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AMRO
ASEAN +3 MACROECONOMIC RESEARCH OFFICE

AMRO Annual Consultation Report

Japan - 2023

ASEAN+3 Macroeconomic Research Office (AMRO)

March 2024

Acknowledgments

1. This Annual Consultation Report on Japan has been prepared in accordance with the functions of AMRO to monitor and assess the macroeconomic status and financial soundness of its members; identify relevant risks and vulnerabilities; report these to member authorities; and if requested, assist them in mitigating these risks through the timely formulation of policy recommendations. This is being done in accordance with Article 3 (a) and (b) of the AMRO Agreement.
2. This Report is drafted on the basis of the Annual Consultation Visit of AMRO to Japan from October 24 to November 8, 2023 (Article 5 (b) of the AMRO Agreement). The AMRO Mission team was led by Dr. Jae Young Lee, Group Head and Lead Economist. Members included Dr. Runchana Pongsaparn, Group Head and Principal Economist, Dr. Jinho Choi, Deputy Group Head and Principal Economist (Country co-desk economist); Mr. Paolo Hernando, Senior Economist (Country co-desk economist); Dr. Wee Chian Koh, Economist; Mr. Jungsung Kim, Economist; Mr. Akifumi Fujii, Economist; and Ms. Zin Zin Mar Han, Associate. AMRO Director Dr. Kouqing Li and Chief Economist Dr. Hoe Ee Khor participated in key policy meetings and courtesy calls with the authorities. This AMRO Annual Consultation Report on Japan for 2023 was peer reviewed by a group of economists from AMRO's Country Surveillance, Financial Surveillance, and Fiscal Surveillance teams; endorsed by the Policy and Review Group; and approved by Dr. Hoe Ee Khor, AMRO Chief Economist.
3. The analysis in this Report is based on information available up to December 25, 2023.
4. By making any designation of or reference to a particular territory or geographical area, or by using the term "member" or "country" in this Report, AMRO does not intend to make any judgments as to the legal or other status of any territory or area.
5. On behalf of AMRO, the Mission team wishes to thank the Japanese authorities for their comments on this Report, as well as their excellent meeting arrangements and hospitality during our visit.

Table of Contents

Executive Summary

1. The Japanese economy rebounded strongly following the full reopening post-pandemic. In Q1 2023, real GDP grew by 5.0 percent (saar qoq), and remained strong at 3.6 percent in Q2. However, in Q3, the economy contracted by 2.9 percent due to a dip in investment and consumer spending. Going forward, consumption is expected to rebound on the back of higher wages resulting from wage hike agreements. Investment is also expected to recover, reflecting ongoing efforts towards digitalization, and adoption of labor-saving technologies. Meanwhile, exports have consistently surprised on the upside, and are likely to continue growing moderately despite global headwinds. Looking ahead, the economy is expected to expand at 1.9 percent in 2023 and 1.1 percent in 2024.

2. Consumer price inflation has moderated but continues to be relatively high, mainly due to underlying pressures that have proven to be more persistent than initially anticipated. In November 2023, CPI (less fresh food) inflation remained elevated at 2.5 percent (yoy), although down from its peak of 4.2 percent in January, primarily due to a decrease in energy prices. Inflation has continued to exceed the BOJ's 2 percent target since April 2022. The "core-core" CPI inflation, which excludes both fresh food and energy, slightly declined to 3.8 percent in November from 4.0 percent in October, due to a slower rise in the prices of processed food. Looking ahead, although CPI (less fresh food) inflation is decreasing as the pass-through effects of cost increases diminish, it is expected to do so very gradually, and remain still elevated at 3.1 percent in 2023 and at 2.6 percent in 2024.

3. Japan's external position stayed strong, supported by a substantial primary income surplus and a steadily narrowing trade deficit, alongside a decrease in net capital outflows. In 2022, the current account surplus amounted to 1.9 percent of GDP. In Q1-Q3 2023, the surplus rose to 3.5 percent of GDP with the steady narrowing of the trade deficit. The services account deficit also narrowed, largely thanks to the steady rise of inbound tourism following the easing of border restrictions. Meanwhile, the primary income surplus remained strong in the first three quarters of 2023, more than offsetting the trade deficit.

4. The banking sector as a whole continues to be sound with stable credit growth. Bank lending expanded by over 3 percent (yoy) in the first ten months of 2023 despite the termination of most pandemic-related financial relief measures. Corporate lending has expanded across a wide range of sectors, including real estate, manufacturing, electricity and gas, while loans to individuals also continued to rise reflecting the accommodative lending stance of banks. The asset quality of the banking system continued to be strong, with low non-performing loan (NPL) ratio and capital adequacy ratios (CARs) well above the regulatory requirements. Profitability picked up in FY2022 at major banks due to higher net interest income, and regional banks saw an improvement due to an increase in gains on stock transactions and other factors.

5. Fiscal policy remains supportive of the economy. In FY 2022, the government extended economic support through the implementation of two large supplementary budgets. Amid ongoing stimulus spending, strong tax revenue growth played a key role in reducing the fiscal deficit from 5.9 percent of GDP in FY2021 to 3.6 percent of GDP in FY2022. In November 2023, the government announced a supplementary budget valued at JPY13.2 trillion, equivalent to approximately 2.2 percent of GDP. The fiscal deficit was initially expected to decline further in FY2023 with the termination of COVID-19 related measures. However, due to the supplementary budget, the fiscal deficit for FY2023 is now estimated to rise to 5.2 percent of GDP, as fiscal policy remains expansionary.

6. The economy's path towards sustained recovery from the pandemic is challenged by several downside risks. Key risk factors for Japan's economy in the short term, where risks to growth are tilted to the downside, stem mainly from the external sector. These factors include

a sharp slowdown in major global economies and a potential spike in global commodity prices due to geopolitical events. Japan's central role in trade and deep integration into global supply chains also expose it to the risk of deepening economic fragmentation over the medium-to-long term. On the domestic front, a key risk in the short term is the resurgence of inflation well above the central bank's 2 percent target.

7. Given the increasing risk of higher inflation becoming entrenched, the BOJ should begin to move toward the gradual normalization of its ultra-easy monetary policy. In light of the uncertainties surrounding Japan's inflation outlook, the BOJ's current accommodative monetary policy stance remains appropriate for now. However, given the increasing risk of high inflation becoming entrenched, the BOJ should begin to move toward the gradual normalization of its ultra-easy monetary policy and provide effective communication regarding the future path of monetary policy. In particular, the yield curve control (YCC) policy should be phased out to allow long-term interest rates to align more closely with market fundamentals. The BOJ also needs to consider moving away from the negative interest rate policy to allow the short-term policy rate to play its traditional role in managing inflation.

8. Financial regulators need to closely supervise financial institutions to ensure their financial soundness amid rising interest rates and withdrawal of pandemic support. The authorities should continue to monitor the resilience of the banking system by conducting market and credit risk stress tests, incorporating scenarios where domestic long-term interest rates either stay persistently high for an extended period or experience a sharper increase than the recent upward trend. At the same time, the authorities need to monitor the risk of heightened interest rate volatility if there is a rebalancing of banks' investment into short-term securities due to an expected rise in long-term interest rates. In the process of completely terminating financial support programs implemented during the pandemic, it is also important to be mindful of the risk of an increase in corporate bankruptcies.

9. With the economy recovering strongly, the emphasis should return to fiscal prudence after years of large fiscal stimulus policies to address the economic impact of the COVID-19 pandemic and provide subsidies to counter the effects of rising commodity prices. As the shock from the pandemic fades and the economy exhibits steady trend growth, there is no longer a need for economic stimulus policies. Demonstrating a commitment to fiscal discipline requires adherence to the government's fiscal consolidation plan to achieve a primary surplus in the medium term, which includes specifying expenditure cuts and identifying sustainable revenue sources for emerging needs in areas like defense and childcare. The establishment of an independent fiscal institution (IFI) that can provide objective analysis and long-term projections of government debt is recommended.

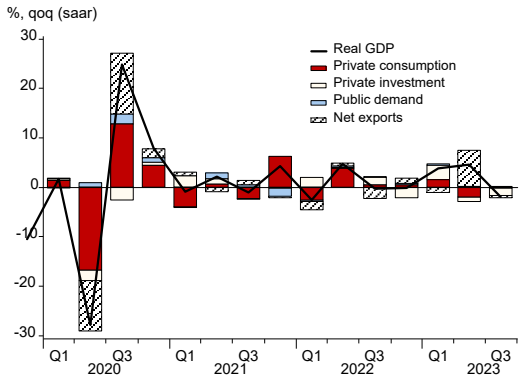
10. In the wake of the COVID-19 pandemic, it is imperative for Japan to undertake comprehensive structural reforms to address underlying economic challenges and enhance its growth potential. To address these challenges, crucial reforms should prioritize improving labor market flexibility, encourage ongoing skills development and training for the workforce, promote greater digitalization, and embrace technological advancements to mitigate the intensifying labor shortages. For Japan to maintain its edge in technology and innovation, reforms in education, research, and development sectors are needed. This would help nurture a skilled workforce adept in emerging technologies and innovation. To enhance the long-term growth potential of the economy, the government should also continue to promote innovation and entrepreneurship in strategic sectors, and reform corporate governance to make Japanese companies more competitive globally. Structural reforms in the energy sector are necessary for a transition to more sustainable and reliable energy sources. In this regard, the government's efforts towards transitioning to renewable energy are commendable, notably with the approval of the Basic Policy for the Realization of Green Transformation (GX) that outlines a 10-year roadmap to transition away from coal-fired to a clean energy society.

A. Recent Developments and Outlook

A.1 Real Sector Developments and Outlook

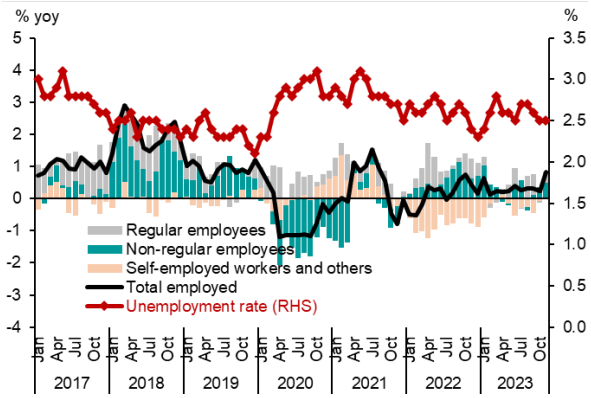
1. The Japanese economy rebounded strongly following the full reopening post-pandemic, propelled by resilient domestic demand and recovering exports. The economy exhibited a robust recovery from the pandemic, with Q1 real GDP growing by 5.0 percent (saar, qoq) and remained strong at 3.6 percent in Q2. However, in Q3, the economy contracted by 2.9 percent (Figure 1). The first quarter experienced a boost through strong consumption and investment, driven by the resurgence in spending as the pandemic transitioned into the endemic phase. Since then, private consumption contracted in both Q2 and Q3, partly due to escalating prices that have outpaced wage growth. Concurrently, business investment contracted in Q2 and Q3 affected by the slowdown in the semiconductor industry. In contrast to the declines in private consumption and business investment, exports have consistently surprised on the upside. This uptick was driven by robust global demand for automobiles, offsetting sluggish exports of semiconductor equipment and IT-related goods. Service exports also experienced a substantial increase, primarily due to the rebound in tourist arrivals following the reopening of the borders across the region with the move towards endemicity.

Figure 1. Real GDP Growth



Source: Cabinet Office; Haver Analytics

Figure 2. Changes in Total Employed by Type and Unemployment Rate



Source: Ministry of Internal Affairs and Communications; Haver Analytics

2. Going forward, Japan's economy is expected to expand by 1.9 percent in 2023 and 1.1 percent in 2024, primarily driven by resilient consumption and steady investment. Private consumption is expected to shift back into positive territory for the remainder of the year, helped by rising wages. Meanwhile, the improvement in business sentiment and high profitability levels among firms are bolstering investment prospects. While exports weakened in Q3, they are expected to strengthen in Q4 in line with the upturn in the global electronics cycle and the increasing demand for consumer durables. Services exports, driven by inbound tourism have recovered to pre-pandemic levels, and are expected to remain strong, partly supported by the weak yen. Looking ahead to 2024, economic growth is expected to decelerate to 1.1 percent, as the impact of economic reopening and pent-up demand further subsides. Investment is projected to stay steady, reflecting ongoing efforts towards digitalization, the adoption of labor-saving technologies, and strategic investments in the revitalization of semiconductors and

renewable energy products. Consumption will also continue to be resilient, on the back of higher wages resulting from wage bargaining agreements. Export prospects are also poised to improve in 2024, in line with the continuing upturn in the global electronics cycle and the improvement in global manufacturing activities.

3. Labor market conditions remain tight due to the recovery of the economy and structural constraints in the labor market, while wage hikes continue to lag behind inflation. Unemployment rate in October 2023 was 2.5 percent, a decrease from its peak of 3.1 percent in October 2020 during the pandemic (Figure 2). Following the annual wage negotiations, key unions and employers affiliated with the Japanese Trade Union Confederation, primarily comprising large corporations, delivered a 3.6 percent wage increase, with base pay seeing a significant rise of 2.2 percent, marking the highest increment in 30 years.[1] Despite the wage agreement, the increase in nominal wages for the overall economy has been more muted. After a 2.9 percent increase in May, nominal wage growth has declined to 1.5 percent in October. [2] This figure falls below the 3 percent level considered necessary to sustain a virtuous cycle of rising income and spending. Furthermore, the surge in inflation has led to negative real wage growth since April 2022. Continued pressure for higher wages is expected due to the combination of elevated inflation and a structural labor shortage caused by the aging population (See Annex 1 “Wage Impact on Prices in Japan: Is This Time Different?”).

Authorities’ Views

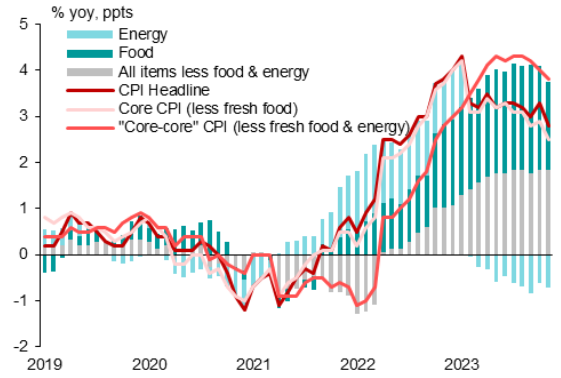
4. Concerning the staff’s analysis of the wage impact on prices, the BOJ opines that wage and price setting behavior in Japan is different between 1990s and after 2000s so that estimation of whole sample could not capture the dynamic correctly. In addition, it is necessary to consider issues that are endogenously determined between wages and prices when estimating.

5. Consumer price inflation has moderated but continues to be relatively high, mainly due to underlying pressures that have proven to be more persistent than initially anticipated. In November 2023, CPI (less fresh food) inflation remained elevated at 2.5 percent (yoy), although down from its peak of 4.2 percent in January, primarily due to a decrease in energy prices (Figure 3). Inflation has continued to exceed the BOJ’s 2 percent target since April 2022. The “core-core” CPI inflation, which excludes both fresh food and energy, slightly declined to 3.8 percent in November from 4.0 percent in October, due to a slower rise in the prices of processed food. These inflationary pressures have been broad-based, affecting an unprecedented 86 percent of the items in the CPI basket. The BOJ’s various measures of underlying inflation, including trimmed mean, mode, and weighted median, have also reached record highs. In addition, the rise in production costs has led to a steady increase in services

[1] Based on the report released by the Japanese Trade Union Confederation (RENGO), in the final seventh round of spring wage negotiations (called “Shunto”), the average agreed base wages increased 2.12 percent, much higher than the 0.63 percent increase in the previous year.
[2] Although headline wages have trended down since May due to the drag from stagnant overtime pay growth and contraction in special payments, scheduled earnings of employees, including base salary, have increased by a higher rate of 1.0 and 1.3 percent in September and October, respectively, reflecting to a certain degree the outcome of the spring wage negotiations.

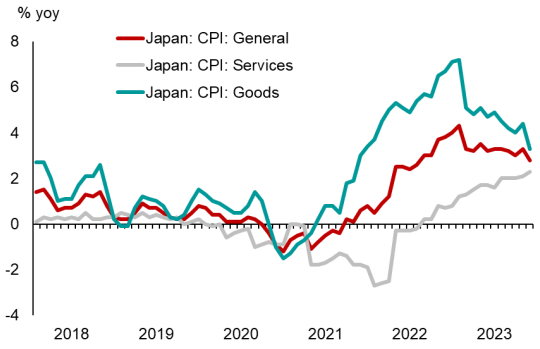
inflation, indicating a higher pass-through of escalating prices, reaching 2.1 percent in October (Figure 4). Meanwhile, medium-term inflation expectations, as indicated by the BOJ Tankan survey, rose to 2.2 percent from a low of 0.8 percent at the start of the pandemic (Figure 6). Looking ahead, although CPI (less fresh food) inflation is decreasing as the pass-through effects of cost increases diminish, it is expected to do so very gradually, and remain still elevated at 3.1 percent in 2023 and at 2.6 percent in 2024.

Figure 3. CPI Inflation



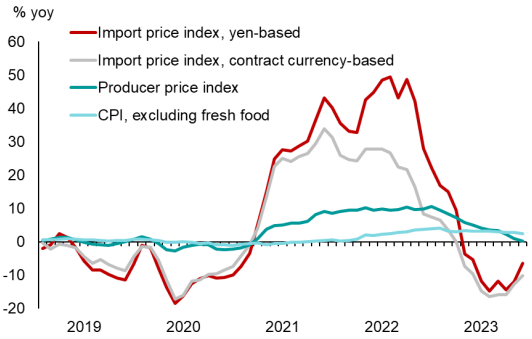
Source: Ministry of Internal Affairs and Communication; Haver Analytics

Figure 4. CPI Inflation by Goods and Services



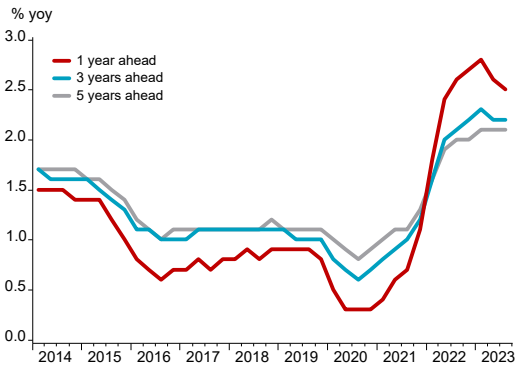
Source: Ministry of Internal Affairs and Communication; Haver Analytics

Figure 5. Indices of Import Price, Producer Price and Consumer Price



Source: BOJ; Ministry of Internal Affairs and Communications; Haver Analytics

Figure 6. Firms' Inflation Expectations



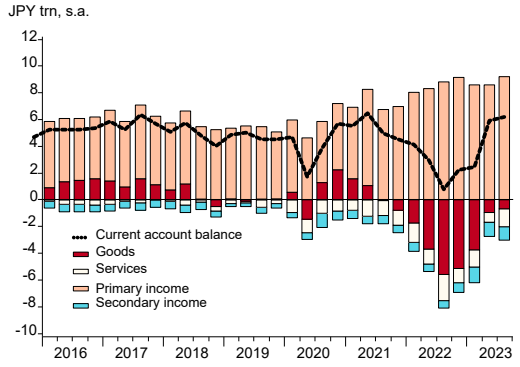
Source: BOJ; Haver Analytics

A.2 External Sector and the Balance of Payments

6. Japan's external position has stayed strong, supported by a substantial primary income surplus and a steadily narrowing trade deficit, alongside a decrease in net capital outflows. In 2022, the current account posted a surplus of 1.9 percent of GDP. In Q1-Q3 2023, the current account surplus rose to 3.5 percent of GDP, as the trade deficit narrowed (Figure 7). The reduction in the trade deficit was facilitated by the recovery of exports, driven mainly by rising automobiles and capital goods exports to the US and Europe. Meanwhile, imports declined sharply due to lower energy prices. The services account deficit narrowed, thanks largely to the steady rise of inbound tourism with the easing of border restrictions. The primary income surplus remained strong in the first three quarters of 2023, more than offsetting the trade deficit. The financial account exhibited net outflows in Q1-Q3 2023, marked by volatility in its

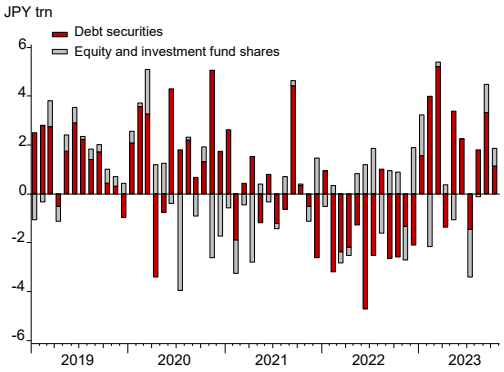
various components. There was an outflow of almost JPY15 trillion of portfolio investment in the first quarter, which reversed to inflows of around JPY9.2 trillion in the second quarter as foreign investors were attracted by the strong performance of the stock market, partly driven by reforms of the Tokyo Stock Exchange.[3] Amid the inflow to the stock market, overall portfolio flows for Q1-Q3 remain negative as Japanese investors bought foreign bonds after the massive sell-off in 2022 (Figure 8). Meanwhile, after collapsing in 2020, outward FDI has recovered, reflecting mainly a surge in reinvested earnings based on the good performance of overseas operations. Despite global economic uncertainties, outward FDI is expected to remain robust in 2023. The current account surplus is projected to remain positive at 2.8 percent and 3.2 percent of GDP in 2023 and 2024, respectively, due to the narrowing of the trade and service deficit, while the primary income surplus remains sizable.

Figure 7. Current Account Balance



Source: BOJ; Ministry of Finance Japan (JMOF); Haver Analytics

Figure 8. Net Purchases of Foreign Securities by Residents



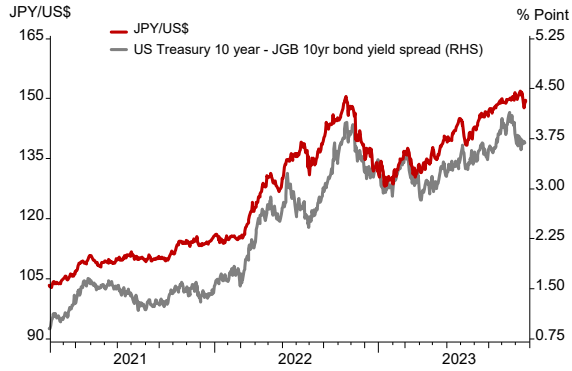
Source: JMOF; Haver Analytics

7. The yen's depreciation pressure has remained in recent months, reflecting a divergence of monetary policy with the US. After reaching a 32-year low of nearly JPY152 per USD on October 21, 2022, the yen strengthened in early 2023, reflecting narrowing interest rate differentials. However, since April, the yen has faced renewed depreciation pressure due to continuing dovish signals from the BOJ, while the U.S. Fed has maintained a hawkish stance. The yen surpassed JPY151 per USD at the end of October 2023, while the gap between 10-year U.S. bond yields and those of JGBs surged to its highest level in more than 22 years. The narrowing of the interest rate differential in November 2023 has eased some pressure on the yen (Figure 9). The Japanese government has repeatedly signaled that it would not rule out FX intervention to curb excessive currency volatility. In September 2022, for the first time in 24 years after the yen slipped to JPY145 per USD, the authorities conducted yen-buying intervention. They intervened again a month later when the yen fell to a three-decade low (Figure 10). Due to these interventions, including FX valuation effects, Japan's FX reserves fell by 8.1 percent, reaching USD1.08 trillion in October 2022, but they have since recovered to USD1.11 trillion in October 2023. Meanwhile, the weak yen has continued to provide a boost to corporate earnings

[3] The Tokyo Stock Exchange (TSE) has embarked on reforms to enhance corporate governance, including revamping the exchange into three sections – Prime, Standard and Growth. These reforms are aimed at spurring investor activism towards greater capital efficiency, shareholder returns and investor participation in Japan's stock market, resulting in special dividends and share buy backs that have attracted the interest of foreign investors.

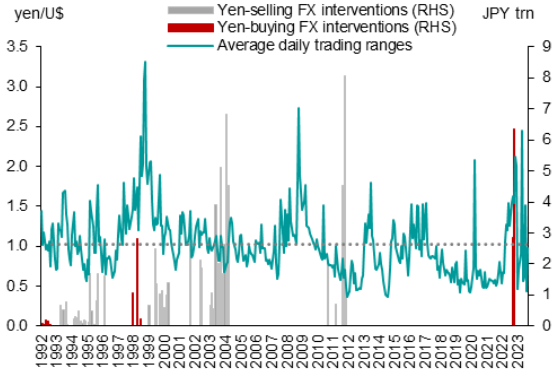
and the stock market. The Nikkei 225 was up by 18 percent for the year as of the end of November, outperforming the S&P500 and other major markets.

Figure 9. USD/JPY and Interest Rate Differentials



Source: BOJ; Haver Analytics

Figure 10. Average Daily Volatility of USD/JPY and FX Interventions



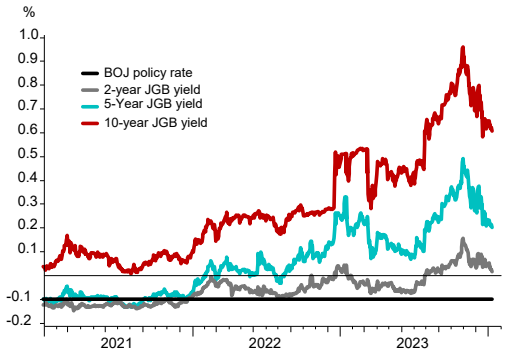
Source: JMOF; Haver Analytics; Bloomberg; AMRO staff calculations
Note: Average daily trading ranges are based on the monthly averages of the differences between the daily highs and lows of the USD/JPY rates. The dotted line indicates the period average from January 1992 to November 2022.

A.3 Monetary Conditions and the Financial Sector

8. The recent adjustments to the BOJ's yield curve control (YCC) policy were aimed at improving bond market functioning, while maintaining an accommodative monetary policy stance. In July 2023, the BOJ introduced greater flexibility to the YCC, allowing the 10-year JGB yield to rise to 1 percent, up from its previous cap at 0.5 percent. As a result, the BOJ would not have to conduct unlimited fixed-rate bond purchasing operations to rein in the long-term yield, unless the yield were to exceed 1 percent. The BOJ described this as a technical tweak to ensure the sustainability of monetary easing, rather than a tightening of monetary policy.[4] In October 2023, the BOJ further adjusted the YCC framework by making 1 percent as a reference rate—instead of a hard ceiling—and ceased to reference ±0.50 percent as a range for the 10-year JGB yields fluctuations. It also removed the reference to daily fixed-rate bond-buying operations and would only purchase JGBs when necessary, such as in response to a sharp rise in yields. Following the YCC adjustments in July and October, the 10-year JGB yield has steadily risen above 0.5 percent and reached nearly 1 percent in early November before declining to around 0.6 percent at the end of 2023 (Figure 11). Concerns about bond market dysfunction have also diminished. According to the BOJ's bond market survey, the diffusion index for the degree of bond market functioning from the surveyed institutions' viewpoint improved from - 64 percentage points in February 2023 to - 31 percentage points in the November 2023 survey (Figure 12).

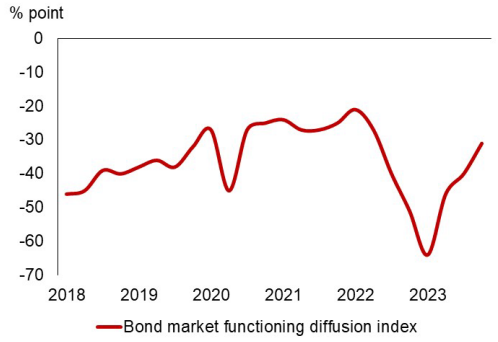
[4] Market reactions were relatively subdued in July 2023, in contrast to the surprise policy adjustment in December 2022, when the band around the 0 percent 10-year yield target was expanded to ±0.50 percent from ±0.25 percent. Amid heightened speculation over another policy change at the next meeting, the BOJ had to purchase large amounts of JGBs to defend the upper ceiling.

Figure 11. JGB Yields and BOJ Policy Rate



Source: BOJ; Haver Analytics

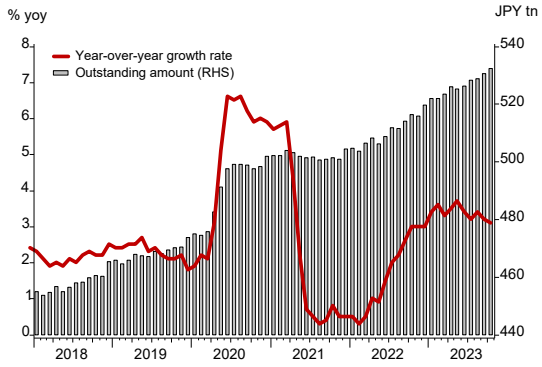
Figure 12. Degree of Bond Market Functioning



Source: BOJ

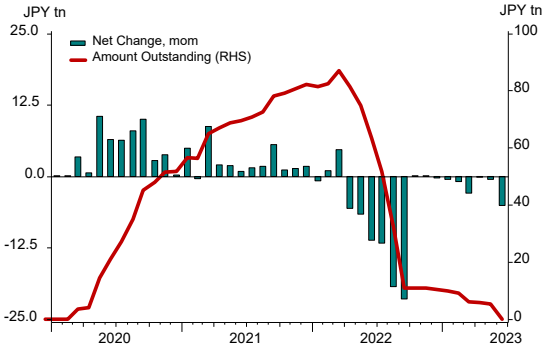
9. Credit growth has remained stable despite the termination of most pandemic-related financial relief measures. Bank lending expanded by over 3 percent (yoy) in the first ten months of 2023, a rate higher than the pre-pandemic 2-3 percent level (Figure 13). The robust credit growth has continued despite the termination of government-supported loans and financial relief measures related to the COVID-19 pandemic (Figure 14). The continued growth in loans can be attributed to increased demand for corporate loans, driven by the resumption of economic activities post-pandemic and higher cost of inputs due to the rise in raw material prices. Corporate lending has expanded across a wide range of sectors, including real estate, manufacturing, electricity and gas. While loans to individuals continued to rise, the pace slowed slightly due to softening demand for housing loans. Overall, banks have maintained an accommodative lending stance. The Diffusion Index in the Tankan Survey for financial institutions' lending attitudes perceived by firms, stood at 14 for large firms and 14-18 for SMEs as of September 2023, indicating active lending by banks.

