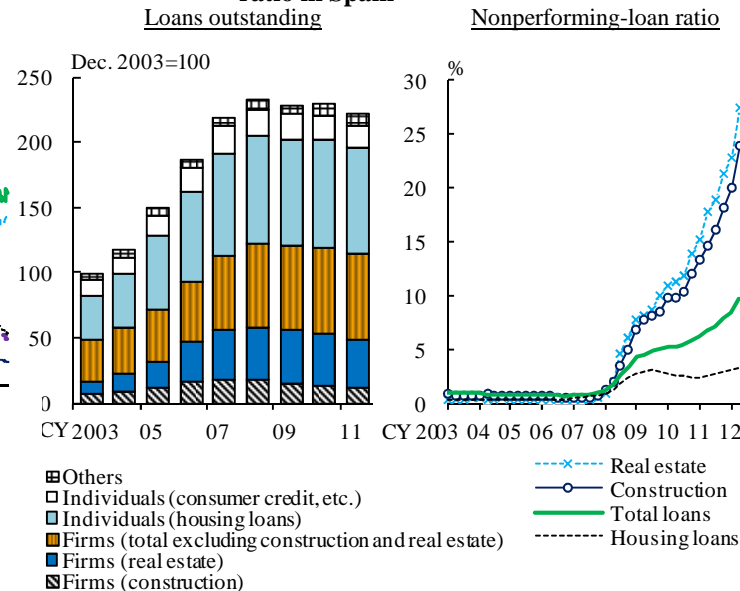
- In European countries facing serious fiscal situations, an adverse feedback loop among fiscal conditions, the financial system, and the real economy has materialized.
 - In Greece, uncertainty persists regarding the achievement of fiscal consolidation and the continuation of financial support. The prevailing concern is that capital injections into troubled banks and the local governments' request for financial support will further worsen fiscal conditions in Spain, keeping Spain's government bond yields at high levels.
 - In some peripheral countries, lending attitudes of banks have grown cautious. Banks' cautious lending attitudes, together with the fiscal austerity, have exerted downward pressure on the real economy.

Chart II-1-1: Government bond yields (10-year)¹



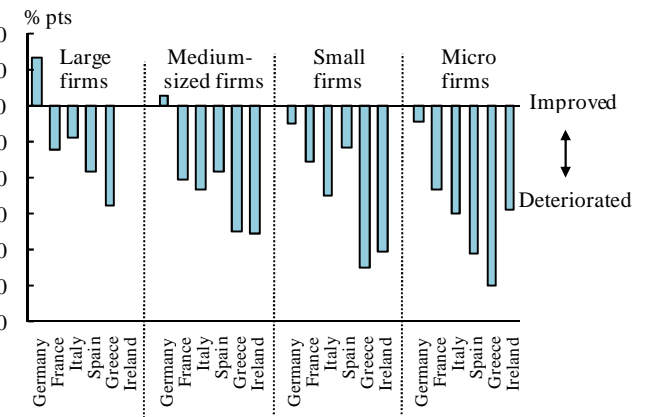
Note: 1. The latest data are as of September 28, 2012.
Sources: Bloomberg; BIS.

Chart B2-1: Loans outstanding and nonperforming-loan ratio in Spain^{1,2}



Notes: 1. Loans outstanding are those for Spanish residents.
2. The latest data for the nonperforming-loan ratio are as of June 2012.
Sources: Bank of Spain, "Economic indicators," "Statistical bulletin"; ECB, "Residential property price index statistics."

Chart II-1-6: European banks' lending attitudes¹

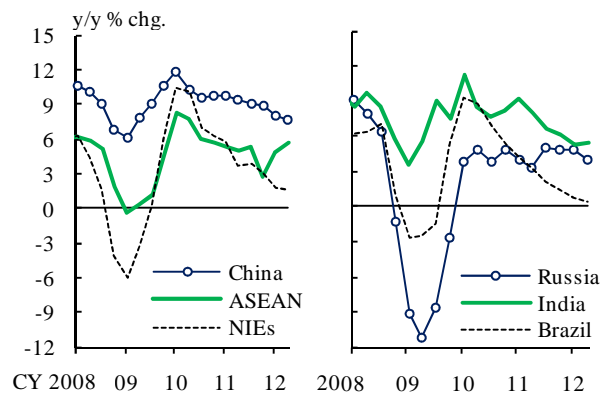


Note: 1. Changes in banks' lending attitudes evaluated by firms in the euro area. Survey covers the period from October 2011 to March 2012.
Source: ECB, "Survey on the access to finance of SMEs in the euro area."

Developments in the global financial system and overseas economies: The United States and emerging economies

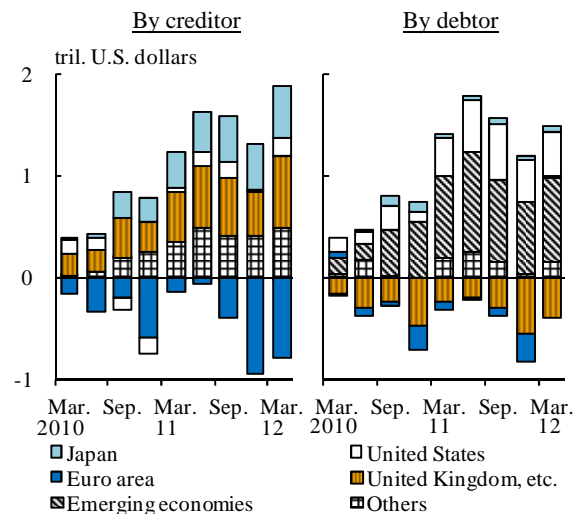
- In many emerging economies including China, economic growth has been slowing.
 - European economies' stagnation has been exerting downward pressure on emerging economies through the trade channel in addition to the earlier monetary tightening.
 - While credit to emerging economies from banks and investors in countries other than in Europe has been firm, credit to emerging economies from Europe has decreased. The effects of the European debt problem on emerging economies through the financial channel also warrant attention.
- In the United States, although the burden on repayments on households has started to ease, it has continued to weigh on the economy.

Chart II-1-9: Real GDP of emerging economies¹



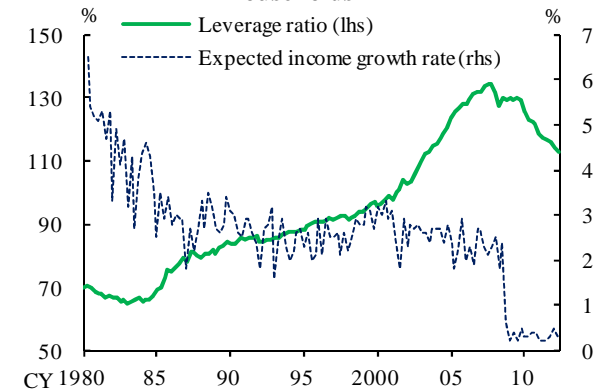
Note: 1. The latest data are as of the April-June quarter of 2012.
Source: Bloomberg.

Chart II-1-10: Outstanding amount of external claims¹



Note: 1. Cumulative changes from end-calendar 2009. "United Kingdom, etc.," includes EU countries other than the euro area. Emerging economies comprise 20 countries including the BRICs and NIEs. The latest data are as of end-March 2012.
Source: BIS, "Consolidated banking statistics."

Chart II-1-13: Leverage ratio and expected income growth rate of U.S. households^{1,2}

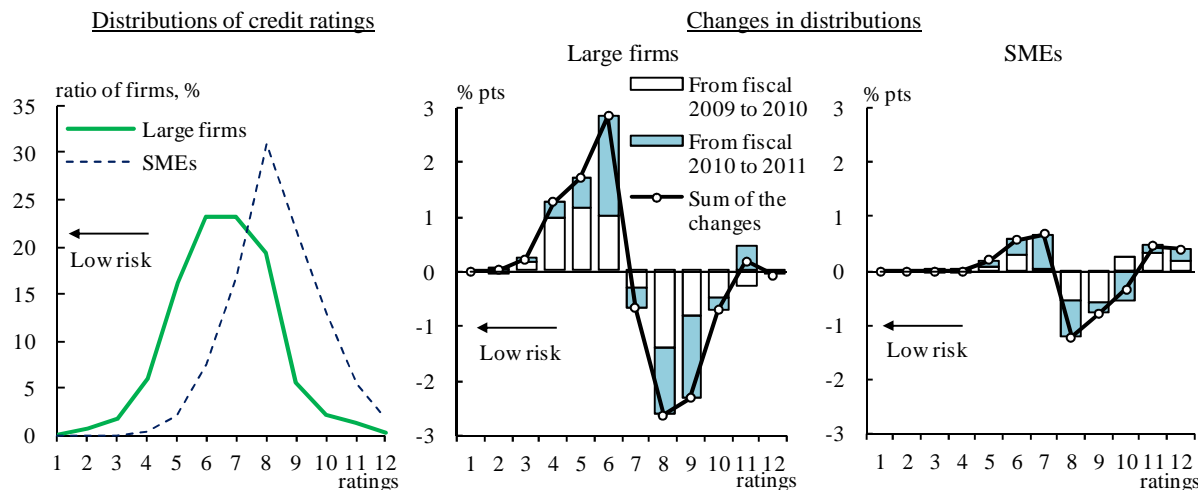


Notes: 1. The latest data are as of the April-June quarter of 2012.
2. The leverage ratio is a ratio of debt outstanding to disposable income. The expected income growth rate is based on a questionnaire on the next 12 months' expected income.
Sources: BEA, "National economic accounts"; FRB, "Flow of funds accounts of the United States"; Thomson Reuters.

Domestic economy, financial conditions of firms and households, and fiscal conditions: Firms and households

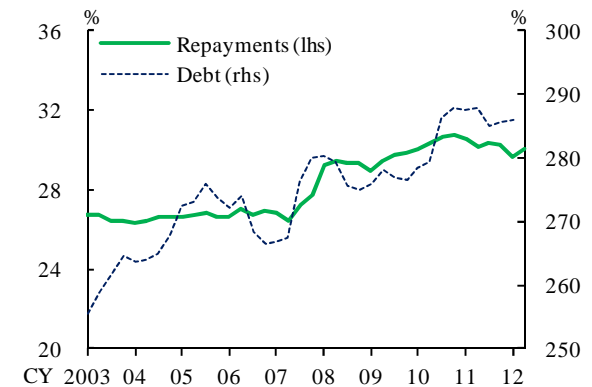
- Firms' financial conditions have generally improved. However, some small and medium-sized firms have continued to face severe financial conditions.
 - Credit ratings of small and medium-sized firms have become further polarized.
- Principal and interest repayments relative to income for households with housing loans remain generally large.

Chart II-2-4: Distributions of credit ratings^{1,2,3}



Notes: 1. The left chart is as of fiscal 2011.
 2. The middle and right charts are yearly changes from fiscal 2009 to fiscal 2011.
 3. "SMEs" stands for small and medium-sized enterprises.
 Source: Teikoku Databank, "SPECIA."

Chart II-2-8: Households' debt servicing capacity^{1,2,3}

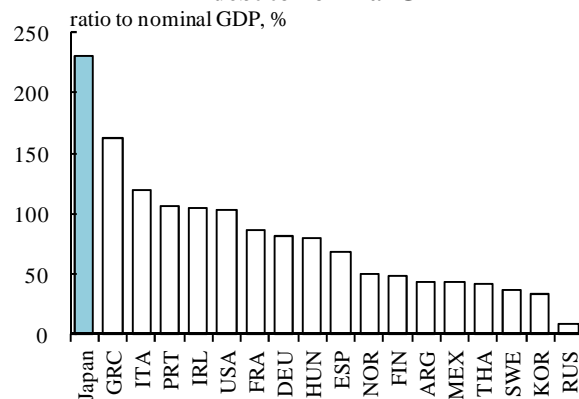


Notes: 1. The ratios to disposable income. 4-quarter moving averages.
 2. Households with housing loans are counted.
 3. The latest data are as of the April-June quarter of 2012 for repayments, and the January-March quarter of 2012 for debt.
 Source: Ministry of Internal Affairs and Communications, "Family income and expenditure survey."

