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JAPAN

FINANCIAL SECTOR ASSESSMENT PROGRAM

FINANCIAL SYSTEM STABILITY ASSESSMENT

May 2024

This paper on Japan was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on April 16, 2024.

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FINANCIAL SYSTEM STABILITY ASSESSMENT

April 16, 2024

KEY ISSUES

Context: Japan's large and globally well-integrated financial system has remained resilient through a series of shocks, including the COVID-19 pandemic, aided by strong policy support and improved policy frameworks since the 2017 Financial Sector Assessment Program (FSAP). The financial system is, however, at a critical juncture amid an evolving macroeconomic environment. After years of deflationary concerns and ultra-low interest rates, sustained inflationary pressures have emerged, leading the Bank of Japan to end its negative interest rate policy and yield curve control. Key risks to macrofinancial stability at present stem from the sizable security holdings of financial institutions under mark-to-market accounting, some banks' notable foreign currency (FX) exposures, and signs of overheating in parts of the real estate markets. These challenges come atop several structural transformations stemming from climate change, rapid digitalization, and an aging population.

Findings: The financial system is broadly resilient to a range of adverse macrofinancial shocks, though there are some areas of susceptibility. Banks and insurers are, in aggregate, well able to maintain their solvency position under a hypothetical adverse scenario comprising an increase in foreign and domestic interest rates and a decline in economic growth and asset prices. Liquidity risks for banks and insurers are also, in aggregate, expected to be well contained, but some banks may be susceptible due to notable liability-side FX exposures and undrawn FX commitments. Systemic contagion risks are generally limited despite some vulnerable entities. Risks from climate change and growing digitalization, including cyber risks, require careful monitoring.

Policy advice: The evolving and challenging risk environment underscores the need to fill remaining gaps in the financial sector policy frameworks. Staffing resources need to be increased significantly to enhance the supervision and resolution of financial institutions. The supervisory agency should continue to develop its risk-based approach to banking supervision and should be provided with the power to set individual bank capital ratios above the minimum in response to a bank's risk profile. The oversight of insurers, investment funds, and the fintech sector should become more risk-based and proactive. Potential vulnerabilities in the real estate sector call for considering a targeted macroprudential policy response. Systemic risk monitoring should be strengthened further including by filling remaining data gaps. The cyber risk mitigation framework should be upgraded. Several aspects of the crisis management framework should be strengthened including by expanding recovery and resolution planning to more banks.

Approved By
May Khamis and Sanjaya Panth

Prepared By
Monetary and Capital Markets Department

This report is based on the work of the Financial Sector Assessment Program (FSAP) missions that visited Japan during September 19–October 6, 2023, and January 9–24, 2024. The FSAP findings were also discussed with the authorities during the Article IV consultation mission in January 25 – February 9, 2024.

- The team was led by Mahvash Qureshi and included Heedon Kang (Deputy Mission Chief), Atilla Arda, Cristina Cuervo, Andrea Deghi, Salih Fendoglu, Cecilia Melo Fernandes, Marco Gross, Emran Islam, André Kahn, Katharine Seal, Peter Windsor, Rui Xu, Mustafa Yenice, and Jinhyuk Yoo (all IMF staff), and Wayne Byres, Ian Tower, and Benjamin Schiesslé (external experts). Hugo Rojas-Romagosa (IMF staff) provided support for climate risk analysis. Hiroshi Nagaoka, Tomoko Katagiri, and Midoriko Yamaguchi (all IMF staff at the Office of Asia and Pacific) provided assistance with mission logistics. Monica Devi (IMF staff) provided administrative support.

- The mission met with senior officials at the Bank of Japan, Financial Services Agency, Ministry of Finance, Securities and Exchange Surveillance Commission, Deposit Insurance Corporation of Japan, and other ministries and public agencies. The mission also met with representatives from industry associations, private financial and research institutions, and professionals at auditing and accounting firms.

- FSAPs assess the stability of the financial system as a whole and not that of individual institutions. They are intended to help countries identify key sources of systemic risk in the financial sector and implement policies to enhance its resilience to shocks and contagion. Certain categories of risk affecting financial institutions, such as operational or legal risk, or risk related to fraud, are not covered in FSAPs.

- Japan is deemed by the Fund to have a systemically important financial sector according to Mandatory Financial Stability Assessments Under the Financial Sector Assessment Program—Update (11/18/2013), and the stability assessment under this FSAP is part of bilateral surveillance under Article IV of the Fund's Articles of Agreement.

- This report was prepared by the Japan FSAP team.

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Glossary

AFS	Available-for-Sale
AML/CFT	Anti-Money Laundering/Combating the Financing of Terrorism
APG	Asia-Pacific Group on Money Laundering
BCBS	Basel Committee on Banking Supervision
BOJ	Bank of Japan
CBDC	Central Bank Digital Currency
CCFS	Council for Cooperation on Financial Stability
CCPs	Central Counterparties
CCoB	Capital Conservation Buffer
CCyB	Counter-Cyclical Capital Buffer
CDS	Credit Default Swap
CESP	Crypto-asset Exchange Service Providers
CET1	Common Equity Tier 1
CPMI	Committee on Payments and Market Infrastructures
CRE	Commercial Real Estate
CSG	Comprehensive Supervisory Guidelines
DICJ	Deposit Insurance Corporation of Japan
D-SIB	Domestic Systemically Important Bank
DSTI	Debt Service-to-Income
ELA	Emergency Liquidity Assistance
ENV-FIBA	Environment-Firm and Bank
ESR	Economic Value-based Solvency Ratio
EWS	Early Warning System
FATF	Financial Action Task Force
FCRC	Financial Crisis Response Council
FIs	Financial Institutions
FIEA	Financial Instruments and Exchange Act
FMC	Financial Monitoring Council
FMIs	Financial Market Infrastructures
FMM	Financial Marco-econometric Model
FSA	Financial Services Agency
FSAP	Financial Sector Assessment Program
FSN	Financial Safety Net
FTSP	Fund Transfer Service Providers
FX	Foreign Currency or Foreign Exchange
GDP	Gross Domestic Product
GHG	Greenhouse Gas
G-SIB	Global Systemically Important Bank
GPIF	Government Pension Investment Fund
HQLA	High Quality Liquid Assets

IAIS	International Association of Insurance Supervisors
IAIGs	Internationally Active Insurance Groups
ICAAP	Internal Capital Adequacy Assessment Process
ICP	Insurance Core Principles
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
JGB	Japanese Government Bond
JPY	Japanese Yen
JSCC	Japan Securities Clearing Corporation
LCR	Liquidity Coverage Ratio
LGD	Loss Given Default
LTI	Loan-to-Income
LTV	Loan-to-Value
MER	Mutual Evaluation Report
MCM	Monetary and Capital Markets Department, IMF
MOF	Ministry of Finance
NBFI	Non-bank Financial Institution
NFC	Nonfinancial Corporate
NGFS	Network for Greening the Financial System
NPL	Nonperforming Loan
NSFR	Net Stable Funding Ratio
PD	Probability of Default
PM	Prime Minister
PFMI	Principles for Financial Market Infrastructures
PPI	Prepaid Payment Instrument
QQE	Quantitative and Qualitative Easing
RAM	Risk Assessment Matrix
RRE	Residential Real Estate
RRP	Recovery and Resolution Planning
RWA	Risk Weighted Asset
SESC	Securities and Exchange Surveillance Commission
SMEs	Small and Medium-sized Enterprises
SMR	Solvency Margin Ratio
SRA	Systemic Risk Analysis and Stress Testing
STeM	Stress Test Matrix
TD	Top-Down
TN	Technical Note
TLAC	Total Loss Absorbing Capacity
USD	U.S. Dollar
VASP	Virtual Asset Service Providers
WEO	World Economic Outlook
YCC	Yield Curve Control

EXECUTIVE SUMMARY

The Japanese financial system has remained resilient through a series of shocks including the COVID-19 pandemic. Japan's large and globally well-integrated financial system withstood the pandemic, aided by strong capital and liquidity buffers, and extensive policy support. Credit provision to the private sector has remained robust, supporting a steady economic recovery.

The financial system is at a critical juncture and confronts several challenges. After years of deflationary concerns and ultra-low interest rates, sustained inflationary pressures have emerged, leading the Bank of Japan (BOJ) to end its negative interest rate policy and yield curve control. In an evolving macroeconomic environment, key risks to macrofinancial stability stem from three main sources of vulnerability: the sizable domestic and foreign security holdings of financial institutions under mark-to-market accounting, notable foreign currency (FX) exposure of some banks, and signs of overheating in parts of the real estate markets. These risks could be accentuated by ongoing structural transformations from climate change, digitalization, and an aging population.

The scenario-based risk analysis conducted by the FSAP suggests that the financial system remains broadly resilient to a range of adverse macrofinancial shocks, with some areas of susceptibility.

- **Banks** are, in aggregate, well able to maintain their solvency position under a hypothetical adverse scenario comprising an increase in foreign and domestic interest rates and a decline in economic growth and asset prices, though some banks may be susceptible to the stress. Liquidity risks are found to be contained at the system level due to ample liquidity in Japanese Yen (JPY), but some banks appear susceptible due to notable liability-side FX exposures and undrawn FX commitments.
- **Insurers**, especially life insurers, are sensitive to an increase in domestic and foreign interest rates though in aggregate, their capital remains well above the regulatory requirement. Insurers are not significantly exposed to liquidity risk, but some may face pressure under stress.
- **Investment funds** appear generally well positioned to accommodate plausible-sized investor redemption shocks, though less-liquid funds could contribute to market volatility under more severe shocks.
- In the **nonfinancial private sector**, smaller firms are particularly susceptible to an increase in default risk under the adverse scenario. Household defaults would rise from a very low level, but the impact could be lessened by the industry practice (5-year/125-percent rule) that could mitigate a sharp increase in mortgage payments.
- **Systemic contagion risks** are limited by the strong capital positions of major financial institutions, but some institutions appear vulnerable to contagion risks.

The climate risk analysis suggests that banks are generally resilient to a transition to net zero greenhouse gas (GHG) emissions by 2050. Banks' exposure to emission-intensive sectors

constitutes, on average, about one-fifth of their assets. Notwithstanding the uncertainty around firms' emission intensities, banks generally appear resilient under the net zero 2050 scenario, though the impact on the capital position varies across banks in the sample.

The financial sector oversight and crisis management frameworks have been strengthened since the 2017 FSAP, but further steps are warranted to respond to the evolving risk environment. The Financial Services Agency (FSA) has adopted a more modern, risk-based bank supervision approach. Basel III capital and liquidity tools have been phased in for internationally active and domestic systemically important banks (D-SIBs). For insurers, the FSA has adopted more effective macroprudential supervision, developed new guidelines to implement the International Association of Insurance Supervisors' (IAIS) ComFrame requirements, and established supervisory colleges for four internationally active insurance groups. Investment funds' oversight has been enhanced. Progress has been made to build financial sector's cyber capacity and to strengthen the crisis management framework. However, additional cross-cutting and sector-specific measures should be considered to effectively traverse the evolving challenges to financial stability, including:

- ***Staffing resources*** should be increased significantly to enhance financial oversight and crisis preparedness. The new risk-based supervision approach correctly prioritizes major banks, but regional banks warrant more resources than currently devoted. Resource needs for insurance supervision are acute given the strategic challenges facing the sector and impending regulatory changes. More resources also need to be devoted to strengthening the supervision of cyber risks and for bank recovery and resolution.

- ***Systemic risk monitoring*** needs further enhancement by leveraging on recent data collection efforts, filling data gaps to enhance contagion analysis, introducing stress testing for investment funds, conducting comprehensive liquidity risk analysis for banks and insurers, and performing more granular risk analysis of the nonfinancial private sector. Continued monitoring of risks from financial institutions' sizable security holdings and banks' FX liquidity needs remains warranted.

- ***Banking supervision*** should be enhanced by continuing to develop the risk-based approach. As liquidity risks appear pertinent, the FSA should set minimum liquidity requirements for all banks. The FSA should have the power to set and adjust individual bank capital ratios above the minimum in response to a bank's risk profile. Moreover, explicit provision needs to be made in the law to ensure the priority of financial stability in the mandate of the FSA, in keeping with current policy and practice.

- ***Insurance oversight*** needs to be strengthened by delegating licensing powers to the FSA and reviewing its budgetary independence, establishing a proactive and comprehensive risk-based supervision framework, and ensuring that suitability requirements apply to all key persons in control functions. The economic value-based solvency framework should be introduced as expected in fiscal year 2025 to address shortcomings in solvency requirements.

- ***Investment funds' supervision*** needs to be enhanced by more frequent on-site inspections.

- Emerging risks from digitalization need to be addressed by bolstering ***cyber resilience*** by updating FSA's supervisory guidelines, methodologies, and tools, improving information collection, and updating the Business Continuity Plan. Cyber-related supervision/oversight of financial market infrastructures (FMIs) should be strengthened. In addition, ***fintech*** developments require close monitoring with enhanced supervision of relevant players.

- ***Climate-related risks*** need to be mitigated by developing a systematic approach to the supervision of banks and insurers, considering the work by international bodies.

- The ***macroprudential policy framework*** should be enhanced by assigning a formal mandate to the Council for Cooperation on Financial Stability (CCFS) and expanding the policy toolkit.

- The ***crisis management framework*** should be strengthened by better protecting the BOJ's financial soundness from emergency liquidity assistance (ELA) operations and by expanding ELA eligibility to systemic nonbank financial intermediaries (NBFIs), prioritizing central counterparties (CCPs). Gradually, all banks that could be deemed systemic at the time of failure should be subjected to recovery and resolution planning (RRP) requirements. To reduce the potential cost to taxpayers, more banks should maintain a minimum amount of loss-absorbing capacity, and resolution strategies should primarily allocate losses to shareholders and creditors. In addition, an effective RRP regime for systemic-in-failure insurers and CCPs should be ensured, consistent with pertinent international standards and guidance.

Table 1. Japan: FSAP Key Recommendations	
Recommendations	**Timeline[1]**
Cross-Cutting Issue	
Increase staffing resources significantly and strengthen skills to enhance the supervision and resolution of financial institutions and the supervision of cybersecurity risks (Government, FSA; ¶66-67, ¶83).	ST
Systemic Risk Monitoring and Macroprudential Policy Framework	
Further broaden and deepen systemic risk analysis with more forward-looking and comprehensive monitoring of risks of the financial system and stronger interagency collaboration (FSA, BOJ; ¶68-69).	C
Strengthen the governance of interagency decision-making on macroprudential policy by assigning a formal mandate to the CCFS (FSA, BOJ; ¶63).	ST
Expand the macroprudential policy toolkit with targeted borrower-based tools (FSA, BOJ; ¶64).	MT
Banking Sector Regulation and Supervision	
Continue to strengthen risk-based supervision and develop the Early Warning System with more forward-looking metrics, especially for credit and liquidity risks (FSA; ¶44).	I
Make explicit provision in the law to ensure the priority of financial safety and stability in the mandate of the FSA (Government; ¶45)	ST
Provide the FSA with the power to set and adjust individual bank capital ratios above the minimum requirements in response to a bank's risk profile (Government; ¶46).	ST
Establish a minimum liquidity requirement for domestic banks (FSA; ¶47).	ST
Insurance Sector Regulation and Supervision	
Reform the approach to insurance supervision by establishing a comprehensive risk-based, proactive supervisory framework of individual insurers and large intermediaries using regular on-site inspections and off-site monitoring (FSA; ¶50).	ST
Ensure that suitability requirements apply to all key persons and set explicit and comprehensive expectations on the establishment and adequacy of all control functions (FSA; ¶50).	ST
Delegate licensing powers to the Commissioner of the FSA and review whether government can provide for increased independence to the FSA to determine its expenditure budget and to finance itself independently (Government, FSA; ¶51).	ST
Cyber Resilience and Financial Stability	
Enhance the regulatory framework and supervisory processes for cybersecurity by updating supervisory guidelines, methodologies, and tools (FSA; ¶71).	MT
Enhance cyber supervision/oversight of financial market infrastructures (FSA, BOJ; ¶71).	ST
Regulation and Supervision of Investment Funds	
Enhance the onsite supervisory approach by broadening its scope to include more firms, including larger asset managers and self-regulatory organizations (SESC; ¶54).	ST
Regulation and Supervision of Fintech Industry	
Intensify monitoring of FTSPs and PPI issuers/Consider reviewing regulatory framework to ensure adequate coverage of any new risks (FSA; ¶56).	I/ST
Climate-related Oversight of Banking and Insurance Sectors	
Develop and publicize a clear plan towards formalizing supervision of climate-related risks in consideration of the work of international bodies (FSA; ¶73).	MT
Financial Safety Net and Crisis Preparedness	
Protect the financial soundness of the BOJ to cover potential losses with additional safeguards and mitigate the risk of moral hazard arising from ELA operations (BOJ, MOF, FSA; ¶76).	C
Expand ELA eligibility to some NBFIs that could be systemically important, prioritizing CCPs (BOJ; ¶77).	MT
Gradually expand RRP to all banks that could be deemed systemic at the time of failure, supported by planning guidance that comprehensively articulates expectations in improving recovery capabilities and addressing impediments to resolvability (FSA; ¶79).	ST
Continue to operationalize, codify, and regularly review and update the authorities' individual and collective crisis readiness efforts, the policies underpinning the several resolution regimes, and the supporting decision-making structures and information flows (All; ¶80).	C
Under the FCRC's auspices, execute a multi-year interagency crisis simulations program for diverse failure scenarios, including fast-fail resolutions of systemic and midsize banks, and their concurrent failure (All; ¶81).	C
Ensure an effective recovery and resolution (planning) regime for insurers and CCPs consistent with pertinent international standards and guidance (FSA, Government; ¶82).	MT
1/ C: Continuous, I: immediate (within one year), ST: short term (1–2 years), and MT: medium term (3–5 years).	

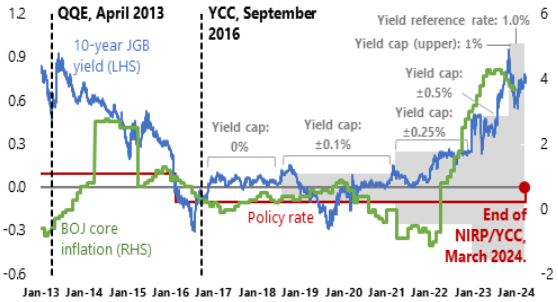
MACROFINANCIAL CONTEXT

1. The Japanese economy continues to grow after the COVID-19 pandemic, with broad-based price increases following three decades of low inflation. Real GDP growth has averaged about two percent during 2021–2023 aided by strong policy support (Figure 1; Table 2). After years of deflationary concerns, inflationary pressures have emerged, with both headline and core inflation (excluding fresh food) exceeding the BOJ's 2 percent target since April 2022.

2. The BOJ has ended its negative interest rate policy and yield curve control (YCC). Against a backdrop of persistent inflation, the BOJ incrementally relaxed its YCC framework over time, allowing for greater flexibility in 10-year Japanese government bond (JGB) yields (Text Figure).[1] With confidence taking hold that the inflation target can be sustainably achieved, it abolished the YCC and the Quantitative and Qualitative Easing (QQE) frameworks in March 2024, and ended the negative interest rate policy, while maintaining its gross JGB purchases broadly at the current pace.[2]

Japan: Inflation and Monetary Policy Shift

(Percent)

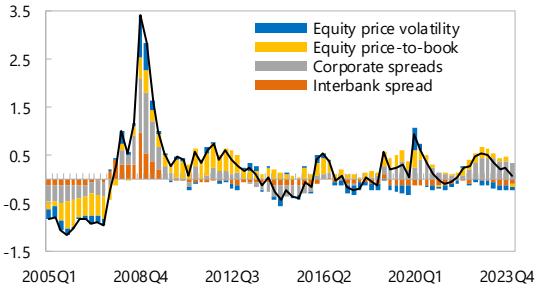


Sources: Tullett Prebon; Ministry of Internal Affairs and Communications; and IMF staff calculations.
Notes: The BOJ decided to guide overnight rate as primary policy tool, encouraging the rate to remain at around 0-0.1 pct. NIRP=negative interest rate policy. QQE=quantitative and qualitative easing. YCC=yield curve control.

3. Domestic financial conditions have remained generally easy in recent months on the back of an increase in equity prices, and a decline in corporate and interbank spreads (Text Figure).[3] Credit to the private sector has remained robust, driven by lending to nonfinancial corporates (NFCs) and the real estate sector (Figure 2). Gross debt of NFCs and households (relative to GDP) has increased since the pandemic, though they also hold sizable liquid assets. Sovereign debt to GDP has risen notably and is the highest among advanced economies.

Japan: Financial Conditions Index

(Increase = tightening of financial conditions)



Source: IMF staff calculations.
Notes: The index incorporates the corporate and interbank spreads, equity price-to-book ratio, and equity price volatility. Input variables are standardized and evaluated relative to the mean, with positive (negative) values indicating tighter (easier) financial conditions than the historical average. Values for 2024Q1 are based on data up to March 28, 2024.

4. Residential real estate (RRE) prices have risen owing to strong demand amid low

[1] See the BOJ's Monetary Policy Releases for changes to the monetary policy framework over time.

[2] See https://www.boj.or.jp/en/mopo/mpmdeci/mpr_2024/k240319a.pdf for additional details and the announced changes to the monetary policy framework in March 2024.

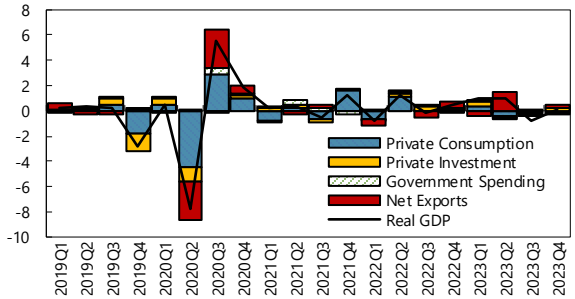
[3] Stock prices have reached multi-decade highs in Japan, with the TOPIX and Nikkei 225 rising by 25 percent and 28 percent in 2023 (y/y), respectively. This increase may be attributed to multiple factors including strong corporate earnings, a weaker yen, inflation, and a conviction on structural changes such as progress in corporate governance reform, all of which have attracted investors, especially foreign investors, to the stock market.

mortgage interest rates (Figure 3). Commercial real estate (CRE) prices have also increased steadily, though the momentum has slowed down since end-2022.[4]

Figure 1. Japan: Macroeconomic Developments

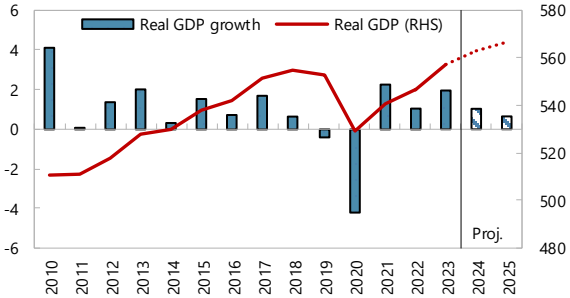
Real GDP has been recovering since the pandemic aided by strong domestic demand…

Contributions to Real GDP Growth
(Percent change, QoQ chained 2015 SAAR)



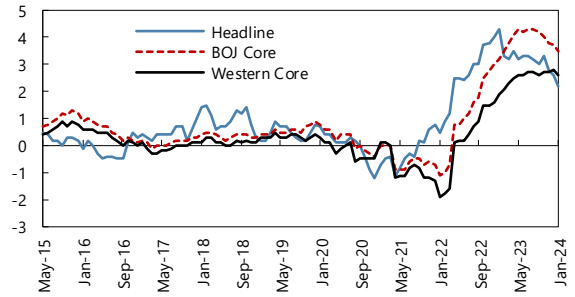
…and is above the pre-pandemic level.

Real GDP and Real GDP Growth
(Percent, LHS; in trillions of yen, RHS)



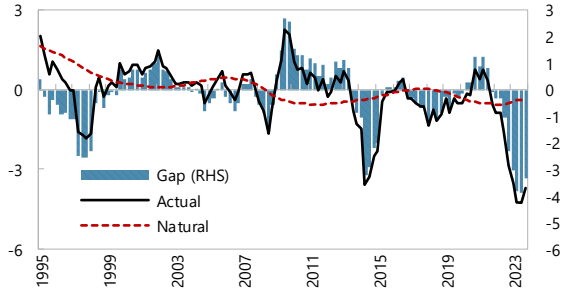
Headline and core inflation have risen above the BOJ's target of 2 percent since April 2022…

Price Inflation
(Percent change, YoY)



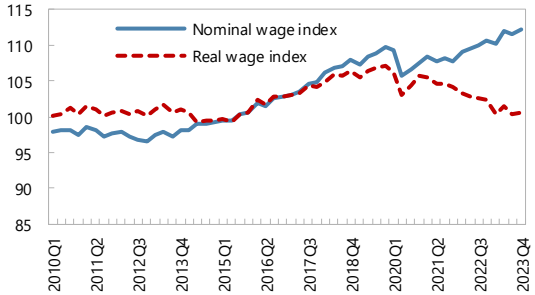
…while the monetary policy stance has remained accommodative.

Real Policy Interest Rate
(Percent; percentage points)



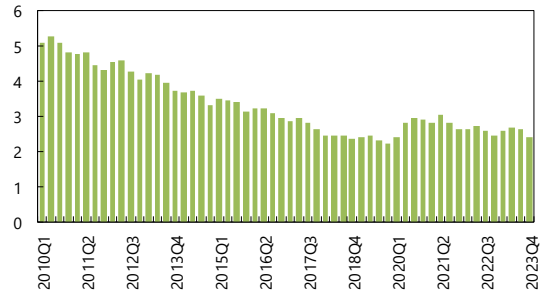
Real wages have declined since the pandemic…

Nominal and Real Wages
(Index, 2015=100)



…but the unemployment rate has remained stable.

Unemployment Rate
(Percent)



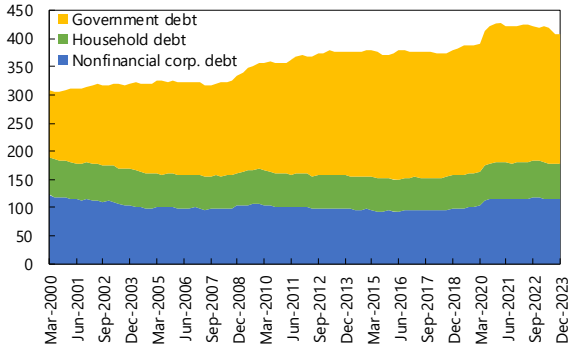
Sources: BOJ; Cabinet Office of Japan; Ministry of Health, Labor & Welfare; and IMF staff calculations.
Notes: BOJ core inflation excludes fresh food and energy. Western core excludes all food, non-alcoholic beverages, and energy. The gap in panel 4 refers to the difference between the actual and natural interest rate, with the latter estimated using the methodology in IMF WP/18/275.

[4] Price developments in the RRE market vary across regions, with a more pronounced increase in urban areas (IMF, 2020). CRE price developments also vary by region, as well as by segment with the retail sector remaining under pressure (MSCI Real Estate database).

Figure 2. Japan: Public and Private Sector Debt

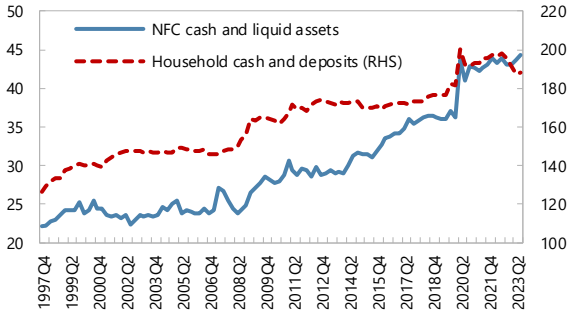
Public and private sector debt have increased notably since the pandemic…

Household, Nonfinancial Corp., and Government Debt
(Percent of GDP)



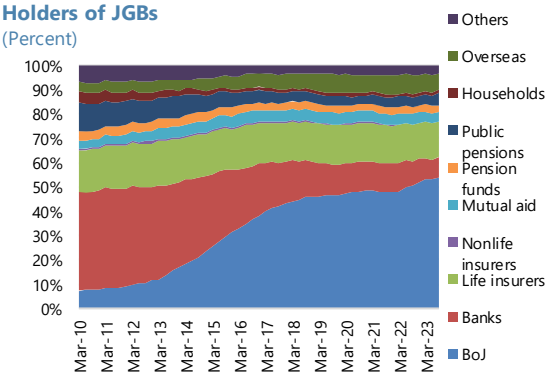
…although firms and households hold sizable liquid assets…

NFC Cash and Liquid Assets, and Household Cash and Deposits (Percent of GDP)



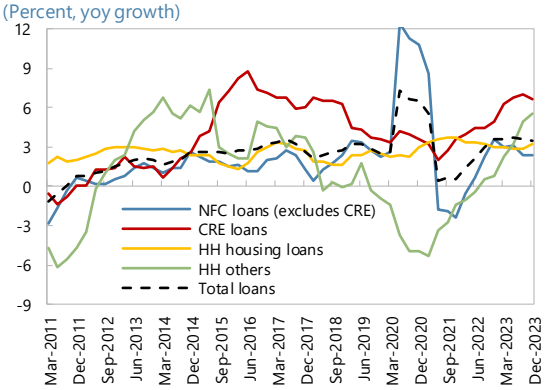
…and most of the public debt is held by the BOJ, which has purchased a record amount of JGBs since QQE.

Holders of JGBs
(Percent)



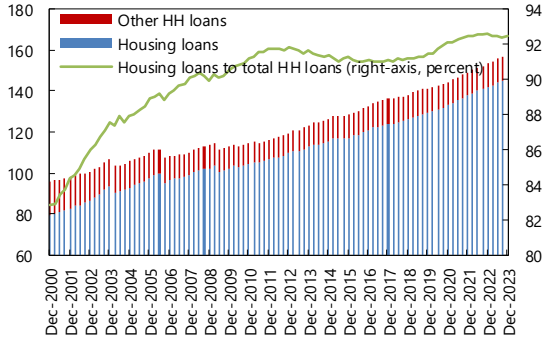
Domestic private sector credit growth has remained robust…

NFC, CRE, and Household loans
(Percent, yoy growth)



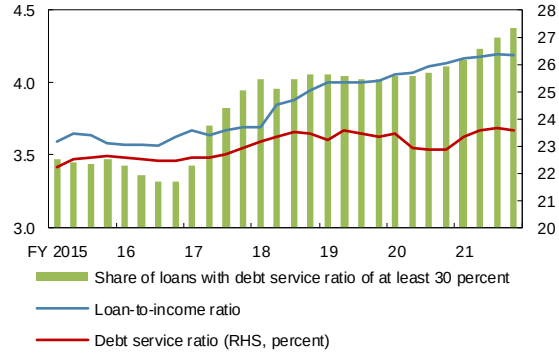
… and housing loans have increased notably since the pandemic…

Household Loans
(Trillions of yen and percent)



…while debt-service-to-income and loan-to-income ratios have also been rising.

Household Loan-to-Income and Debt Service Ratio
(Ratio, and Percent)

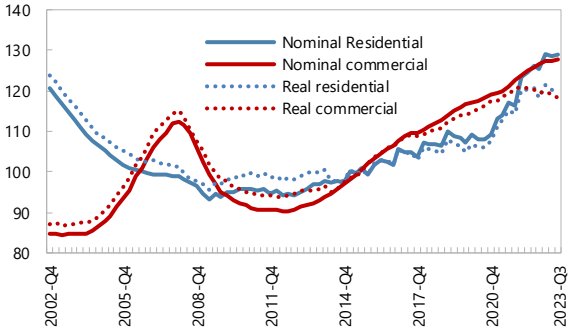


Sources: BOJ; IMF WEO; Institute of International Finance; Ministry of Finance (MOF); and IMF staff calculations.
Notes: Japan fiscal year ("FY") starts in April and ends in March of the following year (e.g., FY2021 stands for April 2021-March 2022). Loan-to-income ratio is ratio of loan (at origination) to the borrowers' income. Debt service ratio represents annual debt service (at origination) to annual borrowers' income. NFC=nonfinancial corporate, CRE=commercial real estate, HH=household, QQE=Quantitative and qualitative monetary easing.

Figure 3. Japan: Real Estate Markets

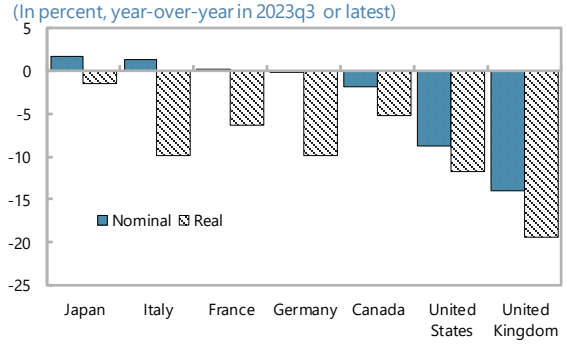
Residential and commercial real estate prices have been increasing…

Real Residential and Commercial Property Price
(Index 2015 = 100, and percent)



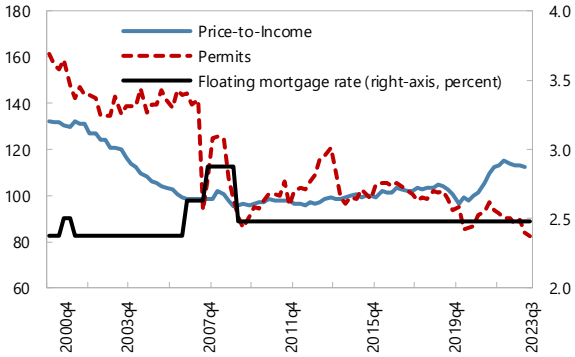
…though the momentum seems to be slowing down in the CRE sector.

