Financial System Report

Summary

April 2019

Bank of Japan

Executive Summary

Financial cycle and potential vulnerabilities

- The funding conditions for firms and households have been highly accommodative. The expansion in the financial cycle has continued.

- However, financial and economic activities as a whole have shown no signs of overheating as observed during the bubble period in the late 1980s.

- Rapid growth of the outstanding amount of real estate loans has continued and a deviation of the *real estate loans to GDP ratio* from its trend has marked a record high for the post-bubble period. Based on a wide range of indicators including land prices, Japan's real estate market cannot be judged as experiencing overheating.

- However, possible vulnerabilities of the real estate market warrant close attention, because the financial institutions (FIs) that have been active in extending loans to rental housing businesses tend to have relatively low capital adequacy ratios.

Executive Summary (cont'd)

Stability of the financial system

- Japan's financial system has been maintaining stability on the whole. FIs generally have strong resilience in terms of both capital and liquidity during tail events such as the Global Financial Crisis (GFC).
- However, the profitability of domestic deposit-taking and lending activities has continued to decline. This seems to be mostly caused by structural factors such as the decrease in growth expectations and the secular decline in loan demand, as well as the prolonged low interest rate environment.
- In response, major FIs have aggressively expanded their global activities, resulting in an increase in their systemic importance and global financial connectedness.
- Regional FIs have become more active in domestic lending to middle-risk firms and the real estate industry, as well as in securities investment. However, as they have generally not been able to secure profits commensurate with the increase in risk-weighted assets, their capital adequacy ratios and stress resilience have declined moderately. Should this situation persist, downward pressure on the real economy from the financial system could intensify in the event of stress, as the capital of FIs would decrease substantially due to increased credit costs and securities-related losses.

Contents

Features and motivations

- Financial cycle: assessing risks in real estate loans, which have turned "red" in the heat map
- Decline in regional FIs' profitability: comparison with European counterparts and stock market views
- Medium- to long-term simulation, and stress testing that assumes stress in the future
- Systemic importance of major FIs: analyses on financial connectedness and resonance

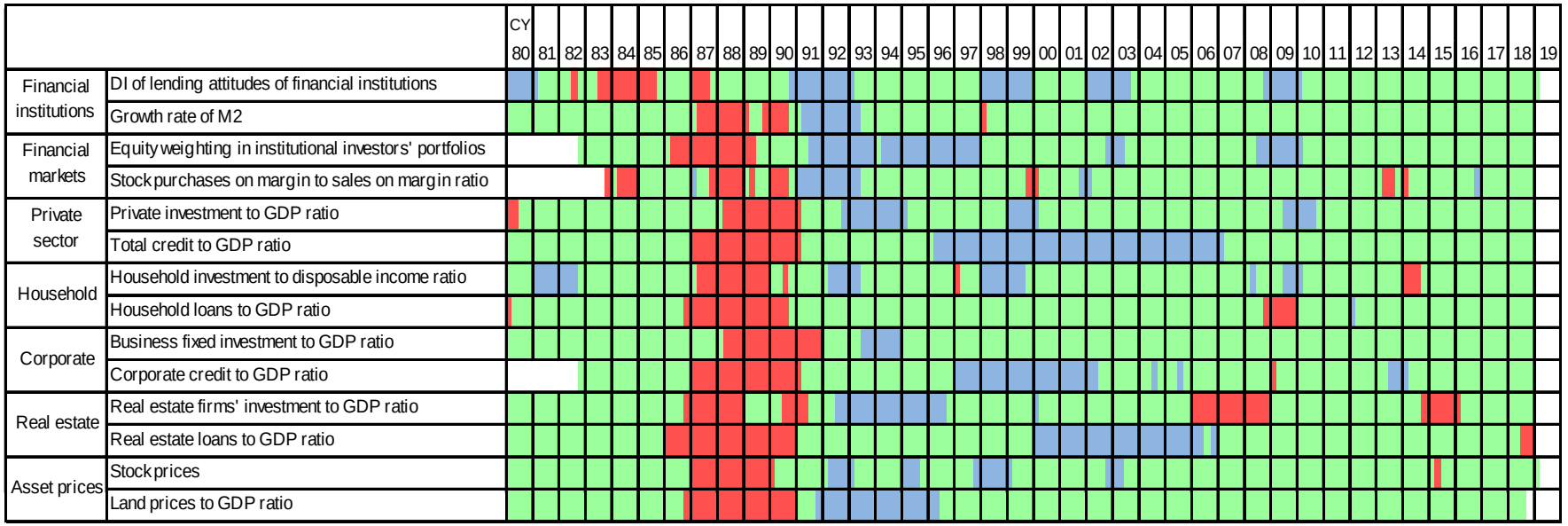
Part I. Financial cycle and financial vulnerabilities

- Heat map of Financial Activity Indexes
- Financial gap and risks to economic growth (GaR)
- Real estate market and its related risks for FIs

Financial cycle: heat map of Financial Activity Indexes (FAIXs)

- The heat map helps detect signs of overheating or contraction in the current phase of the financial cycle by showing the degree of the deviation of FAIXs from their trends.
- 13 out of the 14 FAIXs, all except the *real estate loans to GDP ratio,* appear as "green." It can therefore be judged that financial and economic activities as a whole have not shown excessive movements similar to those seen during the bubble period.
- The *real estate loans to GDP ratio* has now turned "red," which signals an overheating, for the first time since the end of 1990.

Chart III-4-1: Heat map



Financial cycle: some FAIXs close to "red"

➢ Some FAIXs are getting closer to "red" although still in the "green" zone.

Chart III-4-6: DI of lending attitudes of financial institutions

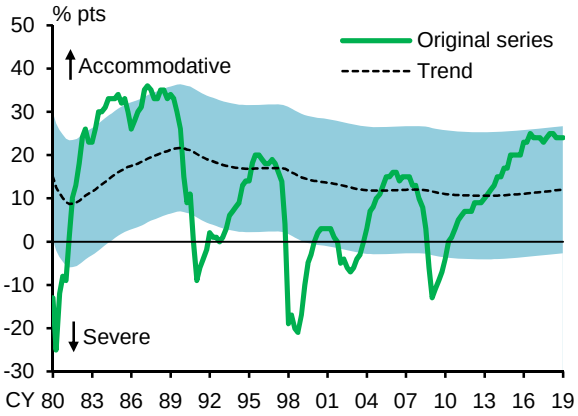


Chart III-4-7: Total credit to GDP ratio

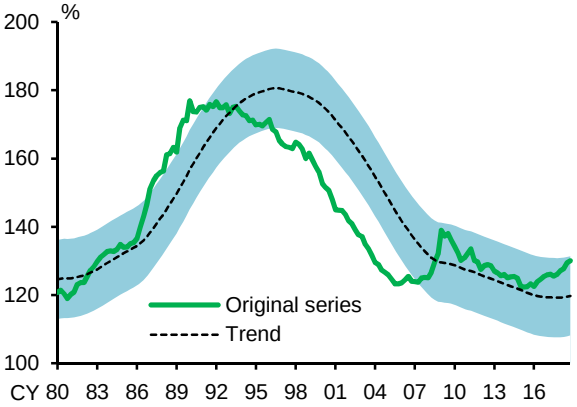


Chart III-4-8: Corporate credit to GDP ratio

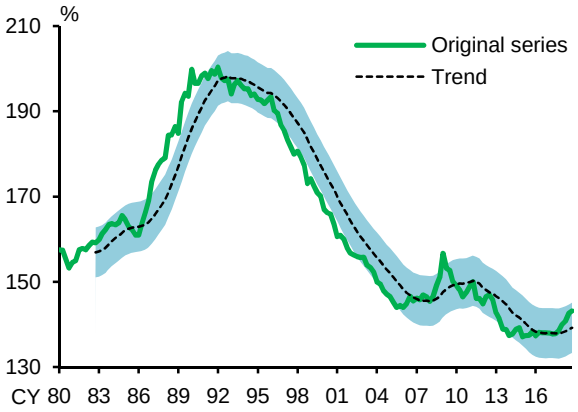
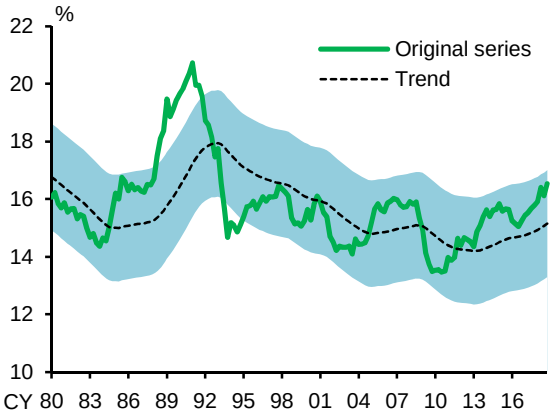


Chart III-4-9: Business fixed investment to GDP ratio



Financial cycle: the financial gap

- The financial gap, which is a composite indicator of the 14 FAIXs included in the heat map, allows us to quantitatively assess the phases of the financial cycle.
- The gap has continued to increase gradually but steadily in positive territory, albeit below the level seen during the bubble period.

Chart III-4-10: Financial gap and output gap

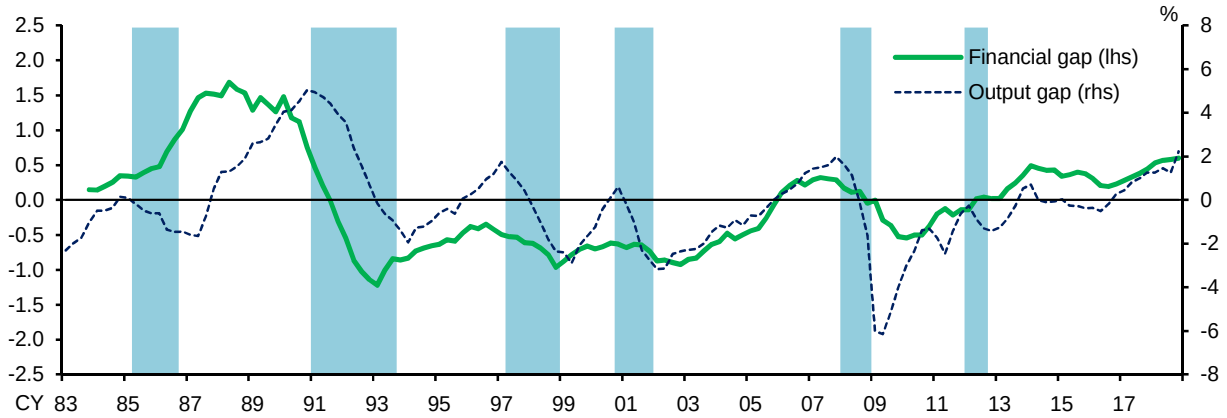
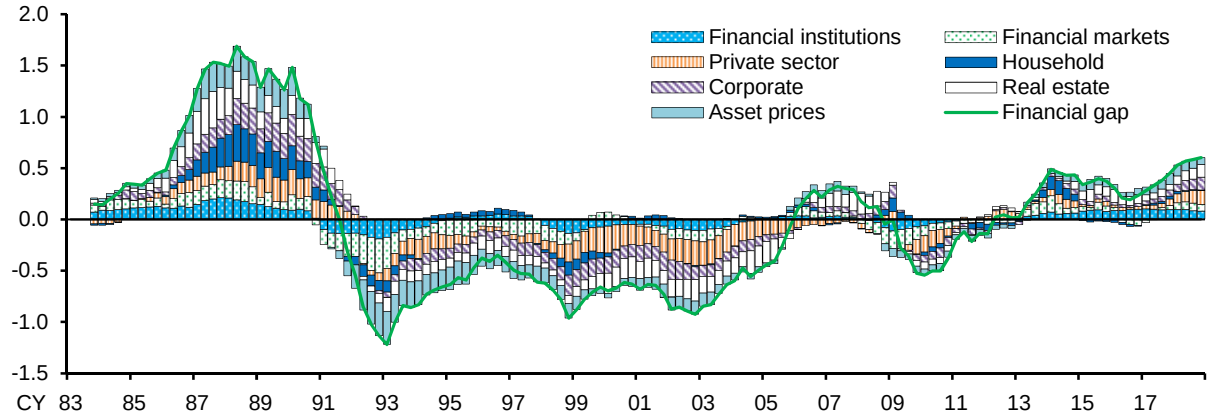


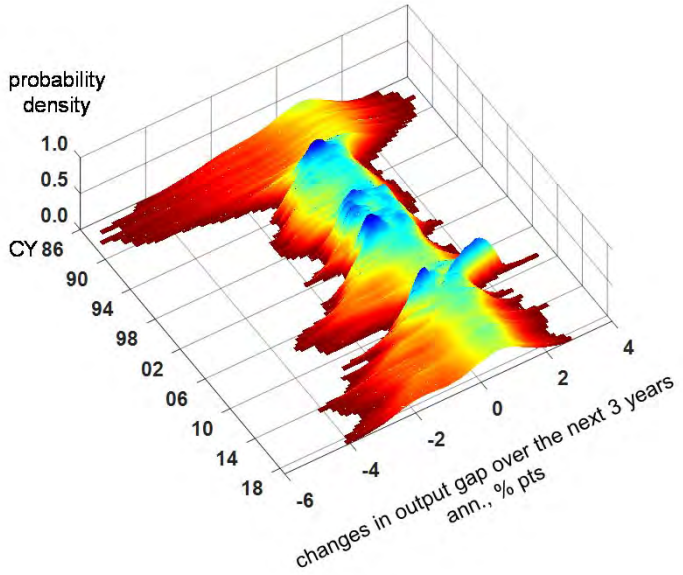
Chart III-4-11: Decomposition of financial gap



GDP-at-risk

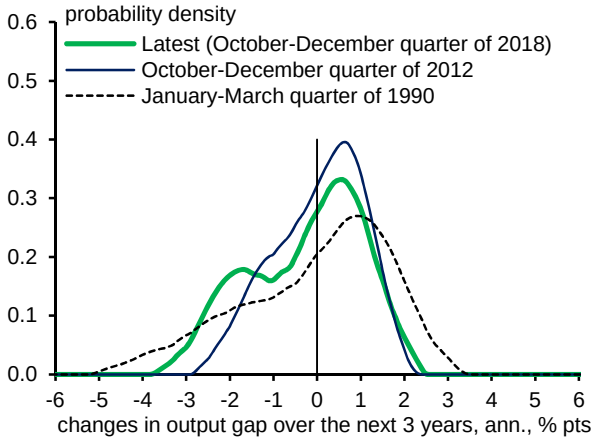
- A "GDP-at-risk" (GaR) approach is used to quantitatively examine the extent to which developments in the financial gap may pose a risk to the future real economy.
- The estimated probability distribution of GDP growth over the next 3 years has exhibited a fatter tail on the downside in recent years, albeit not as fat as during the bubble period.
- The recent expansion in the financial cycle has contributed to an increase in the downside tail risk from a somewhat longer-term perspective by building up pressure on balance sheet adjustments on the back of the cumulative effect of low interest rates.

