



BOJ
Reports & Research Papers

Financial System FSR report



BANK OF JAPAN
APRIL 2020

The total of major banks, regional banks, and *shinkin* banks covered in this *Report* is as follows (as at end-March 2020).

Major banks comprise the following 10 banks: Mizuho Bank, MUFG Bank, Sumitomo Mitsui Banking Corporation, Resona Bank, Saitama Resona Bank, Mitsubishi UFJ Trust and Banking Corporation, Mizuho Trust and Banking Company, Sumitomo Mitsui Trust Bank, Shinsei Bank, and Aozora Bank. Regional banks comprise the 64 member banks of the Regional Banks Association of Japan (Regional banks I) and the 38 member banks of the Second Association of Regional Banks (Regional banks II). *Shinkin* banks are the 248 *shinkin* banks that hold current accounts at the Bank of Japan.

This *Report* basically uses data available as at end-March 2020.

Please contact the Financial System and Bank Examination Department at the e-mail address below to request permission in advance when reproducing or copying the contents of this *Report* for commercial purposes.

Please credit the source when quoting, reproducing, or copying the contents of this *Report* for non-commercial purposes.

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

Objective of the *Financial System Report* and motivations behind the April 2020 issue of the *Report*

The Bank of Japan publishes the *Financial System Report* semiannually with the objective of assessing the stability of the financial system and facilitating communication with concerned parties on relevant tasks and challenges in order to ensure such stability. The *Report* provides a regular assessment of the financial cycle and the resilience of financial institutions against stress, and analyzes the vulnerabilities of the financial system from a macroprudential perspective. Within a macroprudential framework, institutional designs and policy measures are devised based on analyses and assessments of risks in the financial system as a whole, taking into account the interconnectedness of the real economy, financial markets, and financial institutions' behavior, in order to ensure the stability of the overall financial system.

The Bank uses the results of the analysis set out in the *Report* in planning policies to ensure the stability of the financial system and for providing guidance and advice to financial institutions through on-site examinations and off-site monitoring. Moreover, the Bank makes use of the results in international discussions on regulation, supervision, and vulnerability assessment. In relation to the conduct of monetary policy, the macro assessment of financial system stability is also regarded as an important input for the Bank in assessing risks in economic and price developments from a medium- to long-term perspective.

Since late February 2020, the global outbreak of the coronavirus disease 2019 (COVID-19) has been influencing global financial markets and the real economy significantly. Against this backdrop, this April 2020 issue of the *Report* discusses current developments and issues that warrant close vigilance going forward regarding the effects and risks of the outbreak for Japan's financial stability, bearing in mind the financial vulnerabilities that had accumulated before the outbreak.

Contents

Chapter I. Assessment of the stability of Japan's financial system and discussion of future challenges	1
Chapter II. Current observations on financial and capital markets and financial intermediation	3
A. Global financial markets	
B. Japanese financial markets	
C. Financial intermediation	
Chapter III. Implications and risks for financial stability arising from the COVID-19 outbreak	8
A. Risks of higher credit costs associated with a domestic and overseas economic downturn	
B. Risks of deterioration in gains/losses on securities investment due to substantial adjustments in financial markets	
C. Risks of destabilization of foreign currency funding due to tightened funding market conditions	
D. Assessment of the financial cycle	

Chapter IV. Examination of financial institutions' stress resilience	15
A. Financial institutions' profitability and capital adequacy	
B. Macro stress testing	
Glossary	19
Charts	20

I. Assessment of the stability of Japan's financial system and discussion of future challenges

Current assessment

The global outbreak of the coronavirus disease 2019 (COVID-19) has been exerting very substantial downward pressure on the global economy and has been destabilizing global financial markets. There have been a large decline in stock prices across countries, adjustments in U.S. and European credit markets that had been expanding, a tightening of the key-currency U.S. dollar funding markets, fund outflows from emerging market economies, and a plummet in the crude oil prices. Facing a sudden erosion in sales and profits, firms around the world have increased demand for funds, while financial institutions' credit costs are likely to increase due to an economic downturn. As a result, financial institutions' capital and liquidity have come under intense pressure.

To address this situation, governments and central banks, working in close coordination, have implemented powerful fiscal and monetary policy measures to support economic activity and corporate financing and to maintain the functioning of financial markets. In terms of regulation and supervision, flexible actions have been taken such as the deferral of full implementation of the finalized Basel III standards by one year and the encouragement of banks to use their capital and liquidity buffers. Owing to these actions, a large-scale credit contraction in the global financial system has been avoided so far.

Despite undergoing great stress, Japan's financial system has been maintaining stability on the whole and continues to provide the funds essential for economic activities. This owes to the fact that (1) financial institutions have considerable resilience in terms of both capital and liquidity, as examined in the analyses including macro stress testing in previous issues of the *Report*, (2) the Japanese government and the Bank of Japan have implemented swift and powerful policy measures, and (3) Japanese firms on the whole have maintained robust financial bases both in terms of retained earnings and cash availability.

Future risks and caveats

Nevertheless, significant uncertainty remains about future developments regarding the global spread of COVID-19 and the resulting magnitude and duration of downward pressure on the real economy.

The currently observed stress on the financial system originates from the shock to the real economy caused by the wide range of constraints on people's physical activities due to the disease outbreak. Thus, the nature of the current stress significantly differs from stresses in the past caused by the bursting of bubbles triggered by and resulting in the adjustment of financial imbalances. It should be noted, however, that domestic and overseas financial systems had accumulated various vulnerabilities due to the search for yield under the prolonged low interest rate environment, even before the outbreak of COVID-19. Should the substantial deterioration in the real economy be prolonged, full-fledged financial adjustments through such vulnerabilities could give rise to a negative feedback loop between the real economy and the financial sector. Based on these observations, the following three risks to Japan's financial stability warrant close attention.

The first risk is that credit costs could increase due to an economic downturn at home and abroad. Should the impact on the real economy be protracted, problems stemming from tightened liquidity conditions could turn into solvency problems for an increasing number of firms at home and abroad. Under the prolonged low interest rate environment, Japanese financial institutions have increased

domestic loans to middle-risk firms, loans to rental real estate businesses, and loans related to high-leverage projects such as large-scale merger and acquisition (M&A) deals. In term of overseas loans, Japanese financial institutions have increased loans to firms with relatively low creditworthiness including in energy-related sectors. These loans seem generally vulnerable to an economic downturn. The second risk is that gains/losses on securities investment could deteriorate due to substantial adjustments in financial markets. In recent years, large financial institutions have been increasing their overseas credit investment while regional financial institutions have been increasing their holdings of investment trusts, which are subject to various risks. The third risk is that foreign currency funding might be destabilized due to the tightening of foreign currency funding markets mainly for the U.S. dollar. Financial institutions in recent years have expanded stable funding sources such as client-related deposits to fund increased overseas lending and securities investment. However, they still depend on market funding to a non-negligible extent. Should their foreign currency funding become unstable, this could lead to a deterioration in their gains/losses on overseas business through, for example, the unwinding of overseas positions. The second and third risks mean that risks can propagate more easily between overseas and Japan's financial systems.

Japanese financial institutions have remained highly resilient even under the current stress. In addition, the powerful policy actions by the Japanese government, the Bank of Japan, and overseas authorities should provide economic and financial support to protect against the materialization of these risks. Thus, Japan's financial system remains and will remain stable, although close vigilance is required regarding future developments.

Challenges for financial institutions and actions by the Bank of Japan

For the time being, with the COVID-19 outbreak exerting considerable stress on the financial sector and economic activity both at home and abroad, financial institutions face a challenge in supporting economic activity by smoothly fulfilling their financial intermediation function while maintaining their own financial soundness. Once the disease subsides, financial institutions have an important role to play in providing support to firms to help them improve their business conditions and aid the economic recovery in general.

From a longer-term perspective, financial institutions also face challenges with regard to structural issues such as the prolonged low interest rate environment, the population decline, and excess savings in the corporate sector, the nature of which might be affected by changes in economic activity and corporate behavior due to the COVID-19 outbreak. With the persisting downward pressure on profits in domestic deposit-taking and lending activities, (1) large financial institutions need to improve their governance in response to their systemic importance, which has been increasing through the expansion of their global operations. (2) It is increasingly important for regional financial institutions to establish business models that enable them to secure profits by contributing to the revitalization of regional economies. (3) A shared challenge for major banks and regional financial institutions is the need to strengthen their capabilities of risk management in areas where they actively take risks by learning from the lessons of the ongoing stress. Furthermore, (4) financial institutions need to make steady efforts to address risks and opportunities that arise from medium- to long-term changes in the business environment springing from digitalization and climate change.

The Bank of Japan, in close coordination with the Japanese government and overseas financial authorities, will do its utmost amid the spread of COVID-19 to ensure financial stability and provide full support for the smooth functioning of financial intermediation by financial institutions. From a medium- to long-term perspective, the Bank will actively encourage financial institutions' efforts to address the above four challenges.

II. Current observations on financial and capital markets and financial intermediation

This chapter reviews the developments in financial markets within Japan and abroad, as well as financial intermediation by Japanese financial institutions, with a focus on changes before and after late February 2020, when the coronavirus disease 2019 (COVID-19) started to spread globally.¹ Most of the data available for the analysis on financial intermediation are up to the end of February. Information obtained from the Bank's off-site monitoring complement the analysis.

A. Global financial markets

Looking back at developments in global financial markets, prices of risky assets such as stocks and corporate bonds generally followed an uptrend through the middle of February 2020, mainly reflecting a subsiding of political uncertainties, such as those related to U.S.-China trade negotiations. In late February, however, U.S. and European stock prices and real estate investment trust (REIT) prices declined significantly across countries and since then have been fluctuating widely. Investors' risk appetite has deteriorated sharply due mainly to the global outbreak of COVID-19 and a plummet in crude oil prices following disagreements on production cuts among oil-producing countries (Charts II-1-1 and II-1-2). In credit markets, credit spreads, particularly for non-investment-grade corporate bonds (high-yield bonds) and leveraged loans, have been widening considerably and their prices have been declining substantially due to outflows of invested funds (Charts II-1-3, II-1-4, and II-1-5). In emerging markets, there have been large and rapid capital outflows and many emerging market economies have experienced significant declines in stock prices and depreciations of their currencies (Chart II-1-6).

Meanwhile, U.S. and European long-term interest rates have declined substantially, temporarily reaching historical lows, partly due to concerns over a global economic recession and monetary easing across countries (Chart II-1-1). Moreover, investors' increased preference for safe assets has accelerated the growing demand for U.S. dollar cash. Against this background, U.S. dollar funding premiums have spiked and strains in U.S. money markets in particular have intensified (Charts II-1-7 and II-1-8). However, most recently, strains on financial markets have shown some signs of easing, reflecting ample liquidity provision and asset purchases by major central banks, as well as coordinated central bank action to further enhance the provision of U.S. dollar liquidity, including that by the Bank of Japan. Nevertheless, there remains a high degree of uncertainty regarding future developments in financial markets. Continued attention is therefore necessary with regard to future developments in the spread of COVID-19 and their impacts on the global economy and global financial markets.

B. Japanese financial markets

In Japanese financial markets, as the Bank of Japan continues with Quantitative and Qualitative Monetary Easing (QQE) with Yield Curve Control, both short- and long-term interest rates have generally been stable, due in part to the Bank's provision of ample funds, including Japanese government bond (JGB) purchases, although these rates fluctuated temporarily due mainly to overseas factors (Charts II-2-1 and II-2-2). Japanese stock prices plunged in late February and since then have continued to show large fluctuations (Chart II-1-1). The yen temporarily appreciated sharply against the U.S. dollar, but since then has been depreciating, reflecting the robust demand

¹ In Japan, the fiscal year starts in April and ends in March of the following year.

for dollar cash (Chart II-2-3). Nevertheless, market participants remain vigilant against the yen's appreciation (Chart II-2-4). Meanwhile, corporate bond spreads and CP issuance rates have been generally stable compared to their U.S. and European equivalents, but CP issuance rates are showing increases as of the beginning of April (Chart II-2-5).

On March 2, the Bank of Japan released a statement by the Governor to indicate its commitment to continue striving to provide ample liquidity and ensure stability in financial markets. On March 16, the Bank held its Monetary Policy Meeting earlier than scheduled and decided to enhance monetary easing through (1) the further ample supply of funds by conducting various operations including purchases of JGBs and the U.S. dollar funds-supplying operations; (2) measures to facilitate corporate financing, including the introduction of a new operation and increasing purchases of CP and corporate bonds; and (3) active purchases of exchange-traded funds (ETFs) and J-REITs.²

C. Financial intermediation

1. Loans and securities investment by financial institutions

a. Domestic loans

The domestic loans outstanding of financial institutions have recently been growing at around 2 percent annually (Charts II-3-1 and II-3-2). By type of bank, major banks' loans have continued to show relatively high growth, mainly driven by merger and acquisition (M&A)-related loans. On the other hand, the pace of increase in regional banks' loans outstanding, especially real estate loans, has been decelerating moderately.

Since March 2020, demand for liquidity has rapidly increased, especially that from small and micro firms in such sectors as food services, accommodations, and retail that are facing sharp declines in their sales and profits due to the effects of the COVID-19 outbreak. An increasing number of major firms have been taking actions to raise funds and establish or increase their committed lines, some of which are led by precautionary motives to meet future needs. In response, financial institutions have indicated their intent to facilitate and smooth corporate financing by establishing emergency lending program and special consulting desks, and by encouraging firms to utilize public financial assistance programs where appropriate.³

Developments in loan interest rates

Financial institutions' average contract interest rates, both short-term and long-term, on new loans and discounts have been hovering around historically low levels (Chart II-3-3). The intensified competition among financial institutions has exerted downward pressure on loan interest rates, so that base rates, such as long-term interest rates, are remaining at low levels. Their average contract interest rates on loans outstanding have continued to decline moderately (Chart II-3-4).

² For details, see the Bank of Japan's website (https://www.boj.or.jp/en/announcements/release_2020/k200316b.pdf).

³ For financial institutions' responses to the COVID-19, please see the following websites (in Japanese): Japanese Bankers Association (<https://www.zenginkyo.or.jp/topic/covid19-jbamembers/>); Regional Banks Association of Japan (https://www.chiginkyo.or.jp/app/story.php?story_id=1673); The Second Association of Regional Banks (https://www.dainichiginkyo.or.jp/dcms_media/other/20200310.pdf).

Since March 2020, firms' demand for working capital has increased due to the spread of COVID-19. Going forward, the government and other entities will begin fully implementing their policies for assisting corporate financing, such as credit guarantees and interest rate subsidies. Thus, careful attention should be paid to the impacts of those policies on loan interest rates and financial institutions' loan profitability.

Developments in real estate loans

The outstanding amount of loans to the real estate industry has reached a record high as it continues its rapid increase, with a current annual growth rate of about 3 percent, above the growth rate of loans to all industries, which is around 2 percent (Chart II-3-5). Although the pace of growth has been moderated by the more cautious lending stance of financial institutions, real estate loans continued to increase in the category of loans to real estate investment trusts (classified as REITs and medium-sized firms), which are mainly extended by major banks, as well as loans to small real estate businesses mainly by regional financial institutions (Chart II-3-6). Since March 2020, there have emerged some concerns about a slackening of the supply and demand balance in the real estate rental market and declines in rental income, due to drops in a wide range of economic activities.

b. Overseas loans

Overseas loans have continued to follow a moderate increasing trend (Chart II-3-7). Japanese banks, major banks in particular, have focused on expanding their international business bases and supporting the overseas activities of Japanese firms. However, the pace of growth in these loans has become slower than before, as Japanese banks have started to increase their focus on improving profitability by, for example, increasing loans with higher margins in their loan portfolios, due to intensified competition with overseas counterparts and an increase in the required amount of foreign currency funding.

Since March 2020, the global outbreak of COVID-19 has led to an increase in the drawdown of committed lines, particularly by major firms overseas in such sectors as air transport, accommodations, automobiles, and their related retailers.

Looking at a breakdown of overseas loans by credit rating, investment-grade loans (BBB and above) account for about 70 percent, indicating that the credit quality of the overall overseas loan portfolio has remained high (Chart II-3-8). That said, financial institutions have increased their loans to relatively risky firms, including leveraged loans, reflecting their greater focus on yields mentioned above. These include a certain amount of loans to firms vulnerable to economic cycles, such as firms in energy industries that are susceptible to changes in crude oil prices. Should the downturn in overseas economies be prolonged, the effects on the quality of loan assets and credit costs warrant close attention. At the same time, it is necessary to closely monitor the future lending attitudes and developments in profitability of Japanese banks, as the availability and costs of U.S. dollar funding remain unstable due to strains in U.S. dollar money markets.

c. Securities investment

In response to destabilization of financial markets, financial institutions have shifted their stance on securities investment since March 2020. The following is based on information obtained mainly from off-site monitoring and the data in Chart II-3-9 are those as at the end of February. First, the outstanding amount of financial institutions' yen-denominated bond investment has remained essentially unchanged, with yen interest rates remaining low on the whole, even since March. Some

regional financial institutions have sold domestic bonds to lock in gains in preparation for possible impairment losses on strategic stockholdings and investment trusts. The outstanding amount of foreign bond investment followed an increasing trend, reflecting financial institutions' aim to secure investment yields that are higher than those on yen-denominated bonds. Since March, however, there has been a mixture of sales aiming at locking in gains and purchases motivated by higher interest rates, reflecting an increased volatility in overseas interest rates. The outstanding amounts of investment trust products and overseas credit products continued to show a secular increase. Since March, however, an increasing number of financial institutions have taken a more cautious investment stance, due to the plunge in prices of stocks and REITs and adjustments in overseas credit markets.

Since March, financial institutions' unrealized gains/losses on risky assets have deteriorated substantially due to the plunge in domestic and overseas stock prices and the spike of overseas credit spreads. However, this was mostly offset by improvements in unrealized gains/losses on bondholdings due to the large decline in overseas interest rates. However, given that there is less room for further decline in overseas interest rates, the negative impact could surpass these improvements should adjustments in domestic and overseas stock prices and overseas credit markets deepen further or should the negative correlation between stocks and bonds be disrupted as seen in the middle of March.