Nominal and Real Commercial Prroperty Price Growth
(In percent, year-over-year in 2023q3 or latest)



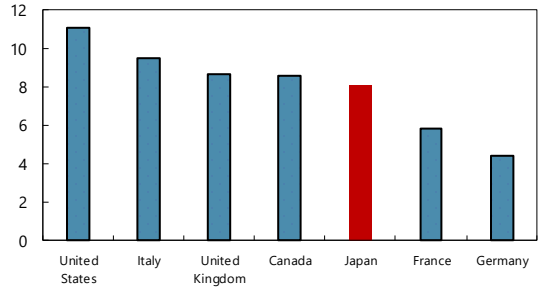
Strong demand for residential property amid low mortgage rates and tight supply have been contributing to price pressures…

House Price to Income, Issued Permits and Mortgage Rate (LHS=Index, 2015=100, RHS=percent)



…with about one-tenth of the population spending over 40 percent of their disposable income on housing.

Overburden Rate
(Share of population spending more than 40 percent on housing, percent, 2020)



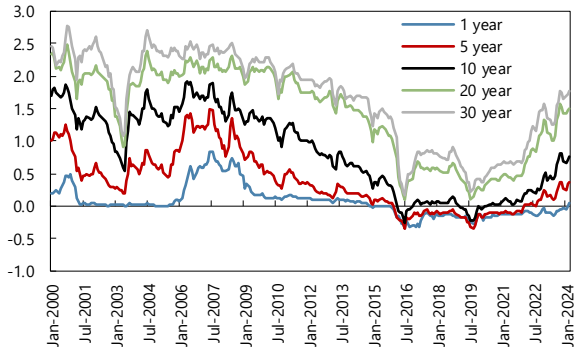
Sources: BIS; BOJ; Ministry of Land, Infrastructure, and Transport and Tourism; MSCI Real Estate; OECD; and IMF staff calculations.
Notes: Housing loans include those by domestically licensed banks and Shinkin banks. In the bottom right panel, cost overburden rate corresponds to the share of the population spending more than 40 percent of their disposable income (including social transfers) on housing (mortgage or rental expenses, excluding utilities or regular maintenance costs).

5. Elevated interest rate differentials vis-à-vis other major economies have implied persistent JPY depreciation pressures. Low interest rates in Japan and aggressive monetary policy tightening in the U.S. and euro area since 2022 have implied notable yield differentials, contributing to depreciation pressures on the JPY (Figures 4 and 5). The higher prices of key imported goods (e.g., oil) may also have been a contributing factor to the JPY depreciation trend. Concurrently, the increase in U.S. interest rates has raised U.S. dollar (USD) funding costs for Japanese firms.

Figure 4. Japan: Interest Rates

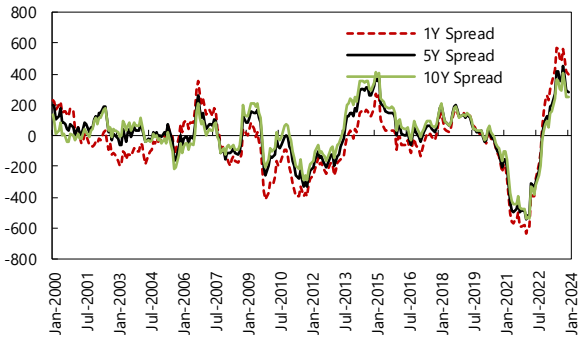
Long-run JGB yields have been rising recently as the YCC framework has been relaxed…

Japanese Government Bond Yields
(Percent, monthly average of daily values)



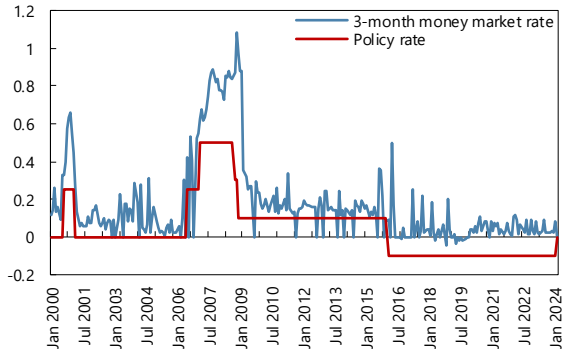
…yet yield differentials with U.S. Treasury bonds remain significant.

United States-Japan Government Real Bond Yield Spread
(Basis points, monthly average of daily values)



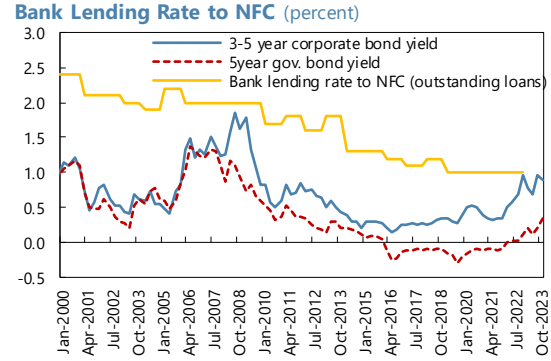
Policy and money market rates have remained at historical lows…

Policy Rate and 3-Month Money Market Rate
(Percent, monthly average of daily values)



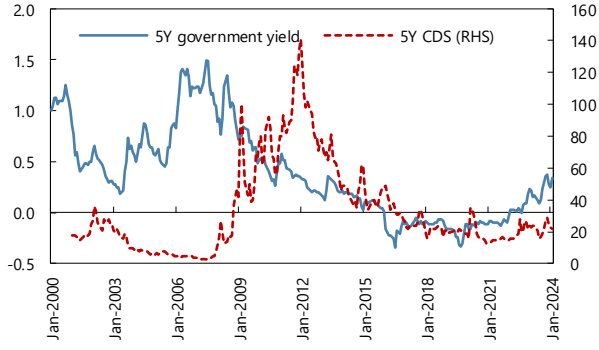
…and bank lending rates for NFCs have been trending down, though yields on NFC bonds have risen since 2021.

Corporate Bond 3Y-5Y yield, Government 5Y yield, and Bank Lending Rate to NFC (percent)



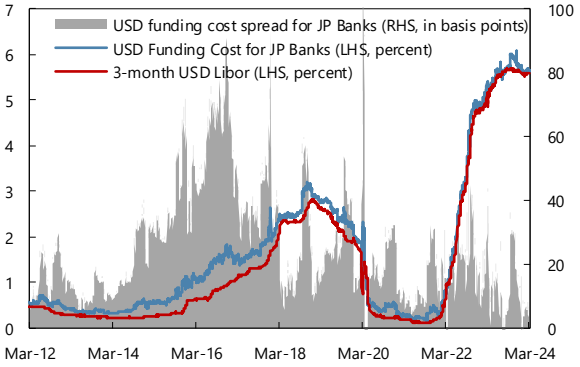
Sovereign CDS swap spreads have also remained low.

JGB 5-Year Yield and Sovereign 5-Year Credit Default Swap (CDS) Spread (Percent, bps, monthly average of daily values)



U.S. dollar funding costs have risen sharply since the Fed's tightening of monetary policy in early 2022.

Cost of Short-Term USD Funding for Japanese Banks
(Percent, basis points, daily freq.)

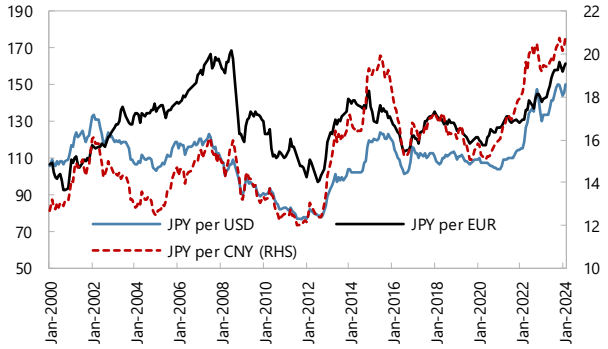


Sources: Bloomberg LLP; BOJ; MOF; S&P Markit CDS price; and IMF staff calculations.
Notes: Spreads are calculated as (US Yields - Japan Yields) × 100 (In Basis Points). NFC=nonfinancial corporate; JGB=Japanese government bonds; CDS=credit default swap; YCC=yield curve control. The USD funding cost estimate for JP banks in the lower right involves the JPY-USD currency basis swap (3-month).

Figure 5. Japan: Exchange Rates

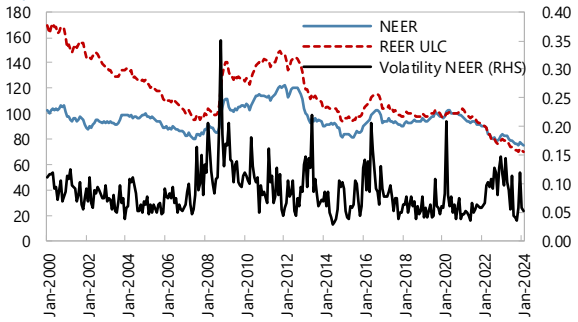
The JPY has been facing depreciation pressures…

Selected Bilateral Exchange Rates to the Japanese Yen (JPY)
(Units, monthly average of daily values)



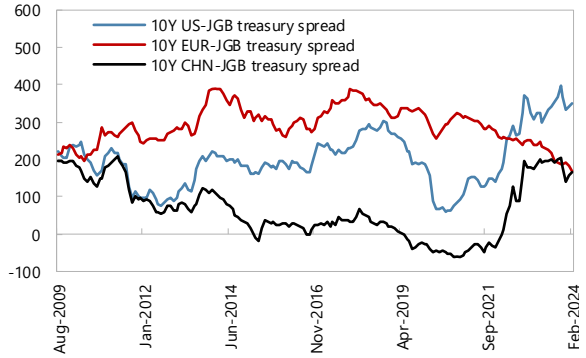
…and somewhat increased exchange rate volatility…

JPY Nominal Effective Exchange Rate (NEER), Real Effective Exchange Rate ULC (REER), and NEER Volatility
(Index 2020=100, ratio)



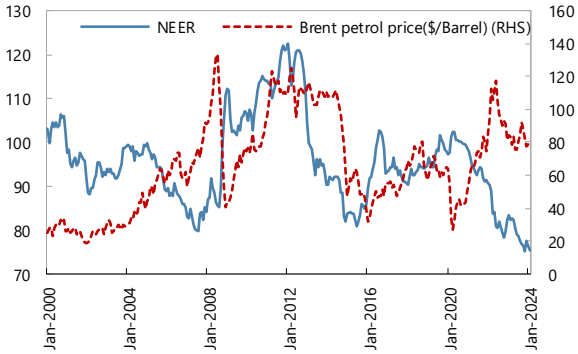
…partly because of notable interest rate differentials with major economies…

10-Year US-JGB, EUR-JGB, CHN-JGB Treasury Spread
(Basis point, average of daily values)



…and the higher cost of key imports such as oil.

JPY Nominal Effective Exchange Rate (NEER) and Brent Crude Oil Prices (Index, 2020=100, $/Barrel)



Sources: BIS; Bloomberg LLP; BOJ; Cabinet Office of Japan, and IMF staff calculations.
Note: CNY=Chinese Yuan, EUR=Euro, ULC=Unit labor cost.

FINANCIAL SECTOR LANDSCAPE

A. Financial System Structure

6. Japan has one of the largest financial systems in the world with total assets nearly seven times GDP at end-2023. The banking sector accounts for 60 percent of the financial system (Figure 6), with one-third of its assets held by three global systemically important banks (G-SIBs) (Table 3).[5] Japan's insurance sector—dominated by life insurers—accounts for 12 percent of the financial system and ranks fourth in the world by total written premiums (in USD terms). Investment funds have grown in importance, accounting for 8 percent of the financial system, amid conscious

[5] The banking sector comprises city banks (including G-SIBs), trust banks, regional banks, Shinkin banks (credit unions), credit associations, credit cooperatives, and other banks (e.g., Japan Post Bank).

efforts by the authorities. The pension sector is dominated by the Government Pension Investment Fund (GPIF) and amounts to 8 percent of the financial system.[6]

7. The Japanese securities markets are among the largest in the world. The market capitalization of the Tokyo Stock Exchange stood at USD 6.2 trillion (146 percent of GDP) at end-2023, making it the fifth largest stock exchange globally. The NFC bond market ranks fourth in the world with a capitalization of 16 percent of GDP in 2023. Japan houses three CCPs, one among the top-10 worldwide.

8. Fintech constitutes a small base but has been growing rapidly, especially in the digital payments sphere. Cashless payments reached 36 percent of total payments in 2022, up from 21 percent in 2017. The usage rate of online financial services is 20 percent, well below that of other G7 countries. However, the rapid growth in some digital banks' accounts and penetration of open banking suggest steady changes.[7] Stablecoin initiatives are underway by several entities although there has been no issuance yet.[8]

9. The financial system is characterized by a high degree of interdependence. Financial institutions have large exposures to each other, as well as to the nonfinancial private sector (Figure 7). Banks and NBFIs hold a notable share of their assets in JGBs, though their exposure has declined considerably by about 15 and 10 percentage points, respectively, in the last decade.

10. Financial institutions have expanded their overseas exposures in search of higher returns. Amid ultra-low domestic interest rates and subdued economic growth during the last decade, banks and NBFIs have increased the share of foreign assets in total assets to seek higher returns (Figure 7). Most of banks' foreign assets are in the form of loans and debt securities, while insurers hold sizable foreign debt and equities (Annex I). To obtain FX funding, banks mostly rely on unsecured wholesale funding and FX swaps, which makes them highly sensitive to an increase in foreign interest rates. In this context, the exposure of Japanese financial institutions to foreign debt securities has declined since 2022 due to the sharp rise in U.S. interest rates and FX funding costs (Figure 8).

[6] The GPIF and corporate pension funds constitute 5 percent and 3 percent of the financial system, respectively.

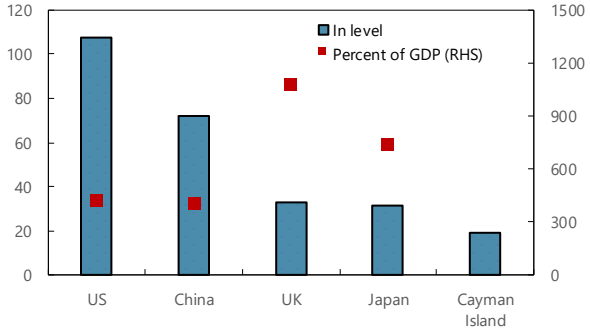
[7] Usage rate refers to those aged 16-64 years using a banking, investment, or insurance website/app each month.

[8] The BOJ does not have any plans to issue a central bank digital currency (CBDC) but has been conducting technical experiments (e.g., a Proof of Concept) to prepare for a change in circumstances. It initiated a pilot program in April 2023 to develop a system for experimenting with the end-to-end process. Experimentation remains at an early stage and no decision has been made with regards to the model that would be used for CBDC.

Figure 6. Japan: Financial System Structure

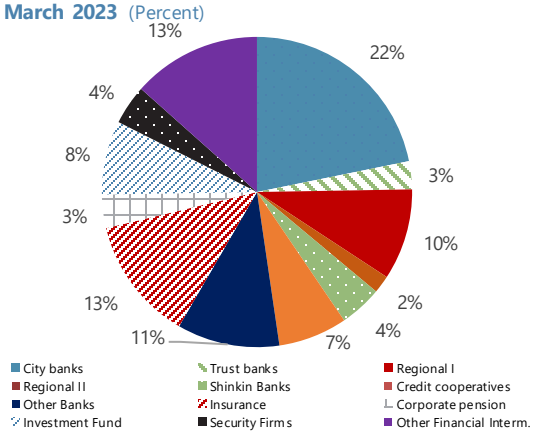
The Japanese financial system is one of the largest globally…

Top Five Countries by Financial System Assets, December 2022 (Trillions of dollar, and percent of GDP)



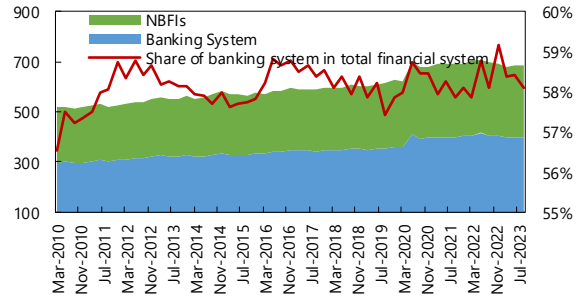
…and is dominated by banks.

Total Financial Assets of Financial Institutions, March 2023 (Percent)



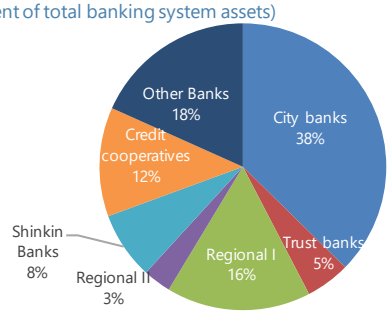
Banks' share in total financial sector assets has stayed stable at about 60 percent…

Banking System and NBFI
(Percent of GDP, percent of total assets in the financial system)



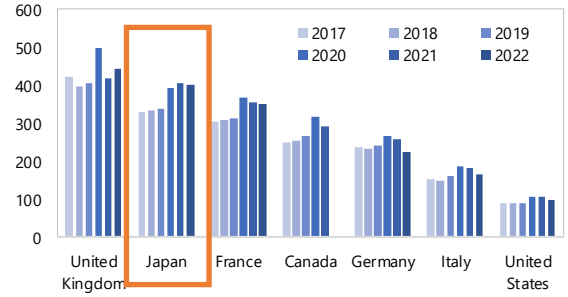
…with city banks constituting the dominant group.

Financial Assets by Types of Banks, March 2023
(Percent of total banking system assets)



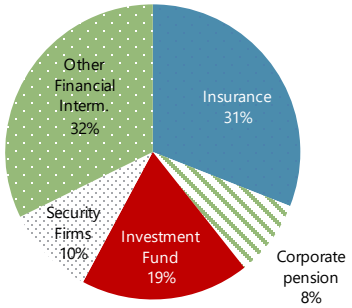
The Japanese banking system is sizeable in cross-country comparison.

Banking System Total Assets to GDP
(Percent)



The NBFI segment is dominated by insurers, followed by investment funds.

NBFI Total Assets, March 2023
(In percent of total NBFI assets)



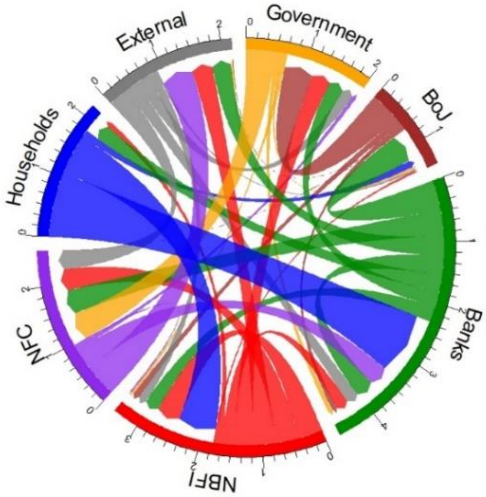
Sources: Financial Stability Board; BOJ; Japanese Bankers Association; Shinkin Central Bank; and IMF staff calculations.
Notes: Japan Post Bank is included in "other banks." Other financial intermediaries consist of miscellaneous non-banking institutions, public financial entities, and financial dealers and brokers (not securities firms). Regional Bank I, typically established within the main city of a prefecture, concentrate most of their operations within the prefecture, and maintain significant relationships with local enterprises and local governments. Regional Banks II focus on servicing the financial needs of both smaller companies and individuals situated within their immediate geographical localities. The list of Regional I and Regional II banks is available here: https://www.fsa.go.jp/en/regulated/licensed/index.html. Shinkin banks are cooperative regional financial institutions serving small-and-medium enterprises and individuals, operating under the Shinkin Bank Law.

Figure 7. Japan: Financial System Domestic and Cross-Border Connectedness

NBFIs are notably interconnected with banks, NFCs, and households.

Cross-Sectoral Interlinkages, 2022

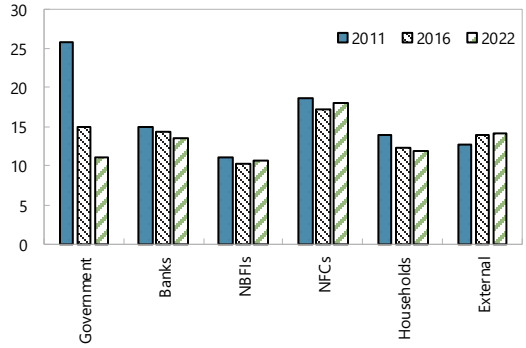
(Asset claims in JPY quadrillions)



Banks and NBFIs have reduced their holdings of government securities, while increasing their cross-border exposures.

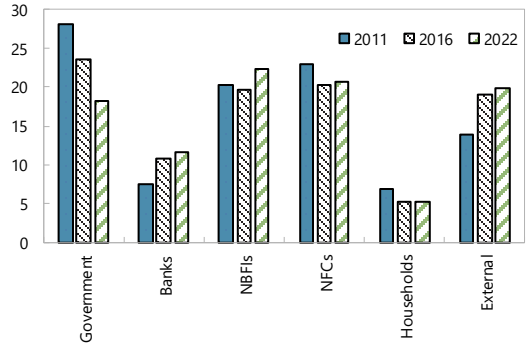
Banks' Asset-Side Exposure

(Percent)



NBFIs' Asset-Side Exposure

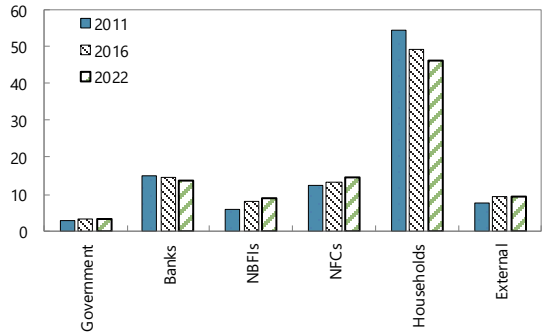
(Percent)



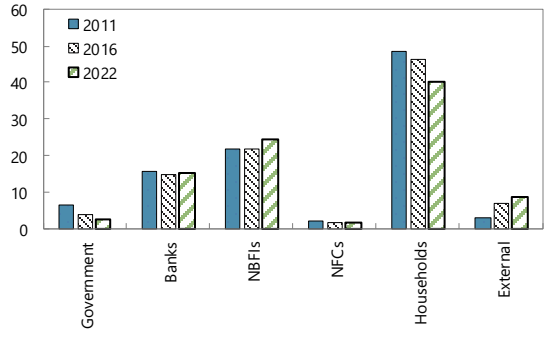
A large share of bank and NBFI liabilities is to households.

Banks' Liabilities to Selected Sectors

(Percent)



NBFIs' Liabilities to Selected Sectors



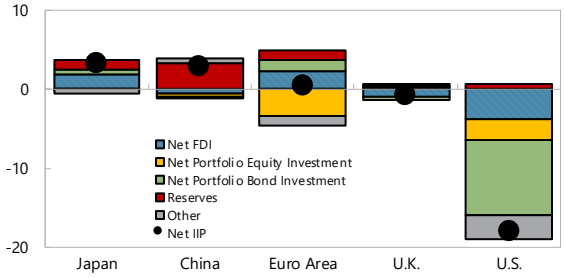
Sources: IMF Balance Sheet Approach Matrix; and IMF staff calculations.

Notes: The size of the link in the top panel reflects the relative significance of claims, and the direction of the arrow indicates exposures of a creditor to the borrower. Information regarding NFC claims on NFCs is unavailable. NFCs=nonfinancial corporates. NBFI=nonbank financial intermediaries.

Figure 8. Japan: Cross-Border Assets and Liabilities

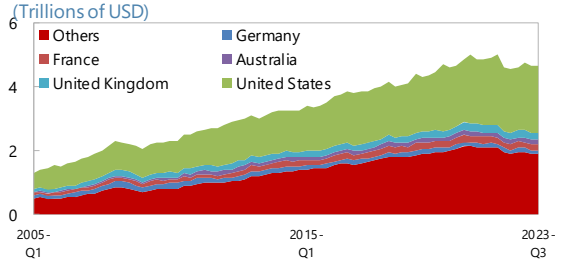
Japan has the largest net foreign assets globally…

Net Foreign Assets (USD trillions, 2023Q3)



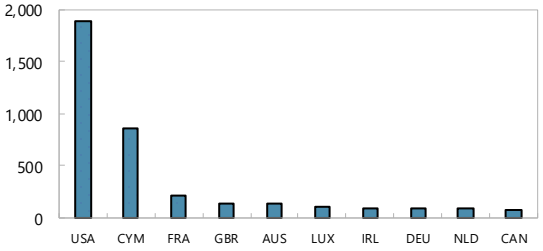
…including bank claims on major economies…

Japanese Banks' Cross-Border Claims (Trillions of USD)



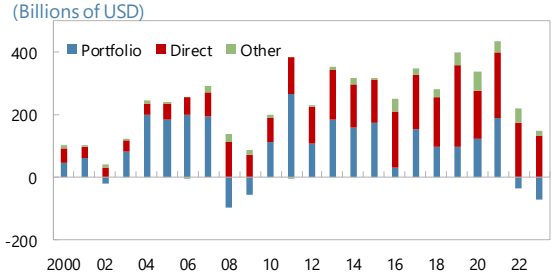
Portfolio investments are mostly tilted towards the U.S., Europe, and offshore centers…

Japan Portfolio Investment assets, June 2023 (Billions of USD, top ten countries)



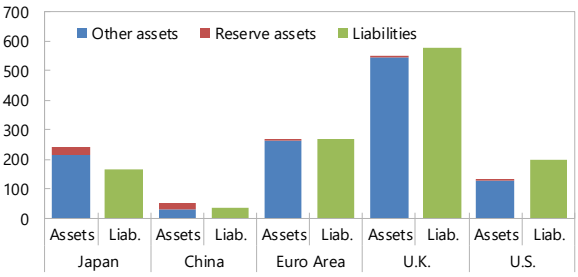
Nonresident investments into Japan have stayed strong.

Cross-Border Liability Flows (Billions of USD)



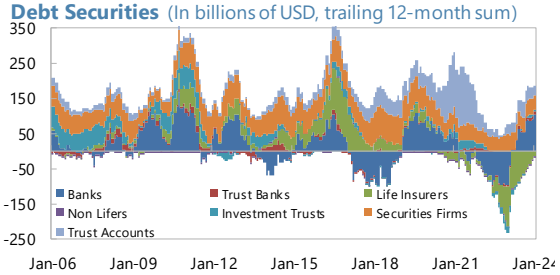
…with sizable gross foreign assets…

Gross Foreign Assets (Percent of GDP, end of 2023Q3*)



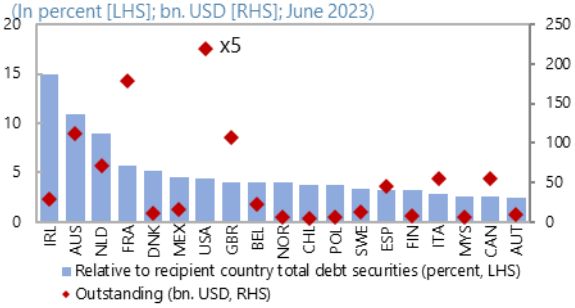
…though amid rising foreign interest rates, some domestic investors have reduced their foreign exposure since 2022.

Japanese Residents' Net Purchases of Long-term Debt Securities (In billions of USD, trailing 12-month sum)



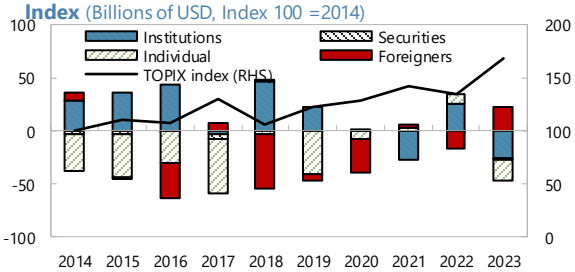
… and appear meaningfully large relative to the size of some of the destination markets.

Japanese Portfolio Debt Investment in Foreign Markets (In percent [LHS]; bn. USD [RHS]; June 2023)



Portfolio equity inflows have risen in 2023, contributing to a surge in stock prices.

Net Purchase of Stocks by Investor Type, and TOPIX Index (Billions of USD, Index 100 =2014)



Sources: BIS; Bloomberg; IMF Balance of Payments; IMF Coordinated Portfolio Investment Survey; IMF International Investment Position; MOF; and IMF staff calculations.
Notes: In bottom left panel, values for 2023 are total up to Q3 only. The bottom right panel shows the net purchases of stocks in the Tokyo and Nagoya stock markets.

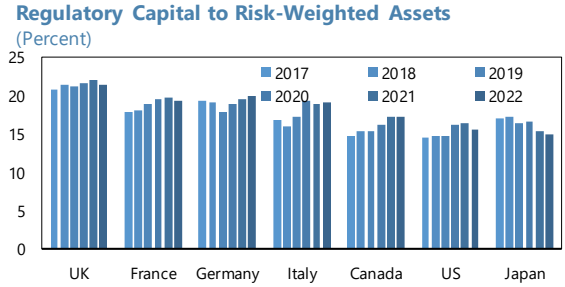
B. Financial Sector Soundness

11. The financial system withstood the pandemic, aided by strong policy support. Banks entered the pandemic crisis with generally strong capital and liquidity positions, which deteriorated only modestly during the pandemic owing to extensive fiscal, monetary, and financial policy support.[9]

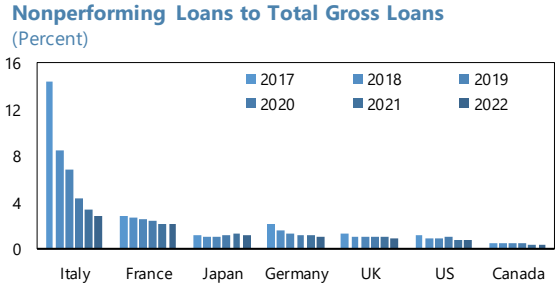
12. Banks' capital ratios remain well above the regulatory minimum, and liquidity buffers remain high. Banks have seen some recent decline in capital ratios due to valuation losses from overseas securities holdings. Nonperforming loan (NPL) ratios have remained low since the pandemic (Figure 9). Although corporate bankruptcies—particularly of small firms—have risen in 2023, they remain low (BOJ, 2023). Banks have maintained sizeable JPY liquidity buffers, and about one-third of assets are liquid (Table 5). Liquidity conditions among banks have been stable, with retail and insured deposits at about 60 percent of total deposits in December 2022.

Figure 9. Selected Countries—Bank Financial Soundness Indicators

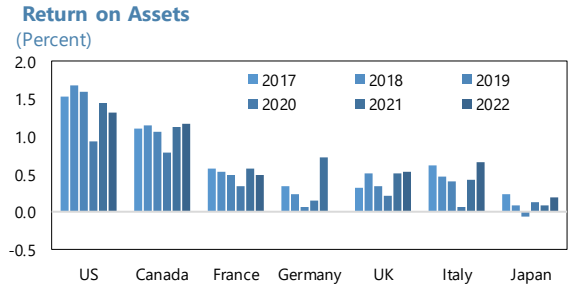
The Japanese banking sector is generally well capitalized...



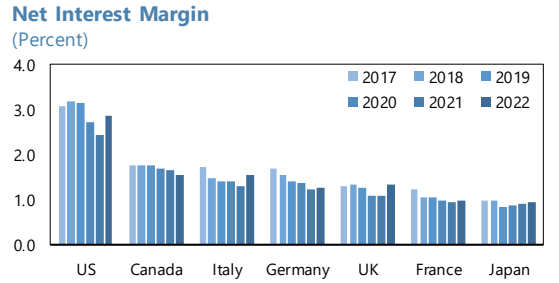
...with a low level of NPL ratios...



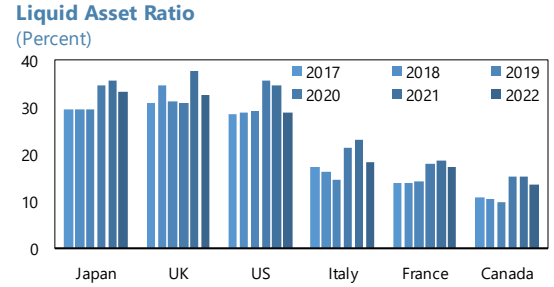
...but is characterized by low profitability ...



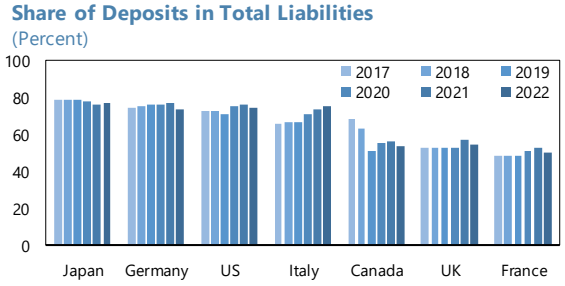
...partly driven by low net interest margins.



Japanese banks hold a large share of liquid assets in total assets...



...with a high share of deposits in total liabilities.



Sources: IMF, Financial Soundness Indicators; Fitch Connect; and IMF staff calculations.

[9] See Table 4 for financial sector policy support measures during the pandemic.

13. Banking sector profitability has been weak in a low interest rate, subdued growth environment. The ultra-low interest rates since 2016 have put downward pressure on banks' net interest margins and profitability, particularly for domestic banks and regional banks.[10] The FSA has initiated measures to support the consolidation of regional banks to preserve their viability. For example, the act on special measures for the anti-monopoly act allows a merger between regional banks on the condition that the merged bank is judged to better serve local communities by leveraging the capacity generated by the merger. Profitability of internationally active banks, particularly G-SIBs, has been aided in 2022 by a rise in foreign interest rates lifting net interest margins in foreign lending and by the depreciation of the JPY. Looking forward, an increase in domestic interest rates may also positively contribute to bank profitability through an increase in banks' net interest income, and thereby to their capitalization.

14. Insurers have strong capital buffers. The average solvency margin ratio (SMR) of major life and non-life insurers in the stress test sample stood at 956 percent and 840 percent, respectively, in March 2023, while the economic value-based solvency ratio (ESR) was 226 percent and 212 percent, respectively.

KEY VULNERABILITIES AND RISKS

15. Three key sources of vulnerability underlie the Japanese financial system:

- **Financial institutions have a significant exposure to domestic and foreign securities held under mark-to-market accounting.** On average, about one-fifth of banks' assets constitute securities, but the share is higher for domestic banks (Figure 10; Annex I). Insurance companies, especially life insurers, also hold a sizable share of assets in securities (Annex I).

