AMRO Country Report
ACR/23-02

AMRO
ASEAN +3 MACROECONOMIC RESEARCH OFFICE

# AMRO Annual Consultation Report

# Japan - 2022

ASEAN+3 Macroeconomic Research Office (AMRO)

February 2023

## 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 17 to November 11, 2022 (Article 5 (b) of the AMRO Agreement). The AMRO Mission team was headed by Dr. Jae Young Lee, Group Head and Lead Economist. Members included Dr. Jinho Choi, Deputy Group Head and Senior Economist (Country desk); Ms. Kana Yoshioka, Economist; Dr. Sungtaek Kwon, Senior Economist; Dr. Trung Thanh Vu, Associate Economist; Mr. Sota Nejime, Associate Researcher; and Ms. Thiri Aung, Associate. Dr. Li Lian Ong and Mr. Prashant Pande (Financial Surveillance) and Mr. Jiangyan Yu (Policy and Review) attended parts of the on-site visit. AMRO Director Dr. Kouqing Li and Chief Economist Dr. Hoe Ee Khor also participated in key policy meetings with the authorities. This AMRO Annual Consultation Report on Japan for 2022 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 23, 2022.
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.

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## Executive Summary

1. The Japanese economy continues to recover at a moderate pace in 2022, albeit volatile, as the COVID-19 pandemic shifts gradually to an endemic phase. In Q1, real GDP shrank by 1.8 percent (seasonally adjusted annual rate (saar), quarter-on-quarter (qoq)), adversely affected by the surge in the Omicron variant, before rebounding strongly by 4.5 percent in Q2. In Q3, the economy contracted by 0.8 percent amid another spike in COVID-19 cases. Private consumption remained robust, underpinning the recovery of economic activities from the pandemic. Business investment began to show some signs of improvement from Q2 onwards. Exports continued to grow at a slower pace than imports. Looking ahead, the economy is expected to expand by 1.4 percent in 2022[1] and 1.2 percent in 2023.

2. Consumer price inflation accelerated in 2022, mainly driven by soaring energy and food prices. Core CPI (less fresh food) inflation increased to 2.1 percent year-on-year (yoy) in April 2022 with shrinking the base effect of cuts to mobile phone charges in the previous year. Since then, the inflation rate has continued to rise, reaching 3.7 percent in November 2022, which exceeded the Bank of Japan's (BOJ) target. Stripping out fresh food and energy, the so-called "core-core" CPI inflation also rose strongly by 2.8 percent (yoy) in November. Looking ahead, core CPI (less fresh food) inflation is projected to average 2.2 percent in 2022[2], before slowing to 1.2 percent in 2023.

3. Japan's external position stayed strong, supported by a large primary income surplus and substantial foreign reserves despite widening trade deficits in 2022. In 2021, the current account surplus amounted to 3.9 percent of GDP. However, in Q1-Q3 2022, the surplus declined to 2.4 percent of GDP, driven by a sharp deterioration in trade deficits, reflecting higher commodity prices. The services account continued to be in deficit, as inbound tourism remained depressed. However, the primary income surplus remained strong in the first three quarters of 2022, more than offsetting the trade deficits.

4. Credit growth recovered to the pre-pandemic level, and the banking sector remains largely sound. Bank lending moderately expanded in the first three quarters of 2022 by 2.5 percent (yoy), which was broadly comparable to the pre-pandemic level of 2-3 percent. The loan growth was largely driven by the financing needs of small and medium-sized enterprises (SMEs) and households. Overall asset quality of the banking system remains solid with the overall NPL ratio standing at 1.3 percent as of March 2022 compared to 1.2 percent in March 2021. Capital adequacy ratios (CARs) have been well above the regulatory requirements. As of March 2022, the CAR was 15.7 percent for major banks, 9.7 percent for domestic regional banks, and 13.4 percent for internationally active regional banks. Profitability picked up in FY2021 at both major and regional banks, partly attributable to the BOJ's policy support during the pandemic.