In recent years, the outstanding amount of overseas credit products held by Japanese financial institutions as a whole has continued to increase, although its pace has slowed (Chart II-3-10). By type of bank, large financial institutions account for a large share of the total amount outstanding. Since March, they have reduced new investment amounts in response to considerable adjustments in overseas credit markets.

The overall credit quality of Japanese banks' portfolios is high. Looking at the outstanding amount of overseas credit product investment by credit rating, Japanese banks' holdings of securitized products including CLOs consist almost entirely of AAA-rated tranches, and about 90 percent of bond investment comprises investment-grade bonds (BBB and above) (Chart II-3-11). That said, bonds with a BBB rating, the lowest investment-grade rating, account for about 40 percent of the total bond investment, and some institutions hold bank loan funds, which are predominantly backed by non-investment-grade (BB or below) loans. These products in portfolios are susceptible to overseas economic downturns, downgrading, and credit market adjustments.

Regional financial institutions have increased their holdings of investment trusts, which entail various risks at home and abroad. This increase was previously driven by investment trusts whose main risk factor is overseas interest rate risk, but the recent pronounced increase is in investment trusts subject to a wide range of market risks, such as those related to stocks, credit, real estate, and foreign exchange (Chart II-3-12).

2. Asset management of institutional investors (insurance companies, pension funds, and investment trusts)

Under the prolonged low interest rate environment, life insurance companies and pension funds have continued to gradually increase their share of investment in foreign-currency denominated assets, which offer relatively high yields. Their investment trend has not changed significantly even after late February 2020 (Charts II-3-13 and II-3-14). The asset sizes of both publicly offered investment trusts and privately placed investment trusts have been decreasing, particularly with a large decline in the size of publicly offered investment trusts, reflecting the plunge in prices of a wide range of risky assets including stocks (Chart II-3-15).

3. Funding activities in the corporate sector

The total volume of firms' funding has continued to grow at an annual rate of about 2 percent recently (Chart II-3-16). While this growth has been mainly led by an increase in borrowing from financial institutions reflecting the demand for funds to be used for business fixed investment and M&A deals, funding through the issuance of corporate bonds and CP has also increased markedly. In particular, firms continued to issue a substantial amount of corporate bonds, including super long-term bonds, because issuance rates in the corporate bond market were hovering at extremely low levels.

Since March 2020, issuance conditions in the corporate bond and CP markets have remained generally favorable due in part to the Bank's decision to increase purchases of these products. The issuance of CP has increased substantially due to growing demand for precautionary funds, and issuance rates are showing increases.

III. Implications and risks for financial stability arising from the COVID-19 outbreak

As discussed in Chapter II, the global outbreak of COVID-19 has been exerting very substantial downward pressure on the global economy; there have been significant changes in domestic and overseas financial markets and financial intermediation activities since late February 2020. As a result, financial institutions' profits, capital, and funding have come under intense pressure. To address this situation, governments and central banks, working in close coordination, have implemented powerful fiscal and monetary policy measures to support economic activity and corporate financing and to maintain the functioning of financial markets. In terms of regulation and supervision, flexible actions have been taken such as the deferral of full implementation of the finalized Basel III standards by one year and the encouragement of banks to use their capital and liquidity buffers (Chart III-1-1). Owing to these actions, a large-scale credit contraction in the global financial system has been avoided so far, but significant uncertainty remains about future developments regarding the global spread of COVID-19 and the resulting magnitude and duration of downward pressure on the real economy.

The currently observed stress on the financial system originates from the shock to the real economy caused by the wide range of constraints on people's physical activities due to the disease outbreak. Thus, the root cause of the current stress and its transmission mechanism significantly differ from stresses in the past caused by the bursting of bubbles triggered by and resulting in the adjustment of financial imbalances. It should be noted, however, that domestic and overseas financial systems had accumulated various vulnerabilities due to the search for yield under the prolonged low interest rate environment, even before the outbreak of COVID-19. Should the substantial deterioration in the real economy be prolonged, full-fledged financial adjustments through such vulnerabilities could give rise to a negative feedback loop between the real economy and the financial sector.

Based on these observations, the following risks warrant close attention in order to ensure Japan's financial stability: (1) credit costs could increase due to an economic downturn at home and abroad; (2) gains/losses on securities investment could deteriorate due to substantial adjustments in financial markets; and (3) foreign currency funding might be destabilized due to the tightening of foreign currency funding markets mainly for the U.S. dollar. The following provides a detailed examination of these risks, interrelating them with existing vulnerabilities that accumulated under the prolonged low interest rate environment.

A. Risks of higher credit costs associated with a domestic and overseas economic downturn

As discussed in the previous chapter, the outbreak of COVID-19 has caused a sharp tightening of funding conditions, especially among small and micro nonmanufacturing firms with limited cash availability, particularly in such sectors as food services, accommodations, and retail. An increasing number of major firms have been taking actions for raising funds and establishing and increasing their committed lines, some of which are led by precautionary motives to meet future needs. Financial institutions have been actively providing financial assistance to their client firms by, for example, implementing emergency lending programs and by revising lending conditions to existing customers, while respectfully yet expeditiously coping with a sharply increasing number of consultations and loan requests. Measures to support corporate financing by the government, municipalities, and the Bank of Japan have also encouraged these financial institutions' efforts. Looking ahead, should the economic downturn be prolonged, a wider range of sectors, including large firms and manufacturing sectors, could face tightened funding conditions and the effects could

propagate, which would lead to an increased negative impact on firms' performance and their solvencies. A smooth implementation of public support such as credit guarantees and interest subsidies is considered to be of vital importance, in addition to financial institutions' support for firms' business improvement.

Before the COVID-19 outbreak, financial institutions in recent years were actively taking risks in lending in order to search for yield under the prolonged low interest rate environment. As a result, as discussed later in Section D, the speed of domestic credit growth exceeded that of economic growth for several years before the outbreak. The areas where vulnerabilities were being accumulated in credit supply include (1) loans to middle-risk firms with relatively low debt payment capacity, (2) loans to rental housing businesses, which are subject to risks of declines in the population and in the macroeconomic growth expectation, and (3) loans to high-leverage projects such as large-scale M&A deals. In addition, large financial institutions have been active in extending overseas loans and have increased loans to firms with relatively low creditworthiness, including those in energy-related sectors. Should the economic downturn become more long-lasting and substantial due to the effects of the COVID-19 outbreak, credit costs incurred mainly from loans to these vulnerable sectors would expand.

Discussing the above points in greater depth, the financial position of Japan's corporate sector has been improving on the whole, reflecting prolonged low interest rates and economic growth (Chart III-1-2). However, with substantial variation remaining across firms, there has been a continuous increase in recent years of loans to low-return borrowers, for which the loan interest rate is not necessarily high enough to cover through-the-cycle credit costs, especially among middle-risk firms (Chart III-1-3).⁴ Credit costs had already started to rise, albeit modestly, despite a trend of economic expansion (see Section A of Chapter IV). Should the economic downturn intensify, vulnerabilities regarding loans to middle-risk firms would result in substantial credit losses that exceed loan-loss provisions.

As seen in Chapter II, regional financial institutions' outstanding amount of loans to rental housing businesses, although slowing down recently, has continued to grow at a relatively high pace. In addition, major banks' lending to major real estate developers and J-REITs has also continued to grow at a high pace (Charts II-3-5 and II-3-6). Since lending to rental housing businesses is based on the assumption that the rental income over the medium to long term will be stable, there has existed the risk that the increases in vacancy rates and loan losses due to the secular declines in the population and the number of households could push down financial institutions' profits, especially in the long term.⁵ Attention should be paid to the possibility that the outbreak of COVID-19 could bring forward a materialization of such a risk, mainly due to slackening demand in the real estate market and lower rental income. The growth in commercial real estate lending by major banks has been supported by sustained and genuine demand for new office buildings, particularly those constructed in metropolitan areas, as well as for logistics facilities, hotels, stores, etc., supported by the development of distribution networks and inbound tourism demand. However, some signs of market saturation have been observed, such as a decrease in office transaction values (Chart III-1-4). Thus, it is necessary to carefully monitor whether the recent shock might trigger any significant changes in investors' perception with regard to future demand conditions and the growth potential of Japan's real estate market, given that the COVID-19 outbreak has already exerted impacts, such as a sharp decline in demand for accommodation.

⁴ For analyses of loans to middle-risk firms and low-return borrowers, see Chapter VI of the April 2018 issue and Chapters V and VI of the October 2018 issue of the *Report*.

⁵ For developments and risks in the real estate market from a medium- to long-term perspective, see Chapter IV and Box 2 of the April 2019 issue of the *Report*.

Loans to high-leverage projects such as large-scale M&A deals have also grown recently. Against this backdrop, the "goodwill" of firms has increased sharply with the increase in M&As, and such increase is likely to be concentrated in a small number of firms (Charts III-1-5 and III-1-6). This implies that there are an increasing number of firms where a credit event could have a relatively large impact on financial institutions' profits and financial position. It should also be noted that if firms obtain large amounts of funding from many financial institutions through, for example, syndicated loans, or issue large amounts of corporate bonds, the impact of a credit event may affect broader areas of the financial system. This warrants careful attention, given the current fragile financial markets conditions.

Finally, turning to overseas credit markets, in recent years, nonbanks such as investment funds have expanded financial intermediation, and vulnerabilities have accumulated including the substantial increase in the amount of global corporate debt and the relaxation of credit discipline under the prolonged low interest rate environment overseas as observed in Japan. Most recently, due to the effects of the COVID-19 outbreak, credit markets have faced substantial correction in, for example, the outflow of funds from investment funds. In addition, the dispersion of the expected default frequency (EDF) across overseas firms has increased and the upper tail of the EDF distribution has widened, especially for firms in the Americas (Chart III-1-7).⁶

Based on a survey on overseas credit investment and lending by these institutions conducted jointly with the Financial Services Agency (FSA) in 2019, loans to non-financials account for about 80 percent of overseas loans. The outstanding amount of relatively highly leveraged loans -- that is, loans with a leverage ratio (interest-bearing debt / earnings before interest, tax, depreciation, and amortization) above 4 -- has remained almost unchanged in recent years. Of these highly leveraged loans, non-investment-grade "leveraged loans" account for about 10 percent of overseas loans to non-financials.⁷ The growth rate in the amount outstanding of leveraged loans of Japanese major banks is higher than those of the peer U.S. and European financial institutions, yet the amount outstanding remains substantially smaller than the peers.⁸

The rating composition by product shows that overseas loans to several segments have low credit ratings overall, albeit their share of the overseas loans remains small. Such segments include the following: (1) leveraged buyout (LBO) finance, which is to be repaid from the future cash flows of the companies acquired in the M&A deals; (2) project finance, which provides funds for projects related to, for example, resource development; and (3) object finance, which provides funds for specified purposes such as the acquisition of vessels and aircraft (Chart III-1-8). The industry composition by credit rating shows no large bias across industries, but loans to the electricity, gas, and energy industries account for a large share in loans with relatively low credit ratings (Chart III-1-9).

These suggest that attention should be paid to the growing risk of a rise in credit costs associated with overseas loans, especially for sectors that have recently been significantly affected by the plummet in crude oil prices and the outbreak of COVID-19.

⁶ Using a firm's stock price and related information, Moody's EDF measures the probability of the firm defaulting over a specific period of time in the future, based on the market value of the firm's assets and liabilities payable.

⁷ There is no uniform definition of leveraged loans internationally. They are defined here as non-investment-grade loans with a leverage ratio above 4.

⁸ For developments in Japanese banks' overseas loans, see Chapter IV and Box 1 of the October 2019 issue of the *Report*.

B. Risks of deterioration in gains/losses on securities investment due to substantial adjustments in financial markets

As discussed in Chapter II, since late February 2020, stock prices have plunged and market prices of overseas credit products have also been substantially affected, with some variation depending on the product type and credit rating in global financial markets (Charts II-1-4 and II-1-5). Against this background, unrealized gains/losses on risky assets such as stockholdings, including those from strategic investment, overseas credit assets, and REITs, have deteriorated among the securities investment of financial institutions. Although these unrealized losses have so far been mostly offset by an increase in unrealized gains on bonds due to the substantial decrease in overseas interest rates, future developments warrant close monitoring. In addition, impairment losses on "goodwill" of overseas subsidiaries have materialized.

In recent years, large financial institutions have increased overseas credit investment and lending amid the decline in profitability of domestic deposit-taking and lending activities. Specifically, as seen in the previous chapter, their investment balances of securitized products such as CLOs backed by leveraged loans are greater than their holdings during the global financial crisis. They have also become active in investing in bonds, including those rated BBB -- the lowest investment-grade rating -- and high-yield bonds rated below BBB, although they invested little in these bonds in the past (Charts II-3-10 and II-3-11). Regional financial institutions have increased their holdings of investment trusts that entail various risks at home and abroad (Chart II-3-12). Japan's financial system has therefore increased its global connectedness. Should there be further adjustments in prices of stocks and credit assets overseas, sales losses and impairment losses from related investments could become large.

With regard to such exposures associated with overseas investment, there is considerable heterogeneity among financial institutions in terms of risk profiles and risk amounts. Large financial institutions have so far worked to tighten investment criteria and strengthen monitoring. They need to reinforce their efforts to thoroughly implement risk management according to their respective investment portfolio compositions and risk amounts while appropriately taking into account the differences in market structures from those at the time of the global financial crisis.

C. Risks of destabilization of foreign currency funding due to tightened funding market conditions

It is of paramount importance to ensure foreign currency liquidity in times of stress, given that Japanese banks, major banks in particular, have substantially increased needs for foreign currency funding, reflecting the expansion of their overseas business. While the share of funding through financial markets in the foreign currency funding of major banks has been large compared to their yen funding structure, the share of stable foreign currency funding such as through client-related deposits and corporate bonds has steadily increased in recent years. They also have a sufficient liquidity buffer to cover possible funding shortages under a market stress for a certain period.

Developments in the global funding markets for the U.S. dollar since late February 2020 show that the demand and supply conditions for the U.S. dollar tightened significantly through mid-March. Some of the key drivers of the tightening include investors' increased preference for safe assets, the triggering of margin calls due to the plunge in stock prices, the outflows of funds from investment funds, and the sharp increase in the use of committed lines by firms in such sectors as air transport, accommodations, automobiles, and their related retailers. At the same time, emerging markets experienced sharp adjustments, which have accelerated the growing demand for dollar cash because the substantial capital inflows and the historically high accumulation of U.S. dollar-

denominated debt in recent years have unwound. U.S. dollar funding markets did not regain stability until the implementation of massive liquidity provisioning such as through the increased frequency of U.S. dollar swap line arrangements by major central banks and the purchases of CP and corporate bonds by the Federal Reserve. Meanwhile, there have been no disruptions to Japanese banks' foreign currency funding.

Nevertheless, it is too early to conclude that market functioning has fully recovered, even though the recovery will continue with the strong support by the U.S. dollar swap line arrangements by central banks. That said, developments in Japanese banks' foreign currency funding conditions warrant vigilance since the risk that Japanese banks' foreign currency funding could be constrained through a possible tightening of the dollar supply by overseas financial institutions has not been eradicated. Should their foreign currency funding become unstable, a deterioration could occur in gains/losses on overseas exposures through, for example, an unwinding of positions of overseas credit investment and lending. It is also vital to ensure liquidity in local currencies that have high dependence on market funding, because Japanese banks' holdings of assets denominated in local currencies such as Asian currencies have been increasing. Operational risk should also warrant attention, in that constraints on financial institutions' business continuity arrangements might lead to a decline in market liquidity, as an increasing number of financial institutions have implemented split operations at multiple locations and work-from-home measures have been implemented to prevent the spread of COVID-19.

For major banks, the "stability gap," which represents the difference between the amount of illiquid assets (narrowly defined as loans, or more broadly also including overseas credit investments) and the amount of stable funding (consisting of client-related deposits, medium- to long-term FX and currency swaps, and corporate bonds including TLAC bonds), has shown a steady improvement (Chart III-3-1).⁹ It should be noted, however, that there are some types of client-related deposits with relatively low stickiness, such as deposits from financial institutions that may be somewhat flighty in the event of stress.¹⁰

With respect to resilience to short-term liquidity stress, major banks generally hold sufficient liquid assets to cover the expected outflow of funds in the event of stress (Chart III-3-2). However, attention needs to be paid to the uncertainty regarding the extent of stressed withdrawals from unused committed lines and/or stressed outflows from client-related deposits as some clients have actually drawn on committed lines, facing severe financing conditions due to the effects of the COVID-19 outbreak.¹¹

⁹ In line with the definition of high quality liquid assets (HQLA) in the liquidity coverage ratio (LCR) regulations, investment-grade corporate bonds and residential mortgage-backed securities (RMBS), both of which are highly liquid, are excluded from the figures for overseas credit investment.

¹⁰ For developments in Japanese banks' U.S. dollar funding, see, among others, Box 4 of the April 2019 issue of the *Report*.

¹¹ In Chart III-3-2, the following assumptions are made with regard to assets and liabilities with remaining maturities of up to 1 month (including those with no specific maturity): (1) the full amount of deposits from financial institutions and interbank funding (excluding central bank funding) is withdrawn; (2) 40 percent of deposits from non-financial institutions and central bank funding in interbank funding are withdrawn; (3) 30 percent of unused committed lines are withdrawn by the clients; and (4) 50 percent of loans are regarded as foreign currency liquidity on the premise that they will be repaid within a short time period. Repo funding is not included in either fund outflows or foreign liquid assets.

D. Assessment of the financial cycle

Lastly, this section reviews the developments in Japan's financial cycle up until the global outbreak of COVID-19, based on the heat map and other tools that are regularly employed in the *Report*.