- **The banking system has a notable FX exposure.** Banks' liabilities in USD terms constitute 30 percent of total liabilities and mostly take the form of FX swaps and unsecured wholesale funding (Figure 11, Annex I). Banks' liquidity coverage ratio (LCR) in USD terms rests below 100 percent, while there is no minimum requirement for it in place, at present. Banks also have a sizeable share of undrawn FX commitments through credit and liquidity lines (two-thirds of total commitments at end-September 2023).

- **Real estate markets appear to be overvalued in some areas.** RRE prices have recorded above trend growth in recent years, and the price-to-income ratio has been historically high (Figure 12). CRE prices have also appreciated notably (in real terms) for the industrial and residential segments, while the retail sector has been under pressure. Both the residential and CRE markets are estimated to be overvalued by, on average, 17 and 30 percent, respectively.[11] About 11 percent and 15 percent of banks' outstanding credit constitutes CRE and retail mortgage loans,

[10] Internationally active banks are defined as those with one or more foreign branches or subsidiaries, while the rest are classified as domestic banks. Regional banks have a predominantly regional focus and can be internationally active or domestic banks.

[11] See the FSAP's Technical Note (TN) on Systemic Risk Analysis and Stress Testing (SRA) for further details.

respectively—and more than three-fourth of the latter is floating-rate mortgages (BOJ, 2023). While households' debt-service-to-income (DSTI) ratio has remained broadly stable, the share of housing loans with DSTIs exceeding 30 percent has increased.[12]

16. These vulnerabilities could amplify the impact of key macrofinancial risks facing the economy at the current juncture. These include a potential intensification of regional conflicts and geoeconomic fragmentation, global supply chain disruptions, and commodity price shocks that could lead to a global economic slowdown and inflationary pressures, and trigger a sudden increase in foreign and domestic interest rates and financial market volatility.[13] Such a hypothetical adverse scenario could imply market and credit risk for Japanese financial institutions through valuation losses on securities held under mark-to-market accounting, a rise in defaults among leveraged borrowers, and significant price corrections in real estate markets. The rise in foreign interest rates could also raise banks' overseas credit risk and FX liquidity risk.[14]

17. The traditional financial stability risks could be compounded by ongoing structural transformations (Figure 13). Climate-related transition risks are highly relevant for Japan, which is among the largest carbon emitters globally and has pledged to reduce GHGs significantly over the next decade (Figure 14).[15] Growing digitalization offers opportunities to the financial sector to enhance efficiency but could also pose challenges for incumbent financial institutions through increased competition, while raising cybersecurity risks (Figure 15).[16] An aging population poses a long-standing challenge to financial stability, particularly through its impact on regional banks' profitability, as discussed in the 2017 FSAP.

[12] The loan-to-income (LTI) ratio at origination has also been increasing steadily since 2015, reaching 4.2 at end-March 2022, driven primarily by young-age borrowers (BOJ, 2022).

[13] In such an adverse scenario, the rise in domestic interest rates could partly occur because of an increase in sovereign risk premia, given the high level of sovereign debt in Japan.

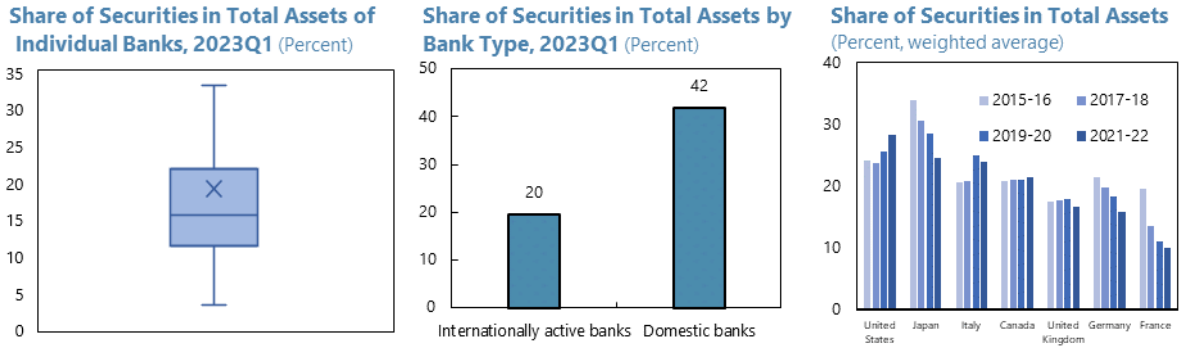
[14] The share of foreign loans in major banks' total loans has nearly doubled over the last decade and is up by about 5 ppt since the last FSAP. The direct exposure of Japanese banks to overseas CRE market appears limited in aggregate (BOJ, 2023), though some institutions could be more exposed.

[15] Japan has set an interim target to reduce GHG emissions by 46 percent from 2013 levels by 2030, and to achieve net zero GHG emissions by 2050.

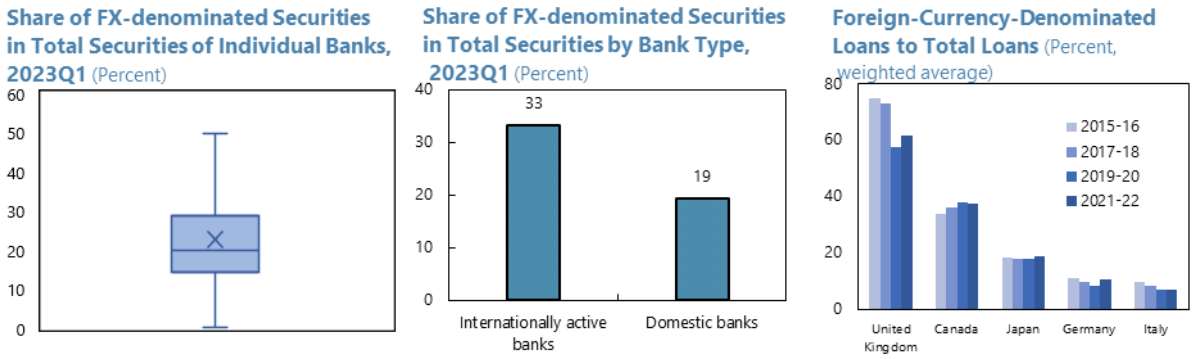
[16] The number of cyberattacks has increased significantly in Japan in recent years (BOJ, 2023). More than 200 cyberattacks occurred on critical infrastructure in 2021, the highest level in the past five years (BOJ, 2022).

Figure 10. Japan: Banking System Security Holdings and Foreign Exposures

The share of securities in banking sector assets is high, particularly for domestic banks, but has been trending down.



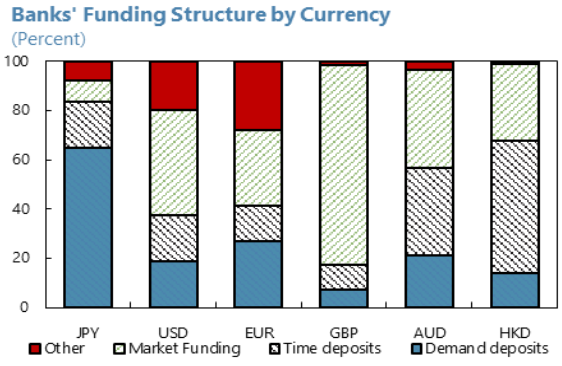
The share of FX-denominated securities in total securities averages about 30 percent but is generally higher for internationally active banks.



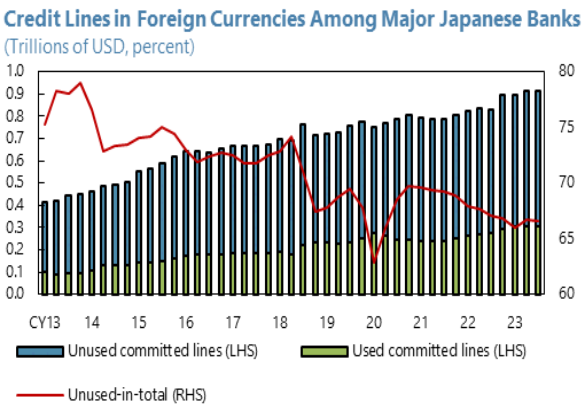
Sources: FSA; Fitch Connect; and IMF staff calculations.
Notes: The 23 banks covered in these charts constitute more than 80 percent of the banking system assets and are included in the solvency and liquidity risk analysis of the FSAP. In the box plots, lines in the middle of the box are medians, the boxes are the interquartile range, the whiskers mark the top/bottom one percentiles, and the cross (x) indicates the mean value.

Figure 11. Japan: Banks' Funding Structure by Currency and FX Credit Lines

Banks' USD liabilities are dominated by market funding…



…and unused off-balance sheet commitments in FX are sizeable.

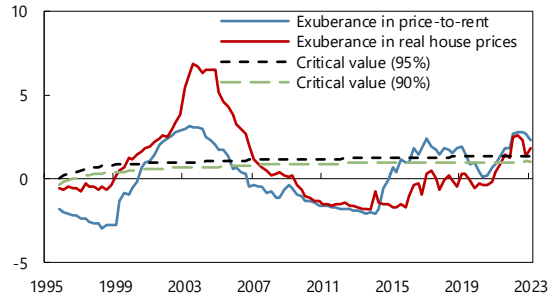


Sources: BOJ; FSA; and IMF staff calculations.
Note: Data as of end-September 2023. Major banks here contain ten banks. See BOJ (2023) for the composition of major banks.

Figure 12. Japan: Vulnerabilities in Real Estate Markets

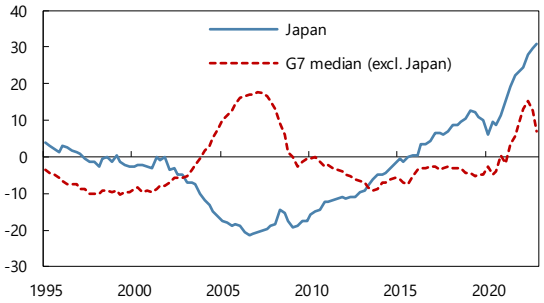
House prices have been rising above trend in recent years…

Indicators of Rapid Price Appreciations
(Index)



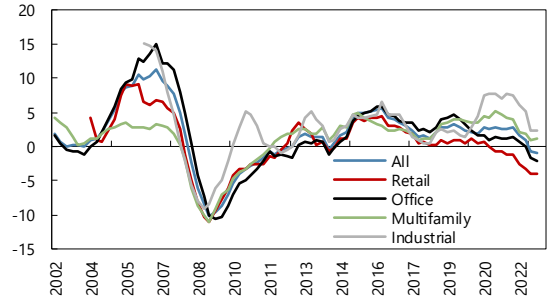
…while affordability has declined.

Price-to-Income ratio Misaligment
(Deviation from long-term trend, Index)



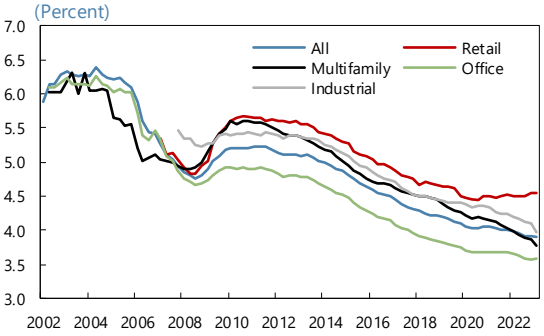
In CRE, the industrial and residential segments have been booming…

Real Commercial Real Estate Price Growth by Segment
(Percent, year-over-year)



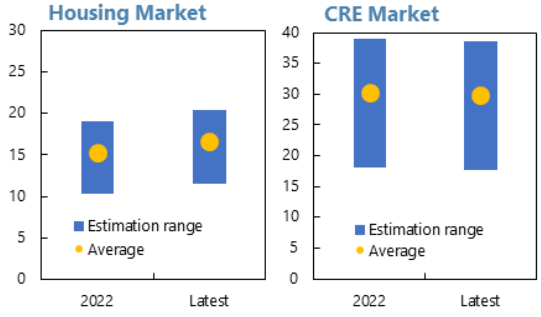
… and capitalization rates have remained compressed.

Capitalization Rate by Segment
(Percent)



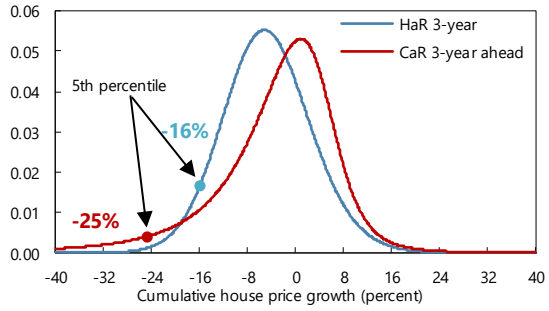
Real estate markets appear to be overvalued…

Overvaluation Measures
(Percent deviation from equilibrium)



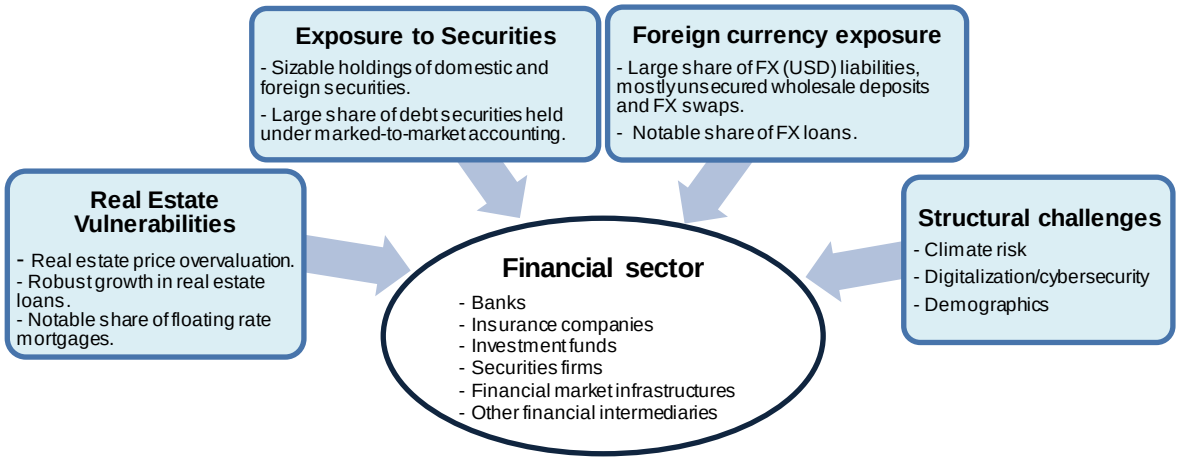
…increasing the likelihood of sizeable price corrections.

House-price-at-risk and CRE-price-at-risk
(Density, cumulative growth)



Sources: BIS Statistics; Haver; MSCI Real Estate; OECD; and IMF staff calculations.
Notes: In the top left panel, indicators of rapid price appreciation are based on recursive (right-tailed) unit root tests. In the bottom left panel, overvaluation measures are estimated using an error correction model controlling for demand-and supply-side factors. The estimated range (blue bar) is computed from different levels of base prices (for years 2000-15) that are used to obtain changes in fitted valuations and to derive estimates of price misalignments relative to fair values. The average misalignment (yellow marker) is the mean over different base years. In the bottom right panel, probability densities are estimated for three-year-ahead (cumulative) house and CRE price growth distributions following an approach similar to Adrian and others (2020) and Deghi, Mok, and Tsuruga (2021), respectively. Filled circles indicate the price decline with a 5 percent probability.

Figure 13. Japan: A Snapshot of Key Challenges Facing the Japanese Financial System

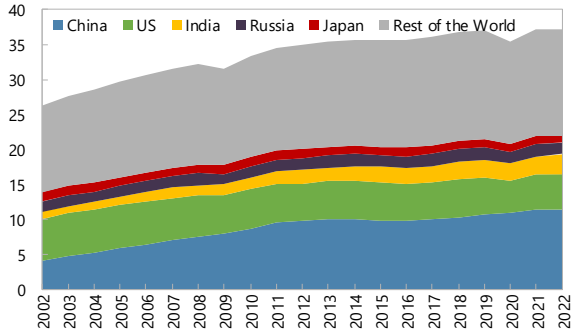


Source: IMF staff.

Figure 14. Japan: Climate-Related Transition and Physical Risks

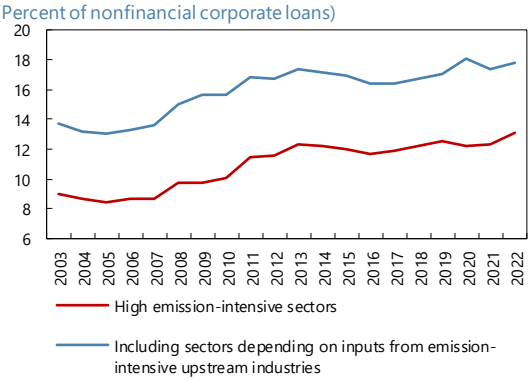
Japan is one of the largest carbon emitters in the world…

Global CO2 Emissions
(In billions of metric tons)



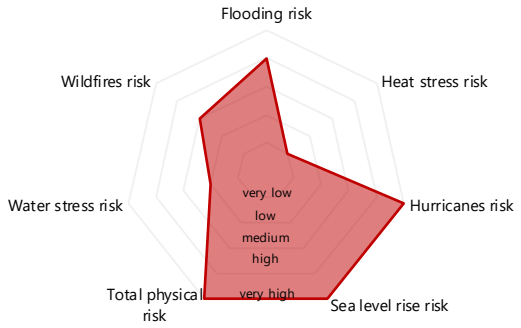
…with almost one-fifth of bank loans to emission-intensive sectors, which exposes it to transition risks.

Bank Loans to Emission Intensive Sectors
(Percent of nonfinancial corporate loans)



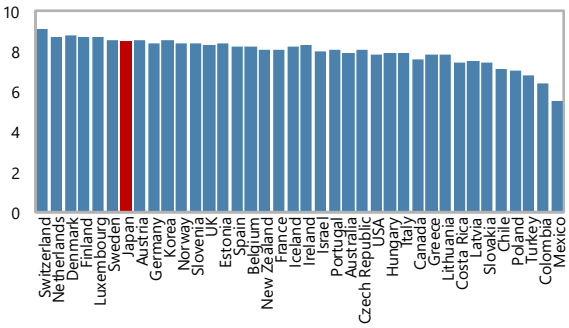
Japan also has notable exposure to physical risk…

Exposure to physical risk scores
(In five categories, very low - very high)



…though is considered to have a strong adaptive capacity to handle such risks.

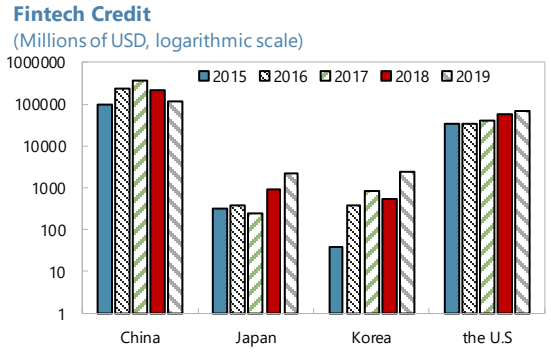
Climate Change Coping Capacity, 2023
(In index, 0-10)



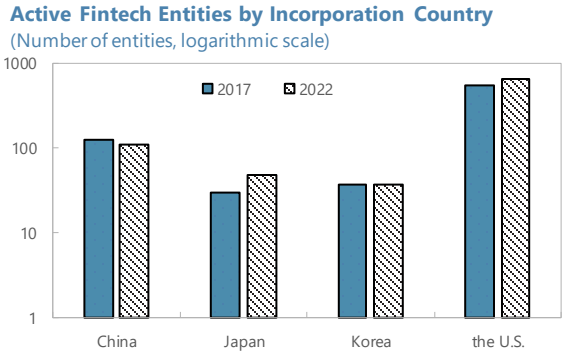
Sources: BOJ; German Watch; Global Carbon Atlas; Haver Analytics; Index for Risk Management (INFORM); U.S Energy Information Administration (EIA); OECD; and IMF staff calculations.
Note: In the bottom right chart, higher score indicates greater capacity to cope with climate physical change risk, and vice versa.

Figure 15. Japan: Fintech Developments and Demographic Shift

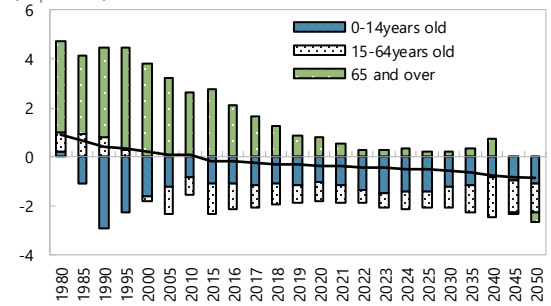
Fintech credit has been growing…



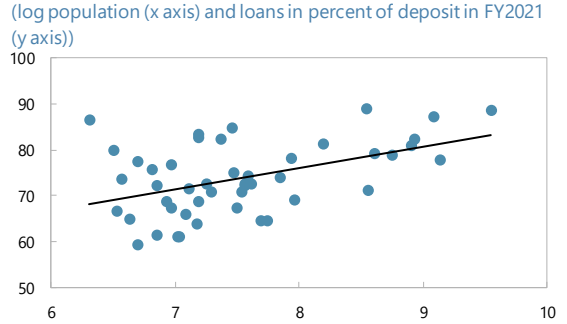
…and the number of fintech companies has been rising, which could increase efficiency but also risks.



Japan's population is aging and shrinking, posing a long-term challenge to macrofinancial stability.



Regional banks in less-populated prefectures have on average limited business opportunities.



Sources: "Fintech and big tech credit: a new database," BIS Working Paper No. 887, September; Cambridge Fintech Ecosystem Atlas database; Regional Bank Association; Ministry of Health, Labor, and Welfare; National Institute of Population and Social Security Research; OECD statistics; Population Census of Japan; and IMF staff calculations.
Notes: In the top right panel, financial entities are defined as those that use digital technology to provide or to enable the provision of financial services. In Japan, these entities predominantly operate in sectors such as crypto asset exchange, digital capital raising, digital identity, digital payments, WealthTech, etc.

SYSTEMIC RISK ASSESSMENT

18. The FSAP assessed the financial sector's resilience with a comprehensive scenario-based risk analysis. Using supervisory and commercial data, top-down stress tests were conducted to examine: i) banks' solvency and liquidity risks, along with possible feedback of liquidity risks to solvency; ii) insurers' solvency and liquidity risks; iii) investment funds' liquidity risk; and iv) the solvency risk of NFCs and households. The scenario-conditional risk parameter paths for both households and NFCs served as direct input to the bank solvency stress test. The FSAP also analyzed contagion risks across banks, insurers, and securities firms using bilateral balance sheet exposures and conducted climate-related risk analysis focusing on banks' transition risks.

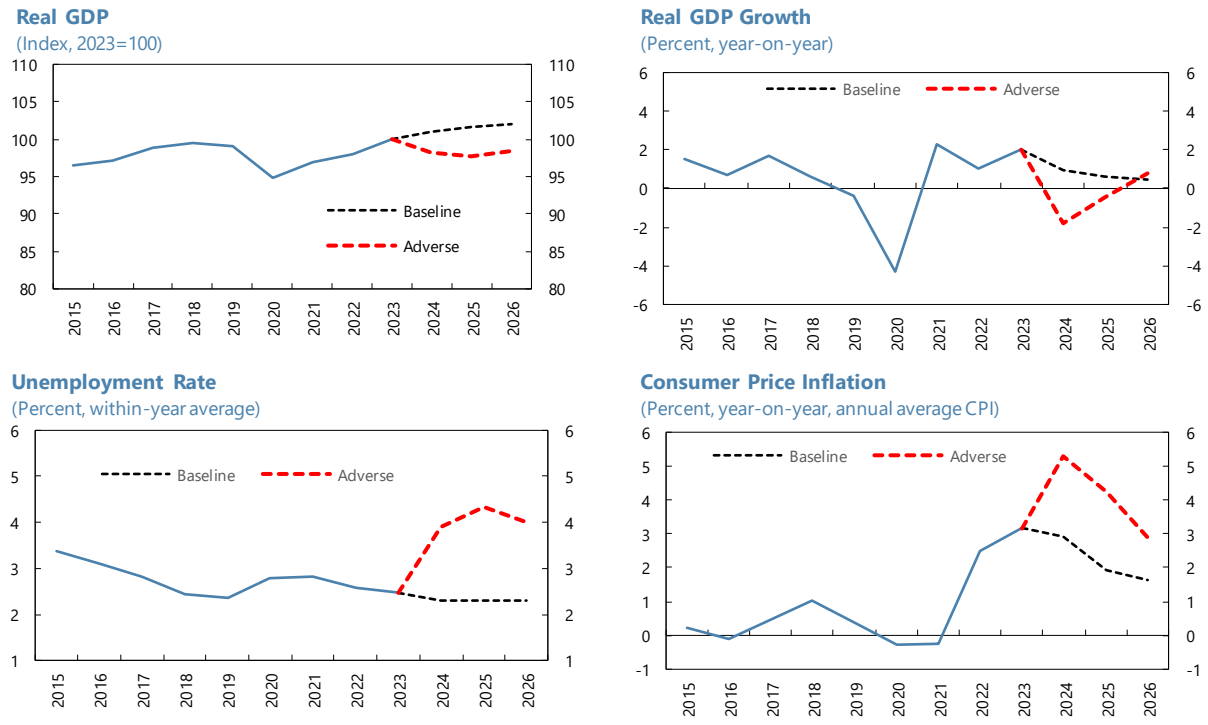
A. Macrofinancial Scenarios

19. A baseline and an adverse scenario spanning the horizon 2024–26 underpin the systemic risk analysis. The baseline scenario is aligned with the IMF's October 2023 World

Economic Outlook (WEO).[17] The adverse scenario combines the various risks outlined above and in the Risk Assessment Matrix for Japan (Table 6)—reflecting an abrupt global and domestic economic slowdown, surge in inflation, and financial market downturn.[18] Domestic interest rates are assumed to initially react to high inflation, but any further increase is contained by a wide output gap and a gradual decline in inflation (Figure 16). The economic slowdown and high inflation imply a fall in real wages, which combined with the increase in interest rates, results in a decline in real estate demand and a notable correction in real estate prices.

20. Sensitivity analyses presume a further rise in domestic interest rates and decline in real GDP around the adverse scenario. Short-term and long-term interest rates are assumed to rise to 1.5 percent and 3 percent in the first year, respectively (compared to 1 percent and 2.25 percent, respectively, under the initial adverse scenario). Real GDP growth is assumed to drop to -3.2 percent and -1 percent in the first two years (compared to -1.8 percent and -0.5 percent in the initial adverse scenario, respectively).

Figure 16. Japan: Macrofinancial Scenarios for Stress Testing

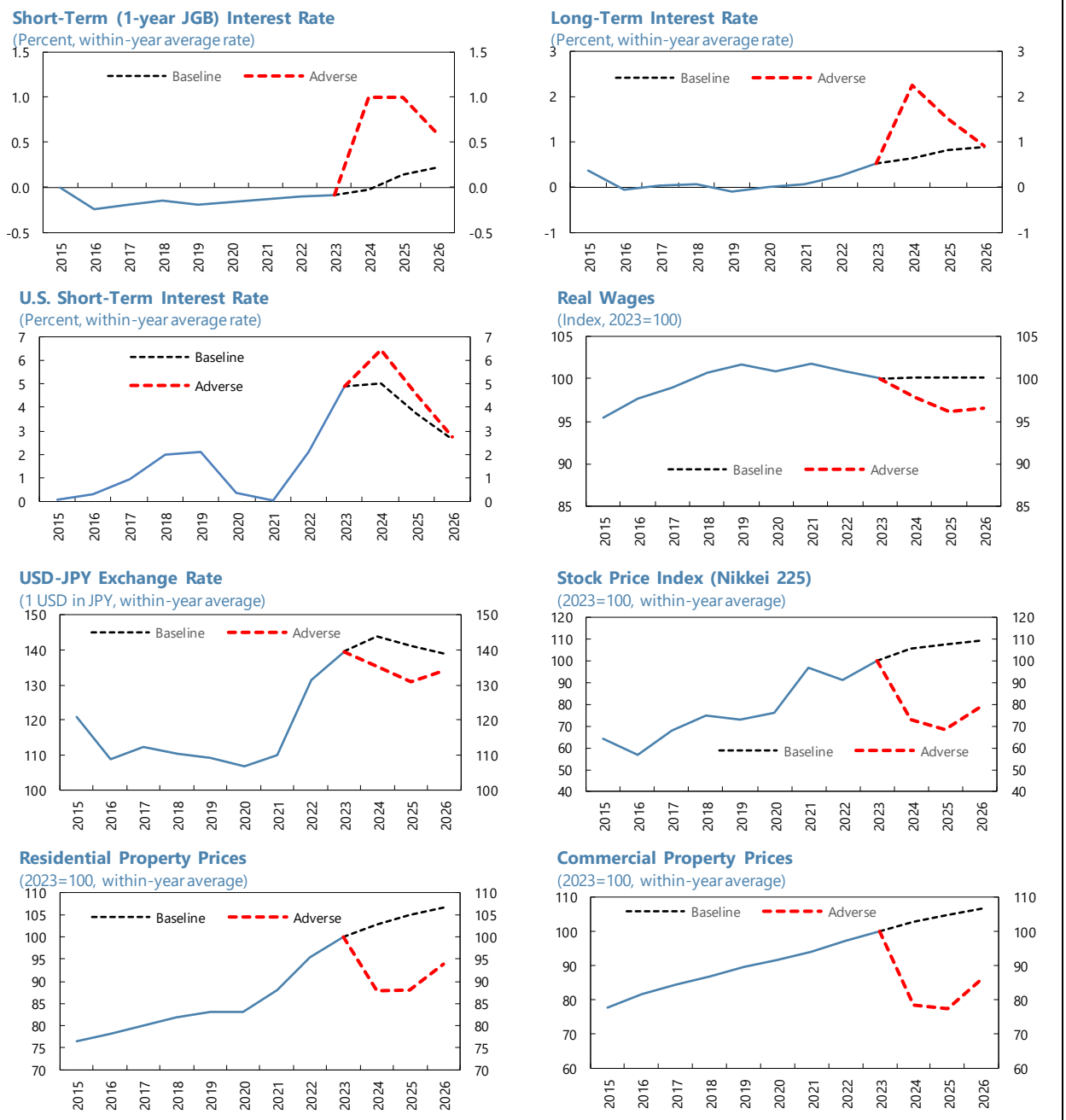


Sources: BOJ; IMF WEO; and IMF staff calculations.

[17] See Table 2 for the updated (April 2024 WEO) baseline projections. Compared to the October 2023 WEO, real GDP growth rate is projected to be 0.2 percentage points higher, on average, over 2024-2026 in the April 2024 WEO, while inflation is, on average, unchanged over 2024-2026.

[18] See the TN on SRA for details on scenarios and results.

Figure 16. Japan: Macrofinancial Scenarios for Stress Testing (concluded)



Sources: BOJ; IMF WEO; and IMF staff calculations.
Notes: Short-term interest rates are 1-year JGB bond yields. Long-term interest rates are 10-year JGB bond yields. More details regarding the scenarios, including for relevant foreign jurisdictions, are provided in the TN on Systemic Risk Analysis and Stress Testing.

B. Banking Sector Resilience

Solvency Stress Test

21. The solvency stress test for internationally active banks and domestic banks (23 banks in total), including regional banks, suggests that the system is broadly resilient to the

considered scenarios. The aggregate Common Equity Tier 1 (CET1) ratio of the banking system falls by 510 basis points in the first year of the adverse scenario but remains well above the regulatory minimum. The decline is more pronounced for domestic banks than for internationally active banks, and for regional banks considered as a separate group compared to the system-wide aggregate (Figure 17).[19] The changes to banks' capital ratio are driven mainly by sizeable valuation losses on securities and a rise in loan losses that are partially offset by an increase in interest income (Figure 18).

22. Three (four) banks face capital shortfalls under the adverse scenario considering CET1 (total capital) as the reference metric. The capital shortfall of these banks amounts to 0.04-0.05 percent of 2022 nominal GDP. Three of the four banks with total capital ratio below the hurdle rate are regional banks. Together, the four banks represent five percent of total assets of the banks in scope of the stress test.[20]

23. The interest rate sensitivity analysis implies additional capitalization pressures for banks compared to the initial adverse scenario. The additional decline in capital is primarily driven by larger valuation losses on securities and, to an extent, by a further rise in loan losses (Figure 19). The number of banks with CET1 (total capital) falling below the hurdle rate in this case is five (eight), and the system-wide total capital shortfall rises to 0.3 percent of GDP.[21]

Liquidity Stress Test

24. A cashflow-based analysis suggests that Japanese banks are generally resilient to a hypothetical, severe liquidity stress event. Five banks, including three regional banks, representing 7 percent of total assets of the banks in the sample, would face a liquidity shortfall on an all-currency basis (Figure 19). The feedback to solvency—from having to sell not marked-to-market securities to honor liability-driven cash outflows—is confined to only a small number of banks, though may be material for them.