Figure 13. Domestic Banks' Lending



Source: BOJ; Haver Analytics

Figure 14. BOJ Special Funds-supplying Operations to Facilitate Financing in Response to COVID-19

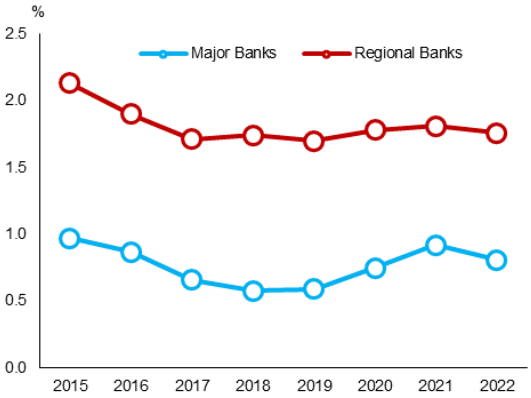


Source: BOJ; Haver Analytics

10. The banking sector as a whole continues to be sound. The asset quality of the banking system continued to be strong, with the non-performing loan (NPL) ratio standing at 0.8 percent for major banks and 1.7 percent for regional banks as of March 2023. This marks a slight improvement from March 2022, when major banks had an NPL ratio of 0.9 percent and regional

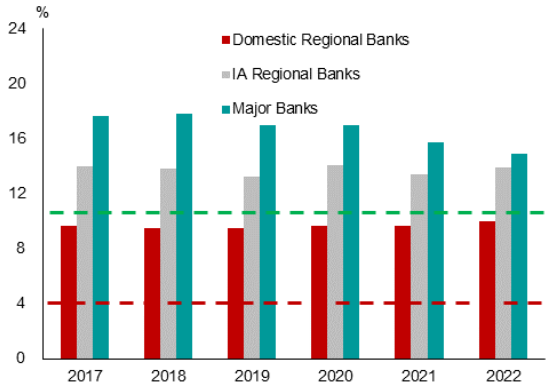
banks' ratio was 1.8 percent (Figure 15). Capital adequacy ratios (CARs) have consistently exceeded regulatory requirements. In the case of major banks, the average CAR (14.9 percent as of March 2023) was decreasing but still above the regulatory requirement of 10.5 percent. Domestic regional and internationally active regional banks have seen a modest improvement in their CAR (10.0 and 13.9 percent) compared to the previous year, exceeding the regulatory minimum levels of 4 percent and 10.5 percent (Figure 16). [5] Regarding profitability, major banks saw an uptick in FY2022 due to higher net interest income, and regional banks saw an improvement due to an increase in gains on stock transactions and other factors. Major banks reported losses from overseas portfolio investments in FY2022. Moreover, while short-term interest rates in Japan have remained in negative territory, long-term interest rates have experienced a significant increase. In response to this, Japanese banks have reduced their investment in JGBs.[6] Liquidity conditions have remained adequate, supported by steady deposit growth. While the liquidity coverage ratios (LCRs) at Japanese megabanks slightly decreased in FY2022 due to a reduction in high-quality liquid assets, they remain comparable to those of other global systemically important banks (G-SIBS).[7]

Figure 15. Japanese Banks' NPLs



Source: Financial Services Agency

Figure 16. Japanese Banks' CARs



Source: Financial Services Agency; Haver Analytics
Note: Major banks refer to international active major banks defined in the FSA's "Overview of Major Banks' Financial Results". IA Regional Bank represents for Internationally Active Regional Bank. The red dot line represents the minimum regulatory CAR of 4 percent for domestic banks. The green dot line represents the minimum regulatory CAR of 10.5 percent for internationally active banks.

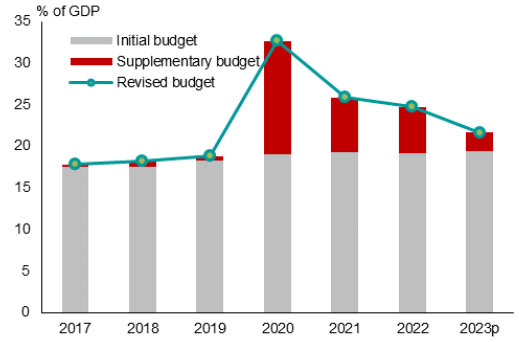
A.4. Fiscal Sector

11. Fiscal policy remains supportive of the economy. In FY 2022, the government extended economic support through the implementation of two large supplementary budgets.[8] Amid ongoing stimulus spending, strong tax revenue collection played a key role in reducing the fiscal deficit from 5.9 percent of GDP in FY2021 to 3.6 percent of GDP in FY2022. In November 2023, the government announced a supplementary budget valued at JPY13.2 trillion, equivalent

[5] The Financial Services Agency of Japan is known to apply relatively low regulatory ratios to address the low profitability of domestic regional banks and encourage the supply of funds to local companies.
[6] According to Ministry of Finance, JGB held by Japanese banks amounted to 175.2 trillion yen as of the end of 2022, down 10.2 percent from the previous year (195.2 trillion yen).
[7] As of March 2023, the liquidity coverage ratios were 152.2 percent at the Mitsubishi UFG group, 130.5 percent at the Sumitomo Mitsui group, and 130.6 percent at the Mizuho group, compared to the Basel III threshold of 100 percent.
[8] The government enacted two supplementary budgets for FY2022 on May and December amounting to JPY2.7 trillion (0.5 percent of GDP) and JPY28.9 trillion (5.3 percent of GDP), respectively.

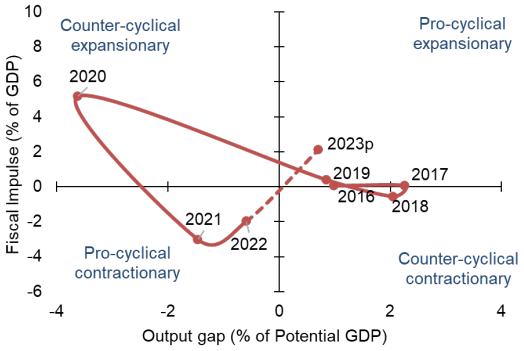
to approximately 2.2 percent of GDP (Figure 17).[9] The fiscal deficit was initially expected to decline further in FY2023 with the termination of COVID-19 related measures. However, due to the supplementary budget, the fiscal deficit for FY2023 is now estimated to rise to 5.2 percent of GDP, and the fiscal policy stance has become procyclical (Figure 18). The government debt-to-GDP ratio, which increased from 259 percent in FY2021 to 261 percent in FY2022 due to pandemic-related expenditures, is expected to decrease to 260 percent in FY2023. This shift is attributed to strong growth and high inflation, resulting in favorable debt dynamics that more than offset the higher deficit.

Figure 17. Initial and Supplementary Budgets



Source: JMOF
Note: FY2023 figures are based on the supplementary budget proposal and AMRO's nominal GDP projection.

Figure 18. Fiscal Stance and Output Gap



Source: JMOF; Cabinet Office; AMRO staff projections
Note: Based on the central government; FY2023 figures are based on AMRO staff projections.

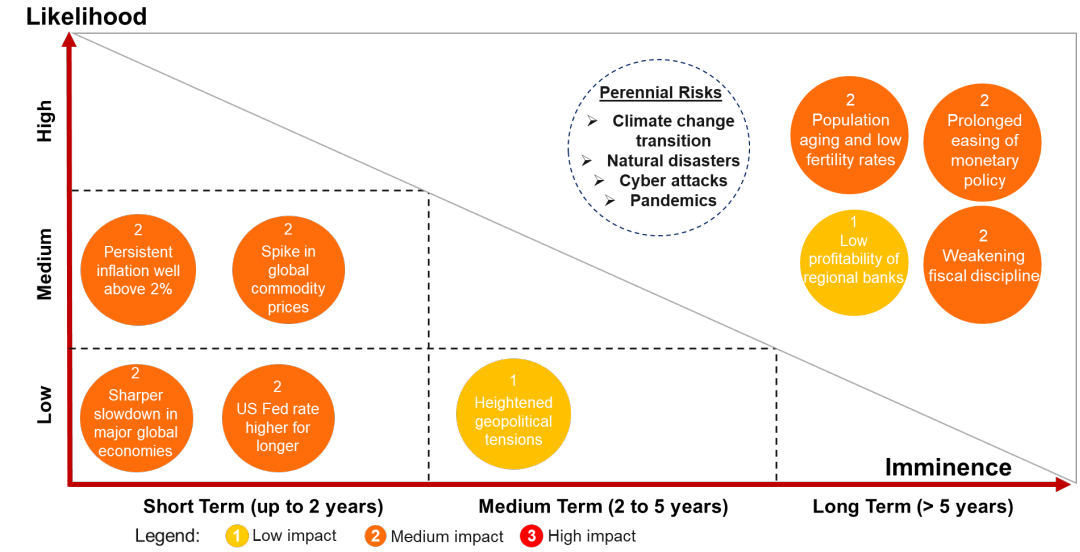
12. In 2023, the government's focus has been on implementing economic policies to mitigate the impact of high prices on the cost of living, along with structural reforms aimed at boosting potential growth. In June 2023, the government announced the "Basic Policy for Economic and Fiscal Management and Reform 2023", which aims to (i) help contain price increases; (ii) support structural wage increases, and (iii) provide a conducive environment for investment and growth. To mitigate the impact of commodity price shocks and depreciation of the yen, households and businesses were provided with subsidies for fuel, electricity and gas. The LNG supply system was also strengthened through the diversification of suppliers and build-up of storage capacity, together with efforts to promote domestic production of feeds and fertilizers. To support a resilient economic recovery after the pandemic, the government promoted continuous high wage increases and provided support for SMEs. Under the broad framework of "New Form of Capitalism", the government continued to promote investment in human capital, new technologies, startups, green transformation (GX) and digital transformation. To reduce risks related to unexpected shocks or supply chain disruptions, greater efforts were made to enhance the resiliency of the supply chains and promote economic security. Strong efforts have also been made to enhance support for children and child-rearing, to address concerns of falling birth rate and an aging society. An enhanced focus on national defense has also been announced, with the goal of reaching 2 percent of GDP in defense spending over the next 5 years.

[9] The package includes inflation relief measures such as a temporary across-the-board income tax cut, subsidies for low-income households, the extension of fuel, electricity and gas subsidies until March 2024. The package also includes government subsidies for SMEs that implement pay rises, funds to foster growth in strategic sectors, support for childcare to help tackle the nation's declining birth rate and steps to ensure the safety and security of the country.

B. Risks, Vulnerabilities and Challenges

13. The economy's path towards sustained recovery from the pandemic is challenged by several downside risks. Key risk factors for Japan's economy in the short term, where risks to growth are tilted to the downside, stem mainly from the external sector. These factors include a sharp slowdown in major global economies and a potential spike in global commodity prices due to geopolitical events. Japan's central role in trade and deep integration into global supply chains also expose it to the risk of deepening geo-economic fragmentation over the medium-to-long term. On the domestic front, a key risk in the short term is the resurgence of inflation well above the central bank's 2 percent target. Meanwhile, other medium- to longer-term vulnerabilities and challenges stemming from domestic sources include weakening fiscal discipline, side effects of prolonged monetary easing, and the demographic drag caused by population aging and low fertility rates.

Figure 19. Japan: Country Risk Map



Source: AMRO staff assessment

B.1 Near-term Risks to the Macro Outlook

14. A sudden spike in global commodity prices could lead to a resurgence of inflation, adding complexity to the BOJ's monetary policy operations. Given Japan's heavy reliance on imports for energy and raw material needs, an upward spike in commodity prices would be a major shock to its economy. Inflation would increase due to the rising cost of imported goods, especially energy. The higher inflation would erode real income and dampen consumer sentiment, leading to reduced domestic demand and slower economic growth. Additionally, the stagflationary condition would complicate the BOJ's exit from ultra-easy monetary policy. Normalizing policy would not only fail to alleviate supply-side inflationary pressures but also act as a headwind to growth. The high inflation may cause the government to spend more on subsidies to mitigate the impact of high prices, resulting in wider deficits and higher debt.

15. Higher-for-longer US Fed interest rates could further weaken the yen and make imports more expensive. Japan has the most accommodative monetary policy and the widest interest rate differential with the US. If the divergence in monetary policies continues, especially with the US continuing with its hawkish stance, it could lead to further yen depreciation and higher import prices. This situation could exacerbate inflationary pressures, especially as inflation becomes more entrenched. The adverse effects of higher imported inflation will be particularly burdensome for Japanese households and small businesses.

16. Persistent inflation of well above 2 percent may require a sharp monetary tightening to bring inflation under control, potentially resulting in adverse consequences. If inflation stays well above the BOJ's inflation target of 2 percent for an extended period, driven by either strong demand (e.g., fiscal stimulus, sustained high wage growth leading to higher consumption, or a surge in tourism) or supply shocks that push inflation expectations above levels consistent with the central bank's inflation target, or a combination of both (see Annex 2 "Decomposing Supply and Demand-driven Inflation in Japan"), a tightening of monetary policy might be necessary to curb inflationary pressure and anchor inflation expectations to prevent it from drifting above the target.[10] However, if the BOJ does not respond in a timely fashion and falls 'behind the curve,' it might be compelled to aggressively raise interest rates to curb inflationary pressure, which could dampen demand and potentially trigger a recession. On the other hand, given the uncertainty of future growth and wage path, downside risks to inflation are likewise present, particularly with weak growth momentum or insufficient wage hikes that may cause the economy to fall back into deflation.

17. A more pronounced deceleration in major global economies, leading to a global recession, would have an adverse impact on Japan's growth. This is because Japan's economy is highly dependent on manufacturing exports, particularly electronics, automobiles, machinery and technology products. The demand for these items would be severely affected in the event of a global slowdown. Additionally, since Japanese companies are major investors worldwide, a global slowdown would also negatively impact their sales and profits.

Authorities' Views

18. Concerning the staff's decomposition analysis of the inflation dynamics, the BOJ opines that the contribution of demand components is overly represented, possibly due to the model's mis-identification. With respect to the CPI, it is difficult to identify demand and supply factors. The rise in Japanese prices in the current phase appears to have been largely influenced by the existing rise in import prices. However, in Figure A2.5 and Figure BA1.1, the contribution of demand-driven factors is large, which is highly likely that they are not well discriminated. While the demand has been recovering recently, the analysis's result that demand-driven demand peaked in Q1 2023 is also disconcerting to the BOJ's view.

[10] Beyond cyclical inflation, structural inflation pressures are emerging, such as from geopolitical tensions that reshape supply chains and energy transition/decarbonization.

B.2 Longer-term Challenges and Vulnerabilities

19. Heightened geopolitical tensions pose risks to Japan's trade and investment. Should the ongoing trade tensions between the United States and China escalate further, the fragmentation of global supply chains could become more pronounced. It is crucial to recognize that changes in global economic landscape due to geopolitical risks can adversely affect not only Japan's trade but also other aspects such as inflation, investments and the reliability of established supply chain networks. Tensions between major economies like the U.S. and China, both major partners in Japan's exports and imports, could amplify risks through trade and investment disruptions. Sustained disruptions in supply chains due to these geopolitical tensions might lead to higher costs and inflation and lower growth. Considering Japan's high dependence on energy and food imports, increases in global energy and food prices could also exert upward pressure on domestic inflation. However, Japan could also benefit from the opportunities associated with the reconfiguration of supply chains, which would offset some of the adverse effects. As a major technology and manufacturing supplier, Japan could be an attractive location for MNCs seeking to diversify their supply chains.

20. Regional banks continue to face the challenges of low profitability, a consequence of anemic growth in the regional economy compounded by an aging population. Regional banks are exposed to structural challenges due to the aging population, which include a weaker customer base [11] and difficulties in securing profitable business models. The lackluster performance of the local economy stands as a primary obstacle impeding the enhancement of profitability of regional banks. High overhead cost of operating regional branches and a weaker quality of loans, compared to major banks, also weigh on the profitability of regional banks. [12] With increasing competition, small and medium-sized regional banks heavily reliant on local lending, may encounter greater difficulties in improving profitability while maintaining asset quality. Addressing these issues is vital to ensure the ability of the banks to survive in the rapidly changing financial environment. Moreover, considering that regional banks offer financial access to the local population, including local businesses and the elderly, the improvement of profitability for regional banks is crucial.

21. The deteriorating fiscal position raises concerns about Japan's long-term fiscal sustainability. The proliferation of numerous new initiatives, such as childcare and defense, which become structurally integrated into the budget, could result in persistent and substantial fiscal deficits if they are not matched by commensurate expenditure cuts in other areas or revenue raising measures. These deficits are not only challenging to reduce but are also prone to expansion, further exacerbating fiscal imbalance and delaying plans for fiscal consolidation. This weakening of fiscal discipline could erode investor confidence in Japan's ability to service its debt and raise long-term concerns about the country's fiscal sustainability, particularly given

[11] Japan's three major metropolitan areas - the Tokyo area, Nagoya area, and Osaka area - continue to attract a steady influx of population from other regions. As of 2022, the Tokyo area has seen a population inflow for 27 consecutive years, and both Nagoya and Osaka areas have experienced 10 years of continuous population influx.

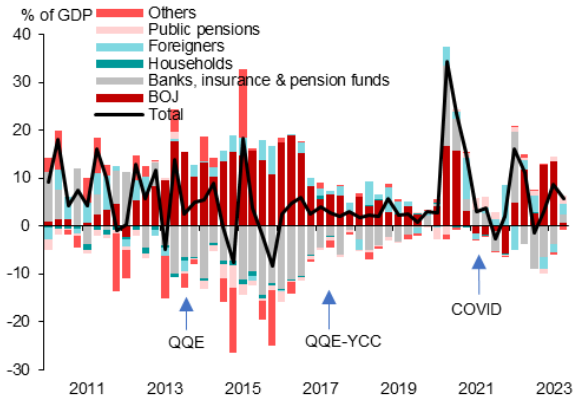
[12] According to the Bank of Japan, the return on risk weighted assets (RORA) for regional banks is currently near its historical low, standing at around 2.5 percent as of FY2022. Meanwhile, major banks have consistently maintained a level close to 4 percent over the past 10 years.

the rising social security expenditures. In addition, the current low-interest rate environment has made the high public debt manageable; however, the fiscal position could become unsustainable with higher interest rates.[13] Steadily increasing debt even during non-crisis periods may result in a narrower fiscal space and decreased ability to respond to a crisis in the future, particularly those requiring significant fiscal resources, such as a large-scale natural disaster, to which Japan is prone.

22. Prolonged ultra-easy monetary policy may give rise to adverse side effects, including market distortions, the potential for weak companies to become "zombified," and heightened financial vulnerabilities. The BOJ's decade-long ultra-easy monetary policy has resulted in unintended adverse side effects. As of September 2023, the BOJ held about 54 percent of outstanding JGBs. The BOJ's outsized presence in financial markets has reduced liquidity in the JGB market (Figure 20). Moreover, prolonged ultra-easy monetary policy has also weakened the link between risks and returns, allowing inefficient companies to survive, thereby impeding economic dynamism. Declining profitability of financial companies may encourage excessive risk-taking, which could pose risks to financial stability. The decades-long low interest rate environment has resulted in capital outflows in search of higher yield, which may have global spillovers when interest rates rise in Japan. The easy monetary policy combined with YCC has also significantly enlarged the BOJ's balance sheet, which could result in huge valuation losses when interest rates rise.

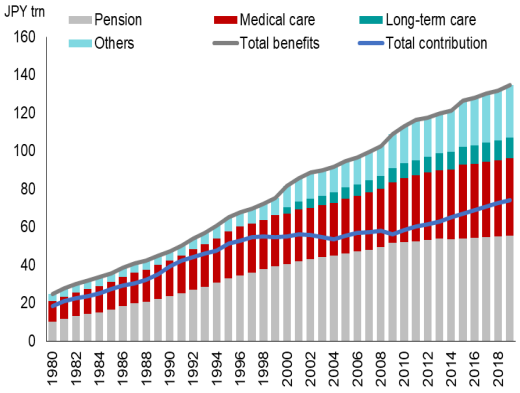
23. Demographic drag resulting from population aging and low fertility rates continues to impact the economy. The steady increase in the elderly population, coupled with a declining birth rate, has led to a gradual decline in the labor force, becoming a significant cause of labor shortage over time. This trend is likely to persist and continue to weigh on potential growth. Moreover, the trend increase in social security-related spending, including medical and long-term care, poses a significant risk to fiscal sustainability (Figure 21).

Figure 20. New JGB Issuances Held by Investors



Source: BOJ, Cabinet Office, AMRO staff calculations
Note: Based on 4-quarter moving averages of nominal GDP.

Figure 21. Social Security Benefits and Contributions in Japan



Source: MHLW, AMRO staff calculations

[13] If market interest rates rise by 2 percentage points from the current levels, Japan's public debt is estimated to rise by an additional 7 percentage points by the end of 2032 compared to the baseline.

Authorities' Views

24. Risks of losses by the central bank due to the expansion of their balance sheet are determined by the shape of the yield curve and the pace of reinvestment. A large central bank balance sheet does not inherently lead to losses during policy tightening. Should the yield curve adopt a positive slope amidst tightening, this scenario could generate profits for the central bank. This is because the central bank's assets are progressively substituted with higher-yield assets through the reinvestment of proceeds from the redemption of maturing holdings. Therefore, the profitability of a central bank depends on the shape of the yield curve and the speed at which redemption proceeds from maturing assets are reinvested. Having said that, the BOJ has also worked to enhance its capital by expanding measures pertaining to provisions for possible losses on bond transactions in order to reduce amplitude of profits changes during monetary policy cycle to ensure its financial soundness. It should also be noted that, even if central bank temporarily makes losses or has negative equity, this does not impede its ability to conduct monetary policy.

C. Policy Discussions and Recommendations

C.1 Preparing for Resumption of Traditional Monetary Policy

25. Given the increasing risk of higher inflation becoming entrenched, the BOJ should begin to move towards the gradual normalization of its ultra-easy monetary policy. In light of the uncertainties surrounding Japan's inflation outlook, especially over wage growth and commodity prices, the BOJ's current accommodative monetary policy stance remains appropriate for now. However, Japan's high inflation has persisted longer than initially anticipated, prompting the BOJ to revise its inflation outlook upward several times. Several indicators suggest that underlying inflation has been gaining momentum in Japan, primarily driven by price increases for goods and services unrelated to energy. In particular, the "core-core" CPI (less fresh food and energy) has surged to over 4 percent (yoy) from April to October 2023, as the pass-through effects of high commodity prices and a weak yen strengthened with some time lags. Furthermore, services price inflation has reached a high of around 2 percent (yoy), and the output gap is estimated to have improved and is expected to remain positive going forward. While the BOJ places greater emphasis on the trend of moderate wage growth, it must also weigh the growing risk of higher inflation becoming entrenched if current high inflation remains persistent, partly due to the shift in firms' pass-through behavior, causing inflationary expectations to become anchored higher than BOJ's price stability target of 2 percent. Additionally, given the sustained monetary policy divergence between the U.S. and Japan, the yen could be subject to recurrent sharp depreciation which would put upward pressure on inflation. Consequently, the BOJ needs to stand ready for well-timed and gradual policy adjustments to reduce the persistently high inflation in order to stabilize and anchor inflation expectations.

26. The YCC policy should be phased out to allow long-term interest rates to align more closely with the market, while maintaining the flexibility to intervene to smooth excessive volatility in the bond markets. The recent adjustments implemented by the BOJ to allow for greater flexibility within its YCC policy are commendable. The BOJ's transition from imposing strict narrow boundaries on 10-year JGB yield movements to providing a reference point at 1 percent has facilitated the development of yield curves that more accurately reflect the market. Initially introduced in September 2016, the BOJ's YCC policy aimed to anchor 10-year JGB yields at 0 percent. This decision was made when long-term JGB yields fell significantly below the short-term policy rate of -0.1 percent, as the BOJ's JGB purchases combined with then-newly introduced negative interest rate policy, exerted strong downward pressure on the long-term interest rates. However, since then, Japan's CPI inflation rates, excluding temporary factors,[14] have been consistently positive. Furthermore, our decomposition analysis of core CPI inflation indicates that demand-driven factors have persistently contributed to its sustained elevation since 2022 (see Annex 2 "Decomposing Supply and Demand-driven Inflation in Japan"), suggesting that the economy has effectively moved away from the deflationary phase. Some recent studies have highlighted that a persistently low interest rate environment can hamper economic activity by intensifying market concentration and lowering productivity.[15] Taking into account the side-effects of prolonged monetary easing and the recent shift from a low deflationary to a high inflation environment, the BOJ should phase out the YCC policy, particularly its control of 10-year JGB yields, at the earliest opportune time to allow long-term interest rates to be determined in the market (see Annex 3 "Impact of the BOJ's YCC Exit on Long-term Interest Rates"). However, the BOJ can maintain the flexibility to engage in ad hoc JGB purchases to mitigate excessive volatilities in bond markets.

27. The timely unwinding of the negative interest rate policy would help streamline monetary policy parameters post-pandemic, while providing the policy space against potential future economic shocks. The BOJ needs to consider moving away from the negative interest rate policy to allow the short-term policy rate to play its traditional role in managing inflation and anchoring inflationary expectations once inflation has met the price stability target in a sustainable manner (See Annex 4 "Estimating the Neutral Rate of Interest in Japan"). This gradual policy normalization process can help the BOJ avoid the risk of having to make a sharp tightening in monetary policy to bring an elevated inflation down to 2 percent, while also creating policy space to implement easing measures in response to future economic shocks. Together with the unwinding of the YCC policy, this shift would enable the BOJ's policy interest rates to function effectively as a monetary policy instrument, which would improve its communication with market participants and provide a clearer signal regarding the policy stance.

28. The BOJ's ongoing comprehensive review of the monetary policy should provide guidance to policymakers, enabling them to conduct monetary policy in a manner that

[14] These temporary factors include mobile phone charges, and the effects of the consumption tax hikes, policy concerning the provision of free education, and travel subsidy programs.
[15] See Kiyotaki, Moore, and Zhang, Shengxing (2021), Credit Horizons, *NBER Working Paper* No. w28742, and Liu, Mian and Sufi (2022), Low Interest Rates, Market Power, and Productivity Growth, *Econometrica*, Vol. 90(1).

plays a more effective role in managing inflation in the post-pandemic era. After the pandemic, central banks are confronted with the challenges of adapting their conventional inflation targeting framework to address a "new normal", characterized by a sustained period of elevated inflation. In this context, it is indeed timely that the BOJ has embarked on a comprehensive review of its monetary policy. Although Japan's inflation has surged to a historically high level, there remains significant uncertainty regarding whether the BOJ's current 2-percent target is compatible with or appropriate for an economy with an aging population and potential growth rates below 1 percent. Building upon the insights gained from the comprehensive review, both the government and the BOJ may need to revisit the 2013 Accord to explore the possibility of adjusting the current monetary policy framework, including the adoption of a price stability target band of 1 to 3 percent over the longer term. This shift to an inflation target band would provide the BOJ with greater flexibility in conducting monetary policy, as it would enable the central bank to take into account Japan's unique economic characteristics associated with a rapidly aging population and prolonged years of deflation while aligning with its peers' 2 percent inflation target.

29. Given the complexity of its monetary policy framework, the BOJ can enhance market stability and manage volatilities by effectively communicating and guiding market expectations. Against the backdrop of heightened uncertainties at home and abroad, the BOJ's clear communication on monetary policy direction and operations has been hindered by its complex monetary policy framework. The operational complexity of its monetary policy has at times led to varied interpretations by market participants, which can affect market volatility. For instance, the adjustment to YCC in December 2022 came as a surprise, and increased market volatility. Nonetheless, the BOJ has made commendable progress in its communication since then and provided greater clarity on its intention and operational framework. This serves as a precursor to further adjustments and has helped guide market expectations, as reflected in the orderly movement of the 10-year JGB yields.

Authorities' Views

30. The BOJ is committed to maintaining its current accommodative monetary policy framework for now. Analysis of recent trends indicates that inflation is mainly driven by supply side factors, due to stronger and longer pass-through of cost increases by firms, while underlying drivers of inflation remain below the inflation target. As these supply-side issues are transient in nature, they do not warrant a change in monetary policy at this juncture. In this regard, current easy monetary policy stance needs to be maintained until such time that sustainable and sustained achievement of the price stability target of 2 percent is in sight. With regards to the ongoing comprehensive review of monetary policy, it aims to provide an assessment of unconventional monetary policies over the past 25 years, including their side effects. However, the review does not include an assessment of the 2 percent price stability target. While market volatility temporarily increased after the adjustment to YCC in December 2022, sustained focus and clear communication with the market have since reduced volatility and enhanced market functioning. Agile market operations have maintained the stability of the 10-year JGB yields amid

subsequent modifications to YCC in July and October 2023.To enhance communication, the BOJ has fully leveraged multiple channels with market participants to support clear and effective communication of BOJ policies and operations.

C.2 Macroprudential Policy to Safeguard Financial Stability

31. Regulators need to closely supervise financial institutions to ensure their financial soundness. The authorities should continue to monitor the resilience of the banking system by conducting market and credit risk stress tests. In particular, if domestic long-term interest rates were to rise and the yen were to weaken, as has been the case recently, losses may occur from their investment in bonds. Hence, it would be useful to incorporate scenarios in stress testing for the banking sector where domestic long-term interest rates either stay persistently high for an extended period or experience a sharper increase than the recent upward trend. At the same time, the authorities need to monitor the risk of heightened interest rate volatility if there is a rebalancing of banks' investment into short-term securities due to an expected rise in long-term interest rates. In a scenario where bank lending continues to expand robustly, it is imperative to closely monitor whether loans are becoming concentrated in particular sectors as such concentration may undermine the financial soundness of banks. Lastly, in the process of completely terminating financial support programs implemented during the pandemic[16], it is also important to be mindful of the risk of an increase in corporate bankruptcies.

32. Financial policy should continue its efforts to encourage regional banks to adapt to the rapidly changing environment, improving their efficiency and profits. The Japanese government has introduced various measures to restructure regional banks.[17] In addition, regional banks themselves have made efforts not only to reduce operating expenses but also to diversify businesses into areas such as leasing and consulting services. However, regional banks continue to face challenges due to their relatively low profitability. Therefore, it is imperative to implement policies that enable regional banks to seize opportunities in the changing business environment. The authorities could continue to support financial institutions' strategies for diversifying their business operations while promoting digital transformation through investments in IT systems. It is also important to revitalize the local economy, which serves as the foundation for regional banks' businesses. In this regard, the reform plan unveiled by the Japanese government in June 2023, which highlighted the revitalization of regional industries and digital infrastructure, represents a positive step forward. Additionally, some local governments are making efforts to stimulate the regional economy by attracting tourists or

[16] 'Super Low Interest' loan, introduced to support small and medium-sized businesses, will be terminated by March 2024
[17] An example is the exemption from the application of the Anti-Monopoly Act for a period of 10 years for regional bank mergers, provided that the new merged bank is judged to better serve its local communicates through leveraging the capacity generated by the merger. The Bank of Japan has also introduced Special Deposit Facility, expired at the end of March 2023, which aimed to strengthen the business foundations of regional banks.

foreign investors,[18] potentially enhancing the profitability of the banks by creating new business opportunities.