Domestic economy, financial conditions of firms and households, and fiscal conditions: Fiscal conditions

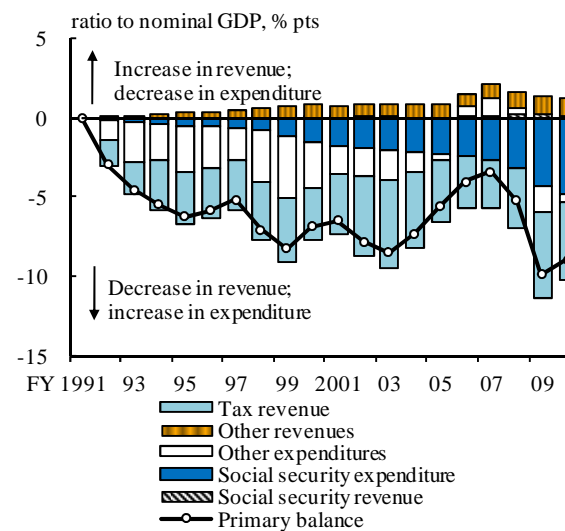
- In the public sector, government debt has accumulated, with a continuing fiscal deficit.
 - Given prolonged low economic growth, growth in revenue has been weak and social security benefits have increased against the backdrop of rapid aging of society.
 - Despite an accumulation of government debt in Japan, government bond yields remain at low levels. An empirical analysis based on certain assumptions implies that, although increased government debt is working as upward pressure on interest rates, demographic changes and an increase in net external assets are exerting downward pressure on the rates.

Chart II-2-10: Ratios of gross general government debt to nominal GDP^{1,2,3}



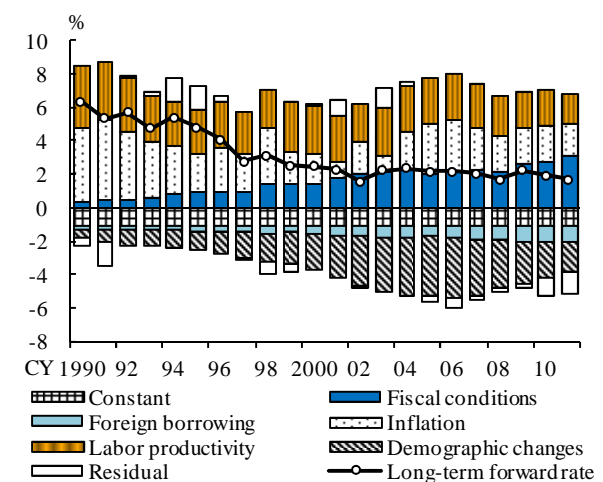
Notes: 1. The general government consists of the central government, local governments, and social security funds.
 2. Figures are estimates as of 2011 by the IMF.
 3. The country specifications are as follows.
 ARG: Argentina, DEU: Germany, ESP: Spain, FIN: Finland, FRA: France, GRC: Greece, HUN: Hungary, IRL: Ireland, ITA: Italy, KOR: South Korea, MEX: Mexico, NOR: Norway, PRT: Portugal, RUS: Russia, SWE: Sweden, THA: Thailand, USA: United States of America.
 Source: IMF, "World economic outlook."

Chart II-2-11: Primary balance^{1,2,3}



Notes: 1. The ratios of revenues, expenditures, and the primary balance to nominal GDP are expressed as the change from the ratios as of fiscal 1991.
 2. The data are for the central and local governments.
 3. Social security expenditure comprises the following items: social benefits other than social transfers in kind; social transfers in kind; and current transfers from the central and local governments to the social security funds.
 Source: Cabinet Office, "National accounts."

Chart II-2-12: Decomposition of long-term interest rates

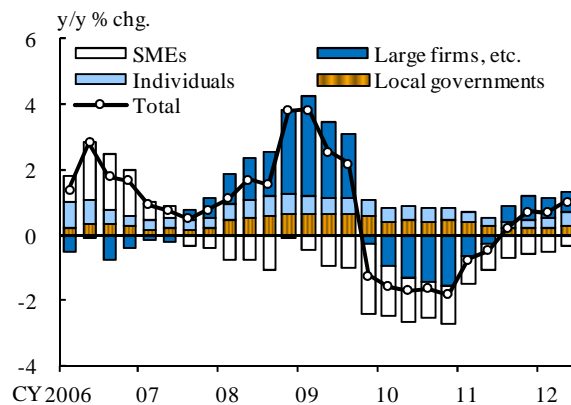


Source: Ichiue, Hibiki and Yuhei Shimizu, "Determinants of Long-term Yields: A Panel Data Analysis of Major Countries and Decomposition of Yields of Japan and the US," Bank of Japan Working Paper, No. 2012-E-7, May 2012.

Loan market conditions

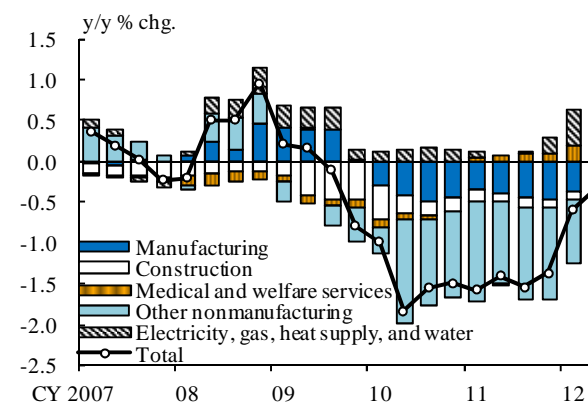
- Financial institutions' domestic loans outstanding, particularly for corporate loans, have increased. Behind the increase in corporate loans lies greater demand especially for working capital and funds related to mergers and acquisitions.
- Nevertheless, borrowing demand for business fixed investment remains sluggish due to the ample cash flow among firms.
 - By industry, loans for business fixed investment have increased in the electric power as well as medical care and welfare industries, while they have declined in many other industries.

Chart III-3-2: Loans outstanding of financial institutions^{1,2}



Notes: 1. Banks and *shinkin* banks are counted.
 2. The latest data are as of end-June 2012.
 Source: BOJ, "Loans and bills discounted by sector."

Chart III-3-4: Loans outstanding for business fixed investment^{1,2}

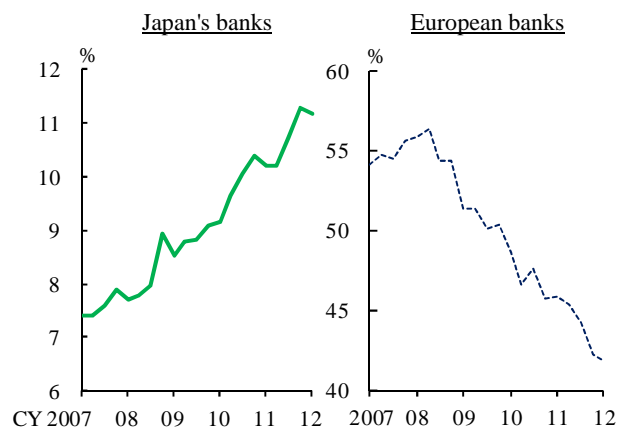


Notes: 1. Banks and *shinkin* banks are counted.
 2. The latest data are as of end-June 2012.
 Source: BOJ, "Loans and bills discounted by sector."

Major banks' overseas loans

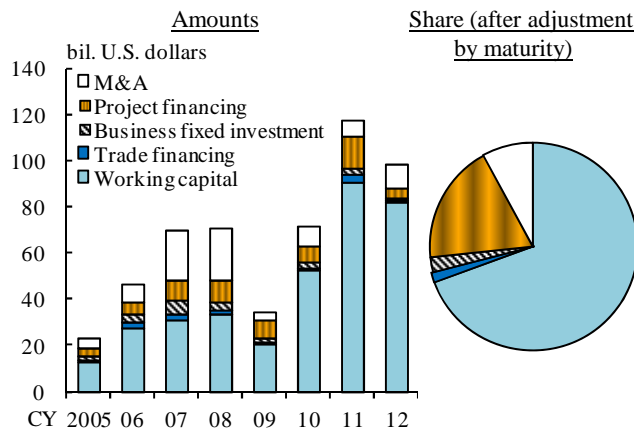
- Major banks have increased overseas loans with high profitability, and the share of their loans in the global loan market has therefore grown.
 - In the market, the share of loans by European banks has declined as they have been reducing their assets, whereas that by Japan's banks has increased since 2008.
- These developments show that banks are increasing overseas loans, while they are relatively careful in choosing overseas loan extension and setting loan conditions.
 - Looking at overseas syndicated loans extended by Japan's banks by lending purpose, most of them are for working capital with low risk, although some are for project financing with relatively high risk and return.

Chart III-3-5: Share in cross-border claims of Japan's banks^{1,2,3}



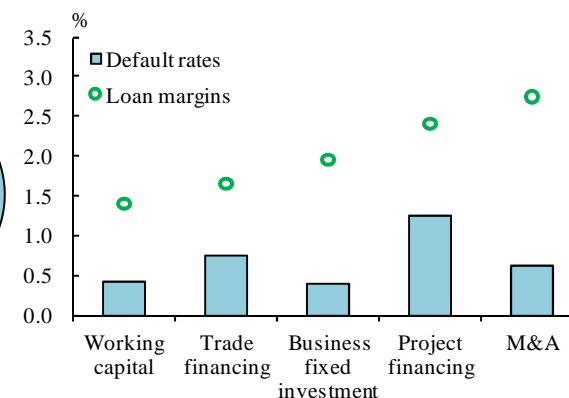
Notes: 1. The share is based on the cross-border claims on banks, the public sector, and the nonbank private sector on an ultimate risk basis.
 2. European banks comprise the banks in the euro area.
 3. The latest data are as of end-March 2012.
 Source: BIS, "Consolidated banking statistics."

Chart III-3-10: Syndicated loan amounts and share^{1,2,3}



Notes: 1. Loans extended from Japan's banks to foreign firms are counted.
 2. The latest data for the left chart are annualized as of the first half of 2012.
 3. The right chart depicts the ratio of the loan amounts multiplied by maturity. The data are from January 2010 to June 2012.
 Source: Thomson Reuters, "DealScan."

Chart III-3-11: Syndicated loan margins and default rates^{1,2,3}



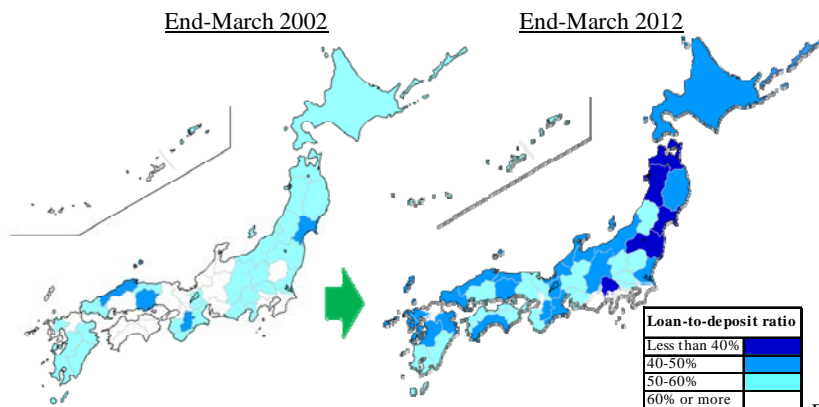
Notes: 1. Loans extended from Japan's banks to foreign firms between January 2010 and June 2012 are counted.
 2. Loan margins and the default rate are averages weighted by the transaction amount of each deal.
 3. The data are from January 2010 to June 2012.
 Sources: Thomson Reuters, "DealScan"; Moody's; BOJ.