25. On FX liquidity risks, a counterfactual analysis assuming a severe outflow of undrawn USD committed credit lines suggests a notable weakening in the liquidity position of some banks. The liquidity pressure under such a scenario would be generally confined to internationally active banks with large committed, yet undrawn credit and liquidity lines (Annex I). While the all-currency LCR of these banks would remain above 100 percent, their USD LCR would fall by 30-40 percentage points. An additional counterfactual analysis, assuming that Japanese banks' USD

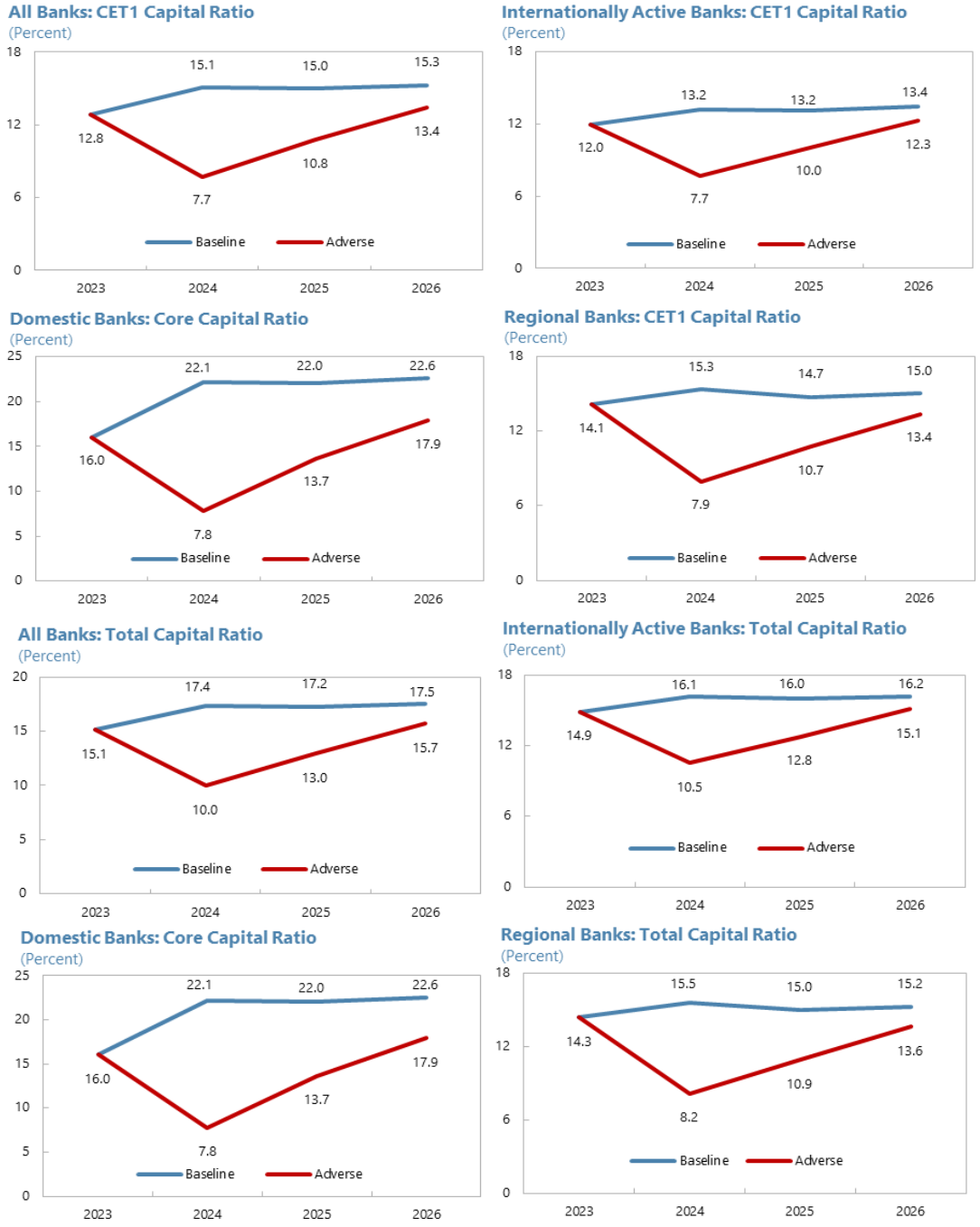
[19] Domestic banks in Japan are subject to an "AFS filter," i.e., valuation changes for securities held under AFS do not affect their regulatory capital metrics. The FSAP stress test "switched off" this filter to estimate the economic valuation effects and to allow for an adequate comparison with internationally active banks. Results with the AFS filter activated are provided in the TN on SRA. In addition, deferred tax assets and the 5-year/125 percent rule for mortgage lending were not considered in the analysis, which would mitigate the impact under the adverse scenario to some extent.

[20] For domestic banks, the hurdle rate was 4 percent. For G-SIBs/D-SIBs, their additional surcharges were included in the hurdle rates as well.

[21] The GDP growth sensitivity analysis implies modest additional bank capital impacts, due to the prominent use of structural models for credit and market risk, which establish the relationships of relevant metrics with the underlying drivers, such as the unemployment rate for mortgage default rates. Moreover, bond and equity valuation effects were found to dominate for Japanese banks, which are primarily a function of changes in interest rates and equity prices.

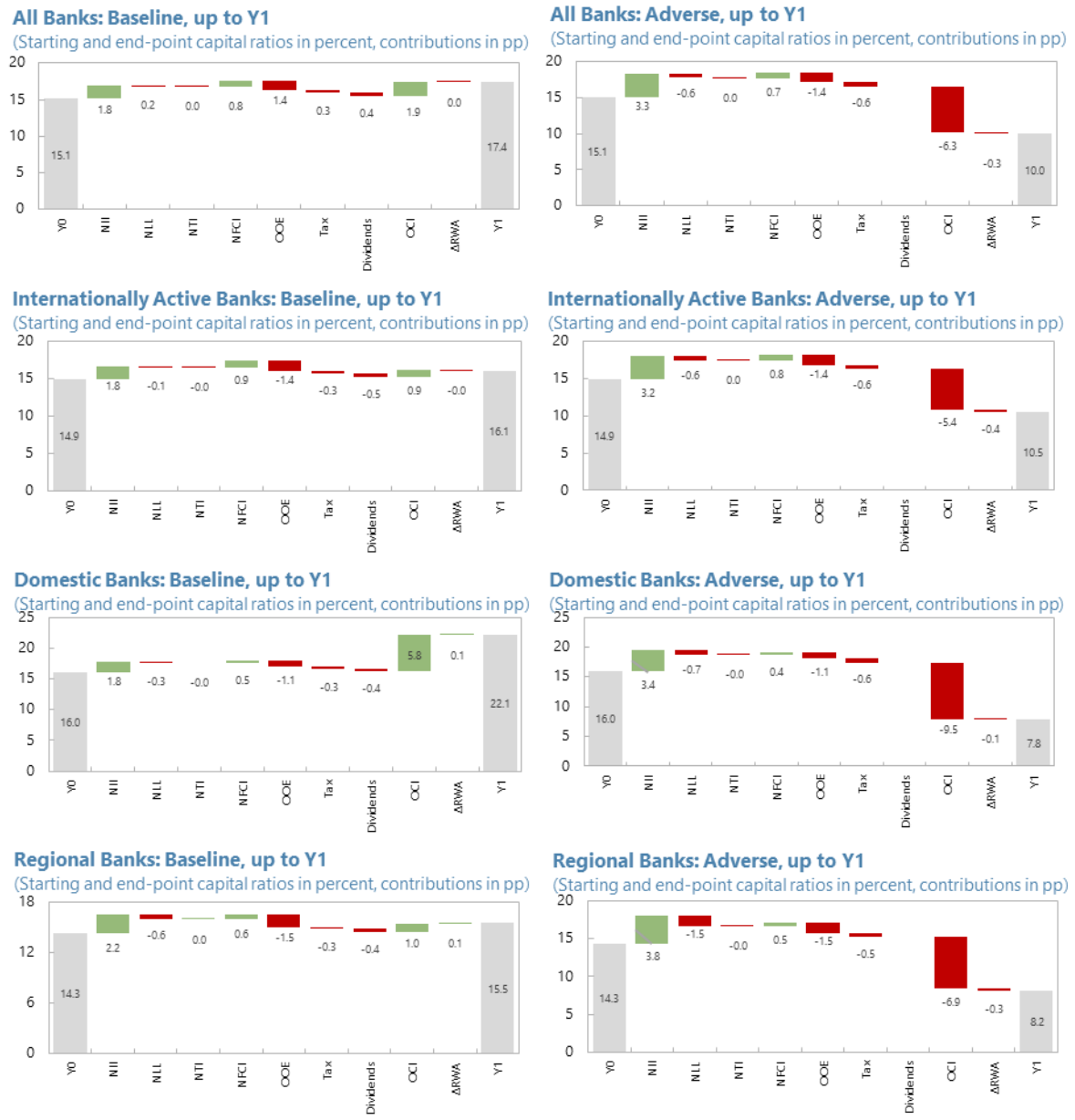
funding cost rises notably, suggests capitalization pressure for only a small number of banks (with capital ratios falling by 0.5-1.2 ppt) relative to the initial adverse scenario.

Figure 17. Japan: Bank Solvency Stress Test Results



Sources: BOJ; FSA; and IMF staff calculations.
Notes: For the domestic bank cluster, core capital ratio is considered, which differs from CET1, and total capital ratios as employed for international banks. The starting point for the domestic banks' core capital was adjusted to take unrealized gains/losses at the onset into account. The Available-For-Sale (AFS) filter was "switched off" for domestic banks to thereby assess the valuation effects on their core capital ratios and to facilitate the comparison with international banks for which no AFS filter is in place. The regional banks cluster considers both internationally active and domestic regional banks. Deferred tax credit effects were not accounted for; their inclusion would reduce the impact of the adverse scenario to an extent.

Figure 18. Japan: Bank Solvency Stress Test Results—Decomposition Analysis up to Year 1

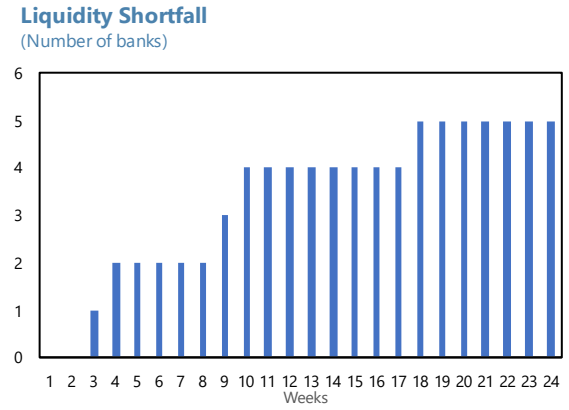


Sources: BOJ; FSA; and IMF staff calculations.

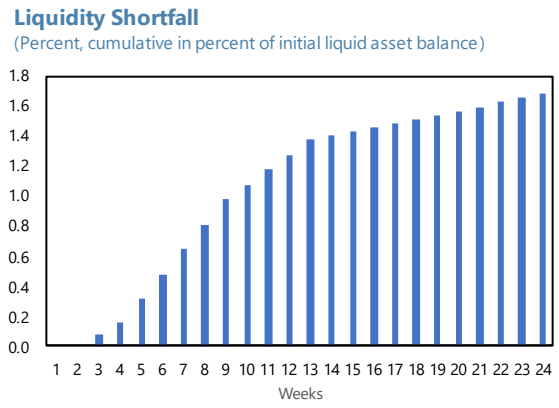
Notes: The contribution analysis as shown here pertains to total capital ratios for international banks and core capital ratios for domestic banks. The capital ratios at the initial position in year 0 (Y0) and final position at year 1 (Y1) are driven by the percentage point contributions arising from NII (net interest income), NLL (net loan losses), NTI (net trading income), NFCI (net fee and commission income), OOE (other operating expenses), taxes, dividends, and valuation gains or losses recorded under OCI (other comprehensive income). The delta risk weighted asset (RWA) term captures the effects of dynamically moving risk weights for internal ratings-based (IRB) exposures, performing-to-nonperforming migration effects for standardized (STA) portfolios, and general loan growth as assumed under the scenarios.

Figure 19. Japan: Bank Liquidity Stress Test Results

Five banks fail the liquidity stress test. The first (fifth) bank faces a liquidity shortfall after three (18) weeks.



The liquidity shortfall accumulates to 1.7 percent of initial liquid assets by the end of the 6-month horizon.



Sources: BOJ; FSA; and IMF staff calculations.

C. Insurance Sector Resilience

Solvency Stress Test

26. The solvency stress test was conducted for 12 life and 10 non-life insurers, covering about 70 and 90 percent of the respective segments. Credit and market risks were assessed under the current SMR by the FSAP team, and under the planned ESR by the authorities.[22] In addition, bottom-up stress tests were conducted by insurers under the SMR with the same scenarios as for the top-down exercise.

27. Life insurers experience a substantial decline in SMR under the adverse scenario but remain broadly resilient. The average SMR for life insurers declines by 372 ppt under the adverse scenario (Figure 20). Two of the twelve life insurers do not meet the statutory SMR requirement of 200 percent. The drop in equity prices and increase in interest rates are the key contributors to the change in life insurers' capital. In comparison, non-life insurers remain more resilient, with the average SMR declining by 154 ppt under the adverse scenario, and all ten remaining above the hurdle rate. The bottom-up results are broadly aligned with the top-down results (Annex II).[23]

28. Stress tests under the ESR also suggest resilience of the insurance sector under the adverse scenario. The ESR decreases by, on average, 67 ppt and 41 ppt for life and non-life insurers, respectively, and remains above the hurdle rate of 100 percent for all insurers (Figure 21). The changes in capital can mainly be attributed to the decline in equity prices and to credit shocks. The impact of an interest rate increase varies across insurers. Life insurers benefit due to a decline in

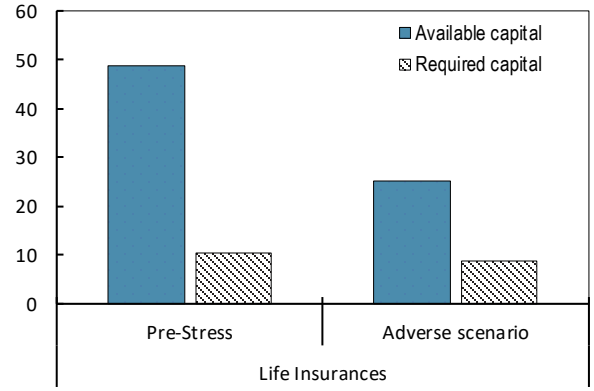
[22] The ESR evaluates insurers' financial positions through economic value-based valuation of their assets and liabilities. Under the SMR, insurance liabilities are evaluated using a locked-in method with factor-based risk measurements.

[23] By considering lapse risk and additional underwriting shocks, post-stress capital in the bottom-up exercise is in aggregate somewhat lower than in the top-down exercise (Annex II). See the TN on SRA for further details.

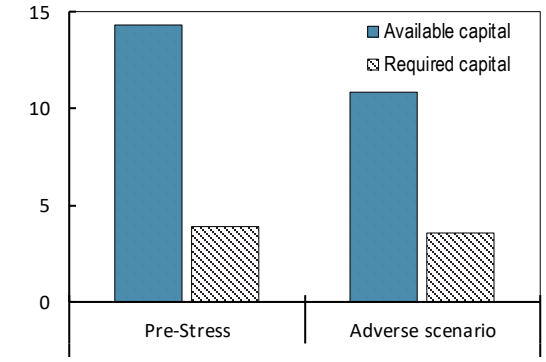
their liabilities offsetting valuation losses on securities. However, an increase in FX hedging costs can compress net investment yields for insurers with large foreign exposures.

Figure 20. Japan: Insurance Solvency Stress Test Results under the Solvency Margin Ratio

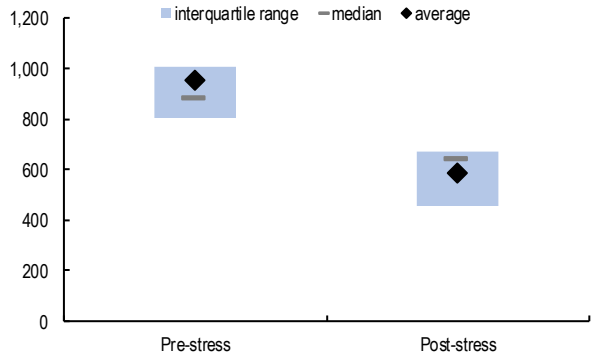
Life Insurance: Available and Required Capital
(Trillions of JPY)



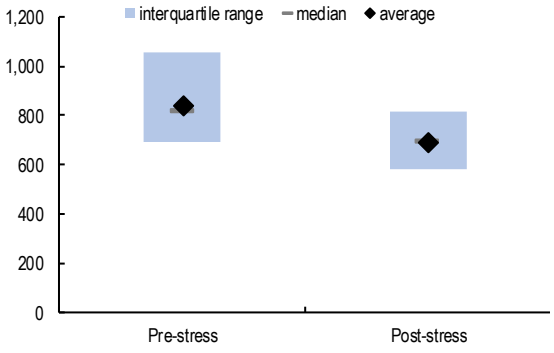
Non-Life Insurance: Available and Required Capital
(Trillions of JPY)



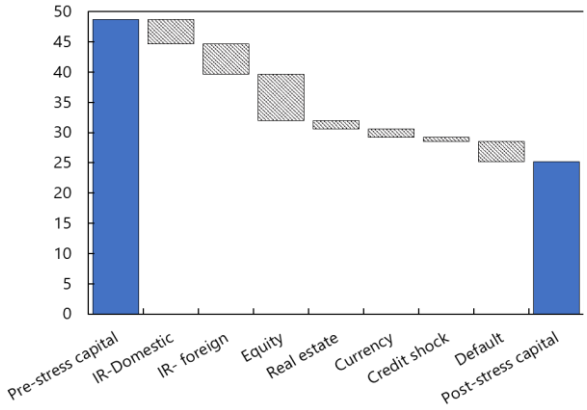
Life Insurance: Solvency Margin Ratio Top-Down
(Percent)



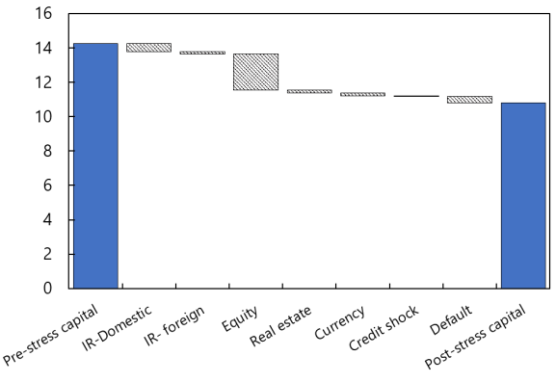
Non-Life Insurance: Solvency Margin Ratio Top-Down (Percent)



Life Insurance: Change in Available Capital
(Trillions of JPY)



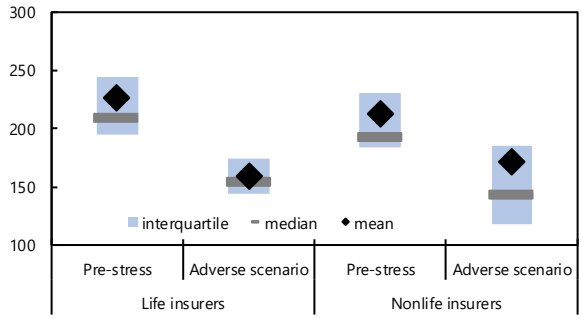
Non-Life Insurance: Change in available Capital
(Trillions of JPY)



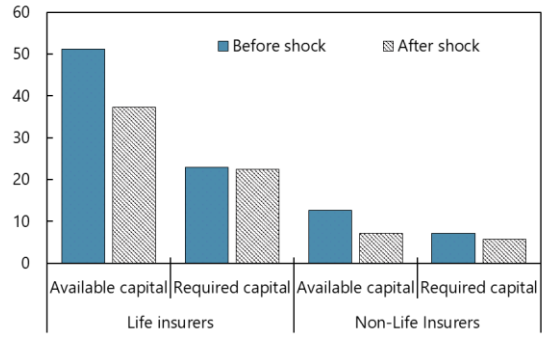
Source: IMF staff calculations.
Note: IR=interest rate.

Figure 21. Japan: Insurance Solvency Stress Test Results under the Economic Solvency Ratio

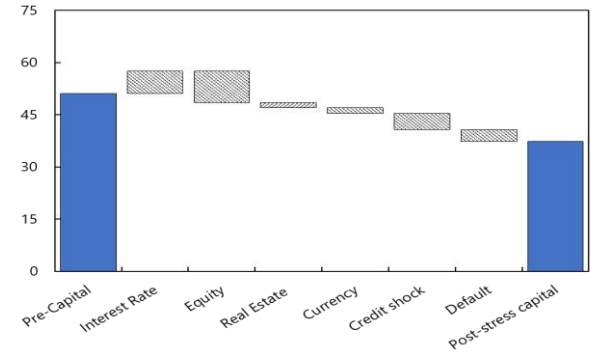
Economic Solvency Ratios
(Percent)



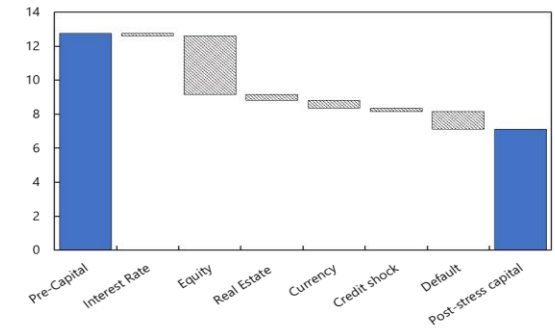
Available Capital and Required Capital under Economic Solvency Ratio: Top-Down (JPY Trillions)



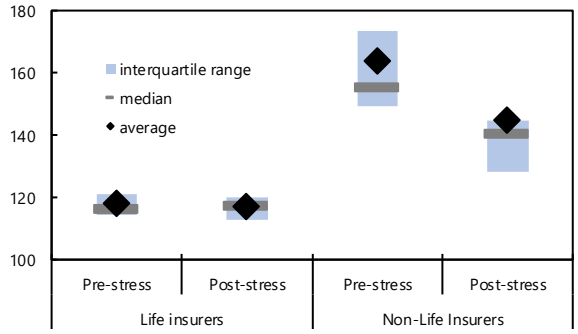
Life insurers: Contribution to Changes in Available Capital (JPY Trillions)



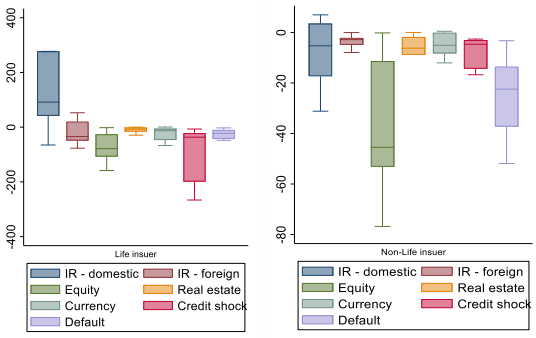
Non-Life insurers: Contribution to Changes in Available Capital (JPY Trillions)



Assets-to-Liabilities Ratio
(Percent)



Contributions to Changes in Net Assets
(Percent)



Source: IMF staff calculations.
Note: IR=interest rate.

29. Various sensitivity analyses confirm the results of the main stress test exercise. Assuming a larger increase in domestic interest rates or appreciation of the JPY against major currencies does not materially affect the results of the adverse scenario (Annex II). Under the ESR, the additional rise in domestic interest rates provides more income from investments in JPY-denominated bonds, partially mitigating the negative impact of higher hedging costs and stock price fluctuations. The solvency position of insurers is also resilient to several biometric shocks and catastrophic natural events considered individually.

Liquidity Stress Test

30. Liquidity risks for insurers are examined using three approaches. These include an assessment of variation margining due to insurers' interest rate swap exposures, a stock-based approach, and a cash flow-based approach.[24]

31. The margin calls analysis does not indicate systemic liquidity stress for insurers. At the system-level, cash margin calls on interest rate swaps following a sharp increase in domestic interest rate could be met by drawing on about 20 percent of cash equivalents (Figure 22). However, cash positions of at least two insurers could be inadequate under severe one-day market movements.[25]

32. In the stock-based approach, the share of liquid assets remains considerable. A large part of insurers' balance sheet comprises liquid assets, including tradable investment assets, even after applying calibrated haircuts in the adverse scenario. For instance, the liquid assets ratio of life insurers is about 70 percent in the adverse scenario.

33. In the flow-based approach, large outflows are projected under stress, but these can be mitigated through reactive management actions. Net outflows under the adverse scenario are especially pronounced for life insurers and are not met by liquid buffers in all cases. Considering reactive management actions, including asset sales, limits net outflows and allows them to be met by liquid assets (including tradable securities).

D. Investment Funds' Liquidity

34. The stress tests indicate that Japan-domiciled investment funds are resilient to severe but plausible redemption shocks derived from historical data. However, assuming more severe shocks under the adverse scenario, the share of funds with liquidity shortfalls could reach up to 18 percent of total asset value (Figure 23). The depletion of liquid buffers is larger among equity funds compared to mixed-allocation or fixed-income funds.[26] In addition, equities held by less liquid funds are more susceptible to selling pressure due to larger investor redemptions.

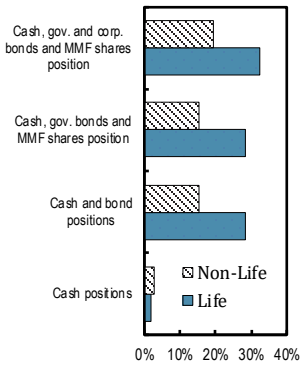
[24] The stock-based approach is based on the implementation of haircuts on assets and liabilities mirroring devaluation in the adverse scenario. The cash-flow based approach compares firms' projected liquidity sources and needs over a predefined time horizon, i.e., 90 days (from the reference date).

[25] Despite liquid assets covering a sizable part of the balance sheet of Japanese insurers, encumbrance levels for life insurers' high-quality sovereign bond holdings are not trivial relative to the size of such exposures (Figure 22).

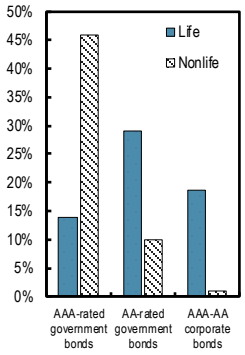
[26] The stress test does not consider the use of liquidity management tools, which could potentially mitigate the impact of the shock.

Figure 22. Japan: Insurance Liquidity Stress Test Results

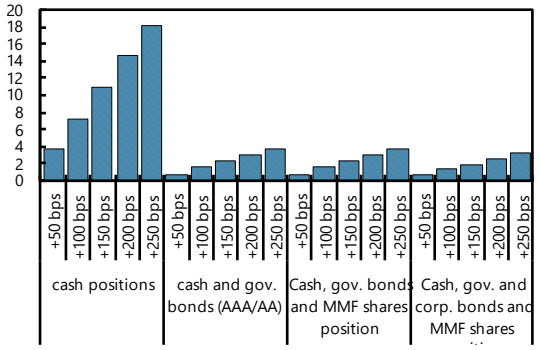
Liquidity Buffers
(Percent of total assets)



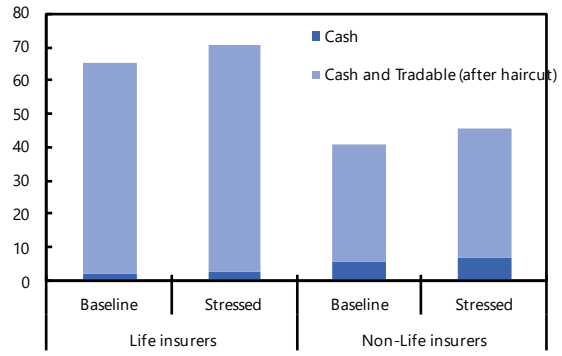
Encumbered Assets
(Percent of total positions)



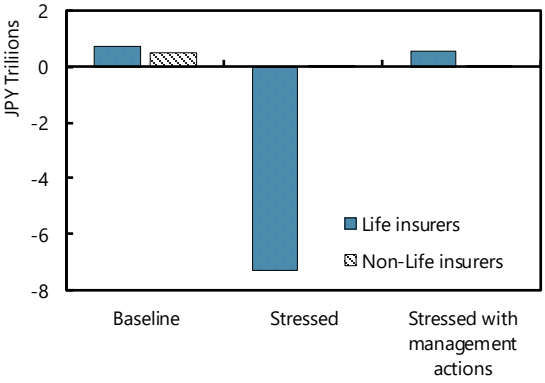
Margin Calls on Interest Rate Swaps for Insurers Exposed to Interest Rate Increases
(Percent of liquid assets)



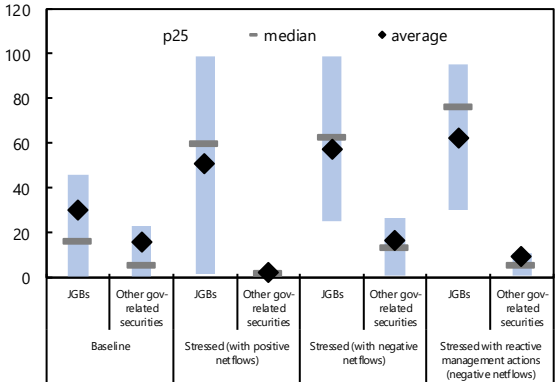
Liquid Assets-to-Total Assets After Stress Under Baseline and Adverse Scenario (Percent)



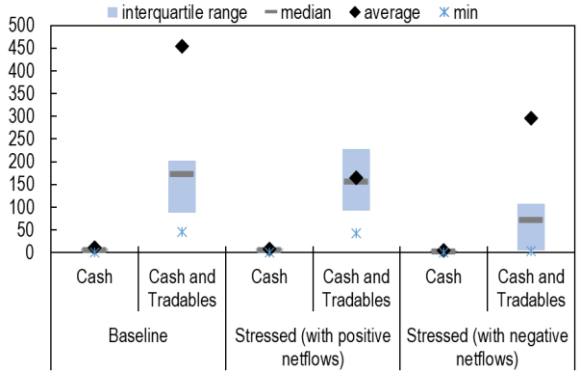
Sum of Inflows and Outflows Under Baseline and Adverse Scenario (JPY trillions)



Life Insurers: Share of Government Securities Sales under Adverse Scenario (Percent of total sales)



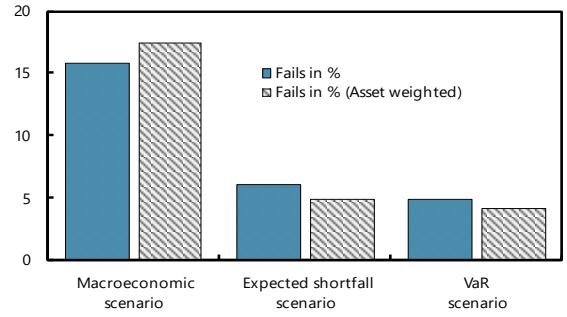
Life Insurers: Sustainability Indicator
(Ratio of liquid assets over projected net flows)



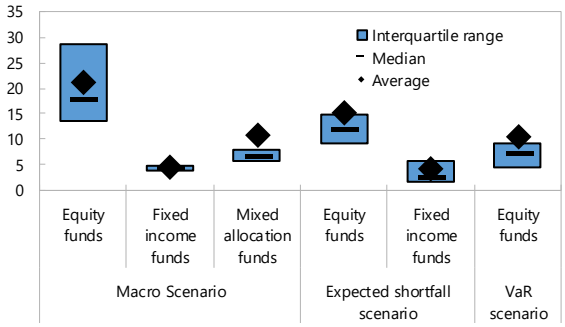
Source: IMF staff calculations.

Figure 23. Japan: Investment Funds Resilience and Asset Price Fragility

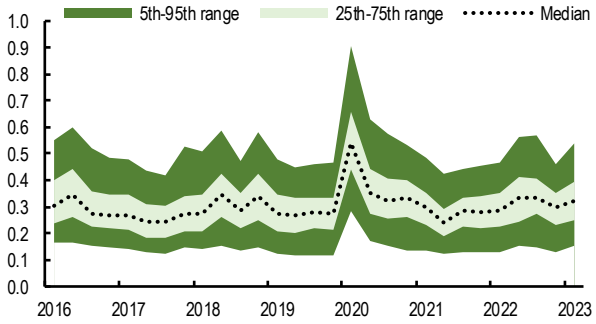
Investment Funds' Resilience
(Percent)



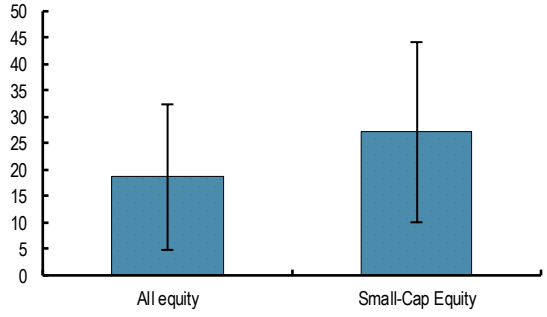
Liquidity Shortfall (for funds that fail stress test)
(Percent of total net asset value)



Asset-level Vulnerability Index
(Index)



Impact of Japan Fund-induced Vulnerabilities on Asset Price Fragility (Percent of median volatility)



Source: IMF staff calculations.
Notes: Panel 1 shows the share of investment funds with insufficient liquidity buffers to meet severe but plausible net outflows calibrated under different stress scenarios. Net outflows to total net assets (or redemption shocks) are computed as: the bottom percentile of each funds' net flows in the "value-at-risk (VaR)" scenario; the average value of the net flow below the VaR percentile in the "expected shortfall" scenario; and based on a model-based approach relating fund flows to macro-financial variables in the "macroeconomic" scenario, with projections based on the adverse scenario used for banks' stress tests. Panel 3 shows an asset-level vulnerability measure based on the illiquidity of the funds holding that asset. Panel 4 shows the coefficient on the (lagged) vulnerability measure in a regression of quarterly asset return volatility. See the TN on SRA for further details.

E. Household and Corporate Sector Solvency

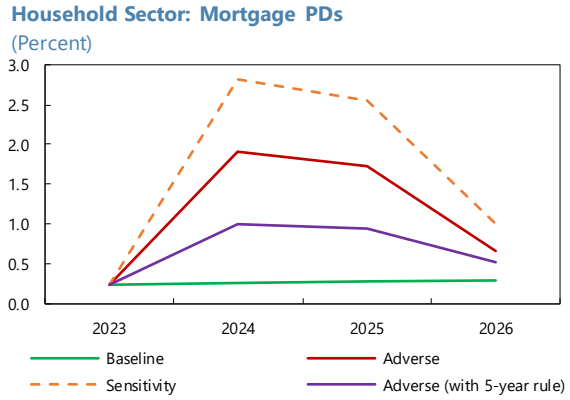
35. The risk analysis for households suggests that probabilities of default (PDs) and loss-given-defaults (LGDs) on housing loans rise under the adverse scenario without the industry practice (5-year/125 percent rule).[27] Housing loan PDs and LGDs rise to 2 percent and 45 percent, respectively, under the adverse scenario, thereby inducing higher credit risk for banks (Figure 24). However, the 5-year/125 percent industry practice could contain the rise in PDs and LGDs.