Authorities' Views

33. The overall soundness of the banking sector remains intact. Even under the current stress of rising interest rates and high inflation, both major and regional banks maintain capital adequacy ratios significantly above the regulatory minimum levels. Meanwhile, the large deposit base remains a stable and cheap source of funding for banks, supporting the overall liquidity of the banking system. Despite some reported rise in corporate bankruptcies with the termination of programs that were designed to provide support during the pandemic, most of these are small companies, with no reports of large losses. Meanwhile, overseas credit remains well diversified for mega banks. Although there has been some drag from foreign bond holdings as banks recorded valuation losses in 2022, overall investments in securities remain positive due to gains from domestic equity investment. The government continues to implement policy measures to support the regional banks. These include the revision of regulations on the scope of business and investment, aiming to enable these institutions to contribute broadly to building a sustainable society, including through digitalization and regional revitalization.

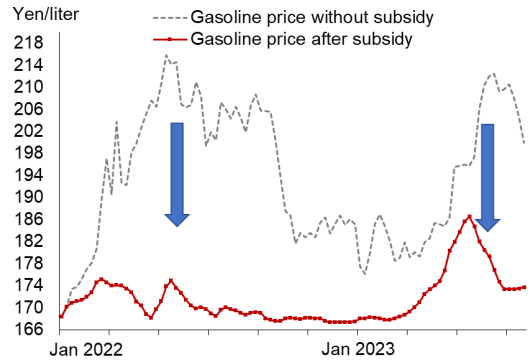
C.3 Strengthening Fiscal Prudence

34. With the economy recovering strongly, the emphasis should return to fiscal prudence after years of large fiscal stimulus policies to address the economic impact of the COVID-19 pandemic and provide subsidies to counter the effects of rising commodity prices. As the shock from the pandemic fades and the economy exhibits steady trend growth, there is no longer a need for economic stimulus policies. To curb both fiscal costs and economic distortions, it is imperative that the government phases out comprehensive subsidies to households and corporates, such as the gasoline subsidy (Figure 22), replacing them with targeted measures for low-income households. In this regard, the supplementary budget, which includes tax cuts approved by the government in November 2023 to boost the economy, carries risks. These measures may keep inflation elevated and set back fiscal consolidation efforts (Figure 23). Fiscal policy should refocus on the pre-pandemic fiscal consolidation plan to achieve a primary surplus in the medium term. Furthermore, the establishment of an independent fiscal institution (IFI)[19] is recommended to provide objective analysis and long-term projections of government debt. This institution can play an important role in determining the subsequent steps of the fiscal consolidation plan once the primary surplus is achieved, thereby enhancing its feasibility and effectiveness, steering public debt towards a downward trajectory. The IFI can also provide a comprehensive view of the overall fiscal accounts, including assessments on the sustainability and efficacy of fiscal policies in the various accounts of the

[18] For example, the Fukuoka prefectural government is hosting field trips for overseas schools and holding tourism campaigns to attract overseas tourists. Additionally, Kumamoto prefectural government is also actively promoting the creation of communities involving entrepreneurs, business managers and industry specialists (including from academia) to support growth, solve regional issues and realize new business opportunities.
[19] The establishment of an IFI for Japan has been proposed by several international organizations, including by AMRO (see AMRO Annual Consultation Report on Japan 2021 – Box C by Sota Nejime).

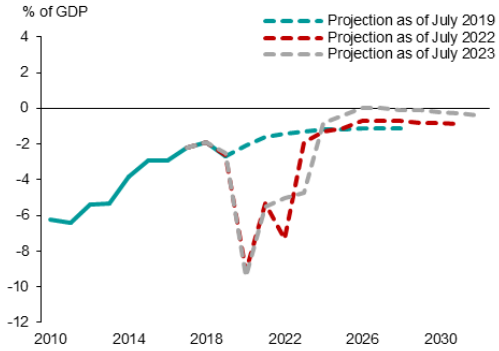
government (see Box A "Special Accounts and Fiscal Investment and Loan Program (FILP) in Japan).

Figure 22. Policy Effects of Gasoline Subsidy



Source: Agency for Natural Resources and Energy, Ministry of International Affairs and Communications

Figure 23. Primary Balance of Central and Local Governments

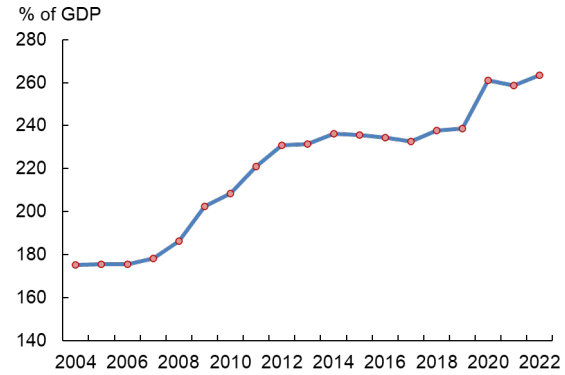


Source: Cabinet Office
Note: Based on each year's "baseline case" projections

35. The government needs to resume its fiscal consolidation plan to ensure long-term fiscal sustainability. A strong commitment to fiscal consolidation and discipline is essential, especially considering the very high public debt and rising interest rates. The importance of maintaining investor confidence through prudent fiscal management is underscored by the growing share of government debt held by foreigners, standing at around 14 percent of JGB, up from around 7 percent in 2010. As a first step, demonstrating a commitment to fiscal discipline requires adherence to the government's fiscal consolidation plan. However, stronger steps are needed, which includes specifying expenditure cuts and identifying sustainable revenue sources for emerging needs in areas like defense and childcare. The effectiveness of this process can be supported by the establishment of an IFI by providing an independent review of fiscal policies and economic conditions. Furthermore, the IFI can offer expert opinion on the need for adaptive policies (i.e. supplementary budgets) in response to changing economic conditions or unexpected shocks. Given the uncertainties surrounding economic growth and inflation, a further increase in government debt could raise investor concern, potentially leading to a sovereign rating downgrade,[20] especially if efforts towards fiscal consolidation are impeded by debt-financed fiscal stimulus measures. A conservative fiscal approach is warranted amid changing financial conditions, particularly considering that public debt increased by more than 20 percentage points during the pandemic (Figure 24). The debt is expected to rise moderately to 266.5 percent of GDP by 2032 under the baseline scenario (See Annex 5 "Debt Sustainability Analysis for Japan"). However, under an adverse scenario where new initiatives lead to a structural increase in the fiscal deficit, coupled with a significant escalation in interest rates, debt could reach as high as 275.6 percent of GDP by 2032 (Figure 25). To ensure economic stability, policymakers must prioritize prudent fiscal management by implementing spending cuts, exploring revenue-enhancing measures, and fostering a growth-friendly environment.

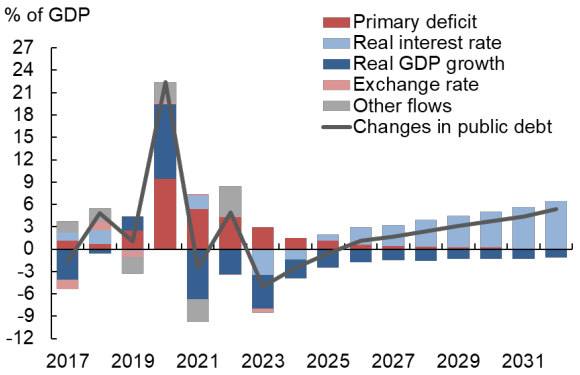
[20] For the detailed analysis, refer to Choi, den Ruijter, Jiang, and Moshammer (2022), "Japan's Sovereign Rating in the Post-Pandemic Era," AMRO Working Paper WP/22-03 (available at https://amro-asia.org/wp-content/uploads/dlm_uploads/2022/04/AMRO-WP_Japans-sovereign-rating-in-the-post-pandemic-era_final.pdf)

Figure 24. General Government Debt



Source: Cabinet Office; AMRO staff calculations

Figure 25. Debt Dynamics Under Adverse Scenario



Source: Cabinet Office; AMRO staff estimation
Note: Debt dynamics for FY2023-2032 are based on AMRO projections.

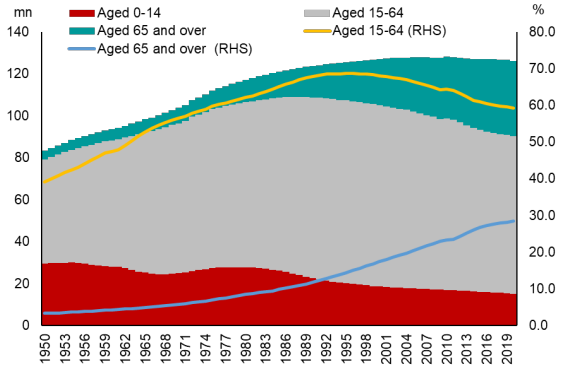
36. Enhancing revenue and strengthening spending efficiency are essential components in long-term fiscal consolidation efforts. Planned measures aimed at stimulating innovation, enhancing productivity, and increasing spending on childcare support and national defense underscore the imperative need for tax reform to mobilize the necessary resources. This could include a review of corporate tax, personal income tax, and tobacco tax to raise resources for enhancing future economic growth. Given Japan's relatively lower tax burden compared to other OECD countries, an increase in the consumption tax rate from the current 10 percent could also be considered. Accelerating the introduction of environmental taxation would not only raise revenue but also support the government's environmental targets and provide incentives for development of sustainable technologies and greener economic models. Alongside revenue-raising measures, improving expenditure efficiency will be necessary for fiscal consolidation, requiring expenditure cuts and resource reallocation. The need to optimize expenditure is particularly urgent given Japan's intention to increase defense and childcare spending, a move that must be managed carefully to avoid compromising other critical priorities.

37. Post-pandemic, the government should shift its focus away from short-term support measures to redirect efforts towards long-term structural reforms. Instead of relying on short-term economic programs or subsidies, the focus should increasingly be on structural reforms that fortify the resilience and growth potential of the economy. To enhance the long-term growth potential, the government should continue to promote strategic sectors, revitalize regional economies, and strengthen research and development. This is essential to ensure economic resilience and support the government's fiscal consolidation plan through a virtuous cycle of economic growth and higher revenues.

38. In the long term, there is a need for concerted efforts to reform social security, especially in light of the rapid aging of the population in Japan. Given Japan's demographic challenges, characterized by an aging population (Figure 26) and a declining fertility rate, alongside the growing financial strain on the social security system, a comprehensive reform

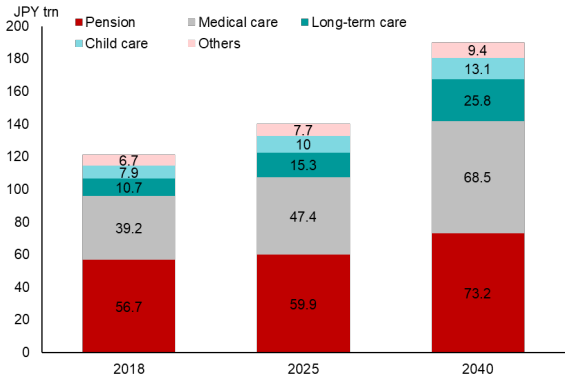
strategy is needed for ensuring fiscal sustainability. Although pension expenses have risen moderately, with social insurance contributions more than adequate to cover them. However, the escalating cost in medical and long-term care has become a major concern (Figure 27). The imbalance between these healthcare expenses and members' contributions has led to a growing dependence on fiscal resources and premiums from the working generation, rendering the current pay-as-you-go system increasingly untenable. The macroeconomic slide model [21] introduced in 2004, an integral component of enhancing the sustainability of the pension system, is highly commendable. Nevertheless, the fiscal vulnerability to rising medical and long-term care expenditures requires urgent reform. Regarding medical care, the implementation of higher co-payments for higher income elderly individuals in October 2022 will help improve the financial sustainability of healthcare services. However, Japan's social security system remains at a critical juncture. The rising costs, especially in healthcare and long-term care, coupled with an increasing reliance on the budget, necessitate urgent and comprehensive reform. This reform could include adjusting the contribution structure for both working-age and old-age members, further adjusting co-payment levels based on income and assets. It should also include the promotion of private insurance to encourage greater personal savings, along with the streamlining and integration of medical and long-term care services to reduce redundancies and costs. Additionally, incorporating wider use of digital healthcare records and promoting the use of generic drugs are essential aspects of this reform. Given the relatively low burden of tax and social security contributions compared to peer countries, there may also be scope for tax reforms to support these changes.

Figure 26. Population by Age Group



Source: National Institute of Population and Social Security Research (IPSS); AMRO staff compilation

Figure 27. Projection of Social Security Expenses



Source: MHLW

Authorities' Views

39. Fiscal consolidation remains a key objective of the government. With the output gap closed, the government now emphasizes the normalization of fiscal policy back to pre-pandemic level. However, the high inflation and uneven growth could still derail the recovery of the Japanese economy. In this regard, the economic package for FY2023 aims to mitigate the

[21] The macroeconomic slide model was part of the 2004 Pension Reform legislation, and enabled adjustment of pension benefits in line with changes in demographic variables such as life expectancy and macroeconomic indicators such as wage and inflation trends. By enabling adjustments to pension benefits without the need for legislative approval, the reform has enabled more adaptability in the pension system, helping ensure its long-run solvency and sustainability.

burden of rising prices on households and is not meant to boost short-term demand, similar to the pandemic period. To support the goal of creating a virtuous cycle of wage growth and rising consumption, the package also includes incentives to firms that provide wage increases. The economic package also aims to increase production capacity and enhance the long-term growth potential of the economy. This will be achieved through investments in research and development, the buildup of strategic sectors, and efforts towards enhanced digitalization and a green economy.

C.4 Structural Reforms

40. The urgency for labor market and childcare reform in Japan is becoming more pressing, driven by an aging population. The reform of labor market policies aims to increase flexibility and bolster productivity, crucial steps to counteract demographic and economic challenges (see Box B "Japan's Female Labor Force Participation - Key Achievements and Remaining Challenges"). A particularly welcome development has been policy changes that foster greater labor mobility and encourage the move away from the entrenched mindset of lifetime employment.[22] Over the medium to long term, labor shortages could be exacerbated, especially given the limited scope to further mobilize women and the elderly, as their participation rates have already significantly increased in the last decade to relatively high level by global standards. To address these challenges, crucial reforms should prioritize ongoing skills development and training for the workforce, promote greater digitalization, and embrace technological advancements to mitigate the intensifying labor shortages in the medium term. Policies to support childcare will also be crucial in addressing the issue of low and declining fertility rate and an aging population. In this regard, concrete steps announced by the government to provide support for families, including cash handouts, insurance coverage for childbirth costs, and increased maternity leave benefits, are welcome.

41. The government should foster supply chain diversification and digital transformation, essential for economic resilience and dynamism in a post-pandemic world. The COVID-19 pandemic has clearly demonstrated the importance of enhancing an economy's ability to adapt to rapidly changing circumstances by strengthening supply chain resilience and digital innovation. The government needs to conduct regular assessments to ensure the effective implementation of previously introduced strategies aimed at diversifying the supply chains. At the same time, recognizing Japan's emergence as a viable alternative for multinational companies (MNCs) seeking to diversify their supply chains, the authorities should implement non-protectionist measures to attract the MNCs to locate their production in Japan. The implementation of the "Strategy for the Digital Industry" should be prioritized. The Japanese government's recent commitment to implementing measures to boost the development of artificial intelligence[23] is a significant move toward digitalization. In particular, the development

[22] To enhance ability of companies to hire and fire based on skills and performance, job descriptions are now being issued by companies. To lessen the penalty of shifting jobs, the required time period before unemployment benefits are received will be relaxed.
[23] Prime Minister Fumio Kishida pledged that a part of an upcoming economic package will include measures to boost the development of artificial intelligence. The government will earmark funds to also facilitate the incorporation of AI in small and midsize companies and in medical and other fields. (October 2023)

of smart factories is essential to addressing labor shortages and enhancing productivity. Continuing to promote the usage of cashless e-payment is also pivotal for enhancing Japan's financial digitalization.

42. **The government's commendable revitalization efforts should be complemented by concrete plans to address other structural challenges.** To restore the international competitiveness[24] of its semiconductor industry and enhance supply chain resilience, the government is adopting a new industrial policy with an ambitious goal to triple the sale of chips to JPY15 trillion by 2030. The new strategy involves forming partnerships with overseas manufacturers and granting subsidies for chip manufacturing—a significant departure from past practices that focused on self-sufficiency and provided limited financial support to domestic firms.[25] While these revitalization efforts are commendable, the industry's success also hinges on securing enough talents amidst an aging workforce. Japan is facing a critical shortage of skilled engineers, many of whom have left to work in foreign semiconductor firms which are more competitive and pays better. Devising appropriate policies, including incentives to attract skilled workers and encouraging closer collaboration among leading manufacturing firms and universities to strengthen the ecosystem, can support the government's push in expanding its strategic sectors, which includes semiconductors, batteries, and biotechnology. Similarly, initiatives to improve the capital efficiency of listed companies and reform the country's JPY5 trillion asset management industry should be accompanied by measures to further encourage corporate culture reform and enhance governance and transparency.[26]

43. Japan has embarked on ambitious policies and initiatives to achieve net-zero greenhouse emissions by 2050, aligning itself with global climate change goals (see Appendix 6 "Climate Clipboard"). The government's efforts towards transitioning to renewable energy are commendable, notably with the approval of the Basic Policy for the Realization of Green Transformation (GX) in 2023. The plan outlines a 10-year roadmap to achieve the green transformation from a fossil fuel to a clean energy society. Specific measures include shifting from fossil fuel-based to renewable energy, utilizing nuclear energy, and introducing carbon pricing. The launch of a carbon trading platform at the Tokyo Stock Exchange in October 2023 is a welcome development, providing a market-driven approach to reducing greenhouse gas emissions that aligns economic costs with environmental goals. Amid the continuing initiatives, large investments will be needed to successfully attain net-zero emissions. The government's plans to issue GX Economy Transition Bonds to finance the transition to a green economy needs to be considered carefully, particularly given Japan's already large stock of public debt. In this regard, the carbon pricing to be implemented will be used to redeem these

[24] Japan's share of global semiconductor production has fallen from 50 percent in the 1980s to below 10 percent in 2022.
[25] Japan has offered subsidies of JPY476 billion for TSMC's new foundry in Kumamoto (in partnership with Sony and Denso), JPY330 billion to Rapidus to develop and produce cutting-edge 2 nanometer chips (in collaboration with IBM), JPY192 billion to Micron to build a new factory in Hiroshima and install extreme ultraviolet (EUV) exposure equipment, JPY 92.9 billion to Kioxia to build a new facility in Mie (in partnership with Western Digital), and JPY15 billion to Samsung to construct a new chip packing test line in Yokohama.
[26] Although initiatives by the FSA such as revisions to the Corporate Governance Code to address cross-shareholdings and board independence and diversity have gradually fostered a cultural shift, Japanese companies still lag those in advanced economies in many corporate governance indicators. Meanwhile, Japan's asset management industry—which holds the world's second largest household financial assets—has low levels of information disclosure and is not customer-centric.

bonds, and also better align incentives towards reduced consumption of carbon-intensive goods and promote energy efficient options.

Box A. Special Accounts and Fiscal Investment and Loan Program (FILP) in Japan [27]

Special Accounts play an important role in Japan's fiscal management, offering a unique framework for earmarked funds separate from the general budget. These accounts are designed to ensure the targeted allocation of resources for specific policy objectives, programs and projects, and promoting transparency and efficiency in fiscal operations. As of FY2023, there are 13 Special Accounts, each dedicated to specific purposes such as national debt service, pension and medical care, regional transfers, and the Fiscal Investment and Loan Program (FILP) (Figure A1). While some Special Accounts receive funding through transfers from the general budget and other accounts, their financial sources also include earmarked revenues, including specific taxes, fees, and other dedicated streams. Certain accounts are authorized to issue Japanese Government Bonds (JGBs) and borrow from banks to meet their expenditure needs. For the initial budget of FY2023, the total gross expenditure from these 13 Special Accounts amounts to JPY441.9 trillion, whereas the net expenditure stands at JPY197.3 trillion.[28]

Figure A1: Objectives and Size of Special Accounts (FY2023 Initial Budget)

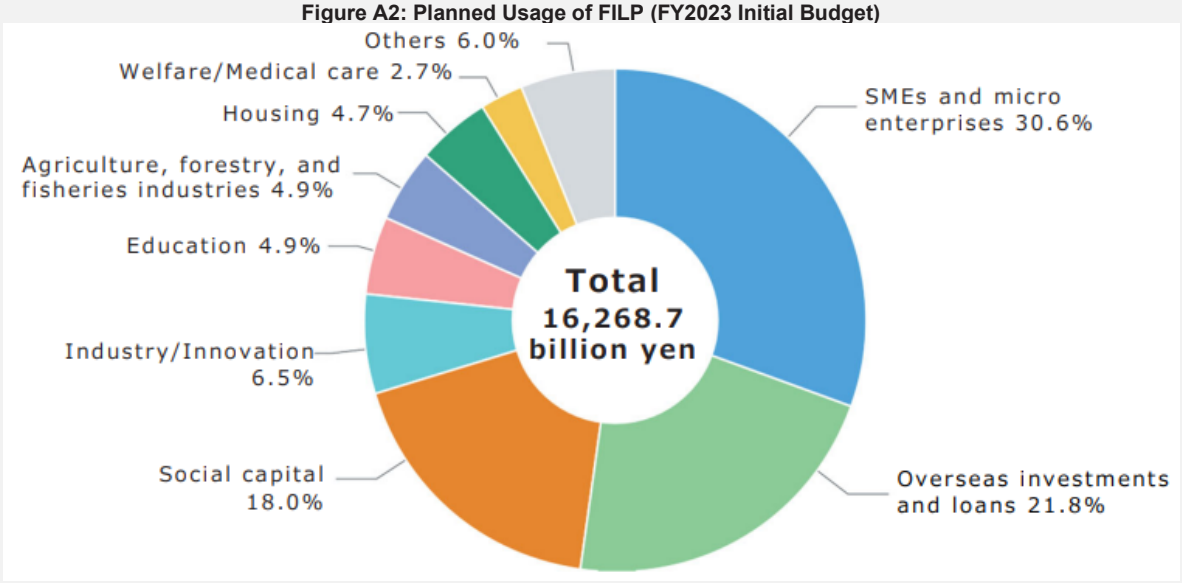
	Objective of Special Account	Gross Expenditure (JPY trillion)
1	National debt service	239.5
2	Pension and medical care	99.5
3	Regional transfers	49.5
4	Fiscal Investment and Loan Program (FILP)	24.9
5	Energy-related measures	14.1
6	Workers' compensation	8.7
7	Foreign exchange stability	2.4
8	Food supply stability	1.5
9	Reconstruction after the Great East Japan Earthquake	0.7
10	Car accident insurance and airport development etc.	0.5
11	Debt service for national forest and land management service	0.3
12	Patent-related service	0.1
13	Earthquake reinsurance	0.1
(Total)		441.9
cf.	General budget	114.4

Source: JMOF, AMRO staff compilation

Within the spectrum of Special Account operations, the Fiscal Investment and Loan Program (FILP) stands out as unique, characterized by its extensive range of activities, substantial expenditure, and independence from tax revenues, making it widely used during the COVID-19 pandemic. Supplementing loans and investments from the private sector, the FILP has played a pivotal role in providing mid- to long-term financing for projects contributing to the nation's economic development and social welfare. These projects encompass infrastructure development, natural resource acquisition, support to MSMEs, agriculture, forestry and fishery, housing supply, innovation, education and so on (Figure A2). Most recently, the government utilized the FILP to provide financial support to companies affected by the pandemic. The FILP is implemented through FILP agencies, such as government-affiliated financial institutions, using three financial instruments: (i) loan (Fiscal Loan); (ii) equity investment (Industrial Investment); and (iii) guarantee (Government Guarantee) (Figure A3). For the FY2023 initial FILP plan, a total budget of JPY16.2 trillion has been allocated, comprising JPY12.7 trillion for Fiscal Loan (78.4 percent), JPY0.4 trillion for Industrial Investment (2.5 percent), and JPY3.1 trillion for Government Guarantee (19.1 percent). Notably, the government does not rely on tax revenues for the FILP, meaning that it does not accept transfers from the general budget. The FILP is primarily funded through the issuance of FILP bonds, which are JGBs whose proceeds are earmarked for lending to FILP agencies (FILP Loan) and redeemed using repayments from FILP agencies.

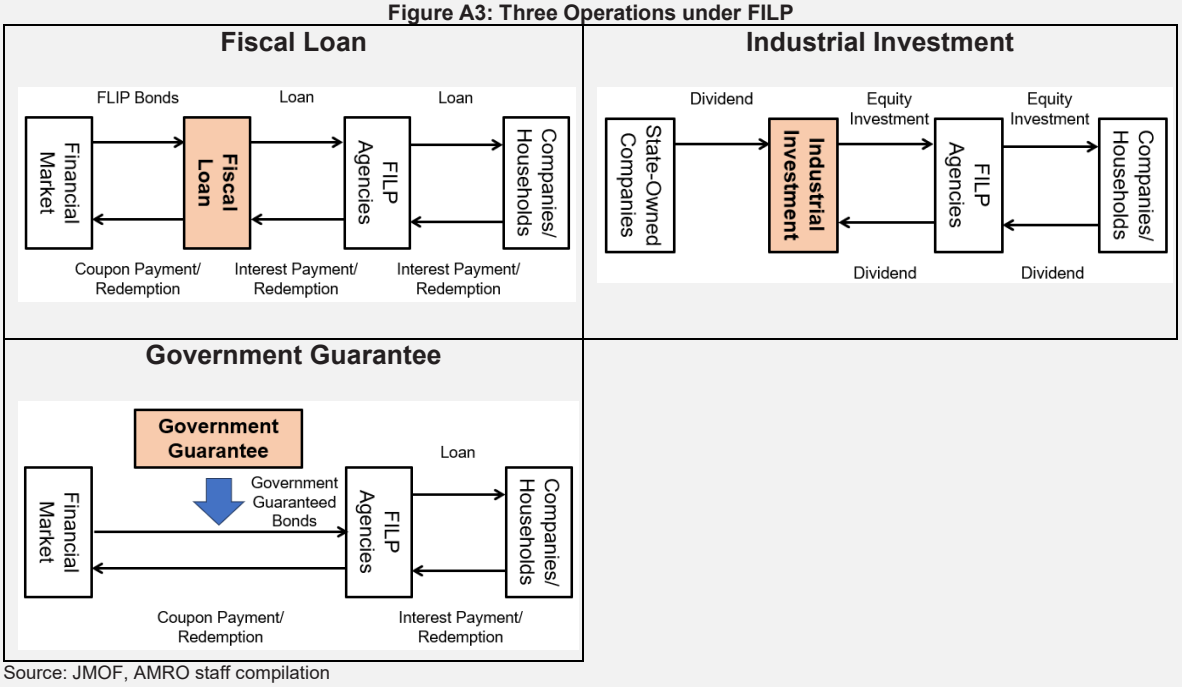
[27] Prepared by Akifumi Fujii, Economist.
[28] While gross expenditure includes intra-account transfers and JGB refinancing, net expenditure eliminates the impact of the double-counting, meaning net expenditure represents the sheer size of fiscal spending from Special Accounts.

Figure A2: Planned Usage of FILP (FY2023 Initial Budget)



Source: JMOF

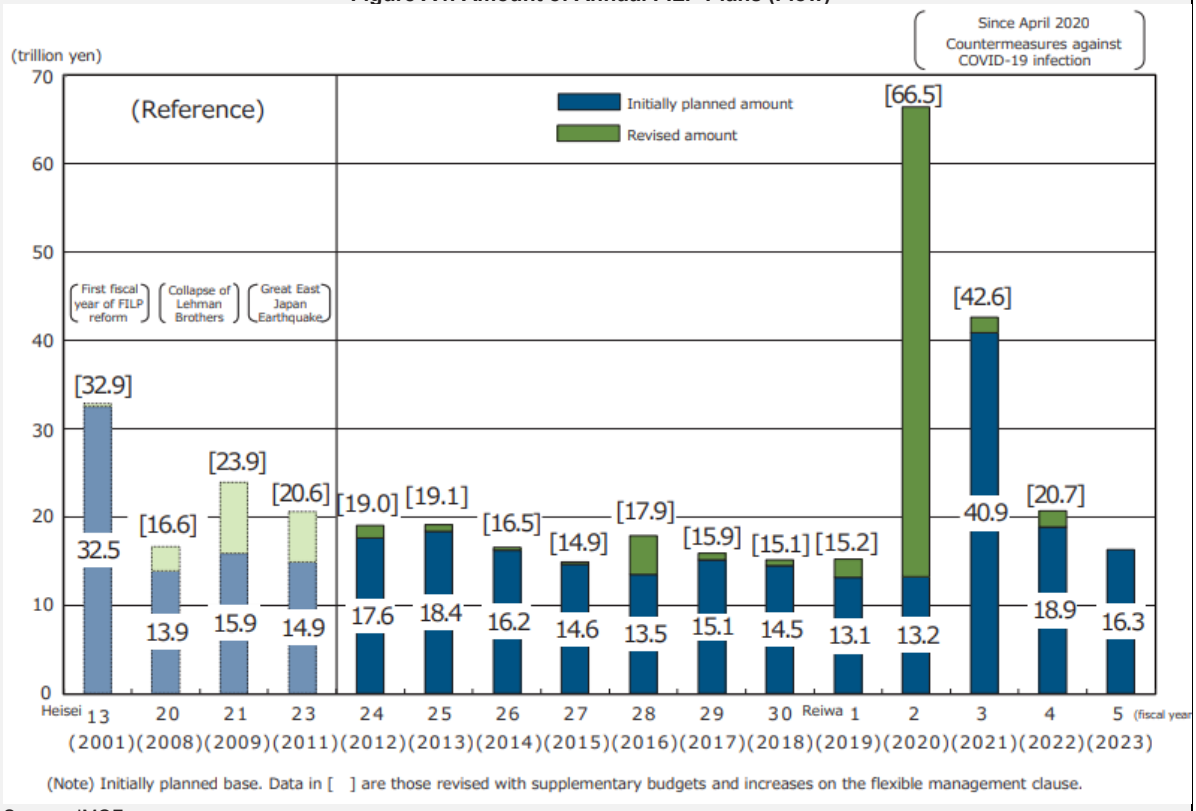
Figure A3: Three Operations under FILP



Source: JMOF, AMRO staff compilation

The magnitude of the FILP's flow and stock has been relatively stable over the past few years, and the proportion of the government liabilities attributed to the FILP has stayed modest. For the past decade, the size of the annual FILP plan, including supplementary budgets (flow), has been around JPY15-20 trillion except in FY2020 and 2021. During these years, the government increased the FILP plan to JPY66 trillion and JPY43 trillion respectively, in response to the pandemic's impact on companies (Figure A4). Despite the government's plan, the realized FILP disbursement only accounted for 30-40 percent of the planned amount. As a result, the FILP stock has been relatively stable at around JPY150-160 trillion over the past few years, encompassing the pandemic period (Figure A5). Among the three FILP operations, the Fiscal Loan and Government Guarantee have a significant impact on the fiscal position, constituting the government liabilities in the form of FILP bonds and contingent liabilities. Out of the estimated FILP stock of JPY159 trillion at the end of FY2023, JPY127 trillion and JPY25 trillion originate from the Fiscal Loan and Government Guarantee, respectively. Of the total balance of JGBs including FILP bonds as of end-FY2023 which is expected to be around JPY1,200 trillion, the share of FILP bonds and Government Guarantee remains relatively modest. In FY2022, new FILP bonds totalling JPY14 trillion were issued, while JPY18 trillion worth of bonds were redeemed.