The heat map indicates by color whether there are any signs of overheating, such as those observed during the bubble period in the late 1980s, by showing the degree of deviation from the trend of various Financial Activity Indexes (FAIXs). In the current heat map, 12 out of the 14 FAIXs appear as "green," which signals neither an overheating nor a contraction (Chart III-4-1).¹² The *real estate loans to GDP ratio*, which turned "red" in the April 2019 issue of the *Report*, has remained "red" (Chart III-4-2). In this *Report*, the *total credit to GDP ratio*, which in the previous issue was still "green," has turned "red" for the first time since early 1991 (Chart III-4-3). A major and direct cause for this change is decidedly the relatively large decrease in GDP in the October-December quarter of 2019, which was mainly due to the slowdown in overseas economies and the impacts of the consumption tax hike and natural disasters. However, more fundamentally, the deviation has been driven up by the secular and faster growth in the total credit -- the numerator of the ratio -- relative to GDP for some time (Chart III-4-4).

Since the bursting of the bubble, the trend of the *total credit to GDP ratio* has clearly been a downward shift, and the signs have suggested an overheating relative to this downward trend. The downward shift seems to be largely due to the secular decline in corporate loan demand, mainly reflecting the substantial declines in Japan's potential and expected growth rates (Chart III-4-5). Some FAIXs that substantially deviated upward from their trend during the bubble period, such as the *land prices to GDP ratio* and the *household investment to disposable income ratio*, have remained stable at this stage (Charts III-4-6 and III-4-7). In this respect, the developments in the financial cycle in recent years differ substantially from those during the bubble period, due to differences in the strength of optimism and the degree of overheating incorporated in expectation formation. That said, given that credit growth has outpaced economic growth for several years, the abovementioned vulnerabilities warrant attention: (1) loans to middle-risk firms; (2) loans to rental housing businesses; and (3) loans to high-leverage projects such as large-scale M&A deals.

It should also be noted that, as the downward pressure on business conditions is likely to remain for the time being, financial institutions have shown their attitude toward actively providing funds to firms in order to support firms' cash management, reflecting the policy actions by the government and the Bank of Japan. As a result, the *total credit to GDP ratio* may increase further for the time being, which, if this occurs, is regarded as a necessary development in reaction to policy actions.

Regarding the "financial gap," which is constructed by calculating the weighted average of the deviation rates of individual FAIXs in the heat map from their trends, the positive gap has increased somewhat from that in the previous *Report*, reflecting developments in *the total debt to GDP ratio* mentioned above (Chart III-4-8). Looking at "GDP-at-risk" (GaR),¹³ the estimated probability distribution of GDP growth over the next 3 years conditional on these developments in the financial gap has exhibited a fatter tail on the downside in recent years, although this tail is not as fat as during the bubble period (Chart III-4-9). These results suggest that while the expansion in the financial cycle in recent years has supported a trend of moderate expansion of the economy, it has

¹² In Chart III-4-1, the colors represent the following: (1) red indicates that an indicator is above its upper threshold, that is, overheating; (2) blue indicates that an indicator is below its lower threshold, that is, excessive contraction; (3) green indicates no signs of either extreme; and (4) white indicates no data for that period. For details on the FAIXs, see Ito, Y., Kitamura, T., Nakamura, K., and Nakazawa, T., "New Financial Activity Indexes: Early Warning System for Financial Imbalances in Japan," Bank of Japan Working Paper, no. 14-E-7, April 2014.

¹³ For the GaR approach in terms of its underlying idea, concrete estimation method, and usage caveats, see Chapter IV and Box 1 of the October 2018 issue of the *Report*.

also led to an increase in the downside tail risk to economic growth 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. With the effects of the COVID-19 outbreak spreading, it is necessary to closely monitor, should the substantial deterioration in the real economy be prolonged, whether a synergistic worsening of the real economy and the financial sector could materialize due to full-fledged financial adjustments through the demonstration of the vulnerabilities behind the developments.

IV. Examination of financial institutions' stress resilience

This chapter first assesses financial institutions' profitability and capital adequacy, which constitute the basis of their loss-absorbing capacity. Next, it examines how the materialization of a tail risk, such as a severe economic downturn, would affect the stability of the financial system and the financial intermediation function using macro stress testing.¹⁴

In the tail event scenario, like in previous issues of the *Report*, a stress that is similar in both character and magnitude to the global financial crisis is assumed to arise. The results of the stress testing, which are presented below, confirm that Japan's financial system is resilient to such considerable stress. The stress in financial markets resulting from the COVID-19 outbreak so far has not surpassed the severity assumed in the stress testing in this chapter in terms of the decline in domestic and overseas stock prices, changes in foreign exchange rates toward the yen's appreciation, and the rise in foreign currency funding costs, partly due to the positive impact of prompt and large-scale policy actions by governments and central banks (Chart IV-1-1). This implies that the stress testing results are consistent with the fact that Japan's financial system has been maintaining stability under the current situation and show that Japan's financial system remains highly robust.

However, attention needs to be paid to the fact that the root cause of the current shock and its transmission mechanism significantly differ from those in the global financial crisis. Thus, the depth and duration of any potential economic downturn are subject to considerable uncertainty at present and the speed of the deterioration in financial markets is generally faster than assumed in the stress testing, meaning that careful consideration is required when interpreting the results.

A. Financial institutions' profitability and capital adequacy

1. Profitability

Financial institutions' net income remained historically high in their financial reporting until the first half of fiscal 2019, yet their net income has been on a moderate downward trend (Chart IV-1-2). Pre-provision net revenue (PPNR) excluding trading income, which shows financial institutions' core profitability, has continued to decline. This is due to the downward trend in domestic net interest income caused by the shrinking of deposit-lending margins, as well as to sluggishness in net non-interest income. Moreover, credit costs, the decline of which had supported profits, have been increasing, although they remain at low levels. On the other hand, realized gains on sales of securities in the first half of fiscal 2019 improved, particularly those on bondholdings, mainly reflecting the decline in overseas interest rates.

¹⁴ The simulation utilizes the Financial Macro-econometric Model (FMM) developed by the Financial System and Bank Examination Department of the Bank. For the basic structure of the model, see "The Financial Macro-econometric Model (FMM, March-2020 Version): Overview and Recent Developments," *Financial System Report Annex Series* (forthcoming; the Japanese version was released in March 2020).

2. Capital adequacy

The capital adequacy ratios of financial institutions have been sufficiently above the regulatory requirements for all types of banks.¹⁵ Nevertheless, those of domestic banks have been on a gradual downward trend in recent years (Chart IV-1-3). The decline in the ratios is mainly driven by the fact that earnings are growing at a slower pace than risk-weighted assets, partly due to the increase in loans to low-return borrowers (Chart IV-1-4).

B. Macro stress testing

This section, as in the previous issues of the *Report*, examines the sufficiency of financial institutions' capacity to absorb losses by macro stress testing, assuming an immediate realization of a financial and economic stress at home and abroad to an extent similar to that during the global financial crisis (tail event scenario).¹⁶ The assumed scenarios are purely hypothetical ones designed to effectively examine the stress resilience of financial institutions. They represent neither the Bank of Japan's outlook for the future economic and financial environment or asset prices, nor the likelihood of their outcomes.

1. Baseline scenario

The baseline scenario is based on the forecasts of several research institutions and average forecasts by markets as of January 2020, before the global outbreak of COVID-19.¹⁷ Moreover, it assumes that government bond yields evolve in line with the forward rates implied by the yield curve as of late January, and that stock prices (TOPIX) and foreign exchange rates remain unchanged from the levels registered in January 2020.

The simulation results show that loans outstanding continue to grow and the lending margins remain generally unchanged or moderately narrower; as a result, the net interest income of internationally active banks generally remains unchanged, while that of domestic banks continues to follow a moderate downward trend (Charts IV-2-1, IV-2-2, and IV-2-3). Credit cost ratios have recently started to increase, but only slightly, so they remain at low levels (Chart IV-2-4). Realized gains on securities holdings decline slightly, reflecting an increase in the number of financial institutions that have run out of room for locking in gains (Chart IV-2-5). Combining these developments, net income follows a gradual downward trend, especially for domestic banks (Chart IV-2-6). Finally, capital adequacy ratios remain well above the regulatory requirements throughout the simulation period for all types of banks (Chart IV-2-7).

¹⁵ Internationally active banks and domestic banks are required to maintain a CET1 capital ratio of 4.5 percent and a core capital ratio of 4 percent, respectively. Internationally active banks are also required to meet capital buffer regulations designed to build up an additional buffer to prevent credit supply constraints under stressed conditions. The capital buffer regulations include a requirement of a capital conservation buffer of 2.5 percent, a countercyclical capital buffer of 0 to 2.5 percent, and a capital buffer for global systemically important banks (G-SIBs) of 1 to 2.5 percent or domestic systemically important banks (D-SIBs) of 0.5 percent. Banks are able to use their buffers as necessary to maintain lending to the real economy. See "Confirmation of the safety and soundness requirements in view of the growing impact of COVID-19," released by the FSA on March 17, 2020 (available only in Japanese).

¹⁶ The stress testing targets 112 banks and 248 *shinkin* banks (accounting for approximately 80 to 90 percent of total loans outstanding). The duration of the stress event is assumed to be 3 years, from April-June 2020 through January-March 2023.

¹⁷ The major economic variables for the baseline scenario and the tail event scenario can be downloaded from the Bank's website at <https://www.boj.or.jp/en/research/brp/fsr/fsr200421.htm/>.

2. Tail event scenario

In the tail event scenario, financial markets experience a decline in stock prices, an appreciation of the yen against the U.S. dollar, and a decline in domestic and overseas interest rates, all occurring to the same extent as during the global financial crisis.¹⁸ At the same time, overseas economies decelerate significantly to an extent that again is similar to that during the global financial crisis. Japan's output gap also deteriorates to a level comparable to that seen at that time. The simulation results are as follows. Net interest income declines substantially, reflecting sluggish loan demand and a narrowing of lending margins under the deterioration in the domestic and overseas economies (Charts IV-2-1, IV-2-2, and IV-2-3). Credit cost ratios are projected to rise to a level above their break-even points, due to a deterioration in firms' interest payment capacity indicated by the interest coverage ratio (ICR) (Chart IV-2-4). Moreover, all types of banks realize losses on securities holdings, mainly due to the large decline in stock prices (Chart IV-2-5). As a result, net income decreases substantially and remains in deficit for 3 consecutive years (Chart IV-2-6). Capital adequacy ratios decrease correspondingly but exceed the regulatory requirements on average for all types of banks (Charts VI-2-7 and VI-2-8).

Among the three types of banks, internationally active banks are projected to face the largest decline in capital adequacy ratios, since unrealized losses on securities are counted in their capital adequacy ratios. They also suffer a larger fall in net interest income than the other types of banks, partly reflecting a fall in the yen-denominated value of income gained from overseas loans due to yen appreciation. In addition, reflecting the high share of overseas lending in total lending, credit costs linked to overseas loans account for about 30 percent of the increase in credits costs overall. The estimates indicate that about 80 percent of the increase in credit costs linked to overseas loans are generated from loans to non-investment grade borrowers whose creditworthiness is relatively low (Chart IV-2-9). By region, not only loans to the Americas but also those to Europe, the Middle East, and Africa (EMEA) and the Asia and Pacific region generate somewhat large credit costs.¹⁹

Among regional financial institutions, those with substantial increases in their loans to low-return borrowers and their holdings of stock investment trusts, as well as those with an increase in the book value of their securities holdings due to the repeated locking in gains, tend to see a larger decline in capital adequacy ratios in the event of stress. In particular, the credit cost ratio of domestic regional banks, for which the share of loans to low-return borrowers in total loans is relatively high, rises to approximately 1.5 percent, which is high by historical standards yet still below the peak during Japan's financial crisis of the late 1990s.²⁰

¹⁸ One exception is the assumption that the decline in domestic and foreign government bond yields is smaller than in the period during the global financial crisis as the lower limit for government bond yields is set to the lowest level observed until January 2020.

¹⁹ In the stress testing in this *Report*, estimation models of the credit costs related to overseas lending have been refined in two respects. First, loans outstanding to "normal" borrowers were segmented into multiple groups based on their creditworthiness and the credit costs of each group were estimated individually. This makes it possible to capture in detail the impact of the stress event on credit costs. Second, in addition to the GDP, the ICR, which shows borrowers' ability to pay interest, was newly added to the explanatory variables for the overseas default rate models. These refinements make it possible for the test to incorporate the possibility that, in the event of stress, firms with relatively low creditworthiness and high leverage will default not only due to a decrease in operating profits but also due to an increase in the burden of interest payments.

²⁰ The credit cost ratio of domestic regional banks is projected to become significantly higher than that of *shinkin* banks. This is because regional banks' share of loans to low-return borrowers is higher than that of *shinkin* banks. It is also due to the fact that credit costs for regional banks during the global financial crisis were more sensitive to business conditions than those of *shinkin* banks, which is reflected in their different parameter values in the credit cost models.

Taken together, the above stress testing results show that, on the whole, Japan's financial institutions are highly resilient to considerable stress comparable to the stress observed during global financial crisis. However, it should be noted that there is substantial variation in financial institutions' capital adequacy ratios in the event of stress.

Glossary

Financial statements of financial institutions

Net income = operating profits from core business + realized gains/losses on stockholdings + realized gains/losses on bondholdings – credit costs ± others (such as extraordinary gains/losses)

Gross operating profits from core business = core gross operating profits = net interest income + net non-interest income

Operating profits from core business = pre-provision net revenue (PPNR) excluding trading income = net interest income + net non-interest income – general and administrative expenses

Net interest income = interest income – interest expenses

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

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

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

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

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

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

Credit cost ratio = credit costs / total loans outstanding

Capital adequacy ratios of internationally active banks

Common equity Tier 1 (CET1) capital ratio = CET1 capital / risk-weighted assets

CET1 capital includes common equities and retained earnings.

Tier 1 capital ratio = Tier 1 capital / risk-weighted assets

Tier 1 capital includes CET1 capital and preferred equities that meet certain conditions.

Total capital adequacy ratio = Total capital / risk-weighted assets

Total capital includes Tier 1 capital and subordinated bonds that meet certain conditions.

Capital adequacy ratios of domestic banks

Core capital ratio = core capital / risk-weighted assets

Core capital includes common equities and retained earnings as well as preferred equities that meet certain conditions.