Chart III-4-12: Financial vulnerabilities and risks to economic growth over the next 3 years (GaR)



Note: The chart presents the time series of probability distributions of annualized changes in output gap over the next 3 years at each point in time.

Chart III-4-13: Comparison of risks to economic growth by period



Real estate market (1)

- For real estate loans, the newly extended loans have decreased over the past few years, but the outstanding amount has continued to grow at a faster rate than total bank loans, reflecting long durations for loans to rental housing businesses.

Chart III-4-2: Real estate loans to GDP ratio

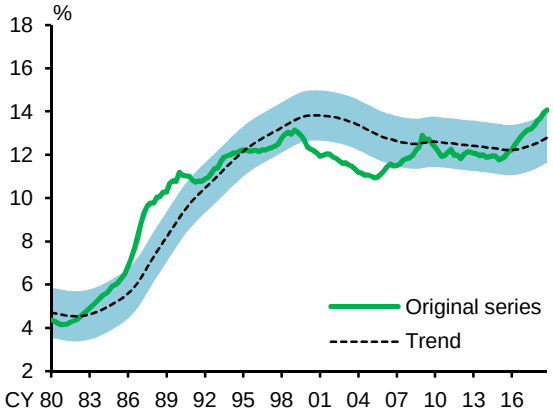


Chart III-1-13: Real estate loans among financial institutions

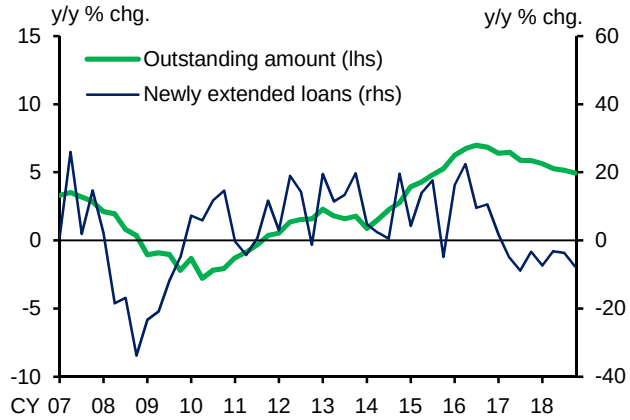
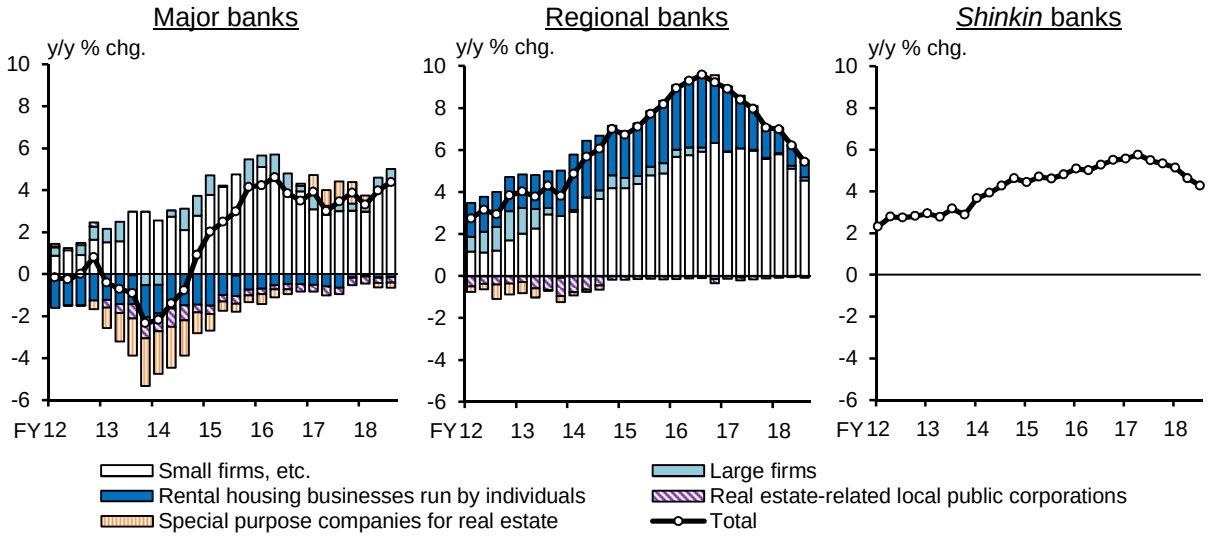


Chart III-1-14: Breakdown of real estate loans



Note: Loans to REITs are included in "Small firms, etc. "

Real estate market (2)

- Not so many FAIXs are signaling an overheating in the real estate market: the *real estate firms' investment to GDP ratio* and the *land prices to GDP ratio* are still in the "green" zone.
- Japan's real estate market cannot, as a whole, be judged as experiencing overheating driven by overly optimistic growth expectations as in the bubble period.

Chart III-4-4: Land prices to GDP ratio

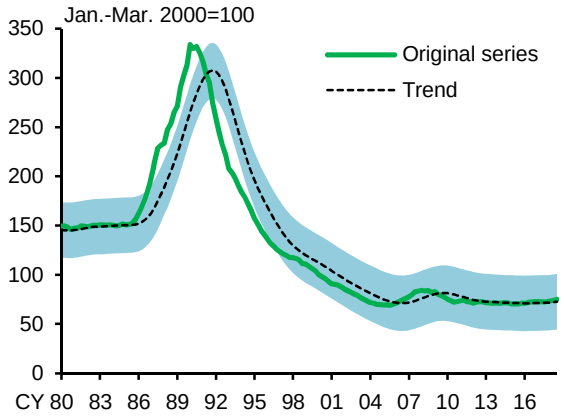


Chart B2-1: Distribution of year-on-year rates of changes in commercial land prices

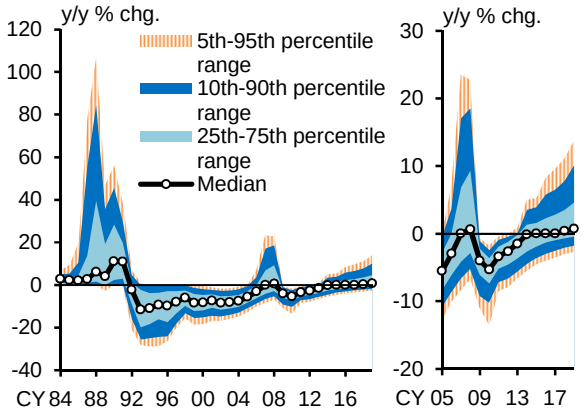


Chart III-4-3: Real estate firms' investment to GDP ratio

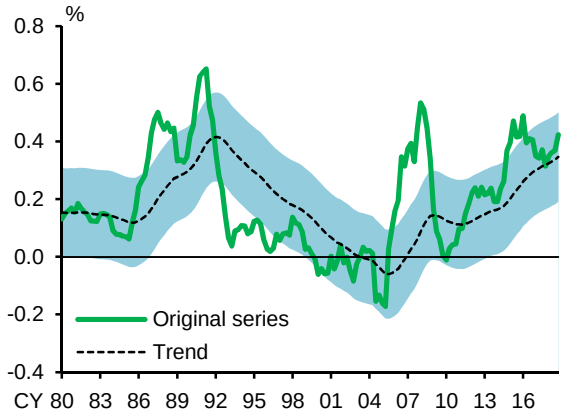
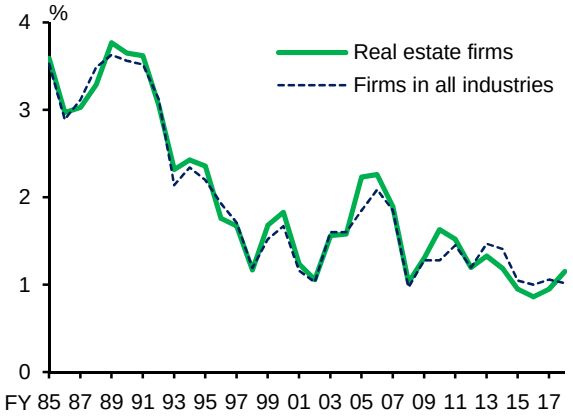


Chart III-4-5: Expected growth rate by real estate firms



Real estate related risk for FIs (1)

- For regional FIs, the share of real estate loans among the total amount of loans has continued to rise. Heterogeneity in this share has increased as it has exceeded 30 percent at some regional FIs.
- At the same time, a higher real estate loan share of a FI is associated with a lower capital adequacy ratio.

Chart IV-3-1: Ratio of real estate loans to total loans

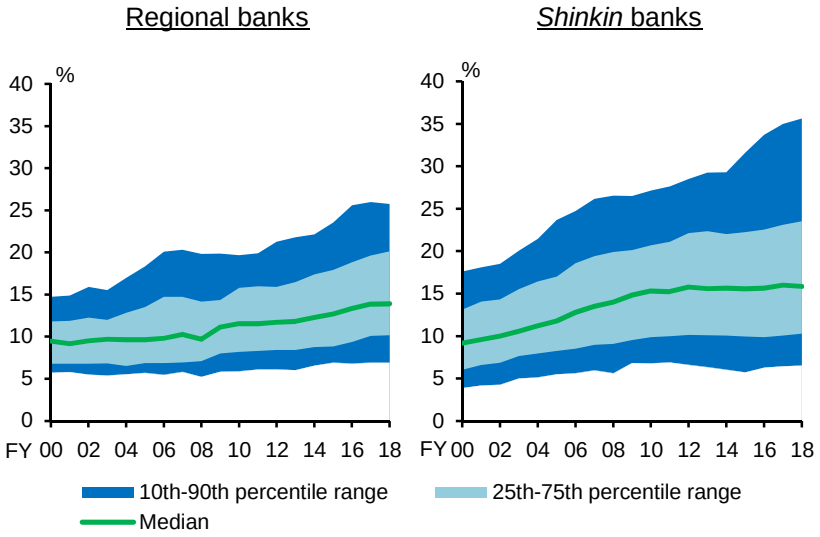
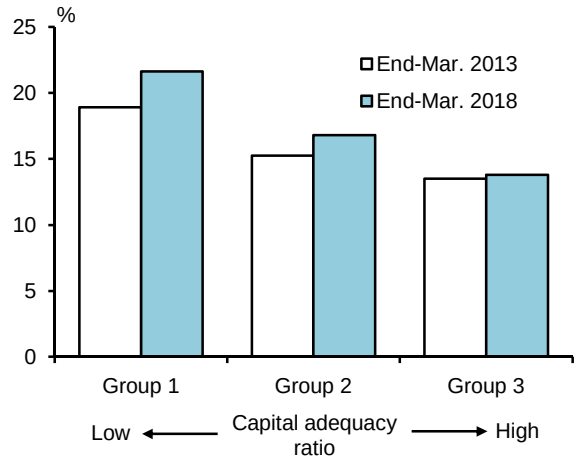


Chart IV-3-3: Capital adequacy ratios and ratios of real estate loans to total loans



Note: Financial institutions are divided into three groups based on their average capital adequacy ratios from fiscal 2012 to 2017, and the average ratio of real estate loans to total loans is shown by group.

Real estate related risk for FIs (2)

- The recent increase in the real estate loans has been driven by those to REITs, real estate investment funds, and individuals for obtaining rental houses; they are mainly long-term loans for which borrowers intend to earn rental income and use it to repay the principal and interest. In contrast, the bubble period featured real estate loans mainly for large-scale real estate transactions.
- Attention should be paid to the fact that borrowers whose loss-absorbing capacity is not necessarily high, such as small firms and individuals, account for the lion's share of loans to rental housing businesses.