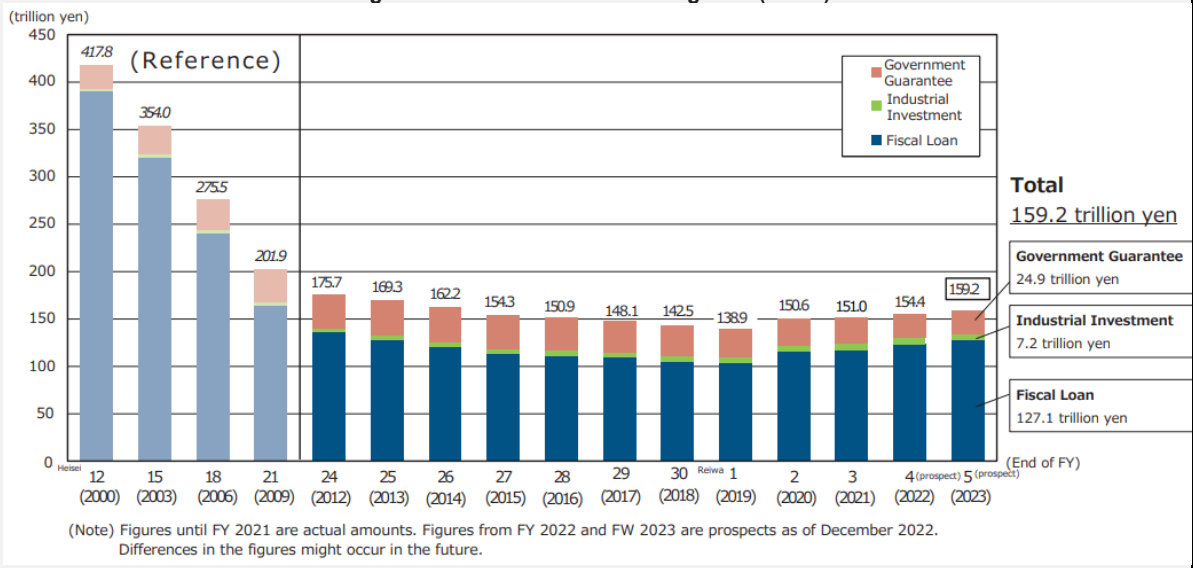
Figure A4: Amount of Annual FILP Plans (Flow)



(Note) Initially planned base. Data in [ ] are those revised with supplementary budgets and increases on the flexible management clause.

Source: JMOF

Figure A5: Amount of Outstanding FILP (Stock)



(Note) Figures until FY 2021 are actual amounts. Figures from FY 2022 and FW 2023 are prospects as of December 2022. Differences in the figures might occur in the future.

Source: JMOF

While the FILP is subject to thorough scrutiny by the National Diet and the government, ongoing efforts are in place to enhance its transparency and risk management. The formulation process for the FILP plan mirrors that of the general budget and other Special Accounts' budgets, requiring approval from the National Diet following an assessment by the Ministry of Finance and other relevant ministries. Additionally, the FILP undergoes monitoring by the 'FILP Subcommittee under Fiscal System Council,' an advisory panel to the Minister of Finance comprising external specialists from academia, media and relevant industries. Monitoring reports and discussions within the subcommittee are disclosed to the public. For instance, the subcommittee released a report addressing under-performing FILP agencies (Kan-Min-Funds) in June 2019, recommending measures to enhance investment principles and governance for these agencies. Furthermore, the FILP's asset liability management has been improved by reducing the duration gap between the

assets (FILP loans) and liabilities (FILP bonds) and making provisions against potential future losses resulting from interest rate fluctuations.

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Ministry of Finance, Japan. 2023. “Japanese Public Finance Fact Sheet”

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Box B. Japan’s Female Labor Force Participation - Key Achievements and Remaining Challenges [29]

In response to declining birth rates and population, the Japanese government has actively promoted female participation in the labor force. This initiative gained momentum with the introduction of various policy measures under the Abenomics umbrella, launched in 2012. The Abe administration, as part of its strategic vision, set ambitious targets to raise the female labor force participation rate (aged 25-44) from 68 percent in 2012 to 73 percent by 2020. Concurrently, a parallel goal aimed at increasing the share of women in leadership positions to 30 percent was also established.

Since the initiation of Abenomics, the labor participation rate of female workers has risen markedly, surpassing that of other advanced economies, owing to the government’s concerted efforts (Figure B1). The female labor force participation rate in Japan has risen significantly since 2012, reaching 80.6 percent in 2022, which is well above that of other advanced economies such as Germany (79.4 percent), the UK (78.3 percent), the US (74.0 percent), and France (73.6 percent). The upward trend of female labor force participation may be attributed to the policies implemented during the Abe administration, which strongly supported working mothers. The specific policy measures under the Abenomics include (i) increasing the number of women in leadership positions, (ii) eliminating childcare waiting lists by providing additional childcare centers, (iii) encouraging men to play a more active role in parenting, and (iv) achieving a better work-life balance by reducing the infamous long working hours (Muraki, 2013).[30] As a result, more women will be able to rejoin the labor forces after their marriage and child-rearing.

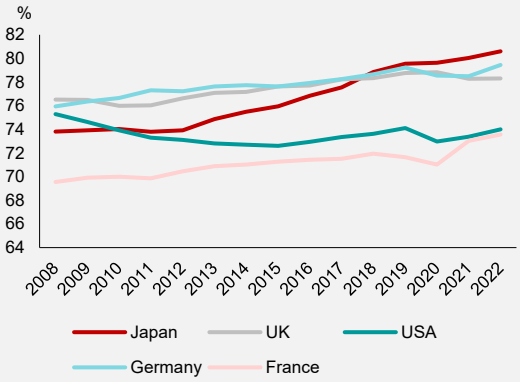
Within age-cohort groups, the so-called ‘M-shaped’ curve has experienced a flattening trend, primarily due to the notable increase in labor participation among females in their 30s and the 40s (Figure B2). In Japan, women often leave work after marriage or childbirth, returning later, thereby creating an 'M-shaped' labor force participation rate. Since 2012, the curve has become smoother compared to preceding years. This suggests a positive trend where more women are actively maintaining employment throughout their marriage and child-rearing years.

Despite these noteworthy achievements, there is still room for improvement in enhancing female participation, a crucial factor amid the declining labor force. According to the Recruit Works Institute (2023), Japan’s labor force numbered approximately 65.9 million in 2022. However, it is projected to decrease to 63.4 million by 2030, and to 57.7 million by 2040. This trajectory could result in a shortage of 11 million workers by 2040.[31] It underscores the pressing need for strategic

[29] Prepared by Zin Zin Mar Han, Associate
[30] Muraki A. (2013). From Abenomics to womenomics: Working women and Japan’s economic revival. Keynote Address by Vice Minister, Ministry of Health, Labor and Welfare, Japan, at the Brookings Institution on September 25th, 2013.
[31] https://www.works-i.com/research/works-report/item/forecast2040.pdf

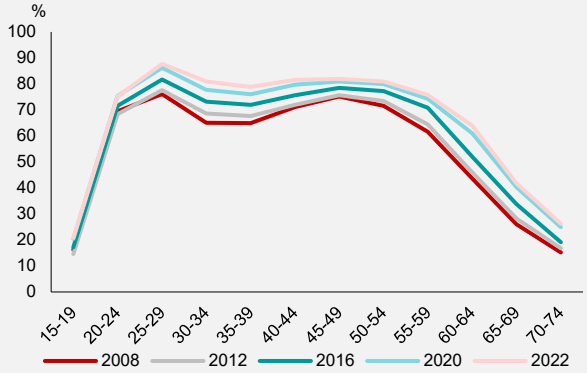
workforce planning and policies to mitigate potential economic challenges associated with this anticipated labor shortage.

Figure B1: Female Labor Force Participation Rate



Source: OECD

Figure B2: Female Labor Participation by Age



Source: OECD

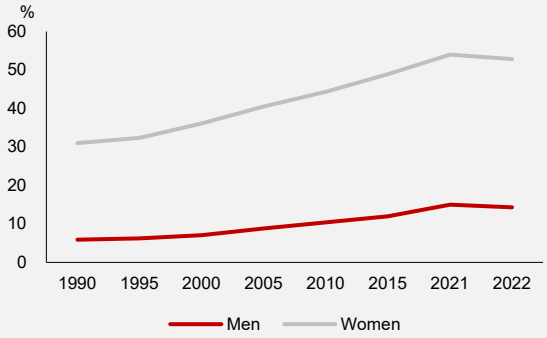
The pronounced gender inequality persisting between men and women in Japan remains a primary obstacle to increasing female participation in the labor force. Japan adheres to a traditional conservative social structure, despite its advanced economy. Traditional gender roles persist, with men often designated as the primary breadwinners, while women are expected to embrace the role of housewives following marriage and childbirth. According to the World Economic Forum's Global Gender Gap Report (2023), Japan holds the 125th place out of 146 countries, marking the lowest rank in the East Asia and the Pacific. This assessment is based on various metrics related to the gender gap in politics, economics, education, and health. In dissecting the challenges in Japanese society, deeply ingrained gender norms emerge as a significant and influential factor (Gray, 2022).[32]

An additional concern is that the increase in female workers has predominantly been driven by non-regular employees, a trend that does not contribute to the empowerment of more women in managerial positions and may restrict the optimal utilization of the labor force. The proportion of non-regular female employees has been steadily rising, albeit with a slight decrease in both non-regular male and female employees in 2022 (Figure B3). According to a government survey, female employees choose part-time jobs due to the shorter working hours, providing greater flexibility to accommodate their daily lives.[33] The Japanese government has implemented policies to support female employees by subsidizing nursery childcares, leading to an increase in the number of day care centres and enrolled children (Figure B4). This is a welcome development to ensure better work-life balance for married women. According to the aforementioned Global Gender Gap Report, women hold only 12.9 percent of senior and management position in Japan, which is still far from the target of raising the representation of women in leadership position to 30 percent. According to the data compiled by Bloomberg, the female board representation in listed companies in Japan is only 13 percent, which is less than half of the global average.[34] Although the female labor force participation rate has risen in Japan, the overall quality of participation remains low. Typically, non-regular workers face challenges in accessing capacity-building training to enhance their careers. Within the parameters of Japan's lifetime employment system and seniority-based promotion structure, non-

[32] Gray, G.P. (2022), "Japanese Gender Norms and Their Impact on Male Attitudes Toward Women", Schotanus, M.S. (Ed.) *Gender Violence, the Law, and Society* , Emerald Publishing Limited, Bingley, pp. 143-159.
[33] Cabinet Office (2013), "White Paper on Gender Equality" (in Japanese) https://www.gender.go.jp/about_danjo/whitepaper/h25/zentai/html/zuhyo/zuhyo01-00-28.html
[34] https://www.japantimes.co.jp/business/2023/09/11/japan-board-diversity/

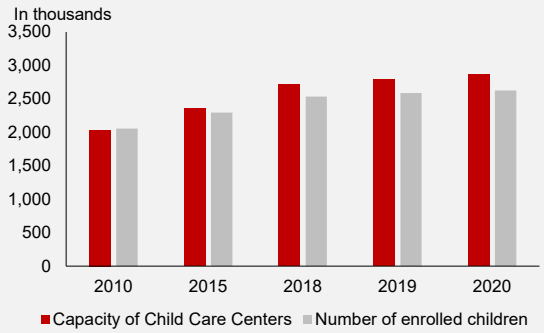
regular female workers frequently encounter obstacles when aspiring to managerial or decision-making positions.

Figure B3: Share of Part-time Workers



Source: OECD

Figure B4: Capacity of Nursery Care Centers



Source: MHLW

Certain tax and social security rules may unintentionally discourage female workers from embracing longer working hours. Certain tax and social security rules in Japan incentivizes married women to choose non-regular employment in order to keep their income within specific thresholds. The primary income earner can claim JPY 380,000 of tax exemption if the spouse earn less than the specific thresholds.[35] Another example pertains to the treatment of benefits for dependent spouses in the social security system. Under the Employees' Health Insurance (EHI) and the Employees' Pension Insurance (EPI) programs, premiums must be paid if the employees earn monthly wages of JPY 88,000 or more, reaching an annual threshold of JPY1.06 million. However, married women can be covered under EHI and EPI at no cost if their income remains below JPY 1.3 million as a dependent spouse. As a result, most married women strive to maintain the status of a dependent spouse by reducing part-time job hours and limiting their income to qualify for the tax deduction and for coverage under the social insurance scheme at no cost. For instance, a survey conducted by UA Zensen, one of the largest industrial unions in Japan reveals that about 40 percent of married women strive to maintain incomes below the thresholds to qualify for the spousal tax deductions.[36]

The wage disparity between genders in Japan remains a persistent barrier to the entry of more women into the country's labor force. According to the OECD, as of 2022, Japan's wage gap stands at 21.3 percent, making it the largest among G7 nations and double the average of OECD countries. One major contributor to this substantial gender wage gap is the prevalence of women in part-time jobs, as mentioned earlier. According to the 2022 OECD data, the percentage of female employees in part-time jobs in Japan is 38.5 percent, significantly higher than the OECD countries' average of 24.0 percent. In addition, female employees in listed companies in Japan earn only 70 percent of what their male colleagues receive, even when undertaking similar work assignments and possessing equivalent work experience.[37]

As a specific measure, promoting greater adoption of paternity leave and encouraging men's involvement in household responsibilities can contribute to retaining more married women in the labor force. In 2022, the government amended the Child and Family Care Act, introducing a four-week paternity leave to enhance flexibility within the existing policy. Prime Minister Kishida has set a target of achieving a 50 percent uptake in paternal leave by 2025. Despite the government's efforts to support better work-life balance for parents, a survey published by the Ministry of Health,

[35] The spousal deduction threshold, which was initially JPY 1.03 million, was raised to JPY 1.5 million in the 2018 tax reform. This adjustment represents a positive improvement aimed at encouraging women to extend their working hours.
[36] https://www.asahi.com/ajw/articles/14792427#:~:text=About%2040%20percent%20of%20married,tax%20credit%2C%20a%20survey%20showed.
[37] https://mainichi.jp/english/articles/20230902/p2a/00m/0bu/026000c

Labour and Welfare (MHLW) indicated that only 17.1 percent of men, whose wives gave birth between October 2021 and September 2022, took paternity leave – a modest increase of about 3 percentage points compared to the previous year.[38] Additionally, women in Japan continue to bear a disproportionate resposibility for household chores. According to the latest OECD data, the daily time spent on unpaid work between men and women is 40.8 minutes and 224.3 minutes, respectively.

The recently amended Act on Promotion of Women's Participation and Advancement in the Workplace holds the potential to foster a more welcoming work environment for female workers. In June 2022, the government announced its new "Framework Policies" aimed at enhancing transparency regarding the gender wage gap within corporates. This initiative coincided with the enactment of the amended Act on Promotion of Women's Participation and Advancement in the Workplace on 8 July 2022. This Act focused on two key aspects: (1) providing increased workplace opportunities for women and (2) fostering work-life balance for women.[39] The legislation also promotes the uptake of parental leave by both men and women. Pursuant to the new regulations, companies with 301 or more employees must disclose the gender wage gap in their annual reports. Additionally, companies with at least 101 employees must create a "General Employer Action Plan", outlining numerical targets for female employees along with the timing and means of achieving these objectives. The amendment of the Act reflects the government's commitment to building a more welcoming work environment for women, recognizing the significance of transparency and proactive measures in addressing gender disparities within the corporate sector.

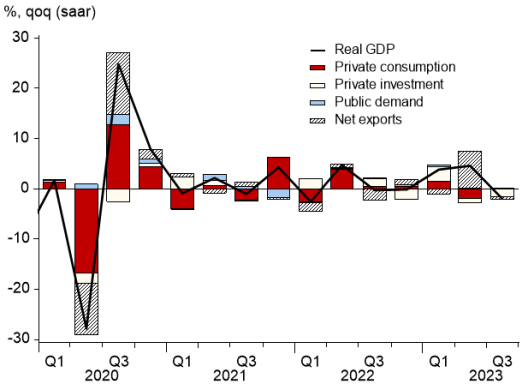
[38] https://www.bloomberg.com/news/articles/2023-07-31/japan-falls-short-on-paternity-leave-goals-even-as-numbers-rise#xj4y7vzkg
[39] For instance, companies are required to establish numerical targets for the recruitment of more women and their appointment to decision-making roles.

Appendices

Appendix 1. Selected Figures for Major Economic Indicators

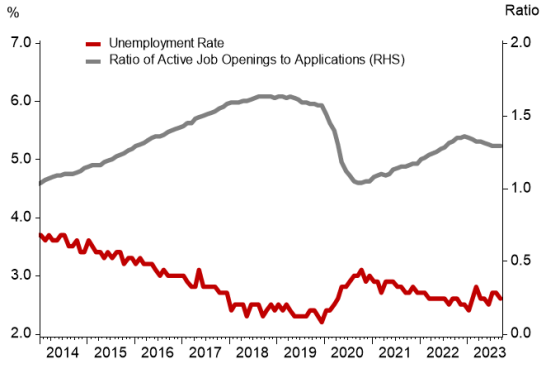
Figure 1.1. Real Sector

The Japanese economy expanded robustly in 1H 2023 but contracted in Q3 due to lower investment ...



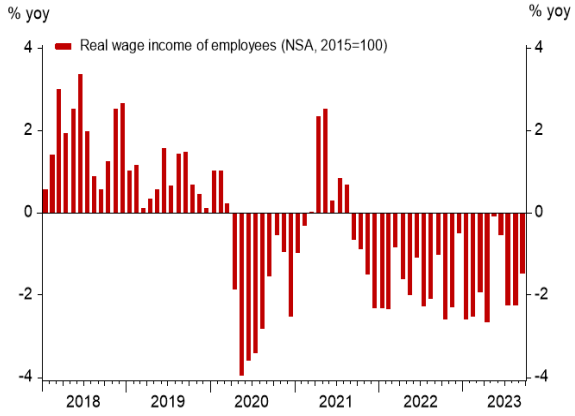
Source: Cabinet Office; Haver Analytics

…while labor conditions remain tight due to the economic recovery and labor shortage.



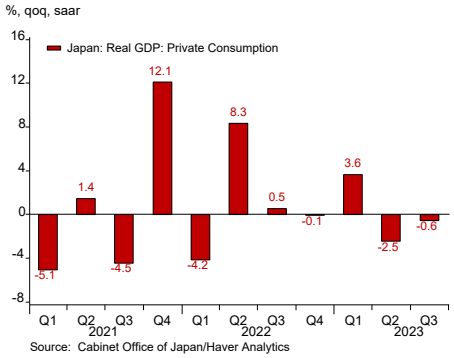
Source: Ministry of Health, Labour and Welfare (MHLW); Ministry of Internal Affairs and Communications; Haver Analytics

Employees' real income growth remained negative in 2023, reflecting the surge in inflation.



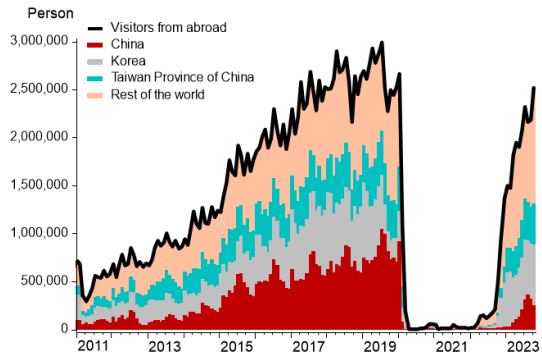
Source: Cabinet Office; Haver Analytics

Private consumption was weak in Q2 and Q3 2023, partially attributed to high inflation that has outpaced wage growth.



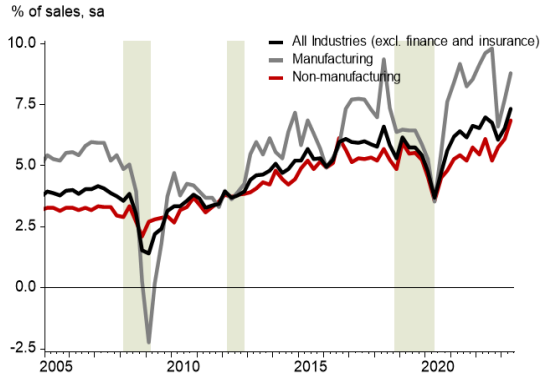
Source: Cabinet Office; Bank of Japan (BOJ); Haver Analytics

Strong tourist arrivals have helped support consumption despite weak household spending.



Source: Japan National Tourism Organization; Haver Analytics

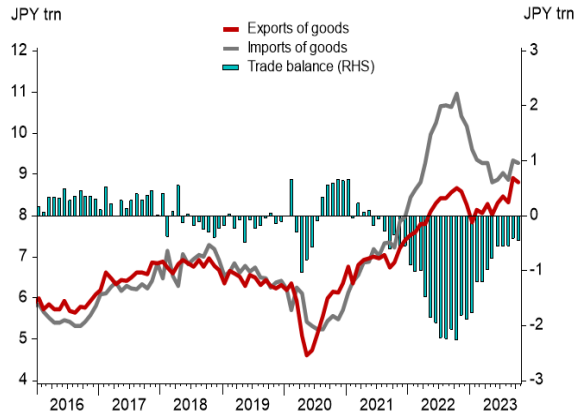
The normalization of economic activity and the depreciation of the yen have boosted net profits.



Source: Ministry of Economy, Trade and Industry; Haver Analytics

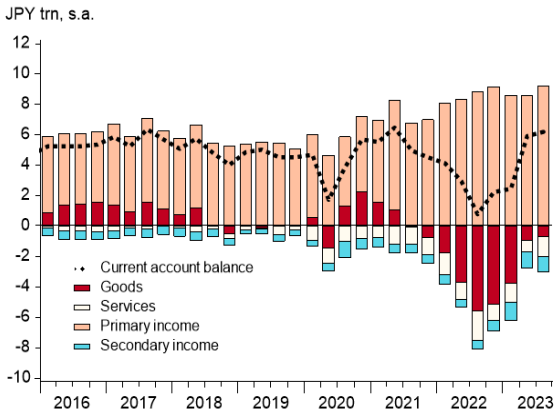
Figure 1.2. External Sector

Merchandise trade deficits continued to narrow in 2023, with the recovery of exports …



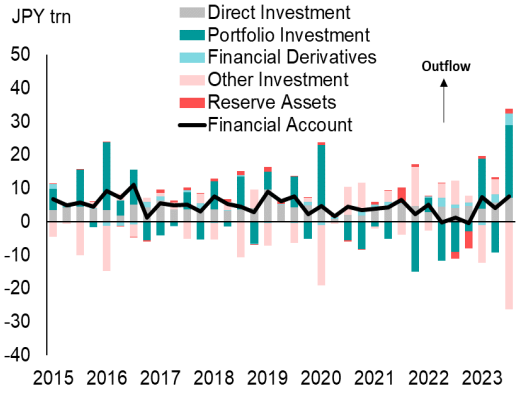
Source: JMOF; Haver Analytics

while the current account balance remained resilient in 2023 on the back of a large primary balance surplus.



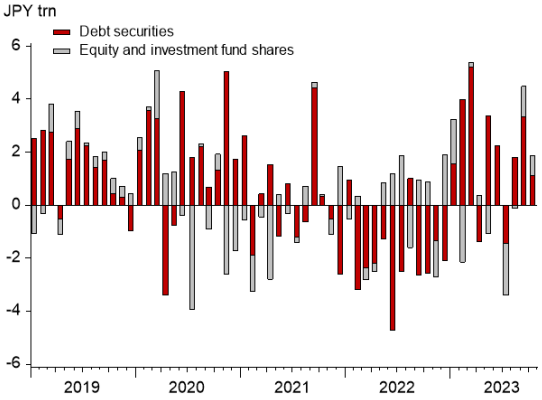
Source: BOJ; JMOF; Haver Analytics

Capital outflows increased in 2023 with higher overseas portfolio investment.



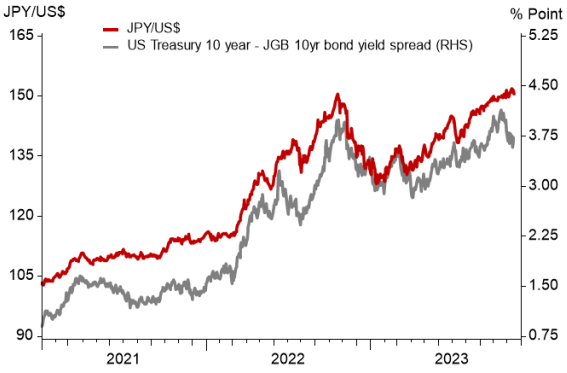
Source: BOJ; JMOF; Haver Analytics

Japanese investors have renewed their exposure to foreign bonds after the massive sell-off in 2022.



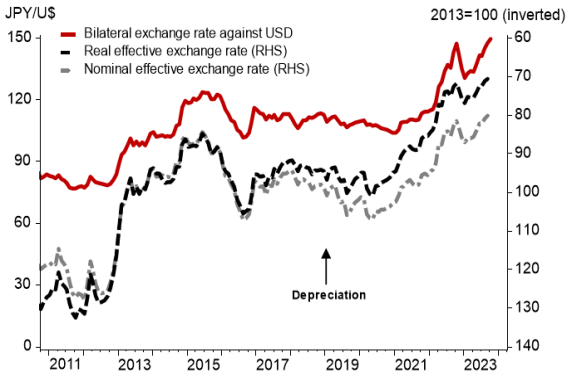
Source: BOJ; JMOF; Haver Analytics

The recent narrowing of interest rate differential may ease the pressure on the yen.



Source: BOJ; Federal Reserve Board; Haver Analytics

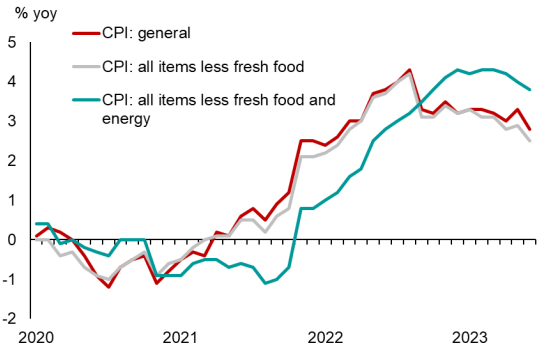
Effective exchange rates indicate that the JPY has weakened against key currencies since 2H 2020.



Source: BOJ; BIS; Haver Analytics

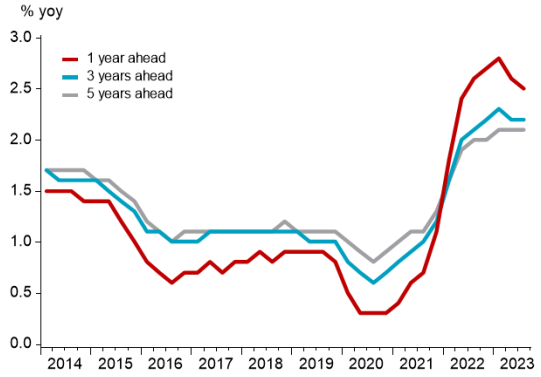
Figure 1.3. Monetary and Financial Sector

Although inflation has moderated, it has exceeded BOJ's 2 percent target since April 2022.



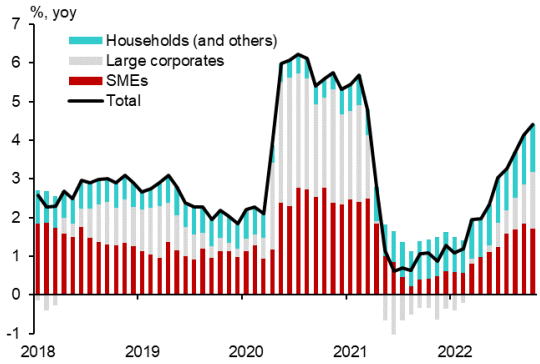
Source: Ministry of Internal Affairs and Communications; Haver Analytics

Firms' medium-term inflation expectations rose to 2.1 percent from a low of 0.8 percent at the start of the pandemic.



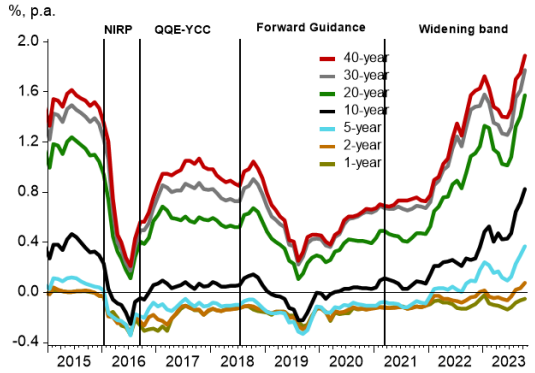
Note: Based on the BOJ's quarterly Tankan survey for all enterprises
Source: BOJ; Haver Analytics

Loan growth recovered to pre-pandemic levels, driven by the financing needs of SMEs and households.



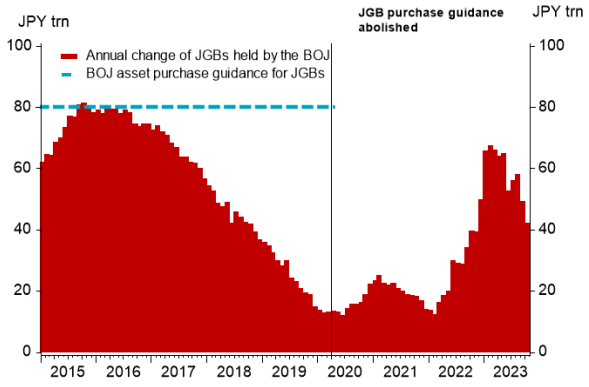
Source: BOJ

Long-term JGB yields have increased in 2023 with the series of tweaks to YCC by the BOJ.



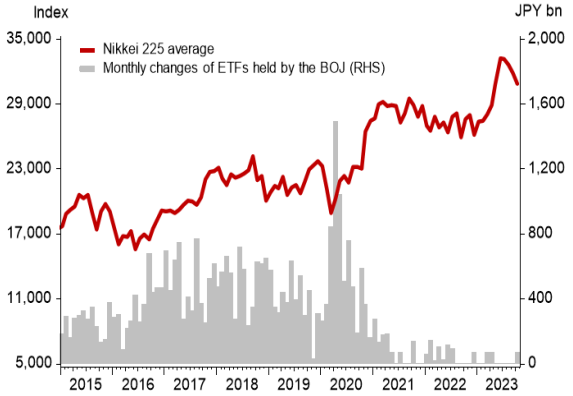
Source: BOJ; JMOF; Haver Analytics

The amount JGB purchases by the BOJ has fallen from its peak in Q1 2023.