Chart II-1-1: Developments in global financial markets

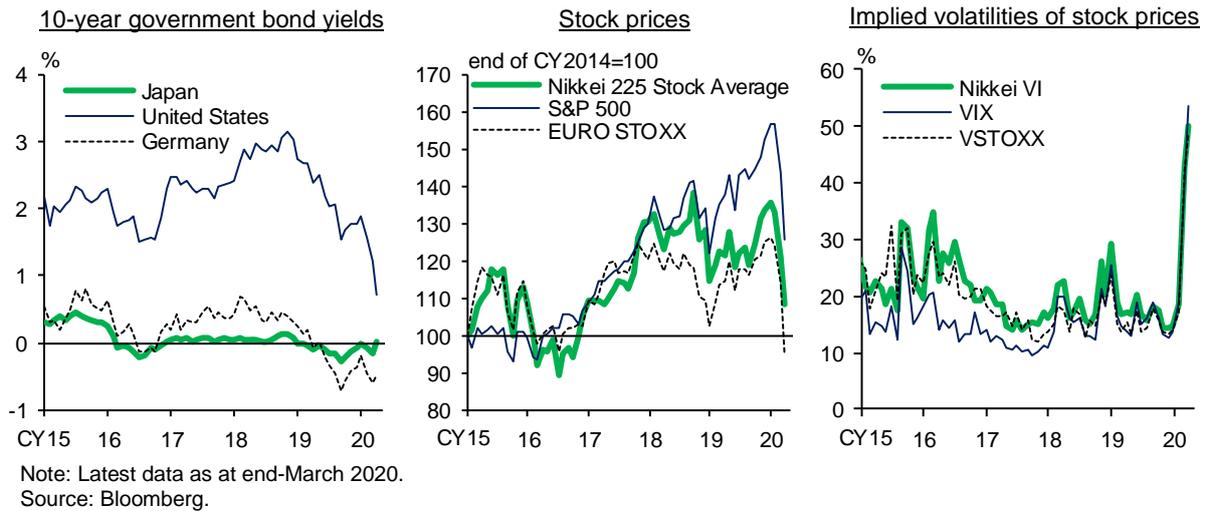


Chart II-1-2: REIT indices

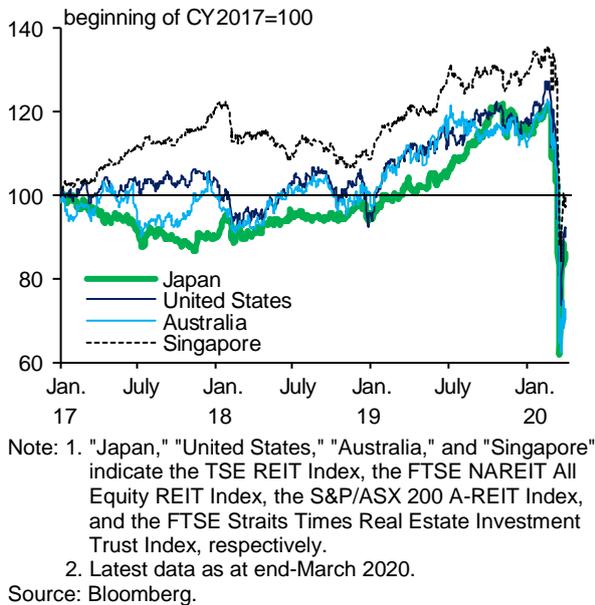


Chart II-1-3: Net flows in U.S. corporate bond funds

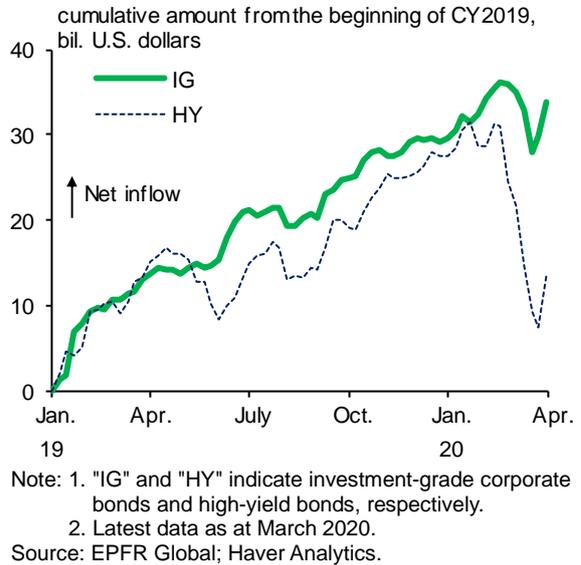


Chart II-1-4: Credit spreads on U.S. corporate bonds and CLOs

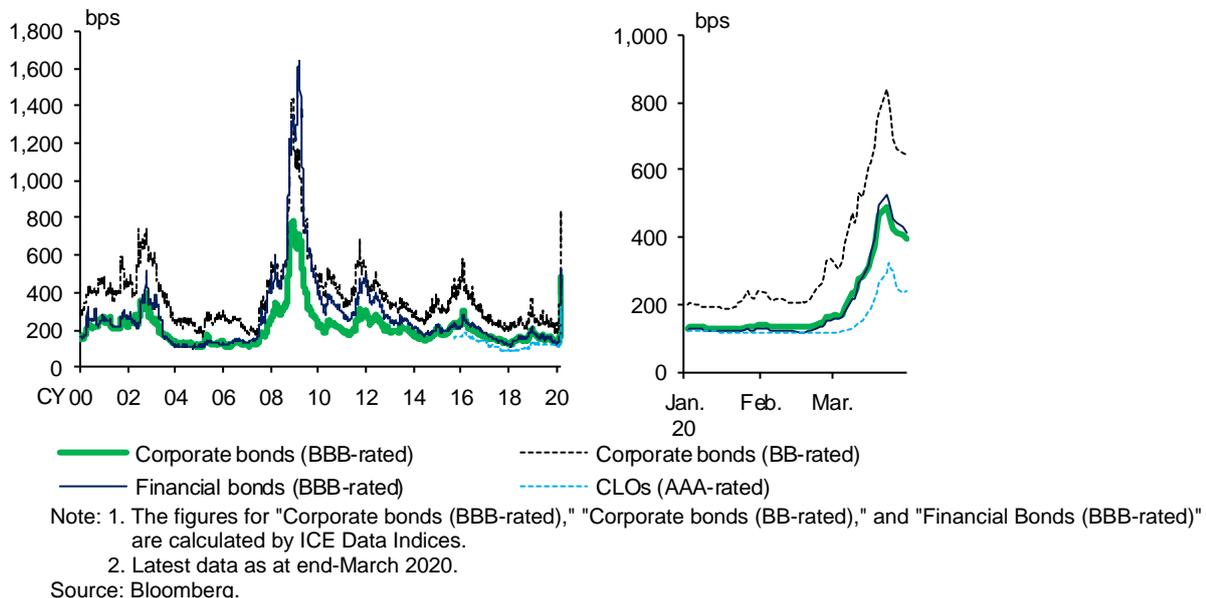
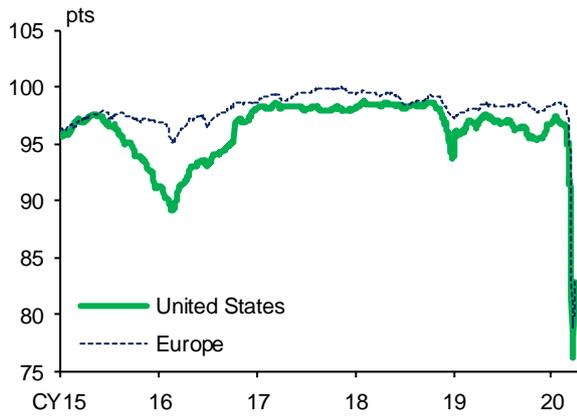
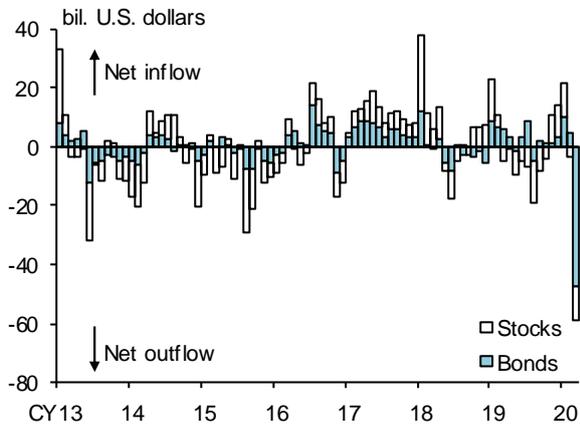


Chart II-1-5: Leveraged loan prices



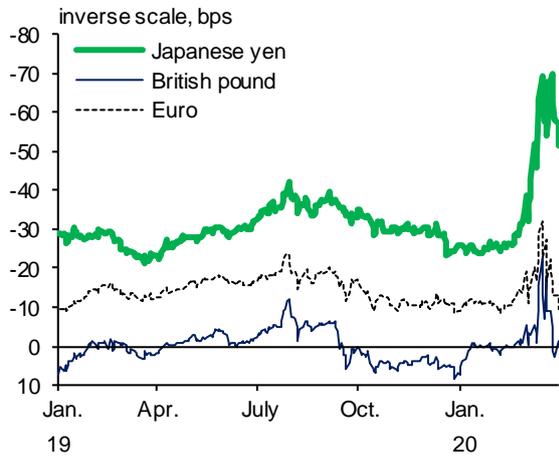
Note: 1. The figures indicate the index of leveraged loan prices in the secondary markets (the S&P/LSTA Leveraged Loan Index for the United States and the S&P European Leveraged Loan Index for Europe).
 2. Latest data as at end-March 2020.
 Source: Bloomberg.

Chart II-1-6: Net flows in emerging market funds



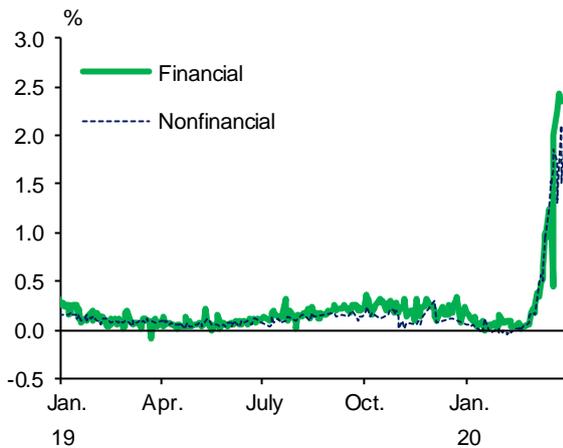
Note: Latest data as at March 2020.
 Source: EPFR Global; Haver Analytics.

Chart II-1-7: U.S. dollar funding premiums



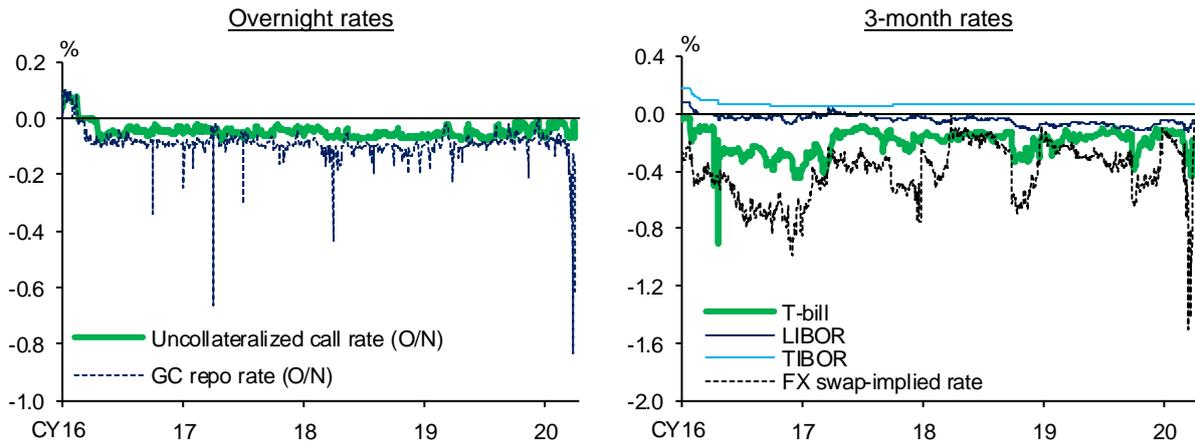
Note: 1. 1-year cross-currency basis swaps.
 2. Latest data as at end-March 2020.
 Source: Bloomberg.

Chart II-1-8: U.S. commercial paper rates



Note: 1. Yield spreads of AA-rated commercial paper over OIS (3-month).
 2. Latest data as at end-March 2020.
 Source: Bloomberg.

Chart II-2-1: Short-term rates



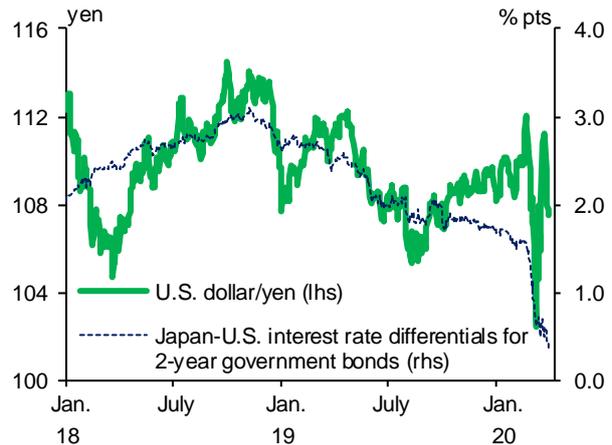
Note: 1. In the left-hand chart, the horizontal axis indicates the starting date of transaction settlement. "GC repo rate (O/N)" up to April 27, 2018 indicates the T/N rate.
 2. In both charts, the latest data are as at end-March 2020.
 Source: Bloomberg; Japan Bond Trading; JSDA; BOJ.

Chart II-2-2: 10-year JGB yields



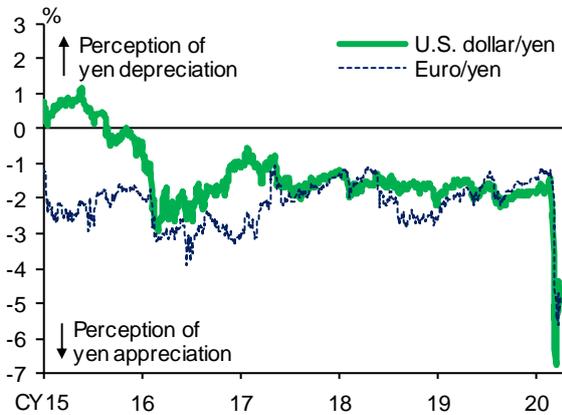
Note: Latest data as at end-March 2020.
 Source: Bloomberg.

Chart II-2-3: Japan-U.S. interest rate differentials and U.S. dollar/yen rates



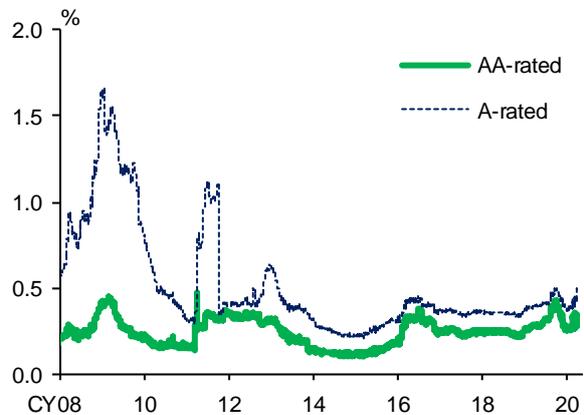
Note: Latest data as at end-March 2020.
 Source: Bloomberg.

Chart II-2-4: Risk reversals



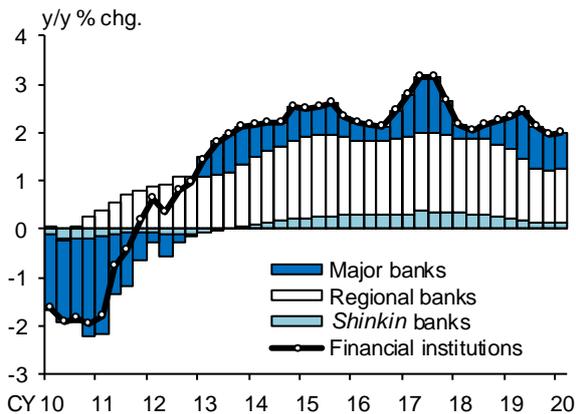
Note: Latest data as at end-March 2020.
 Source: Bloomberg.

Chart II-2-5: Credit spreads on corporate bonds



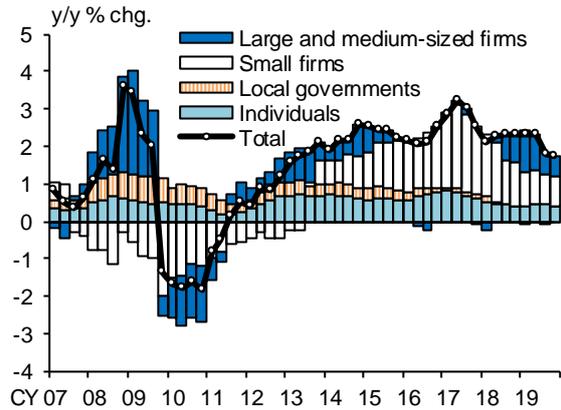
Note: 1. Yield spreads of corporate bonds with remaining maturity of 3 or more years but less than 7 years over government bonds. Rated by R&I.
 2. Latest data as at end-March 2020.
 Source: Bloomberg; JSDA.

Chart II-3-1: Domestic loans outstanding among financial institutions



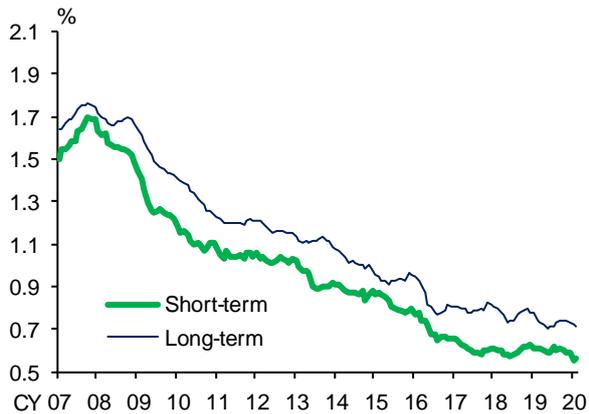
Note: Latest data as at the January-March quarter of 2020.
Source: BOJ, "Principal figures of financial institutions."

Chart II-3-2: Loans outstanding among financial institutions by type of borrower



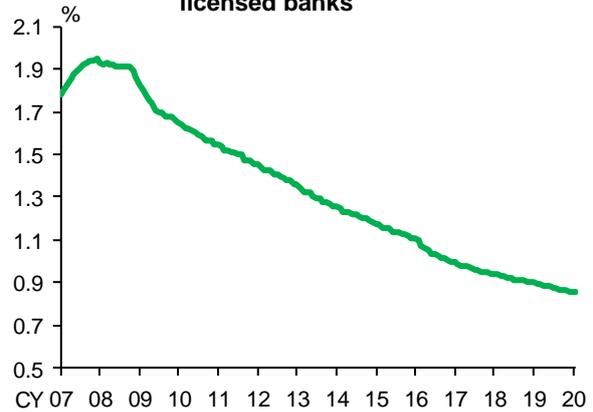
Note: Loans to banks and insurance companies are excluded. Latest data as at end-December 2019.
Source: BOJ.

Chart II-3-3: Average contract interest rates on new loans and discounts among domestically licensed banks



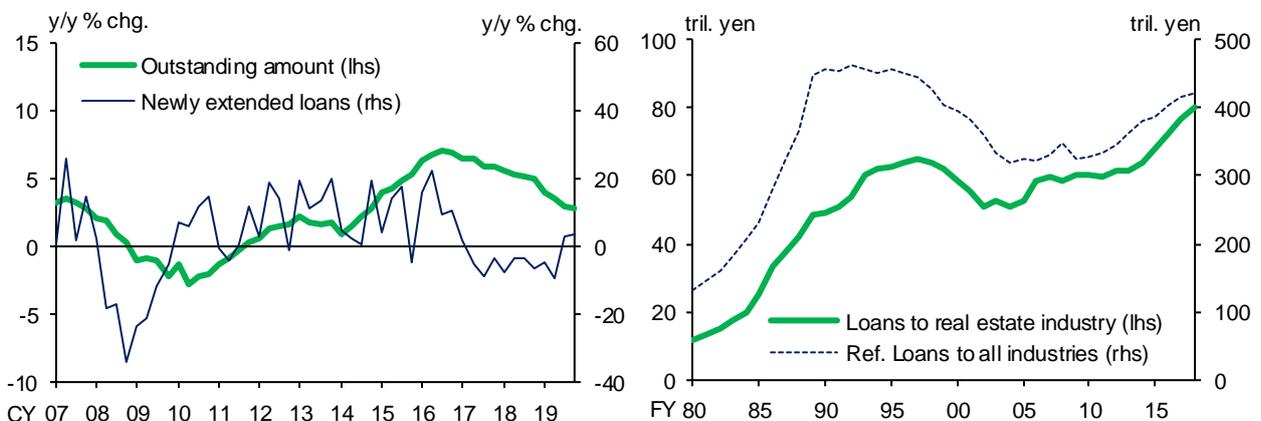
Note: 6-month backward moving averages. Latest data as at February 2020.
Source: BOJ, "Average contract interest rates on loans and discounts."