Regional financial institutions' efforts: Financial conditions of regional financial institutions

2. Examination of financial intermediation

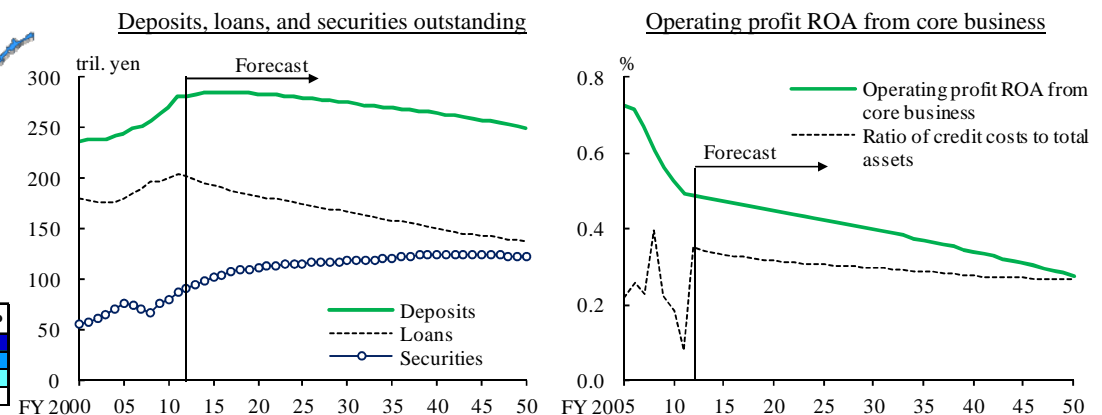
- In the nonmetropolitan areas facing the decreasing population and the aging of society, growth in loans to local firms has been slow and the loan-to-deposit ratio (the ratio of the amount of deposits to the amounts outstanding of loans for small and medium-sized firms and housing) has declined significantly.
- As the loan-to-deposit ratio has declined, regional financial institutions' core profitability has declined.
 - In a simple calculation based on the assumption that financial institutions will respond passively to developments in the external environment such as demographic changes, financial institutions' profitability could continue to decline in the medium to long term.

Chart III-3-13: Loan-to-deposit ratio (ratio of loans to individuals and SMEs to deposits)¹



Note: 1. Regional banks and *shinkin* banks are counted.
Source: BOJ.

Chart IV-3-34: Regional banks' financial conditions and operating profit ROA from core business



Sources: Ministry of Internal Affairs and Communications, "National survey of family income and expenditure"; National Institute of Population and Social Security Research, "Population Projection for Japan"; BOJ.

(Reference) Assumptions used in the calculations for Chart IV-3-34

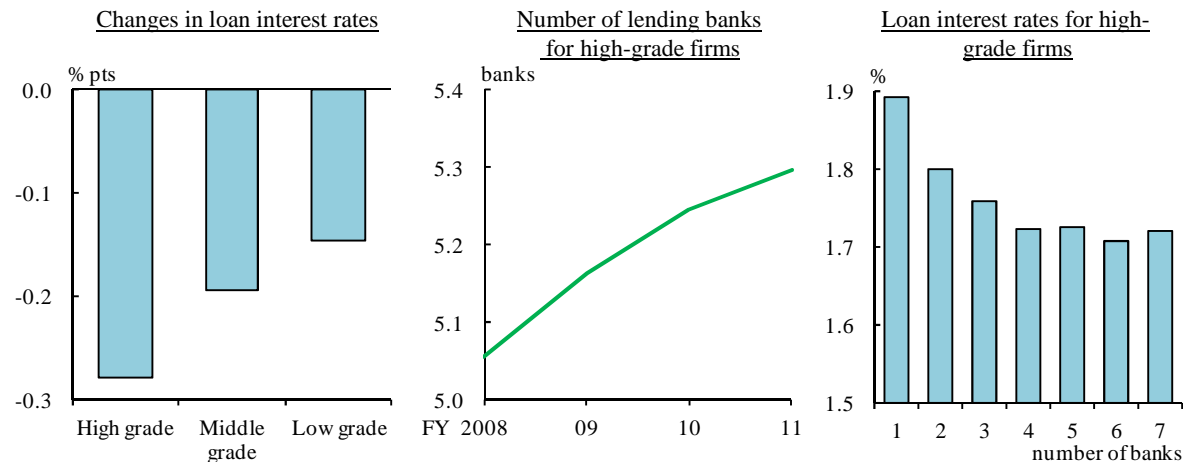
Assets		Assumptions
Assets	Loans to SMEs	Decline by 1.6 percent per year, which is the average pace of decline recorded from fiscal 2001 to fiscal 2011.
	Housing loans	Change in accordance with the future population by age group (decrease in the long run).
	Other loans	Level at fiscal 2011.
	Securities	Adjusted by the net surplus between the deposit flow and the lending flow.

Liabilities and interest rates		Assumptions
Liabilities	Individual deposits	Change in accordance with the future population by age group (decrease in the long run).
	Other deposits	Level at fiscal 2011.
Interest rates and non-interest income		Level at fiscal 2011.
Credit costs		The ratio of credit costs to total loans outstanding remains at the same level as the average credit cost ratio recorded from fiscal 2001 to fiscal 2011.

Regional financial institutions' efforts: Regional financial institutions' lending attitudes

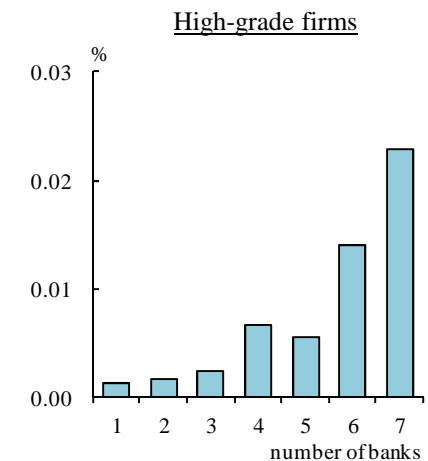
- Regional financial institutions have boosted loans in metropolitan areas and neighboring prefectures. Such lending attitudes have intensified competition in lending to existing firms that are top rated.
- Attention should be paid to the possibility that excessive lending competition will result in deterioration in profits on loans through a decline in loan interest rates and an increase in credit costs.
 - At high-rated borrowing firms, the number of financial institutions extending loans to these firms has increased. Loan interest rates tend to decline when these firms have a greater number of financial institutions extending loans. In addition, the default rates rise even at these firms as the number of financial institutions increases.
 - Close monitoring is important for financial institutions after loan disbursement. If the number of financial institutions that extend loans increases without such monitoring, the governance on firms' activity from the financial side might weaken.

Chart III-3-14: Changes in loan interest rates, and number of lending banks per firm and loan interest rates for high-grade firms^{1,2,3,4}



Notes: 1. The high-grade firms are in the upper 25th percentile in credit rating, the low-grade firms are in the lower 25th percentile, and the middle-grade firms are in the other percentiles.
 2. The left chart is yearly changes of loan interest rates from fiscal 2009 to fiscal 2011.
 3. The number of lending banks for high-grade firms in the middle chart is the average per firm.
 4. The right chart is the average from fiscal 2008 to fiscal 2011.
 Sources: Teikoku Databank, "SPECIA"; BOJ.

Chart III-3-15: Default rates by number of lending banks¹



Note: 1. Averages from fiscal 2008 to fiscal 2011. The high-grade firms are in the upper 25th percentile in credit rating.
 Sources: Teikoku Databank, "SPECIA"; BOJ.

Finding potential business partners and supporting business succession

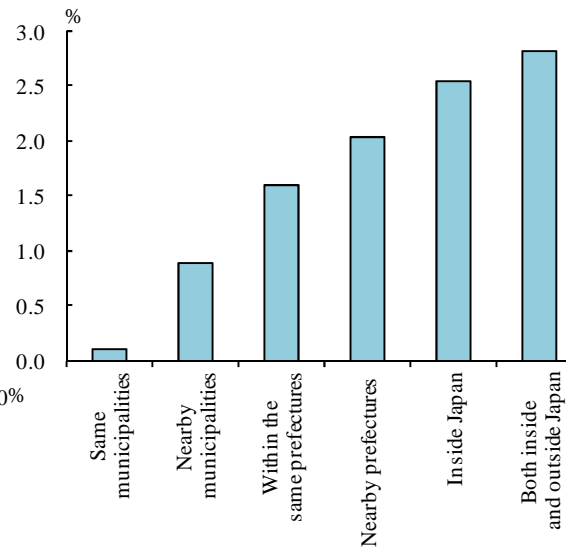
- Financial institutions have begun to strengthen the provision of information services with which small and medium-sized firms can find potential business partners in order to explore new markets. They have also started to support business succession of firms with elderly owners through, for example, mergers and acquisitions.
 - Small and medium-sized firms have emphasized the need to strengthen their sales. For many small and medium-sized firms, their small sales territory could have been one factor behind low profitability.
 - The share of firms without successors among total small and medium-sized firms increased to about 30 percent in fiscal 2010. Many of these firms are top rated in their sectors, enjoying high profitability and high credit ratings corresponding to normal in the borrower classification.

Chart III-3-22: Management challenges faced by SMEs¹



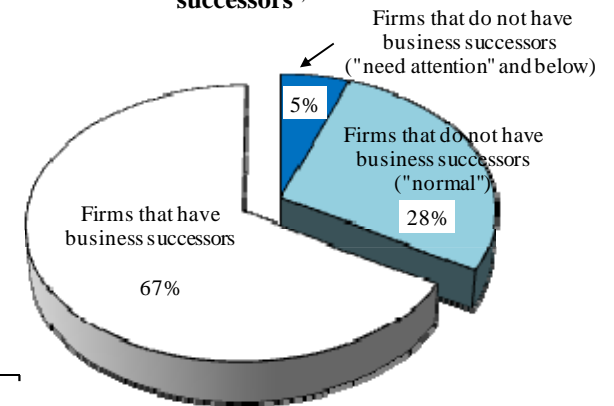
Note: 1. The data are as of 2008. Multiple answers are included.
 Source: Tokyo Chamber of Commerce and Industry, "Surveys on SMEs' management challenges."

Chart III-3-25: SMEs' operating profit ROA by sales territory¹



Note: 1. The latest data are as of fiscal 2010.
 Sources: Small and Medium Enterprise Agency, "Basic survey on small and medium enterprises"; BOJ.

Chart B4-2: Ratio of SMEs without business successors^{1,2}

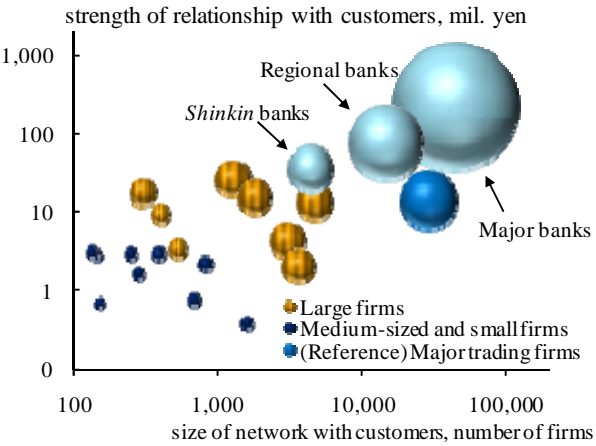


Notes: 1. SMEs with owners over 60 years old are counted.
 2. The data are as of fiscal 2010.
 Sources: CRD; BOJ.