5. The fiscal deficit narrowed in FY2021 on the back of strong revenue collection after widening in FY2020 as a result of the massive COVID-19 stimulus packages. During FY2022, the government launched an emergency package equivalent to 1.1 percent of GDP, primarily to mitigate the impact of soaring crude oil and commodity prices, and to support investment and reforms for sustainable growth. In October 2022, the government announced another economic package, totaling JPY39 trillion, equivalent to 6.9 percent of GDP, to mitigate the impact of price increases and revitalize the economy. The fiscal deficit narrowed from 10.0 percent of GDP in FY2020 to 5.9 percent in FY2021, but is expected to widen to 9.4 percent in FY2022. Meanwhile, the government debt-to-GDP ratio slightly declined from 262 percent in FY2020 to 259 percent in FY2021, but is expected to increase to 268 percent in FY2022.

[1] For 2022, real GDP growth outturned at 1.1 percent yoy (released on February 14, 2023).
[2] For 2022, core CPI (less fresh food) inflation outturned at a 2.3 percent yoy (released on January 10, 2023).

6. Japan's macro-financial outlook is tilted to the downside with substantial uncertainties, mainly from the external sector. A resurgence of global energy prices would adversely affect the Japanese economy, which relies on energy imports, by worsening the terms of trade and weighing down domestic consumption. A further divergence in monetary policy between Japan and other advanced economies could lead to a steeper yen depreciation and higher import prices. Also, a recession in both the U.S. and Europe would adversely affect Japan's manufacturing and export sectors by dampening demand for Japanese automobiles and other manufactured goods.

7. Under the baseline projection that inflation will peak and start to decline in the near term, the BOJ's current easy monetary policy stance remains appropriate. Japan's underlying inflationary pressure has remained relatively weak, as can be seen in the so-called "core-core" CPI (less fresh food and energy) inflation staying at around 2 percent. Meanwhile, taking into account the upside risk of a higher inflation rate becoming entrenched, the BOJ should stand ready to adjust its monetary policy, for example, by raising its 10-year Japanese Government Bond (JGB) yield target and/or further widening the current band.[3] Considering the heightened uncertainties in the post-pandemic global economy, and experiences of the past decade, the BOJ's monetary policy framework could be reviewed to allow for greater flexibility by introducing a price stability target band of 1 to 3 percent as a more practical and realistic goal.

8. Financial supervisory authorities should remain vigilant to ensure that financial institutions can maintain their financial soundness. The Financial Services Agency (FSA) and the BOJ should continue to monitor and evaluate the resilience of the banking system by conducting market and credit risk stress tests to better assess the risks from high interest rates and exchange rate volatility, especially on small and regional banks. Financial policy should also keep supporting financial institutions to adapt themselves to a rapidly changing business environment.

9. The government should place a higher priority on strengthening fiscal prudence, while providing targeted supports to low-income households suffering from higher energy and food prices. As the COVID-19 pandemic subsides and economic activities resume, extensive fiscal stimulus measures should be terminated or phased out so that the pre-crisis fiscal consolidation program can be put back on track. In response to high energy and food prices, fiscal policy should continue to play a role in providing targeted social assistance to vulnerable groups. To achieve its primary balance target, the government should formulate a comprehensive post-pandemic fiscal consolidation plan with specific fiscal targets and policy measures. Over the longer term, sustained efforts to reform the social security and tax systems are needed to address post-pandemic challenges amid rapid population aging.

10. Structural reforms should be implemented with greater urgency to enhance growth potential, as short-term stimulus measures are phased out in the post-pandemic new normal. A recent policy to provide financial support for child rearing and early childhood education is encouraging. Measures such as greater efforts to attract more people to participate in the labor market, particularly female, elderly, and foreign workers, should be strengthened. The government should continue to ramp up work-style reform and digital transformation initiatives to incentivize Japanese firms into adjusting their traditional working styles to new employment trends, such as teleworking and gig workers, as well as leveraging new technologies to enhance total factor productivity. Continued policy efforts to foster customized human resources in the post-pandemic era would help to boost Japan's declining growth potential and revitalize the economy.