Chart II-3-4: Average contract interest rates on outstanding loans and bills discounted among domestically licensed banks



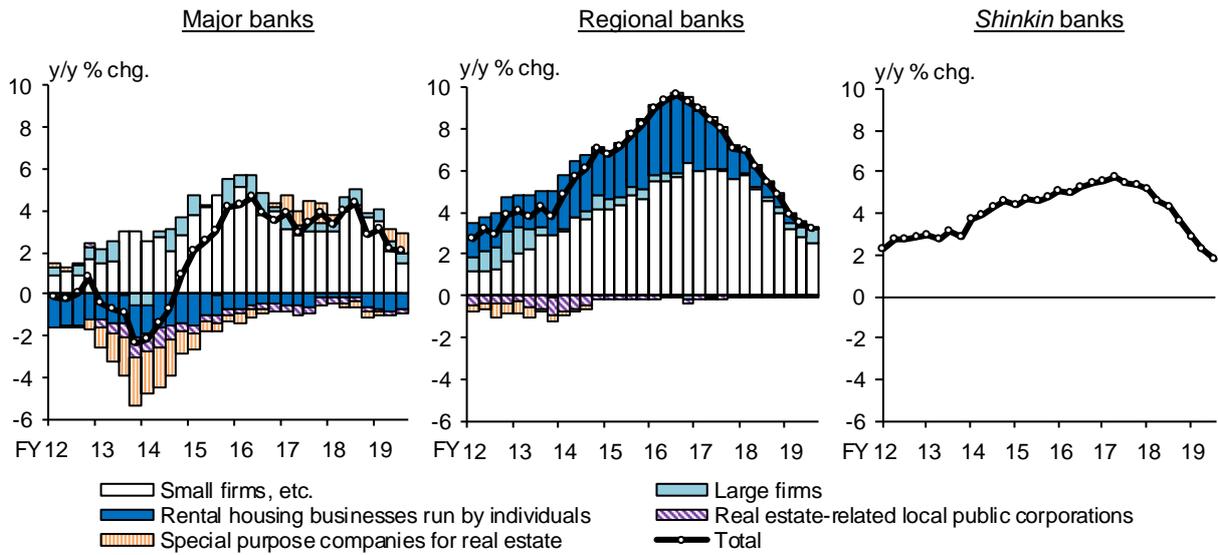
Note: Latest data as at February 2020.
Source: BOJ, "Average contract interest rates on loans and discounts."

Chart II-3-5: Real estate loans among financial institutions



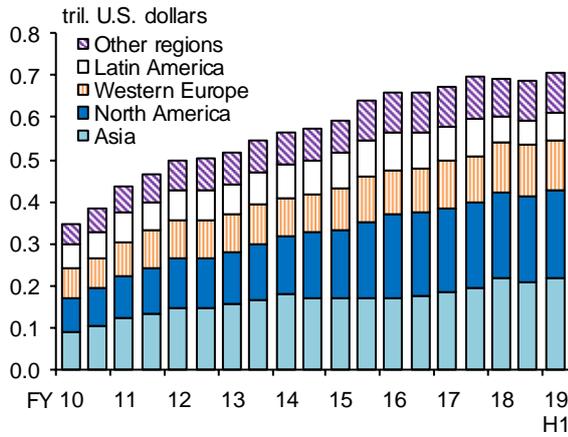
Note: 1. The right-hand chart covers domestic banks only to extend the time scale.
2. In the left-hand chart, the latest data for "Outstanding amount" are as at end-December 2019 and the latest data for "Newly extended loans" are as at the October-December quarter of 2019. In the right-hand chart, the latest data are as at end-March 2019.
Source: BOJ.

Chart II-3-6: Breakdown of real estate loans



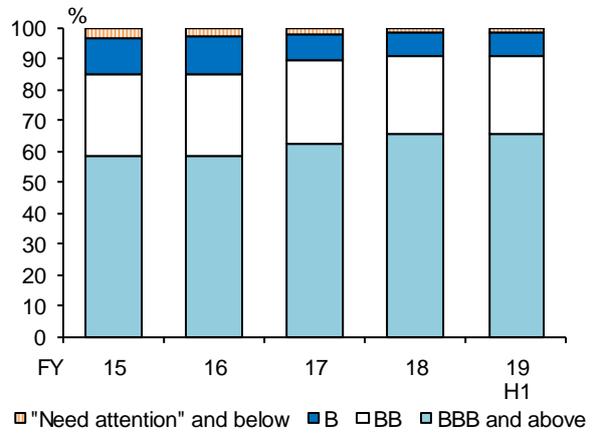
Note: Latest data as at end-December 2019.
Source: BOJ.

Chart II-3-7: Overseas loans outstanding of the three major banks by region



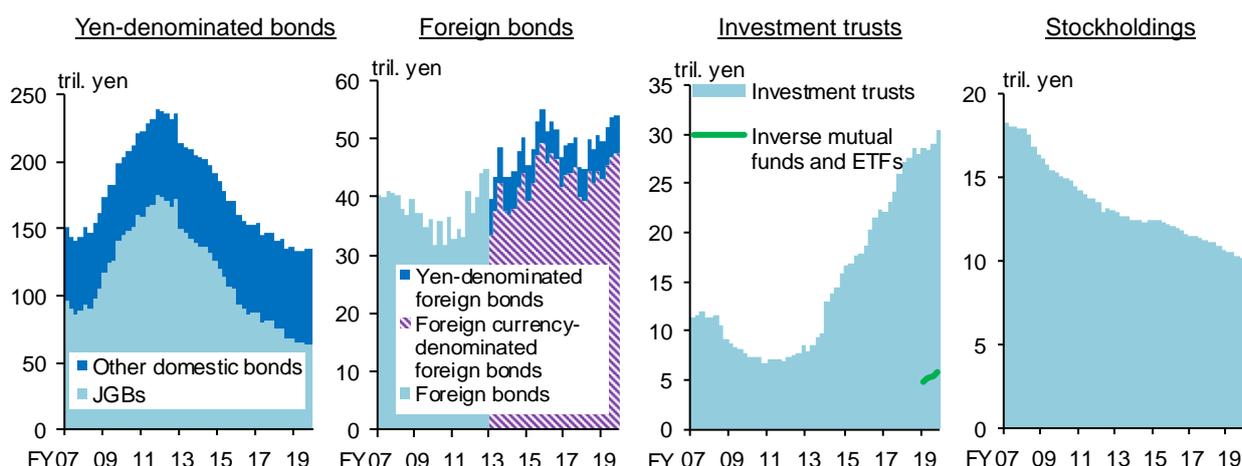
Source: Published accounts of each bank.

Chart II-3-8: Composition of the three major banks' overseas loans by credit rating



Source: BOJ.

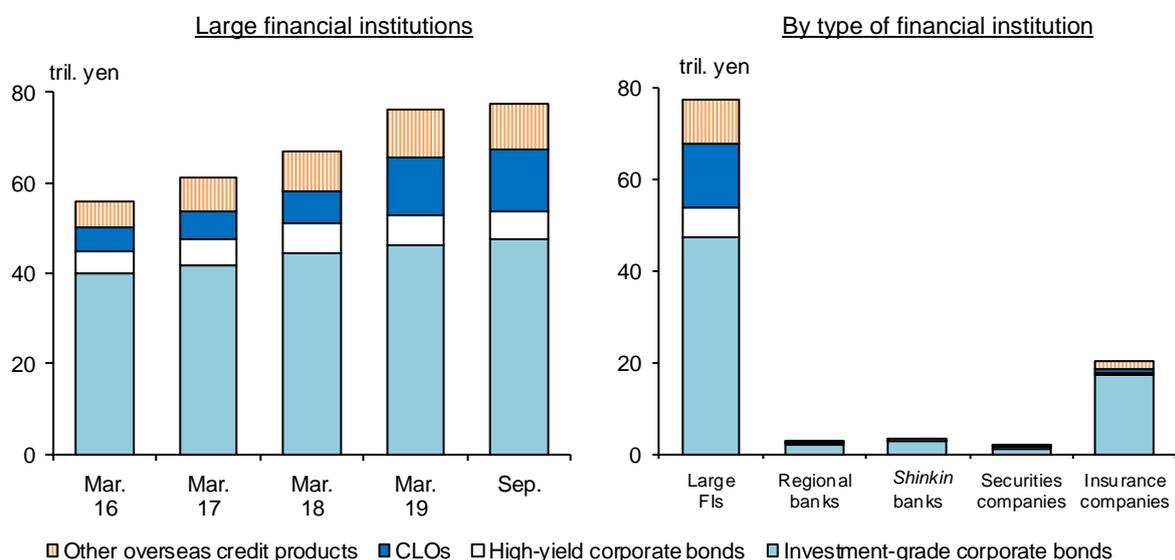
Chart II-3-9: Outstanding amount of securities investments among financial institutions



- Note: 1. The data for "Yen-denominated" bonds are the sum of figures for domestic and overseas branches, based on the outstanding amount at month-end.
 2. The data for "Foreign bonds" held by both domestic and overseas branches are the sum of figures for "Foreign currency-denominated foreign bonds" and "Yen-denominated foreign bonds", based on the outstanding amount at month-end. The data up to March 2010 are figures for foreign securities.
 3. The data for "Investment trusts" include some securities other than investment trusts, based on the outstanding amount at month-end. The data are the sum of figures for domestic and foreign investment trusts held by both domestic and overseas branches.
 4. The data for "Stockholdings" are based on the outstanding amount on a book value basis at month-end and exclude foreign stockholdings. The data for major banks are figures for domestic branches and the data for other banks are the sum of figures for domestic and overseas branches.
 5. Latest data as at end-February 2020.

Source: BOJ.

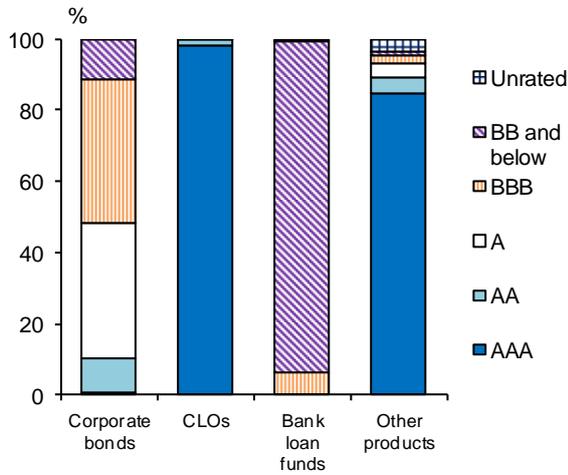
Chart II-3-10: Outstanding amount of overseas credit product investment among financial institutions



- Note: 1. "Large financial institutions" includes major banks, Japan Post Bank, and a central organization of financial cooperatives.
 2. Investment trusts held by regional banks and *shinkin* banks are excluded from the data.
 3. Data for "Large financial institutions" are as at end-September 2019 and data for other types of financial institutions are as at end-March 2019.

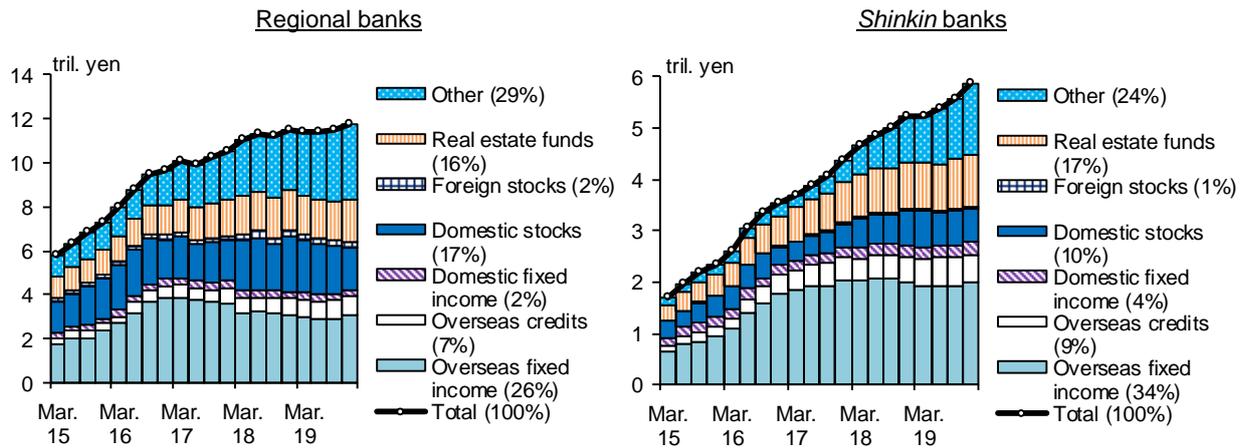
Source: BOJ.

Chart II-3-11: Composition of overseas credit product investment among financial institutions by credit rating



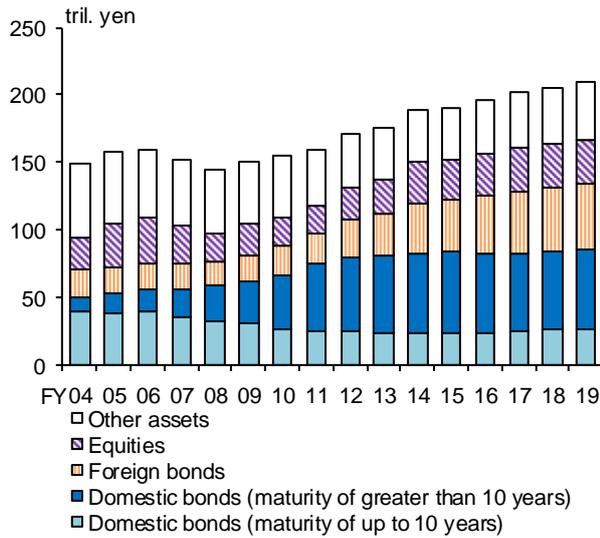
Note: 1. Covers major banks, Japan Post Bank, a central organization of financial cooperatives, regional banks, and *shinkin* banks.
 2. Investment trusts held by regional banks and *shinkin* banks are excluded from the data.
 3. Data as at end-March 2019.
 Source: BOJ.

Chart II-3-12: Breakdown of outstanding amount of investment trusts among regional financial institutions



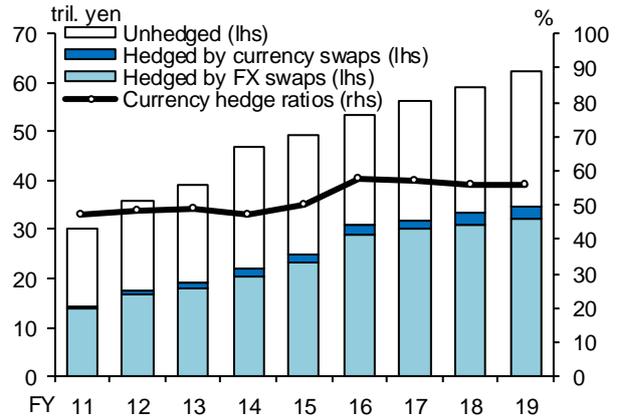
Note: 1. Based on book values. Figures in parentheses in the chart indicate the share of product type in last period.
 2. "Other" includes foreign investment trusts.
 3. Latest data as at end-December 2019.
 Source: BOJ.

Chart II-3-13: Investment assets outstanding among life insurance companies



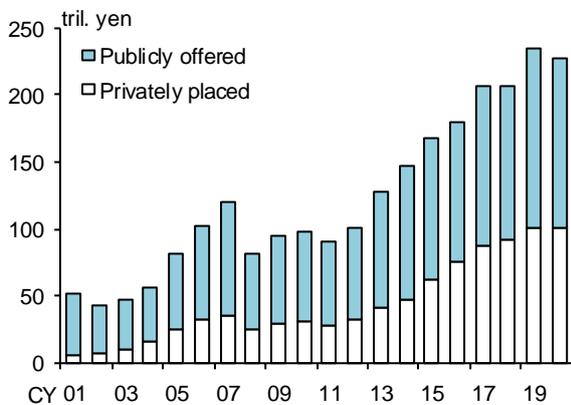
Note: 1. "Other assets" includes cash and deposits, loans, investment trusts, and real estate.
 2. Covers nine major life insurance companies.
 Based on general accounts. The data for fiscal 2019 are as at end-September 2019.
 Source: Published accounts of each company.

Chart II-3-14: Currency hedge ratios for foreign securities investment among life insurance



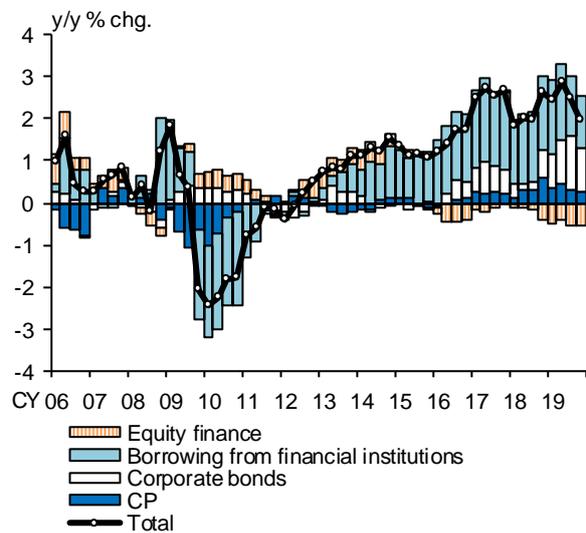
Note: Covers nine major life insurance companies.
 Estimated based on general accounts. The data for fiscal 2019 are as at end-September 2019.
 Source: Published accounts of each company.

Chart II-3-15: Assets among investment trusts



Note: 1. Includes publicly offered REITs (from 2007) and privately placed REITs (from 2013).
 2. The latest data for REITs are as at end-January 2020 and the latest data for other assets are as at end-February 2020.
 Source: The Investment Trusts Association, Japan.

Chart II-3-16: Outstanding amount of firms' funding



Note: 1. "Equity finance" indicates net changes in the book values of shares and other equities of private nonfinancial corporations.
 2. "Borrowing from financial institutions" excludes borrowing by banks and insurance companies. "CP" and "Corporate bonds" cover those issued by ordinary industrial corporations.
 3. Latest data as at end-December 2019.
 Source: I-N Information Systems; JASDEC; BOJ.