Regional financial institutions' efforts: Financial institutions' customer networks

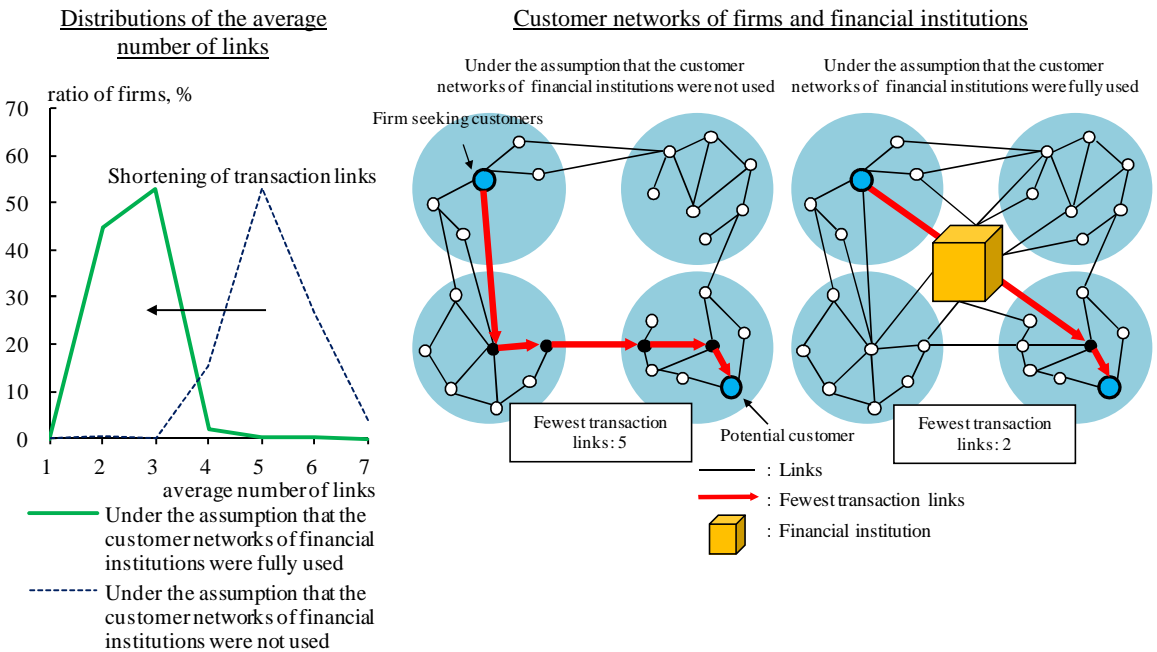
- Financial institutions' customer networks are utilized in information services with which firms can find potential business partners in order to explore new markets. Financial institutions could expand their networks by cooperating with each other regardless of their type of business or region, and further enhance the quality of their services.
 - Financial institutions' customer networks are clearly large compared with other industries. The number of clients for them exceeds that for many other industries, and the amount of financial transactions per client for them is considerable.
 - If financial institutions' customer networks are used efficiently, the process of finding business partners among firms would be shortened and the business networks of individual firms could expand.

Chart B3-1: Customer networks of firms and financial institutions^{1,2}



Notes: 1. The "strength of relationship with customers" is the average amount of credit per customer. The "size of networks with customers" is the average number of customers per firm or financial institution. The size of circles indicates the average amount of credit per firm or financial institution.
 2. Customers are business partners of sales and purchases for firms and borrowers for financial institutions. Major trading firms have more than 10,000 customers and capital of 1 billion yen or more.
 Sources: Teikoku Databank, "SPECIA"; BOJ.

Chart B3-2: Relation between firms through transaction networks^{1,2,3}

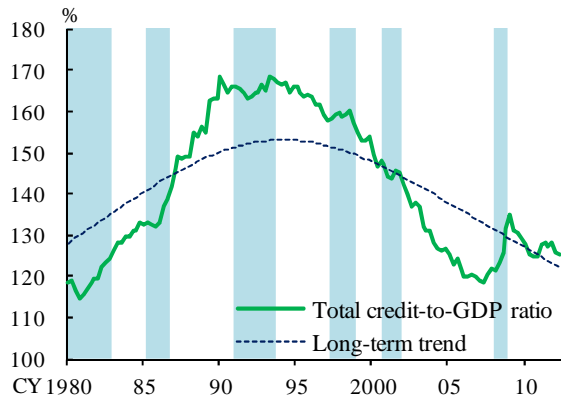


Notes: 1. The average number of links in the left chart indicates the average number of the fewest links that a firm must go through to find a customer through business transactions.
 2. The right chart is drawn by the BOJ. Circles in the right chart indicate firms. Black dots indicate firms that a firm must have business relationships with to find a customer through the fewest links.
 3. Firms, banks, and shinkin banks located in one prefecture are counted.
 Source: Teikoku Databank, "SPECIA."

Macro risk indicators and the amount of risks at financial institutions: Macro risk indicators

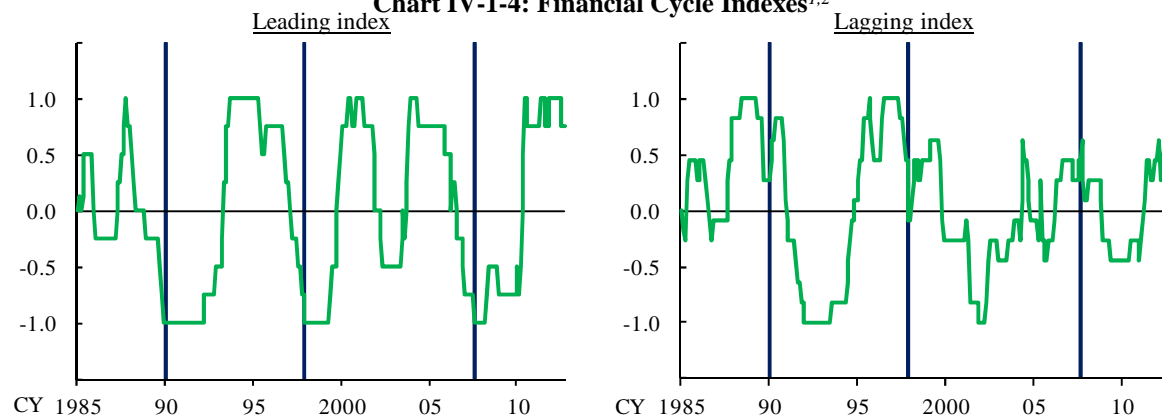
- In the examination of the financial system to ascertain financial imbalances, there is no indicator that warns of financial imbalances stemming from bullish expectations. Due attention should be paid, however, to a further increase in the amount outstanding of JGBs held by financial institutions.
 - Total credit from financial institutions to firms and households relative to GDP continues to hover around its long-term trend.
 - The Financial Cycle Indexes and the Financial Activity Index show no sign of instability in the financial system.

Chart IV-1-1: Total credit-to-GDP ratio¹



Note: 1. Shaded areas indicate recession periods. The latest data are as of the April-June quarter of 2012.
Sources: Cabinet Office, "National accounts"; BOJ, "Flow of funds accounts."

Chart IV-1-4: 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 September 2012.
Source: BOJ.

Chart IV-1-3: Heat map of Financial Activity Index¹

	CY	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12
DI of financial institutions' lending attitudes		Blue	Red	Red	Red	Red	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	
Total credit to GDP ratio		Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	
Equity weighting in institutional investors' portfolios		White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
Money multiplier (ratio of M2 to the monetary base)		Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	
Gross rent multiplier (ratio of land prices to rent)		Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Stock price		Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Spread between expected equity yields and government bond yields		White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
Ratio of business investments to operating profits		Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Ratio of firms' CP outstanding to their liabilities		White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White	White
Households' debt-to-cash ratio		Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green

【Financial Cycle Indexes】

- 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 same movement in the lagging index indicates that the financial system might have already become unstable.

【Heat map of Financial Activity Index】

- Red (the darkest areas): overheating (a rise by more than one standard deviation from the trend).
- Blue (the second darkest areas): overcooling (a decline by more than one standard deviation from the trend).
- Green (the most lightly shaded areas): everything in between above.
- White: the period without data.

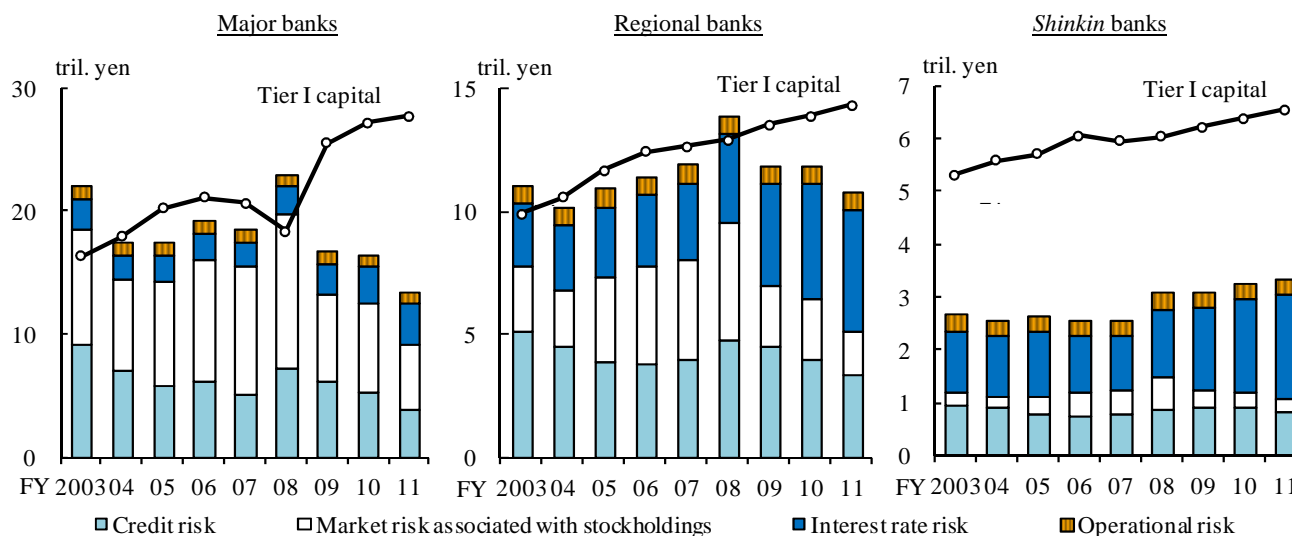
Note: 1. The latest data are as of the January-March quarter of 2012.
Sources: Cabinet Office, "National accounts"; Ministry of Finance, "Financial statements statistics of corporations by industry, quarterly"; Ministry of Internal Affairs and Communications, "Consumer price index"; BOJ, "Flow of funds accounts," "Monetary base," "Money stock," "Tankan"; and etc.

Macro risk indicators and the amount of risks at financial institutions: Amount of risks at financial institutions

3. Risks in the financial system

- The amount of risks banks and *shinkin* banks bear as a whole has been decreasing relative to capital.
 - However, the quality of bank loans has not improved substantially, despite the low credit costs.
 - While major banks are still exposed to a high degree of market risk associated with stockholdings, interest rate risk has been rising at regional banks and *shinkin* banks reflecting the increase in JGB investment.

Chart IV-3-1: Risks and Tier I capital¹⁾



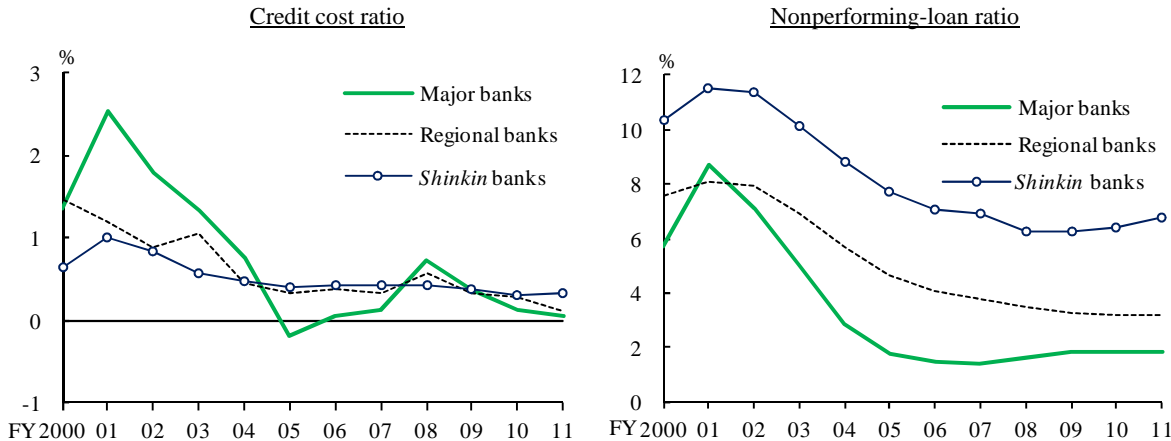
Note: 1. Credit risk: unexpected loss with a 99 percent confidence level. Market risk associated with stockholdings: value-at-risk with a 99 percent confidence level and 1-year holding. Interest rate risk: 100 basis point value. Operational risk: 15 percent of gross profits.