[3] AMRO had shared this view with Japanese authorities during the 2022 Annual Consultation Visit ahead of the BOJ's policy announcement on 20 December 2022. See the details at https://www.amro-asia.org/japan-recalibrating-policy-mix-to-navigate-post-pandemic-challenges/

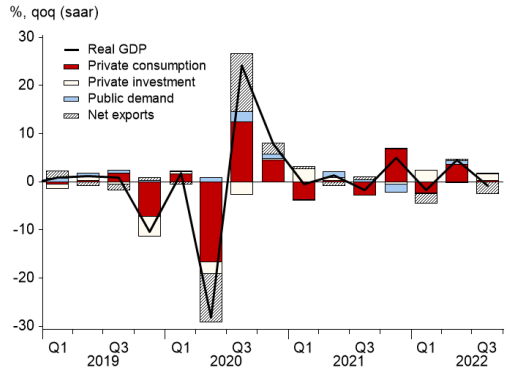
# A. Recent Developments and Outlook

## A.1 Real Sector Developments and Outlook

**1. The Japanese economy continues to recover at a moderate pace in 2022, albeit volatile, as the COVID-19 pandemic shifts gradually to an endemic phase.** In Q1, real GDP shrank by 1.8 percent (saar, qoq), adversely affected by the surge in the Omicron variant, before rebounding strongly by 4.5 percent in Q2 (Figure 1). In Q3, the economy contracted again by 0.8 percent amid another spike in infections. Private consumption remained robust with economic activities resuming in the course of recovery from the pandemic. Business investment began to show some signs of improvement from Q2. However, exports continued to grow at a slower pace than imports.

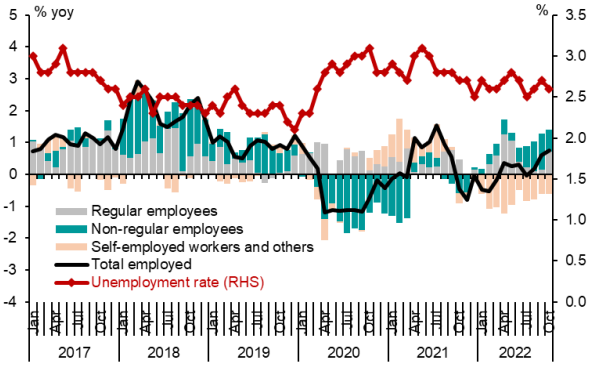
**2. Looking ahead, the economy is expected to expand at 1.4 percent in 2022 and 1.2 percent in 2023.** Private consumption will likely recover in Q4 2022 and this year, supported by pent-up demand, particularly services consumption, as the COVID-19 situation moves from the pandemic to endemic phase. Business investment will slowly pick up on the back of improving corporate profits from overseas operations, reflecting the weak yen. In contrast, exports will be adversely affected by the expected slowdown in the United States and Europe, and the continuing, albeit diminishing, global supply chain disruptions.

**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

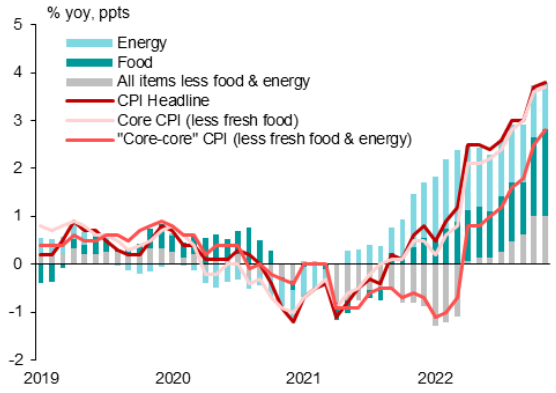
**3. Labor market conditions remain buoyant, with no significant scarring effects from the COVID-19 pandemic.** Employment remained firm in 2022, as the growth of non-regular workers turned positive, recovering from the pandemic (Figure 2). The unemployment rate gradually declined to 2.6 percent in October 2022 from a peak of 3.1 percent in October 2020 during the pandemic. Income conditions also continue to improve. Nominal wage growth is on a rising trend, reaching 1.4 percent in October 2022.[4] However, escalating inflation has led to real wage growth turning negative since April (see Selected Issue 2. *Wage Development in*

[4] The Japanese Trade Union Confederation (RENGO) has announced that for the next year's Spring Wage Negotiation called "Shunto", it will demand a 5.0 percent increase in nominal wages, which is more than double this year's growth rate of 2.07 percent.