Chart III-1-1: Main policy responses in major countries and economies

	Monetary policies and measures for financial market stability	Prudential measures
Multi-country or international	<p>Enhancement of U.S. dollar liquidity provision through the coordination of 6 central banks</p> <p>Establishment of temporary U.S. dollar liquidity arrangements between the FRB and 9 central banks other than the above 6 central banks</p>	<p>Deferral of finalized Basel III implementation by 1 year</p> <p>Encouraging banking organizations to use their capital and liquidity buffers</p> <p>Providing greater flexibility in how to phase in the impact of expected credit loss (ECL) on regulatory capital</p>
Japan	<p>Provision of more ample yen funds by making use of active purchases of JGBs and other operations</p> <p>Introduction of the Special Funds-Supplying Operations to Facilitate Corporate Financing regarding the Novel Coronavirus (COVID-19)</p> <p>Increase in purchases of CP and corporate bonds (2 trillion yen increase in the upper limit)</p> <p>Active purchases of ETFs and J-REITs at annual paces with upper limits of about 12 trillion yen and about 180 billion yen, respectively</p>	<p>Request to take flexible actions responding to infringements of covenants</p> <p>Acceptance of flexible approaches for asset assessment</p> <p>Provision of flexibility to defer deadlines for supervisory reporting from financial institutions</p>
United States	<p>Reduction of the target range for the federal fund rate (from 1.50-1.75% to 0-0.25%)</p> <p>Increase in the holdings of Treasury securities and of agency mortgage-backed securities (MBS) as well as inclusion of purchases of agency commercial mortgage-backed securities in the FRB's agency MBS purchases</p> <p>Establishment of the Commercial Paper Funding Facility (CPFF)</p> <p>Establishment of the Primary Market Corporate Credit Facility (PMCCF) and the Secondary Market Corporate Credit Facility (SMCCF)</p> <p>Establishment of the Primary Dealer Credit Facility (PDCF)</p> <p>Establishment of the Money Market Mutual Fund Liquidity Facility (MMLF), through which the FRB of Boston makes loans available to eligible financial institutions secured by high-quality assets purchased by the financial institution from money market mutual funds</p> <p>Establishment of the Term Asset-Backed Securities Loan Facility (TALF)</p> <p>Establishment of the Main Street Lending Program (MSLP)</p> <p>Establishment the Paycheck Protection Program Liquidity Facility (PPPLF)</p> <p>Establishment of the Municipal Liquidity Facility (MLF)</p> <p>Establishment of a temporary repurchase agreement facility for foreign and international monetary authorities (FIMA Repo Facility)</p>	<p>Temporary reduction of the examination activities and grant of additional time for resolving non-critical existing supervisory findings</p> <p>Encouraging banking organizations to use a TLAC buffer so that they support the economy</p> <p>Delay of the estimated impact on regulatory capital stemming from the implementation of Current Expected Credit Loss (CECL) for a transition period</p> <p>Delay of the effective date of the final rule that revises the Board's framework for determining whether a company controls another company for purposes of the Bank Holding Company Act or the Home Owners' Loan Act</p> <p>Temporary easing of the supplementary leverage ratio rule</p> <p>Flexible supervisory and enforcement approach regarding mortgage servicing rules</p> <p>Temporary relief through changes to the community bank leverage ratio framework</p> <p>Suspension of the requirements to classify certain loan modifications as troubled debt restructuring</p>
EU	<p>Introduction of additional long-term refinancing operations (LTROs)</p> <p>Ease of conditions for targeted longer-term refinancing operations (TLTRO III)</p> <p>Increase in a temporary envelope of additional net asset purchases to the existing asset purchase programme (APP)</p> <p>Launch of the Pandemic Emergency Purchase Programme (PEPP) purchasing private and public sector securities with an overall envelope of 750 billion euro until the end of 2020</p> <p>Expansion of the range of eligible assets under the Corporate Sector Purchase Programme (CSPP) to non-financial commercial paper</p>	<p>Relief in the composition of capital for Pillar 2 Requirements (P2R) allowing banks to partially use capital instruments which do not qualify as CET1 capital to meet the P2R</p> <p>Statement regarding the appropriate relaxation of the countercyclical capital buffer (CCyB) by the national macroprudential authorities (Reduction of CCyB in Germany, France, etc. [from 0.25% to 0% in Germany and France])</p> <p>Introduction of supervisory flexibility regarding the treatment of non-performing loans</p> <p>Postponement of the 2020 EBA EU-wide stress test exercise</p>

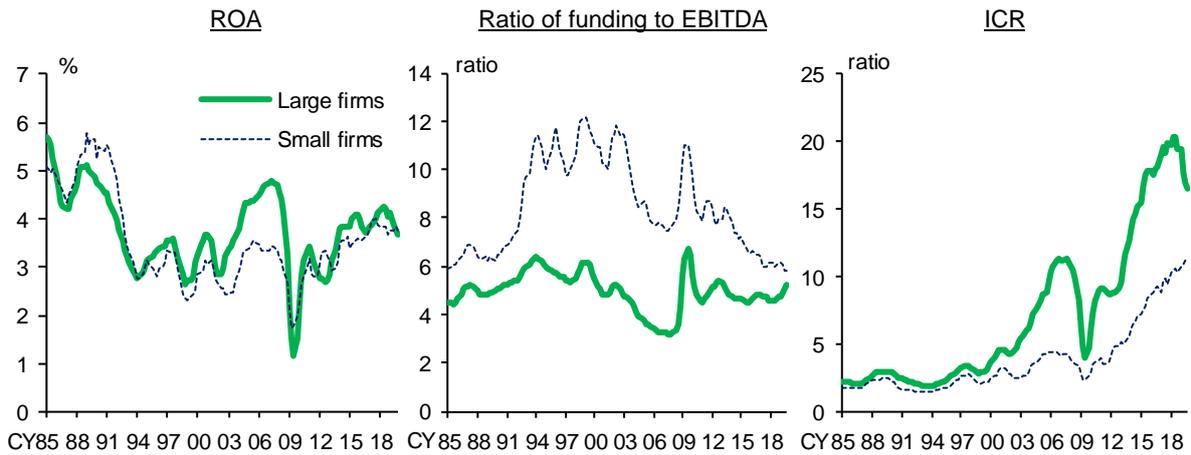
	Adoption of a package of temporary collateral easing measures (easing the conditions for the use of credit claims as collateral, reduction of collateral valuation haircuts, etc.)	Recommendation for significant credit institutions to refrain from making dividend distributions and performing share buybacks during the period of the COVID-19-related economic shock Publication of guidelines on legislative and non-legislative moratoria on loan repayments applied in the light of the COVID-19 crisis
United Kingdom	Reduction of Bank Rate (from 0.75% to 0.1%) Introduction of the Term Funding Scheme with additional incentives for SMEs (TFSME) Expansion of the Asset Purchase Facility (APF), to increase in the holdings of government bonds and corporate bonds by 200 billion pounds Creation of the Covid Corporate Financing Facility (CCFF) purchasing commercial papers Activation of the 3-month Contingent Term Repo Facility (CTRF)	Reduction of the CCyB (from 1% to 0%) Cancellation of the annual stress test Amendments to the biennial exploratory scenario timetable Postponement of supervisory programmes for individual firms and FMI (non-critical data requests, on-site visits, etc.) Release of letters to the seven largest systemically important UK deposit-takers requesting the suspension of dividend payments and share buybacks on ordinary shares

	Fiscal policies	
Japan	<p><u>108 trillion yen (about 20% of GDP) of economic measures (including financial support for public loans and guarantee) that include:</u> Development of infection prevention and control measures, establishment of a medical service system, and development of vaccines and drugs; virtually interest-free and unsecured loans to self-employed individuals and small and micro businesses; new subsidies for small and micro businesses; deferral of tax payments; new benefits for households with declining incomes due to absence from work; support for recovery of business activities; and construction of a resilient economic structure</p> <p>Major examples of financial assistance: Providing continuing financing support through special loans and crisis response operations by the Japan Finance Corporation (JFC), etc. Making loans for managerial improvement funds of small businesses (the so-called <i>Marukei</i> Loan) de facto interest-free Refinancing existing debts from JFC and guaranteed private loans Strengthening and expanding credit guarantees, including reduction or exemption of guarantee fees Establishing a facility that allows private financial institutions to provide virtually interest-free and unsecured loans Requesting that private financial institutions thoroughly implement timely and appropriate responses to changes in the repayment capacity of borrowers after loan disbursements Strengthening cooperation between private financial institutions and governmental financial institutions</p>	
United States	<p><u>2.3 trillion dollars (about 11% of GDP) of spending and tax measures (including public loans and guarantees, etc.) that include:</u> one-time tax rebates to individuals; expansion of unemployment benefits; a food safety net for the most vulnerable; provision of loans, guarantees and backstopping Federal Reserve 13(3) program to prevent corporate bankruptcy; forgivable Small Business Administration loans and guarantees; funds for hospitals; and transfers to state and local governments, etc.</p>	
Germany	<p><u>156 billion euros (about 4.9% of GDP) of spending and tax measures that include:</u> spending on healthcare equipment, hospital capacity and R&D (vaccine); expanded access to the short-term work subsidy; expanded childcare benefits for low-income parents; easier access to basic income support for the self-employed; grants to small business owners and self-employed persons; and interest-free tax deferrals until year-end <u>757 billion euros (about 23% of GDP) of public loan guarantees, etc.</u></p>	
United Kingdom	<p><u>At least 57 billion pounds (at least about 2.6% of GDP) of spending and tax measures that include:</u> additional funding for the NHS, public services and charities; measures to support businesses, including property tax holidays, direct grants for small firms in the most-affected sectors, and compensation for sick pay leave; and strengthening the social safety net to support vulnerable people <u>330 billion pounds (about 15% of GDP) of government-backed loans and guarantees, etc.</u></p>	

Note: Based on data available up to April 10, 2020.

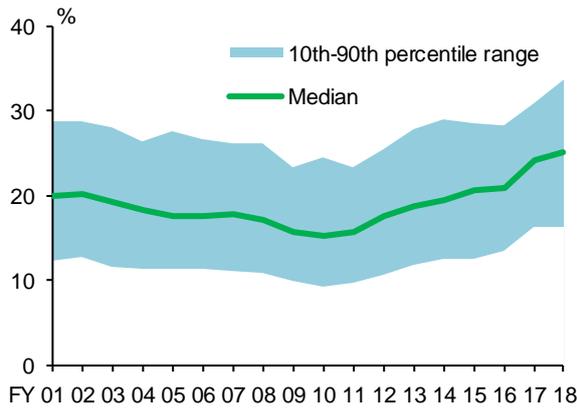
Source: BCBS; IMF; Releases by each government and each central bank.

Chart III-1-2: Debt payment capacity of firms



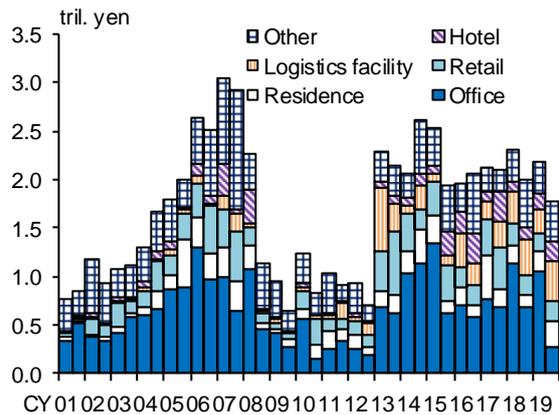
Note: 1. ROA = operating profits / total assets. EBITDA = operating profits + depreciation and amortization.
 ICR = (operating profits + interest incomes) / interest expenses.
 2. 4-quarter backward moving averages. Latest data as at the October-December quarter of 2019.
 Source: Ministry of Finance.

Chart III-1-3: Loan share of low-return borrowers among financial institutions



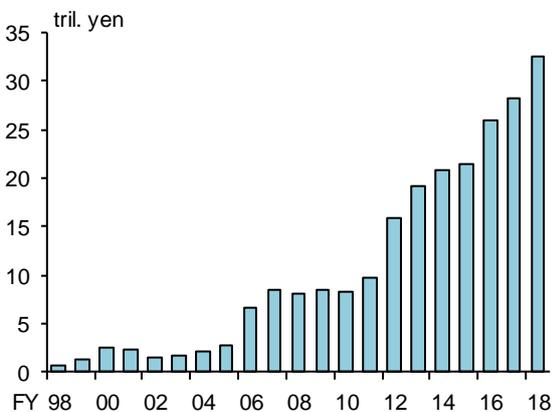
Note: Covers major banks and regional financial institutions.
 Source: Teikoku Databank.

Chart III-1-4: Value of real estate transactions by type of property



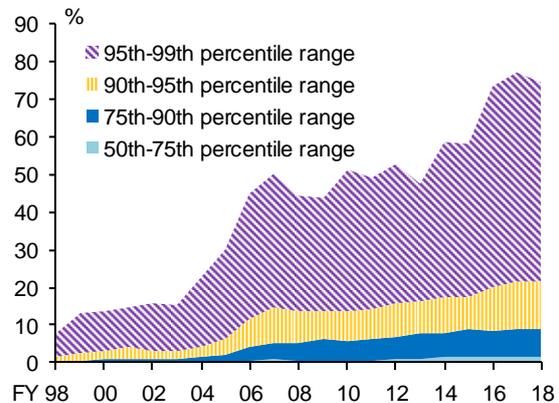
Note: Latest data as at the second half of 2019.
 Source: Japan Real Estate Institute.

Chart III-1-5: Amount of firms' goodwill



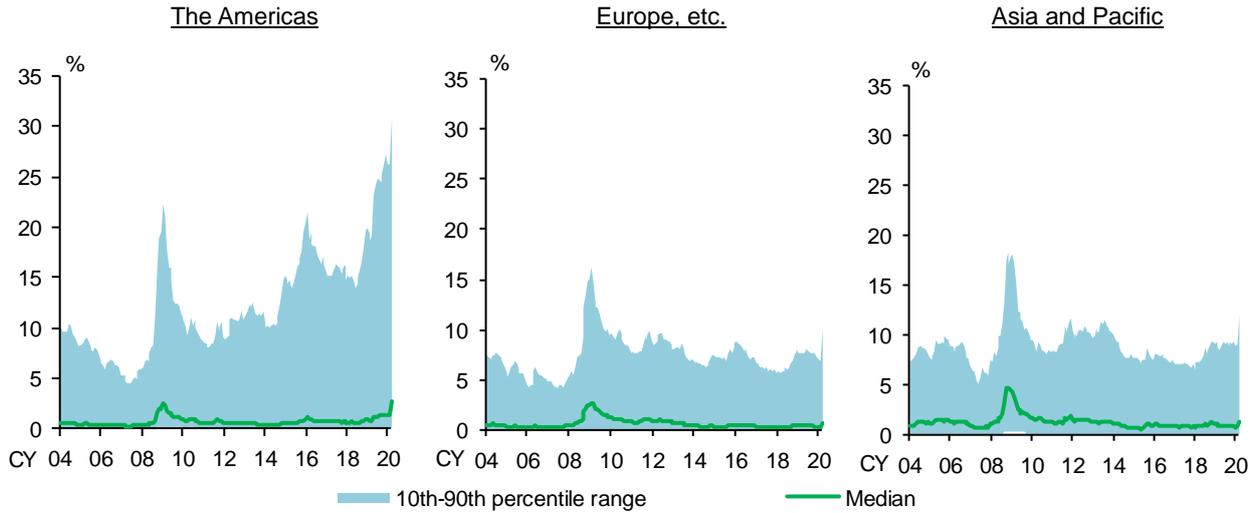
Note: Covers firms listed on the domestic stock exchanges.
 Source: Development Bank of Japan.

Chart III-1-6: Distribution of goodwill as a percentage of net worth



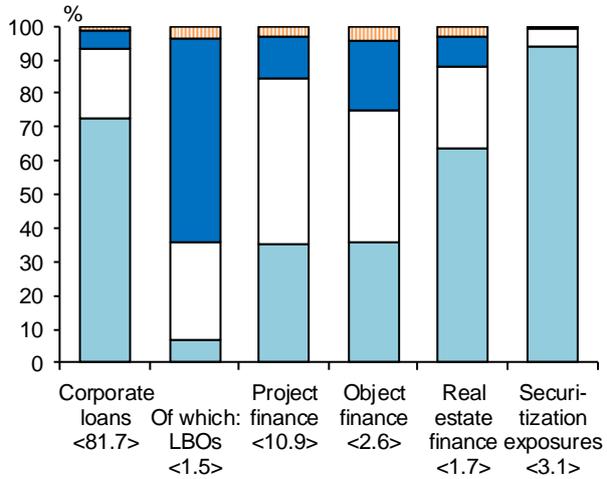
Note: Covers firms listed on the domestic stock exchanges.
 Source: Development Bank of Japan.

Chart III-1-7: EDF for firms by region



Note: 1. The charts indicate 1-year EDF.
 2. "Europe, etc." includes the Middle East and Africa.
 3. Latest data as at end-March 2020.
 Source: Moody's.

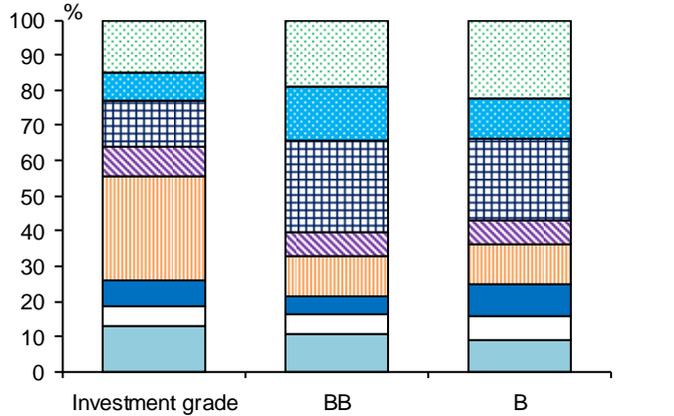
Chart III-1-8: Composition of overseas loans by type of product and by credit rating among large financial institutions



Legend: "Need attention" and below (white), B (dark blue), BB (light blue), Investment grade (orange)

Note: "Large financial institutions" includes major banks, Japan Post Bank, and a central organization of financial cooperatives. Figures in parentheses indicate the share of product type. Data as at end-March 2019.
 Source: BOJ.