Chart IV-3-4: Average duration of new loans to rental housing businesses

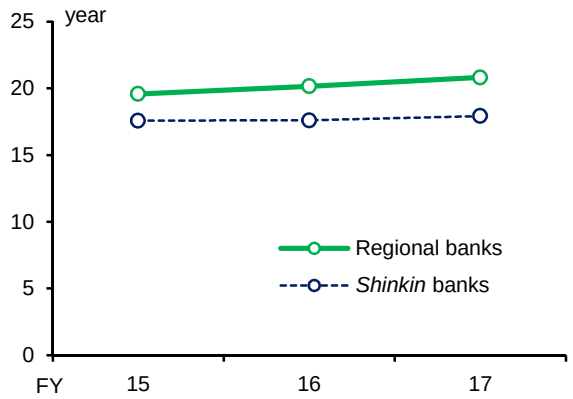
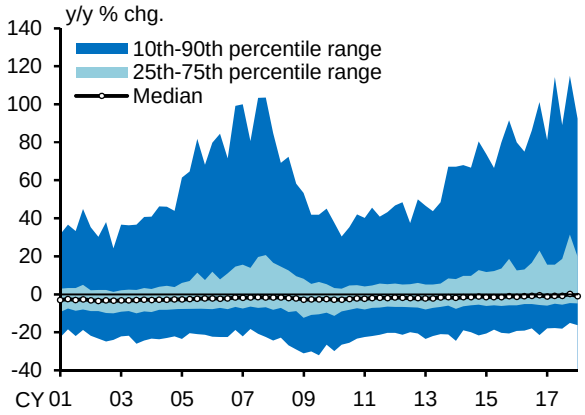


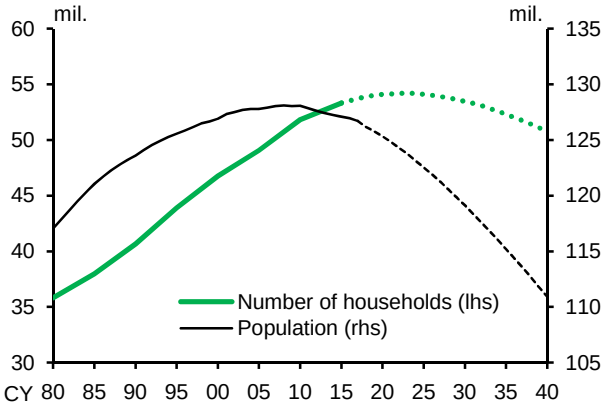
Chart B2-9: Debt financing by small and medium-sized real estate firms with low creditworthiness



Real estate related risk for FIs (3)

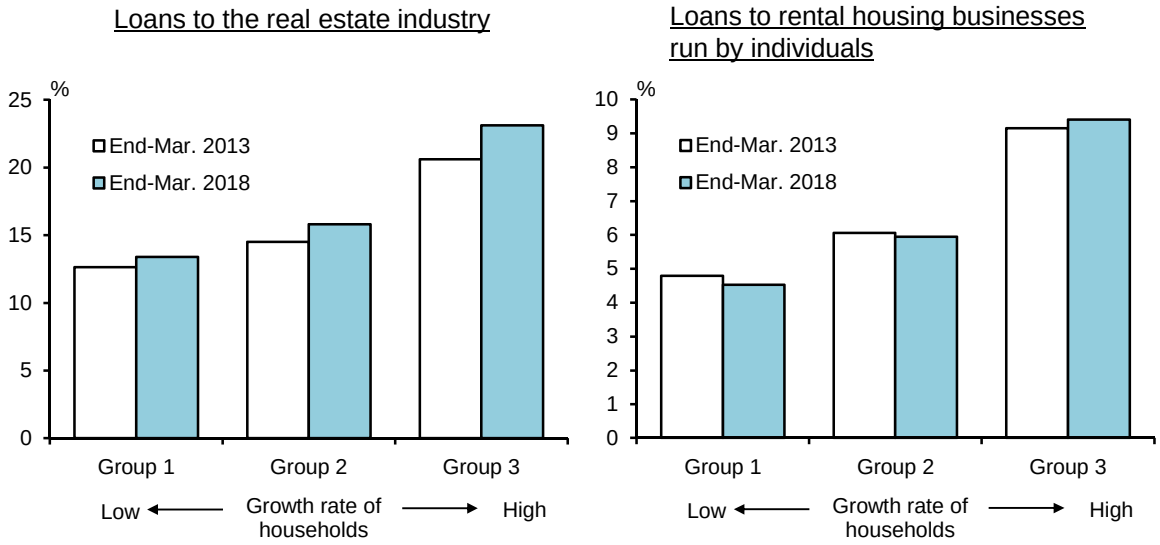
- FIs have diversified their borrowers of real estate loans, but these loans are generally exposed to the common risks of a rise in vacancy rates and a fall in rental income in the medium to long term.
- Attention should be paid to whether real estate investment has fallen into overinvestment relative to future rental demand, given the declines in the population, the number of firms, and growth expectations.

Chart IV-3-5: Population and number of households



Note: The dotted lines represent forecasts.

Chart IV-3-6: Growth rate of households and ratio of real estate loans to total loans

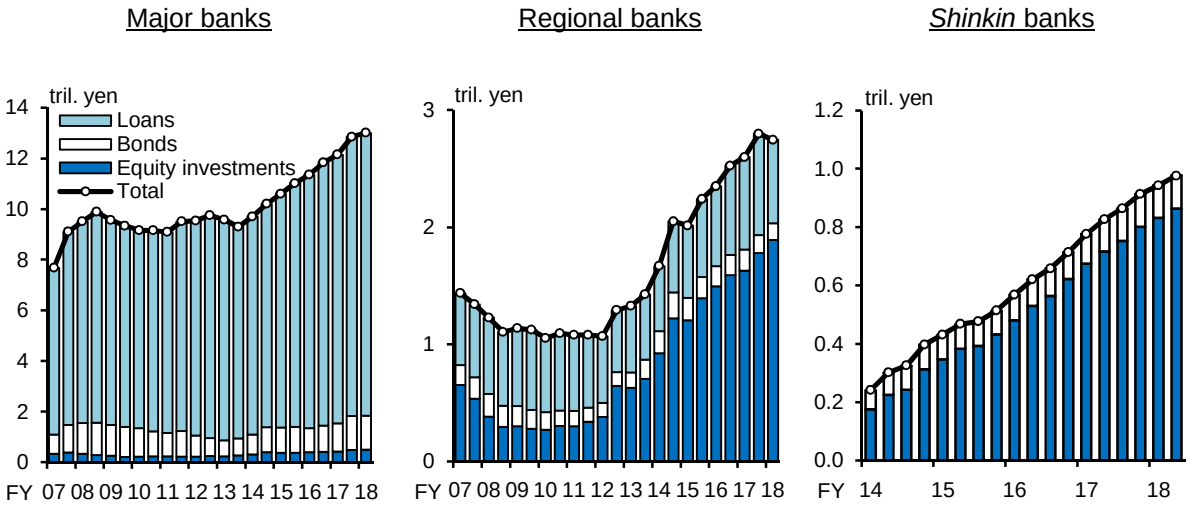


Note: Regional financial institutions are divided into three groups based on the average growth rate of households in the location of their head offices from fiscal 2012 to 2017. The left-hand chart indicates the average ratio of real estate loans to total loans for each group. The right-hand chart indicates the average ratio of loans to rental housing businesses run by individuals to total loans by group.

Real estate related risk for FIs (4)

- In addition to real estate loans, regional FIs have increased equity-type investment in real estate investment funds such as J-REITs and privately placed REITs.
- The value of investment in real estate investment funds could be more severely affected than loans by a deterioration of real estate market conditions.

Chart IV-3-2: Outstanding amount of lending and investment in real estate investment funds



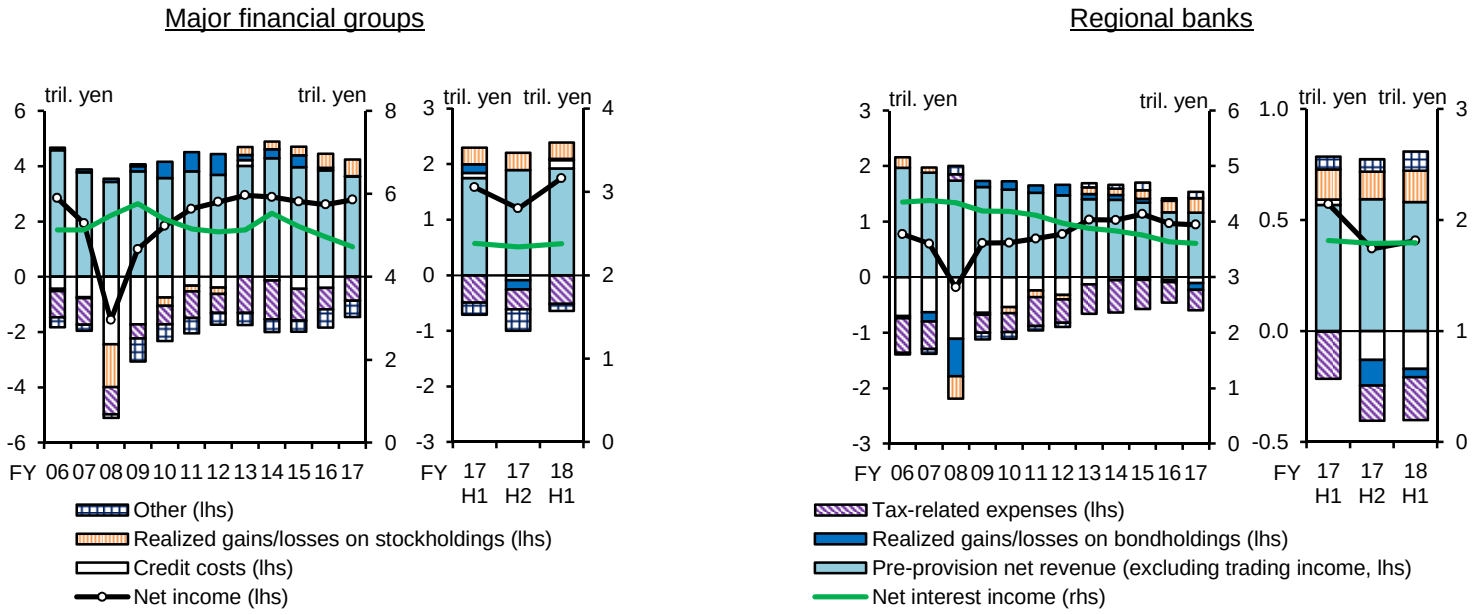
Part II. FIs' declining profitability and potential vulnerabilities

- Japan's FIs' profitability
- Banks' profit structure under low interest rate policies: International comparison
- Stock market participants' view on FIs' profitability

Japan's FIs' profitability

- FIs' net income has remained high from a long-term perspective.
- Pre-provision net revenue (PPNR) excluding trading income, has continued to follow a decreasing trend, especially for regional FIs. FIs' net income has been underpinned by (i) the decrease in credit costs on the back of firms' strong performance and (ii) realized gains from the sale of securities.
- However, some signs of changes are observed: credit costs appear to have begun increasing, albeit they are still at low levels, and investment in securities has also seen losses in foreign bonds and a decrease in room for realizing gains on securities.

Chart V-1-1: Developments in and decomposition of net income



Lending to middle-risk firms and credit risk

- FIs have actively extended loans at low interest rates to firms with relatively high credit risk -- middle-risk firms. The share of loans to these "low-return borrowers" among all loans to small firms has been still on the upward trend.
- For firms with high reliance on borrowing, there has been no notable improvement in their interest payment capacity as a whole, despite the favorable macroeconomic environment.

Chart IV-1-9: Loan share of low-return borrowers among financial institutions

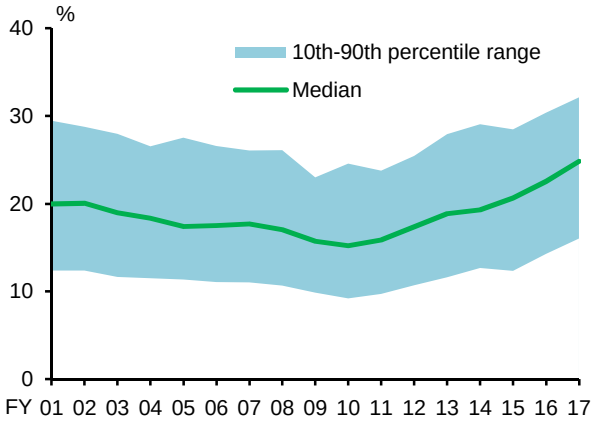
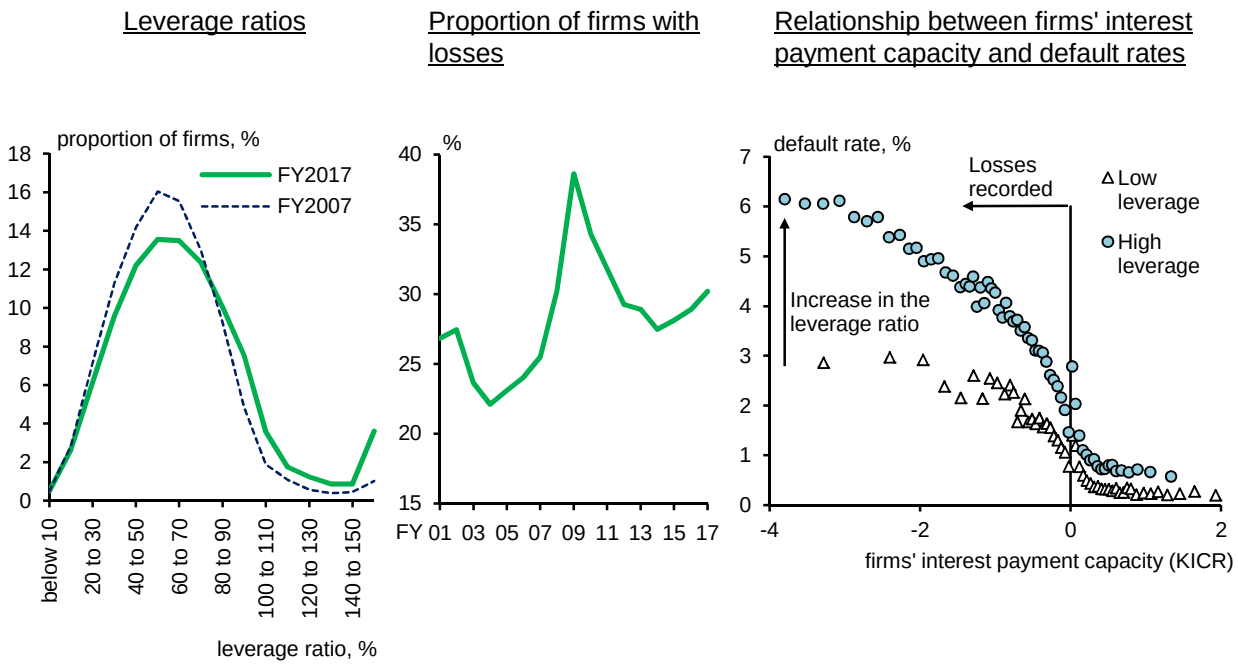


Chart IV-1-10: Financial condition of firms with a high reliance on borrowing

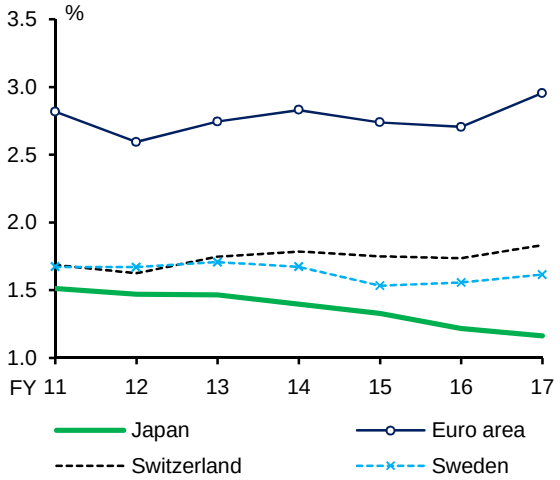


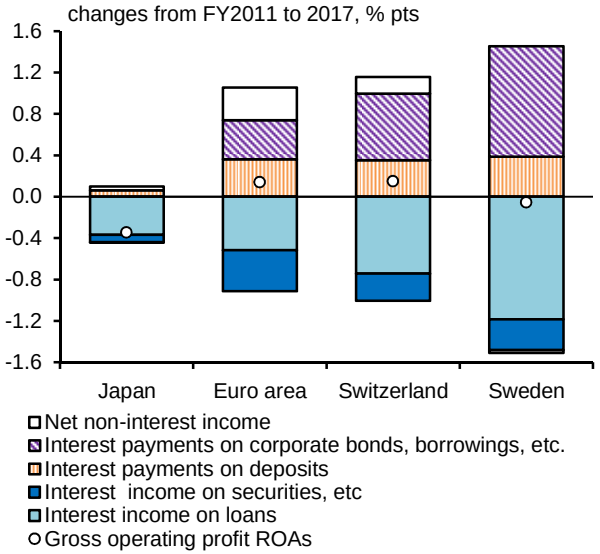
Note: Covers small and medium-sized firms whose total amount of borrowings exceeds cash and deposits (defined as a high reliance on borrowing). For details, see "A Forecast Model for the Probability of Default Based on Granular Firm-Level Data and Its Application to Stress Testing," *Financial System Report Annex Series* (forthcoming; the Japanese version was released in March 2019).