*Japan*). Labor shortages continue, particularly in the construction, healthcare, and transportation sectors, and are expected to intensify with the economy recovering from the pandemic.

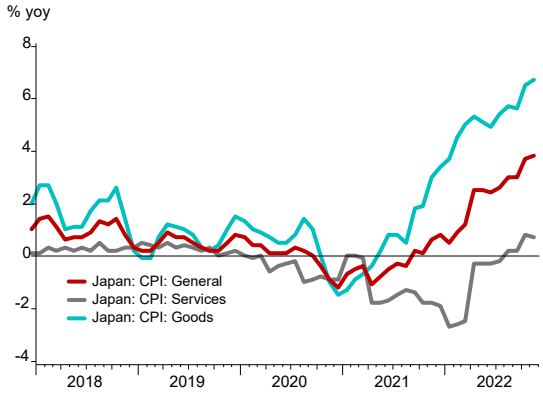
**4. Consumer price inflation accelerated in 2022, mainly driven by soaring energy and food prices.** Core CPI (less fresh food) inflation jumped to 2.1 percent (yoy) in April 2022 with shrinking the base effect of cuts to mobile phone charges in the previous year. Since then, the inflation rate has continued to rise, reaching 3.7 percent in November 2022, which exceeded the BOJ's 2 percent target. Stripping out fresh food and energy, the so-called "core-core" CPI inflation also rose strongly by 2.8 percent (yoy) in the same month (Figure 3). Japan's inflation remains relatively weak, when compared to peer economies, with a modest increase in services prices (Figure 4), coupled with a limited pass-through of the costs of imported goods to consumer prices (Figure 5). Meanwhile, medium-term inflation expectations (BOJ Tankan survey) increased significantly to over 2 percent (Figure 6). Looking ahead, core CPI (less fresh food) inflation is projected to average 2.2 percent in 2022, before slowing to 1.2 percent in 2023.