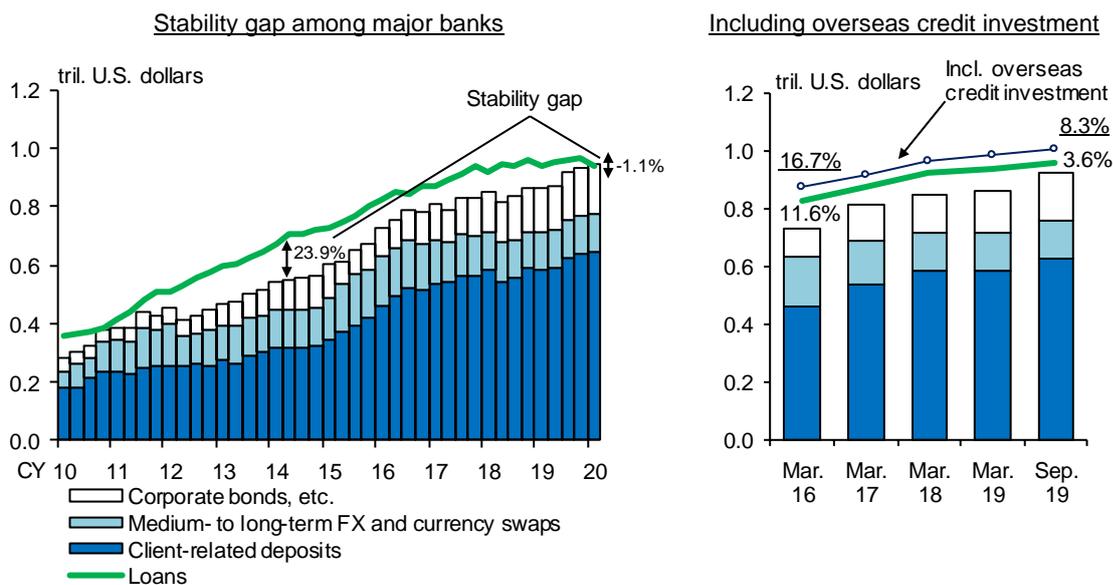
Chart III-1-9: Composition of major banks' overseas loans by industry and by credit rating



Legend: Other industries (white), Transportation, postal service, and information and communication (dark blue), Electricity, gas, and energy (grid pattern), Wholesale and retail (purple), Finance and insurance (orange), Construction and real estate (blue), Textiles and chemicals (white), Machinery (blue)

Note: Covers the three major banks. Data as at end-March 2019.
 Source: BOJ.

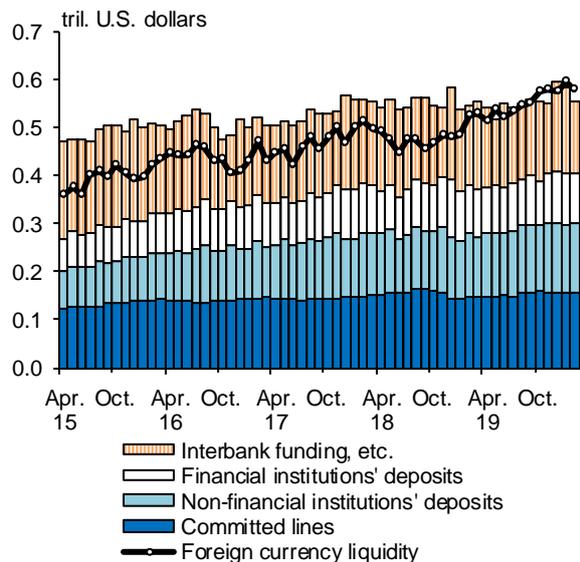
Chart III-3-1: Stability gap among major banks



- Note: 1. Until end-March 2012, "Corporate bonds, etc." and "Medium- to long-term FX and currency swaps" indicate funding maturing in more than 3 months and thereafter, funding maturing in more than 1 year.
2. The figures in the left-hand chart indicate the ratios of the gaps to the loans (as at end-April 2014 and end-February 2020).
3. "Incl. overseas credit investment" in the right-hand chart indicates the sum of outstanding amounts of the loans and the overseas credit investment. The figures without underlines and those with underlines in the chart indicate the ratios of the gaps to the loans and those to the sum of loans and the overseas credit investment, respectively (as at end-March 2016 and end-September 2019).
4. The data in both charts cover internationally active banks.
5. In the left-hand chart, the latest data are as at end-February 2020. In the right-hand chart, the latest data are as at end-September 2019.

Source: BOJ.

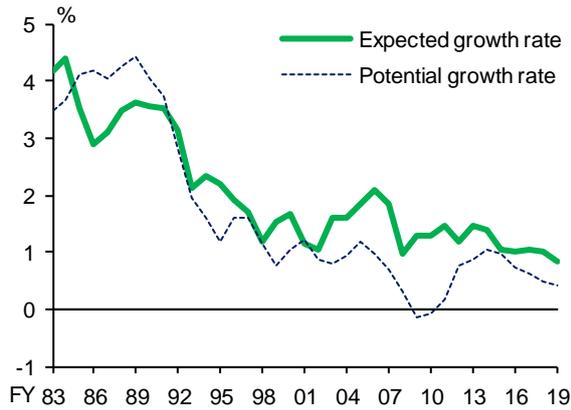
Chart III-3-2: Resilience to foreign currency liquidity stress among major banks



- Note: 1. "Foreign currency liquidity" = interbank investments + 50 percent of loans + FX and currency swaps + unencumbered securities. Data excluding unencumbered securities indicate assets maturing within 1 month or with no specific maturity. "Financial institutions' deposits" up to end-February 2017 are estimated based on the proportion of financial institutions' deposits to non-financial institutions' deposits from end-March 2017.
2. The bar graph shows the breakdown of cash outflows.
3. Covers internationally active banks. Latest data as at end-February 2020.

Source: BOJ.

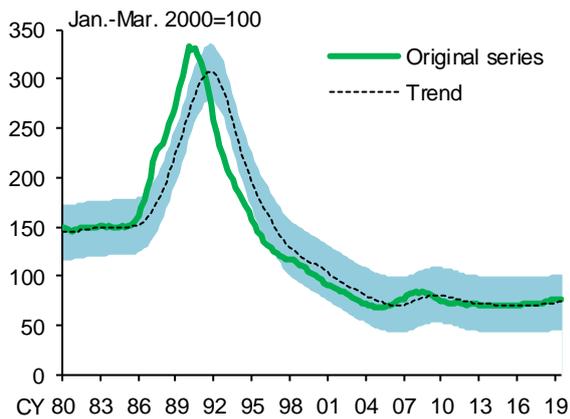
Chart III-4-5: Potential growth rate and firms' expected growth rate



Note: "Expected growth rate" indicates Japan's real GDP growth rate for the next 5 years forecasted by firms listed on the domestic stock exchanges.

Source: Cabinet Office; BOJ.

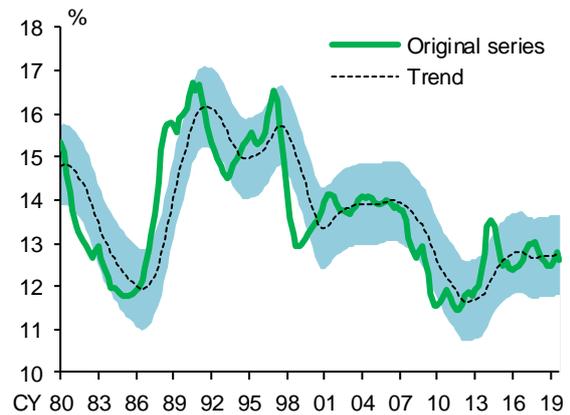
Chart III-4-6: Land prices to GDP ratio



- Note: 1. Land prices indicate the urban land price index of six large city areas (average of all categories of land use).
 2. "Trend" is calculated using 3-year backward moving averages. The shaded area indicates the root mean square of the deviation from the trend.
 3. Latest data as at the July-September quarter of 2019.

Source: Cabinet Office, "National accounts"; Japan Real Estate Institute, "Urban land price index."

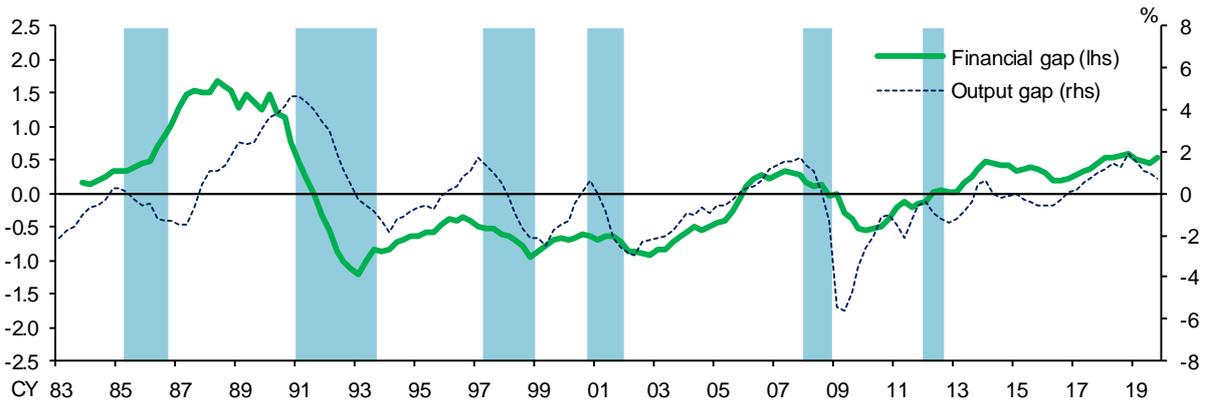
Chart III-4-7: Household investment to disposable income ratio



- Note: 1. "Trend" is calculated using 3-year backward moving averages. The shaded area indicates the root mean square of the deviation from the trend.
 2. 4-quarter backward moving averages. Latest data as at the October-December quarter of 2019.

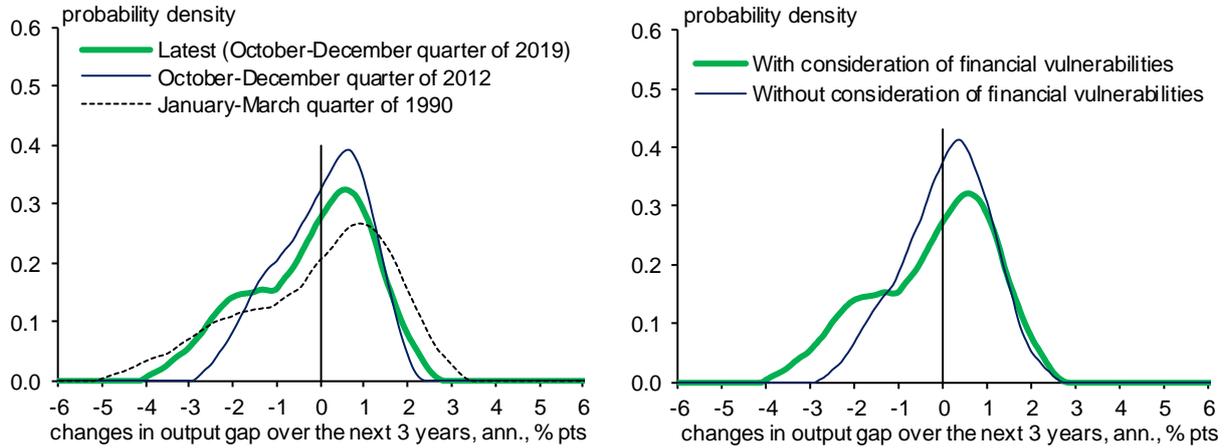
Source: Cabinet Office, "National accounts."

Chart III-4-8: Financial gap and output gap



Note: Latest data as at the October-December quarter of 2019. The shaded areas indicate recession phases.
Source: BOJ.

Chart III-4-9: Comparison of risks to economic growth by period



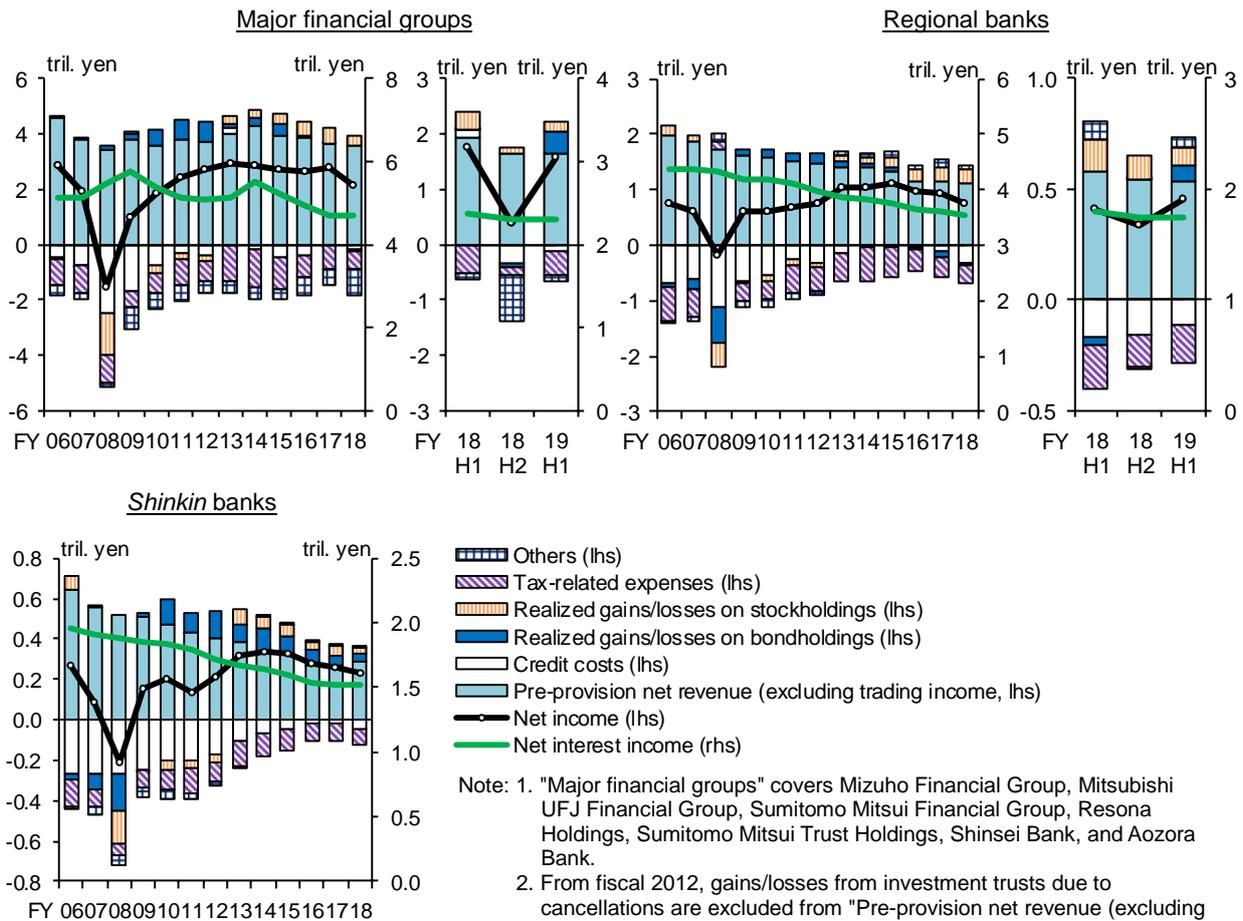
Note: The distributions in the right-hand chart are as of the October-December quarter of 2019.

Chart IV-1-1: Scenario and recent developments for financial variables

	Scenario for financial variables (changes between the peak and the trough during the global financial crisis)	Recent developments (changes from the beginning of 2020 to March 31, 2020)
TOPIX	-55.2	-18.5
S&P500	-46.1	-20.0
FX rate (U.S. dollar/yen)	-22.5	-1.0
Dollar funding premium	+1.9	-0.1

Note: 1. The scenario figures for financial variables are those in the tail event scenario. The changes between the peak and the trough are calculated on a quarterly basis.
 2. The figures for dollar funding premiums are percentage-point changes and those for others are percent changes.
 Source: Bloomberg; Tokyo Stock Exchange.

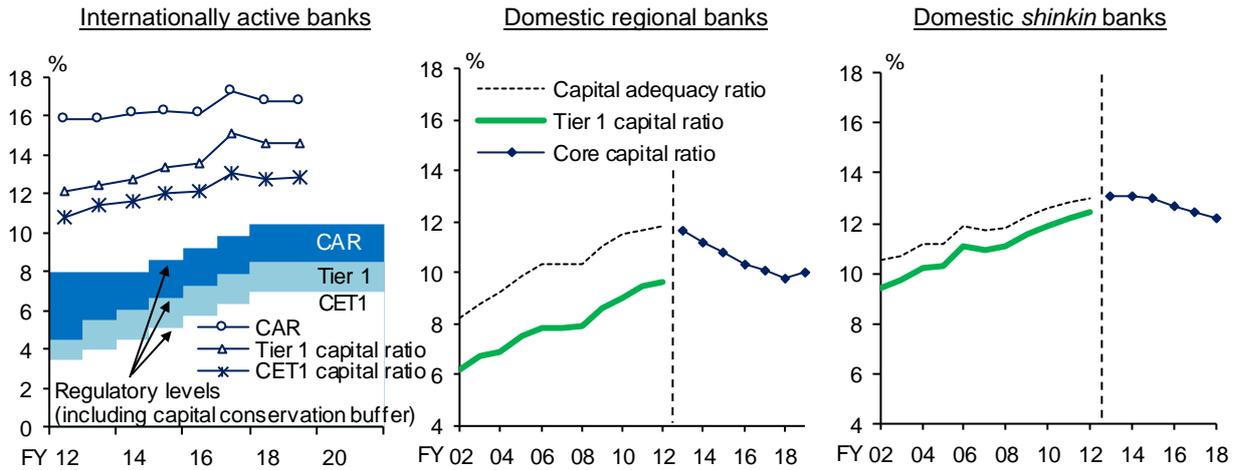
Chart IV-1-2: Developments in and decomposition of net income



Note: 1. "Major financial groups" covers Mizuho Financial Group, Mitsubishi UFJ Financial Group, Sumitomo Mitsui Financial Group, Resona Holdings, Sumitomo Mitsui Trust Holdings, Shinsei Bank, and Aozora Bank.
 2. From fiscal 2012, gains/losses from investment trusts due to cancellations are excluded from "Pre-provision net revenue (excluding trading income)" and "Net interest income."
 3. The definition of credit costs for regional banks and *shinkin* banks is somewhat different between fiscal 2017 and fiscal 2018 onward due to its clarification.