Banks' profit structure under low interest rate policies: International comparison (1)

- We analyze and assess the impact of the prolonged low interest rate environment on the profit and financial structure of Japanese FIs by comparing them with European FIs.
- The first feature of Japanese FIs is a marked decline in their profitability. The profitability of European FIs has generally been flat in recent years, whereas that of Japanese FIs has exhibited a clear decreasing trend.
- The main reason for this difference in profitability is developments in funding costs.

Chart V-2-1: Gross operating profit ROAs of banks in countries with negative policy rates and factors in their changes





Banks' profit structure under low interest rate policies: International comparison (2)

- European FIs' investment yields have declined by approximately the same degree as their funding rates. In contrast, the funding rates in Japan have been stuck around zero, whereas the investment yields have declined further, partly reflecting the effect of monetary easing.
- In Japan, relative to European countries:
  - ✓ There has been little room for a further decline in deposit interest rates, reflecting the historically long duration of the low and zero interest rate environment.
  - ✓ The share of deposits among liabilities has been extremely high, so that Japanese FIs have benefited little from a decline in the costs of market financing.

Chart V-2-3: Yields on financial assets

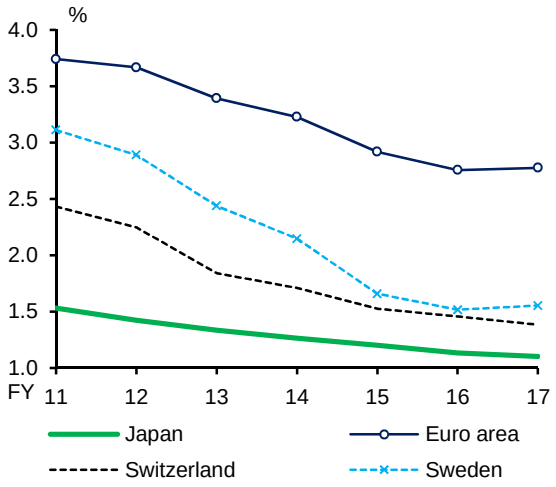


Chart V-2-4: Yields on financial liabilities

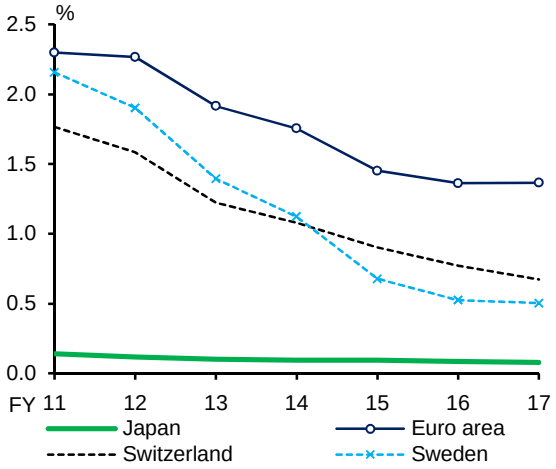
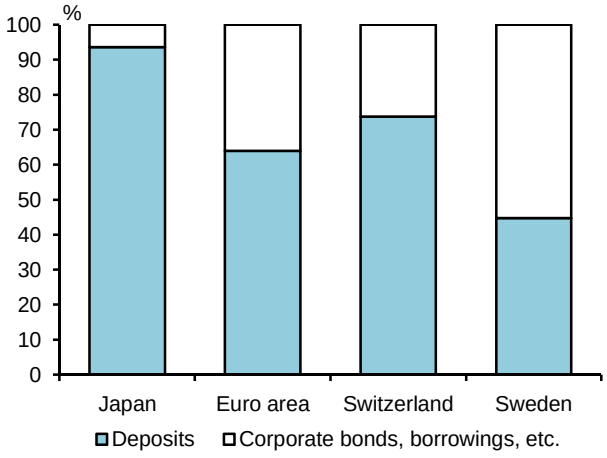


Chart V-2-5: Breakdown of financial liabilities



Banks' profit structure under low interest rate policies: International comparison (3)

- The second feature of Japanese FIs is their active risk taking in securities investment. Loan rates have been falling in both Europe and Japan. In contrast, whereas securities yields have been falling in Europe, they have remained essentially unchanged in Japan.
- This is because (i) Japanese FIs have a relatively large amount of strategic shareholdings and have enjoyed growing dividend income; and (ii) they have actively invested in risky assets, including foreign bonds and investment trusts, which entail various risk factors.

Chart V-2-7: Interest rates on loans

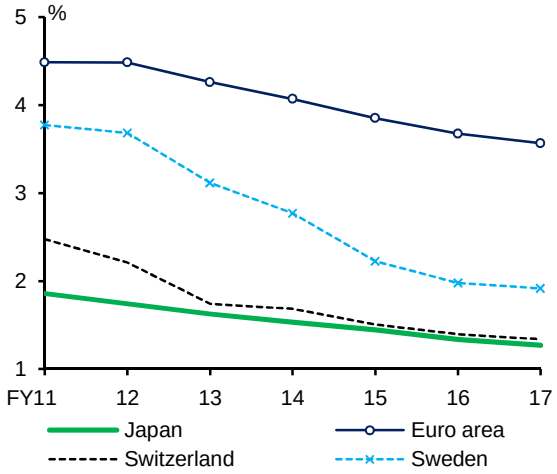


Chart V-2-8: Interest rates on securities, etc.

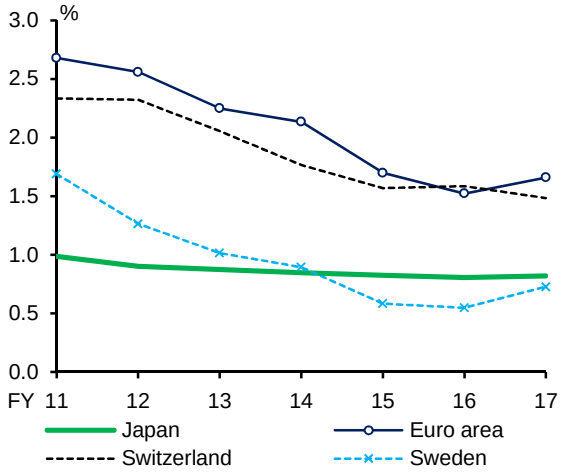
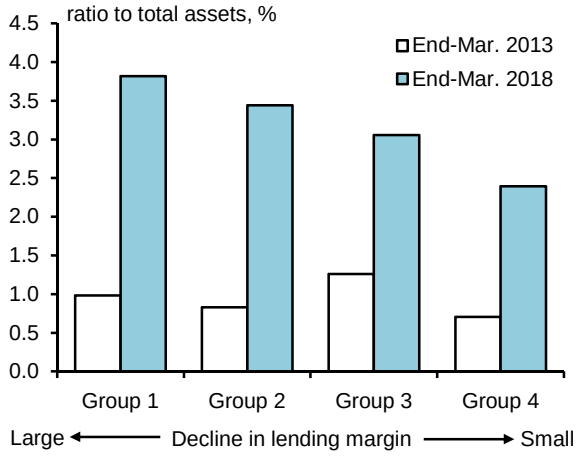


Chart V-2-9: Lending margins and investment trust holdings

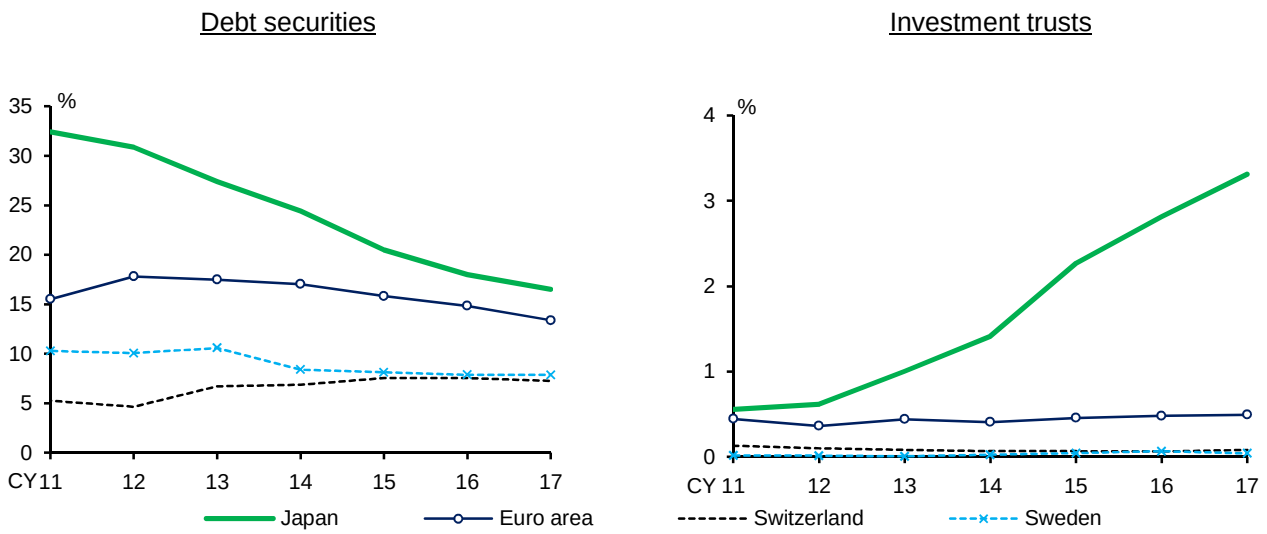


Note: Regional banks are divided into four groups based on their sizes of decline in lending margins from fiscal 2012 to 2017, and the average ratio of investment trust holdings to total assets is calculated for each group.

Banks' profit structure under low interest rate policies: International comparison (4)

- The active risk taking in foreign bonds and investment trusts means that the profits and financial soundness of Japanese FIs are more affected by financial markets.
- In the U.S. and Europe, non-banks play a major role in the financial intermediation activities in securities markets.
- It is a distinctive feature of Japan's financial system that FIs have been increasing their exposure to investment trusts and foreign bonds that entail various market risks.

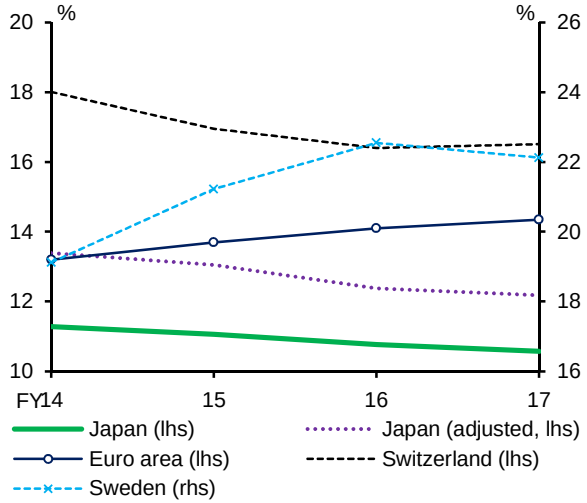
Chart V-2-10: Share of securities in financial institutions' financial assets



Banks' profit structure under low interest rate policies: International comparison (5)

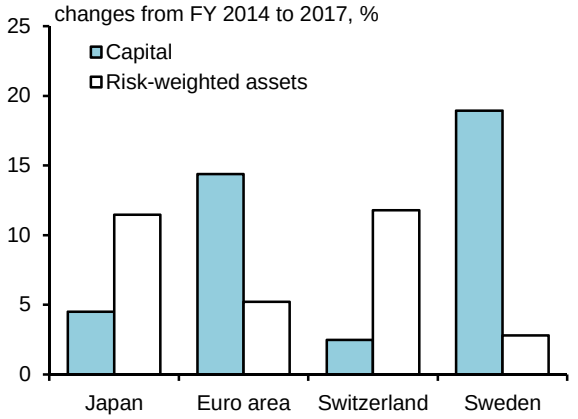
- The third feature of Japanese FIs is a decline in their capital adequacy ratios.
- Their capital adequacy ratios have been following a moderate declining trend, reflecting the cumulative effect of the increase in their capital through the accumulation of profits having been smaller than the expansion of their risk-weighted assets.
- This contrasts with FIs in the euro area and Sweden: the increases in their capital have clearly exceeded the increases in their risk-weighted assets.

Chart V-2-11: Capital adequacy ratios



Note: "Japan" indicates core capital ratios for domestic banks. "Japan (adjusted)" is estimated by adding valuation difference on available-for-sale securities to capital. The data for European countries indicate CET1 capital ratios.

Chart V-2-12: Changes in capital and risk-weighted assets



Stock market participants' view on FIs' profitability (1)

- The price-to-book ratios (P/B ratios) of Japanese regional banks decreased sharply in the 1990s and then declined again gradually from the latter half of the 2000s. In recent years, they have remained at a low level of around 0.5, which is well below 1.
- The P/B ratios of Japanese regional banks have continued to decline in spite of their relatively high ROE. Most of this decline can be accounted for by the prolonged downward trend in net interest income, the steady decline in the number of borrowing firms, and the prolonged low interest rates.