**Figure 3. CPI Inflation**



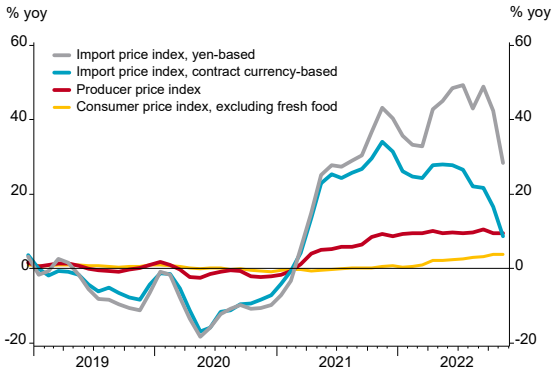

Source: Ministry of Internal Affairs and Communication; Haver Analytics

**Figure 4. CPI Inflation by Goods and Services**



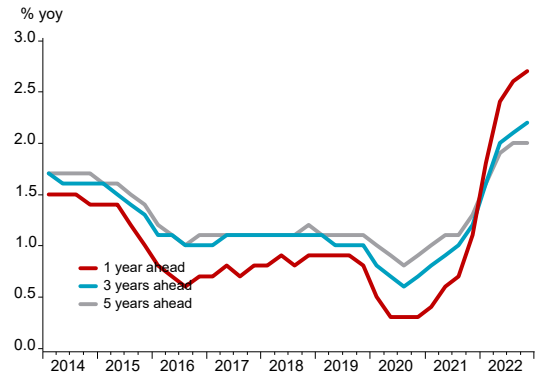

Source: Ministry of Internal Affairs and Communication; Haver Analytics

**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**



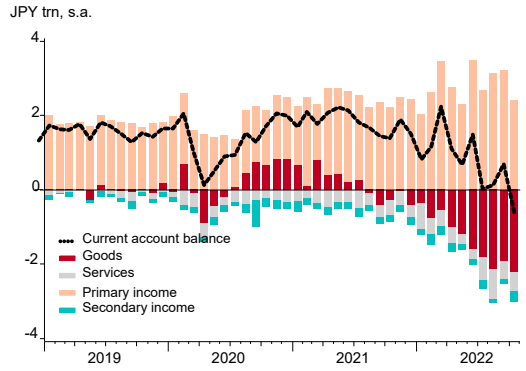

Source: BOJ; Haver Analytics

## A.2 External Sector and the Balance of Payments

**5. Japan's external position stayed strong, supported by a large primary income surplus and substantial foreign reserves despite widening trade deficits in 2022.** In 2021, the current account surplus amounted to the equivalent of 3.9 percent of GDP. In Q1-Q3 2022,

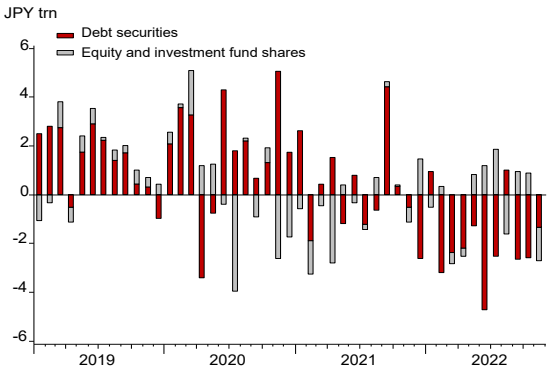
the surplus declined to 2.4 percent of GDP, driven by a sharp deterioration in trade deficits, reflecting higher commodity prices (Figure 7). The services account continued to be in deficit, as inbound tourism remained depressed. That said, the primary income surplus remained strong in the first three quarters of 2022, more than offsetting the trade deficits. In October 2022, the current account balance turned into a deficit on a seasonally adjusted basis. On the financial account, net capital outflows gradually eased during the pandemic, mainly attributable to Japanese investors reducing their exposures to foreign bonds amid increasing global uncertainty (Figure 8). Furthermore, foreign investors increased their purchase of Japanese government bonds, mainly T-Bills, from Q2 2022. Meanwhile, outward FDI jumped sharply in 2021, reflecting a surge in reinvested earnings, and remained elevated in 2022 despite heightened uncertainty in the global economy.

**Figure 7. Current Account Balance**




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

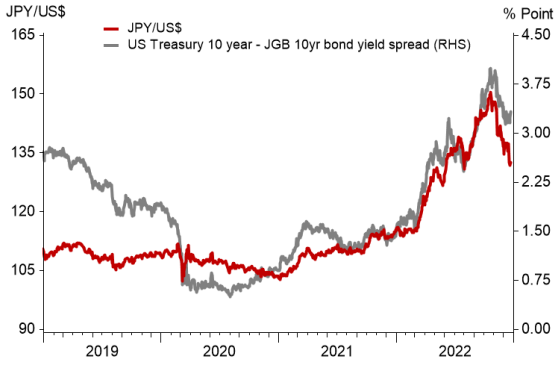
**Figure 8. Net Purchases of Foreign Securities by Residents**