36. Default probabilities also rise for NFCs, especially smaller firms, under the adverse scenario. The aggregate (debt-weighted) PD for firms rises by 0.6 ppt in the first year of the shock, and more so under the sensitivity analysis. Small and medium-sized firms are affected more relative to large firms due to their higher leverage and lower interest coverage ratio.

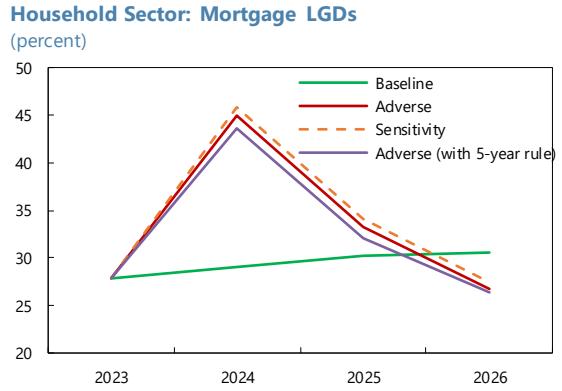
[27] The industry practice implies that monthly payment amounts change infrequently (every 5 years) even under a sharp interest rate increase, while the increase is also capped at 25 percent.

Figure 24. Japan: Results from Household and Corporate Sector Risk Analyses

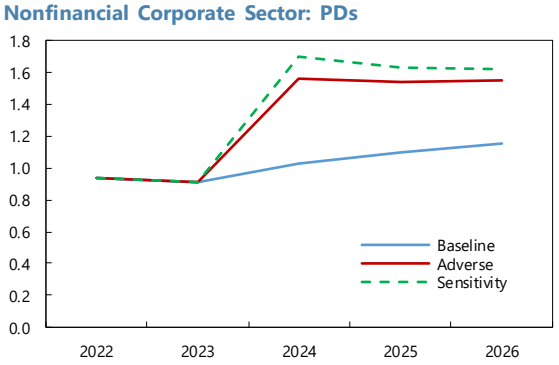
Mortgage default rates rise in the adverse scenario, primarily due to higher unemployment and interest rates…



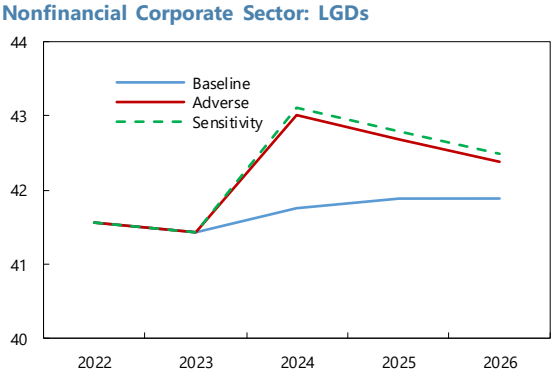
…and mortgage loss-given-default rates also rise in response to falling house prices and higher interest rates.



Default probability of NFCs rises in the adverse scenario due to a less favorable macro environment…



…accompanied by higher loss-given-default on NFC loans.



Source: IMF staff calculations.
Notes: In the top two panels, the adverse scenario with industry practice (5-year/125 percent rule) does not fully reflect the potential impact of the practice if followed by the industry over the stress test horizon, particularly for mortgage LGDs. The sensitivity analysis in all panels refers to the additional increase in interest rates. See the TN on SRA for further details.

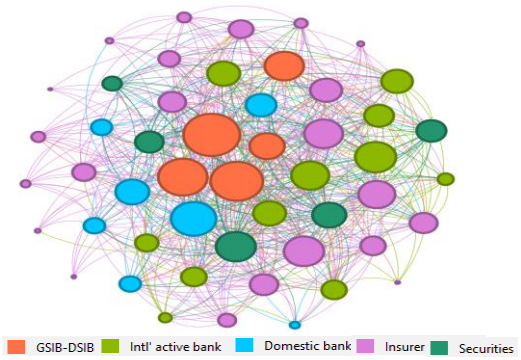
F. Interconnectedness and Contagion

37. The Japanese financial system is highly interconnected, with G-SIBs and D-SIBs playing a central role. The interconnectedness analysis shows that shocks to a financial institution permeate through most of the financial network (Figure 25). Banks are more exposed to each other (than to insurers or securities firms), with interbank claims averaging 35 percent of sectoral capital buffers.[28] Banks hold sizeable claims on securities firms, and insurers on banks, amounting to 9 percent and 13 percent of total sectoral capital buffers, respectively. Deposits, followed by loans, are the main source of bilateral exposures.

[28] Capital buffer is defined as the difference between total regulatory capital and risk-based assets. These buffers are then aggregated at the sectoral level.

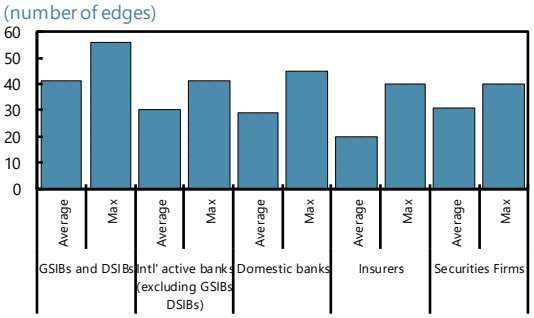
Figure 25. Japan: Domestic Interlinkages and Contagion

The domestic financial system is highly interconnected, ...



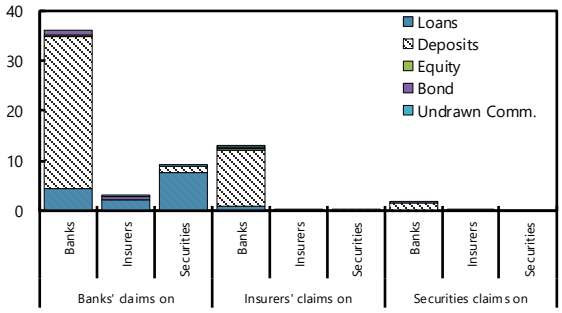
... with GSIBs and DSIBs, followed by securities firms, appearing more central to the network

Average Degree of Connectedness
(number of edges)



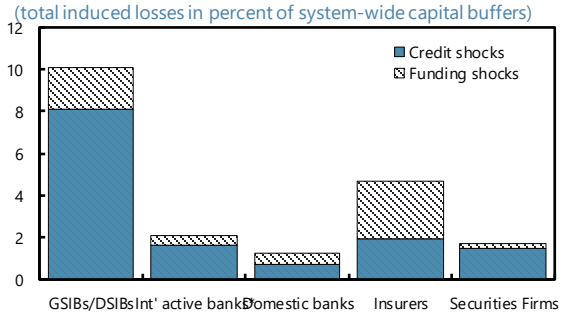
Bilateral exposures, driven mostly by intercompany deposits, are moderate relative to sector-wide capital buffers.

Sector-level bilateral on-balance sheet exposures



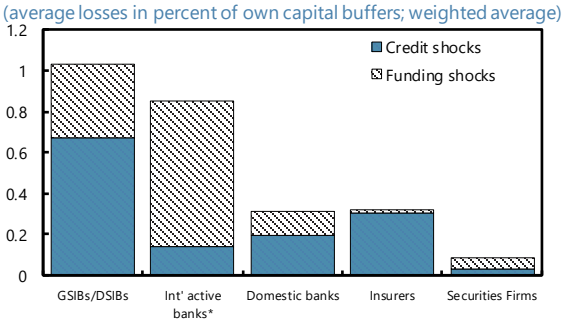
System-wide losses relative to capital buffers are, on average, moderate, with G-SIBs and D-SIBs exerting the highest impact, driven mostly by credit shocks.

Contagion Index
(total induced losses in percent of system-wide capital buffers)



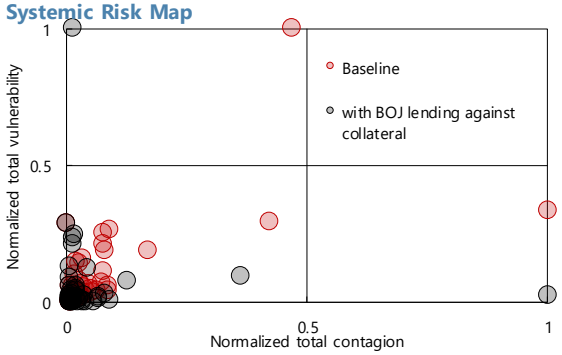
Average vulnerability to the hypothetical failure of others in the system appears moderate.

Vulnerability Index
(average losses in percent of own capital buffers; weighted average)



Systemic contagion risks appear contained, with BOJ liquidity provision reducing such risks further.

Systemic Risk Map



Sources: FSA; and IMF staff calculations.

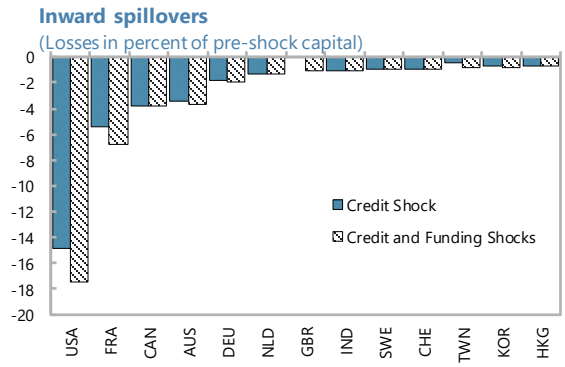
Notes: In the top-left panel, the colors of the nodes are based on the specific type of financial institution. The network map is based on Fruchterman-Reingold algorithm. Top-right panel shows degree of connectedness (total number of incoming/outgoing linkages as an average or max within each cluster). Contagion index is defined as total system-wide losses induced by a hypothetical failure of financial institutions in each cluster in percent of system-wide capital buffers. Vulnerability index is defined as average loss of financial institutions in each cluster across N-1 simulations in percent of own capital buffer. Systemic risk map, shown in bottom-right panel, plots the average vulnerability of each institution against its contagion potential (computed in absolute JPY terms and normalized between 0 and 1). The grey dots show the computed vulnerability and contagion potential of each institution when considering possible BOJ liquidity provision in the face of systemic risks. The contagion index, vulnerability index, and systemic risk map are based on bilateral exposures. Broader changes in market sentiment or valuation changes in common asset holdings could exacerbate contagion risks.

38. Domestic systemic contagion risks based on bilateral exposures appear limited due to the strong capital positions of financial institutions. A simulation-based exercise suggests that a shock to G-SIBs/D-SIBs would result in losses of about 10 percent of system-wide capital buffers (Figure 25) and would transmit primarily through the credit rather than funding channel. The vulnerability of financial institutions to contagion from other institutions appears moderate—on average, up to one percent of sectoral capital buffers. Banks that were found to fail the liquidity stress test did not rank high in terms of being a source of distress in the contagion analysis.

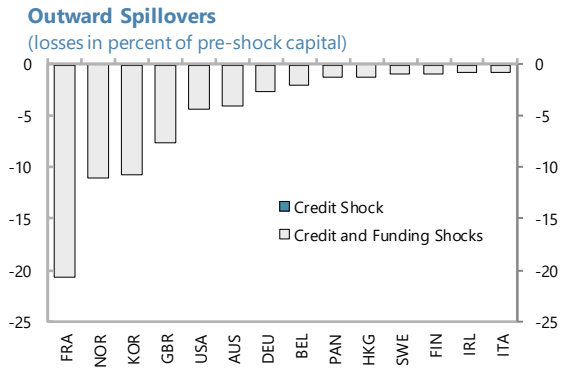
39. Cross-border inward spillovers from a failure of foreign financial institutions could be sizeable for Japan, with the strongest impact emanating from the U.S. Japanese banks would, on average, lose more than 16 percent of their capital in an assumed scenario where their claims on U.S. banks were to be written off. Cross-border outward spillovers, mainly through counterparties' facing funding shortfalls, could also be potentially sizeable (Figure 26).

Figure 26. Japan: Cross-Border Spillovers

U.S. banks exert the strongest impact on Japanese banks ...



...while Japanese banks can also induce sizable outward spillovers through counterparty funding shortfalls ...



Sources: BIS Consolidated Banking Statistics (ultimate borrower basis); Bloomberg; Fitch Connect; and IMF staff calculations.
Notes: The model estimates are based on Espinosa-Vega and Sole (2010), with loss-given-default (LGD) parameter assumed to be 0.65, the discount rate 0.2, and the funding shortfall rate at 0.35. The inward spillover results are governed primarily by the assumed level of LGD, given Japan's creditor status. Outward spillovers reflect loss of counterparty country banks, in percent of total regulatory Tier 1 capital.

G. Climate Risk Analysis

40. The FSAP assessed climate-related transition risks in Japan through scenario-based analysis.[29] The scenarios, anchored in emission and temperature paths, and expected benefits of mitigation policies (e.g., reduced GDP losses from chronic physical risk), are aligned with the Network for Greening the Financial System (NGFS) Phase IV scenarios and include net zero 2050, fragmented world, and current policies scenarios.[30]

[29] See the TN on SRA for details on the scenario analysis.

[30] Under the net zero 2050 scenario, global warming is limited to 1.5°C above pre-industrial levels through stringent mitigation policies and innovation, achieving global net-zero CO_2 emissions by 2050. The current policies (reference)

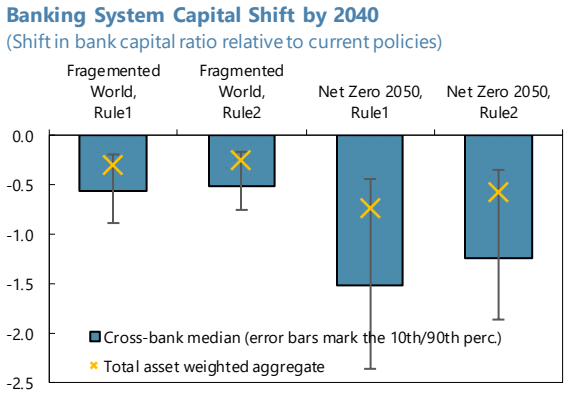
(continued)

41. The overall impact on bank capital in the net zero 2050 scenario appears manageable, with some heterogeneity across banks. Banks' aggregate capital ratio is estimated to decrease by 0.6-0.7 ppt by 2040 (0.03-0.04 ppt per year) relative to the current policies scenario (Figure 27). Across different banking clusters, internationally active banks are modestly impacted because of the better risk profiles of their borrowers, while the impact on regional banks in the sample is more pronounced. These results, however, need to be interpreted with caution given the substantial uncertainty surrounding firms' emission intensities.

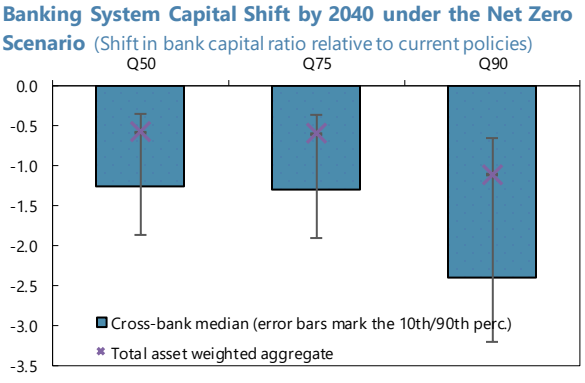
42. A high-level physical risk analysis suggests that Japan is significantly exposed to extreme weather events.[31] Approximately one-third of physical assets across Japan are at risk of flooding, with significant variations across prefectures (Figure 28). While Japan has a strong adaptive capacity, flood depth is projected to rise in some scenarios, with certain prefectures more vulnerable to an increase in flood hazards. Banks' loan-to-asset ratios tend to be lower in vulnerable prefectures, indicating limited direct exposure of banks to flood risks, though they could also be impacted indirectly.

Figure 27. Japan: Climate Transition Risk Analysis Results

The impact on bank capital ratios varies across banks under different scenarios…



Significant uncertainty in firms' emission intensities implies a substantial impact on banks' capital ratios.



Source: IMF staff calculations.
Notes: In the left panel, the error bars represent the 10th and 90th percentiles. 'Rule 1' refers to a recycling rule in which all carbon tax revenues are transferred to households. Under 'Rule 2', half of the carbon tax revenues are used for feed-in tariff in the renewable sector and half are transferred to households. Results presented in the right panel are simulated under the net zero 2050 scenario with Rule 2. Q50, Q75, and Q90 refer to the case where 50, 75, and 90 percentiles of PDs, LGDs, and credit spreads for individual firms are chosen.

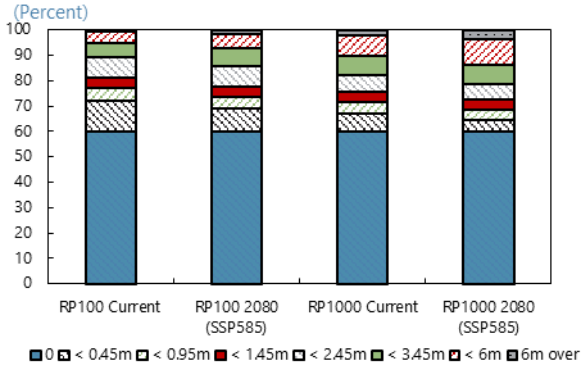
scenario maintains existing policies, resulting in high physical risks. In the fragmented world scenario, a delayed and divergent climate policy response across countries globally leads to high physical and transition risks.

[31] Exposure of physical assets across Japan to flood risks was examined by correlating gridded asset exposure with flood depth projections for 100-year and 1,000-year return periods at 15-arcsecond resolution (equivalent to 500 meters), based on IMF (2022).

Figure 28. Japan: Flood Risk Analysis Results

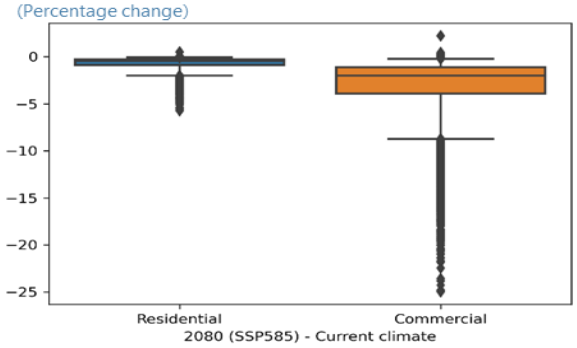
About one-third of physical assets are at risk of flooding across Japan. Climate change is expected to expose more assets to greater flood risk.

Japan: Distribution of Assets By Inundation Depth
(Percent)



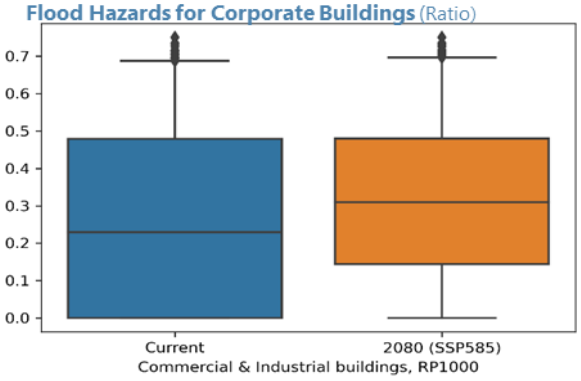
Future land prices could decline due to a change in the assessment of flood risk.

Japan: Changes in Land Prices Due to Climate Change
(Percentage change)



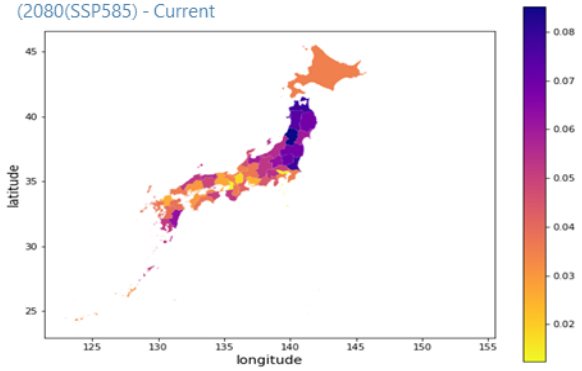
On average, the damage rate of a 1000-year flood hazard for commercial/industrial buildings increases by 5 percentage points.

Japan: Comparison of Damage Rates of 1000-year Flood Hazards for Corporate Buildings (Ratio)



Certain prefectures are expected to experience higher damage if future climate risk materializes.

Changes in Average Damage Rates of RP1000
(2080(SSP585) - Current

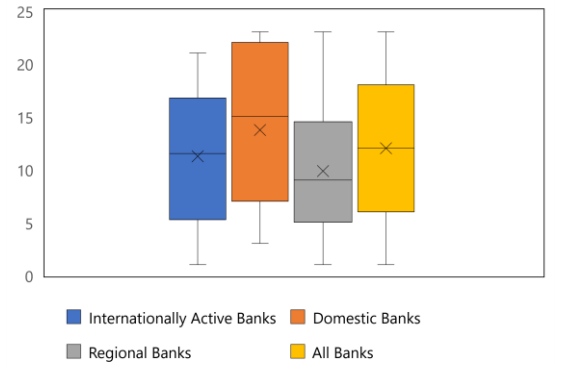


Sources: Eberenz and others (2020); Cabinet Office; MS&AD LaRC-Flood® Project; and IMF staff calculations.
Notes: In the top left panel, physical assets exposed to less than 0.45 meters of inundation depth are deemed not prone to flood risk, aligning with the Japan's "Building Standard Law." In the top-right and bottom-left panels, a box plot displays the median (middle line) along with the 25th and 75th percentiles (box), while the upper and lower lines represent the 95th and 5th percentiles, respectively. In the bottom panels, damage rates are defined as the proportion of damage values relative to values of the underlying assets. Average damage rates by prefecture are calculated based on physical assets exposed to flood risk. RP100 (1000) 2080 SSP8585 (Current) refers to flood depth projections for 1-in-100 (1000)-year hazards for 2080 under the Shared Socioeconomic Pathways 585 (the current climate conditions).

H. Holistic Vulnerability Assessment of Banks

43. An overall assessment of banks' vulnerability drawing on the systemic risk analysis suggests that internationally active banks are generally more vulnerable than domestic banks. The three most vulnerable banks based on a composite indicator of various risk dimensions (e.g., solvency, liquidity, etc.) represent five percent of total assets of the banks included in the sample.[32] Across the various banking clusters, internationally active banks are, on average, more vulnerable than domestic banks, while regional banks—as a separate cluster—are on average the most vulnerable (Figure 29). A decomposition of the vulnerability metrics (Annex III) shows that internationally active banks are overall more vulnerable due to greater interconnectedness, while domestic banks appear more vulnerable with a view to the solvency and liquidity stress test results.

Figure 29. Japan: Composite Vulnerability Indicator across Bank Types
(Index, 1 – 23)



Source: IMF staff calculations.
Notes: The box plots depict the distribution of the composite indicator-based ranking for the banks in the stress test sample. A lower rank indicates higher vulnerability. The box indicates the interquartile range, whiskers indicate the minimum and maximum values, the horizontal line in the box is the median, and the cross (x) indicates the mean ranking.

FINANCIAL SECTOR OVERSIGHT

A. Banking Sector

44. Banking oversight has undergone notable improvements since the last FSAP, but further progress is needed to respond to the aforementioned challenges and risks. The FSA has shifted towards a more modern, risk-based approach to supervision, better suited to respond flexibly to an evolving banking system. A transformation of this scale is a significant project, but further developments are needed. The FSA should explore the development of more forward-looking metrics in the Early Warning System (EWS), especially for credit and liquidity risks. It should also enhance a baseline set of supervision activities to improve the understanding of each bank's risk profile and develop a revised risk methodology to draw a full risk profile of each institution, incorporating financial risks as well as governance, business, operational and strategic risks. A more articulated and risk-based methodology would support the FSA in adjusting resources according to shifting needs, identifying risk trends, and underpinning supervisory consistency and quality control.

[32] The risk dimensions pertain to banks' initial balance sheet characteristics, along with the forward-looking metrics of solvency and liquidity risks, interconnectedness, and climate transition risk comprising the systemic risk analysis. To construct the composite indicator, banks' ranking across the various risk dimensions was aggregated by assigning larger weights to the forward-looking metrics. See the TN on SRA for further details.

45. The FSA has redefined its policy goals, but its legal mandate needs to confirm the priority of financial safety and stability. The FSA has broadened its policy goals in 2018, shifting from a narrow focus on "stability" to balancing "stability" and "effective financial intermediation."[33] While recognizing the wisdom of the FSA's supervisory transformation, there are risks from having multiple objectives which, at times, will be in conflict. The primary objective of an agency like the FSA should always be the promotion of financial safety and if the agency is assigned broader responsibilities, these should be subordinate to the primary objective. The legal frameworks should reflect this hierarchy.

46. Two important gaps related to capital adequacy persist in the FSA's powers, making Japan an outlier among its peers. The "Pillar 2" powers to calibrate a capital requirement to a bank's risk profile and risk management capability are still missing. In addition, the FSA's ability to proactively deal with a bank that has a deteriorating capital situation is constrained by its inability to order the bank to raise capital before breaching the minimum regulatory requirements. Delays in regulatory action in an emerging crisis could make it harder and costly to resolve the situation. Options for the supervisor to intervene directly by requiring more capital on a legal basis rather than through indirect but formal means (e.g., Business Improvement Orders) should be a minimum expectation.

47. The FSA should set appropriate minimum liquidity requirements for all banks. Although internationally active banks are subject to the Basel LCR and Net Stable Funding Ratio standards, there is no quantitative minimum liquidity requirement for domestic banks. Despite the largely stable, retail deposit base of banks, the lack of minimum quantitative standards could create a potential prudential vulnerability that the FSA and, as needed, the BOJ would have to react to in a stress event.

48. The BOJ should update its practices and approach to remain broadly aligned with the FSA. A distinctive feature in Japan is the role played by the BOJ in examining banks that hold an account with it. While cooperation and coordination between the FSA and BOJ are evident, banks' supervision will be more effective and efficient if supervisory practices are aligned to the maximum extent possible.

B. Insurance Sector

49. The FSAP conducted a full assessment of Observance of the Insurance Core Principles (ICPs), which found an overall good level of observance. Six of 24 ICPs were assessed as Observed, twelve Largely Observed, and six Partly Observed.[34] Areas of observance include licensing requirements, requirements for FSA approval of changes in control and portfolio transfers, preventive measures and corrective measures/sanctions, information sharing and confidentiality requirements, domestic/cross-border supervisory cooperation, and anti-money laundering and combating the financing of terrorism (AML/CFT). The FSA also plans to apply the ESR to all insurers

[33] See "FSA's supervisory approaches—Replacing checklists with engagement," published in June 2018.

[34] See the ICP detailed assessment report for detailed information.

from fiscal year 2025, a far-reaching reform that will address shortcomings in the existing solvency requirements.

50. The current framework of regulation and supervision has, however, some notable gaps that need to be addressed.

- **The FSA's approach to insurance supervision is largely reactive, partly because of resource constraints.** Most supervisory activities are conducted on an industry-wide thematic basis, and regular risk assessment of individual insurers is not undertaken as part of a supervisory cycle. Intensive supervision is triggered mainly where problems have been identified, often after risks have crystallized. Conduct issues, therefore, currently dominate on-site supervision work. A fundamental reform of supervision work should be undertaken, focusing on supervision of individual insurers and larger intermediaries.

- **The scope of suitability (fit and proper) requirements is not comprehensive.** The FSA should ensure that suitability requirements apply to all board members, senior managers, and key persons in control functions, with appropriate guidance on qualifications. In addition, the extensive general requirements on risk management and internal controls should be supplemented with clearer requirements for effective, independent, and well-resourced risk management, compliance, and actuarial functions, especially for individual insurers.

- **Solvency and related requirements fall short of ICP standards, pending ESR introduction.** For example, assets and liabilities are not valued on an economic basis. Policy reserves do not include an explicit margin over the current estimate. The ESR will be underpinned by economic valuation requirements, helping to improve observance in this area.

51. Institutional arrangements for insurance supervision should be strengthened. As recommended in previous assessments, the FSA's independence should be bolstered by delegating insurer licensing powers currently reserved to a minister. The government should also review whether the FSA can be provided increased freedom to determine its expenditure budget and to finance itself independently of other parts of the government. The separate regulatory arrangements for kyosai organizations (the insurance activities of cooperatives) could give rise to differences in approach and levels of protection for policyholders that are not justified by differences in the markets. The FSA and the ministries responsible for supervision of kyosai organizations should increase cooperation, prioritizing coordination on the regulation and supervision of the largest kyosai organizations, and in the medium term, review regulatory and supervisory responsibilities for the kyosai business.

C. Investment Funds

52. The regulatory framework for the investment funds sector has been recently enhanced with relation to liquidity risk management. In line with global standard setting efforts, the framework for Investment Management Business Operators has been amended with increased

attention to liquidity risk management and authorities are actively engaged with the industry to ensure adequate implementation.

53. The authorities have also recently implemented a new supervisory approach, relying on enhanced offsite monitoring of firms. The FSA has increased its data collection efforts and launched several targeted initiatives to get a better insight of the industry. This is complemented by the onsite monitoring framework, where a limited number of firms are inspected per year.

54. The authorities should ensure a broader coverage of their onsite inspection program and more forward-looking offsite risk monitoring. While there is no set target for yearly inspections, the number of firms inspected per year has been limited. The authorities should broaden the coverage of their onsite inspection program to improve the overall risk assessment of firms. To strengthen offsite risk monitoring, the new investment fund survey is a very welcome development, but the FSA should consider expanding its coverage and increasing the frequency to help identify risks in a timely manner.

D. Fintech

55. The FSA monitors fintech developments through various channels and responds as needed with targeted regulatory initiatives. The FSA's Fintech Policy Office coordinates fintech regulatory and supervisory work internally and monitors developments through industry outreach, data analysis for licensed firms, and engagement with self-regulatory organizations and study groups. Recent fintech-related regulatory initiatives have been undertaken across services, including amendments to the Payment Services Act, the Banking Act, and the Financial Instruments Exchange Act (FIEA). As fintech continues to grow, a more systematic approach to data gathering and analysis would be a welcome step.

56. The fast pace of growth in digital payment services warrants intensified monitoring of developments and enhanced supervision of most relevant players. The FSA should closely monitor developments to determine whether the current regulatory safeguards remain adequate. In the absence of specific capital requirements for Fund Transfer Service Providers (FTSPs), it may also consider requiring entities to develop wind-down plans for the event of failure of the FTSP.[35] Additionally, an analysis should be carried out to determine whether the requirement for third-party Prepaid Payment Instrument (PPI) issuers to retain only 50 percent of funds transmitted by clients remains adequate in an era of digital PPIs, given the sector's rapid growth.

57. Japan has developed a comprehensive conduct and prudential regulatory framework for Crypto-asset Exchange Service Providers (CESPs), but further efforts are warranted to enhance public awareness on the risks of crypto assets. The basic framework, introduced in 2017, has gradually evolved to incorporate more stringent user protection, prudential, and conduct of business requirements. It currently constitutes a comprehensive approach to the regulation and

[35] Most jurisdictions apply statutory capital requirements to e-money institutions (e.g., the EU, the U.S., and Singapore).

supervision of CESPs, particularly through strict asset segregation requirements and compulsory use of cold wallets. The FSA also monitors the provision of services by non-regulated entities to Japanese clients and issues warnings to entities and disseminates public alerts. Going forward, the FSA could enhance its efforts to educate the public on the risks regarding crypto assets and the overall functioning of crypto asset markets and continue to ensure a strong enforcement approach.

E. Financial Market Infrastructures

58. The authorities have made notable progress towards enhancing risk management practices at CCPs since the 2017 FSAP. The Comprehensive Guidelines for Supervision of Financial Market Infrastructures were revised in 2022, which reduced gaps between the regulatory framework and the Principles for Financial Market Infrastructures (PFMI). The FSA and BOJ also conduct joint hearings on the Japan Securities Clearing Corporation (JSCC) risk management at least once a year and coordinate their assessment and supervisory response.

59. Although the FIEA does not mirror the language of the PFMI, the authorities' risk assessment of FMIs covers the full extent of the PFMI. The FSA conducts supervision of FMIs, as well as requires CCPs to disclose information, based on the PFMI. The BOJ conducted a detailed assessment for seven private-sector FMIs in 2020 and has updated it on an annual basis. Moreover, the FMIs perform their self-assessments against the PFMI.

60. The JSCC should consider introducing additional mechanisms to ensure that customer's interests and view are systematically considered. The JSCC has communicated with customers and considered their needs and interests in developing its commercial strategy and other policies since 2017. Nevertheless, as noted in the last FSAP, there could be benefits in considering additional mechanisms to take customers' interests into account, e.g., by increasing their presence in the various committees organized by the JSCC.

F. Financial Integrity

61. The FSA has devoted increased resources to AML/CFT supervision of financial institutions (FIs) and Virtual Asset Service Providers (VASPs) and moved to a more risk-based approach.[36] The FSA's AML/CFT Policy Office assesses annually the individual residual money laundering/terrorism financing risk levels of FIs and VASPs.[37] While the FSA devotes special, ongoing attention to nine financial groups, including the three G-SIBs, it has ramped up on-site inspection efforts of all categories of FIs and VASPs, in line with the 2021 MER. Nevertheless, further efforts could be made to implement a fully risk-based supervisory model, including to avoid unnecessary focus on lower-risk FIs. The "Travel Rule" under FATF Recommendation 15 came into force for all VASPs in

[36] See the 2021 Financial Action Task Force/Asia-Pacific Group on Money Laundering (FATF/APG) mutual evaluation report (MER) and the updates in 2022 and 2023 for detailed evaluation and recommendations.

[37] As of November 2023, there were 29 registered VASPs and about 5 million active accounts with a total balance of JPY 1.8 trillion (2.8 percent of GDP).

June 2023. Since then, the FSA has begun monitoring compliance on an off-site basis, focusing more on larger VASPs.

62. The FSA should ensure that FIs not compliant with AML/CFT requirements are appropriately sanctioned. The FSA has revised its AML/CFT Guidelines and set a March 2024 deadline for implementation. It has engaged in regular dialogue with entities on their progress and, since 2021, has imposed administrative orders on two FIs for breaches of AML/CFT obligations. The authorities should consider imposing proportionate and dissuasive sanctions for non-compliance and reviewing the appropriateness of the available sanctions.