Source: BOJ; Haver Analytics

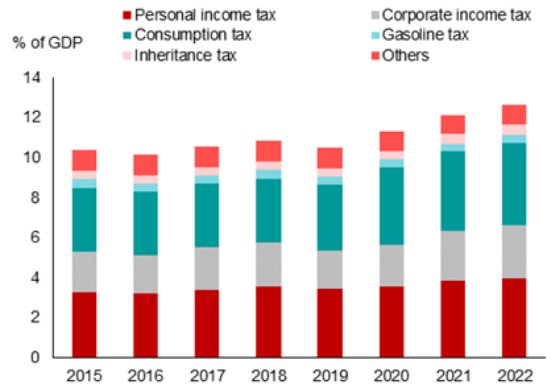
Stock prices soared in 2023, with the BOJ scarcely making ETF purchases.



Source: Tokyo Stock Exchange; BOJ; Haver Analytics

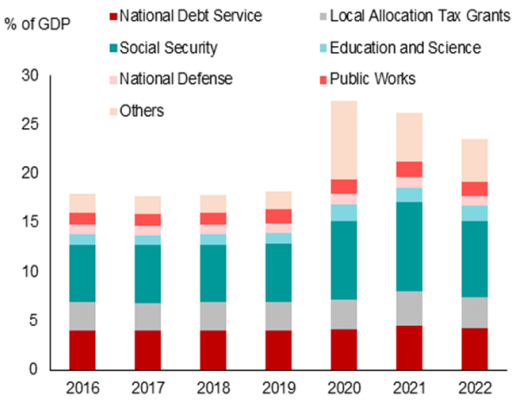
Figure 1.4. Fiscal Sector

In FY2022, tax revenues posted a record high, mainly driven by PIT and CIT...



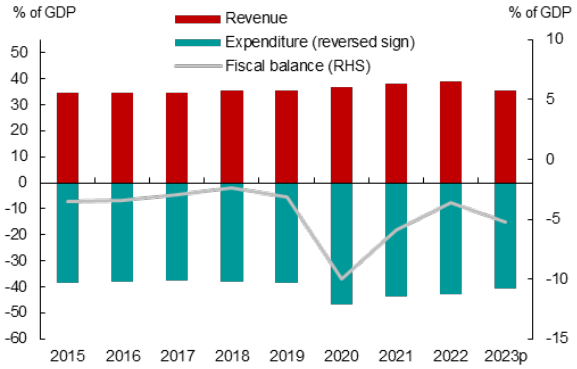
Source: JMOF

…while government spending declined.



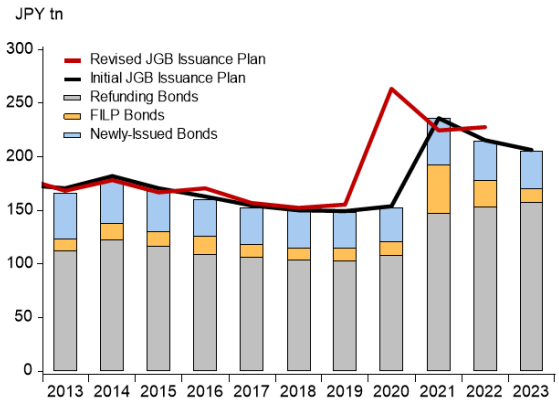
Source: JMOF

The fiscal deficit is estimated to be elevated at 5.2 percent in FY2023 with the approval of the supplementary budget.



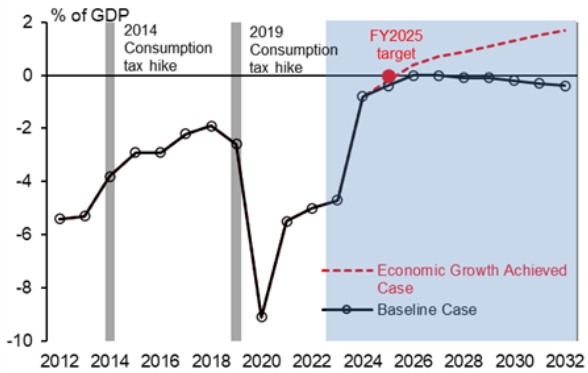
Note: Figures for FY2023 are based on AMRO staff estimates.
Source: Cabinet Office; AMRO staff estimates

Government bond issuances remain elevated compared to the pre-pandemic level.



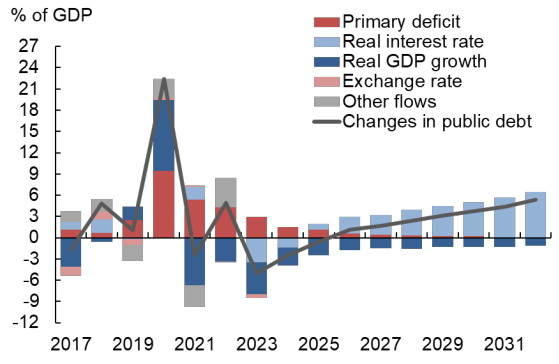
Source: JMOF; Haver Analytics

Achieving the government's target of primary balance surplus will highly likely happen later.



Note: The primary balance is for central and local government.
Source: Cabinet Office; AMRO staff estimates

Japan's public debt would steadily rise over the medium-term in case of a spike in market interest rates.



Source: AMRO staff estimates

Appendix 2. Selected Economic Indicators for Japan

	2019	2020	2021	2022	2023	2024
					Projection	
Real Sector and Prices	(Annualized percent change, unless otherwise specified)					
GDP growth (CY)	-0.4	-4.1	2.6	1.0	1.9	1.1
Private consumption	-0.6	-4.4	0.8	2.2	0.9	0.5
Private non-residential investment	-0.7	-4.9	0.5	1.9	2.1	1.9
Private residential investment	4.1	-7.7	-0.3	-3.5	2.3	0.5
Government consumption	1.9	2.4	3.4	1.7	0.4	0.3
Public investment	1.9	3.5	-1.8	-9.6	2.6	0.8
Net exports (ppts)	-0.4	-0.8	1.0	-0.6	0.7	0.5
Exports of goods and services	-1.5	-11.6	11.9	5.3	1.3	4.6
Imports of goods and services	1.0	-6.8	5.1	7.9	-2.4	2.1
GDP growth (FY)	-0.8	-3.9	2.8	1.5	1.8	1.0
Labor market (CY)	(Average of monthly data)					
Unemployment rate (%, sa)	2.4	2.8	2.8	2.6	2.5	2.5
Active job openings-to-applicants ratio (sa)	1.60	1.18	1.13	1.28	1.40	1.50
Prices (CY) 1/	(Average of monthly data)					
Headline CPI (all items)	0.5	0.0	-0.3	2.5	3.1	2.5
Core CPI (less fresh food)	0.6	-0.2	-0.2	2.3	3.1	2.6
Core-core CPI (less fresh food and energy)	0.6	0.2	-0.5	1.1	3.9	2.4
External Sector 2/	(USD billion unless otherwise specified)					
Current account balance	176.3	149.9	196.4	84.5	115.3	145.1
Percent of GDP	3.4	3.0	3.9	1.9	2.8	3.2
Trade balance	1.3	26.6	16.4	-117.5	-71.9	-58.0
Exports, f.o.b.	695.0	630.6	749.3	751.7	717.2	801.2
Imports, f.o.b.	693.6	604.0	732.8	869.3	789.1	859.2
Service balance	-10.0	-34.2	-38.6	-42.3	-24.0	-8.4
Primary income balance	197.6	181.7	240.1	263.3	232.6	230.5
Secondary income balance	-12.6	-24.2	-21.5	-19.1	-21.4	-19.1
Financial account balance	228.2	132.2	153.5	48.4	78.6	94.7
International reserves (end of period)	1,323.8	1,394.7	1,405.8	1,227.6	1,265.0	1,359.7
Fiscal Sector (FY, General Government) 3/	(In percent of GDP)					
Revenue	35.4	36.8	37.9	39.1	35.5	35.0
Expenditure	38.6	46.8	43.8	42.7	40.7	37.5
Fiscal balance	-3.1	-10.0	-5.9	-3.6	-5.2	-2.5
Primary balance	-2.5	-9.4	-5.3	-3.2	-4.6	-1.9
Outstanding debt	238.7	261.1	258.6	261.0	260.0	257.9
Monetary Sector 4/	(In annual percent change, unless otherwise specified)					
Monetary base	3.6	9.1	15.9	1.5	2.5	2.0
Uncollateralized overnight call rate (%, end of period)	-0.07	-0.03	-0.02	-0.02	0.00	0.00
Memorandum Items 4/						
Trade balance, customs cleared (USD bn)	-15.3	3.6	-16.2	-154.7	-75.0	-52.1
Exports of goods, customs cleared (USD bn)	705.7	640.6	756.9	747.3	715.2	805.3
Imports of goods, customs cleared (USD bn)	721.0	636.9	773.1	902.1	790.2	857.4
Exchange rate (USD/JPY, period average)	109.0	106.8	109.8	131.4	…	…
Exchange rate (USD/JPY, end of period)	109.2	103.3	115.1	132.1	…	…
Nikkei 225 (JPY, end of period)	23,656.6	27,444.2	28,791.7	26,094.5	…	…
JGB 10 year yield (%, end of period)	-0.02	0.04	0.09	0.45	…	…
Non-performing loan ratio (%, end of FY, All banks)	1.1	1.2	1.3	…	…	…
Nominal GDP (USD bn, CY)	5,117.8	5,055.3	5,033.4	4,260.5	4,146.7	4,515.3
Nominal GDP (JPY tn, CY)	557.9	539.8	552.6	559.7	579.9	591.5

Note: 1/ The BOP data in the external sector follows the IMF BPM6 standard.
2/ 2023-24 figures are based on AMRO staff projections.
3/ Based on calendar year, unless otherwise mentioned.

Source: Japanese authorities; AMRO staff estimates and projections.

Appendix 3. Balance of Payments

	2019	2020	2021	2022	2023 3/
	(JPY trillion unless otherwise specified)				
Current account balance (I)	19.3	16.0	21.5	10.7	16.1
Trade balance	0.2	2.8	1.8	-15.7	-10.1
Exports, f.o.b.	75.8	67.3	82.4	98.8	100.3
Imports, f.o.b.	75.6	64.5	80.6	114.5	110.3
Services, net	-1.1	-3.7	-4.2	-5.5	-3.4
Receipts	22.8	17.5	18.7	22.3	27.2
Payments	23.9	21.2	23.0	27.8	30.6
Primary income, net	21.6	19.4	26.3	34.5	32.5
Secondary income, net	-1.4	-2.6	-2.4	-2.5	-3.0
Capital account (II)	-0.4	-0.2	-0.4	-0.1	-0.2
Financial account (III) (+ indicates net outflows) 1/	22.1	12.9	9.9	12.8	11.0
Direct investment (net)	23.9	9.4	19.2	16.2	16.1
Portfolio investment (net)	9.4	4.4	-21.9	-19.3	-2.0
Financial derivatives (net)	0.4	0.8	2.2	5.1	4.1
Other investment (net)	-11.5	-1.7	10.5	10.7	-7.3
Errors and omissions (IV)	6.0	-1.7	-4.3	-4.8	0.1
Overall balance (= I + II - III + IV)	2.8	1.2	6.9	-7.1	5.0
Reserve assets (+ indicates increases)	2.8	1.2	6.9	-7.1	5.0
Memorandum items:					
Current account balance (In percent of GDP)	3.5	3.0	3.9	1.9	2.8
Gross reserves (USD billion, end of period)	1,323.8	1,394.7	1,405.8	1,227.6	1,266.3
(In months of imports of goods and services)	16.9	19.4	18.0	13.3	13.6
Changes in gross reserves (USD billion)	52.8	70.9	11.1	-178.2	38.7
Nominal GDP (USD billion) 2/	5,117.8	5,055.3	5,033.4	4,260.5	4,146.7

Note: 1/ Excludes changes in reserve assets.
2/ Based on AMRO staff calculations using the yearly averages of USD/JPY exchange rates.
3/ 2023 are based on AMRO staff estimates.
4/ Based on the calendar year.
Source: Japanese authorities; AMRO staff projections.

Appendix 4. Statement of Government Operations

	FY2019	FY2020	FY2021	FY2022	FY2023e
General Government 1/	(In percent of GDP)				
Revenue (I)	35.4	36.8	37.9	39.1	35.5
Taxes	18.9	20.0	21.1	21.9	20.0
Personal Income Tax	5.2	5.4	5.6	5.7	5.8
Corporate Income Tax	4.6	4.6	5.3	5.8	5.2
Consumption Tax	6.5	7.2	7.4	7.6	7.3
Others	2.7	2.7	2.8	2.8	1.7
Social Contributions	13.4	13.7	13.8	13.7	13.2
(o/w Social security contribution)	13.9	14.9	13.4	13.3	12.9
Other revenues	3.2	3.1	3.1	3.5	2.2
(o/w interest income)	1.0	1.0	1.0	1.1	1.1
Expenditure (II)	38.6	46.8	43.8	42.7	40.7
Expense (III)	37.8	45.9	43.2	42.3	39.8
Compensation of employees	5.2	5.3	5.2	5.1	5.0
Use of goods and services	3.4	4.0	4.3	4.5	4.6
Consumption of fixed capital	3.3	3.5	3.6	3.6	3.4
Social benefits	21.3	22.0	22.5	22.0	18.8
(o/w Social security benefits)	18.5	19.2	18.7	18.5	17.9
Interest	1.7	1.6	1.5	1.5	1.7
Subsidies	0.6	0.6	0.6	1.2	0.8
Grants	0.1	0.1	0.1	0.2	0.1
Other expense	2.3	8.6	5.2	4.2	5.5
Net Acquisition of Nonfinancial Assets (IV)	0.7	0.9	0.7	0.3	0.8
Net Operating Balance (= I - III)	-2.4	-9.1	-5.2	-3.3	-4.4
Net Lending/borrowing (Overall Balance) (= I - II)	-3.1	-10.0	-5.9	-3.6	-5.2
Primary Balance	-2.5	-9.4	-5.3	-3.2	-4.6
Gross Debt	238.7	261.1	258.6	261.0	260.0
Central and Local Government 2/	(In percent of GDP)				
Primary Balance	-2.6	-9.1	-5.5	-5.0	-4.1
Central Government	-2.9	-9.2	-6.5	-5.5	-5.0
Local Government	0.2	0.1	0.9	0.5	0.9
Fiscal Balance	-3.7	-10.2	-6.6	-6.0	-4.4
Central Government	-3.8	-10.2	-7.4	-6.3	-5.1
Local Government	0.0	-0.1	0.8	0.3	0.7
Outstanding Debt	191.2	209.1	212.3	213.5	212.5

Note: 1/Based on the Government Finance Standard Manual (GFSM) 2014 standard; FY2023 figures are based on AMRO staff estimates.
2/ Excludes expenditures and fiscal resources spent on recovery and reconstruction measures. FY2023-2024 figures are based on AMRO staff projections.
Source: Japanese authorities; AMRO staff estimates and projections

Appendix 5. Data Adequacy for Surveillance Purposes: a Preliminary Assessment

Criteria/Key Indicators for Surveillance	Data Availability[(i)]	Reporting Frequency/Timeliness[(ii)]	Data Quality[(iii)]	Consistency[(iv)]	Others, if Any[(v)]
National Account	Yearly and quarterly data is available (for expenditure, production, and income approach).	Quarterly data is released within two months of the end of the reference quarter (for first preliminary estimate)	-	-	-
Balance of Payments (BOP) and External Position	Monthly BOP data is available in detail.	Monthly BOP data is released on the sixth business day of the second month after the reference period, while quarterly IIP data is released on the sixth business day of the third month after the end of the reference period.	-	-	-
Central Government Budget/External Debt	Monthly data on central government public finances is available, while quarterly external debt data is available in detail.	Monthly data on central government public finances is released within two months of the end of the reference period, while quarterly data on external debt is released within two months of the end of the reference period.	-	-	-
Inflation, Money Supply and Credit Growth	Monthly data on inflation, money supply and credit growth is available.	Monthly inflation data is released within one month of the reference period, while data on money supply and credit growth is released within two months of the end of the reference period.	-	-	-
Financial Sector Soundness Indicators	Available	Monthly data is released within one to two months after the end of the reference period, while quarterly data is available three months after the end of the reference period. However, as of 9 December 2022, Japan's Financial Soundness Indicators (FSI) data has been updated only up to Q1 2021.	-	-	-
Housing Market Indicators	Available	Monthly data is released within one month after the end of the reference period.	-	-	-

Notes:
(i) Data availability refers to whether the official data is available for public access by any means.
(ii) Reporting frequency refers to the periodicity with which the available data is published. Timeliness refers to how up to date the published data is relative to the publication date.
(iii) Data quality refers to the accuracy and reliability of the available data taking into account the data methodologies.
(iv) Consistency refers to both internal consistency within the data series itself and its horizontal consistency with other data series of either the same or different categories.
(v) Other criteria might also apply, if relevant. Examples include but are not limited to potential areas of improvement for data adequacy.

Source: AMRO staff compilation. This preliminary assessment will form the "Supplementary Data Adequacy Assessment" in the EPRD Matrix.

Appendix 6. Climate Clipboard—Risks, Responses, and Opportunities [40]

A. Physical risks

Exposure/Sources of risk	Potential macro-financial impact
• Floods (chronic) • Tropical typhoons (acute, chronic) • Sea-level rise (chronic)	• According to **an empirical study conducted by BOJ, 2022**, floods generally have a negative effect on the GDP of the manufacturing, wholesale, and retail sectors, while they tend to have a positive effect on the GDP of the construction sector. For instance, if the magnitude of flood damage to household assets is 1 percent of GDP, it is estimated that the GDP for the manufacturing sector would decrease by 1.2 percent, while that for the construction sector would increase by 1.8 percent. • Although the trend for the number of tropical typhoons is uncertain, climate projections suggest that their intensity around Japan may increase in the future. • A trend of sea level rise has been observed in Japanese coastal areas since the 1980s, but no long-term trend of rise is seen for the period from 1906 to 2022 (**Japan Meteorological Agency**).

B. Transition risks

Sources of risk	Potential macro-financial impact
• Forced GHG emission reductions by corporates • Reducing the share of coal-fired power plants by shifting to cleaner energy sources • Market risk in relation to electric vehicles (EVs) • Establishment of domestic carbon pricing instruments	• Cost increases to reduce GHG emissions will negatively impact the overall corporate sector. • Increased electricity charges due to expensive cleaner energy, such as renewable energy and co-firing coal generation, will affect inflation and GDP growth. • The manufacturing sector, particularly Japanese automakers, may experience a decline in market share globally due to transition to Evs, leading to a slowdown in export growth. • Rising energy prices due to carbon pricing will negatively affect private consumption, particularly among low-income households. • There is a risk that the new GX transition bonds could have an additional negative impact on government debt for years, further exacerbating the overall fiscal stance.

C. Adaptation response framework and strategies

Adaptation framework	Key initiatives/strategies	Estimated financing need and sources	
Climate Change Adaptation Plan (Approved by Cabinet, Oct 2021)	• Climate change adaptation in Japan focuses on the following seven areas: i) Agriculture; Forestry, and Fisheries; ii) Water Environment and Water Resources; iii) Natural Ecosystems; iv) Natural Disasters and Coastal Areas; v) Human Health; vi) Industrial and Economic Activities; and vii) Life of the Citizens and Urban Life. Latest initiatives: • JPY792 million for the adaptation plan in FY2023 (**MOE**)	• USD16.468 billion between 2020 and 2059 under a 2.0-degree increase scenario (**ESCAP**)	
		Domestic	**External**
		Annual budgets	-

D. Mitigation response framework and strategies

Nationally Determined Contribution (NDC)	National framework / Strategies	Estimated Financing and sources
• Reduce GHG emissions by 46 percent by FY2030 relative to the FY2013 level (**Oct 2021**). (the FY ends on March 31 of the following calendar year) • Continue efforts to meet the goal of reducing GHG emissions by 50 percent. • The above GHG includes carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbon (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (NF3).	**Sources of GHG emissions (Unit: Million t-CO2)**	• USD10 trillion in investments between 2020-2050. Of that investment, USD8 trillion would come from redirecting funds that would have been invested in incumbent technologies. USD2 trillion would be needed to cover the higher net cost of the decarbonizing technologies and infrastructure (**McKinsey**) • USD2.0-2.7 trillion of energy system investments between 2020-2050 (**AIGCC**) • **METI** established the Green Innovation Fund

Sector	FY2030	2013
Energy-related CO2	677	1,235
Industry	289	463
Commercial and others	116	238
Residential	70	208
Transport	146	224
Energy conversion	56	106
Non-energy related CO2	70	82.3
Other GHGs	66.3	90.5
GHG removals	-47.7	-
Joint Crediting Mechanism (JCM)	Counted on GHG emissions reduction	
Total	**760**	**1,408**

Source: **Japan's NDC** (October 2021)

Long-term commitment

Key sectoral strategies and initiatives

[40] Prepared by Sota Nejime, when he was seconded to AMRO as an Associate Researcher and Akifumi Fujii, Economist.

• Achieve net zero emissions by 2050 (METI)	• Updated Green Growth Strategy (Jun 2021) ➢ The strategy identifies 14 priority areas to develop and explore, indicating sector-specific action plans for 2050 in the R&D, demonstration, scale-up and commercial phases. • Long-Term Strategy under the Paris Agreement (Oct 2021) ➢ This is formulated as a long-term low GHG emission development strategy in accordance with the Paris Agreement. • 6th Strategic Energy Plan (Oct 2021) ➢ The Strategic Energy Plan is to show the path of the energy policy to achieve carbon neutrality by 2050 and reduction of GHG emissions by 46 percent in FY 2030 from FY 2013 levels. ➢ It targets reducing the share of coal in the power supply to 19 percent by 2030. ➢ The government decided to restart the nuclear power fleet (Dec 2022) • Basic Policy for the Realization of Green Transformation (GX) (Feb 2023) ➢ The plan describes a 10-year roadmap to achieve the green transformation from coal-fired to clean energy society.	amounting to JPY2 trillion for the next 10 years.

E. Enabling regulations for climate resilience

E.1. Legal framework	E.3. Carbon pricing frameworks	E.4. Sustainable finance frameworks
• Act on Promotion of Global Warming Countermeasures ➢ The law was enacted in 1998 and has undergone eight revisions. ➢ The most recent amendment to the law established the target of achieving net-zero emissions by 2050 as a basic principle.	• Ministries are currently deliberating a new emissions trading system (ETS) concept called the "GX league" at the national level, scheduled to be fully implemented in 2026. • A new surcharge scheme has been approved for industries emitting a significant amount of GHG, set to be enforced in 2028. ➢ The authorities plan to issue GX Economy Transition Bonds to finance research and development initiatives and subsidies for companies engaged in green and transition investments. ➢ Revenue generated from the surcharge will be used to retire the debt incurred by the GX Economy Transition Bonds, implying that the new surcharge is set to be an earmarked tax. • Tokyo and Saitama prefectures are currently implementing ETS at a regional level.	• Basic Guidelines on Climate Transition Finance (May 2021) ➢ The primary objective of basic guidelines is to contribute to Japan's goal of achieving carbon neutrality by 2050, aligning with the objectives of the Paris Agreement. ➢ The guidelines introduce a new category, termed "transition finance," designed to encourage increased investments in sectors where achieving emission reductions is particularly challenging. • Green Bond and Sustainability-Linked Bond Guidelines (Jul 2022) ➢ The guideline was developed to align with international developments in the green bond market, enhance domestic awareness of green bonds, and foster increased green bond issuance and investment in the country.
E.2. GHG accounting framework		
• As of November 2023, there is no national-level GHG accounting framework in place. • The government aims to establish both a national framework and an emissions trading platform in 2026. • At the regional level, Tokyo and Saitama prefectures have independently established their own framework for GHG accounting.		

E.5. Financial system

Initiatives	Guidelines	Status
1. Taxonomy	• No guidelines have been established yet.	-
2. Risk management assessments	• Supervisory Guidance on Climate-related Risk Management and Client Engagement (Jul 2022, FSA)	• A pilot analysis was conducted following the guidance. ➢ Pilot Scenario Analysis Exercise on Climate-Related Risks Based on Common Scenarios (Aug 2022, FSA, BOJ)
3. Climate-related financial disclosures	• TCFD Guidance 3.0 (Jan 2023) • Basic Guidelines for Disclosure and Evaluation of Climate-Related Opportunities (Mar 2023)	• The TCFD consortium was established in 2019 with the aim of promoting effective and efficient disclosure of climate-related information by companies.
4. Data availability	• No specific data set is available for the impact of climate change on the financial system.	-
5. Capacity building	• Various initiatives being led by BOJ and FSA	• BOJ has organized workshops about the relationship between ESG and the financial system.

F. Potential opportunities from the low-carbon transition

• CCS and CCUS (METI)	• Basic Hydrogen Strategy	• Investment in renewable energy • Investment in EV value chain

Source: National authorities, media reports, AMRO staff.

Annexes: Selected Issues

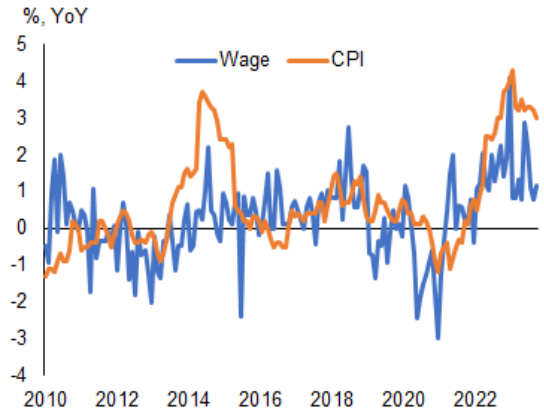
1. Wage Impact on Prices in Japan: Is This Time Different?[41]

Overview

1. The prevailing market perspective asserts that Japan requires a significant wage boost to counter deflation and achieve sustainable inflation, especially in the face of challenges presented by an aging population. The Japanese economy, long entrenched in a deflationary spiral, necessitates a robust surge in wages to invigorate consumer spending and catalyze overall economic expansion. As wages burgeon, consumers gain increased purchasing power, fostering a more resilient and self-sustaining economic ecosystem. This, in turn, propels demand, fuels production, and ultimately contributes to a healthier inflationary environment. Governor and board members of the Bank of Japan have also consistently communicated the importance of the wage-price spiral, emphasizing that wages and prices can mutually drive each other.

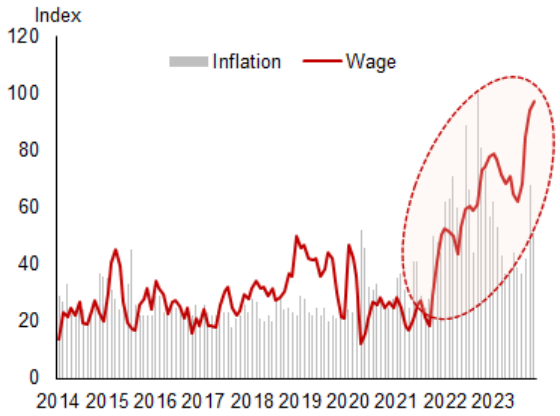
2. Lately, there has been a concurrent increase in both wages and prices in Japan, fostering optimism for the sustainable inflation dynamics in the country. The wage growth rate in Japan has remained at an average of around 0 percent per annum since the early 1990s. However, wage growth has recently been noticeably higher than in the past (Figure A1.1). As wages rise, the level of interest in wages among people, gauged through Google Trends , has significantly increased (Figure A1.2). In this scenario of heightened interest in wages, the impact of wages on prices may become more pronounced. In this context, analyzing the extent to which wages truly influence prices is crucial to the forecasting of future inflation dynamics and determination of the appropriate monetary policy stance. Taking this into account, this selected issue examines the recent wage growth in Japan, undertaking empirical analysis to explore the correlation between wages and inflation, and concludes with relevant policy implications.

Figure A1.1 Wage and CPI Growth



Source: Ministry of Health, Labor and Welfare of Japan (MHLW); Ministry of Internal Affairs and Communications (MIAC)
Note: 1) General Consumer Price Index is used for CPI. 2) The latest data both for Wages and CPI is September 2023.

Figure A1.2 Google Search Volume for Wages and Inflation in Japan



Source: Google Trends
Note: 1) Google Trends application area is limited to Japan. 2) The latest data is from November 2023. 3) The wage figure is a 3-month moving average.

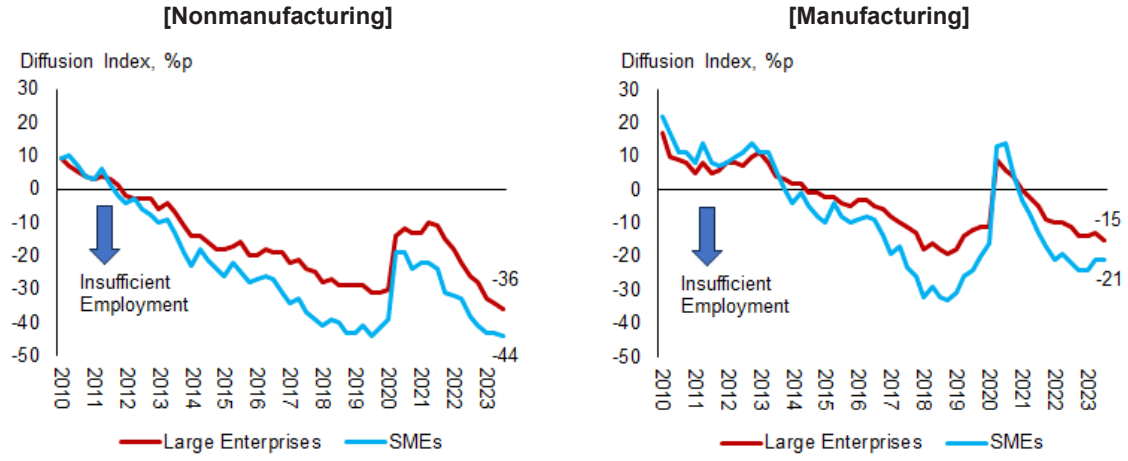
[41] Prepared by Jungsung Kim, Economist.

Recent Wage Growth Trends in Japan

3. The immediate and primary drivers of wage increases in Japan are the outcomes of "Shunto," the annual spring labor-management wage negotiations, amid acute labor shortages. According to the outcomes of wage negotiations, the agreed-upon wage growth rate between labor and management has risen from 1.78 percent in 2021 to 3.58 percent in 2023.[42] Given that the average wage negotiation results over the past decade have been below 2 percent, the current growth rate can be deemed relatively high. Additionally, a pervasive labor shortage spanning various industries is further intensifying the demand for wage hikes. Tankan surveys reveal that both the manufacturing and non-manufacturing sectors, along with enterprises of varying sizes, are grappling with shortages in labor (Figure A1.3). As a result, the employment rate has increased significantly, and the influx of foreign workers has nearly quadrupled since 2008 (Figure A1.4).

4. In sectors with pronounced labor shortages, such as services, wage growth rates are notably high. From January to September of this year, year-on-year wage growth was reportedly highest in the following order: real estate, transportation, compound services, finance and insurance, and eating and drinking services (Figure A1.5). In contrast, wage growth in the manufacturing sector in the same period remained relatively modest, hovering around 2 percent. The substantial wage growth observed in the service sector may potentially impact final prices, depending on the price-setting behavior of companies.