Source: BOJ.

Credit risk: Credit costs at banks and *shinkin* banks

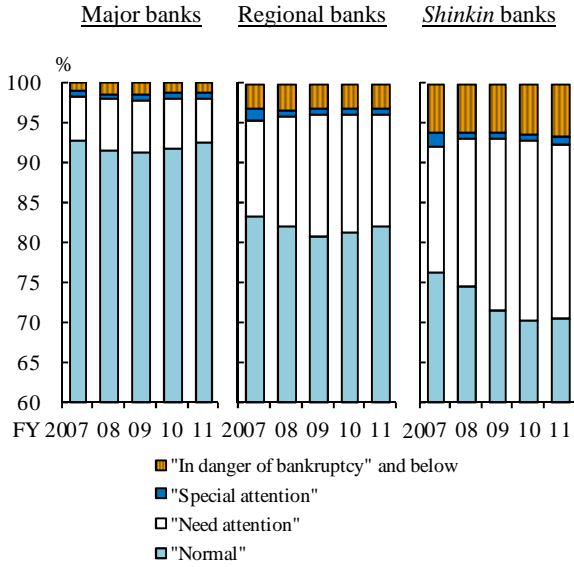
- The credit cost ratios of banks and *shinkin* banks remain at low levels. The nonperforming-loan ratio has generally remained at a low level, although that for *shinkin* banks has increased moderately.
- However, the quality of regional banks' loans has not improved substantially.
 - The ratio of "normal" loans to total loans has increased moderately at regional banks, but has not yet recovered to the level immediately before the Lehman shock.
 - The ratio of "normal" loans to total loans has been decreasing at *shinkin* banks.

Chart IV-3-2: Credit cost ratio and nonperforming-loan ratio



Source: BOJ.

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

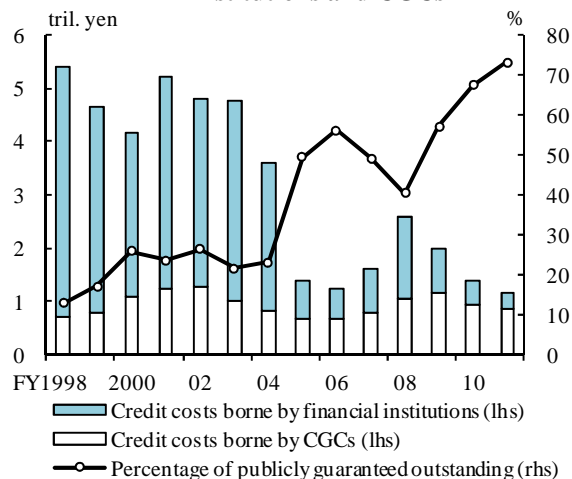


Source: BOJ.

Credit risk: Credit costs of the Credit Guarantee Corporations

- The amount of subrogation borne by Credit Guarantee Corporations (CGCs) remains relatively high.
 - The share of credit costs borne by CGCs has exceeded 70 percent. Moreover, due to the introduction of the Emergency Guarantee Program, the share of full guarantees (100 percent guarantees) on banks' credit by CGCs is slightly less than 70 percent of total guarantees by CGCs.
- The subrogation ratio of 100 percent guarantees is higher than that of 80 percent guarantees. Attention should be paid to the possibility that, if firms with loan guarantees under the Emergency Guarantee Program fail to improve their business conditions, the associated costs will ultimately become a burden on the public sector.

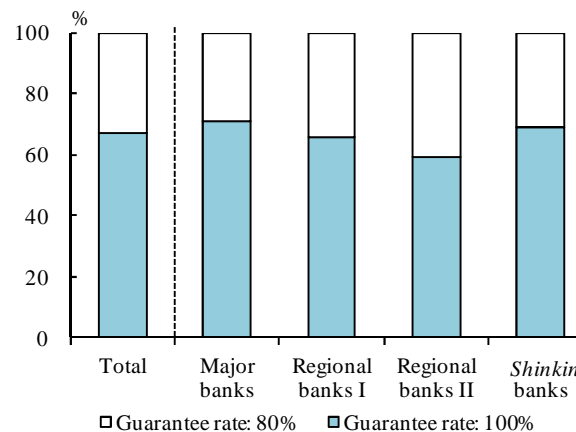
Chart IV-3-5: Credit cost borne by financial institutions and CGCs¹



Note: 1. Credit costs borne by financial institutions are the sum of write-offs, realized losses on bulk sales, and others. Credit costs borne by CGCs are the amount of subrogation.

Sources: Financial Services Agency; National Federation of Credit Guarantee Corporations.

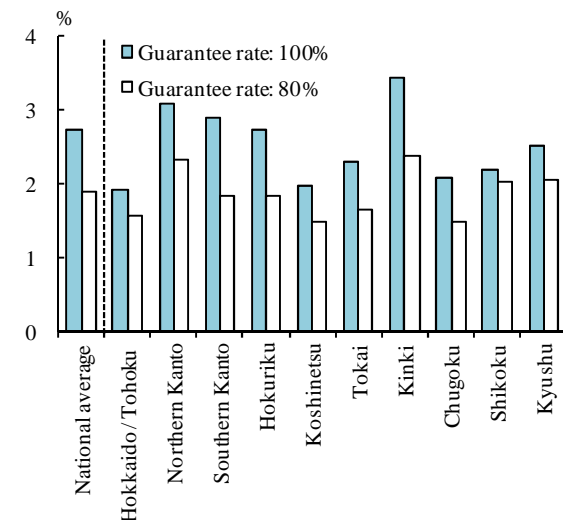
Chart IV-3-6: Breakdown of amount outstanding of liabilities guaranteed by CGCs¹



Note: 1. The data are average amounts outstanding in fiscal 2011.

Source: Small and Medium Enterprise Agency, "Report on the amount of subrogation by financial institutions."

Chart IV-3-8: Subrogation rate^{1,2,3}



Notes: 1. The subrogation rate is a ratio of the amount of subrogation payment to the outstanding amount of guaranteed liabilities.

2. The amount of subrogation payment is the cumulative amount in fiscal 2011. The outstanding amount of guaranteed liabilities is the average amount in fiscal 2011.

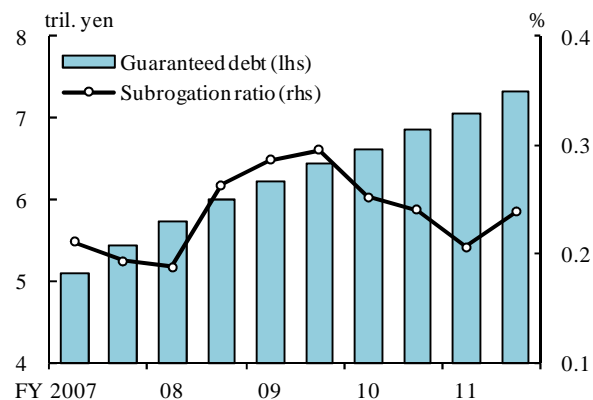
3. Counted based on the regions in which financial institutions' head offices are located.

Source: Small and Medium Enterprise Agency, "Report on the amount of subrogation by financial institutions."

Credit risk: Housing loans

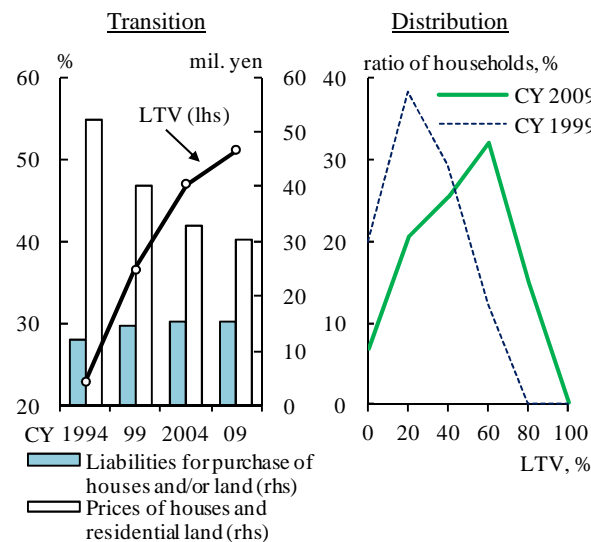
- Credit costs arising from housing loans have been marginal so far.
 - The level of housing guarantee corporations' subrogation ratio remains low. The collateral coverage of housing loans is secured to a certain extent.
- However, residential land prices have been on a downtrend and the loan-to-value (LTV) ratio has continued to rise. Attention should thus be paid to the possibility that credit costs of financial institutions will increase, depending on developments in, for example, residential land prices.

Chart IV-3-9: Subrogation ratio on housing loans



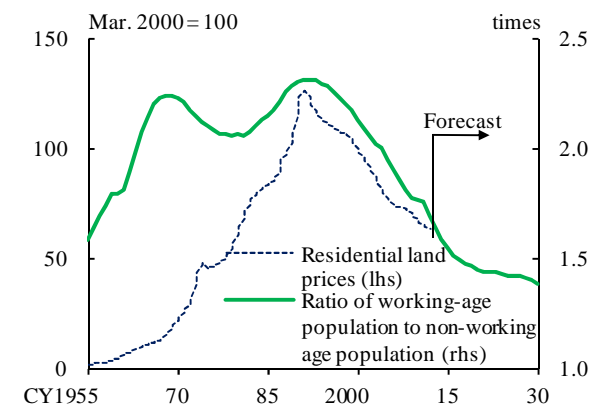
Source: Zenkoku Hosho.