Chart V-3-1: P/B ratios of regional banks

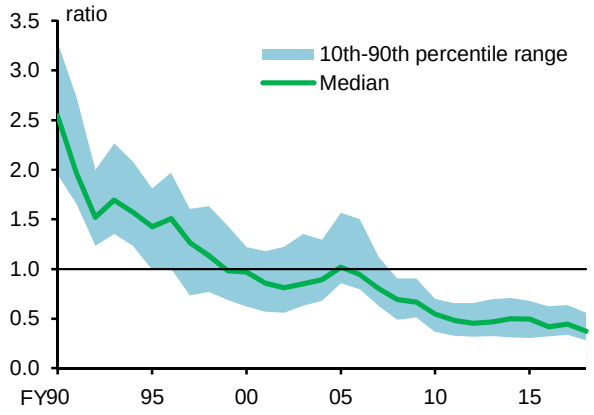
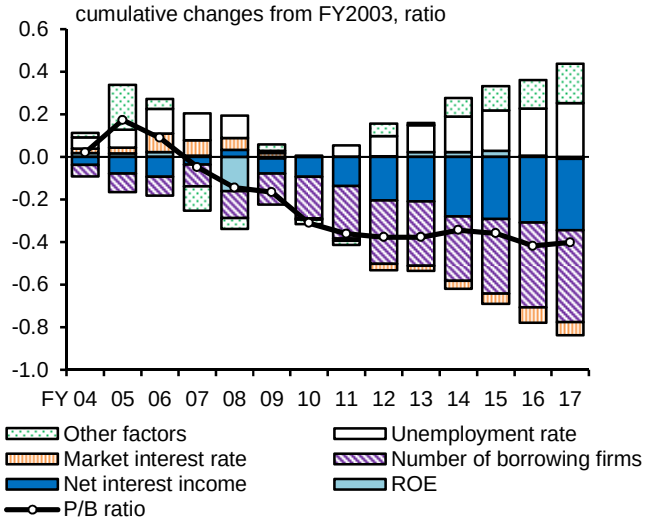


Chart V-3-2: Decomposition of P/B ratios of regional banks



Stock market participants' view on FIs' profitability (2)

- SRISK is an indicator that measures FIs' future stress resilience using stock price information. SRISK estimates the FI's capital shortfall by measuring a decrease in the FI's stock market value that could occur in the event of an overall stock market collapse.
- Estimated SRISK for Japanese regional banks gradually rose from the mid-2000s and has remained at a high level. This is in sharp contrast to the SRISK of European banks, which has declined from the high levels during the GFC and the European sovereign debt crisis.
- The continued high level of the estimated SRISK for Japanese regional banks is mainly attributable to the high level of their financial leverage on a total market value basis.

Chart V-3-3: SRISK of Japanese regional banks and European banks

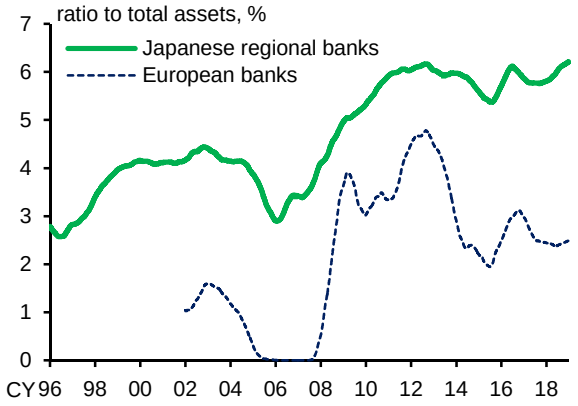
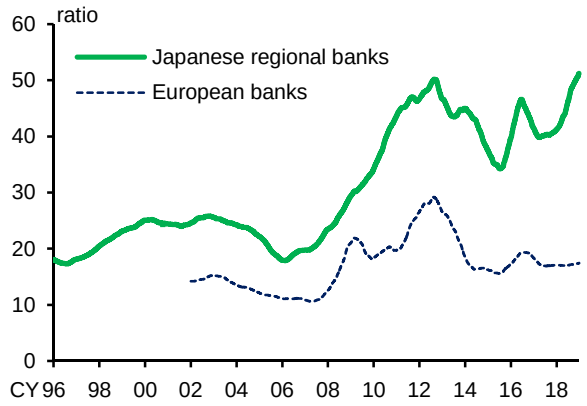


Chart V-3-4: Leverage of Japanese regional banks and European banks



Note: Leverage = (total stock market value + total debt) / total stock market value.

Part III. FIs' resilience to tail risk

- Regular macro stress testing
- Medium- to long-term profit simulation (baseline scenario)
- Stress testing based on medium- to long-term profit simulation (tail event scenario in 5 years' time)

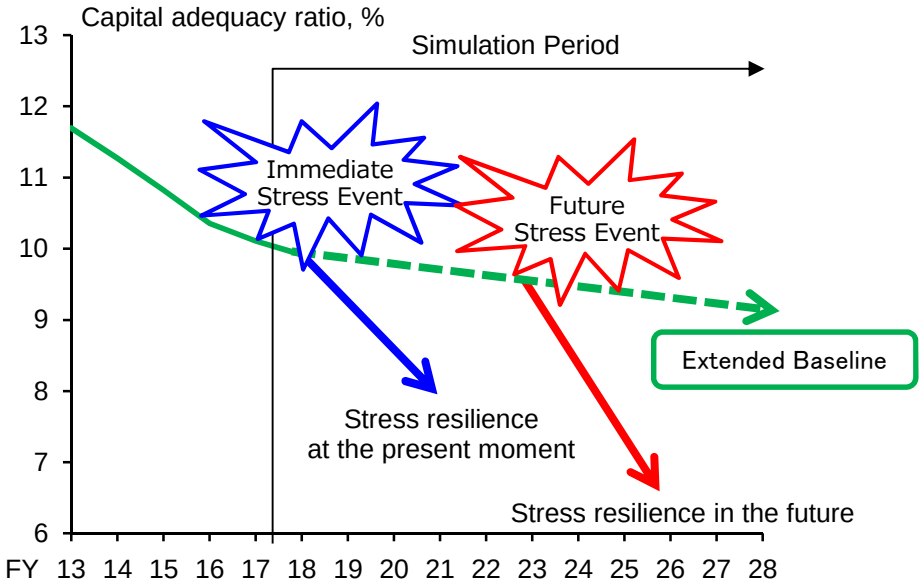
Overview of the macro stress testing

- It is highly likely that Japanese FIs' core profitability will continue to be under downward pressure, and as a result, their capital adequacy ratios may continue to decline.
- Bearing this outlook in mind, the macro stress testing is conducted for two tail event scenarios that differ in the timing of the event:

  (a) The tail event occurs immediately (regular macro stress testing);

  (b) The tail event occurs in 5 years' time (medium- to long-term stress testing).
- Caveat: the medium- to long-term stress testing results substantially depend on assumptions on economic and financial conditions, as well as FIs' behavior, and thereby they are subject to a larger margin of error than those of regular stress testing.

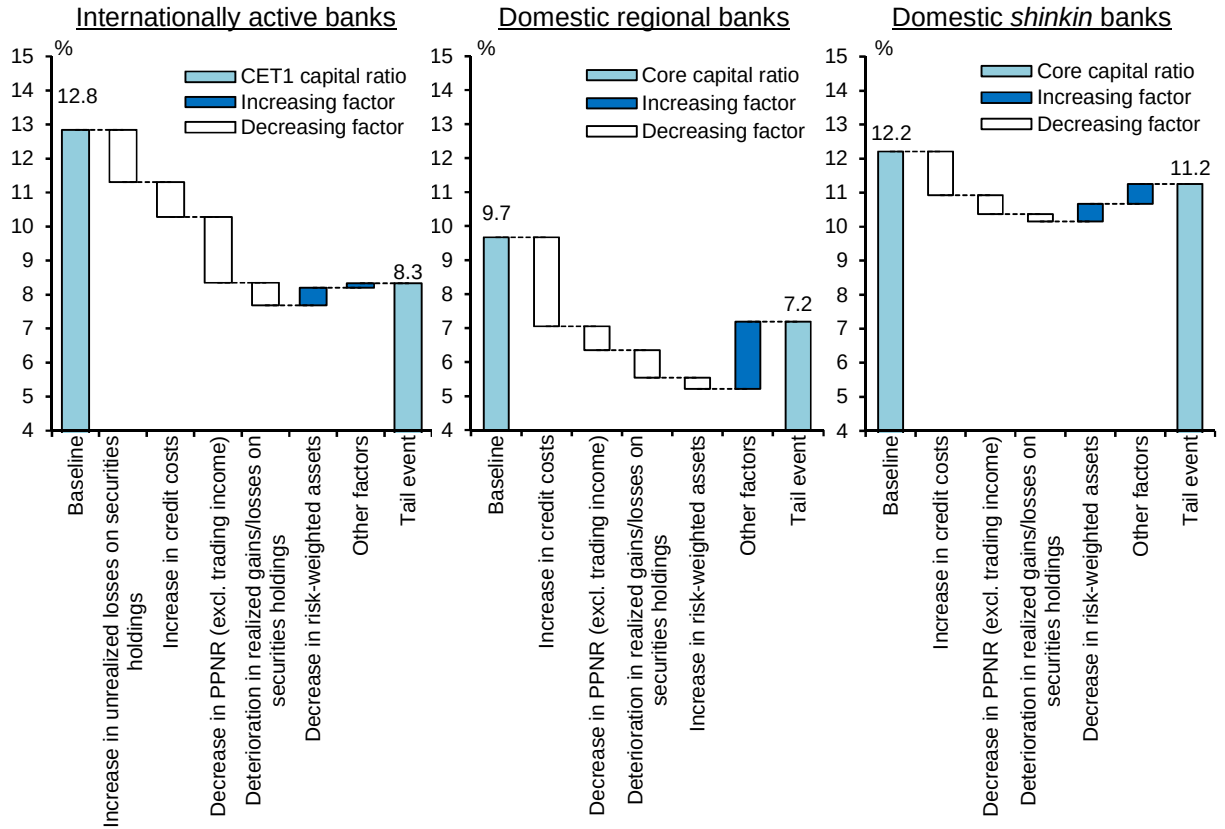
Macro stress testing in this issue of the *Report*



Regular macro stress testing

- This test assumes an immediate deterioration in financial and economic conditions at home and abroad to levels comparable to those during the GFC.
- The test results show that capital adequacy ratios decrease sharply but exceed regulatory requirements on average for all types of banks.
- The decline in capital adequacy ratios is projected to be (i) largest for internationally active banks, reflecting their unrealized losses on securities, and (ii) larger for regional banks than for *shinkin* banks, reflecting a difference in credit costs.

Chart VI-1-8: Decomposition of the CET1 capital ratio and the core capital ratio (fiscal 2021)



Note: "Other factors" includes taxes, dividends, and CET1 regulatory adjustments.

Medium- to long-term simulation: baseline scenario (1)

- The simulation period is extended from 3 years to 10 years. The main assumptions are:
  - ✓ The output gap follows the same path in the first 3 years as in the baseline scenario of the regular stress testing, and gradually converges to zero in the following 7 years;
  - ✓ Population declines moderately; potential growth rate at the current level;
  - ✓ Government bond yields in line with the forward rates implied by the current yield curve; stock prices and foreign exchange rates remain unchanged;
  - ✓ FIs continue to realize gains on securities holdings at the same pace as seen in the past 3 years up until they have exhausted all unrealized gains;
  - ✓ FIs' general and administrative expenses remain constant.

Chart VI-2-1: Output gap (medium- to long-term baseline scenario)

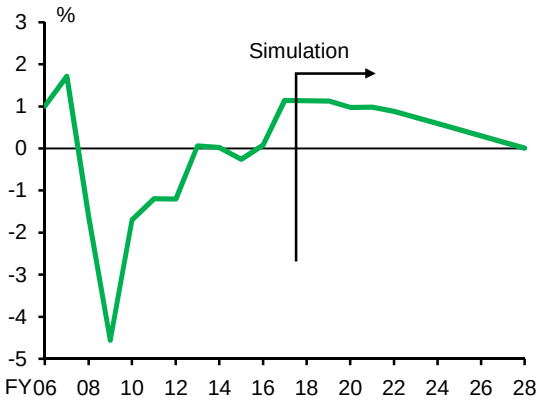


Chart VI-2-2: Nominal interest rates (medium- to long-term baseline scenario)

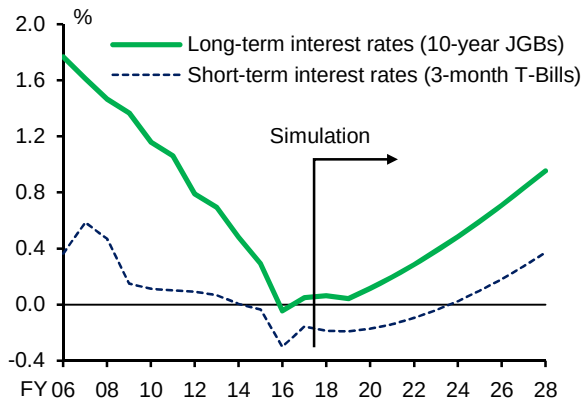
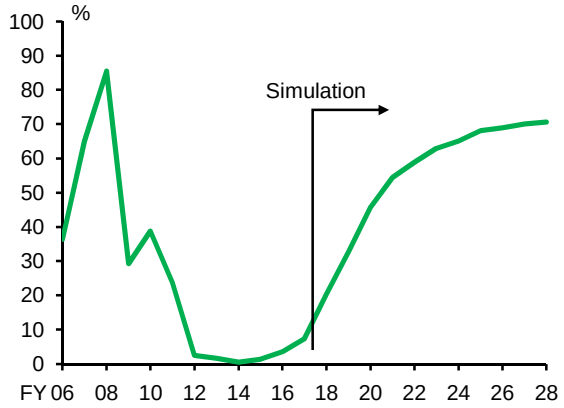


Chart VI-2-5: Share of banks that have exhausted unrealized gains (medium- to long-term baseline scenario)



Note: Share of banks whose "valuation difference on available-for-sale securities" is equal to or below zero in a given year.