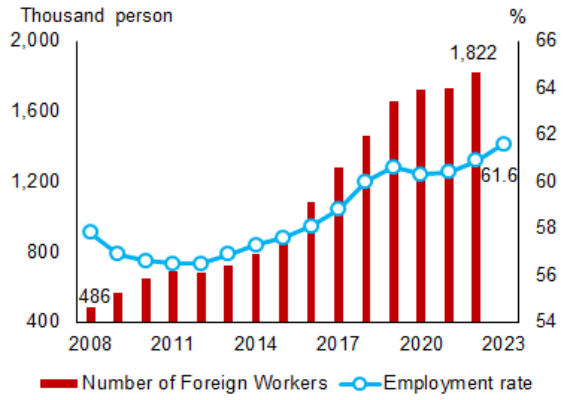
Figure A1.3 Employment Conditions



Source: Bank of Japan
Note: The latest data is of Q3 2023.

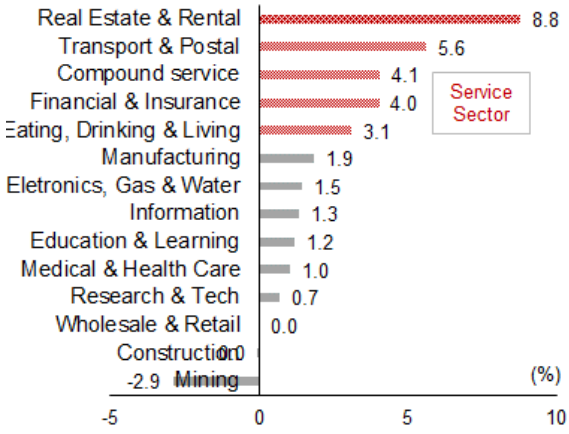
[42] There is a possibility that next year's "Shunto" may result in higher wage increases than this year. It has been reported that the Japanese Trade Union Confederation, representing the labor sector in Japan, has demanded a wage increase of over 5 percent at the spring labor-management negotiations in 2024. (Kyodo News, 20.Oct.2023)

Figure A1.4 Employment Rate and Number of Foreign Workers in Japan



Source: MHLW
Note: 1) Number of foreign workers is surveyed on a yearly basis. 2) The employment rate for 2023 is as of September.

Figure A1.5 Wage Growth by Industry

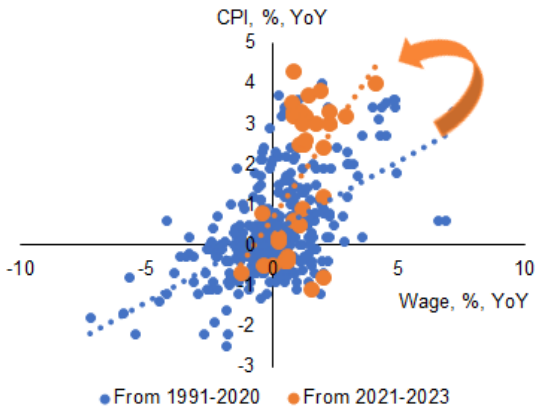


Source: MHLW
Note: Average growth rate from January to September in 2023 compared to the same period in 2022.

The Relationship between Wage Growth and CPI Inflation

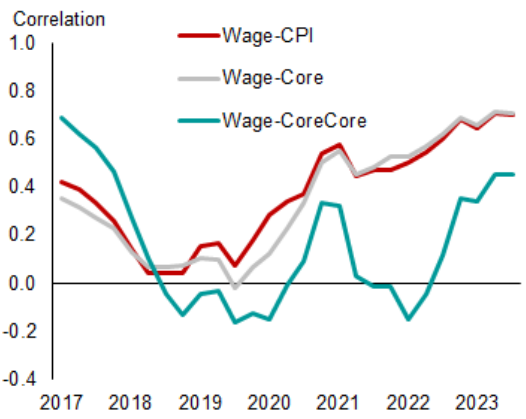
5. The relationship between the wage growth and CPI inflation in Japan is gradually strengthening. When graphing the variables on an XY plane spanning from 1991 to 2020, a consistent relationship becomes evident. Focusing the analysis on the period from 2021 to 2023 reveals a further strengthening of this relationship (Figure A1.6). The slope of the trend line, representing wage growth and CPI inflation, has steepened in the recent period compared to the period from 1991 to 2020. The correlation coefficient also signifies an increasing correlation between wage growth and CPI inflation. Calculating the moving correlation coefficient using the preceding five years' data for wage growth and CPI inflation shows a steep upward trend in recent times. These results remain robust even when using core CPI (excluding fresh food), or core-core CPI (excluding both fresh food and energy) (Figure A1.7). This suggests the possibility that recent wage increases may be influencing inflation through channels such as markups or increased income.

Figure A1.6 The Relationship between Wage and CPI in Japan



Source: AMRO staff calculations
Note: 1) Each dot line represents a trend. 2) The latest data both for wages and CPI is from September 2023.

Figure A1.7 Moving Correlation Coefficient of Wages and CPI



Source: AMRO staff calculations
Note: 1) The correlation coefficient is calculated using the preceding five years' data at each point.

6. The causal relationship between wages and prices, examined by a Granger-Causality test, reveals that each of these two variables does Granger cause the other.[43] This indicates that the past information of one variable significantly contributes to the prediction of the other. Additionally, in the case of Japan, both the headline CPI as well as the core and core-core indices are recognized as important indicators. Taking this into consideration, the analysis is conducted by sequentially changing price indicators to headline CPI, core, and core-core. The results show that both the null hypothesis that wages do not Granger cause the CPI indices and CPI indices do not Granger cause wages are rejected.

Table A1.1 Result for Granger-Causality Test

Null Hypothesis	Wage ≠> CPI	Wage ≠> Core	Wage ≠> CC	CPI ≠> Wage
F-statices	4.535***	3.354***	3.480**	3.037**

Source: AMRO staff estimations
Note: 1) ***, ** and * denote that null hypothesis is rejected at 1 percent, 5 percent, and 10 percent significant level, respectively. 2) CC represents core-core CPI. 3) The sample period is from Q1 1991 to Q2 2023.

Wage Impacts on Prices

7. A preliminary empirical analysis suggests a significant impact of wages on prices. The model employed for estimation is based on the inflation determination equation proposed by Guerrieri et al. (2010), assuming an open economy. Initially designed with wages and the output gap, the equation is expanded to incorporate exchange rates (equation 2 to 6). Subsequently, the dependent variables are specified as core CPI (equation 3), core-core CPI (equation 4), CPI goods (equation 5), and CPI services (equation 6) to assess the impact of wages.[44] The estimation results indicate that wages exert a significant impact not only on headline CPI but also on core and core-core CPI, with the most pronounced effect observed in core CPI. Furthermore, upon differentiating CPI into goods and services, the analysis suggests that wages have a more substantial impact on CPI goods. More importantly, the results from the regression analysis show that only about one-third of wage increase is passed on to price, implying that wages may have to rise by more than 3 percent to achieve the 2 percent target when other factors remain constant. However, when restricting the analysis to after the year 2000, the impact of wages on prices is found to be statistically insignificant.[45] This implies that the influence of wages may vary over time, prompting the need to evaluate the effects of wages across various time periods.[46]

[43] The results of the Granger test in this chapter suggest that prices and wages influence each other and that both variables could be exogenous to either variable. However, it is difficult to assert that there is a strict statistical causal relationship just because the test has passed. Therefore, most papers conduct regression analysis after the Granger test.
[44] Both the output gap and exchange rates have been analyzed to be in line with a priori expectations that they are positively effect on prices.
[45] This may be mainly due to the lowering of the influence of wages along with the rise in unemployment as economic activities were disrupted during the pandemic.
[46] The Bank of Japan's recent analysis of the impact of wages on prices, when limiting the analysis period to after the year 2000, the influence of wages was also statistically insignificant.(Linkage between Wages and Prices: Past Experience and Future Issues, Bank of Japan, April, 2023)

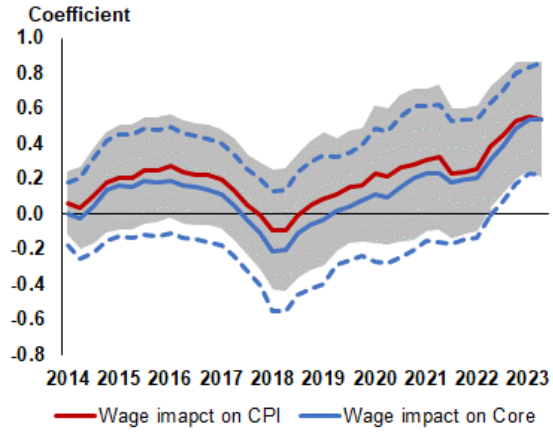
Table A1.2 Regression Results for Wage Impacts on Prices

Explanatory Var.	Dependent Var. Eq (1) ΔCPI	(2) ΔCPI	(3) ΔCore	(4) ΔCC	(5) ΔGoods	(6) ΔService
C	0.458***	0.432***	0.419***	0.336***	0.413***	0.486***
$\Delta Wage_{t-1}$	**0.321*** **	**0.332*** **	**0.346*** **	**0.339*** **	**0.401*** **	**0.267*** **
$\Delta Output\ gap_{t-1}$	0.203***	0.172***	0.172***	0.123*	0.201*	0.147**
$\Delta Exchange\ rate_{t-1}$	–	0.026***	0.021***	0.017***	0.056***	0.005
Adjusted R^2	**0.406**	**0.459**	**0.474**	**0.380**	**0.317**	**0.313**

Source: AMRO staff estimations
Note: 1) ***, ** and * denote that null hypothesis is rejected at 1 percent, 5 percent, and 10 percent significant level, respectively. 2) CC represents core-core CPI. 3) Goods and Service represent CPI goods and CPI services. 4) Δ denotes the lag difference. 5) The sample period is from Q1 1991 to Q2 2023. 6) the use of lagged values of explanatory variables is employed to tackle the endogeneity issue.

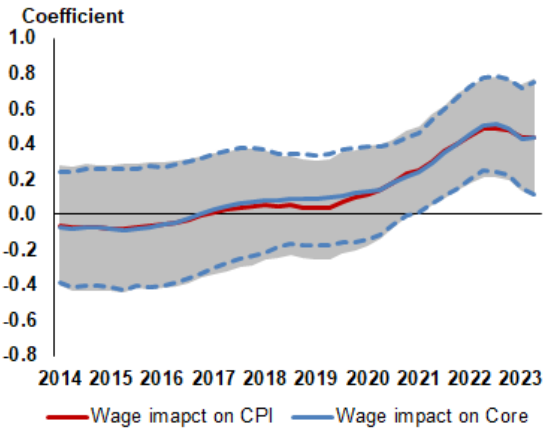
8. An additional empirical analysis, under the assumption that the impact of wages on prices may vary over time, reveals a notable expansion of wage influence in recent periods. The coefficient measuring the impact of wages on prices is estimated using two approaches: rolling regression (Figure A1.8) and Time-Varying Parameter (TVP[47]) model (Figure A1.9). Both models affirm the result that the influence of wages on prices has intensified recently. According to both rolling regression and TVP model, the impact of wage on prices has become more significant since Q2 2022 and Q1 2021. In the rolling regression, coefficients are estimated by using data from the past 10 years at each point in time to capture changes in the coefficient over time. For the TVP model, a Bayesian approach is employed to estimate time varying coefficient values. The finding of an increased impact of wages on prices remains significant even when the price index is changed to core, indicating robustness in the analysis.[48] However, it is important to note that these estimated results may vary depending on the model or estimation period employed by researchers.

Figure A1.8 Change in Wage Coefficient over Time



Source: AMRO staff estimations

Figure A1.9 Response of CPI to Wages over Time



Source: AMRO staff estimations

[47] Parameters to be sampled were extracted using Gibbs sampling. For more details regarding TVP model, please refer to Bayesian Econometrics (Kang, 2021)
[48] For core-core CPI, the impact of wages is insignificant in rolling regression, but significant in the TVP model.

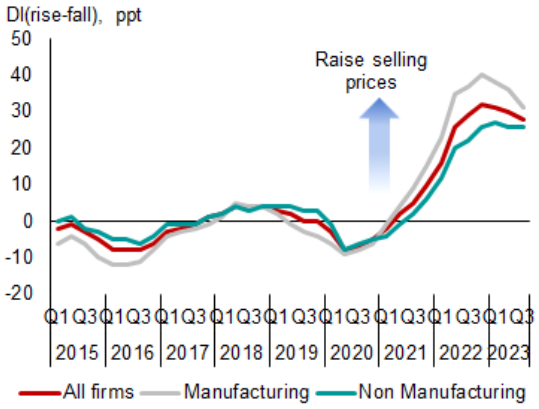
Note: 1) The shadow area and blue dot line represent 95 percent confidence intervals. 2) Equation: ΔCPI or Δcore CPI = constant + Δwage + Δoutput gap +Δ exchange rate + error. 3) Figures show the time-varying coefficient of wages in the equation.

Note: 1) Figures show posterior distribution of the wage coefficient based on a TVP model consisting of Output gap, nominal wage index, and CPI(or Core); 2) The shadow area and blue dot line represent 95 percent confidence intervals. 3) Figures show time-varying response of CPI(or Core) to a 1 percent increase in wage.

Policy Implications

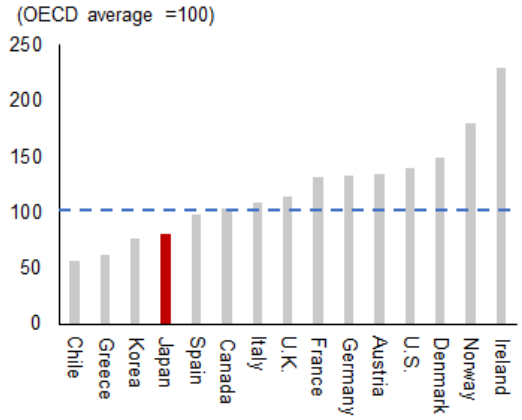
9. While it may be premature to conclusively predict the wage-price spiral will be strengthened in the near future, the critical factor lies in the combination of wage increases and improvements in labor productivity. Empirical analysis indicates that wages have a significant impact on various inflation indicators, and this influence has recently intensified. However, caution is warranted in concluding that persistent wage effects will be based on these empirical findings. The wage increases in Japan have only recently gained momentum, and relying solely on empirical analysis from past data may not help accurately predict the future trends. Notably, there is a growing trend among companies to pass on the increased input costs stemming from high commodity prices to the final selling prices (Figure A1.10). It remains to be seen whether recent wage growth will further intensify this trend. Despite recent wage hikes, Japan's labor productivity remains at a relatively low level.[49] (Figure A1.11) Therefore, policymakers should focus not only on elevating stagnant wages but also enhancing labor productivity to ensure sustainable economic growth.

Figure A1.10 Change in Firms' Price-setting Stance



Source: Bank of Japan

Figure A1.11 Labor Productivity among OECD Countries



Source: OECD
Note: 1) The labor productivity is measured by GDP per hour worked
2) The data is as of 2021

10. Authorities must make concerted efforts to ensure that wage increases have a positive impact on the economy by enhancing productivity. To enhance labor productivity, reforms in both the labor market and education are imperative. The recent labor market reform guidelines announced by the Japanese government on May 2023, including support for improving abilities through re-skilling, introducing job-based wages according to the actual conditions of individual companies, and facilitating the movement of labor to growth

[49] According to Japan Productivity Center, Japan's service industry has been experiencing a continuous decline in labor productivity since the Q3 2021, while the manufacturing sector has seen consecutive declining since the Q1 2023.

areas, can be considered as a desirable initial step for labor market reform.[50] Considering the fact that the number of non-regular works are steadily increasing, it is also crucial to promote human capital formation and inspire work motivation for them through supporting education investment and introducing performance based salary.[51] Furthermore, to leverage Japan's high educational attainment for productivity, fostering the talents desired by businesses through industry-academic collaboration is essential. Lastly, Japanese companies should actively participate in government reform guidelines while persistently striving to increase productivity through initiatives such as digitization and automation in the workplace.

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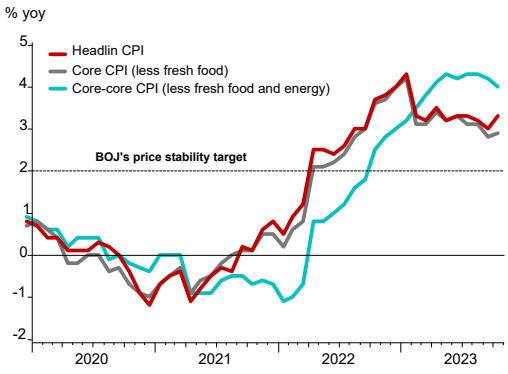
Kang, Kyuho (2021), "Bayesian Econometrics"

[50] For more details, please visit cabinet secretariat website. (https://www.cas.go.jp)
[51] When the treatment of non-regular workers is inadequate, it can undermine their motivation, potentially leading to a decline in overall economic productivity. (Aoyagi and Ganelli, 2013)

2. Decomposing Supply and Demand-driven Inflation in Japan [52]

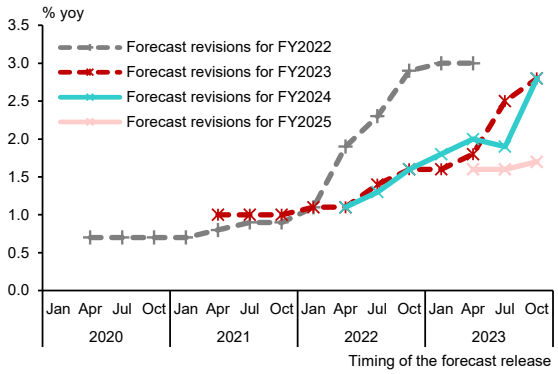
1. Japan's extended period of high inflation, exceeding initial expectations, has rendered the assessment of its duration and underlying drivers increasingly challenging. Several indicators suggest that underlying inflation has been gaining momentum in Japan, primarily driven by price increases for goods and services unrelated to energy. In particular, the "core-core" CPI (less fresh food and energy) has surged to 4 percent or higher (yoy) from April to October 2023 (Figure A2.1). Furthermore, services price inflation has reached a high of around 2 percent (yoy), and the output gap is estimated to have improved and is expected to remain positive going forward. Taking into account these developments surrounding prices, the BOJ has consistently revised its inflation outlook upward during the Policy Board meetings held in 2022-2023 (Figure A2.2). In this regard, accurately deciphering the key determinants of high inflation in Japan is crucial for shaping the BOJ's price outlook and guiding its monetary policy response.

Figure A2.1 Japan: Consumer Price Inflation



Source: Ministry of Internal Affairs and Communications via Haver Analytics

Figure A2.2 Real-time Revision of BOJ's Core CPI Inflation Forecasts

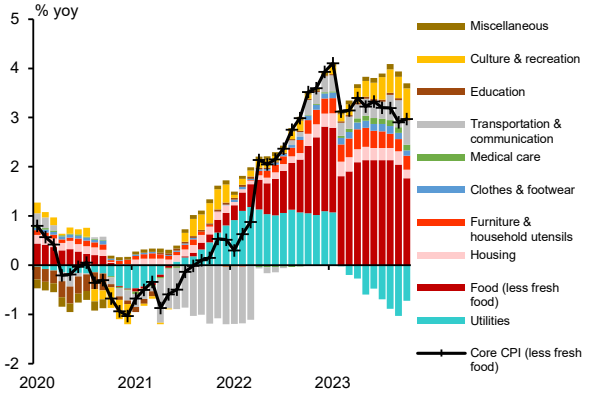


Note: Based on the medians of the BOJ Policy Board members' quarterly forecasts of core CPI (less fresh food) inflation, except for the April 2020 meeting when the average forecast was calculated from the announced range.
Source: BOJ

2. Conventional breakdowns of CPI inflation by key commodities suggest that Japan's elevated CPI inflation is primarily supply-driven, particularly through the importe price channel. The conventional approach attributes Japan's high consumer prices to food and daily necessities that utilize a significant proportion of imported raw materials (Figure A2.3), which are considered as supply-side factors. Furthermore, the delayed price hikes by firms, reflecting previous cost increases due to high commodity prices and a weak yen, have contributed to the sustained rise in consumer prices, even in the presence of negative import price inflation (Figure A2.4).

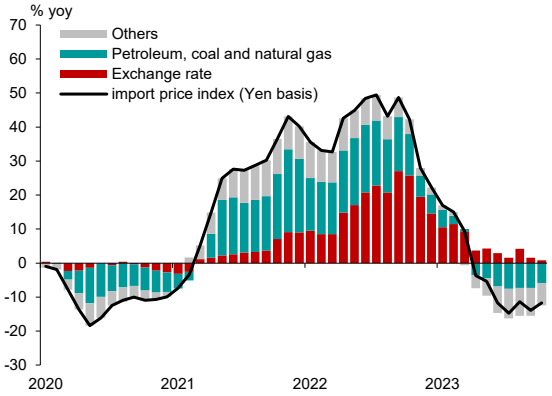
[52] Prepared by Jinho Choi, Deputy Group Head and Principal Economist, with contributions by Jungsung Kim, Economist.

Figure A2.3 Contribution to Core CPI Inflation by Commodity



Source: Ministry of Internal Affairs and Communications via Haver Analytics

Figure A2.4 Contributions of Energy Prices and Exchange Rates to Import Price Inflation



Source: BOJ via Haver Analytics; AMRO staff calculations

3. Against this backdrop, we employ a novel methodology to differentiate between supply- and demand-driven inflation, with the aim of providing additional insights into the underlying drivers of Japan's high inflation. Shapiro (2022) decomposed U.S. inflation into demand and supply-side factors by examining the relationships between the price index and consumption activity within the sectoral data of personal consumption expenditures (PCE). The methodology suggests identifying sectoral inflation as either supply-driven or demand-driven based on the signs of residuals from estimating a vector autoregression (VAR) model with a lag of p.

$$\boldsymbol{y}_{it} = \sum_{k=1}^{p} C_{ij}\, \boldsymbol{y}_{i,t-k} + \vartheta_{it}$$

Where the vector $\boldsymbol{y}_{it} = (\Delta p_{it}, \Delta q_{it})$ consists of the first differences in the log deflator (Δp_{it}) and real consumption (Δq_{it}) of item i at month t, respectively. $\vartheta_{it} = (\vartheta_{it}^{p}, \vartheta_{it}^{q})$ denotes the respective residuals. Specifically, if the residuals in both price and quantity equations share the same sign, inflation in an expenditure item is categorized as "demand-driven". Conversely, if the residuals exhibit opposite signs, sectoral inflation is classified as "supply-driven".[53] Additionally, to account for measurement errors, if either the price or quantity residuals are close to zero, the category is classified as "ambiguous".

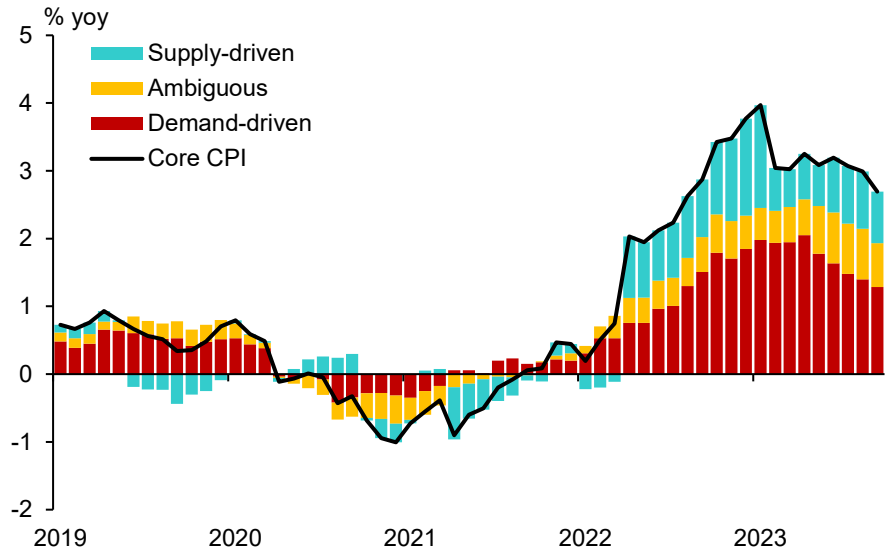
4. This pioneering methodology has been widely utilized by various central banks and international organization, including the Federal Reserve Bank (FRB) of San Francisco[54], the International Monetary Fund (IMF)[55], the European Central Bank (ECB)[56], and the Central Bank of Ireland[57], among others. These studies suggest that during the initial phase of the pandemic, lockdowns primarily reduced prices through the demand channel due to collapse in demand, negatively affecting overall inflation, which was observed across different regions. However, with gradual reopenings and stimulus macro policies, demand-driven inflation turned

[53] This classification implies that the signs of reduced-form residuals reveal information about the signs of the structural shocks. See Shapiro (2022) for the details of the identification strategy.
[54] https://www.frbsf.org/economic-research/indicators-data/supply-and-demand-driven-pce-inflation/.
[55] Firat and Hao (2023).
[56] Gonçalves and Koester (2022).
[57] Conefrey and McLaughlin (2023).

positive surging significantly. Meanwhile, supply-driven inflation stayed positive and relatively stable throughout the pandemic. We apply this methodology to Japan by utilizing core CPI (less fresh food) inflation and monthly consumption expenditure data, with the latter obtained from the Family Income and Expenditure Survey (FIES), focusing on 10 key categories[58] based on use classification. The analysis covers the period from January 2000 to September 2023.

5. Our decomposition analysis of Japan's core CPI inflation indicates that demand-driven factors have contributed to its elevated level since 2022. The acceleration in core CPI inflation in 2022 was propelled by the dual forces of supply-driven and demand-driven factors (Figure A2.5).[59] Since February 2023, the contribution of supply-driven factors to core CPI inflation has decreased by nearly half, primarily due to the implementation of the government's new energy subsidy for electricity and gas bills.[60] Meanwhile, the contribution of demand-driven inflation has gradually dwindled after reaching its peak in Q1 2023. This decomposition result emphasizes the significant role of demand-driven factors in propelling Japan's core CPI inflation rates. Despite the limitation of our empirical model, which examines only 10 disaggregated categories, this finding stands in sharp contrast to the conventional view, based on CPI disaggregation by commodity, suggesting that the recent spike in Japan's CPI inflation has been predominantly driven by supply factors. As a robustness check, using an alternative structural VAR model also confirms our key finding (See Box A1. Alternative Approach Using a Structural VAR Model with Sign Restrictions).

Figure A2.5 Decomposition of Core CPI Inflation by Supply and Demand Drivers



Source: Ministry of Internal Affairs and Communications via Haver Analytics; AMRO staff estimation

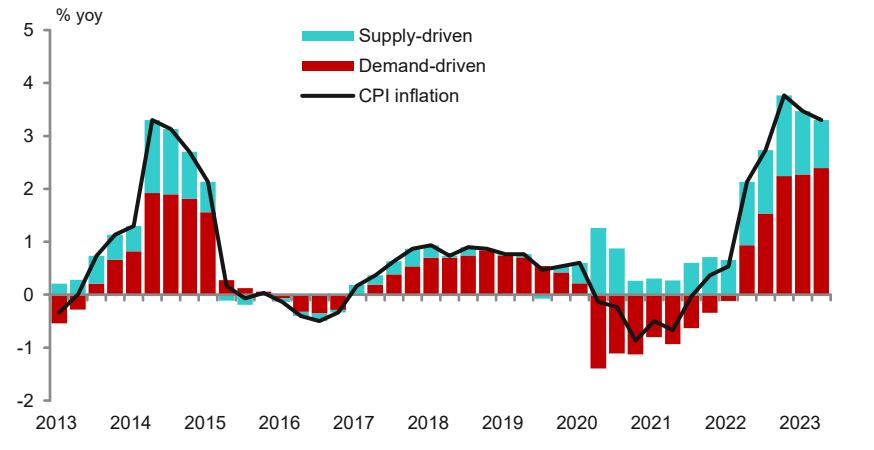
[58] These include: 1) Food (less fresh food), 2) Housing, 3) Fuel, light & water charges (or Utilities), 4) Furniture & household utensils, 5) Clothing & footwear, 6) Medical care, 7) Transportation & communication, 8) Education, 9) Culture & recreation, and 10) Miscellaneous.
[59] To categorize as "Ambiguous," a threshold at 0.10 standard deviations from zero was applied to either of the price or quantity residuals. The use of alternative thresholds does not qualitatively impact the estimation results.
[60] The government initiated a subsidy program in January 2023, offering JPY7 per kilowatt-hour for electricity and JPY30 per cubic meter for gas monthly. This energy subsidy, initially set to expire in September 2023, has been extended until April 2024.

Box A1. Alternative Approach Using a Structural VAR Model with Sign Restrictions[61]

We employ an alternative structural VAR (SVAR) approach to estimate the components of inflation driven by supply and demand in Japan. To decompose Japan's core CPI inflation into supply and demand-driven factors, we construct a SVAR model consisting of core CPI inflation (yoy), and output gaps. To identify supply and demand shocks, we impose a sign-restriction scheme following Eickmeier and Hofmann (2022) under which: i) an increase in either demand or supply shocks has a positive impact on output gaps; and ii) an increase in supply shocks has a negative impact on inflation, whereas demand shocks have a positive impact. Essentially, this identification strategy aligns with that of Shapiro (2022), as both methods exploit the key characteristics of demand and supply shocks. For estimating the model, we adopt Bayesian methods, as suggested by Arias et al. (2014), covering the sample period from Q1 1991 to Q2 2023.

This alternative SVAR approach indicates a significant contribution of demand-driven factors to the recent surge in Japan's core inflation. According to our estimations, demand-driven factors increasingly propel the acceleration in Japan's consumer inflation, whereas the impact of supply-driven factors have diminished, particularly in 2023. As of Q2 2023, demand-driven factors accounted for 54 percent of Japan's core inflation.

Figure BA1.1 Decomposition of Core CPI Inflation Using Sign-restricted SVAR Model



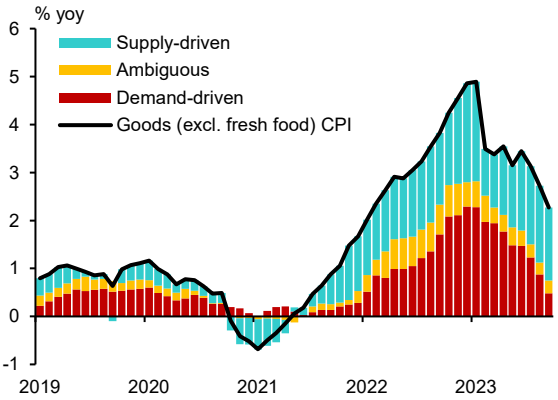
Source: Ministry of Internal Affairs and Communications via Haver Analytics; AMRO staff estimation

6. The escalation in core goods inflation was also driven by both supply and demand factors in 2022, but the contribution of demand-driven inflation has diminished significantly in 2023 (Figure A2.6). In 2022, as the COVID-19 pandemic subsided, domestic economic activities resumed, and Japan's border measures gradually eased. At the same time, the surge in commodity prices and a weaker yen contributed to pushing up production costs. These circumstances resulted in an increase in both demand and supply-driven inflation, especially notable in the food category, which accounted for about 29 percent of the total goods CPI basket (Figure A2.7). In 2023, the demand-driven inflation channel weakens with modest domestic demand. Meanwhile, the supply-driven inflation channel remains robust as companies continue to raise retail prices, particularly in food and beverages, reflecting the past rise in production costs.[62] Furthermore, the decomposition of goods CPI inflation indicates that supply-

[61] Prepared by Jungsung Kim, Economist.
[62] According to a local research company (Teikoku Databank), food price hikes in 2023 were seen for 32,395 products, significantly surpassing the 25,768 items that experienced hikes in 2022. For a related local news report, see https://mainichi.jp/english/articles/20231201/p2a/00m/0bu/003000c.