Source: JMOF; Haver Analytics

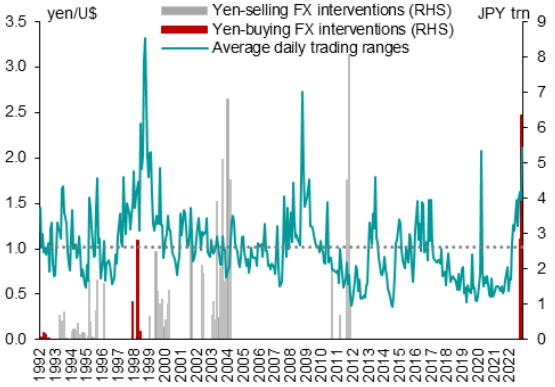
**6. The yen has depreciated sharply against the U.S. dollar in 2022, reflecting a diverging monetary policy stance and widening trade deficit, while JGB yields have been under tremendous pressure to rise above the BOJ's yield target ceiling.** From March to October 2022, the yen's depreciation against the U.S. dollar accelerated on the back of escalating U.S. inflation and the Federal Reserve's aggressive rate hikes, which have widened the gap between the interest rates of U.S. and Japanese securities, such as the long-term U.S. bond yields and those of JGBs (Figure 9). Japan's widening trade deficits have also weighed on the weak yen. In September 2022, the yen's one-sided and sharp depreciation against the U.S. dollar led the government to conduct the yen-buying foreign exchange market intervention, the first time since 1998, followed by additional rounds of interventions in October 2022, aimed at reducing excessive volatility (Figure 10). The real effective exchange rate has depreciated by 17 percent from January to October 2022. However, since November 2022, the yen has appreciated against the U.S. dollar in tandem with the narrowing interest rate differentials. Meanwhile, from May 2022, the BOJ conducted unlimited fixed-rate purchase operations of 10-year JGBs on every business day in order to keep the yields below its upper band ceiling, under its yield curve control (YCC) policy. In December 2022, the BOJ announced a widening of the band from ±0.25% to ±0.50% to improve bond market functioning and encourage a smoother formation of the entire yield curve. The Japanese stock market has been relatively stable with a modest price decline in 2022, despite the corrections in the global markets.

**Figure 9. USD/JPY and Interest Rate Differentials**




Source: BOJ; Haver Analytics

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

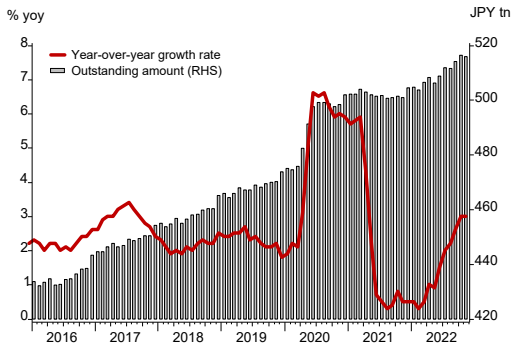



Source: JMOF; Haver Analytics; Bloomberg; AMRO staff calculations
Note: Average daily trading ranges are based on the monthly averages of the differences between the daily highs and lows of the USD/JPY rates. The dotted line indicates the period average from January 1992 to November 2022.

## A.3 Monetary Condition and Financial Sector

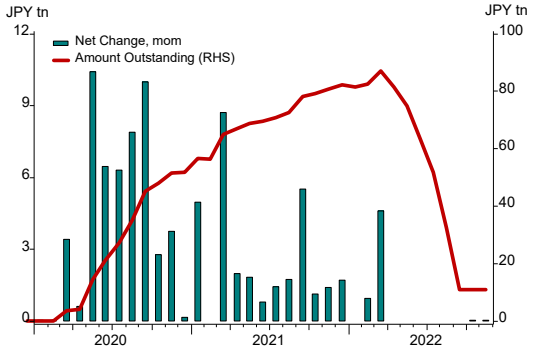
**7. Credit growth recovered to pre-pandemic levels, partly attributable to continued policy support for SMEs' financing needs.** Bank lending moderately expanded in the first three quarters of 2022 by 2.5 percent (yoy), which was broadly comparable to the pre-pandemic rate of 2-3 percent (Figure 11). The loan growth was largely driven by the financing needs of SMEs and households. COVID-19 relief financial measures remained supportive, although a gradual wind-down is underway. In particular, the government's emergency loan guarantee programs have expired, except for some schemes for SMEs[5] that have been extended by government-affiliated credit guarantee corporations. In December 2021, the BOJ decided to terminate a part of the COVID-19 special lending program, mainly corresponding to large corporates and households at the end of March 2022. In September 2022, the BOJ decided to phase out its remaining COVID-19 relief measures mainly for SMEs (Figure 12). The central bank decided to terminate "government-supported loans" at the end of December 2022, and "non-government-supported loans" at the end of March 2023.