Source: Published accounts of each bank; BOJ.

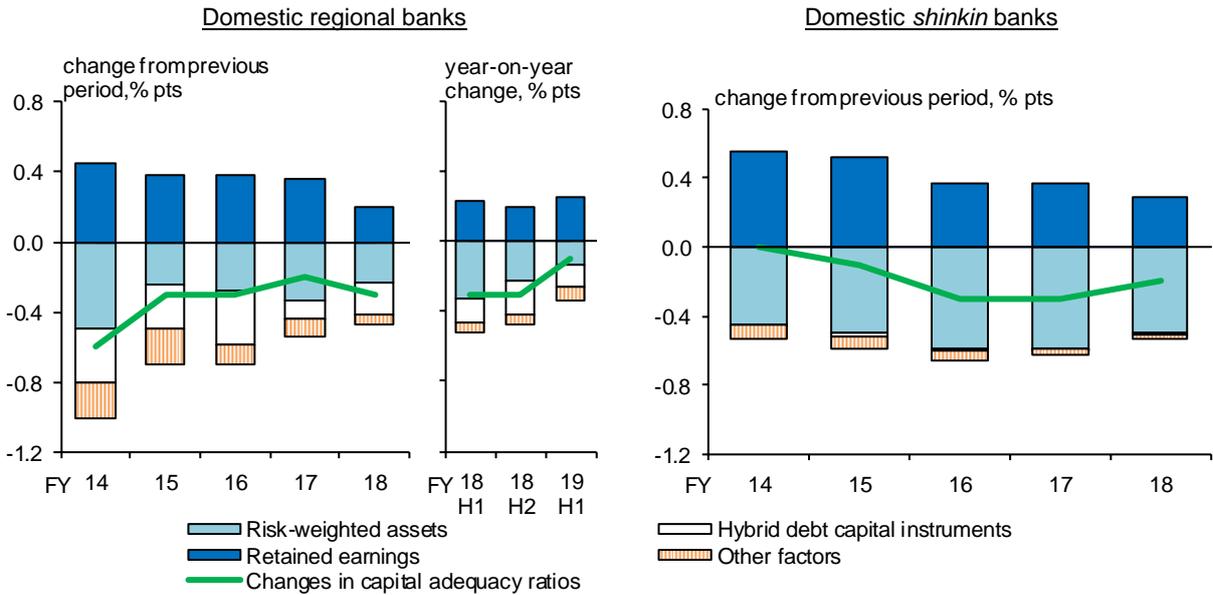
Chart IV-1-3: Financial institutions' capital adequacy ratios



Note: "CAR" indicates total capital adequacy ratio. Classifications of internationally active banks and domestic banks are as at each time point for Basel III's regulatory ratios, and are as at end-fiscal 2013 for regulatory ratios before Basel III. The charts are calculated on a consolidated basis. The latest data in the left-hand and middle charts are as at end-September 2019 and the latest data in the right-hand chart are as at end-March 2019. The transitional arrangements are taken into consideration.

Source: BOJ.

Chart IV-1-4: Factors of changes in capital adequacy ratios



Note: The transitional arrangements are taken into consideration.

Source: BOJ.

Chart IV-2-1: Loans outstanding

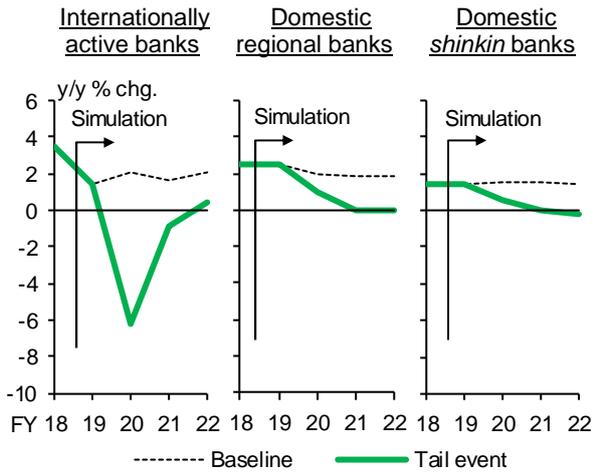


Chart IV-2-2: Lending margin

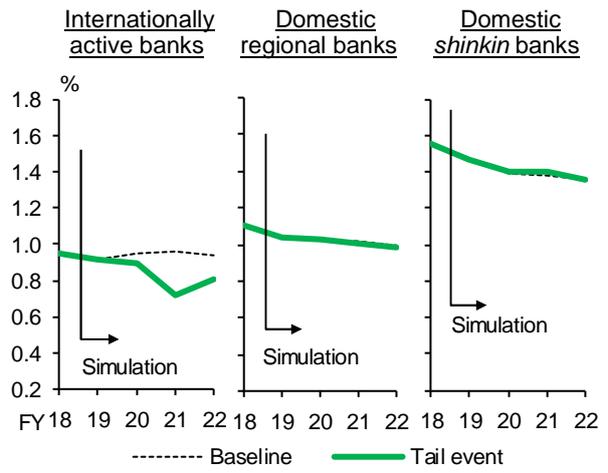


Chart IV-2-3: Net interest income

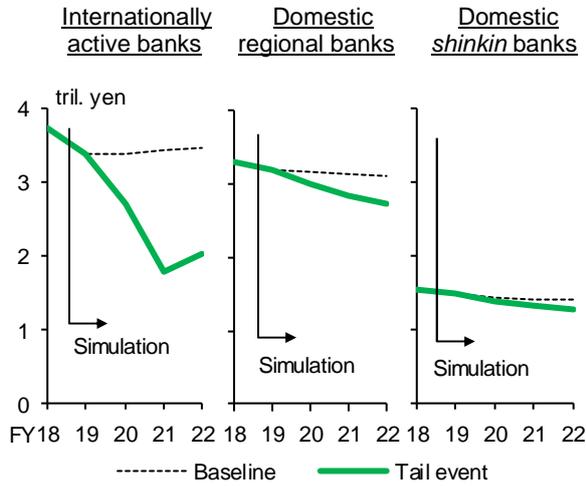
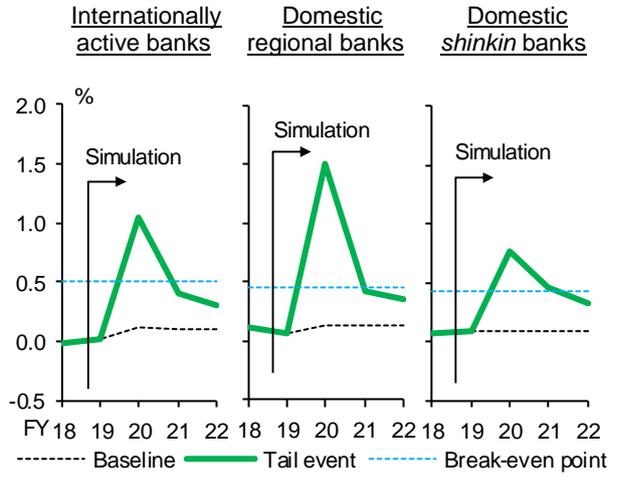


Chart IV-2-4: Credit cost ratios



Note: "Break-even point" is as at the first half of fiscal 2019 (for *shinkin* banks as at fiscal 2018).

Chart IV-2-5: Realized gains/losses on securities holdings

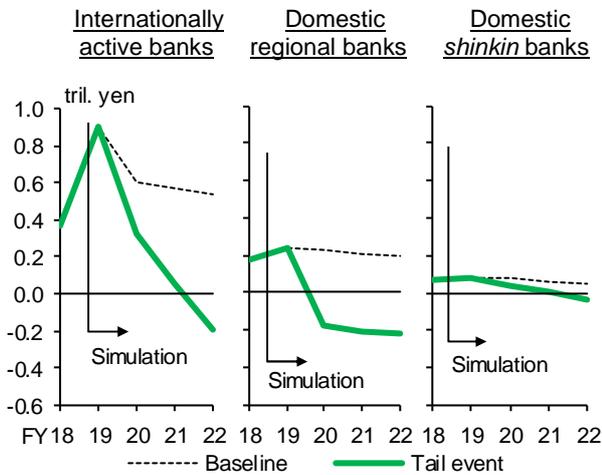
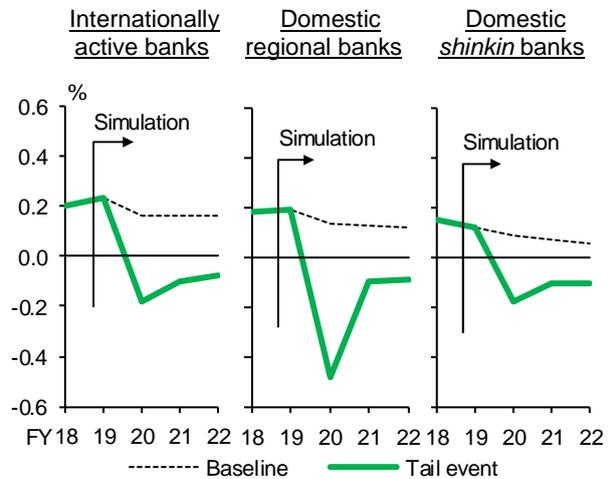
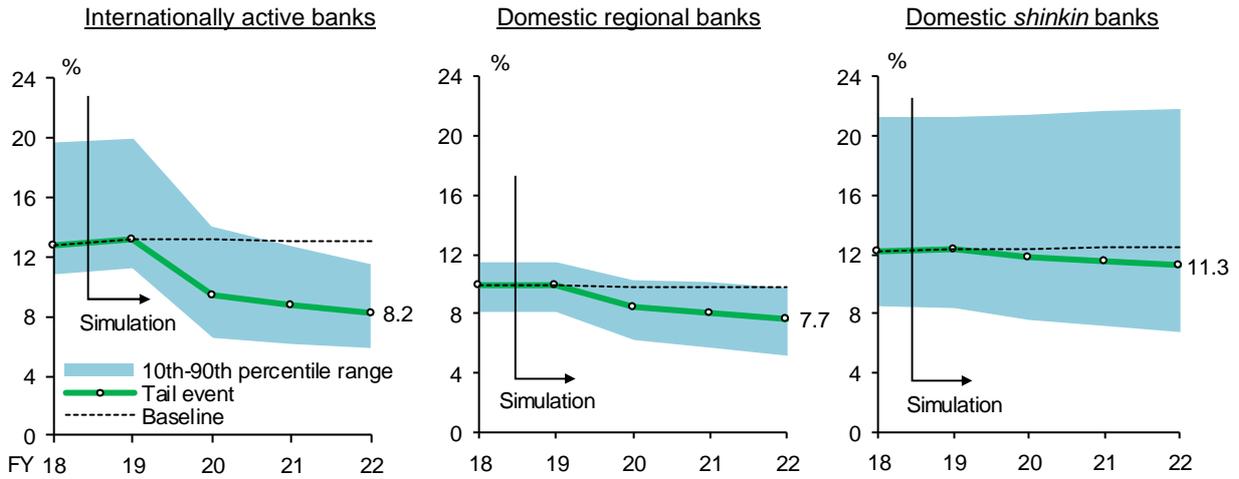


Chart IV-2-6: Net income



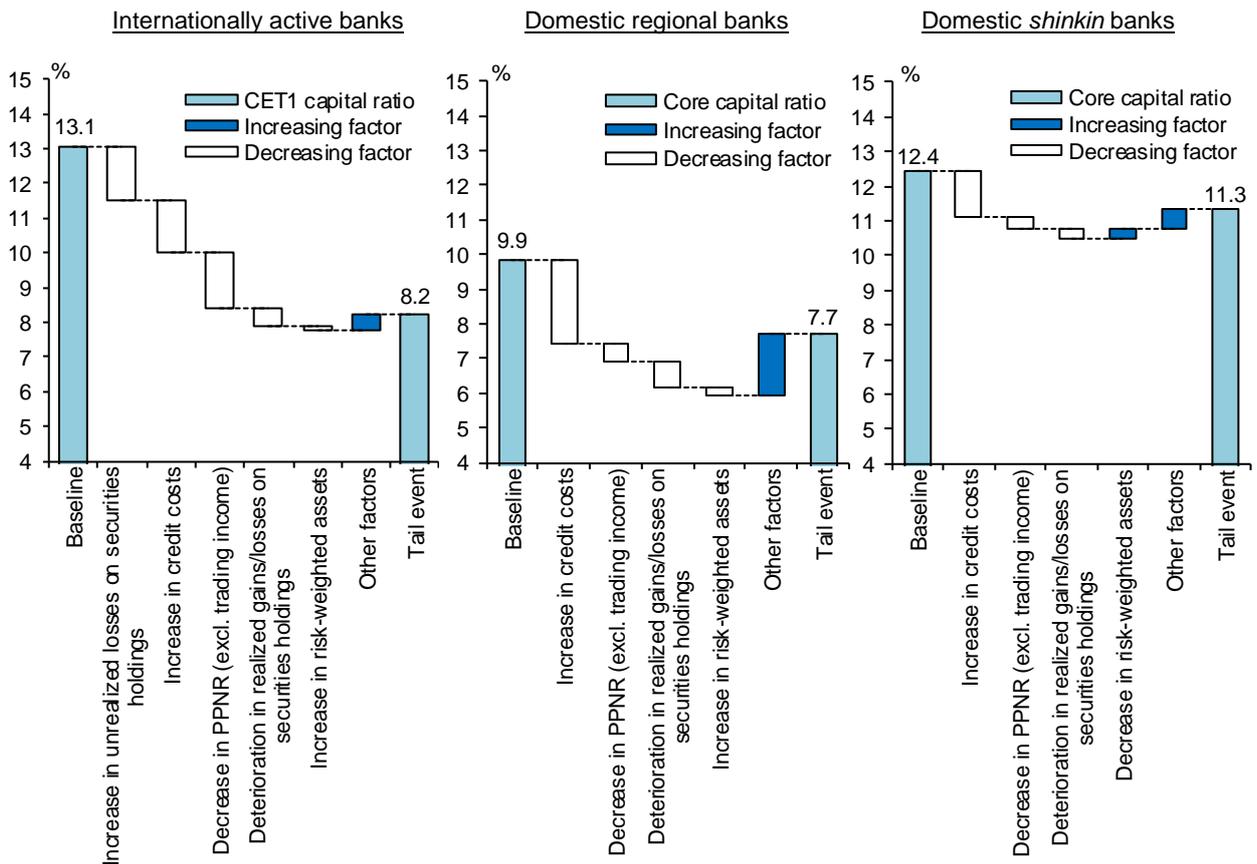
Note: The charts indicate the ratio of net income to total assets.

Chart IV-2-7: CET1 capital ratios and core capital ratios



Note: The left-hand chart shows the CET1 capital ratios of internationally active banks. The middle and right-hand charts show the core capital ratios of domestic banks. The transitional arrangements are taken into consideration.

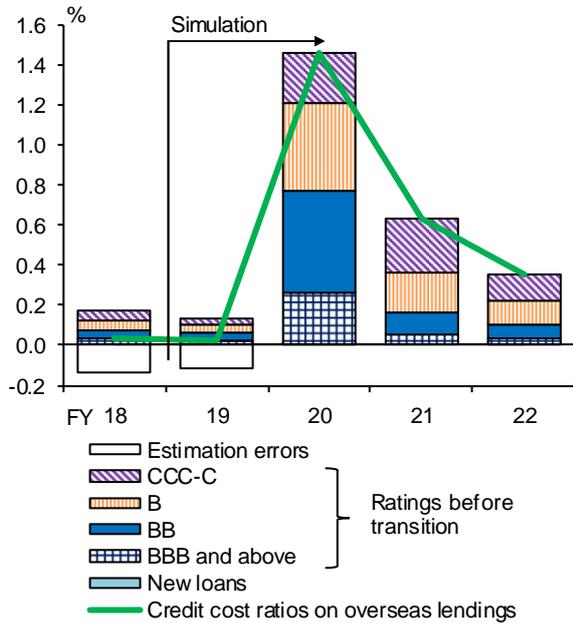
Chart IV-2-8: Decomposition of the CET1 capital ratio and the core capital ratio (fiscal 2022)



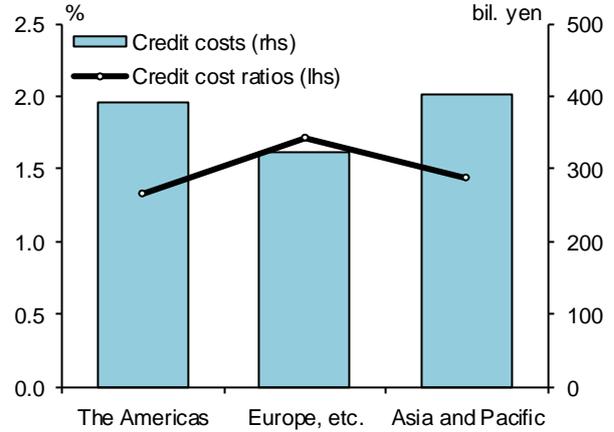
Note: 1. The charts indicate the contribution of each factor to the difference between the capital adequacy ratios at the end of the simulation period (as at end-March 2023) under the baseline and tail event scenarios. "Increase in unrealized losses on securities holdings" takes tax effects into account.
 2. The left-hand chart shows the CET1 capital ratio of internationally active banks. The other charts show the core capital ratio. The transitional arrangements are taken into consideration.
 3. "Other factors" includes taxes, dividends, and CET1 regulatory adjustments.

Chart IV-2-9: Credit cost ratios on overseas lendings (internationally active banks)

Credit cost ratios on overseas lendings (tail event scenario)



Credit cost ratios by region (fiscal 2020)



Note: 1. In the left-hand chart, a rating before transition indicates the rating of a loan at the end of the previous fiscal year, which causes a credit cost with a downgrade or default.
 2. In the right-hand chart, "Europe, etc." includes the Middle East and Africa.