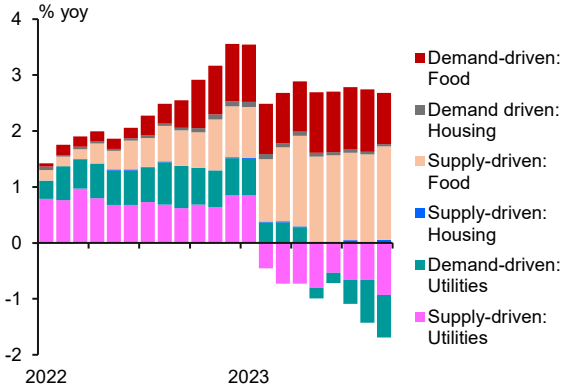
driven inflation from the utilities category turned negative starting February 2023. This suggests that the government's new energy subsidy has played a role in curbing prices in this sector.

Figure A2.6 Decomposition of Core Goods CPI Inflation by Supply and Demand Drivers



Source: Ministry of Internal Affairs and Communications via Haver Analytics; AMRO staff estimation

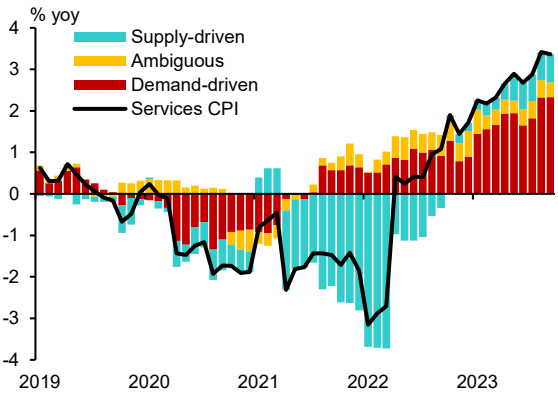
Figure A2.7 Contributions of Key Commodities to Core Goods CPI Inflation with Supply and Demand Drivers



Source: Ministry of Internal Affairs and Communications via Haver Analytics; AMRO staff estimation

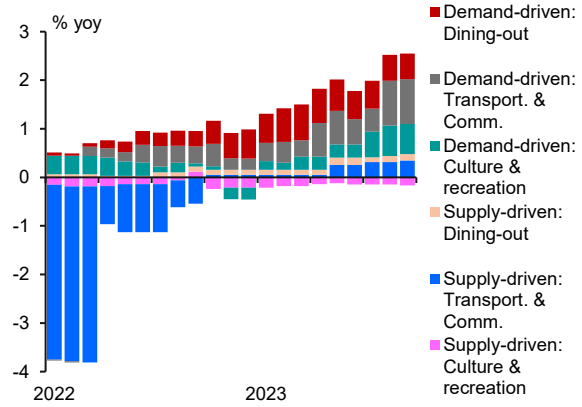
7. In contrast, the acceleration in overall services inflation has been primarily driven by demand-side factors since the second half of 2022. Japan's services price inflation has consistently been affected by idiosyncratic factors, including the government's adoption of the free higher education policy in April 2020, the domestic travel subsidy program that continued in 2H 2020, and the reductions in mobile phone charges implemented from April 2021. The decomposition of services CPI inflation indicates that the contribution of supply-driven inflation turned positive in October 2022 as the impact of the previous year's mobile phone charge reductions finally dissipated (Figure A2.8). Meanwhile, demand-driven inflation has played a significant role in the overall increase in services inflation since 2H 2022, primarily driven by categories such as dining-out, transport and communication, and culture and recreation (Figure A2.9). Considering Japanese households' relatively robust demand for services goods (Figure A2.10) and firms' stronger pass-through to services prices (Figure A2.11), one cannot rule out the possibility of Japan's services inflation, with the significant contribution of demand factors, becoming much stickier than in the past.

Figure A2.8 Decomposition of Services CPI Inflation by Supply and Demand Drivers



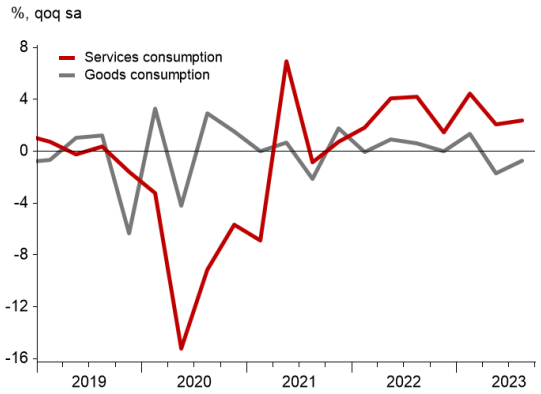
Source: Ministry of Internal Affairs and Communications via Haver Analytics; AMRO staff estimation

Figure A2.9 Contributions of Key Commodities to Services CPI Inflation with Supply and Demand Drivers



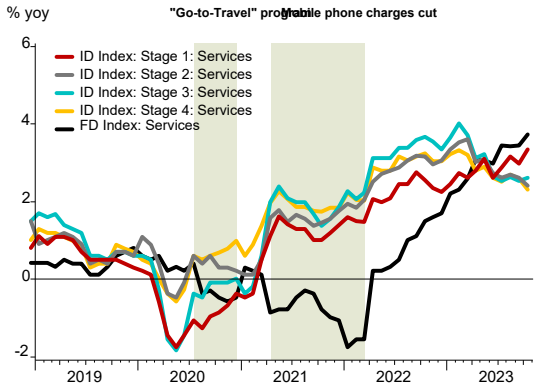
Source: Ministry of Internal Affairs and Communications via Haver Analytics; AMRO staff estimation

Figure A2.10 Private Consumption by Type



Source: Cabinet Office via Haver Analytics

Figure A2.11 Pass-through of Producer Price Changes by Demand Stages



Note: Based on the BOJ's Final Demand (FD)-ID (Intermediate Demand) Price Indexes; ID indices range from "Stage 1" (the most upstream sector of production flows) to "Stage 4" (the most downstream sector). The FD index corresponds to producers' final demand of goods and services and excludes exports.
Source: BOJ via Haver Analytics; AMRO staff calculations

8. Our analysis highlights the recent surge in Japan's inflation which is driven by demand, implying that the BOJ needs to be vigilant for potential policy adjustments to control inflationary pressures. Although the contribution of demand-driven factors to core goods inflation has diminished in recent months, the acceleration in services inflation, fuelled by demand-driven factors, may require greater attention from the BOJ. While the BOJ places greater emphasis on the trend of moderate wage growth, it must also weigh the growing risk of higher inflation becoming entrenched if current high inflation remains persistent, partly due to the shift in firms' pass-through behavior, causing inflationary expectations to become anchored at a higher level. If inflation stays well above the BOJ's inflation target of 2 percent for an extended period, driven by a combination of strong demand and supply shocks that push inflation expectations above levels consistent with the central bank's inflation target, a sharp tightening of monetary policy might be necessary to curb inflationary pressure and anchor inflation expectation to prevent it from drifting above the target. Consequently, the BOJ needs to be prepared to make well-timed and gradual policy adjustments to reduce the persistently high inflation to stabilize and anchor inflation expectations.

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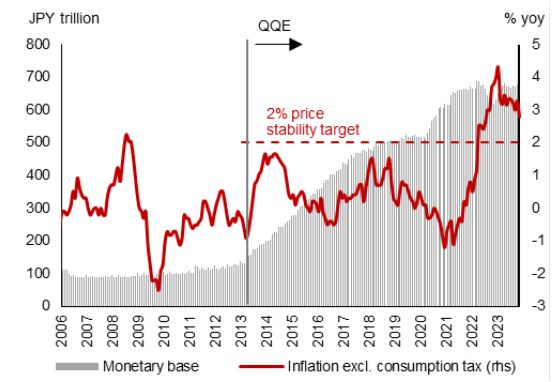
3. Impact of the BOJ's YCC Exit on Long-term Interest Rates[63]

Background

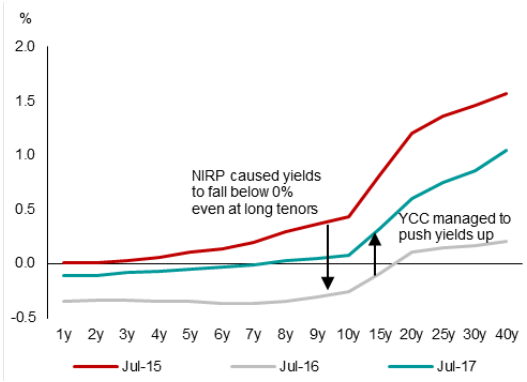
1. The Bank of Japan (BOJ) introduced the Yield Curve Control (YCC) framework in September 2016 to enhance the sustainability of its ultra-easy monetary policy. The BOJ adopted Quantitative and Qualitative Monetary Easing (QQE) in April 2013 with the aim of lowering real interest rates by raising inflation expectations and pushing down nominal interest rates. However, after years of substantial bond buying and the resultant sharp increase in the monetary base, the BOJ still could not achieve its price stability target of 2 percent (Figure A3.1). Following the introduction of the Negative Interest Rate Policy (NIRP) in January 2016 with the hope of fueling inflation, not only did short-term interest rates fall into negative territory, but the yield curve flattened, and long-term interest rates also dropped below zero percent (Figure A3.2). There were concerns that the compression in interest rate margins would undermine the profitability of financial institutions, leading the BOJ to introduce a new framework known as "QQE with YCC", with the short-term policy interest rate target of -0.1 percent and the long-term interest rate target around 0 percent.

Figure A3.1. Monetary Base and Inflation



Source: BOJ, Ministry of Internal Affairs and Communications

Figure A3.2. JGB Yield Curve



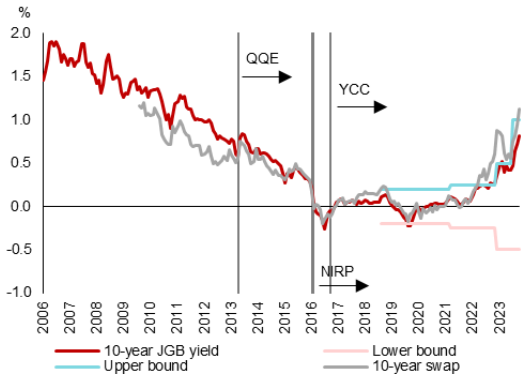
Source: MOF

2. After an extended period of closely controlling the term structure of interest rates, the BOJ has recently increased flexibility in its YCC policy. Until recently, the BOJ maintained close control over the term structure of interest rates with the YCC policy, notwithstanding minor adjustments in the allowance band around the long-term interest rate target of 0 percent.[64] However, since the US Federal Reserve began its current interest rate tightening cycle in early 2022, 10-year Japanese Government Bond (JGB) yields have persistently faced upward pressures (Figure A3.3). This trend is also evident in the 10-year overnight index swap rate breaching the BOJ's interest rate ceiling. In December 2022, the BOJ doubled the band to 0.5 percent above or below the target of 0 percent. Amid heightened speculation of future policy adjustments, the BOJ had to increase bond purchases to cap the

[63] Prepared by Wee Chian Koh, Economist.
[64] The long-term interest rate refers to yield on 10-year JGBs. In July 2018, the former Governor Kuroda mentioned in the press conference that 10-year JGB yields were expected to move within 0.1 percent band with the possibility of fluctuations up or down at twice that level (i.e. within 0.2 percent). The allowance band was subsequently decided to be 0.25 percent in March 2021.

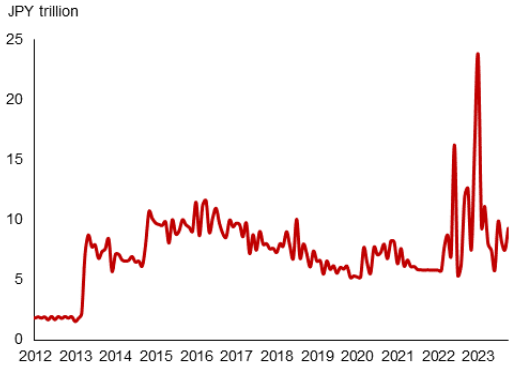
rise in yields (Figure A3.4). In July 2023, the BOJ decided to conduct YCC with greater flexibility, effectively raising the upper bound from 0.5 percent to 1.0 percent. In October 2023, the BOJ further increased the flexibility of the YCC by regarding the 1.0 percent upper bound as a "reference" instead of a ceiling.

Figure A3.3. 10-year JGB Yield and 10-year Overnight Index Swap Rate



Source: Bloomberg, BOJ, MOF

Figure A3.4. BOJ's Outright JGB Purchases



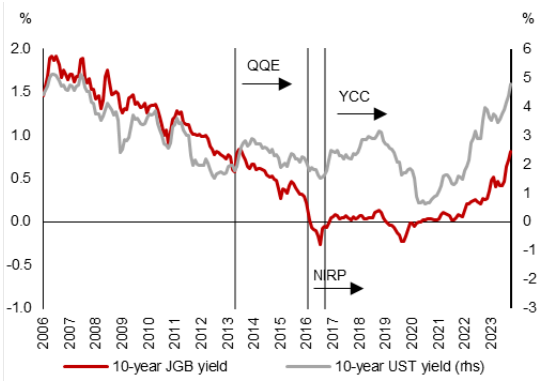
Source: BOJ

3. The likelihood of the BOJ ending its YCC policy has increased. Many analysts are of the view that the recent policy tweaks to the YCC framework are indicative steps towards a formal exit. If the YCC is lifted, bond yields could rise, influencing financial markets and the economy. Against this backdrop, this selected issue aims to quantify the impact of the BOJ's potential YCC exit on long-term interest rates.

Modeling Nominal Long-term Interest Rates

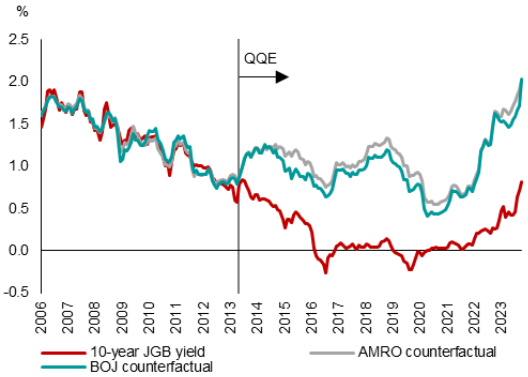
4. The BOJ's unprecedented ultra-easy monetary policy has pushed down Japan's long-term interest rates. Prior to the introduction of QQE, Japan's 10-year JGB yield closely followed the movement of the 10-year US Treasury (UST) yield. A simple model that regresses 10-year JGB yield on 10-year UST yield and expected inflation in Japan has high explanatory power (R^2 = 0.95) in the movement of the 10-year JGB yield. However, Japan's long-term yields have decoupled from the US (R^2 = 0.31) after the start of the BOJ's QQE program (Figure A3.5). The gap between JGB and UST yields was the largest during the Fed's monetary policy normalization from 2015 to 2018 and the current tightening cycle. The large-scale purchases of JGBs have effectively lowered long-term interest rates by about 0.9 percentage point on average (Figure A3.6). This is broadly in line with the BOJ's estimate (BOJ 2021).

Figure A3.5. 10-year JGB and 10-year UST Yields



Source: BOJ, Federal Reserve Bank of St. Louis

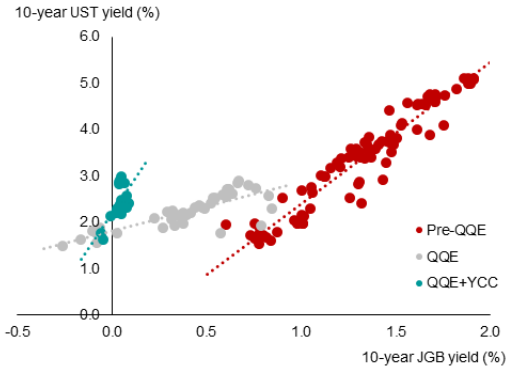
Figure A3.6. Counterfactual simulation of 10-year JGB Yield



Source: BOJ, AMRO staff estimates
Note: AMRO's model is based on a regression with 10y JGB yield as the dependent variable and 10y UST yield and expected inflation as independent variables. The BOJ's model uses 10y UST yield, CPI inflation, and active job openings-to-applicants ratio as independent variables. The regressions are based on pre-QQE data from January 2006 to March 2013.

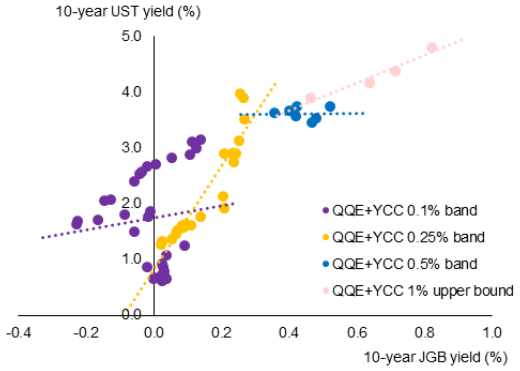
5. The correlation between the 10-year JGB yield and the 10-year UST yield varies depending on the policy regime. This is evident from the changes in the level and slope of the scatter plot between JGB and UST yields (Figures A3.7 and A3.8). Given this observation, one approach to model the regime changes is to introduce a categorical variable, with "0" referring to pre-QQE, "1" indicating QQE, "2" denoting QQE with YCC, "3" representing QQE with YCC of 0.1% allowance band, and so on. Analyzing the data under these categories can offer insights into the evolving correlations between the two yields across different policy periods.

Figure A3.7. Scatter plot of 10-year JGB and 10-year UST Yields



Source: BOJ, Federal Reserve Bank of St. Louis
Note: Pre-QQE is from January 2006 to March 2013; QQE is from April 2013 to August 2016; QQE+YCC is from September 2016 to July 2018.

Figure A3.8. Scatter plot of 10-year JGB and 10-year UST Yields



Source: BOJ, AMRO staff estimates
Note: QQE+YCC 0.1% band is from August 2018 to February 2021; QQE+YCC 0.25% band is from March 2021 to November 2022; QQE+YCC 0.5% band is from December 2022 to June 2023; QQE+YCC 0.1% upper bound is from July 2023 to October 2023.

6. The introduction of the BOJ's QQE, YCC, and NIRP policies has added complexity to the determinants of long-term interest rates. These factors have expanded beyond US long-term interest rates and Japan's expected inflation to also encompass the

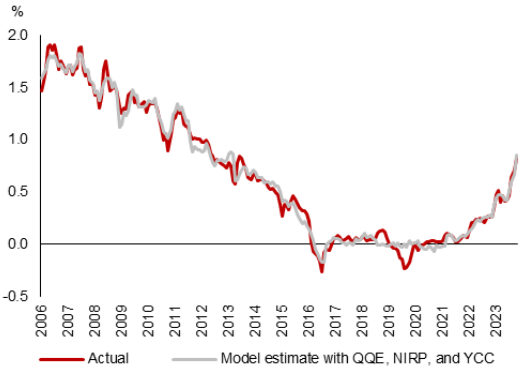
BOJ's holdings of JGBs[65] and their maturities, the overnight call rate (short-end of the yield curve)[66], and the impact of policy regime shifts. The model we adopt takes the form of:

$$\begin{aligned} 10y\ JGB\ yield = {} & \beta_0 + \beta_1 10y\ UST\ yield + \beta_2 D_{QQEYCC} + \beta_3 10y\ UST\ yield * D_{QQEYCC} \\ & + \beta_4 Expected\ inflation + \beta_5 BOJ's\ JGB\ share \\ & + \beta_6 BOJ's\ JGB\ average\ maturity + \beta_7 Call\ rate * D_{NIRP} \end{aligned} \quad (1)$$

where $D_{QQEYCC} = 0$ refers to the period during pre-QQE, $D_{QQEYCC} = 1$ is QQE, $D_{QQEYCC} = 2$ is QQE with YCC, $D_{QQEYCC} = 3$ is QQE with YCC with a 0.1 percent allowance band, and so on; $D_{NIRP} = 0$ from February 2016 onwards and $D_{NIRP} = 1$ otherwise.

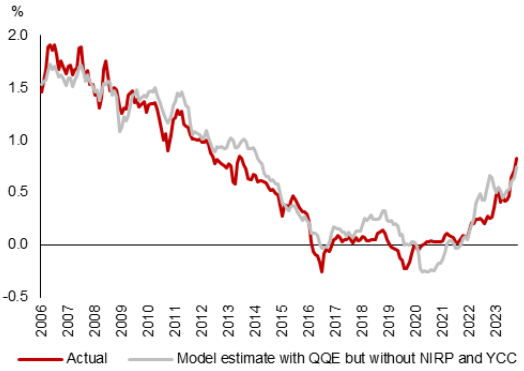
7. Our model accurately captures the movements in the actual 10-year JGB yield. The inclusion of changes in the policy regime significantly enhances the model fit (Figure A3.9). An alternative model that does not explicitly account for NIRP and YCC fails to capture the impact of NIRP pushing yields into negative territory in 2016 and the effects of various YCC adjustments in controlling yields (Figure A3.10).

Figure A3.9. AMRO's 10-year JGB Yield Model



Source: BOJ, AMRO staff estimates
Note: See equation 1 for model variables.

Figure A3.10. Model Without Policy Regimes



Source: BOJ, AMRO staff estimates
Note: Model as in equation 1 but without D_{QQEYCC} and D_{NIRP}.

Impact of YCC Exit on Nominal Long-term Interest Rates

8. What constitutes a YCC exit? It is important to note that the YCC is a policy framework aimed at controlling interest rates and shaping the yield curve, often achieved through substantial or unlimited purchases of JGBs. In the context discussed here, and based on the discussions with market participants, a YCC exit refers to the BOJ relinquishing control over the 10-year JGB yield. However, we assume that the NIRP will stay since the BOJ has not expressed confidence in achieving sustainable 2 percent price stability yet.[67] In such a YCC exit, the pace and scale of the BOJ's JGB operations (i.e., the BOJ's balance sheet policy) become significant. The BOJ can exit in a gradual manner by tapering its JGB purchases or abstaining from the market altogether. Although unlikely, a more aggressive exit

[65] We test several model specifications and find that the stock of BOJ's JGB holdings is more important in explaining the variation in 10-year JGB yields compared to the flow (i.e., monthly purchases).
[66] As discussed in the background section, the NIRP led to a marked decline in yields even at long tenors.
[67] The lifting of the NIRP is characterized as monetary policy normalization.

is also conceivable involving the BOJ selling a substantial portion of its JGB holdings. The scenarios outlined below encompass a wide range of potential outcomes.

9. Utilizing our model, we simulate the trajectory of the 10-year JGB yield under various scenarios, a process that requires making assumptions about the future path of key determinants. Our assumptions are as follows:

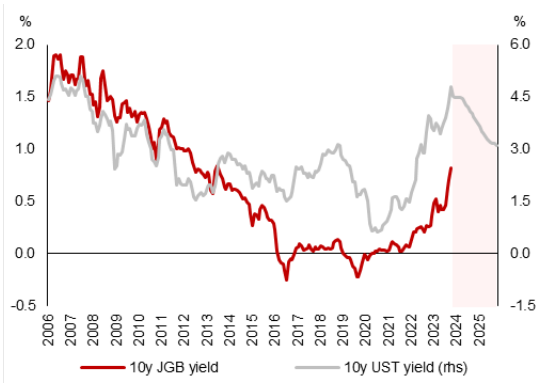
- **10-year UST yield** is based on market consensus forecasts as of November 28, 2023. The market projects the yield to fall from 4.52 percent in November 2023 to 3.74 percent in December 2024 and 3.18 percent in December 2025 (Figure A3.11).
- **Expected inflation** is based on the 12-month moving average of core inflation.[68] Core inflation is based on AMRO staff's projection, which is expected to average 2.6 percent in 2024 and 1.9 percent in 2025.
- **Overnight call rate** is assumed to remain around -0.1 percent, i.e., NIRP remains in place.
- **The BOJ's share of JGBs and average maturity** are assumed to vary depending on the YCC exit scenario.
  - i. *Scenario 1: YCC policy remains in place.* Both the BOJ's share of JGBs and maturity are unchanged from their October 2023 levels.
  - ii. *Scenario 2: Phased YCC exit.* The BOJ no longer sets a cap or reference on the 10-year JGB yield, allowing it to move according to market forces. The BOJ gradually reduces its bond purchases, with its share of JGB holdings declining by 10 percentage points annually. This results in a holding of 41 percent at end-2024 and 31 percent at end-2025, down from 53 percent in October 2023. Simultaneously, the average maturity of the BOJ's JGB holdings falls from 6.6 years in October 2023 to 5.9 years at end-2024 and 5.3 years at end-2025.
  - iii. *Scenario 3: Rapid YCC exit.* While removing the cap or reference on the 10-year JGB yield, the BOJ drastically reduces its balance sheet size to the pre-QQE level in two years. This results in the BOJ's share of JGB holdings declining to 31 percent at end-2024 and 12 percent at end-2025. The average maturity of the BOJ's JGB holdings falls to 5.2 years at end-2024 and 4.0 years at end-2025.

10. If the YCC policy remains unchanged, our model projects that the 10-year JGB yield will fall to around 0.4 percent at the end of 2024, in line with the easing of UST yields. Although the BOJ has allowed the 10-year JGB yield to rise above 1 percent, it has not reached that level yet. The 10-year JGB yield rose to around 0.96 percent in the days following the October 2023 policy adjustment but has since fallen to below 0.7 percent as of the end of November 2023. The recent decline in JGB yields reflects the pullback in UST yields, as the Fed tightening cycle may be approaching an end. In fact, the movement of the 10-year JGB yield has been largely driven by the 10-year UST yield since early 2022 (see Figure A3.5 above), whereas the impact of the BOJ's JGB purchases appears to have

[68] Japan's inflation expectations are largely adaptive in nature, i.e., backward-looking (BOJ 2016). The 12-month moving average of core inflation is used as a proxy for expected inflation as it appears to be a good fit.

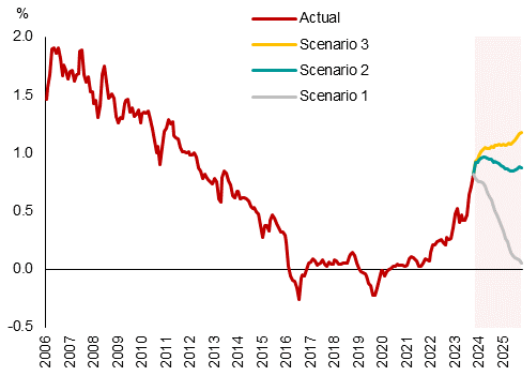
diminished. This can be observed from the substantial purchases required to bring the 10-year JGB yield down over the past year (see Figure A3.4 above). What this also implies is that the expected decline in UST yields should alleviate upward pressures on JGB yields, as our model shows (Figure A3.12).

Figure A3.11. 10-year UST Yield Projections



Source: BOJ, EconForecasting, Federal Reserve Bank of St. Louis
Note: The pink shaded area represents market projections.

Figure A3.12. 10-year JGB Yield Projections Under Various Scenarios



Source: BOJ, AMRO staff estimates
Note: The pink shaded area represents AMRO scenario projections.

11. In a phased YCC exit scenario, the 10-year JGB yield is estimated to rise moderately to 0.97 percent in March 2024 and then ease to 0.90 percent at the end of 2024. This suggests that with a gradual approach, the BOJ can engineer an orderly exit, maintaining the 10-year JGB yield at around the BOJ's current reference rate of 1 percent. In fact, some analysts have characterized the October 2023 policy adjustment as a de facto exit, and the YCC is no longer seen as a binding constraint since the repricing of yields has remained below 1 percent.[69]

12. In a rapid YCC exit scenario whereby the BOJ's balance sheet is restored to its pre-QQE size in two years, the 10-year JGB yield is estimated to increase to 1.07 percent at the end of 2024 and further to 1.26 percent at the end of 2025. Despite the expected decline in the 10-year UST yield, the 10-year JGB yield is projected to continue rising as the effect of the reduction in the BOJ's share of JGB holdings more than offsets falling UST yields.

13. The outcomes of the simulation results affirm that an orderly YCC exit can effectively rein in sharp rises in the 10-year JGB yield. In this regard, it is advisable for the BOJ to implement phased exit of the YCC, enabling long-term interest rates to better align with market fundamentals. Given the anticipated easing of UST yields, the current juncture may present an opportune time for initiating a YCC exit. This transition should be complemented by a recalibration of the BOJ's forward guidance, explicitly outlining the pace of reduction in its JGB holdings, while maintaining the flexibility to engage in ad hoc JGB

[69] From our discussions with Japanese financial institutions, the 10-year JGB yield at 1 percent is an attractive entry point for domestic investors.

purchases to mitigate excessive market volatilities. It is crucial to note that that our simulation results are based on a model estimated until October 2023. It is possible that a new policy framework could potentially reshape the dynamics between the 10-year JGB yield and its determinants.

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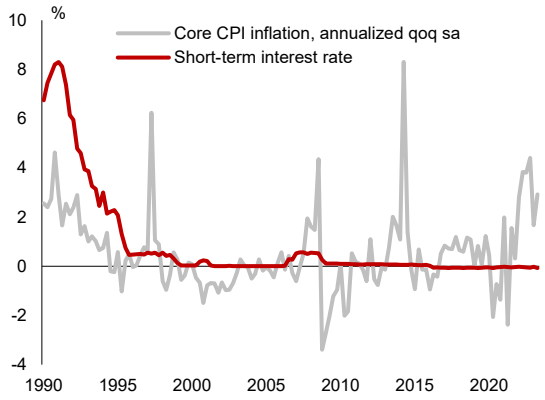
4. Estimating the Neutral Rate of Interest in Japan[70]

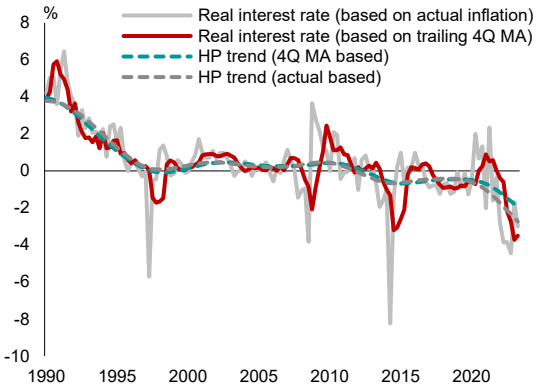
1. As Japan grapples with increasingly negative real interest rates, a critical aspect of understanding the BOJ's monetary stance lies in evaluating the neutral interest rate. Despite Japan's core CPI (less fresh food) inflation consistently exceeding the 2 percent target since April 2022, the BOJ has steadfastly maintained its negative interest rate policy, keeping the short-term policy rate at -0.1 percent (Figure A4.1). This has led to the economy's real interest rates plunging into negative territory (Figure A4.2). While the deepening negative real interest rates may provide additional stimulus to the economy, the increased risk of higher inflation becoming entrenched should not be overlooked. In this context, this Selected Issue revisits the concept of "neutral rate of interest (NRI)", which represents the equilibrium interest rate that neither accelerates nor decelerates economic activities and inflation. Assessing Japan's NRI would help gauge the extent of the BOJ's monetary easing and provide insights into its monetary policy normalization ahead.