Medium- to long-term simulation: baseline scenario (2)

- Two cases are considered for the supply-demand conditions of the loan market:

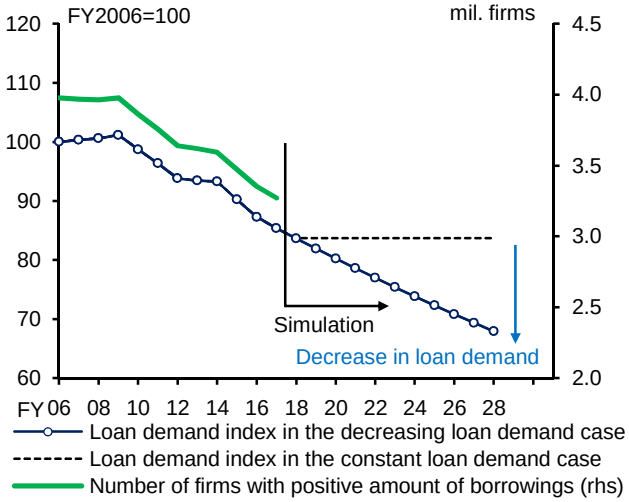
  (a) Decreasing loan demand case:

  - ✓ Firms' loan demand continues to decrease at the same pace as seen so far;
  - ✓ The share of loans to low-return borrowers continues to rise.

  (b) Constant loan demand case:

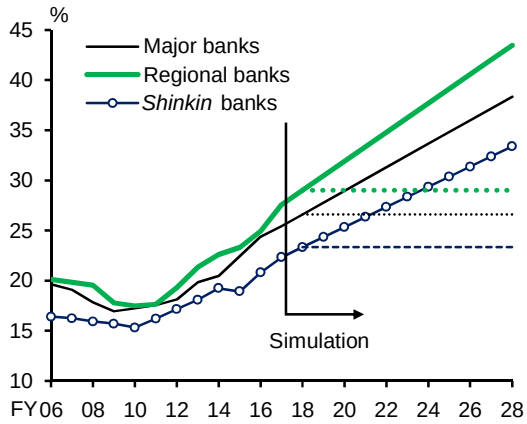
  - ✓ Firms' loan demand immediately stops declining and thereafter remains unchanged;
  - ✓ The share of loans to low-return borrowers also remains unchanged.

Chart VI-2-3: Loan demand index (medium- to long-term baseline scenario)



Note: "Loan demand index" is calculated by dividing the number of borrowing firms by the number of banks' branches as a proxy variable for the supply-demand conditions of the loan market to ensure the tractability of the simulation model.

Chart VI-2-4: Share of loans to low-return borrowers (medium- to long-term baseline scenario)



Note: The chart indicates the share of loans to low-return borrowers among the total amount of loans to small firms. The solid lines indicate the decreasing loan demand case and the dotted lines indicate the constant loan demand case.

Medium- to long-term simulation: results of baseline (1)

- For internationally active banks, loans outstanding continue to grow, driven by their international business; for domestic banks, the growth in loans outstanding slows down, reflecting the decline in Japan's population and the shrinking of the positive output gap.
- Loan interest rates start to rise, albeit only slightly, because of the rise in market interest rates; however, in the decreasing loan demand case, lending margins in banks' domestic business continue to be under structural downward pressure.

Chart VI-2-6: Loans outstanding in the decreasing loan demand case (baseline scenario)

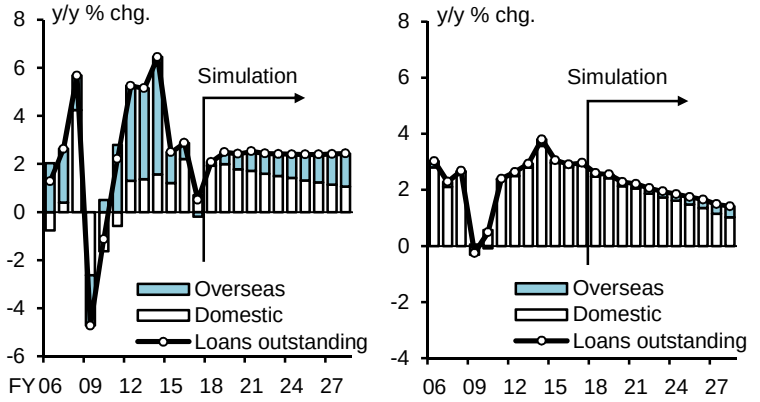
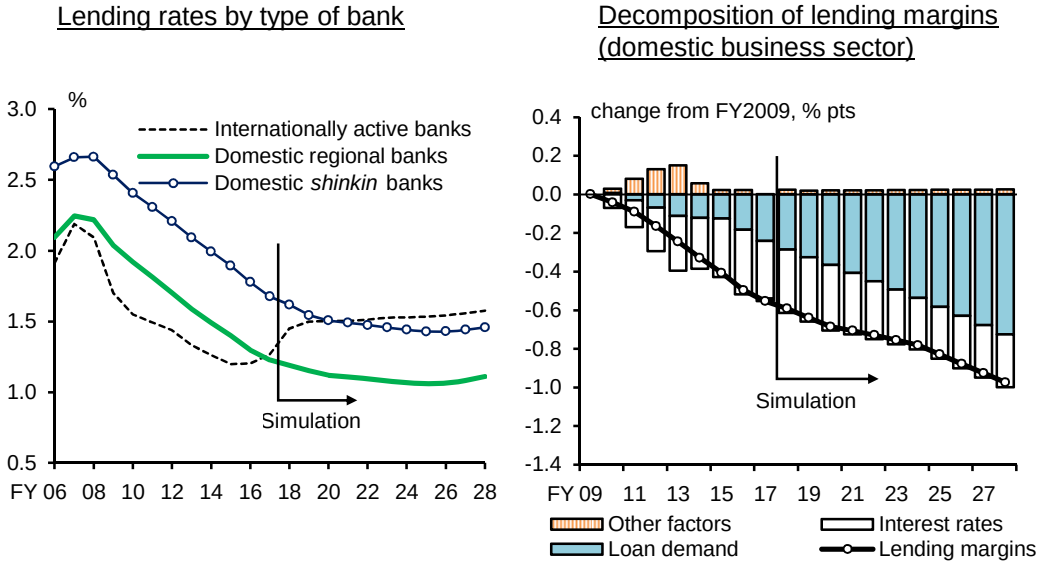


Chart VI-2-7: Lending rates and margins in the decreasing loan demand case (baseline scenario)



Note: "Other factors" includes a nonperforming loan factor and estimation errors.

Medium- to long-term simulation: results of baseline (2)

- In the decreasing loan demand case, net income follows a downward trend. In particular, domestic banks' profits are projected to fall to a greater extent than those of internationally active banks, whose profits are underpinned by their international business. The number of domestic banks with net losses increases.
- In the constant loan demand case, net profits remain at an adequate level for all types of banks mainly because of a halt of the shrinking of lending margins. The share of banks with net losses does not rise substantially.

Chart VI-2-10: Decomposition of net income ROA in the decreasing loan demand case (baseline scenario)

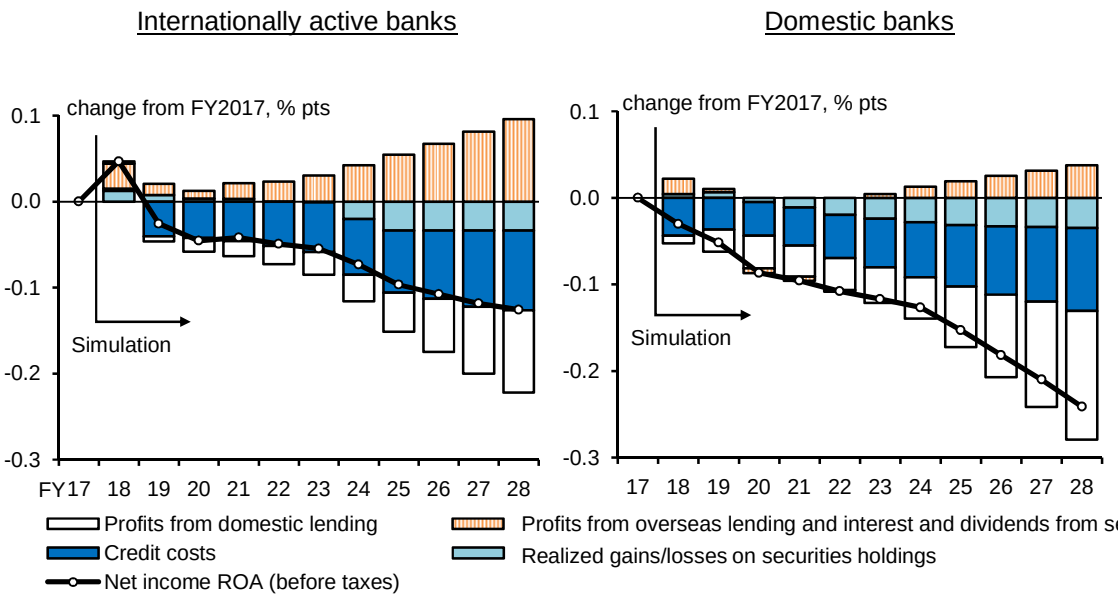
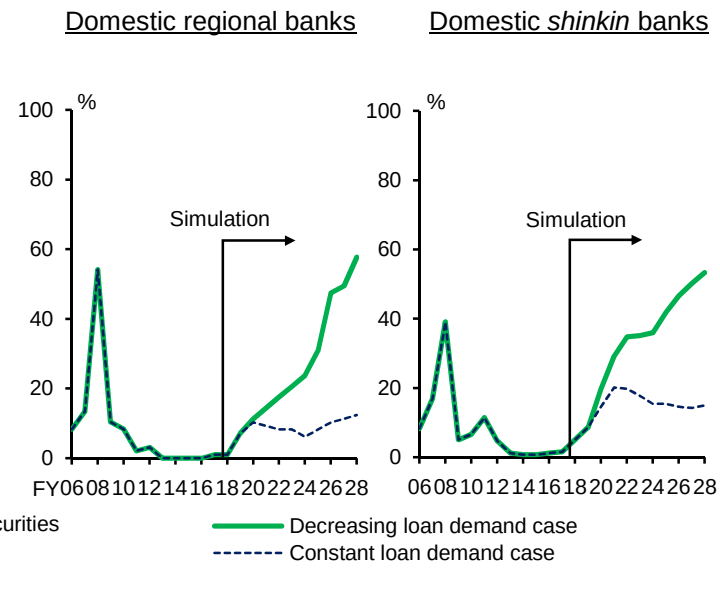


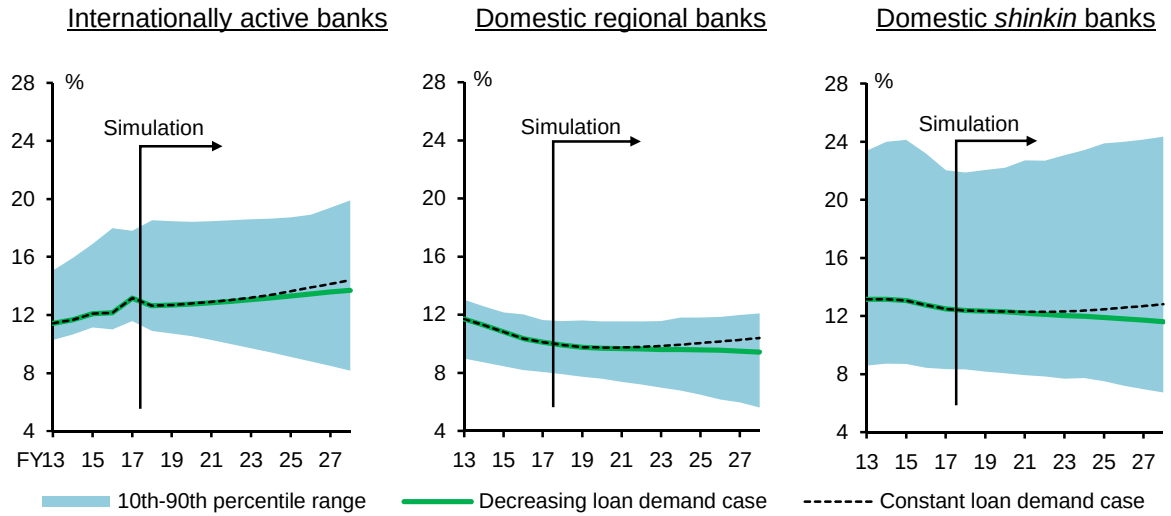
Chart VI-2-9: Share of banks with net losses (baseline scenario)



Medium- to long-term simulation: results of baseline (3)

- Capital adequacy ratios remain above regulatory requirements even in the decreasing loan demand case.
- For domestic banks, however, core capital ratios continue to follow a moderate downward trend, as they cannot secure profits commensurate with the increase in risk-weighted assets and are distributing some of these profits through dividend payments.

Chart VI-2-11: CET1 capital ratios and core capital ratios (baseline scenario)

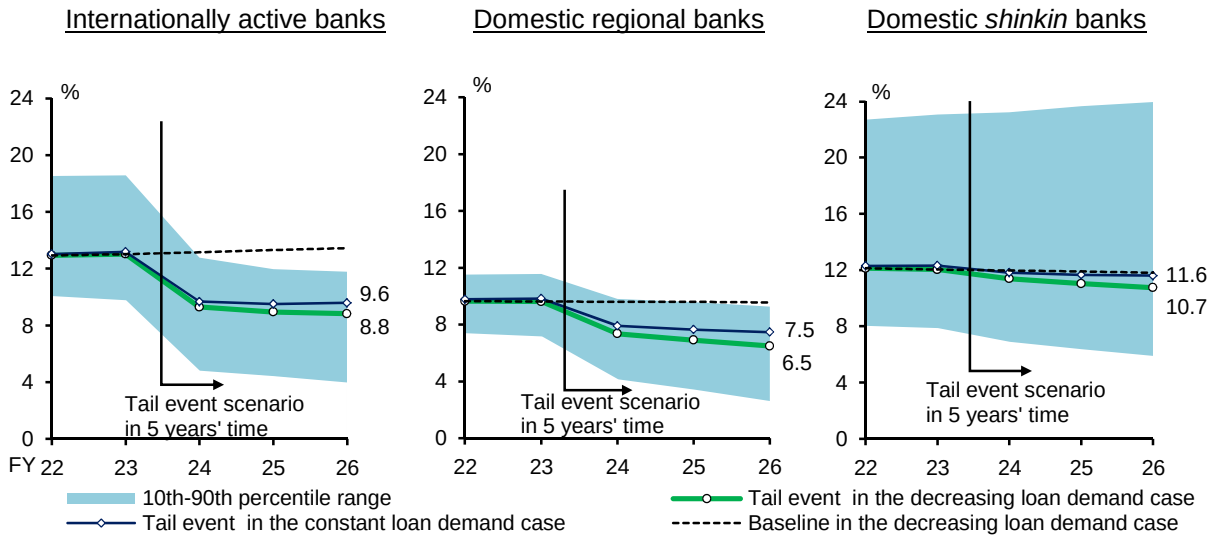


Note: "10th-90th percentile range" is in the decreasing loan demand case.