Chart IV-3-10: Transition and distribution of LTV^{1,2}



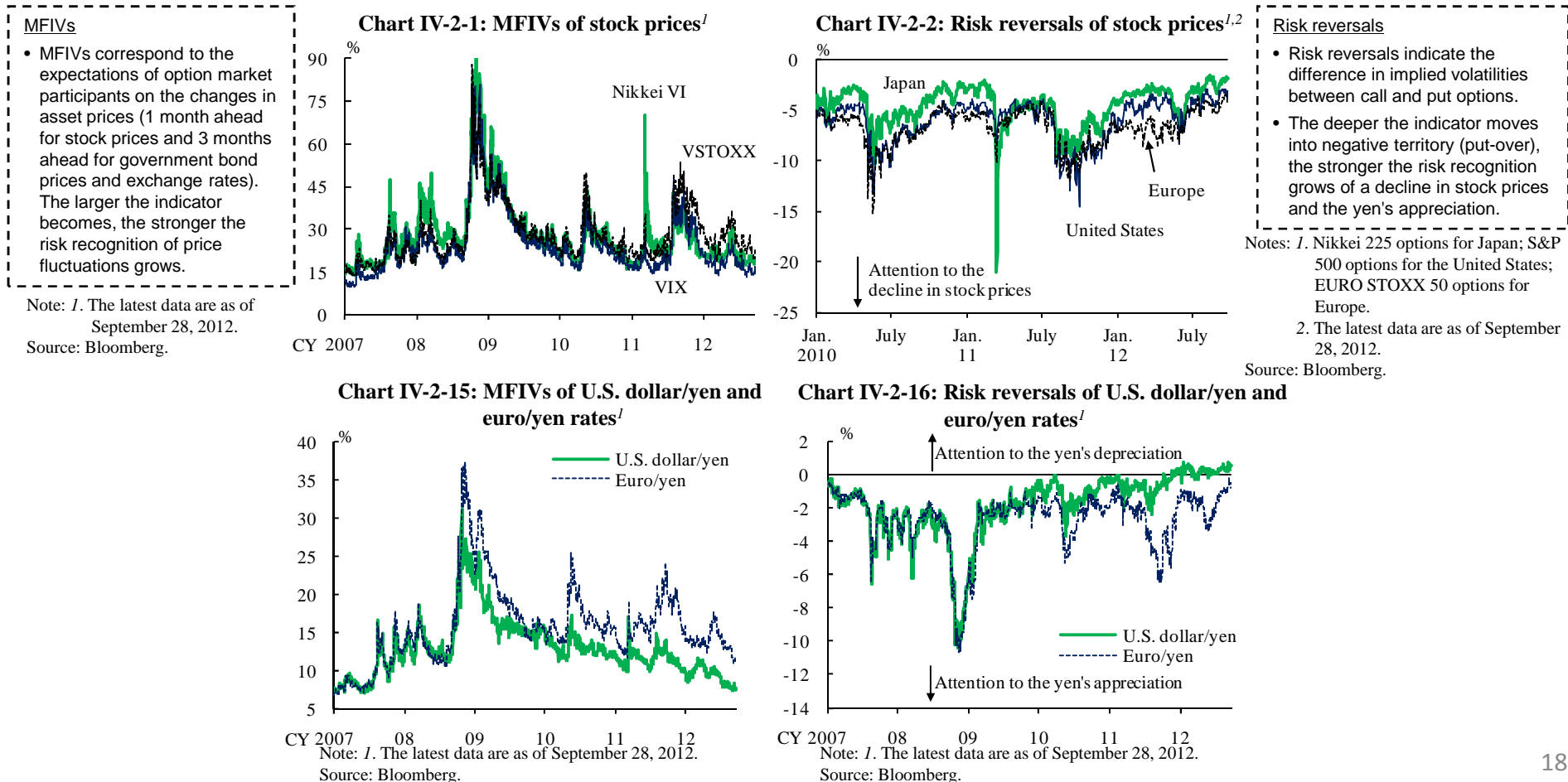
Notes: 1. The LTV comprises the liabilities for purchase of houses and/or land divided by the prices of houses and residential land.
 2. Two-or-more person households with housing loans are counted.
 Sources: Ministry of Internal Affairs and Communications, "National survey of family income and expenditure"; BOJ.

Chart IV-3-12: Residential land prices and working-age population



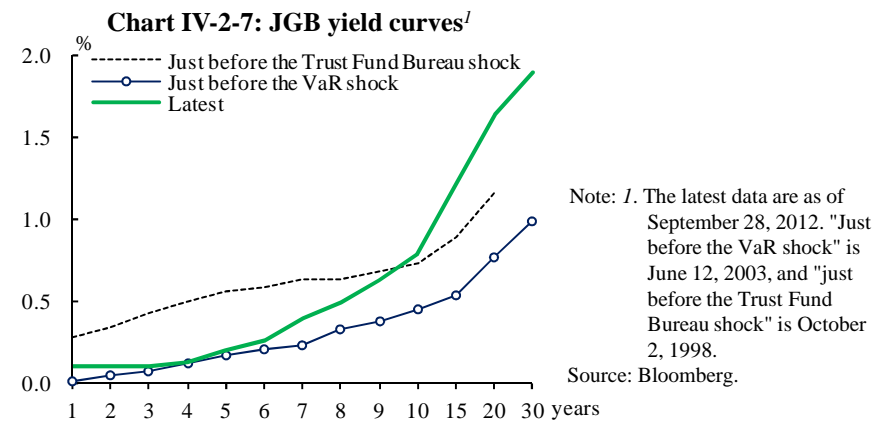
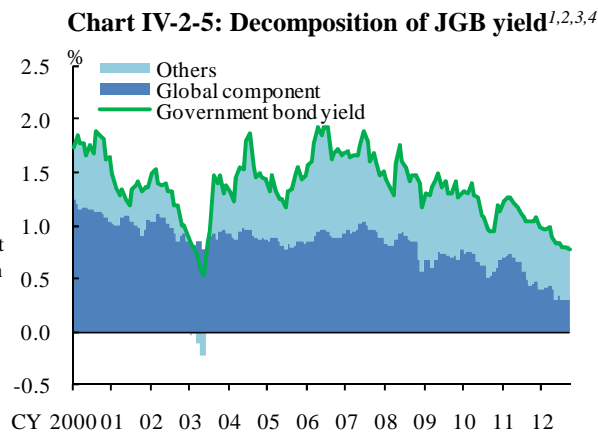
Sources: Japan Real Estate Institute, "Urban land price index"; National Institute of Population and Social Security Research, "Population projections for Japan."

- Market participants' uneasiness grew toward June 2012 in response to the heightening concern over the situation in Europe but recently declined again, mainly due to market expectations toward the European authorities' policies, as was suggested by the model-free implied volatilities (MFIVs) and risk reversals of stock prices. Nonetheless, such market participants' risk recognition is highly correlated globally, and domestic stock prices remain susceptible to developments in U.S. and European stock markets.
- Meanwhile, the MFIV of the U.S. dollar/yen rate has been on a declining trend, albeit with some fluctuations. The 1-month dollar/yen risk reversal has remained stable and skewed slightly toward dollar calls (concern over the dollar's appreciation and the yen's depreciation) since the beginning of 2012.

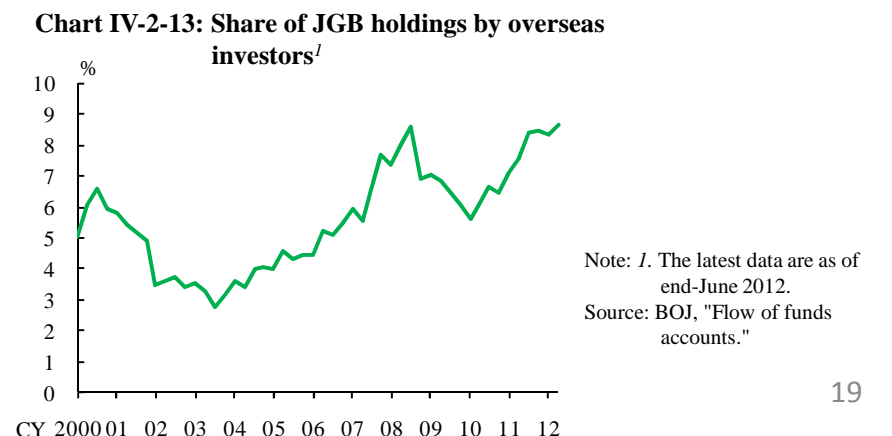
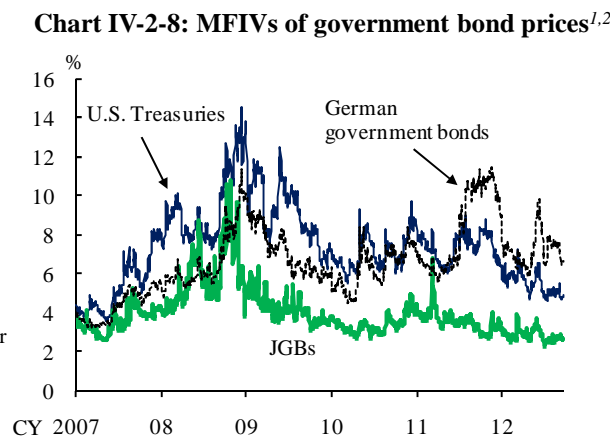


- JGB yields fell to the 0.70-0.75 percent level for the first time since the VaR shock, correlating to a considerable degree with U.S., U.K., and German government bond yields and sharing the common component behind fluctuations in these government bond yields ("global component").
- On the other hand, a comparison of the current JGB yield curve with the curve at the time of the VaR shock shows that longer-term yields are relatively higher, primarily because investors, mainly major banks, are cautious about lengthening the duration of their securities portfolio. In addition, market participants' risk recognition, which is gauged by the MFIV of JGB prices and some other indicators of derivative transactions, does not show any expectations of upward fluctuations.
- However, attention should be paid to the possible upward pressure on government bond yields if the effects of some of the factors pulling down the "global component" wane. In addition, foreign investors' holdings of JGBs have been increasing, and careful monitoring is required regarding the possibility that the degree of foreign investors' confidence in fiscal sustainability in Japan will be more rapidly reflected in JGB yields.

Notes: 1. Government bonds are 10-year bonds.
 2. "Global component" is defined as the first principal component of U.S., U.K., and German government bond yields.
 3. "Others" is the sum of the constant term and residuals from regression of JGB yields on the "global component."
 4. The latest data are as of end-September 2012.
 Source: Bloomberg.



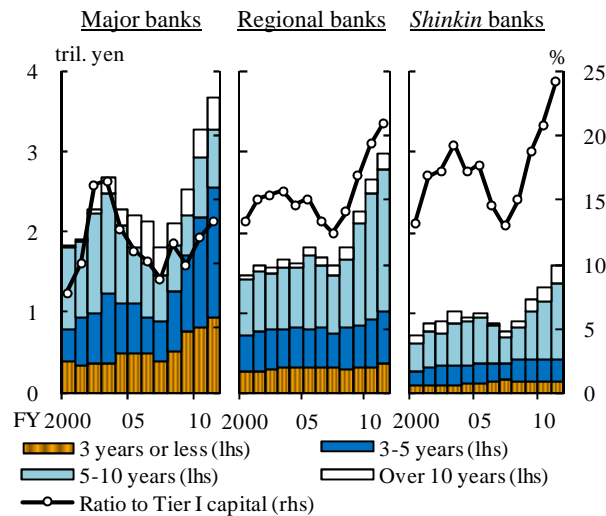
Notes: 1. Options on JGB futures traded on the Tokyo Stock Exchange for JGBs; options on U.S. Treasury futures traded on the Chicago Board of Trade for the United States; options on Euro-Bund futures traded on Eurex for Germany.
 2. The latest data are as of September 28, 2012.
 Source: Bloomberg.



Market risk: Interest rate risk borne by financial institutions

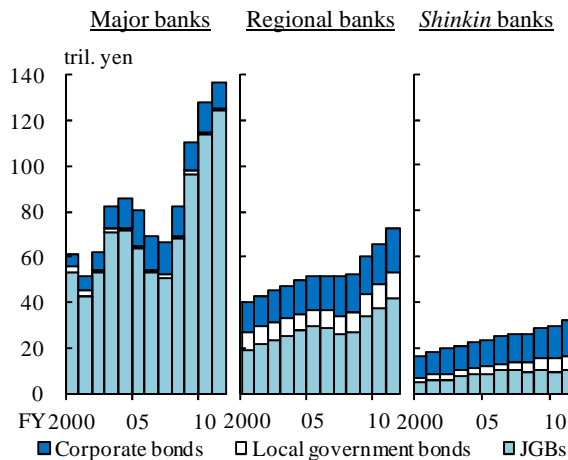
- The amount of interest rate risk borne by banks and *shinkin* banks has been increasing.
 - Increases in interest rate risk are due to an increased amount of bond investment and a lengthened average remaining maturity of the investment.
 - The average remaining maturity of domestic bond investment has remained at around 2.5 years at major banks, and has lengthened to around 4 years at regional banks, which invest large amounts in long-term bonds, and to about 4.5 years at *shinkin* banks.