**Figure 11. Domestic Banks' Lending**




Source: BOJ; Haver Analytics

**Figure 12. BOJ Special Funds-supplying Operations to Facilitate Financing Amid COVID-19**

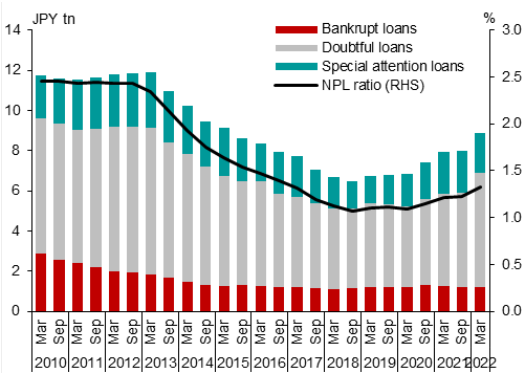



Source: BOJ; Haver Analytics

[5] The SME schemes include the Safety Net Guarantee No. 4 which is ongoing under Credit Guarantee Corporations' (CGCs) Credit Guarantee Programs.

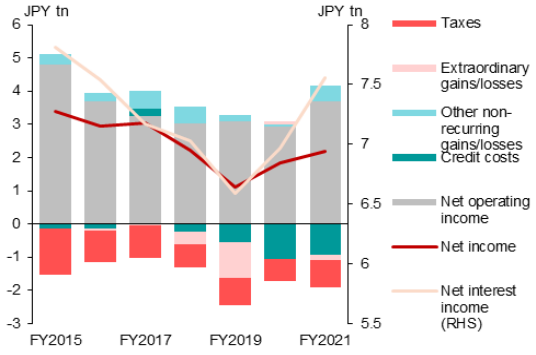
**8. The overall banking system remains largely sound.** Asset quality of the banking system remains solid with the average non-performing loan (NPL) ratio standing at 1.3 percent as of March 2022, compared to 1.2 percent in March 2021 (Figure 13). Capital adequacy ratios (CARs) have also been well above the regulatory requirements of 4 percent for domestic banks and 10.5 percent for internationally active banks.[6] As of March 2022, the CAR was 15.7 percent for major banks, 9.7 percent for domestic regional banks, and 13.4 percent for internationally active regional banks. Profitability picked up in FY2021 at both major and regional banks (Figure 14),[7] partly attributable to the BOJ's policy supports during the pandemic. In particular, the BOJ's new "Special Deposit Facility" helped incentivize regional banks to cut overheads. Compared with the previous year, regional banks' general and administrative expenses as of March 2022 decreased by 1.0 percent. Meanwhile, both major and regional banks posted reduced gains from overseas security investments in H1 2022, reflecting losses from foreign bond investments with the rise in interest rates. Liquidity conditions have remained robust as deposits grew faster than loans. The liquidity coverage ratios at Japanese megabanks were higher than, or comparable to, those of other global systemically important banks (G-SIBs).[8]

**Figure 13. Japanese Banks' NPLs**




Source: Financial Services Agency; Haver Analytics
Note: Based on all Japanese banks' NPLs under the Financial Reconstruction Law.

**Figure 14. Japanese Banks' Net Income**




Source: Japanese Bankers Association; Haver Analytics
Note: Based on all Japanese banks' financial results

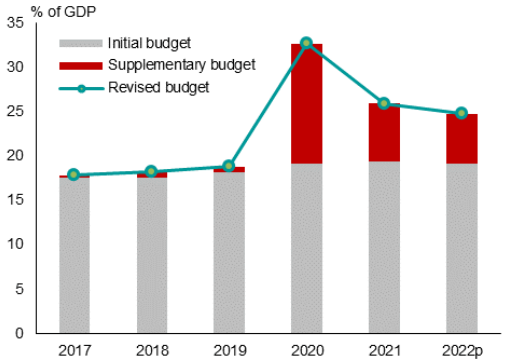
## A.4 Fiscal Sector

**9. The fiscal deficit narrowed in FY2021 on the back of strong revenue after widening in FY2020 as a result of the massive COVID-19 stimulus packages.** In FY2021, the government maintained strong fiscal support to address the pandemic by adopting a supplementary budget of JPY36 trillion, equivalent to 6.6 percent of GDP. Meanwhile, total revenue increased to JPY169.4 trillion, mainly due to unused budget carried-forward from the previous fiscal year[9] as well as strong corporate income tax receipts. For FY2022, the government launched an emergency package of JPY6.2 trillion, equivalent to 1.1 percent of