Tail event scenario in 5 years' time: results (1)

- Setting the above medium- to long-term simulation results as a baseline scenario, we conduct the stress testing, assuming that a major stress event similar to the GFC will occur in 5 years' time ("tail event scenario in 5 years' time").
- FIs incur substantial net losses due to the deterioration in credit costs and losses on stock holdings, as well as the decline in PPNR (excluding trading income).
- Capital adequacy ratios decline, but they remain above regulatory requirements even in the decreasing loan demand case for all types of banks, including regional FIs.

Chart VI-2-13: CET1 capital ratios and core capital ratios (tail event scenario in 5 years' time)

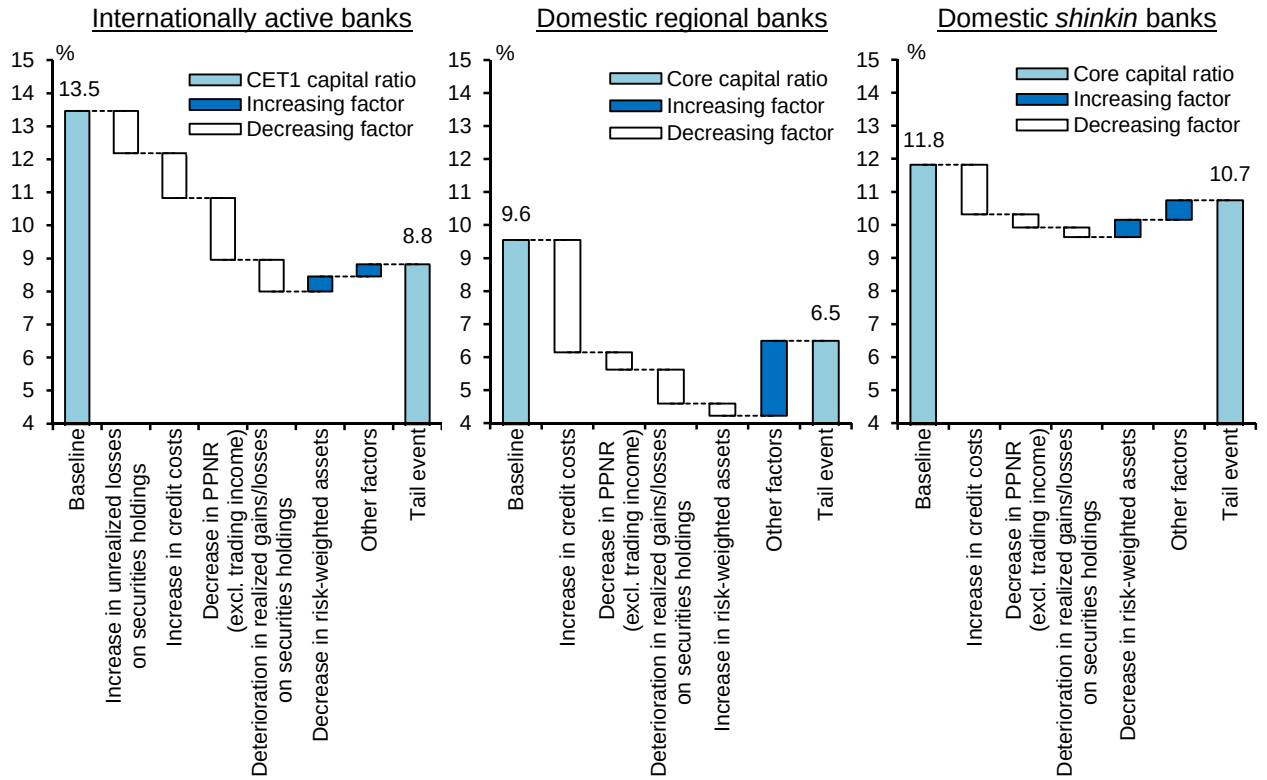


Note: "10th-90th percentile range" is for the tail event in the decreasing loan demand case.

Tail event scenario in 5 years' time: results (2)

- In the decreasing loan demand case of "tail event scenario in 5 years' time," two features stand out in contrast to that of the "immediate tail event scenario."
- First, domestic banks' capital adequacy ratios are significantly lower. This reflects:
  - ✓ Lower capital adequacy ratios at the outset of the stress scenario due to the cumulative effect of FIs' declining profitability until then;
  - ✓ Larger credit costs due to the increase in the share of loans to low-return borrowers;
  - ✓ Larger impairment losses on securities through the shrinking of the buffer of unrealized gains that results from successive rounds of realizing gains.

Chart VI-2-14: Decomposition of the CET1 capital ratio and the core capital ratio in the decreasing loan demand case (fiscal 2026)



Note: "Other factors" includes taxes, dividends, and CET1 regulatory adjustments.

Tail event scenario in 5 years' time: results (3)

- Second, the distribution of capital adequacy ratios for individual FIs shows a substantially fatter downside tail, although the ratios overall remain above regulatory requirements.
- FIs that experience large falls in their capital adequacy ratios are projected to reduce their lending substantially to raise their capital adequacy ratios. The decline in the aggregate loans outstanding is larger in the "tail event scenario in 5 years' time."
- Downward pressure on the real economy may be amplified by the financial sector, even if the capital adequacy ratios of FIs as a whole are above regulatory requirements, depending on the size of the decline in such ratios and the distribution of individual FIs.

Chart VI-2-15: Distributions of core capital ratios

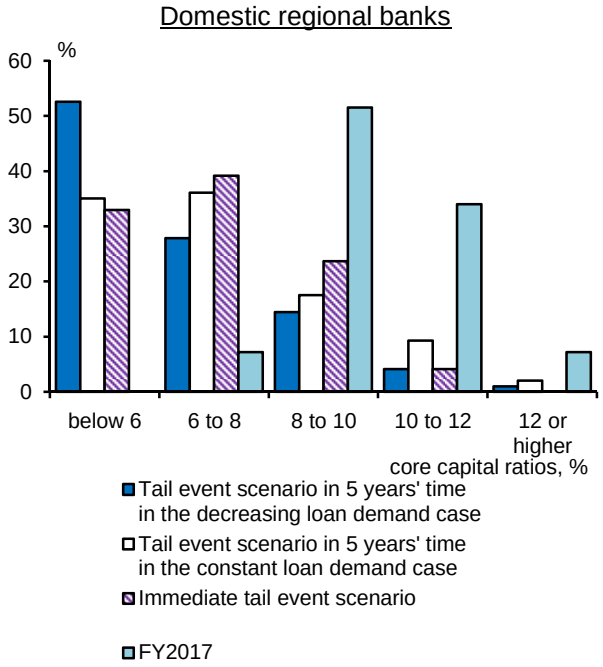
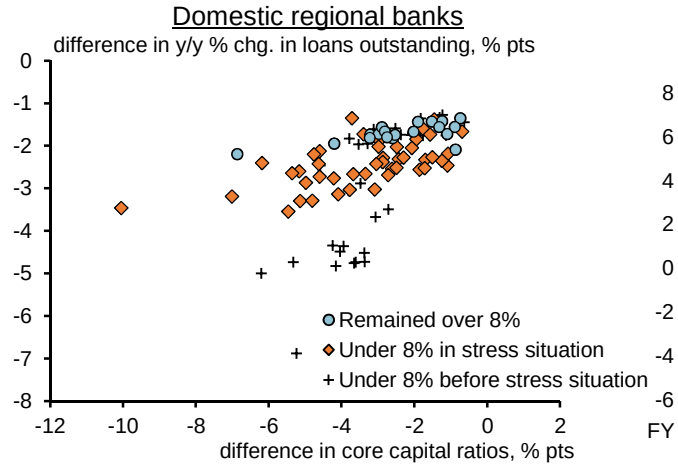
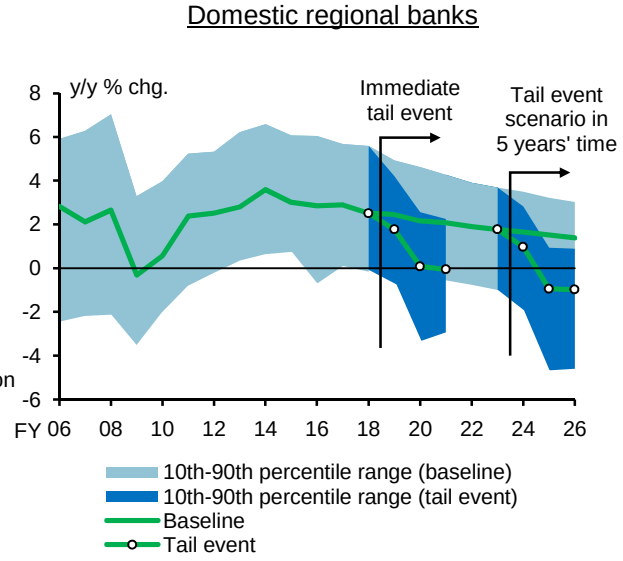


Chart VI-2-16: Core capital ratios and loans outstanding in the decreasing loan demand case (tail event scenario in 5 years' time)



Note: The vertical axis shows the difference in year-over-year changes in domestic loans outstanding between the tail event and baseline scenarios. The horizontal axis shows the difference in core capital ratios between the tail event and baseline scenarios. Data as at fiscal 2026.

Chart VI-2-17: Loans outstanding in the decreasing loan demand case



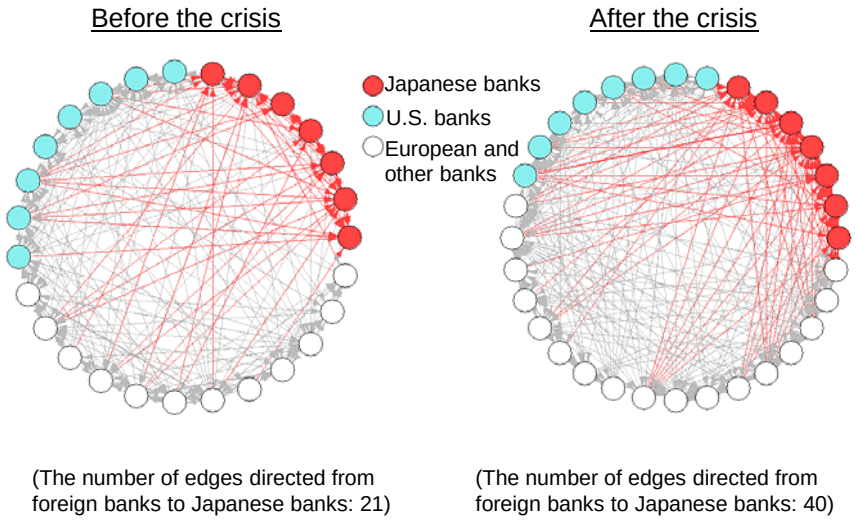
Part IV. Systemic importance of major FIs

- Global financial connectedness of Japanese banks
- U.S. interest-rate increases and Japanese banks' U.S. dollar funding

Global financial connectedness of Japanese banks

- The quantitative analysis using FIs' stock price volatilities suggests:
  - ✓ After the GFC, connectedness between Japanese major banks and foreign G-SIBs has increased so that the impact of overseas banks on Japanese banks has increased;
  - ✓ Financial vulnerabilities originating from abroad are more likely to be transmitted to Japanese major banks, and thus to the domestic financial system.
- This seems to be related to the expansion of Japanese major banks' overseas business. Specifically, they have increased common exposure to foreign G-SIBs and become more susceptible to the behavior of foreign G-SIBs in foreign currency funding markets.

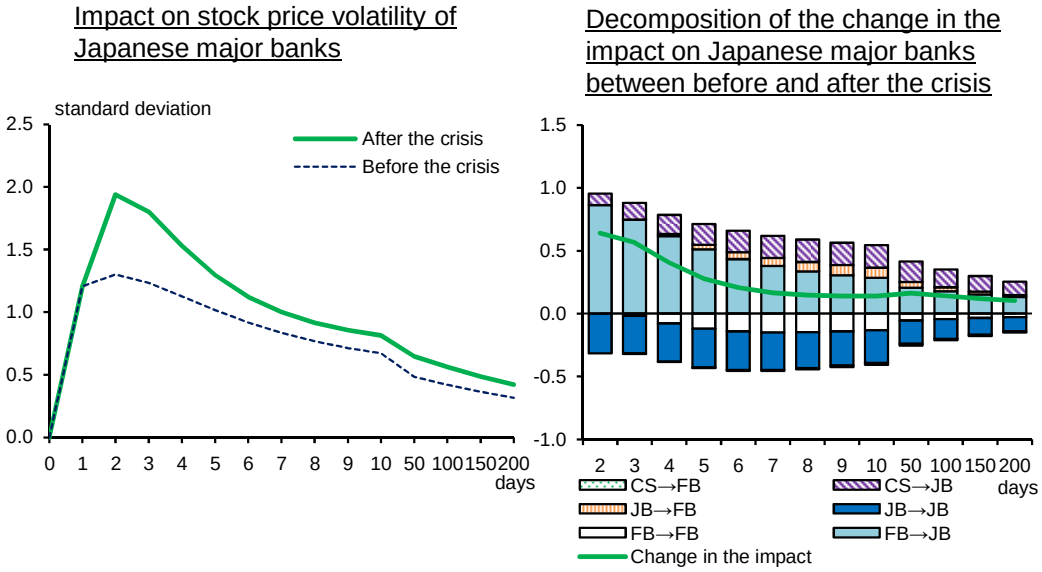
Chart B3-1: Network graphs of financial connectedness



(The number of edges directed from foreign banks to Japanese banks: 21)

(The number of edges directed from foreign banks to Japanese banks: 40)

Chart B3-2: Impact of an interest rate snapback through financial connectedness



Note: 1. The red lines are the edges directed to Japanese major banks. The edge width is proportional to the coefficient size.
2. "The number of edges directed from foreign banks to Japanese banks" is based on the banks for which data are available both before and after the crisis.