G. Macroprudential Policy Framework

63. Inter-agency coordination for macroprudential policies has improved since the last FSAP, but the institutional framework could be enhanced further. Several initiatives have been undertaken to strengthen inter-agency coordination, including establishment of the Financial Monitoring Council (FMC) (Figure 30).[38] The CCFS serves as the collegiate to assess desirability of introducing macroprudential tools but operates without a clear mandate. A stronger institutional framework with a formal mandate for the CCFS would help enhance accountability and transparency in decision making.

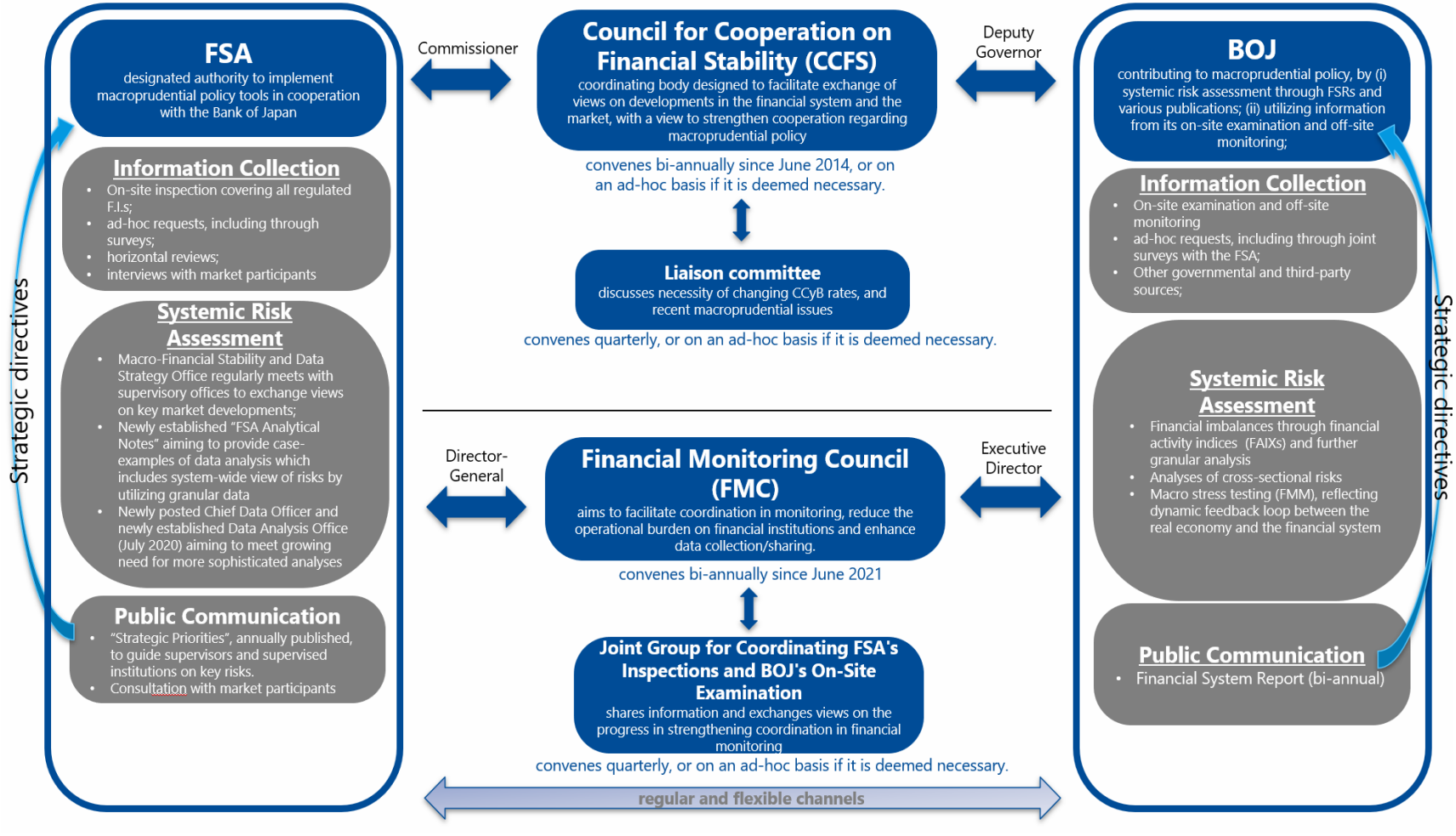
64. The macroprudential toolkit could be further expanded. Basel III capital and liquidity tools for internationally active banks and D-SIBs have been phased in (Figure 31). The liquidity risk framework for NBFIs (asset managers and insurers at a group-wide level) has also been enhanced. Expanding the perimeter of international standards, most pertinently the Capital Conservation Buffer (CCoB), to domestic banks would be prudent. Potential vulnerabilities in the real estate sector also call for deeper risk oversight and a macroprudential policy response to mitigate further build-up of risks. In this context, the FSAP assessed that introducing borrower-based tools (e.g., caps on loan-to-value, debt-to-income, and DSTI ratios) could help contain the rise in housing loan PDs and LGDs under the adverse stress testing scenario, complementing the industry 5-year/125 percent rule.[39] Such measures could, however, be introduced gradually and calibrated according to sectoral developments to mitigate their potential unintended consequences (IMF, 2014). Collection of granular information on loans and borrower characteristics under the "Common Data Platform" could be instrumental in helping to adequately calibrate the measures and make ex-post assessments.

65. The risks related to banks' FX liquidity underscore the need for continued intensive monitoring. The authorities should monitor LCRs by currency of all banks and further enhance the monitoring of net open FX positions. Consideration could also be given to imposing LCRs-by-currency on banks.

[38] The FMC, comprising senior officials from the FSA and the BOJ, aims to enhance coordination in financial monitoring and to exchange views on various prudential issues.

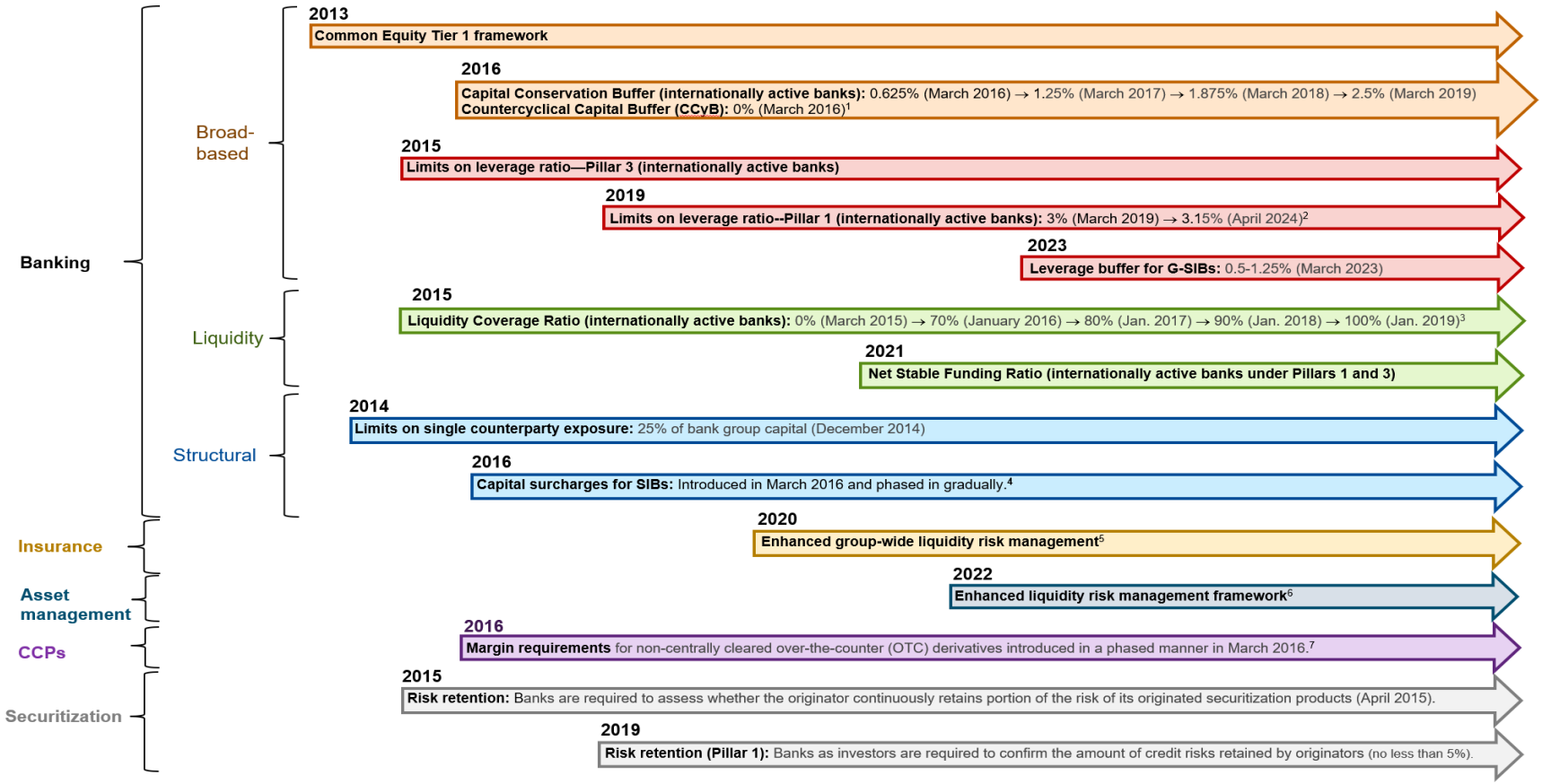
[39] See the TN on SRA for detailed information.

Figure 30. Japan: Institutional Arrangement for Macroprudential Policies



Source: IMF staff.

Figure 31. Japan: Macroprudential Policy Toolkit



Sources: IMF Macroprudential Policy Survey; Exchanges with the authorities during the first mission; and IMF staff.
1/ The amendment to "Comprehensive Guidelines for Supervision of Major Banks" (March 2017) clarifies the operational framework for the Countercyclical Capital Buffer (CCyB). The level of CCyB is effectively set at zero percent.
2/ In response to the pandemic, the FSA introduced a temporary measure effective till end-March 2024 that allows financial institutions to exclude their current accounts at the BOJ from the leverage ratio calculation. The FSA's modified framework announced on July 25, 2022, allows excluding the outstanding balance of financial institutions' current accounts at the BOJ from the exposure measure in exceptional macroeconomic circumstances.
3/ LCR is monitored in major currencies. For large domestic banks, no minimum LCR is enforced but it is monitored. A simplified LCR is collected for other banks.
4/ As of end-June 2023, capital surcharges are 1.5% (MUFG), 1% (SMFG), 1% (Mizuho FG), 0.5% (Sumitomo Mitsui Trust Holdings), 0.5% (Norinchukin), 0.5% (Nomura Holdings), 0.5% (Daiwa Holding).
5/ Effective December 18, 2020, revised supervisory guidelines require insurers to establish appropriate group-wide liquidity risk management, incorporating elements of ComFrame and the "Holistic Framework" by IAIS.
6/ Effective Jan 1, 2022, per the amended Cabinet Office Ordinance on Financial Instruments Business, etc. and the Investment Trusts Association, Japan (JITA) rules. The new framework generally follows IOSCO's Recommendation for Liquidity Risk Management (2/2018).
7/ The threshold for notional amount is JPY 1.1 trillion as of September 1, 2022, and expanded to all financial institutions that are covered by the margin requirements effective March 1, 2017.

H. Cross-Cutting Issues

Resources

66. Staffing resources need to be increased significantly to strengthen financial supervision. Some issues in banking supervision and observance of the ICPs can be traced back to resource constraints. The new risk-based supervision approach correctly prioritizes G-SIBs and major banks, but regional banks, some of which are internationally active, warrant more resources than currently devoted. Resource needs for insurance supervision are acute, given the strategic challenges facing the sector and impending regulatory changes such as the introduction of the ESR. Limited resources of the Securities and Exchange Surveillance Commission (SESC) are likely impacting the breadth of its onsite supervision program. As the investment fund sector continues to grow, the authorities should ensure that adequate supervisory resources, commensurate with potential risks, remain available.

67. More resources need to be devoted to strengthening cybersecurity supervision. The IT Cyber Monitoring Team at the FSA has responsibilities for supervising more than 1,000 financial entities, as well as for developing and operationalizing the cyber strategy for the financial sector, updating the supervisory guidelines, managing cyber incidents, and conducting the Delta Wall exercise, among others. Although the team has made significant strides in developing its supervision capacity, resource constraints have affected the capacity for effective regulation and cyber supervision.

Systemic Risk Monitoring

68. Notable progress has been made in upgrading systemic risk analysis, but the framework could be enriched further. The risks highlighted in the systemic risk assessment call for continued vigilance and careful monitoring. The BOJ should continue enhancing its macro stress testing framework, e.g., by further developing its credit risk module. The liquidity risk analysis for banks should be enhanced further with, e.g., stress testing tools and models for exposures in JPY and FX. The systemic risk analysis should be broadened to cover stress testing of investment funds. Given the strong interconnectedness of the financial system, contagion risks should be assessed more formally to inform financial supervision. The authorities should continue to develop their analytical capacity to analyze climate-related risks.

69. To broaden and deepen systemic risk analysis, further improvements in data are necessary. Progress has been made to collect granular data under the Common Data Platform initiative and through various surveys. These efforts should be strengthened by enriching the scope of data collection and integrating related databases for more comprehensive risk assessment. Remaining gaps related to climate data should be closed.

Cybersecurity

70. Japan's financial system is digitalizing rapidly, increasing exposure to cyber risk.[40] The Japanese government has stepped up efforts to support digital transformation,[41] but as in other jurisdictions, cyber incidents have also surged in recent years. The tight interdependencies within its financial system, and beyond, make Japan vulnerable to evolving cyber threats.

71. The authorities have made progress in enhancing cyber resilience of the financial sector, but further progress is needed. Clear supervisory and examination processes are in place, with a dedicated specialist cyber team at the FSA and BOJ, but these could be strengthened in several dimensions.

- **The FSA should update its Comprehensive Supervisory Guidelines (CSG) on cyber risk for all supervised financial entities.** The FSA should implement a more structured, risk-based approach to cyber risk supervision, supported by adequate tools. Supervisory tools and methodologies should be aligned with the updated CSGs. Furthermore, cyber supervision of FMIs should be prioritized, as they are critical to ensuring domestic financial stability.

- **The FSA would benefit from deepening its analysis of the operational interconnectedness of the financial system. "**Cyber mapping" will help deepen the understanding of operational and technological interconnectedness and the transmission channels through which cyberattacks could potentially undermine financial stability.

- **The BOJ should strengthen cyber risk oversight of FMIs.** The BOJ oversight function should leverage the CPMI-IOSCO Cyber Guidance as a tool to gather self-assessments from the overseen FMIs and to conduct their cyber assessments.

- **Further improvements in response and recovery capabilities are recommended**. The FSA and BOJ should keep upgrading, as necessary, their cyber scenarios along with their business continuity plans and/or cyber incident response and recovery plans. The BOJ should consider conducting cyber simulations/table-top exercises with BOJ-NET participants and FMIs with BOJ-NET connections to ensure that all stakeholders are well prepared to manage a systemic cyber incident.

Climate-related Oversight

72. The FSA's approach emphasizes the need for financial institutions to engage with clients to facilitate the decarbonization process and mitigate climate-related transition risks.[42]

[40] See the TN on Cyber Resilience and Financial Stability for detailed information on the cyber ecosystem in Japan.

[41] https://www.cas.go.jp/jp/seisaku/atarashii_sihonsyugi/pdf/ap2023en.pdf.

[42] The FSAP reviewed the regulatory and supervisory practices of climate-related risks in the banking and insurance sectors using the Basel Committee of Banking Supervision (BCBS) Principles (June 2022) and the IAIS Application Paper on the Supervision of Climate-related Risks (May 2021) as benchmarks.

The government's policies, including the FSA's approach, are focused on the need to mobilize transition finance. This approach considers an important role for financial institutions to fund the transition but does not view the de-risking of individual banks and insurers through defunding certain companies as beneficial for the transition in the short term.

73. The FSA is at the early stages of establishing a systematic approach to supervision of climate-related issues. The FSA published "Supervisory Guidance on Climate-related Risk Management and Client Engagement" in July 2022 as a non-binding discussion paper. Discussions with banks and insurers are currently held on an ad-hoc basis as part of more general supervisory dialogues. To further evolve its climate-related supervisory framework, the FSA should consider and develop a systematic approach in consideration of the work of international bodies such as the BCBS, IAIS, and NGFS.

CRISIS MANAGEMENT

A. Emergency Liquidity Assistance

74. Many aspects of the ELA practices in Japan are robust. Sound internal guidelines exist for establishing solvency requirements to provide ELA for prudential purposes and for accidental causes under Articles 33 and 37 of the BOJ Act, respectively.[43] The level of collateral haircuts is subject to yearly review whereby haircuts may be adjusted depending on financial market conditions.

75. The ELA framework could be strengthened further in several dimensions. Public disclosure on the solvency requirement and eligibility criteria of financial institutions could be improved by explicitly noting these in the English version of the published principles.[44] The publicly available documentation should clearly indicate that ELA can only be granted to solvent institutions, except in certain cases under crisis management measures (Article 38 as per Article 102 of the Deposit Insurance Act).

76. It is important to strengthen ELA safeguards to mitigate the risk of moral hazard. The BOJ's publicly available ELA principles for Articles 33 and 37 should clearly stipulate that ELA is conditional, discretionary, and granted basically at a specific margin above the policy rate.[45,46] In addition, firms receiving ELA should be under the FSA and BOJ's intensive monitoring and conditionality to reduce the potential risk of moral hazard. Furthermore, when providing ELA under Articles 37 and 38, the BOJ should make utmost operational efforts to request and mobilize as much

[43] This subsection refers to Article 33, 37, and/or 38 of the BOJ Act, unless specified otherwise. See the TN on Financial Safety Net and Crisis Readiness (FSN) for further information.

[44] Detailed ELA guidelines are publicly available in Japanese, but only a general overview of the ELA framework and principles is publicly available in English (Chapter VI, "Functions and Operations of the Bank of Japan").

[45] These features under Article 38 are outlined in the "Principles in Conducting Business Necessary to Maintain Financial Stability."

[46] An exception could be for interest rates under Article 37, as operational disruptions are distinct from liquidity management failures.

collateral as needed, which is a key safeguard principle to protect the BOJ's balance sheet.[47] If ELA is granted without or with insufficient collateral, the authorities should implement measures to safeguard its balance sheet. This could be achieved with, for example, preferential status of the BOJ in the creditor hierarchy and arrangements with the government to cover for potential losses on ELA operations such as fully or partially suspending the distribution of profits to the national treasury.

77. The scope of institutions eligible to receive ELA could be expanded to NBFIs, prioritizing CCPs. The BOJ could consider including systemic NBFIs under Article 33 to access ELA for macroprudential purposes, prioritizing CCPs given their pivotal role in ensuring financial stability.

B. Crisis Preparedness Framework

78. Progress has been made to improve financial crisis readiness since the 2017 FSAP. The Japanese resolution framework for financial institutions distinguishes between non-systemic and systemic cases. Each option allows distinct resolution measures, including public liquidity and (preemptive) capital support,[48] underpinned by broad powers, except for statutory bail-in powers.[49] Since the 2017 FSAP, the authorities have introduced Total Loss-Absorbing Capacity (TLAC) requirements, expanded resolution planning to include one D-SIB along with the three G-SIBs, set up the FSA's RRP Office, and continued to elaborate upon guidelines for firms' resolvability.

79. More banks should be subjected to recovery and resolution planning, supported by comprehensive planning guidance. All seven SIBs (three G-SIBs and four D-SIBs) are required to submit recovery plans for the FSA's review. The FSA prepares resolution plans for three G-SIBs and one D-SIB, and these four SIBs are also subject to TLAC requirements. Considering that the systemic resolution options and potential public financial support apply to all banks, and that the authorities estimate that several large deposit-taking institutions hold substantially more insured deposits than readily available deposit insurance funding, it is critical that RRP requirements are expanded to more banks. The expansion should be gradual, prioritizing all major banks for recovery planning and all SIBs for resolution planning, and then eventually covering all banks that could be deemed systemic at the time of failure. Also, more banks should be required to maintain a minimum amount of TLAC. Furthermore, the authorities should comprehensively articulate their expectations of banks in improving recovery capabilities and addressing impediments to resolvability.[50]

80. The authorities should continue to operationalize the resolution framework, supported by enhanced policy guidelines and decision-making arrangements. They should complete efforts to document internal arrangements, including manuals and playbooks with sufficient operational modalities, complemented with enhanced decision-making and information-sharing arrangements to ensure prompt and effective resolution execution. To guide, expedite, and increase

[47] Unlike Article 33, the BOJ Act does not prescribe collateral for ELA under Articles 37 and 38.

[48] The resolution tools include transfer of assets and liabilities, if needed to a bridge bank both in systemic and non-systemic cases.

[49] Japan has chosen a contractual bail-in regime.

[50] See the TN on FSN for detailed discussion.

the predictability of future resolution decisions and thereby minimize potential taxpayer costs, as well as to ensure that losses are primarily allocated to shareholders and creditors, the authorities should adopt policies for key moments in the resolution process. These policies should, for example, provide more transparency on the choice between resolution regimes, with the Crisis Management Measures regime designated as a last-resort option.

81. Executing a multi-year interagency crisis simulations program for diverse failure scenarios would help deliver prompt and effective resolution outcomes. Better structured interagency efforts are needed to enhance the authorities' individual and collective crisis readiness for diverse failure scenarios, including fast-fail resolutions of systemic and mid-size banks, and their concurrent failure. As crisis simulation exercises are resource intensive and require considerable planning, the authorities should agree on a multi-year program with regular exercises. The resolution policy and crisis readiness work should be undertaken under auspices of the Financial Crisis Response Council (FCRC).

82. The authorities should strengthen the recovery and resolution (planning) regime for insurers and FMIs that could be deemed systemic in failure, prioritizing CCPs, consistent with pertinent international standards and guidance. Internationally active insurance groups (IAIGs) are subject to recovery planning requirements, and their recovery plans are discussed in firm-specific international crisis management groups. The FSA deems none of the insurers—including the four IAIGs—systemically important and therefore does not undertake resolution planning for these firms. Yet, all insurers are covered by the Orderly Resolution Measures regime that includes potential provision of public financial support. Therefore, the authorities should plan for the failure of insurers. Similarly, they should further the RRP regime for FMIs, prioritizing CCPs, which are considered systemic in any jurisdiction.

83. Staffing resources need to be enhanced to further crisis readiness efforts. Considering the size, complexity, and the international role of the Japanese financial system, the current staffing resources in this area appear stretched. As many aspects of the authorities' readiness efforts must be strengthened and accelerated, staffing levels and skillsets—particularly at the FSA as the lead resolution authority—must be commensurate with the increasing ambitions.

AUTHORITIES' VIEWS

84. The authorities appreciated the FSAP engagement and constructive discussions and agreed with the broad thrust of the findings and the overall direction of the recommendations. They welcomed the FSAP's assessment of the resilience of the financial system and the improvement of financial policy frameworks since the 2017 FSAP. They commended the FSAP team's comprehensive assessment and constructive dialogue. The authorities found the engagement useful to bring additional perspectives to their risk analysis, make emerging issues more visible, and identify areas for further improvement.

85. The authorities mostly concurred with the systemic risk assessment, while highlighting some nuance in views. They agreed that the Japanese financial system is broadly resilient to severe

adverse shocks. They pointed out that the loss in capital under the adverse scenario would be lessened by considering deferred tax assets for valuation losses of securities investments and correcting the overestimation of housing loan PDs. They also considered the stress test's alternative scenario of an increase in domestic interest rates occurring concurrently with a decline in economic growth as highly unlikely. The authorities highlighted that banks have been actively managing risks against rising interest rates, including through portfolio rebalancing and the use of hedging tools. They noted that Japanese banks have been resilient to FX funding risks and cautious in expanding overseas lending recently. They underscored their commitment to continue monitoring market and liquidity risks. They agreed on possible signs of overheating in parts of the real estate markets while office demand has been solid compared to overseas CRE markets. They, however, do not assess risks to housing loans as an immediate concern, considering quite low historical record of credit cost as well as the industry practice of 5-year/125-percent rule. They considered the climate risk analysis as useful and emphasized the need to interpret the results with caution, given the high level of uncertainty across the various dimensions of the analysis. They welcomed recommendations to strengthen the systemic risk analysis capacity, noting ongoing initiatives to broaden and deepen their risk monitoring framework.

86. The authorities emphasized their commitment to further strengthen the financial regulatory and supervisory approaches. In the context of the FSA's supervisory reforms from 2018 and the FSAP's recommendation to enact legal provisions to ensure the supremacy of the financial stability objective, the authorities noted that the FSA's legal mandate, while including facilitation of financial intermediation, had not changed and does not include economic growth or international competitiveness as a policy goal. They emphasized that the FSA prioritizes financial safety and financial stability through its practice and policies and considers economic growth as the ultimate goal to be achieved by fulfilling its mandate. On macroprudential policies, the authorities assess the current institutional framework to be effective and do not see a need to assign a formal mandate to the CCFS. Noting historical experience with quantitative restrictions on real-estate related loans, they underscored difficulties in the calibration of borrower-based tools and their potential adverse consequences for economic welfare. The authorities noted several plans (e.g., implementation of the economic value-based solvency regulation) to help strengthen financial sector oversight and implement some of the FSAP recommendations. They are committed to boosting cyber resilience and will continue strengthening the policy frameworks in emerging areas, such as climate and fintech, consistent with pertinent international standards and guidance. On financial integrity issues, they are working to implement many of the recommendations following the recent FATF/APG mutual evaluation report.

87. The authorities also welcomed the assessment of the financial crisis preparedness framework. The authorities noted advances with TLAC requirements and RRP and noted that they are mindful of the need to constantly enhance (e.g., expand RRP requirements to more banks) and update matters in the evolving financial landscape. They agreed that many aspects of public sector liquidity framework and measures including the BOJ's ELA are robust, because of their continuous efforts to strengthen financial safety net over the years. Also, they agreed that the BOJ's financial soundness against potential losses arising from ELA operations is important.

Table 2. Japan: Selected Economic Indicators

Nominal GDP: US$ 4,213 Billion (2023)
Population: 125 Million (2023)

GDP per capita: US$ 33,806 (2023)
Quota: SDR 30.8 billion (2023)

	2021	2022	2023 Est.	2024	2025	2026	2027	2028	2029
				Proj.					
(In percent change)									
Growth									
Real GDP	2.6	1.0	1.9	0.9	1.0	0.8	0.6	0.6	0.4
Domestic demand	1.5	1.5	0.9	0.8	1.1	0.6	0.6	0.5	0.4
Private consumption	0.8	2.2	0.6	0.3	0.9	0.6	0.6	0.4	0.2
Gross Private Fixed Investment	0.4	1.0	1.9	1.9	1.5	0.6	0.3	0.3	0.3
Business investment	0.5	1.9	2.1	2.3	1.8	0.8	0.4	0.4	0.4
Residential investment	-0.3	-3.5	1.1	-0.1	0.3	0.0	0.0	0.0	0.0
Government consumption	3.4	1.7	0.9	1.3	0.7	1.0	0.9	1.2	1.2
Public investment	-1.8	-9.6	2.8	0.1	-0.2	-0.2	-0.3	-0.3	-0.3
Stockbuilding	0.5	0.3	-0.1	-0.1	0.1	0.0	0.0	0.0	0.0
Net exports	1.1	-0.5	0.9	0.2	0.0	0.2	0.0	0.0	0.0
Exports of goods and services	11.9	5.3	3.0	3.3	1.7	2.5	1.8	1.6	1.5
Imports of goods and services	5.1	7.9	-1.3	2.2	2.0	1.7	1.6	1.4	1.3
Output Gap	-1.6	-0.9	0.2	0.1	0.0	0.0	0.0	0.0	0.0
(In percent change, period average)									
Inflation									
Headline CPI	-0.2	2.5	3.3	2.2	2.1	2.0	2.0	2.0	2.0
GDP deflator	-0.2	0.3	3.8	2.3	2.3	2.1	2.0	2.0	1.9
(In percent of GDP)									
Government									
Revenue	36.4	37.6	36.5	35.8	36.5	36.5	36.5	36.5	36.5
Expenditure	42.5	41.9	42.2	42.3	39.7	39.4	39.6	39.9	40.2
Overall Balance	-6.1	-4.4	-5.8	-6.5	-3.2	-2.9	-3.1	-3.4	-3.8
Primary balance	-5.5	-3.9	-5.6	-6.4	-3.0	-2.7	-2.8	-2.8	-2.9
Structural primary balance	-4.8	-3.9	-5.7	-6.5	-3.0	-2.7	-2.8	-2.8	-3.0
Public debt, gross	253.9	248.7	252.4	254.6	252.6	251.3	251.0	251.0	251.7
(In percent change, end-of-period)									
Macro-financial									
Base money	8.5	-5.6	6.3	2.3	2.3	2.6	2.6	2.5	2.4
Broad money	2.9	2.2	2.1	1.5	2.0	2.1	2.1	2.0	1.6
Credit to the private sector	1.9	4.2	4.4	2.6	1.9	1.9	1.6	1.3	1.3
Non-financial corporate debt in percent of GDP	155.0	159.4	155.2	156.8	156.5	155.5	155.7	156.7	156.6
(In percent)									
Interest rate									
Overnight call rate, uncollateralized (end-of-period)	0.0	0.0	0.0	...	...	...	...	...	...
10-year JGB yield (end-of-period)	0.1	0.4	0.6	...	...	...	...	...	...
(In billions of USD)									
Balance of payments									
Current account balance	196.4	84.5	144.7	142.6	149.7	162.6	161.5	165.5	154.5
Percent of GDP	3.9	2.0	3.4	3.5	3.5	3.6	3.5	3.4	3.1
Trade balance	16.4	-117.5	-49.1	-31.4	-28.9	-20.5	-19.4	-17.8	-19.1
Percent of GDP	0.3	-2.8	-1.2	-0.8	-0.7	-0.5	-0.4	-0.4	-0.4
Exports of goods, f.o.b.	749.2	751.8	713.2	728.6	754.9	784.0	799.9	818.3	835.6
Imports of goods, f.o.b.	732.7	869.4	762.2	759.9	783.8	804.5	819.2	836.0	854.7
Energy imports	127.8	195.5	152.6	143.0	128.9	118.6	111.0	105.3	100.8
(In percent of GDP)									
FDI, net	3.5	2.9	3.8	3.0	2.7	2.9	2.8	2.8	2.7
Portfolio Investment	-3.9	-3.4	4.7	-0.7	-1.0	-1.0	-0.3	0.5	-0.4
(In billions of USD)									
Change in reserves	62.8	-47.4	29.8	11.5	11.5	11.5	11.5	11.5	11.5
Total reserves minus gold (in billions of US$)	1356.2	1178.3	1238.5	...	...	...	...	...	...
(In units, period average)									
Exchange rates									
Yen/dollar rate	109.8	131.5	140.5	...	...	...	...	...	...
Yen/euro rate	129.9	138.6	152.0	...	...	...	...	...	...
Real effective exchange rate (ULC-based, 2010=100)	73.5	62.0	56.4	...	...	...	...	...	...
Real effective exchange rate (CPI-based, 2010=100)	70.7	61.0	58.0	...	...	...	...	...	...
(In percent)									
Demographic Indicators									
Population Growth	-0.3	-0.3	-0.4	-0.5	-0.5	-0.5	-0.5	-0.6	-0.6
Old-age dependency	48.7	48.9	49.3	49.8	50.3	50.7	51.1	51.5	52.0

Sources: Haver Analytics; OECD; Japanese authorities; and IMF staff estimates and projections.

Table 3. Japan: Structure of Financial System

PANEL A: Financial System Assets

(In trillion of yen)

	2016	2017	2018	2019	2020	2021	2022
Banks	1759	1808	1843	1891	2104	2210	2236
City and trust banks	706	733	747	788	860	901	953
City banks	573	594	625	670	734	767	817
Trust banks	132	139	122	118	126	134	136
Regional banks I	311	320	329	324	394	422	410
Regional banks II	75	76	75	71	80	84	81
Shinkin Banks	151	155	158	159	175	180	175
Others	516	524	534	549	594	622	618
Foreign banks	47	52	59	68	69	73	77
Japan Post Bank	210	211	209	211	224	233	230
State-owned banks 1/	82	81	81	81	101	108	108
New types of banks, and others 2/	177	180	185	190	200	208	204
Credit Associations	22	23	24	25	27	27	27
Credit Cooperatives	192	198	203	204	209	210	209
Insurance companies	408	414	420	424	445	453	439
Life	376	381	388	393	412	420	407
of which: Japan Post Insurance	80	77	74	72	70	67	63
Non-life	31	32	31	30	32	32	31
Reinsurance	1	1	1	1	1	1	1
Pension funds	237	245	250	241	274	296	301
Public 3/	145	156	159	151	186	197	200
Corporate 4/	92	89	91	90	88	99	101
Investment funds	176	197	205	200	258	272	276
Consumer finance companies	22	24	25	27	33	35	...
Stock exchanges	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Financial dealers and brokers	141	148	151	174	175	191	206
Total (In trillions of yen)	2935	3034	3096	3159	3492	3659	3696
Nominal GDP (In trillions of yen)	545	556	557	557	538	551	563
Total (In percent of GDP)	539	546	556	567	649	664	657

PANEL B: Number of Institutions

(Number of institutions)

	2016	2017	2018	2019	2020	2021	2022
Banks	467	467	463	458	451	453	452
City and trust banks	18	17	16	16	15	15	15
City banks	5	5	5	5	5	5	5
Trust banks	13	12	11	11	10	10	10
Regional banks I	64	64	64	64	62	62	62
Regional banks II	41	41	40	38	38	37	37
Shinkin Banks	265	264	261	259	255	254	254
Others	79	81	82	81	81	85	84
Foreign banks	57	59	59	58	58	60	59
Japan Post Bank	1	1	1	1	1	1	1
State-owned banks 1/	6	6	6	6	6	6	6
New types of banks, and others 2/	15	15	16	16	16	18	18
Credit Associations	153	148	146	145	145	145	145
Credit Cooperatives	796	789	764	738	711	683	662
Insurance companies	93	94	94	95	95	96	97
Life	41	41	41	42	42	42	42
of which: Japan Post Insurance	1	1	1	1	1	1	1
Non-life	43	44	44	44	44	45	46
Reinsurance	9	9	9	9	9	9	9
Pension funds							
Public 3/	1	1	1	1	1	1	1
Corporate 4/	18823	18883	19091	19078	18969	18939	18917
Investment funds	11095	11784	12455	12951	13562	14235	14301
Consumer finance companies	1865	1770	1716	1647	1638	1580	1548
Stock exchanges	4	4	4	4	4	4	4
Financial dealers and brokers	256	260	261	261	265	267	269
Total							

Source: FSA.