Chart IV-3-16: Interest rate risk (100 bpv) associated with domestic bondholdings¹



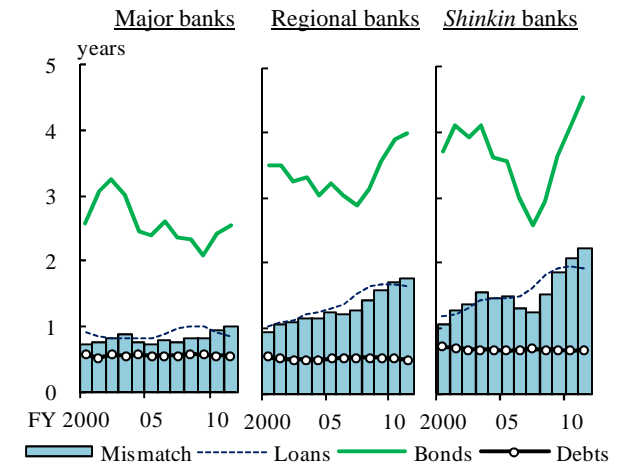
Note: 1. The latest data are as of end-March 2012.
Source: BOJ.

Chart IV-3-17: Domestic bondholdings¹



Note: 1. The latest data are as of end-March 2012.
Source: BOJ.

Chart IV-3-18: Average remaining maturity and maturity mismatch¹



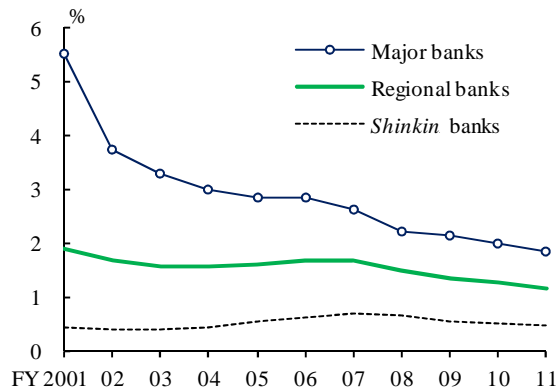
Note: 1. The latest data are as of end-March 2012.
Source: BOJ.

Market risk:

Market risk associated with stockholdings and alternative investment at financial institutions

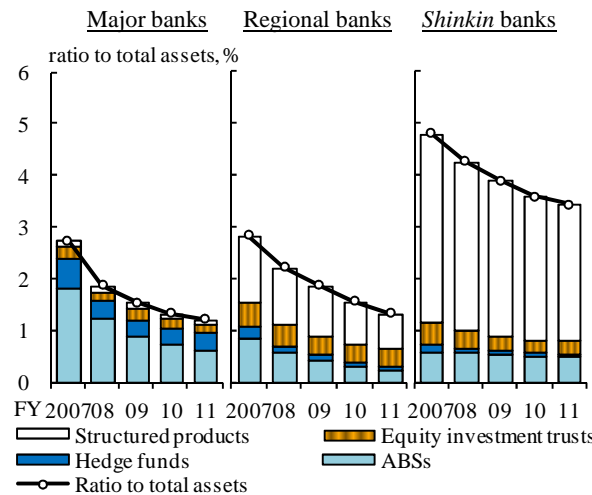
- The pace of reduction in market risk associated with stockholdings has been slower than planned at banks and *shinkin* banks.
- The amount outstanding of alternative investment has been decreasing at banks and *shinkin* banks since the Lehman shock. However, the amount outstanding of alternative investment is relatively high at *shinkin* banks, partly due to structured products that were bought in the past.
 - The structured products could incur significant losses depending on market variations since the product design is complex and market liquidity is low. It should be noted that financial institutions with lower profitability tend to hold a higher ratio of alternative investment.

Chart IV-3-21: Ratio of stockholdings to total assets¹



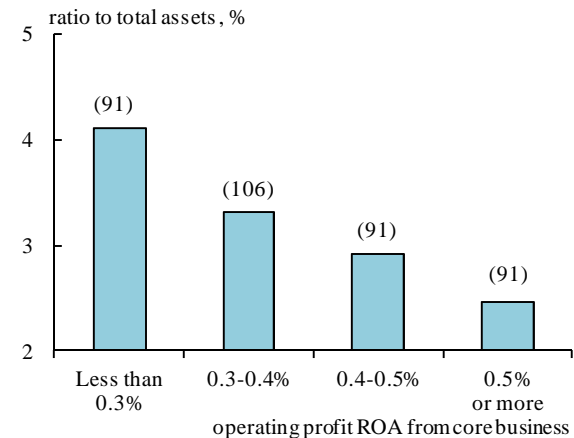
Note: 1. On an acquisition or amortized price basis.
Source: BOJ.

Chart IV-3-22: Alternative investment¹



Note: 1. ABSs exclude RMBSs.
Source: BOJ.

Chart IV-3-23: Share of alternative investment and operating profit ROA from core business^{1,2,3}



Notes: 1. Banks and *shinkin* banks are counted.
2. RMBSs are excluded from alternative investment.
3. Operating profit ROA from core business is the 5-year average. Numbers in parentheses are the number of financial institutions.
Source: BOJ.

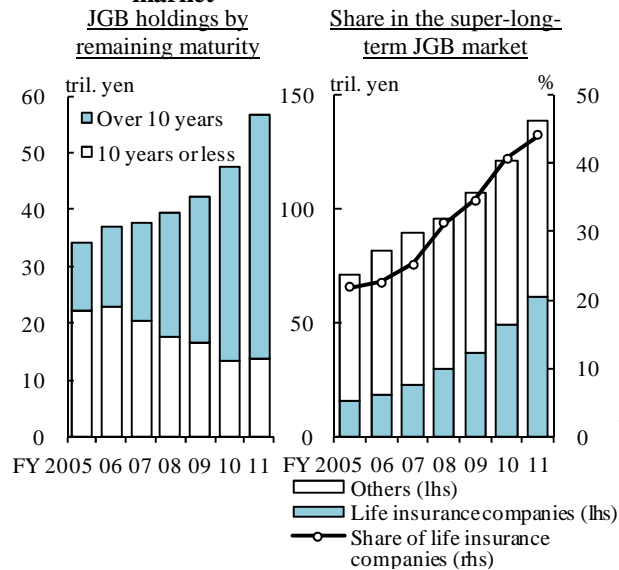
Market risk:

Interest rate risk at life insurance companies

3. Risks in the financial system

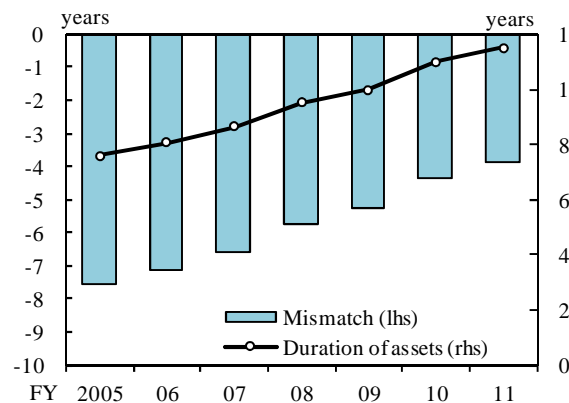
- Life insurance companies have substantially increased the amount outstanding of super-long-term JGBs. Consequently, the duration mismatch is narrowing, but remains to a noticeable extent.
 - Life insurance companies take on the greatest amount of risk in the JGB market.
 - The maturity of liabilities is longer than that of assets for life insurance companies. Thus, if interest rates rise, the value of assets would increase at a faster rate than that of liabilities and the value of net assets would increase (the opposite in the case of banks).
 - Given the duration mismatch, potential demand for investment in super-long-term JGBs is expected to be strong for the time being. However, due to the effects of demographic changes, the maturity of life insurance companies' liabilities could shorten moderately.

Chart IV-4-2: JGB holdings and share of life insurance companies in the super-long-term JGB market^{1,2}



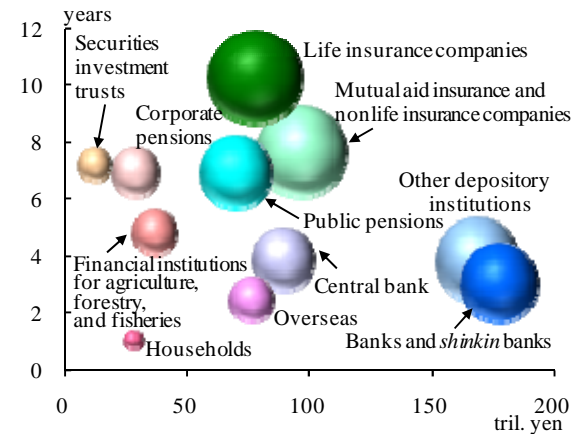
Notes: 1. In the left chart, the nine major life insurance companies are counted.
 2. In the right chart, members of the Life Insurance Association of Japan except for Japan Post Insurance are counted. The term composition of JGB holdings of the member companies noted above is assumed to be the same as those of the nine major life insurance companies. The figure for fiscal 2011 is the BOJ's estimate using changes in the nine major life insurance companies.
 Sources: Japan Post Insurance; Ministry of Finance; Life Insurance Association of Japan.

Chart IV-4-4: Duration of assets and duration mismatch¹



Note: 1. The nine major life insurance companies are counted.
 Sources: Published accounts of life insurance companies; National Institute of Population and Social Security Research, "Population projections for Japan"; Ministry of Internal Affairs and Communications, "Population census"; Japan Institute of Life Insurance, "Life insurance survey"; BOJ.

Chart B8-1: Interest rate risk by sector¹



Note: 1. The horizontal axis indicates JGB holdings. The vertical axis indicates the duration of the JGBs. The size of circles shows the amount of interest rate risk associated with JGB holdings. The data are as of end-March 2012.
 Sources: Ministry of Finance; Japan Securities Dealers Association; published accounts of each entity; QSS Report <Bond>; BOJ.

Resilience against shocks in the economy and financial markets: Framework of macro stress testing

- From this *Report*, the macro stress testing includes the feedback loop between the financial system and the real economy.
 - In the previous macro stress testing, only the effects of changes in external environments such as real economy, stock prices, and interest rates on the financial sector were taken into account.
 - As one of the major features of the macro stress testing in this *Report*, the effects of the changes in behavior of financial institutions on the real economy are taken into account by using the Financial Macro-econometric Model (FMM) in which the feedback loop between the financial system and the real economy are taken into account.

Chart A-1: Credit risk testing

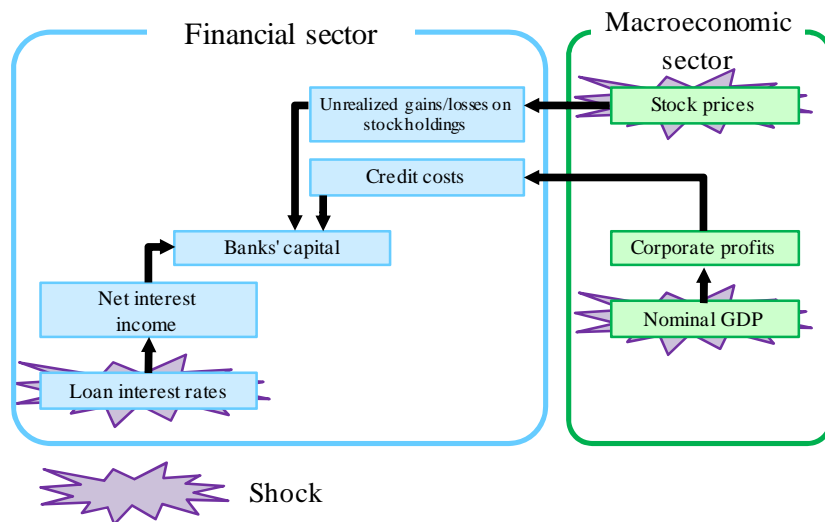
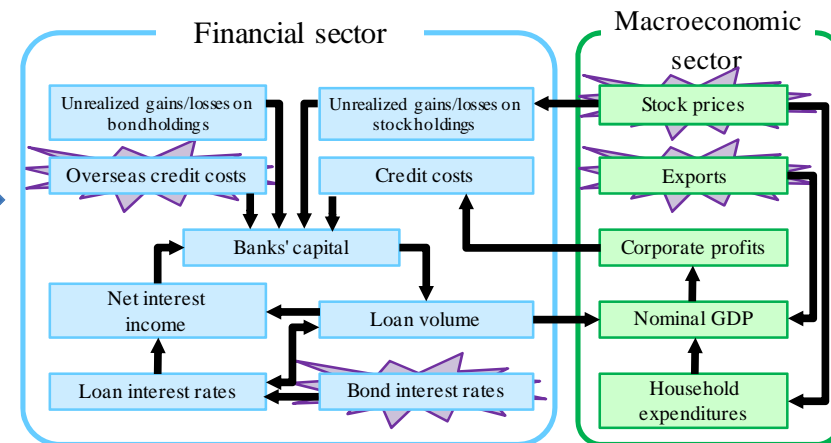