Note: The impact of a 200 bps rise in overseas credit spreads on Japanese major banks.

U.S. interest-rate increases and Japanese banks' U.S. dollar funding

- Major banks' stability gap is on a downward trend from a longer-term perspective, but has recently been flat, due to the slowdown in their U.S. dollar-denominated deposit taking.
- In the U.S., a shift of funds away from deposits to T-bills and MMFs has been taking place due to rises in U.S. policy rates. Under these circumstances, the pass-through rate of market rates to deposit rates and the interest rate sensitivity of deposit balances have tended to be greater at Japanese banks than at their U.S. counterparts.
- This reflects the high dependence of Japanese banks on large-lot deposits: they have substantially increased foreign currency funding needs due to the expansion of their overseas business.

Chart IV-4-3: Stability gap among major banks

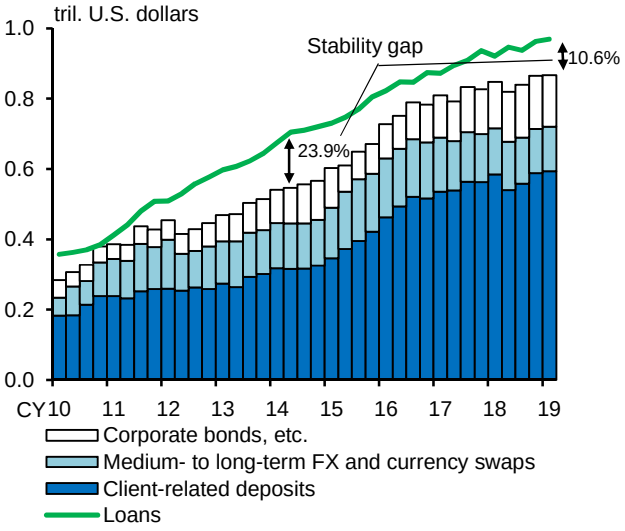
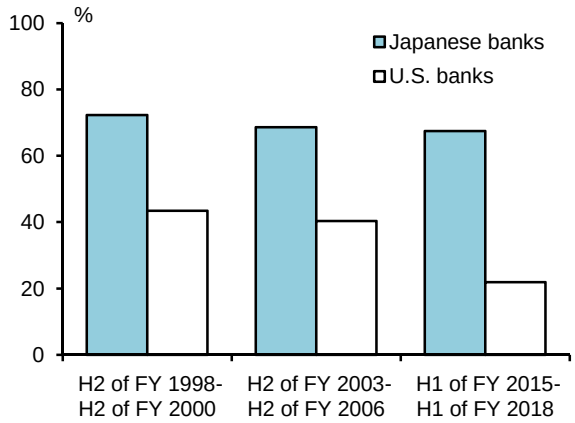
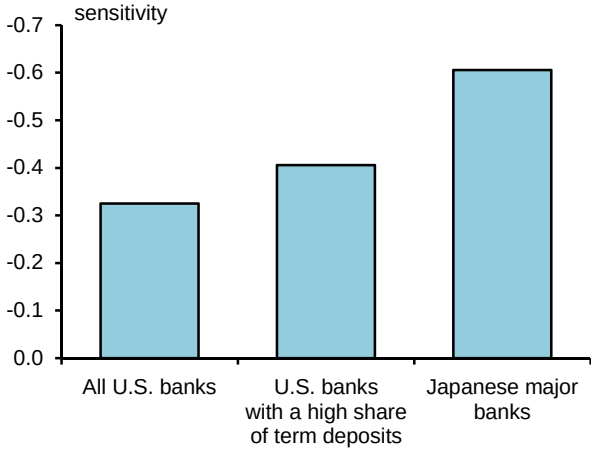


Chart B4-2: Pass-through rate to deposit interest rates during phases of interest rate hikes in the U.S.



Note: Pass-through rate = change in deposit rates / change in the FF rate.

Chart B4-5: Sensitivity of deposits outstanding to interest rates



Toward ensuring financial stability in the future

- Japan's financial system has been maintaining stability on the whole. However, the profitability of domestic deposit-taking and lending activities has continued to decline. This decline, which started at the end of the 1990s, seems to be caused by the decline in the medium- to long-term potential growth rate, as well as the prolonged low interest rate environment.

- What is needed for a recovery in FIs' profitability is an increase in the potential growth rate. To this end, efforts by a wide range of entities are necessary. FIs play an important role by providing consulting and advisory services to firms and services supporting households' wealth management. FIs have already been intensifying such efforts, but it will likely take more time until this bears fruit.

（Challenges for FIs）

- In order for the financial system to maintain stability into the future, FIs need to address the following four business challenges.

(1) Strengthening efforts to raise FIs' core profitability

- They need to enhance consulting and advisory services for firms and wealth management services for households, secure loan interest rates commensurate with the risks, increase their fee and commission income, and increase their business efficiency. To pursue such efforts, each FI would need to have effective options for merging and forming alliances.

(2) Enhancing risk management in areas where FIs have actively increased risk taking

- For regional banks, these areas include lending to middle-risk firms and the real estate industry, and investment in investment trusts. For major FIs, challenges include ensuring a solid financial base in accordance with their increased systemic importance and enhancing their business management on a global and group-wide basis.

Toward ensuring financial stability in the future (cont'd)

(3) Adapting to digitalization

- FIs need to make clear policies regarding the use of digital technology and establish frameworks for cyber security, data protection, and anti-money laundering.

(4) Implementing appropriate capital policies

- FIs need to (i) develop business plans that appropriately take capital costs into account, according to the governance structure, (ii) make clear capital policies, including those pertaining to sufficient capital levels, dividend payout plans, and the effective use of unrealized gains on securities, and (iii) improve dialogues with a wide range of stakeholders including shareholders.

（Actions by the Bank of Japan）

- In order to ensure the stability of the financial system, the Bank, through on-site examinations, off-site monitoring, and various other activities, will continue to provide support to FIs.
- The Bank will focus on grasping FIs' profitability and financial soundness and sharing its views with them by utilizing its macro stress testing results for individual FIs. The Bank will hold seminars and support FIs' efforts toward more sophisticated risk management and improvement in profitability.
- As FIs grapple with structural problems, it is important to develop an institutional framework that adapts to digital technology innovations and to consider how government FIs should function. The Bank will hold discussions with the parties concerned.

Supplement 1: Corporate sector's excess savings and secular decline in loan demand

- In Japan, the corporate sector changed from being a "net investor" to a "net saver" in the latter half of the 1990s. Under these circumstances, the share of "debt-free firms," i.e., firms that have no borrowings from banks, has increased.
- This structural change in the savings and investment balance has led to a secular decline in demand for FIs' loans and therefore a slackening of loan markets.

Chart IV-1-5: Savings-investment balance by sector

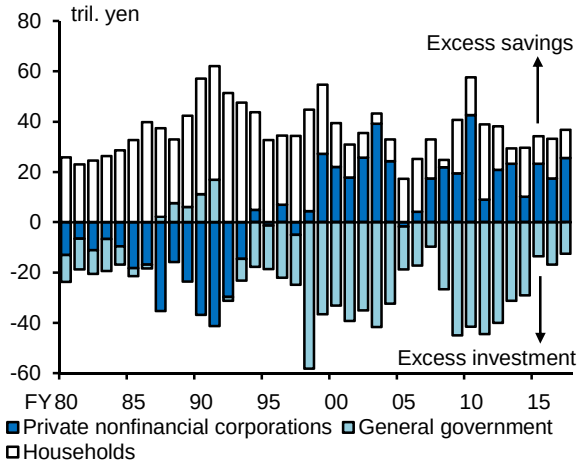
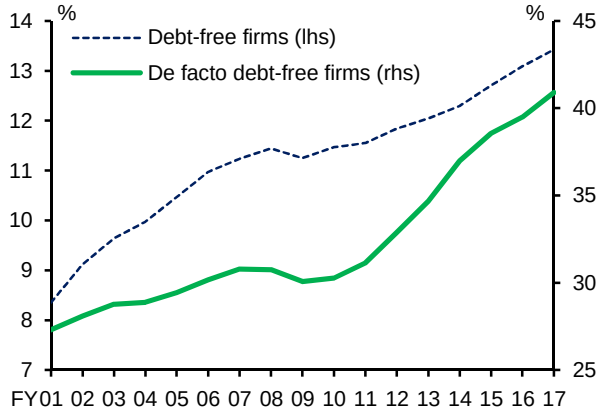


Chart IV-1-6: Share of debt-free firms



Note: "Debt-free firms" is defined as firms without borrowings.
"De facto debt-free firms" is defined as firms whose cash and deposits exceed their total amount of borrowings.

Supplement 2: Adapting to digitalization

- The progress of digitalization could undermine existing FIs' profit opportunities by encouraging non-financial firms' entry to the financial sector. On the other hand, digitalization also provides FIs with tools for expanding their financial service frontiers and increasing their business efficiency.
- FIs are trying to advance business innovations using digital technology in various fields, particularly in retail payments.
- The Bank's questionnaire survey results show clear differences by type of bank:
  - ✓ Major banks are active in using IT and data to raise market shares in new markets;
  - ✓ Regional FIs tend to prioritize the use of digital technology as a cost reduction measure.

Chart B7-1: Digitalization in banking

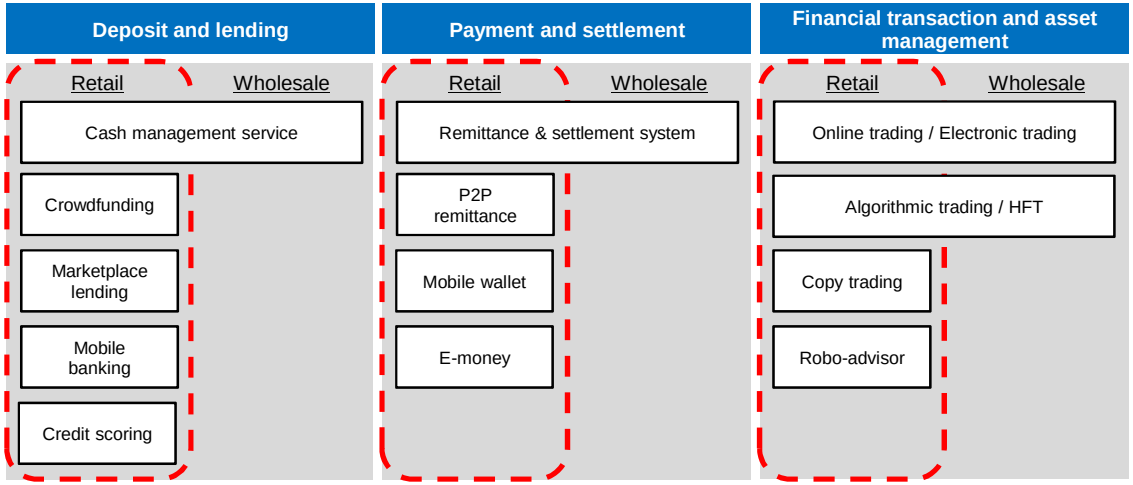
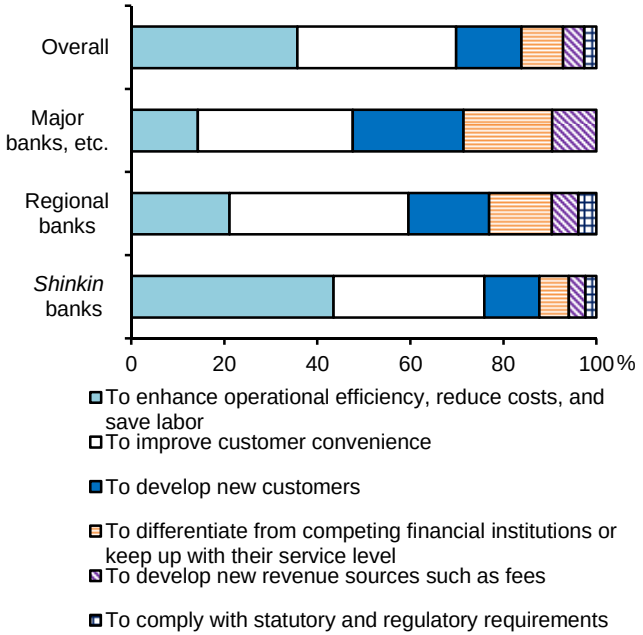


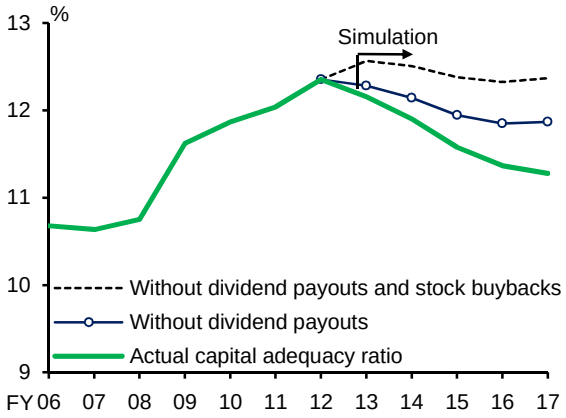
Chart B6-1: Goals and effects of IT and data utilization



Supplement 3: Implementing appropriate capital policies

- Regional FIs' capital adequacy ratios have declined because (i) they have been struggling to make profits commensurate with the expansion in risk-weighted assets and (ii) they have drained their profits through dividend payouts and share buybacks.
- Some listed regional banks have raised their dividend payout ratio to prioritize stable dividend payouts despite a decline in their profitability.
- FIs need to be attentive to the adequacy of their capital levels, together with their capital efficiency, given their important role in financial intermediation.

Chart IV-5-3: Dividend payouts, stock buybacks, and capital adequacy ratio



Note: Covers holding companies of regional banks and regional banks that do not belong to a holding company.

Chart IV-5-4: Dividend payout ratios by type of bank