1/ State-owned Banks includes the Development Bank of Japan, the Japan Bank of International Cooperation, the Shoko Chukin Bank, Japan Finance Corporation, the Okinawa Development Finance Corporation, and the Japan International Cooperation Agency.

2/ Including Shinkin Central Bank, Norinchukin Bank, Aozora Bank, and SBI Shinsei Bank.

3/ Government Pension Investment Fund.

4/ Including defined benefit corporate pension, defined contribution corporate pension, Employee's pension fund, and Pension Fund Association.

Table 4. Japan: Pandemic-Related Financial Sector Policy Measures		
Risk	**Dates**	**Details**
Capital Measures	March 17, 2020 April 8&17, 2020	The FSA published a Notice to banks that (1) banks can assign zero-risk weight for loans that are guaranteed by credit guarantee associations or those under emergency guarantee program by credit guarantee associations; and (2) their capital buffers are expected to be released in downturns to support credit. The FSA and the BOJ also agreed to relax leverage-ratio exposure rules by exempting deposits at the central bank from the leverage ratio exposure (April 8/17, 2020). This measure is scheduled to end at end-March 2024 (per the FSA's Notice dated March 25, 2022).
Liquidity Measures	March 17, 2020	The FSA published a Notice to banks that banks can appropriately use their stock of High-Quality Liquid Assets (HQLA) and thereby fall below the minimum during periods of distress. The FSA also postponed implementation of the Net Stable Funding Ratio by 1 ½ year (became effective by September 2021 for internationally active banks).
Changes to market conduct by insurers	March 17, 2020	The FSA requested insurance companies to take appropriate measures such as setting a grace period on payment of insurance premiums and renewal of insurance contracts.
Lending measures and Guidance	March 24, 2020 (Followed by further Notices in the following months)	The FSA requested financial institutions (FIs) to (1) inform customers about the COVID-19 crisis-related special loans offered by Japan Finance Corporation and other institutions; (2) respond respectfully to customers' need, including extending the repayment period and deferred principal payment period with a leeway; followed by further Notices on April 7 and 27, May 8, and June 10 that request FIs to continue to proactively provide new loans and respond promptly and flexibly to borrowers' requests (including providing bridge loans on demand until businesses receive loans from FIs based on government sponsored-lending programs, proactively offering support to borrowers of housing loans by deferring principal payments for a sufficient period or otherwise promptly modifying loan terms and conditions depending on customers' needs, providing 0/0 loans promptly and flexibly to small and medium-sized enterprises (SMEs) or individuals for rent payment); and refrain from registering requests to modify loan terms and conditions by customers affected by the pandemic as arrearage to credit information agencies and from charging fees for the modification of loan terms and conditions. Fully guaranteed 0/0 loans have started to be phased out (September 2022), with rollovers expected to be mostly over by mid-2024. These pandemic-related guidelines are expected to be discontinued in 2024.
Postponing national implementation of new regulations	March 30, 2020	The FSA initially announced a one-year deferral of the national implementation date of the finalized Basel III standards and later for another year to end-March 2024, in line with the change to the implementation date by the international agreement. Several banks opted for earlier adoption of the finalized standards, starting end-March 2023.
Fund-Provisioning by the BOJ	May 22, 2020	The BOJ introduced a fund-provisioning measure, "Special Funds-Supplying Operations to Facilitate Financing in Response to the Novel Coronavirus (COVID-19)" to support financing of mainly micro enterprises and SMEs, providing funds against loans such as interest-free and unsecured loans made by eligible counterparties based on the government's emergency economic measures (0/0 loans). The total size of the scheme reached about ¥90 trillion at end-FY21 (equivalent to about US$740 billion at the time). The Policy Board of the BOJ decided to phase out the scheme at its meeting in September 2022, given improved financial conditions on the whole, including some segments of SMEs that are affected by the pandemic, and the decline in the demand for the scheme. Loans through this scheme has completely unwound by June 2023.
Source: IMF staff.		

Table 5. Japan: Financial Soundness Indicators[1]

	2017	2018	2019	2020	2021	2022	2023
Capital Adequacy and Asset Quality							
Regulatory capital to risk-weighted assets [2/,3/]	16.0	17.1	17.2	16.4	16.6	15.4	14.9
Regulatory tier 1 capital to risk-weighted assets	13.5	14.9	15.1	14.3	14.6	13.8	13.4
Capital-to-total assets [2/,3/]	4.9	5.2	5.2	4.7	4.6	4.3	4.1
NPL net of provisions/capital [2/,4/]	6.2	4.8	4.3	4.8	5.7	6.9	4.9
Non-performing loans (NPL) to total loans ratio [2/,4/]	1.3	1.1	1.1	1.1	1.2	1.3	1.2
Earnings and Profitability							
Return on assets [2/,4/]	0.2	0.2	0.1	-0.1	0.1	0.1	0.2
Return on equity [2/,4/]	5.1	5.4	2.3	-1.3	3.5	2.6	5.8
Interest margin	1.1	1.1	1.1	1.0	0.9	0.9	1.1
Net interest income to gross income [2/,4/]	62.6	62.2	70.4	60.3	63.5	69.1	66.6
Non-interest expenses to gross income [2/,4/]	67.8	69.0	82.7	73.5	70.7	69.8	70.4
Personnel expenses to non-interest expenses [2/,4/]	59.6	44.2	43.7	43.0	42.9	42.7	43.8
Liquidity							
Liquid assets to total assets [2/,4/]	28.7	29.6	29.4	29.5	34.4	35.8	33.3
Liquid assets to short-term liabilities [2/,4/]	49.7	49.9	49.2	47.4	52.6	53.3	50.8
Customer Deposits to Total (Non-interbank) Loans [2/,4	136.5	139.4	139.5	139.1	147.6	148.6	146.9
Other							
Gross derivative asset to capital [2/,4/]	43.8	35.8	35.2	55.8	43.3	57.1	75.9
Gross derivative liability to capital [2/,4/]	42.3	33.2	33.7	52.0	42.7	59.9	79.9

Source: IMF, Financial Soundness Indicators (FSI) database.
1/ Data for these series are for Q1 of each year.
2/ Including city banks and regional banks but not Shinkin banks.
3/ Aggregated based on a consolidated basis.
4/ Aggregated based on an unconsolidated basis.

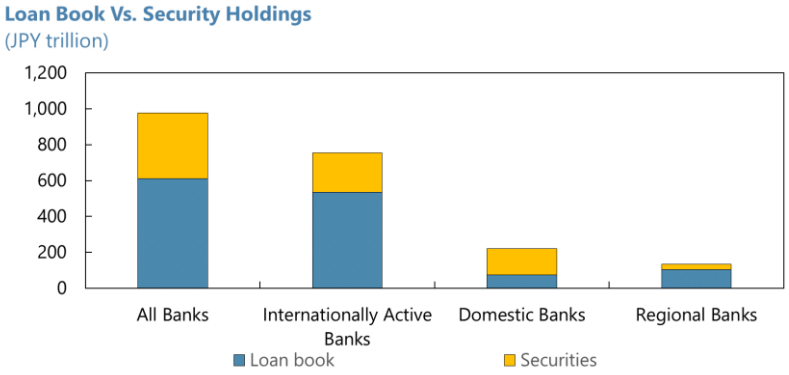
Table 6. Japan: FSAP Risk Assessment Matrix		
Risk	**Overall Level of Concern**	
	Likelihood	**Expected Impact if Materialized**
Intensification of regional conflict(s) and geo-economic fragmentation	**High**	**High** • Global trade and supply-chain disruptions and increased uncertainty leading to an abrupt global and domestic economic slowdown. • Significant commodity price volatility and upward pressure on inflation leading to a sharp increase in foreign and domestic interest rates. • Valuation losses from holdings of foreign and domestic debt securities under mark-to-market accounting. • Increase in sovereign risk premia, repricing of risky assets, and higher funding costs and lending rates leading to a sharp deterioration of financial conditions and increasing liquidity risks to financial institutions. • Nominal wage growth lags inflation, implying reduction in real wages and private sector borrowers' debt service ability, raising credit risk for banks and NBFIs.
Abrupt global slowdown or recession	**Medium**	**High** • Lower domestic GDP growth leading to a deterioration in domestic asset quality, bankruptcies, and erosion of bank capital buffers. • Deterioration in macroeconomic fundamentals leading to a reassessment of fiscal risk and higher sovereign risk premia, triggering a negative feedback loop between the sovereign and financial sectors. • Increase in credit risk from overseas exposures. • A rise in global risk premia and strains in offshore U.S. dollar funding markets, implying higher hedging/funding costs for the financial and nonfinancial sectors, impairing their profitability and investment.
Bond market stress from a reassessment of sovereign risk	**Medium**	**High** • An increase in sovereign risk premia would worsen public debt dynamics and transmit risk to the financial sector because of the sovereign-financial sector nexus.
Extreme climate events/disorderly energy transition.	**Medium**	**High/Medium** • Economic damage leading to large credit losses in the financial sector, amplified by productivity losses and collateral devaluations, triggering a tightening of financial conditions. • Global and domestic decarbonization efforts to mitigate climate change, leading to side-effects, i.e., transition risks to the financial sector depending on the global/domestic policy ambitions and degree of exposure to carbon-intensive firms and industries.
Cyberthreats	**Medium**	**High** • Cyberattacks on critical infrastructure and systemic financial institutions could threaten macrofinancial stability by undermining confidence and disrupting financial services and real activities.

Source: IMF staff.
Note: The RAM reflects the FSAP team's views on the source and likelihood of risks and expected impact if materialized as of the time of FSAP discussions with the authorities. Non-mutually exclusive risks may interact and materialize jointly.

Annex I. Balance Sheet Structure of Japanese Banks and Insurers

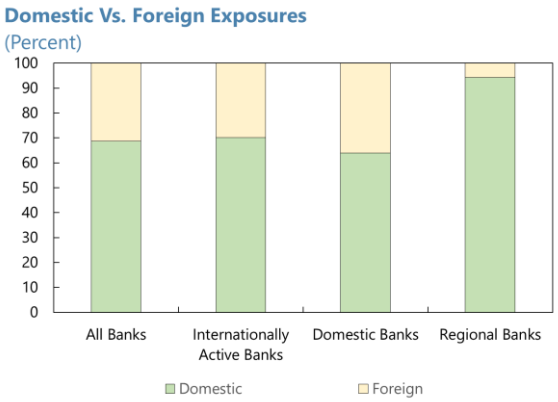
Figure I.1 Japan: Asset Composition of Banks

Japanese banks' security holdings are significant, both for internationally active banks and domestic banks, and less so for the regional bank cluster.

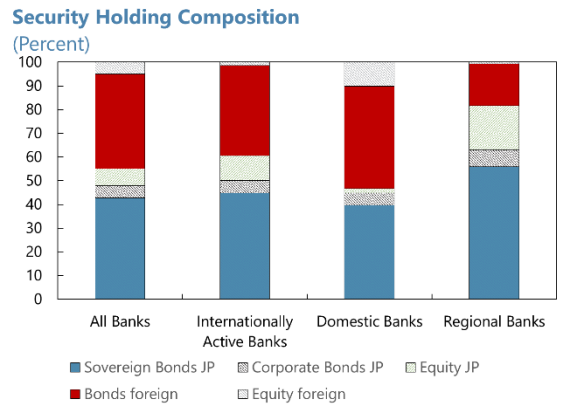


Security investment shares for domestic banks are particularly sizeable.

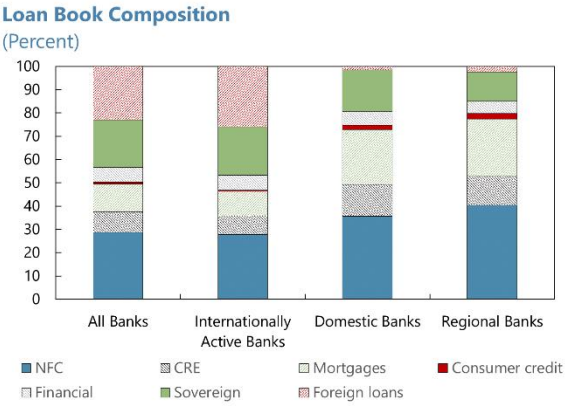
All bank clusters, but to a lesser extent regional banks, are exposed to foreign borrowers.



Domestic sovereign and foreign bonds represent the largest share of overall security holdings.



Foreign lending in the form of loans is more significant for international banks than for other bank clusters.

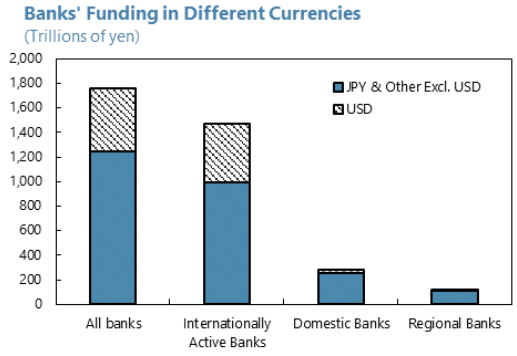


Sources: FSA; and IMF staff calculations.

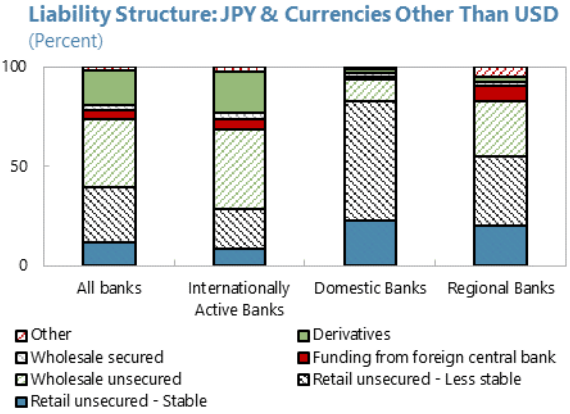
Notes: All data as of end-March 2023. The security holdings shown in these charts comprise the banks' investments in bond funds, equity funds, and REITs. The charts are based on the sample of banks and insurers included in the FSAP stress tests.

Figure I.2. Japan: Liability Composition of Banks

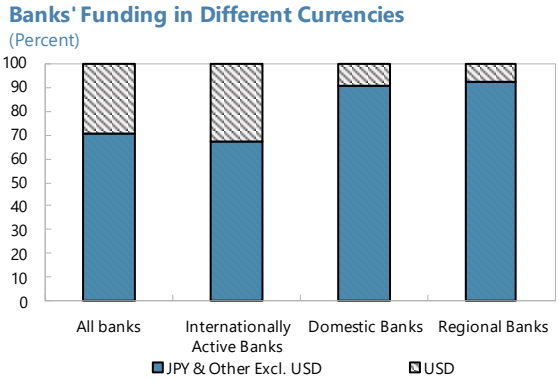
Foreign currency funding is sizeable in particular for internationally active banks.



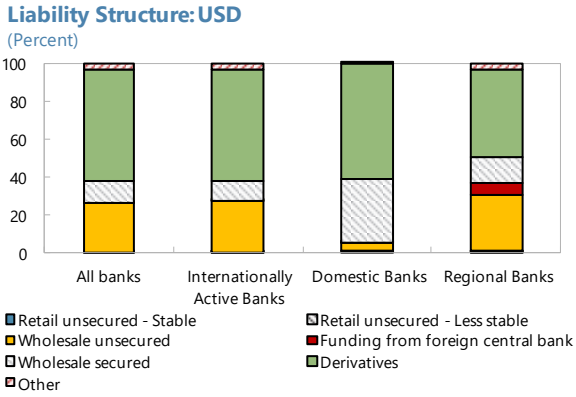
Retail and wholesale unsecured funding dominates the liabilities in JPY and currencies other than the USD. Retail unsecured is dominant for domestic banks.



It represents about 30 percent of their total liabilities, while for domestic banks and regional banks it amounts to a rounded 10 percent.



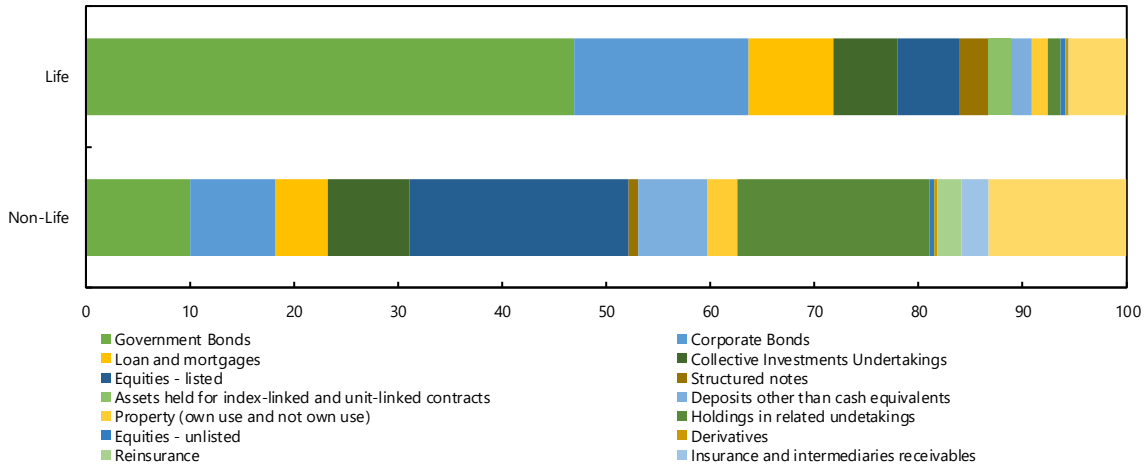
Regarding USD funding, derivatives (largely FX swaps) and unsecured wholesale funding dominate at banking system level. For domestic banks, secured wholesale funding weighs more strongly than unsecured wholesale funding.



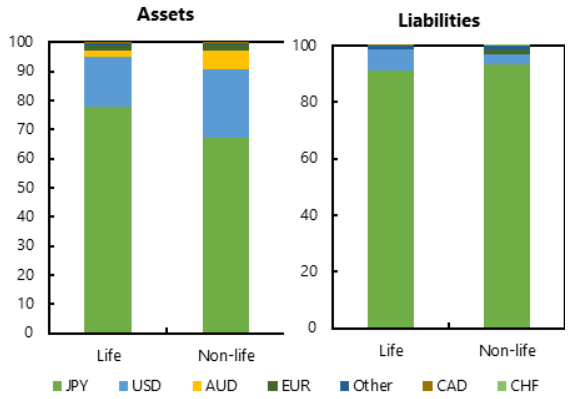
Sources: BOJ; FSA; and IMF staff calculations.
Note: Data as of end-March 2023.

Figure I.3. Japan: Balance Sheet Structure of Insurers

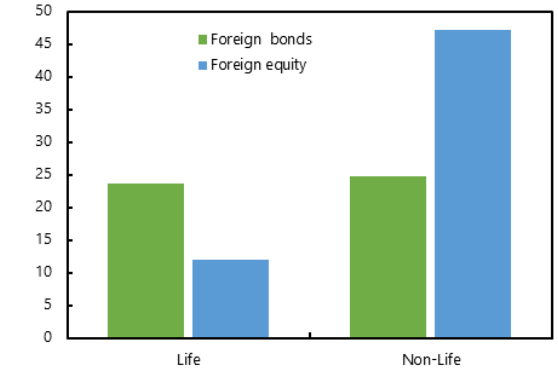
Breakdown of Balance Sheet Assets
(Percent of total assets)



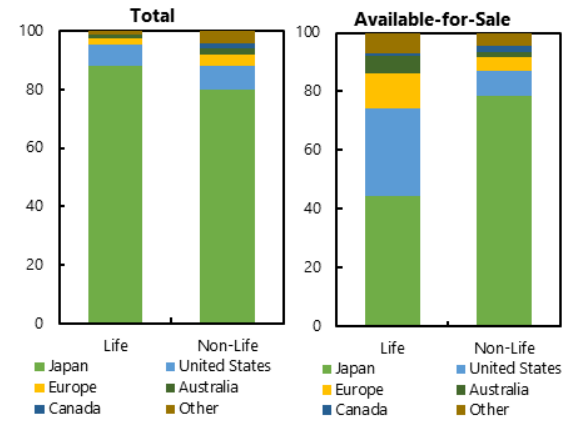
Currency Breakdown of Assets and Liabilities
(Percent of total)



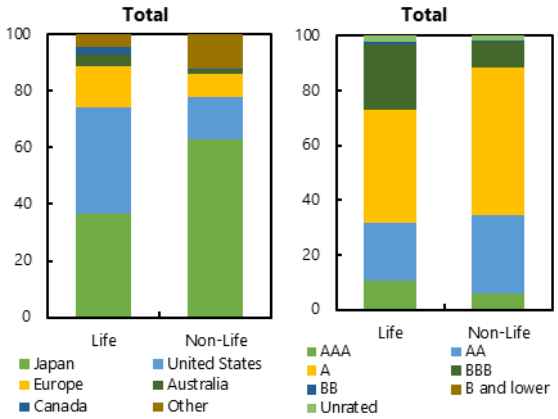
Share of Foreign Bond and Equity Exposures
(Percent of total)



Sovereign Bond Holdings
(Percent of total)



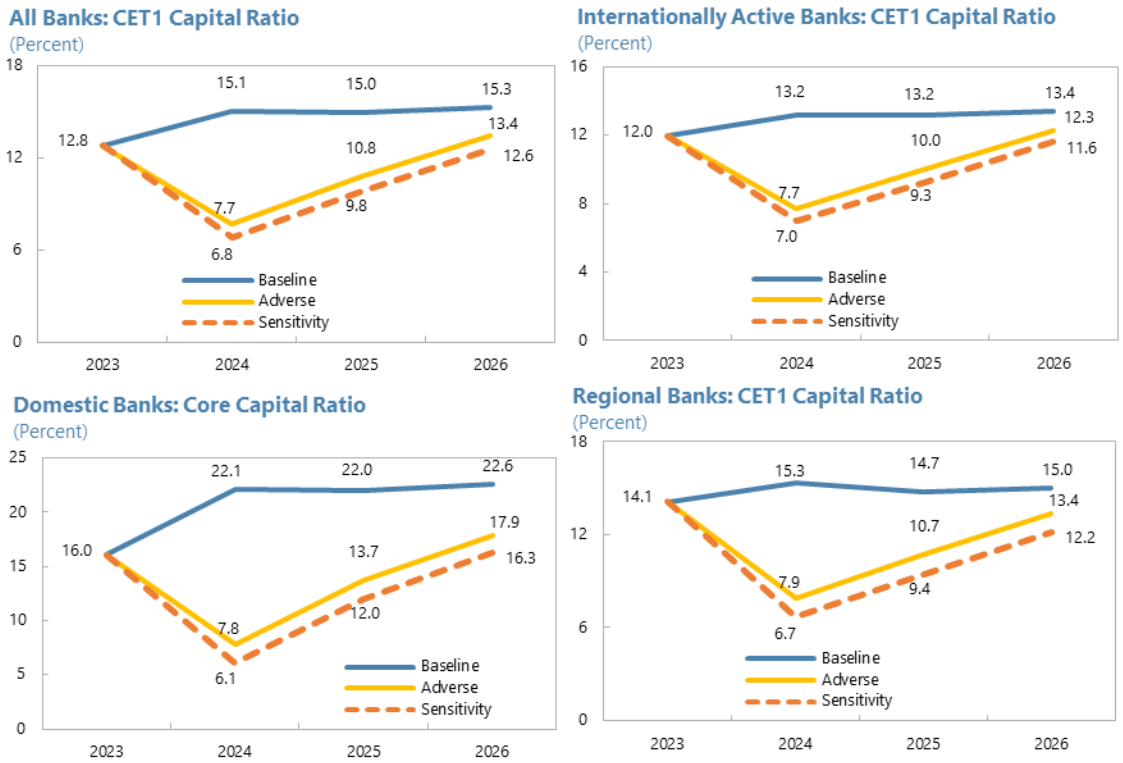
Corporate Bond Holdings
(Percent of total)



Sources: IMF staff calculations based on JFSA data and company submissions.
Note: The charts are based on the sample of banks and insurers included in the FSAP stress tests.

Annex II. Additional Stress Test Results for Banks and Insurers

Figure II.1. Japan: Bank Solvency Stress Test Results—Interest Rate Sensitivity Analysis

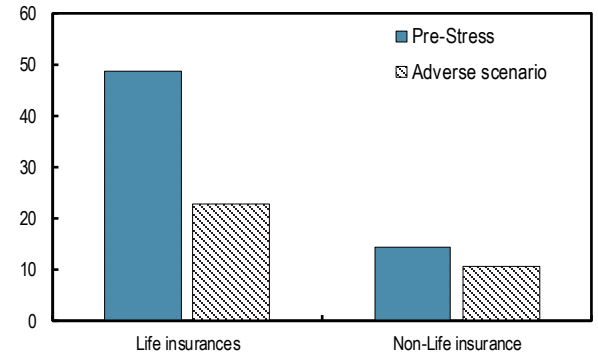


Sources: BOJ; FSA; and IMF staff calculations.

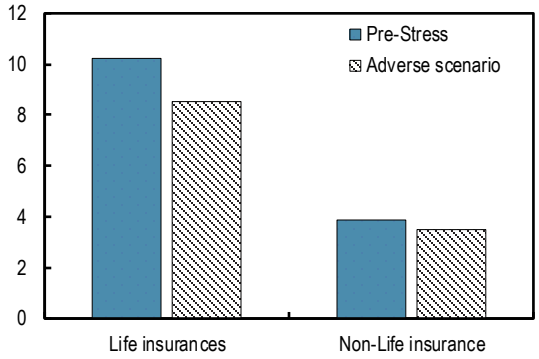
Notes: For the domestic bank cluster, their core capital ratio is used, which differs from CET1, and total capital ratios as employed for international banks. The starting point for the domestic banks' core capital was adjusted to take unrealized gains/losses at the onset into account. The AFS filter was "switched off" for domestic banks, to thereby assess the economic valuation effects on their core capital ratios and to facilitate the comparison with the international banks for whom no AFS filter is in place.

Figure II.2. Japan: Insurance Solvency Stress Test Results—Bottom-Up Analysis

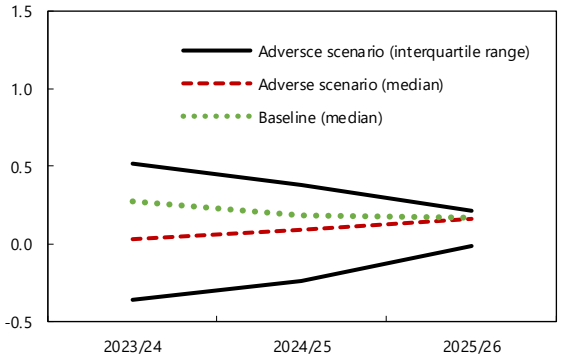
Bottom-up analysis: Available Capital
(Trillions of JPY)



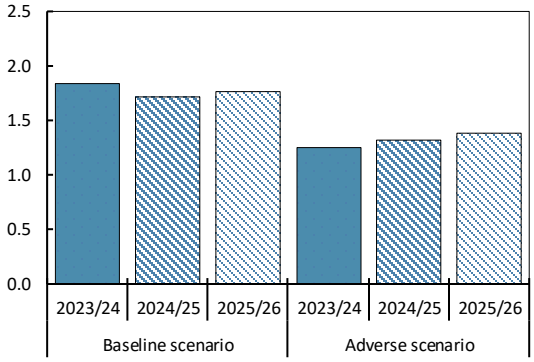
Bottom-up analysis Required Capital
(Trillions of JPY)



Projected Investment Spread
(Percent)



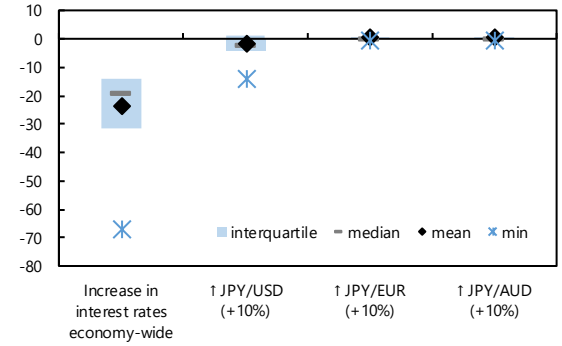
Projected Net Surplus
(JPY Trillions)



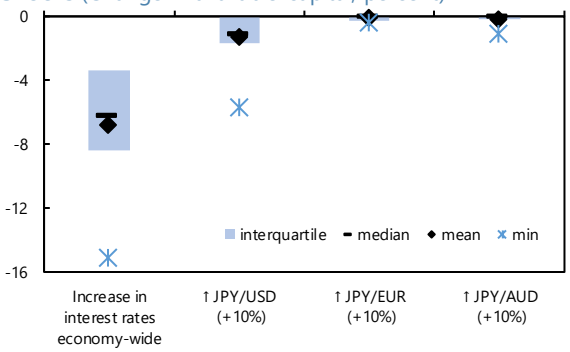
Source: IMF staff calculations.
Notes: To complement the instantaneous shock analysis used in the insurance stress test, participating companies provided a three-year projection of specific business developments under the baseline and the adverse scenarios. Panels 3 and 4 report results from this analysis using shocks from the banking sector stress specified for each year of the entire time horizon

Figure II.3. Japan: Insurance Solvency Stress Test Results—Sensitivity Analysis (SMR and ESR)

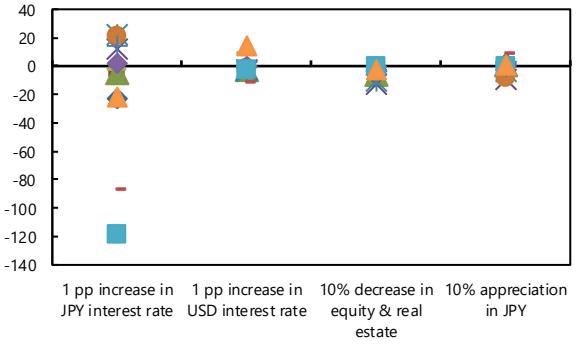
Life Insurers: SMR Sensitivity to Selected Market Shocks (Change in available capital, percent)



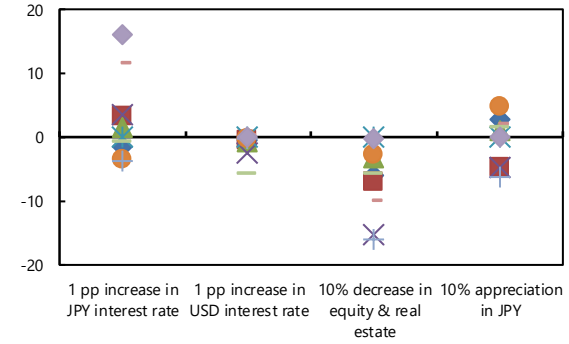
Non-Life Insurers: SMR Sensitivity to Selected Market Shocks (Change in available capital, percent)



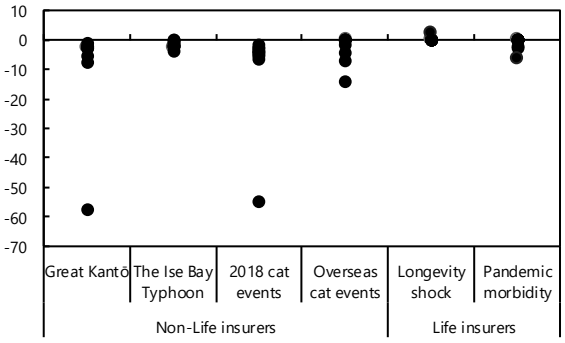
Life Insurers: ESR Sensitivity to Selected Market Shocks (Percentage points)



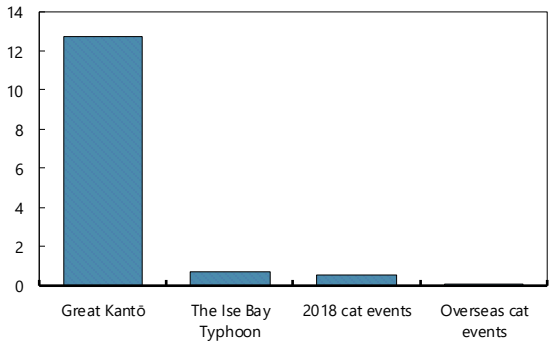
Non-Life Insurers: ESR Sensitivity to Selected Market Shocks (Percentage points)



Changes in Available Capital Following Historically Benchmarked Catastrophic Shocks (Percent, bottom-up)



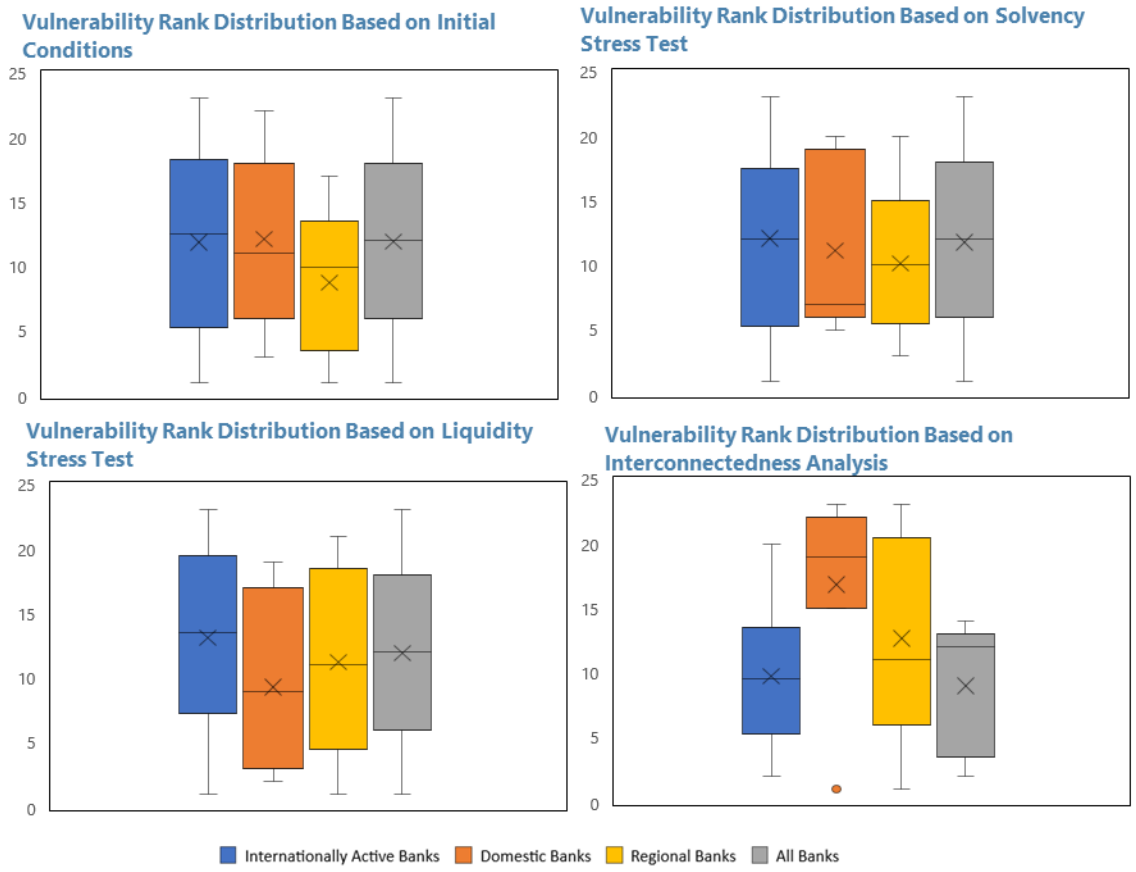
Reinsurance Recoveries (JPY Trillions, bottom up)



Source: IMF staff calculations.