Figure A4.1 Short-term Interest Rates and Core CPI Inflation



Note: The short-term interest rate is based on the uncollateralized overnight call rate.
Source: BOJ; Ministry of Internal Affairs and Communications via Haver Analytics

Figure A4.2 Short-term Real Interest Rates and Trend Components



Note: The short-term real interest rates are calculated by subtracting backward-looking inflation expectations (4-quarter trailing moving average of core CPI inflation rates) or actual inflation rates from the uncollateralized overnight call rates.
Source: BOJ; AMRO staff calculations

2. We estimate Japan's NRI using a semi-structural new Keynesian model of Holston, Laubach and Williams (2023), which incorporates the impact of the COVID-19 pandemic. Holston, Laubach and Williams (2023, referred to as HLW) have proposed an enhancement of the Laubach and Williams (2003, referred to as LW) methodology, a widely adopted approach for NRI estimation. This improvement accounts for persistent supply shocks and time-varying volatility witnessed during the COVID-19 crisis. The application of this refined methodology to the U.S., Canada, and the Euro area indicates that the NRI has not been significantly affected by the pandemics in these economies. Nevertheless, there is a notable decline in trend growth in these economies compared to the pre-pandemic period. The framework of both the LW and HLW models comprises essential elements, including the IS curve, Phillips curve, and law of motions for NRI and potential growth rate. These components are detailed as follows:

[70] Prepared by Jinho Choi, Deputy Group Head and Principal Economist, and Jungsung Kim, Economist.

(IS equation): $\tilde{y}_t = a_{y,1}\tilde{y}_{t-1} + a_{y,2}\tilde{y}_{t-2} + \frac{a_r}{2}\sum_{j=1}^{2}(r_{t-j} - r^*_{t-j}) + \epsilon_{\tilde{y},t}$

(Phillips curve): $\pi_t = b_\pi \pi_{t-1} + (1 - b_\pi)\sum_{k=2}^{4}\frac{\pi_{t-k}}{3} + b_y\tilde{y}_{t-1} + \epsilon_{\pi,t}$

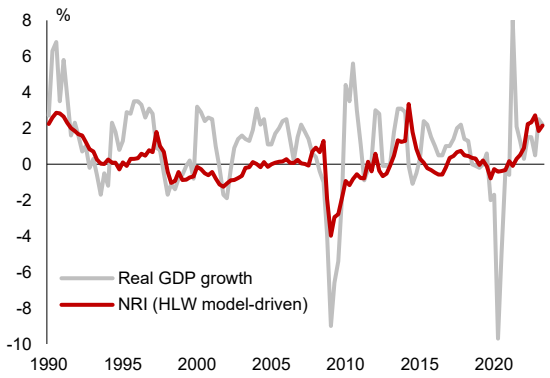
(NRI): $r^*_t = c \cdot g_t + z_t$

(Potential output): $y^*_t = y^*_{t-1} + g_{t-1} + \epsilon_{y^*,t}$

where y_t denotes the output, y^*_t is the potential output, $\tilde{y}_t = 100 \cdot (y_t - y^*_t)$ is the output gap, and r_t and r^*_t are the actual short-term real interest rate and the natural rate of interest, respectively. $\epsilon_{\tilde{y},t}$, $\epsilon_{\pi,t}$, and $\epsilon_{y^*,t}$ are error terms; g_t and z_t denote the trend of the potential output growth and other determinants of r^*_t. g_t and z_t are assumed to a follow random walk. Using the HLW model, we estimate Japan's NRI and trend growth rates employing the standard Kalman filtering method. We draw on references from related literature, including Kamada (2009) and Fujiwara et al. (2016), who applied the LW model to the Japanese economy. For our dataset, we utilize Japan's core CPI inflation (qoq saar), the logarithm of real GDP, and short-term interest rates (uncollateralized overnight call rates). Real interest rates are obtained using actual CPI inflation rates as a proxy for inflation expectations. The sample period spans from Q1 1978 to Q2 2023.

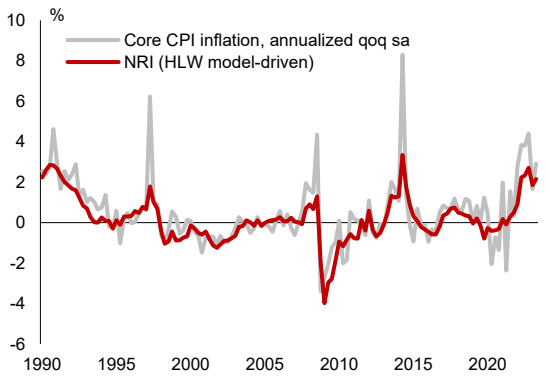
3. Our estimation results indicate a significant increase in Japan's NRI since 2022, aligning with the gradual recovery of economic growth and an acceleration in inflation. Figures A4.3 and A4.4 depict the results of our NRI estimation using the HLW model. Notably, our NRI estimates generally fluctuated around zero throughout most of the sample period. While NRI estimates tend to move in tandem with economic growth and core CPI inflation, the correlation is notably stronger with core CPI inflation than with GDP growth. During the global financial crisis (GFC), marked by a sharp decline in both real GDP growth and core CPI inflation, the NRI also experienced a significant drop. Meanwhile, amid the COVID-19 shock, when the economy contracted sharply while core CPI inflation only moderately decreased due to global supply disruptions, the NRI did not undergo a substantial decline. Furthermore, since 2022, with the recovery of Japan's economic activity and an acceleration in core CPI inflation, the NRI has risen significantly, reaching around 2 percent. However, as a caveat in interpreting the absolute size of NRI, in the case of Japan, where an ultra-easy monetary policy was implemented during an extended period of low inflation, the HLW model's estimation results exhibit relatively weak statistical significance compared to other countries, such as the U.S. and the Euro area.

Figure A4.3 NRI Estimates and Real GDP Growth



Source: Cabinet Office via Haver Analytics; AMRO staff estimation

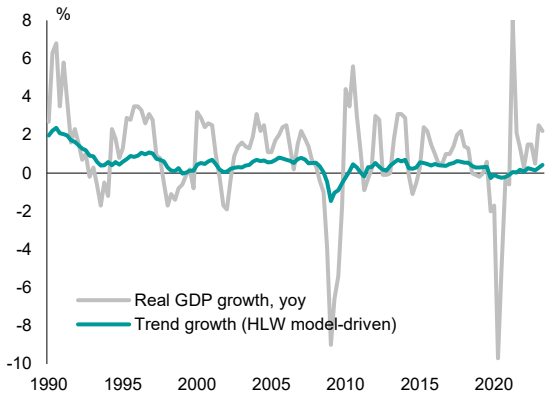
Figure A4.4 NRI Estimates and Core CPI Inflation



Source: Ministry of Internal Affairs and Communications via Haver Analytics; AMRO staff estimation

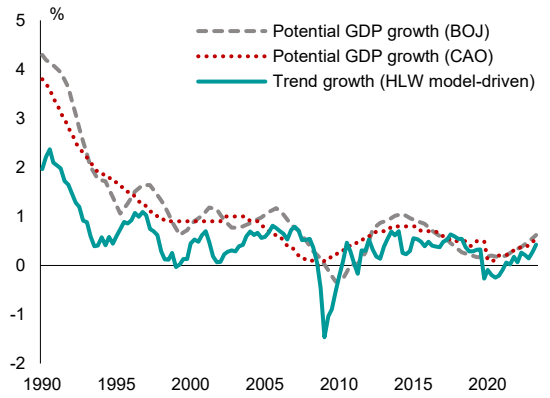
4. Additionally, our estimation results suggest a gradual recovery in Japan's trend growth or potential growth rate, although it remains below the pre-pandemic levels. Our HLW model estimation results indicate that Japan's trend growth estimates capture the persistent components of GDP growth (Figure A4.5). In contrast, when compared to official estimates of potential growth rates, the HLW (2023) model-driven trend growth tends to be lower, exhibiting a significant decline during the GFC (Figure A4.6). Meanwhile, both official potential growth estimates and HLW model-driven trend growth experienced a slight decline during the COVID-19 period. However, recent trend growth showed a gradual recovery, reaching around 0.5 percent.

Figure A4.5 Trend Growth Estimates and Real GDP Growth



Source: Cabinet Office via Haver Analytics; AMRO staff estimation

Figure A4.6 Trend Growth Estimates and Potential GDP Growth

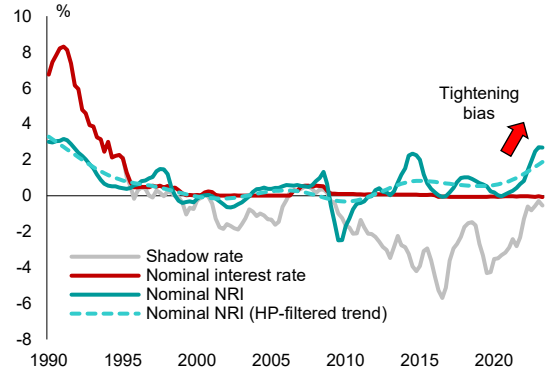


Source: Cabinet Office, BOJ via Haver Analytics; AMRO staff estimation

5. Our model estimation results suggest that the extent of the BOJ's accommodative monetary policy has increased in recent years, despite signals from the NRI favoring a tightening bias. To convert real interest rates into nominal rates, we added the historical average of core CPI inflation from 1990 to 2019 (0.43 percent) to the estimated NRI as a proxy for the steady-state inflation rate. Figure A4.7 shows that the nominal NRI and its filtered trend have risen notably in response to the recovery of economic growth and an acceleration in inflation. If the tightness of the BOJ's monetary policy stance is measured as the difference between nominal short-term interest rates and nominal NRI estimates, the BOJ's policy stance

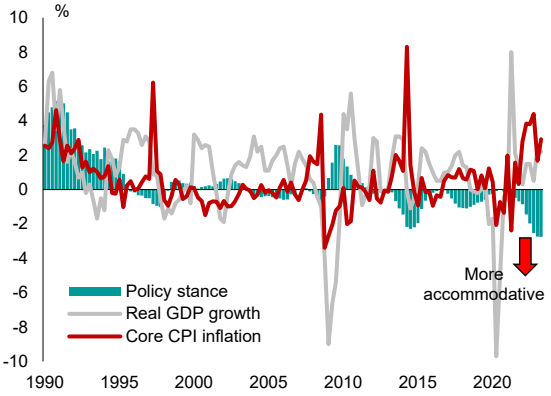
is even more accommodative compared to the NRI (Figure A4.8). As a complement to the BOJ's short-term policy rate, we use the shadow short rate (SSR), developed by the Reserve Bank of New Zealand to quantify a central bank's monetary policy stance after its actual policy rate reaches zero, or in unconventional policy environments (Krippner, 2012). Using the zero lower bound yield curve framework, the SSR measure implies that since early 2022 the tightness of the BOJ's accommodative monetary policy has implicitly increased (i.e. monetary stance is tighter) particularly with the greater flexibility in its yield curve control (YCC). That said, as the NRI has also increased, the gap between the NRI and the shadow policy rate remains broadly unchanged (Figure A4.7). This suggests there is room to reduce the extent of the BOJ's monetary easing or normalize the current negative interest rate policy.

Figure A4.7 Short-term Interest Rates and Nominal NRI and Shadow Short Rate (SSR) Estimates



Note: The shadow short rate (SSR) is the shortest maturity rate from the estimated shadow yield curve, developed by Leo Krippner at the Reserve Bank of New Zealand, which is essentially equal to the policy interest rate in zero-lower bound or unconventional monetary policy environments.
Source: BOJ, LJK Limited via Haver Analytics; AMRO staff estimation

Figure A4.8 Real GDP Growth, Core CPI Inflation and Estimated BOJ's Policy Stance



Note: The 'policy stance' indicator is calculated by subtracting the nominal NRIR estimates from the short-term nominal interest rate and uncollateralized overnight call rate.
Source: Cabinet Office; Ministry of Internal Affairs and Communications via Haver Analytics; AMRO staff estimation

6. Our analysis highlights the widening gaps between current policy rates and the NRI, suggesting the need for the BOJ to initiate a gradual normalization of its ultra-easy monetary policy. The BOJ should consider moving away from the negative interest rate policy, allowing the short-term policy rate to resume its traditional role in managing inflation and anchoring inflationary expectations once inflation has moderated to around its target level. This phased policy normalization process is pivotal for the BOJ to mitigate the risk of having to make a sharp tightening in monetary policy to bring elevated inflation down to 2 percent, while also creating policy space to implement easing measures in response to future economic shocks. Together with the unwinding of the YCC policy, this shift would enable the BOJ's policy interest rates to function effectively as a monetary policy instrument, improving its communication with market participants and providing a clearer signal regarding the policy stance.

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5. Debt Sustainability Analysis for Japan[71]

Background

1. Japan's public debt increased substantially during the pandemic due to a series of large fiscal stimulus packages.[72] In 2019, public debt stood at 238.7 percent of GDP. This subsequently rose to 261.1 percent in 2020, as the government rolled out fiscal stimulus to mitigate the impact of the COVID-19 pandemic, which continued into 2021. In addition, the government also provided subsidies to households in 2022 to alleviate the high cost of living amid a spike in commodity prices. As of the end of 2022, public debt is at 261.0 percent of GDP, more than 20 percentage points higher than the pre-pandemic level.

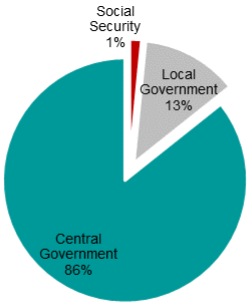
2. Public debt is mostly held by domestic residents with medium to long-term maturity. The majority of general government debt is by the central government (Figure A5.1). Central government debt bills and bonds are mostly held by domestic institutions, namely the BOJ, insurance companies, and banks (Figure A5.2). Foreigners account for a smaller share around 14 percent; however, it has been steadily increasing in the past 10 years. Most of the debt is medium to long-term in nature, with an average maturity of 9 years and 5 months, as of end-September 2023.

3. The gross financing need (GFN) jumped in 2020 to finance the huge fiscal stimulus package and has remained elevated, above pre-pandemic level. The primary deficit spiked in 2020, requiring sizable gross financing needs of 35 percent of GDP, up from 27 percent in 2019. The GFN remained elevated (Figure A5.4) and is estimated to slightly come down to 28.7 percent of GDP in 2023. Nevertheless, net interest expense has been kept stable at less than 1.0 percent of GDP due to the low interest rate environment in Japan.

4. In response to the substantial escalation of Japan's public debt triggered by the pandemic, a comprehensive analysis of public debt sustainability is conducted. This selected issue provides an analysis of the future paths of public debt and gross financing needs in relation to GDP under a baseline scenario, complemented by various stress tests, to assess debt sustainability for Japan. Moreover, the analysis includes an assessment of the government's ability to effectively service, repay, or refinance its maturing obligations. This evaluation utilizes multiple indicators that reflect the overall characteristics and health of the nation's debt profile.

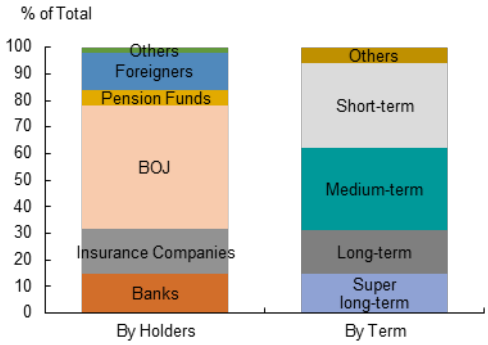
[71] Prepared by Paolo Hernando, Senior Economist.
[72] Public DSA for Japan covers the general government debt, which consists of central government, local government and social security. The latest actual number for general government debt is as of end-FY2022 at JPY1,468 trillion (261 % of GDP). Taking into account government financial assets, the general government net debt is 161 % of GDP as of end-FY2022.

Figure A5.1. General government gross debt



Source: Ministry of Finance; AMRO staff estimates

Figure A5.2. Structure of Central Government Securities (bills and bonds)



Source: BOJ; AMRO staff estimates

Baseline Scenario

5. The baseline scenario projects a steady recovery from the pandemic, followed by a convergence to the potential growth path over the medium term. As the Japanese economy emerges from the pandemic, growth is projected to surpass potential levels in 2023 and 2024, before gradually converging towards potential growth in the medium term. Price pressures are projected to persist in 2023 and 2024, after which the GDP deflator inflation is expected to decrease to its long-term average. We incorporate an increase in interest rates in line with global trends. However, the extended average maturity of Japan's public debt portfolio facilitates a gradual pass-through to effective interest rates (Table A5.1).

6. The normalization of spending post-pandemic, along with fiscal consolidation, is expected to steadily narrow the primary deficit over the medium term. The massive fiscal stimulus to mitigate the impact of the pandemic resulted in a primary deficit of 9.4 percent of GDP in 2020. Although the primary deficit has narrowed since then, it has remained above pre-pandemic levels. The baseline scenario includes the fiscal packages adopted in 2022 and 2023, which will keep the primary deficit elevated in 2023 at 4.6 percent of GDP. The primary deficit is then seen steadily narrowing to eventually achieve balance in 2032. This trajectory aligns with revenue growth, consistent with historical tax elasticity and rising expenditures given an aging society.

7. The public debt-to-GDP ratio is projected to decline until 2025, and then gradually rise over the medium term. After reaching a historical high of 261.0 percent of GDP in 2022, the public debt-to-GDP is projected to decline in 2023-2025 due to the relatively high growth and inflation expected for the period, despite the primary deficit remaining higher than pre-pandemic levels (Figure A5.3). Over the medium term, the public debt-to-GDP ratio is expected to rise from 2026 onwards, as higher interest rates increasingly drive debt dynamics (Figure A5.5). With a less favorable interest rate-growth differential, stronger fiscal consolidation efforts are warranted to stabilize the public debt, and bring it down to a more sustainable level over the long term. The GFN increased to 34.7 percent of GDP in 2020 and

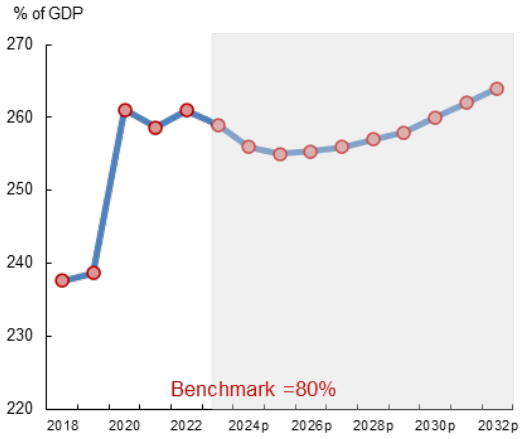
is expected to trend downward until 2024 with the withdrawal of fiscal support measures, and then remain relatively flat thereafter (Figure A5.4 Figure A5.6).

Table A5.1. Macroeconomic and Fiscal Indicators

	2018	2019	2020	2021	2022	2023p	2024p	2025p	2026p	2027p	2028p	2029p	2030p	2031p	2032p
Macroeconomic indicators (Percent)															
Real GDP growth	0.2	-0.8	-3.9	2.8	1.5	1.8	1.0	1.0	0.7	0.6	0.6	0.5	0.5	0.5	0.4
GDP deflator	-0.1	0.8	0.7	-0.1	0.8	3.0	1.3	0.6	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Effective interest rate	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.9	1.0	1.1	1.2	1.3	1.4
Fiscal indicators (Percent of GDP)															
Revenue	35.5	35.4	36.8	37.9	39.1	35.5	35.0	35.5	35.7	35.9	36.0	36.2	36.3	36.5	36.6
Expenditure	37.8	38.6	46.8	43.8	42.7	40.7	37.5	37.4	37.0	37.1	37.1	37.2	37.4	37.5	37.7
Fiscal balance	-2.4	-3.1	-10.0	-5.9	-3.6	-5.2	-2.5	-1.9	-1.4	-1.2	-1.1	-1.1	-1.1	-1.0	-1.1
Primary balance	-0.6	-2.5	-9.4	-5.3	-3.2	-4.6	-1.9	-1.2	-0.6	-0.4	-0.3	-0.3	-0.2	-0.1	0.0
Public debt	237.6	238.7	261.1	258.6	261.0	260.0	257.9	257.1	257.3	257.9	258.9	260.3	262.1	264.0	266.5
Gross financing needs	25.3	26.9	34.7	31.4	30.3	28.7	26.9	26.9	26.5	26.4	26.3	26.3	26.4	26.5	26.6

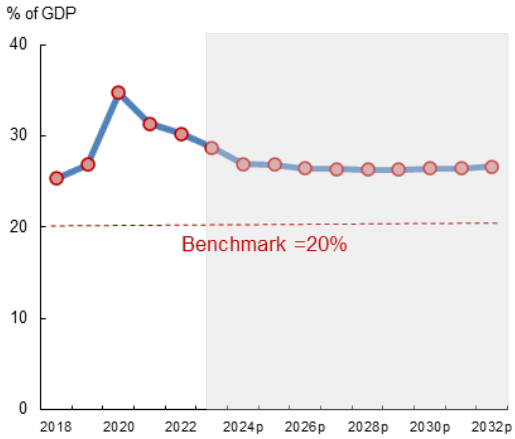
Sources: MOF; CBO; AMRO staff estimates.
Note: The macroeconomic and fiscal indicators for 2023 – 2032 are based on AMRO staff projections.

Figure A5.3. Public Debt



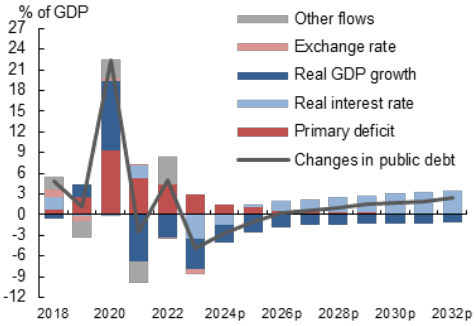
Sources: MOF; AMRO staff estimates.

Figure A5.4. Gross Financing Needs



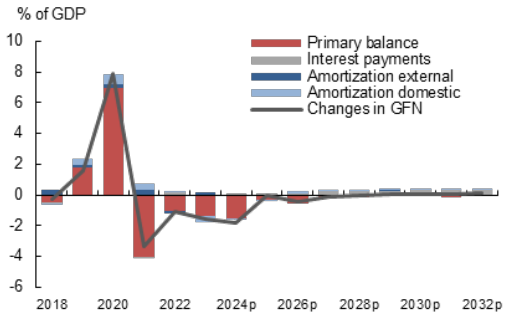
Sources: MOF; AMRO staff estimates.

Figure A5.5. Debt Dynamics



Sources: MOF; AMRO staff estimates.

Figure A5.6. Gross Financing Needs Dynamics

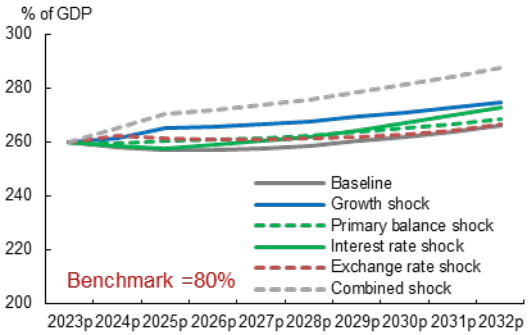


Sources: MOF; AMRO staff estimates.

Macro-Fiscal Stress Tests

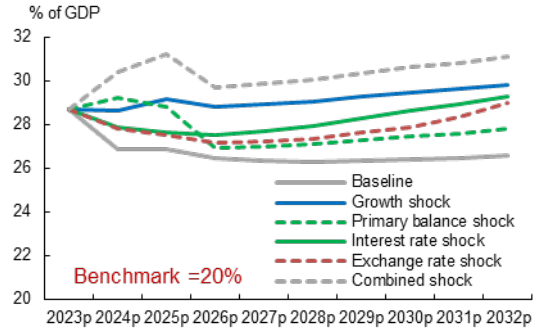
8. Japan's public debt ratio and GFN remain well above the international threshold in baseline and simulated shocks. As a country with one of the highest public debts globally, Japan's public debt-to-GDP ratio continues to exceed the international benchmark of 80 percent. Due to the substantial debt burden, the GFN is also elevated, surpassing the 20 percent benchmark. Given the high debt, which is projected to rise further in the baseline, Japan's fiscal and debt sustainability is vulnerable to various shocks,[73] potentially impacting its fiscal resilience and debt sustainability. Japan's debt dynamics are most susceptible to shocks on growth and interest rates, which could potentially increase public debt to over 270 percent of GDP during the forecast period (Figure A5.7). Under the scenario where all shocks are combined, public debt could rise to almost 290 percent of GDP over the forecast period. Shocks on growth and interest rates would also have the most significant impact on GFN, increasing it by an average of 2.4 and 1.7 percentage points, respectively, over the forecast period compared to the baseline (Figure A5.8).

Figure A5.7. Public Debt



Sources: MOF; AMRO staff estimates.

Figure A5.8. Gross Financing Needs



Sources: MOF; AMRO staff estimates.

Market Perception of Risks and Debt Profile Vulnerabilities

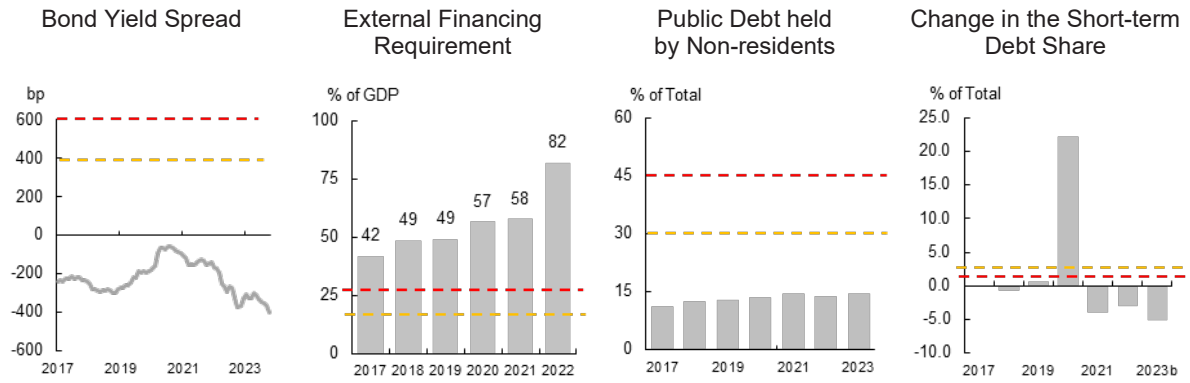
9. Despite the high debt, market perception of sovereign risk remains low. Japan continues to benefit from low interest rates, supported by the ultra-easy monetary policy of the BOJ. The yield differential compared to the US has become even more significant in recent periods due to the divergence in monetary policy between the US and Japan. The status of the Japanese yen as a safe-haven currency that market players can hold on to during periods of market turmoil also boosts the perception of low sovereign risk for Japanese debt (Figure A5.9, Bond Yield Spread).

10. Debt structure has been broadly sound, although external financing requirement is well above the international threshold due to Japan's role as an international financial center. Despite having a current account surplus, the large short-term foreign liabilities of

[73] The scenarios for the stress test are as follows: 1) Real GDP growth shock: one standard deviation or –1.3 percentage points shock to 2024 and 2025; 2) Primary balance shock: one standard deviation or –1.5 percent of GDP shock to 2024 and 2025; 3) Interest rate shock: +1 percentage points shock from 2024; 4) Exchange rate shock: one-time +5 percentage points shock in 2024; 5) Combined shock: all of the above.

global banks in Japan has increased its external debt (Figure A5.9, External Financing Requirement). However, this is not a reflection of the actual financing need for Japan, as these are used for cross-border funding, with Japan serving as a hub for intraregional financing. Meanwhile, the share of debt held by non-residents remains below the threshold, as the domestic investor base is large enough to finance the substantial public debt, although the non-resident share has gradually increased from 11.2 percent in 2017 to 13.7 percent in 2023. It should also be noted that the large amount of short-term debt issued in 2020 is attributed to the urgent need to finance the economic stimulus package amid the COVID-19 pandemic. Short-term debt has steadily decreased since then, in line with the debt strategy to lengthen the maturity profile while optimizing debt servicing costs relative to market demands.

Figure A5.9. Debt Profile Vulnerabilities



Note: 1) - - - Lower early warning (50 percent of the benchmark), - - - upper early warning (75 percent of the benchmark); 2) Bond yield spreads are computed using the difference between JGBs and U.S. Treasury notes at 10-year maturities; 3) External financing requirements = current account deficit + amortization of public external debt + amortization of private external debt; 4) Public debt held by nonresidents is based on the jurisdiction of issuance; 4) Short-term debt is based on the original maturity.

Source: Ministry of Finance, AMRO staff estimates

Overall Assessment

11. Despite public debt and GFN being well above international benchmarks, mitigating factors point to moderate risk for public debt sustainability. With public debt-to-GDP ratio and the GFN as a percentage of GDP being well above the benchmark, authorities need to be vigilant, as even relatively small shocks could potentially be amplified due to the sizable debt stock. Despite the challenges, several factors help Japan manage the large debt, with a key contributor being the extended average maturity of the debt portfolio, nearly 10 years, enabling higher interest rates to impact the debt service cost gradually. A large domestic investor base can also ensure a steady source of financing for the government, despite the large financing requirement. Since the debt is overwhelmingly denominated in Japanese yen, the exchange rate risk is negligible. Moreover, there is a strong incentive for the JGB to be held by investors due to perceptions of the yen as a safe-haven currency. However, with the debt projected to steadily rise in both baseline and shock scenarios, authorities need to formulate a fiscal consolidation plan that will sufficiently streamline expenditure and mobilize revenue to bring debt towards a more sustainable downward trajectory.

Figure A5.10. Heatmap of Public Debt Sustainability

Note For Public Debt and Gross Financing Needs, the cell is highlighted in green if the benchmark is not exceeded under all shocks or the baseline, yellow if exceeded under any specific shock but not the baseline, and red if exceeded under the baseline; 2) For Debt Profile, the cell is highlighted in green if the country value is less than the lower early warning benchmark, red if it exceeds the upper early warning benchmark, and yellow if it lies between the lower and upper early warning benchmarks.

Sources: AMRO staff estimates

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