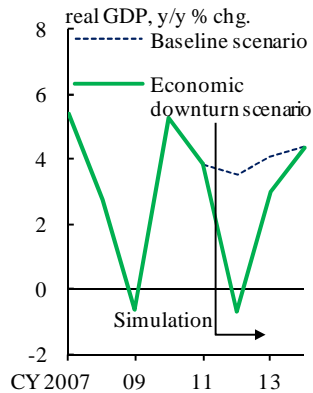
Chart A-3: Economic downturn scenario
(assessment of resilience against macroeconomic shocks)



Resilience against shocks in the economy and financial markets: Economic downturn scenario

- Banks' capital bases as a whole would be able to avoid significant impairment, even if a significant economic downturn similar to that observed after the Lehman shock occurs.
 - It assumes that the domestic and overseas economic growth rates would be in negative territory, and stock prices (TOPIX) would decline significantly from 854 points at the end of fiscal 2011 to 398 points at the end of fiscal 2012.
 - Although the Tier I capital ratio of banks would decrease from 11.6 percent in fiscal 2011 to 10.9 percent in fiscal 2012, the ratio would still exceed the regulatory level.
- Attention should be paid to the possibility that the capital adequacy ratios will plunge further for banks whose quality of loans is relatively low.

Chart V-1-3: Overseas economies



Sources: IMF, "World economic outlook"; Japan Center for Economic Research, "ESP forecasts"; Cabinet Office, "National accounts"; BOJ.

Chart V-1-4: Domestic economy

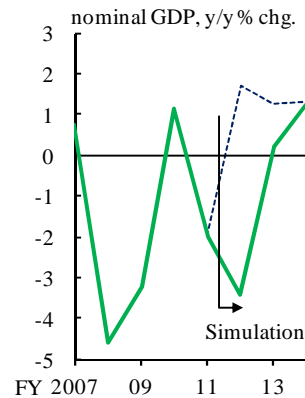
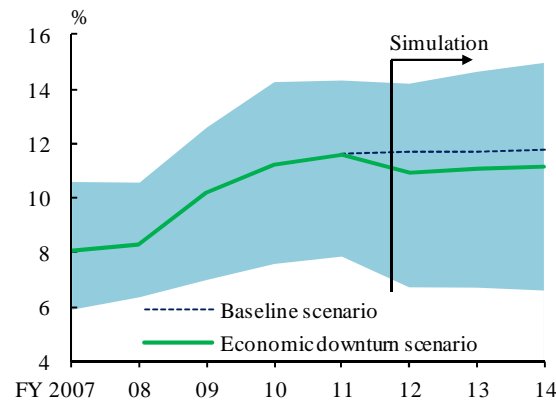


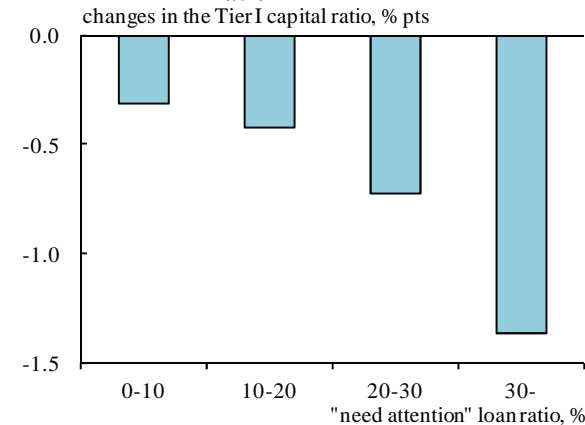
Chart V-1-6: Tier I capital ratios (economic downturn scenario)¹



Note: 1. Major banks and regional banks are counted. The shaded area indicates the 10th-90th percentile range under the economic downturn scenario.

Source: BOJ.

Chart V-1-8: Reductions in the Tier I capital ratio and "need attention" loan ratio^{1,2}



Notes: 1. Regional banks are counted.

2. The horizontal axis shows the share of "need attention" loans in the amount outstanding of loans. The vertical axis shows the average of each bank's difference between the Tier I capital ratio under the economic downturn scenario and that under the baseline scenario as of end-March 2015.

Source: BOJ.

Resilience against shocks in the economy and financial markets: Upward shift scenarios of interest rates

- Banks' capital bases as a whole would be able to avoid significant impairment, even if an upward shift of domestic interest rates for all maturities by 1 percentage point occurs.
 - The profits and unrealized gains on securities holdings would act as buffers and absorb most capital losses on bondholdings due to a rise in interest rates.
- Nevertheless, if interest rates rise significantly by more than 1 percentage point, banks' capital could decline to a noticeable extent and such effects will be amplified through an adverse feedback loop between the financial system and the real economy.
 - If interest rates rise by 2 percentage points, capital losses on bondholdings would exceed the buffers. Furthermore, this induces banks to tighten their lending attitudes to restore their capital adequacy ratios.

Chart V-1-12: Effects of a rise in interest rates on capital losses on bondholdings and the Tier I capital ratio¹

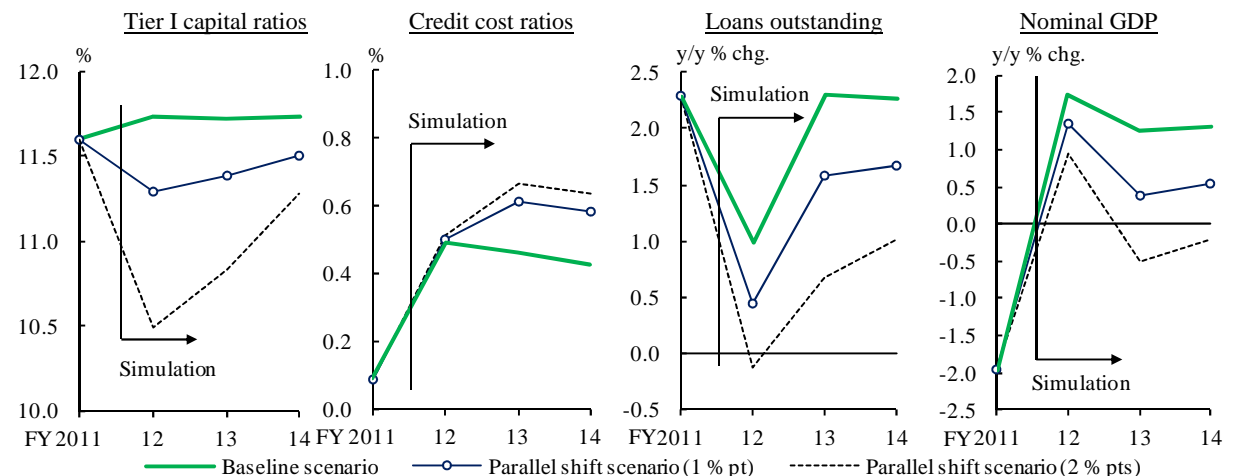
Major banks				
	Mar. 2012 (base point)	Upward shift		
		1 % pt	2 % pts	3 % pts
Capital losses on bondholdings (tril. yen)	—	3.7	7.0	10.3
Tier I capital ratio (%)	12.6	12.6	12.1	11.4
Changes (% pts)	—	0.0	-0.5	-1.2

Regional banks				
	Mar. 2012 (base point)	Upward shift		
		1 % pt	2 % pts	3 % pts
Capital losses on bondholdings (tril. yen)	—	3.0	5.6	8.1
Tier I capital ratio (%)	10.0	9.9	9.0	8.0
Changes (% pts)	—	-0.1	-1.0	-2.0

Note: 1. Changes indicate the Tier I capital ratio at end-March 2013 minus that at the base point (end-March 2012). For the estimate of the Tier I capital ratio, profits, capital gains on securities holdings, and tax effects are taken into account.

Source: BOJ.

Chart V-1-15: Tier I capital ratios, credit cost ratios, loans outstanding, and nominal GDP

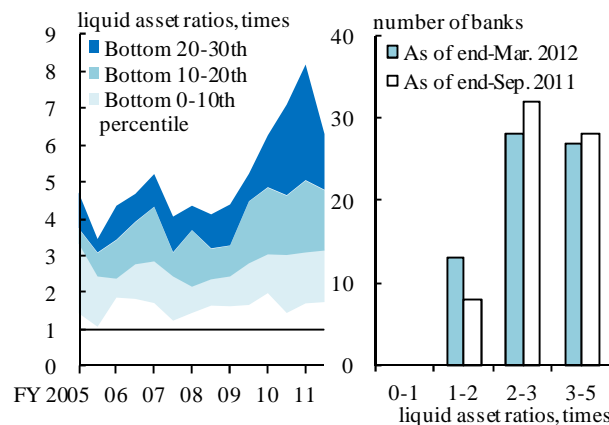


Sources: Japan Center for Economic Research, "ESP forecasts"; BOJ.

Resilience against funding liquidity risk

- Even if banks become unable to raise funds from some markets, they would generally hold a sufficient amount of funding liquidity both in the domestic and foreign currencies.
 - Even under an assumption of a shock in which market funding in yen comes to a complete stop for 3 months and 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 have sufficient liquid assets necessary for funding. Furthermore, under an assumption that one of the major sources of foreign currency funding becomes dysfunctional for 1 month, Japan's banks would still have an adequate amount of foreign currency liquidity buffers to cover funding shortages.
- However, banks could require additional funding sources under a particularly severe situation in which a number of measures for foreign currency funding become inoperative simultaneously.
 - Under an assumption that all of the major sources of foreign currency funding markets become dysfunctional for 1 month, funding shortages would amount to almost the same level as the current foreign currency liquidity buffers.

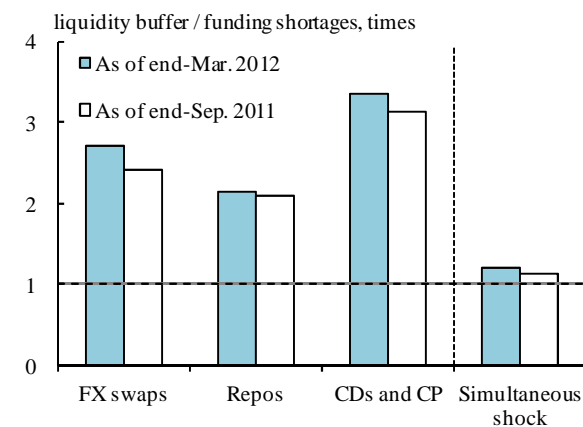
Chart V-2-1: Stress testing against liquidity risk in yen funding^{1,2,3}



- Notes: 1. Major banks (excluding trust banks) and regional banks are counted.
 2. Liquid asset ratio = (current accounts at the BOJ + cash + government bonds) / (net market funding maturing within 3 months). The latest data for the left chart are as of end-March 2012.
 3. The right chart indicates distributions of liquidity asset ratios under the assumption that the deposit runoff occurred at end-March 2012.

Source: BOJ.

Chart V-2-2: Stress testing against foreign currency liquidity risk^{1,2,3}



- Notes: 1. Major banks and regional banks are counted.
 2. The duration of funding shortages in each market is 1 month.
 3. 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.

Sources: Published accounts of U.S. MMFs; BOJ, "Regular derivatives market statistics in Japan."