Annex III. Holistic Vulnerability Assessment for Banks

Figure III.1. Japan: Rank Distribution for Sub-Components of the Composite Vulnerability Indicator



Sources: BOJ; FSA; and IMF staff calculations.
Notes: The underlying individual indicators for each sub-component and the construction methodology are described in detail in the accompanying TN on SRA. The box indicates the interquartile range, whiskers indicate the minimum and maximum values, the horizontal line in the box is the median, and the cross (x) indicates the mean vulnerability ranking across banks in each banking cluster.

Recommendations	Implementation Status
Cross-cutting Issues	
Further raise corporate governance standards to bolster independence of board and oversight functions from senior management across banking and insurance sectors (FSA).	**Partially Implemented and Ongoing.** • The FSA has been encouraging constant improvement of governance in the banking and insurance sectors, and some progress has been made. *Banking Sector* • Notable progress has been made with increased appointments of outside directors and establishment of board committees by banks (including risk committees not required by law). The role of internal audit has been explicitly strengthened in the Corporate Governance Code 2021 and in the FSA's Supervisory Guidance. However, the FSA remains highly focused on major banks and the scope of "fit and proper" assessments has not been broadened yet. *Insurance Sector* • In the insurance sector, since 2016, under the Comprehensive Guidelines for Supervision for Insurance Companies, it is required to appoint at least two outside directors, and the enhancement of the corporate governance system of insurance companies has also been a focus in supervision. However, there are some gaps in relation to the detailed requirements of ICP 7, including on board's powers and resources. • The FSA noted that, as indicated by the OECD's Principle of Corporate Governance, it is not considered appropriate to apply the corporate governance model uniformly to all companies. Instead, the FSA monitors to confirm whether governance and corporate governance are functioning through monitoring, etc., taking into account the scale, the organizational structure, and business characteristics of each insurance company.
Further develop internal processes to support full risk-based supervision for banks, insurers, and securities firms (FSA, SESC).	**Partially Implemented and Ongoing** *Banking Sector* • Meaningful progress has been made towards a flexible, more forward-looking, and risk-focused supervisory process that has regard to each bank's risk, size, and scale. • Active supervisory judgement is being encouraged, but improvements are important. Increasing the intensity of supervision for regional banks, enhancing the EWS, and introducing an analytical framework to assess the risk profile of banks and banking groups on a more comprehensive and systematic basis are still needed. *Insurance Sector* • While risk-based supervision reforms were undertaken, prudential supervision is based on thematic issues where a number of insurers are subject to analysis (but far from all insurers). • The FSA's supervision is mainly reactive to risk that has crystalized into a problem for an insurer. Most supervisory activities are conducted on an industry-wide thematic basis, and regular risk assessment of individual insurers is not undertaken as part of a supervisory cycle. *Securities Firms* • The 2024 FSAP conducted a focused review of the supervision of investment funds instead of a full review of the supervision of securities firms. The FSA and SESC have strengthened their off-site and on-site supervision approach, but the supervisory approach may need to be more proactive so as to address emerging risks and vulnerabilities in the sector more efficiently.

Recommendations	Implementation Status
	Cross-Sectoral Issue • To carry out such risk-based monitoring, the FSA conducts personnel training on prudence in a cross-cutting and comprehensive manner. For example, training menus, including videos by experts in each field, are prepared to enable broader training participation. In addition, the regular personnel reshuffle at the FSA fully considers the importance of developing expertise.
Consider enhancing independence of the FSA and BOJ in key supervisory issues (PM, MOF, FSA, BOJ).	**Not Implemented** • No changes have been made in the structure and powers of the FSA and the BOJ since the 2017 FSAP. • The delegation of most powers to the Commissioner gives the FSA a high degree of operational independence and protection from undue political interference. Nonetheless, the reservation to a minister of key licensing powers and the FSA's dependence on the central government budgeting process expose it to potential interference. • There is no fixed period of appointment for the Commissioner. The thresholds set out for the Prompt Corrective Regime, i.e., the trigger points for action in Cabinet Order in relation to Article 26(2) of the Banking Act, have not been raised. • Staffing decisions are not wholly within the FSA's purview. The FSA Commissioner has authority only over personnel management of staff whose position is equivalent to or lower than Director (Article 55-1, National Public Service Act).
Systemic Risks	
Develop own supervisory stress testing model for both solvency and liquidity risk analysis for banks, and for solvency risk analysis for insurers, as well as stress test large exposures periodically (FSA)	**Partially Implemented and Ongoing.** • The FSA and the BOJ have been conducting guided bottom-up solvency stress tests with common' scenarios for "major banks" since 2019, which cover 60 percent of total sectoral assets, involving centrally defined scenarios set by the authorities. • The authorities compare and examine the results of tests conducted by each bank based on the common scenarios with the results of tests based on the BOJ's Financial Macro-econometric Model (FMM) and explore what causes the differences in test results among financial institutions. • The FSA continues to monitor FX liquidity conditions of banks and observes the outcome of liquidity stress tests conducted by the three mega banks. The FSA also periodically requests information from the three mega banks with regard to large exposures (as for other banks). Yet, the FSA has not developed supervisory stress testing models for solvency and liquidity risk for banks, nor formally stress tests large exposures. The FSA conducts stress testing for insurers, and periodically collects data on exposures and ratings of major insurance companies to identify large concentration in specific borrowers and sectors. In addition, for the three megabanks, the FSA periodically requests a list of loan outstanding and internal ratings of domestic and foreign client exposures to grasp large exposures in specific obligors and sectors. • The FSA conducts stress tests on all insurance companies based on data, including on market risk and credit risk, submitted by insurance companies.
Continue conducting liquidity stress testing regularly for significant foreign currencies and require banks to hold sufficient	**Partially Implemented and Ongoing.** • The FSA closely monitors foreign currency liquidity risk management of mega banks, via annual joint surveys with the BOJ, periodically collects detailed data on their foreign currency liquidity conditions and engages closely with the banks. • Also, in cooperation with BOJ, the F

Recommendations	Implementation Status
counterbalancing capacity, particularly high-quality liquid assets (FSA).	• SA began collecting detailed foreign currency liquidity data of the three megabanks. This has enabled the authorities to conduct foreign currency liquidity stress testing. • However, the FSA has not developed or conducted full-fledged liquidity stress tests for significant currencies (neither JPY nor all-currency basis). • There is also no formal minimum requirement for the LCR in foreign currencies, although the FSA aims to encourage banks to achieve more favorable foreign currency LCR metrics by means of supervisory engagement.
Financial Sector Oversight	
Give the FSA the power to set capital requirements for banks based on specific risk profiles (Gov)	**Not Implemented.** • Under the current legal framework, the FSA does not have complete Pillar 2 powers. It cannot set a minimum capital ratio for a bank that is tailored commensurate to its risk profile. Specifically, it lacks the "ability to require banks to hold capital in excess of the minimum." Therefore, this recommendation is reiterated in the 2024 FSAP. • In some respects, the FSA is an active Pillar 2 supervisor. It requires major and regional banks to submit Internal Capital Adequacy Assessment reports. The FSA assesses the Internal Capital Adequacy Assessment Process (ICAAP) submitted by the major 9 banks, and as needed will enter into a supervisory dialogue with the banks. The risks specifically identified under Pillar 2 in the Basel Framework are placed under scrutiny. However, if the FSA were to consider that the regulatory capital of the bank was insufficient for its risk profile and capability, then directly requiring additional capital is not an option that can be formally required. The FSA instead must depend on its ability to persuade and encourage, which, on the basis of all findings the mission was able to make, are considerable. Ultimately, however, if a difference of view were to develop between the bank and the FSA, the power of compulsion is missing.
Take further steps to implement an economic value-based solvency regime for insurers (FSA).	**Implemented.** The FSA has undertaken regulatory and supervisory reforms in line with international standards and continues to do so with plans to introduce the ESR in fiscal year 2025. It will be applied to all insurers and be a far-reaching reform that would address shortcomings in the existing solvency requirements.
Introduce more specific periodic reporting requirements and more proactive investigations into related party transactions (FSA).	**Partially Implemented and Ongoing.** • Related party risk management expectations have been strengthened for related corporate entities and directors, notably with the inclusion of the concept of economic interdependence. • The Corporate Governance Code emphasizes governance of related party risk. • Definition of related party, however, needs to be broadened to capture other types of individuals beyond directors.
Ensure robust supervision of the systemically important securities firms by ensuring access to a sufficient number of experienced staff and onsite monitoring of overseas operations (FSA, SESC).	**Implemented and Ongoing.** • The authorities have stepped up supervision of the systemically important securities firms, given the importance of their close monitoring, by creating a dedicated team (Monitoring Office for Major Securities Firms) in operation since 2022. • This team conducts continuous monitoring in cooperation with the Securities Division of the FSA, which handles administrative licensing and approval, and the Securities and Exchange Surveillance Commission. For the monitoring of overseas operations of systemically important securities firms, the team now conducts on-site investigations, visiting overseas offices to conduct interviews, and also works to communicate with overseas authorities through the supervisory college and other channels.

Recommendations	Implementation Status
	• The onsite overseas operations monitoring practice started strong, with one onsite visit in 2017 and 4 in 2018, but this practice was interrupted because of the pandemic. On-site visits restarted in November 2023. In addition, the FSA conducts remote interviews with overseas offices and interviews with overseas senior managers when they visit Japan and on other occasions.
Enhance recovery plan further by including extreme stress scenarios while ensuring continuity of critical services and mitigating contagion risks through clearing members (JSCC)	**Implemented** • In 2018, the JSCC started submitting a recovery plan on a voluntary basis; since 2022, it is required to submit a recovery plan as per the FSA's revised "Comprehensive Guidelines for Supervision of Financial Market Infrastructures." • The revised guidelines require that the recovery plan addresses stress tests under more severe stress than for regular stress testing, based on system-wide and firm-specific stress scenarios.
Address recovery planning issues on regulation for central counterparties (FSA)	**Implemented** • In June 2022, the FSA published the revised "Comprehensive Guidelines for Supervision of Financial Market Infrastructures." • As per the revised guidelines, the JSCC is required to develop and submit a recovery plan once a year (or when important changes have been made to their business and group structure). The guidelines list the topics that any recovery plan must cover but they do not elaborate on these topics.
Macroprudential Policy	
Clarify the mandate of the Council for Cooperation on Financial Stability (FSA, BOJ).	**Not Implemented.** The CCFS, as the collegiate to exchange views on financial market developments, continues to operate without a clear, formal mandate. The Council also aims to facilitate macroprudential policy coordination, including the decision to activate/change CCyB rates. The working-level liaison committee, which convenes every quarter and discusses necessity of changing the CCyB rates and conjectural macroprudential policy-related issues, has so far made no recommendation on the CCyB rates to the Council, as the committee has not confirmed the necessity to activate CCyB rates.
Consider proactively enhancing the macroprudential toolbox, including sectoral tools (FSA)	**Partially implemented and Ongoing.** • The macroprudential policy toolkit has been enhanced on several grounds, including via phasing in Basel III capital and liquidity standards for internationally active banks, consistent with internationally agreed timelines. • The FSA implemented capital surcharges for designated systemically important financial institutions, and enhanced liquidity risk management framework for insurers, margin requirements for non-centrally cleared over-the-counter derivatives, and risk retention rules. • Several domestic banks have started to apply finalized Basel III standards—pertaining to the calculation of risk-weighted assets—with the remaining expected to apply by end-March 2025. In this process, certain risk weights specified in the standardized approach for credit risk are being revised in light on sectoral risk metrics, e.g., risk weights for residential real estate loans will be linked to loan-to-value (LTV) rates at the origination. • However, targeted borrower-based tools (e.g., LTV, loan-to-income, debt-to-income, and/or DSTI caps) are not implemented in Japan.

Recommendations	Implementation Status
Continue to broaden and deepen the scope of systemic risk assessments (FSA, BOJ).	**Partially Implemented and Ongoing.** • The FSA and the BOJ have broadened and deepened the scope of the systemic risk assessment on several grounds, including by improving the macro stress testing model (FMM) and covering topical issues in the FSRs. • The FSA started to publish "FSA Analytical Notes", which aims to provide data analysis case-examples which includes a system-wide view of risks by utilizing granular data. The FSA has established a Macroprudential Policy and Data Strategy Office (current name is Macro-financial Stability and Data Strategy Office) and appointed a Chief Data Officer in light of growing needs to enhance the capability of data analysis, which helps to broaden and deepen the scope of systemic risk assessment. • The FSA has initiated several data-related projects, including Common Data Platform joint with the BOJ, which has been in operation since FY 2023. Given the increasing size of the sector, the FSA has also initiated Investment Fund Survey, currently in pilot phase.
Crisis Management, Resolution, and Financial Safety Nets	
Strengthen resolution framework by removing ambiguities in the choice of tools, introducing a statutory bail-in power, clarifying triggers to enable early entry into resolution, and ensure that the role for the courts does not hinder effective resolution (FSA)	**Partially Implemented.** • The FSA revised the supervisory guideline and published in December 2023 to ensure that the role of the courts does not impede effective resolution. The revised guideline on valuations in resolution require financial institutions to establish systems and procedures for timely providing financial information when filing a petition for a substituted permission that requires involvement of the court. • No follow-up actions were undertaken on other components of this recommendation since the 2017 FSAP.
Consider broadening the perimeter of institutions to establish loss-absorbing capacity (FSA)	**Implemented.** • On April 13, 2018, the FSA published "The Revisions to The FSA's Approach to Introducing the TLAC Framework." • Since March 2019, TLAC requirements apply to the three G-SIBs: MUFG, SMFG, and MHFG. Since March 2021, Nomura (a D-SIB) is also subject to TLAC requirements.
Encourage earlier prompt corrective action and provide a clearer path to resolution (FSA).	**Not Implemented.** Corrective action triggers remain calibrated to minimum capital thresholds. No clarification was adopted to ensure early commencement of resolution measures.
Enhance crisis preparedness and coordination via an interagency crisis management forum (MOF, Minister for FS, BOJ, FSA, Deposit Insurance Corporation of Japan (DICJ))	**Not Implemented.** The authorities continue to rely on informal arrangements for interagency cooperation on crisis preparedness.
Establish an orderly resolution regime, following international guidance, for central	**Not Implemented.** The authorities continue to rely on measures that aim to prevent the failure of CCPs.

Recommendations	Implementation Status
counterparties and other FMI operators (FSA).	
Strengthen the framework for the provision of emergency liquidity assistance and tighten preconditions for the use of temporary public funding in resolution (MOF, BOJ)	**Not Implemented**. The BOJ's ELA framework was not changed, nor were the preconditions for accessing public funding in resolution since the 2017 FSAP.
Financial Intermediation	
Continue engaging with banks on implications of macroeconomic and demographic trends and take actions on a timely basis when viability concerns are identified for individual institutions (FSA)	**Implemented.** The Early Warning System, which was revised in June 2019, has been designed to identify possible concerns regarding banks' sustainable profitability and future soundness.
Encourage banks to evolve risk management practices in line with new business activities (FSA).	**Partially Implemented and Ongoing.** • Supervisory Guidance has been enhanced and major banks have established Board Risk Committees, but it is not a full requirement and does not apply to all banks. • The FSA reviews the business strategies of financial institutions, conducts on-site and off-site monitoring, such as finding facts and holding dialogues with them on their business infrastructure, financial bases, governance, and risk management arrangements at home and abroad.
Encourage regional and *Shinkin* banks to review measures such as cost reduction, consolidation, income diversification, and fee structures to address medium term profitability concerns (FSA, Gov).	**Implemented and Ongoing.** • The FSA has initiated measures to support the consolidation of the regional banking sector to enhance their efficiency and preserve viability. As part of a broader drive to improve banking sector efficiency, the act on special measures for the anti-monopoly act provides a 10-year window for a merger or other integration between regional banks. This would exempt the merger from the application of the anti-monopoly act on the condition that the new merged bank is judged to better serve its local communities by leveraging the capacity generated by the merger. Regional banks that merge or integrate for the purpose of strengthening their business foundations could also benefit from a temporary grant scheme that subsidizes some of the initial merger costs.
Lower coverage of credit guarantees (SME Agency).	**Implemented.** • The government of Japan has reformed the credit guarantee system in 2017 to reduce the financial institution's excessive reliance on credit guarantees. The reformation encourages SMEs to make voluntary efforts to improve their business management, and financial institutions to provide loans based on business evaluation and appropriate monitoring after loan execution.

Recommendations	Implementation Status
	• In particular, Safety Net Guarantee No. 5, which was 100 percent guarantee prior to the reform, was revised to 80 percent guarantee, creating an environment in which SMEs can promote structural business improvement under the management support of financial institutions.
Source: IMF staff.	

Domain		Scope and approaches for the 2024 Japan FSAP
Banking Solvency Stress Test		
1. Institutional perimeter	Institutions included	• 23 banks, which include internationally active banks and domestic banks. The Two specialized banks, Japan Post Bank and Norinchukin bank, are also included.
	Market share	• 82 percent in terms of total assets.
	Data source and cut-off date	• Supervisory data provided by the FSA or obtained from banks. • Cut-off date: March 2023. • Scope of consolidation: The data for the stress testing exercise captures the foreign exposure of banks, which is through lending via foreign branches, direct cross-border lending, as well as foreign security holdings. Japanese banks' exposures through foreign subsidiaries are marginal at the banking system level. Hence, the solo level data for Japanese banks—including all foreign business through branches and foreign bond holdings—was deemed adequate. • Other data sources: commercial databases. • Coverage of sovereign exposures: domestic and main foreign countries exposures, by accounting classification. • Coverage of credit risk exposures: domestic and main foreign countries exposures, by economic sectors.
2. Methodology	Overall framework	• Dynamic bank balance sheet model. • Satellite models developed by the FSAP team; largely structural models in the case of Japan.
	Satellite models for macrofinancial linkages	• Credit risk: Parameter (PD, LGD, EAD) projections, including also for write-off rates and cure rates. Using historical data provided by authorities and relying largely on structural models. Analysis used as starting points the PDs and LGDs reported by banks. • Net Interest Income: structurally-informed econometric pass-through equations for banks' interest income and cost of funding. The cost of funding model accounted for feedback from solvency and for the Japanese banks' non-negligible funding dependence in USD, i.e., USD interest rates. The interest income models capture the pass-through market rates and banks' own cost of funding. • Net Fees and Commission income and other income/expenses: bank-panel regression model using a Bayesian Model Averaging (BMA) methodology. • Market risk: Modified duration model for bonds, including with an account for hedging, and allowing for counterfactual analysis that switches the interest rate hedges off. Equity investments revalued with equity price assumptions in the scenarios. FX net open position: revalue in line with FX paths in the scenario; account for FX hedges. The hedging related data was sourced from banks included in the stress test in relation to their trading and may to an extent be incomplete.
	Stress test horizon	• 3 years: 2024-2026.
3. Type of analyses	Scenario analysis	• Baseline scenario from October 2023 WEO projections. • Adverse scenario, calibrated with at least 2 standard deviation shock relative to historical, and guided by GaR estimates; i.e., overall, with a cyclical state dependency in mind. • Modeling of adverse scenario based on MCM's GFM simulations for Japan and main foreign countries of exposures, combining shocks from global layers (tightening of global financial conditions, a sharp global downturn, and geopolitical fragmentation) and domestic layers (rising inflation and domestic interest rates).
	Sensitivity analysis	• Interest rate risks, interest rate hedging on vs. off, concentration risks.

Domain		Scope and approaches for the 2024 Japan FSAP
		• As additional shock to adverse scenario (short-term interest rate: 1.5 percent in 2024, long-term interest rate: 3.0 percent in 2024, GDP growth rate: -3.2 percent in 2024), or stand-alone.
4. Risks and buffers	Risks/factors assessed	• Credit losses, profitability, funding costs, market risk, fixed income securities (interest rate, spreads, and FX), exchange rate, taxes.
	Behavioral adjustment	• Dynamic balance sheet with growth informed by macro model outcome. • Write-offs calibrated; new business implied such that desired gross loan growth is matched. • Portfolio composition unchanged over time. • Hurdle rate for internationally active banks: 4.5 percent for CET1 ratios, 8 percent for total capital ratios. Hurdle rate for domestic banks' core capital ratio at 4 percent. Capital Conversation Buffer (CCoB) allowed to be consumed in the adverse scenario, including a separate analysis of the extent to which banks consumer their CCoB under the baseline and adverse scenarios.
5. Regulatory and accounting standards	Calibration of risk parameters	• PDs and LGDs and numerous other required risk parameters obtained from supervisory databases. • Regulatory risk parameters, as input to risk weight formulas: downturn LGDs kept constant; pass-through from point-in-time PDs to through-the-cycle PDs assumed to be 20 percent. • Expected loss-based provisioning for performing exposures, as per JGAAP, accounted for; the pass-through from PiT expected losses to provision coverage for performing exposures was assumed to be 20 percent; this was informed by information provided by the BOJ/FSA in terms of the extent to which Japanese banks use forward-looking provisioning models to inform the provision coverage for performing exposures.
	Regulatory/accounting standards	• Regulatory capital ratios and national GAAP accounting standards.
6. Reporting format for results	Output presentation	• System-wide capital shortfalls. • Aggregated contributions to evolution of capital ratios (profit and loss, tax, dividends, post-P&L OCI effects, risk weighted asset contributions, etc.
Banking Liquidity Stress Test		
1.Institutional parameters	Institutions included	• 23 banks (the same as in the banking solvency stress test).
	Market share	• 82 percent.
	Data and cut-off date	• Supervisory data. • Reference date: March 2023.
2. Methodology	Overall framework	• The cash-flow stress test analyzes the net cash balance, accounting for available unencumbered assets, contractual cash inflows and outflows, and behavioral flows. • The analysis also considers Basel III LCR and NSFR and stressed LCR and NSFR. • Scenarios of increasing severity of shocks (haircuts, outflows, FX swaps, etc.). • Account for solvency feedback through the possibly required sale of securities that are held in investment categories that do not require continuous marking-to-market (e.g., HTM, and AFS for domestic Japanese banks with an AFS filter).
	Stress test horizon	• 30 days for LCR-type analysis. • 180 days (6 months) for the cash flow-based stress test simulations.

Domain		Scope and approaches for the 2024 Japan FSAP	
3. Type of analyses	Scenario analysis	• Baseline and various scenarios are considered, with varying intensity of adverse liquidity conditions and reflecting different liquidity risks.	
	Sensitivity analysis	• Higher, more severe, run-off rates.	
4. Risks and buffers	Risks	• Funding liquidity risk is reflected in funding and asset roll-off rates, the latter providing cash inflows related to non-renewal of maturing assets. • Market liquidity risk is reflected in asset haircuts, which could be influenced by market movements, potential fire sales and collateral supply considerations.	
	Buffers	• The cash-flow analysis may consider some behavioral assumptions about a counterparty's ability or willingness to transact based on banks' solvency and liquidity conditions. • HQLA in different jurisdictions can be transferred without restrictions. • FX conversion risks are assumed to be absent in the all-currency cash flow stress test.	
	Calibration of risk parameters	• Stress funding run-off rates informed by the LCR calibration as relevant for Japanese banks. • Valuation changes for bonds and equity aligned with those implied by the macrofinancial scenario, as used for the solvency stress test	
5. Regulatory and accounting standards	Regulatory/accounting and market-based standards	• The LCR hurdle rate is set at 100 percent at the aggregate currency level (per Basel III). There is no regulatory minimum defined for foreign currency LCRs in Japan. NSFR per Basel III; limit of 100 percent.	
6. Results reporting format	Output presentation	• Outputs include (1) Changes in the system-wide liquidity position, and their drivers, (2) distribution of banks' liquidity positions, (3) number of institutions with LCR/NSFR below regulatory limits or with cash shortfalls, and (4) amount of liquidity shortfall.	
Insurance Stress Test			
		Top-Down by IMF and Authorities	**Bottom-Up by Insurance Undertakings**
1. Institutions included		• Top life and non-life insurances to cover at least 70 percent of annualized new business premiums	• Top life and non-life insurances to cover at least 70 percent of annualized new business premiums
2. Data		• Statutory and voluntary reporting	• Voluntary reporting
3. Reference date		• March 31, 2023	• March 31, 2023
4. Methodology		• Investment assets: market value changes after price shocks, affecting the solvency margin. • Stock-based assessment of liquidity sources and liquidity needs (e.g., according to BCBS, IAIS classifications) • Revaluation of interest rate swaps positions after interest rate shock	• Investment assets: market value changes after price shocks, affecting the solvency margin ratio. • Sensitivity analysis: effect on available capital and solvency margin ratio. • Stock/flow assessment of liquidity sources and liquidity needs (optional).
5. Stress test horizon		• Instantaneous shock	• Instantaneous shock • 3-year projection of profitability indicators (only in the baseline and the adverse scenario).
6. Scenario analysis		• Baseline.	• Baseline

Domain	Scope and approaches for the 2024 Japan FSAP	
	• Adverse scenario (in line with narrative severity of the banking sector stress test).	• Adverse scenario (in line with narrative severity of the banking sector stress test).
7. Sensitivity analysis	• Sensitivity to market risk variables and interest rate term structure. • Default of largest financial and nonfinancial counterparties.	• Sensitivity to longevity shock, mortality shock, and selected natural disaster events.
8. Risks/ factors assessed	• Market risks: interest rates, stock prices, property prices, credit spreads, currency. • Counterparty risks: default of largest financial counterparties. • Liquidity risk: relation between decreases in future liquidity sources and increases in future liquidity needs. • Summation of risks, no diversification effects.	• Market risks: interest rates, stock prices, property prices, credit spreads, currency. • Counterparty risks: default of largest financial and nonfinancial counterparties. • Underwriting risks: catastrophe events, lapses • Liquidity risk: shock to market value of assets, mass lapse shock, mortality shock, morbidity shock and increase of non-life cost of claims, shock to reinsurance inflows, reduction in written premiums. • Summation of risks, no diversification effects.
9. Buffers	• None	• Buffers inherent to product design and regulatory framework
10. Behavioral adjustments	• None	• Management actions limited to non-discretionary rules in place at the reference date for the solvency risk analysis. • Reactive management actions are allowed in parts of the liquidity risk analysis
11. Regulatory standards	• J-GAAP • Economic value-based solvency ratio (ESR) regulation.	• J-GAAP
12. Output presentation	• Impact on solvency margins. • Contribution of individual shocks. • Dispersion measures of solvency ratios, liquid assets to liquid liabilities ratios, margin calls-to-liquid assets.	• Impact on solvency margins. • Impact on profitability (e.g., net income) • Contribution of individual shocks • Dispersion measures of solvency ratios, profitability measures and liquidity measures
Investment Funds Stress Test		
1. Institutions included	• Open-ended investment funds	
2. Data	• Commercial data (Bloomberg, FactSet, Lipper) • Statutory and voluntary reporting	
3. Reference date	• March 31, 2023	
4. Methodology	• Calibration of various redemption shocks and comparison to the level of highly liquid assets at the fund level	

Domain	Scope and approaches for the 2024 Japan FSAP
	• Price impact on securities due to fund illiquidity
5. Stress test horizon	• Instantaneous shock
6. Scenario analysis	• Adverse scenario (in line with narrative severity of the banking sector stress test). • Pure redemption shock: severe outflows based on historical distribution
7. Risks/ factors assessed	• Market risk: interest rates, share prices, credit spreads, volatility measures, exchange rates. • Liquidity risk: severe redemption shock.
8. Buffers	• Level of highly liquid assets
9. Behavioral adjustments	• Choice of liquidation strategy used: slicing (prorata), waterfall (most liquid assets first) and mixed approach (cash then slicing) • Liquidity Management Tools (LTM) are not considered in the stress test.
10. Output presentation	• Dispersion of liquidity shortfall; number of funds with the ratio of highly liquid assets to redemptions below one • Aggregate price impact (for different asset classes) • Aggregate vulnerability of the investment fund sector
Interconnectedness and Contagion Analysis	
1. Institutions involved	• Domestic spillovers: Banks (same set of banks in the Bank Solvency Stress Testing), major life insurers (same set of insurers in the Insurance Stress Testing), major securities firms • Cross-border spillovers: Country-aggregate banking sector

2. Data and starting position	• Domestic spillovers:
	  • Confidential bilateral exposure data (supervisory): 2023Q1
	• Cross-border spillovers:
	  • Cross-border banking claims exposure data (BIS Consolidated/ultimate guarantor basis): 2016.
	  • Bank regulatory Tier 1 capital data (Fitch Connect): 2016

3. Methodology	• Domestic spillovers: Co-Map (Covi, Gorpe, and Kok, 2019) • Cross-border spillovers: Espinosa-Vega and Sole (2010)
4. Risks	• Credit and funding losses related to bilateral exposures, and fire-sale of assets following sizeable withdrawals of deposits. • Cross-border exposures.
5. Buffers	• Domestic spillovers: Institution's own capital and liquidity buffers. • Cross-border spillovers: Banking sector's aggregate capital buffers.
6. Size of shocks	• Default of institutions (flexibly reflecting institution-specific capital buffer thresholds).
7. Output/Presentation	• Network mapping of the domestic financial system. • Entity-level contagion index, vulnerability index; and systemic risk map.
Climate Risk Analysis – Transition Risk	
1. Institutions included	The banking sector, the same coverage as in the banking solvency stress test.
2. Data and starting position	• Micro firm-level data for balance sheet and income statement (P&L) for 2005-2023 from Moody's/Orbis.

Domain	Scope and approaches for the 2024 Japan FSAP
	• PDs of listed firms for 2005-2020 from Moody's KMV. • Data for firms' reported emissions and industry-median emission intensities for Asia-Pacific region (scope 1) from ICE. • Individual banks' loan exposures by sectors in March 2023. Source: Supervisory data and each bank's financial summary reports. • Individual banks' NPL coverage ratios by sectors.
3. Methodology	• In-house developed micro-macro simulation model (Gross and others, "The IMF ENV-FIBA (Environment-Firm and Bank) Model Framework for Climate Risk Analysis—Conceptual Framework, Model Details, and Guide," forthcoming) • Step 1 (Macro module): An IMF computable general equilibrium model is employed to derive aggregate and sectoral GDP paths, other environmental and macro variables' paths, as well as carbon price paths, that are consistent with NGFS emissions and temperatures target paths. • Step 2 (Micro module): These macro impacts are then used as input to assess the impact of carbon taxes on firms' balance sheets in the firm-level micro simulation. The firm-level credit risk indicators, such as PDs, LGDs, and credit spread, are debt-weighted aggregated into the sectoral-level risk indicators. • Step 3 (Bank module): The sectoral-level credit risk will be translated into impacts on individual banks' capital based on their industry exposures. When assessing the impact on bank capitalization, deleveraging and leveraging of industries that are declining and thriving, respectively, are accounted for.
4. Scenarios	• NGFS Phase IV scenarios (Net Zero 2050, Fragmented World, Current Policies)
5. Time horizon	• Up to 2040.
6. Risks/factors assessed	• The impact of carbon taxes on firms' balance sheets and income statements through the changes in GVAs of the sectors to which firms belong (macro channel), as well as direct emission costs (micro channel). • Foregone interest income (dynamic balance sheet channel).
7. Behavioral adjustments	• In the Micro module, an econometric stock-flow Merton model-inspired PD panel model and Frye-Jacobs LGD modeling are employed. In addition, given huge uncertainty in individual firm's emissions, a Montecarlo simulation is conducted over the firm-level emission intensity based on its estimated kernel density function for Japan. • In the Bank module, individual banks' sectoral loan exposures are assumed to vary at the growth rates of sectoral GVAs to account for foregone/expected interest income from deleveraging/leveraging.
8. Output presentation	• Delta PDs, delta LGDs, and delta credit spreads by sector. • Individual banks' capital ratio impacts and the loss contributions from the underlying industry segments.