[6] The minimum regulatory CAR of 10.5 percent for internationally active banks includes a capital conservation buffer of 2.5 percent.
[7] At major banks, net income in March 2022 was about JPY1.4 trillion, up 17.6 percent over a year ago. Net interest income in the same month also increased by 14.6 percent (yoy). At regional banks, net income was about JPY0.8 trillion, 23.9 percent more than a year ago. Net interest income rose by 3.5 percent (yoy).
[8] As of March 2022, the liquidity coverage ratios were 170.4 percent at the Mitsubishi UFG group, 141.7 percent at the Sumitomo Mitsui group, and 136.5 percent at the Mizuho group, compared to the Basel III threshold of 100 percent.
[9] A significant amount of unused spending in FY2020 was carried forward into FY2021, as the Diet approved a third supplementary budget in January 2021 during the last quarter of the fiscal year 2020 as a so-called "15-month budget."

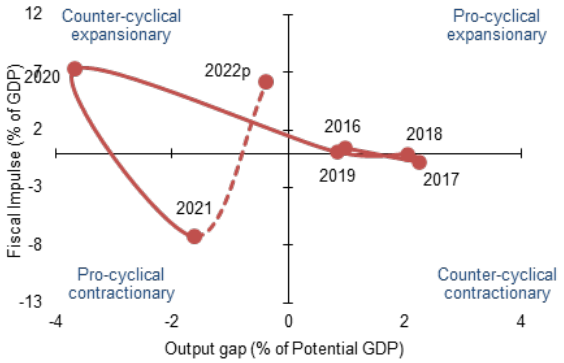
GDP, primarily to mitigate the impact of soaring crude oil and commodity prices and to support investment and reforms for sustainable growth, and partly funded by a supplementary budget of JPY2.7 trillion. In October 2022, the government announced another economic package, totaling JPY39 trillion, equivalent to 6.9 percent of GDP, to mitigate the impacts of price increases and revitalize the economy, which would be backed by a second supplementary budget proposal of JPY29.6 trillion (Figure 15). The fiscal deficit narrowed from 10.0 percent of GDP in FY2020 to 5.9 percent in FY2021, but is expected to widen to 9.4 percent in FY2022 (Figure 16).[10] Meanwhile, the government debt-to-GDP ratio slightly declined from 262 percent in FY2020 to 259 percent in FY2021, and is expected to increase to 268 percent in FY2022.

**Figure 15. Initial and Supplementary Budgets**




Source: JMOF
Note: FY2022 figures are based on the second supplementary budget proposal and AMRO's nominal GDP projection.

**Figure 16. Fiscal Stance and Output Gap**




Source: JMOF; Cabinet Office; AMRO staff projections
Note: Based on the central government; FY2022 figures are based on AMRO staff projections.

**10. Economic policies have continued to focus on addressing social challenges while accelerating structural reforms to boost growth potential.** In June 2022, the government announced the "Basic Policy on Economic and Fiscal Management and Reform 2022" to address macroeconomic challenges facing the Japanese economy. To support robust long-term growth, the government identified four key areas of structural reforms with action plans: i) reform for the realization of a "New Form of Capitalism" by promoting investment in human capital, new technologies, startups, green transformation (GX) and digital transformation, and through initiatives for resolving social issues; ii) response to changing environments inside and outside Japan by strengthening the economy, and energy and food security, and the promotion of international economic partnerships; iii) medium- to long-term economic and fiscal management that would offer flexible policy options through public-private collaboration, tax reform, and wise spending; and iv) policy for near-term economic and fiscal management and FY2023 budget formulation to achieve economic and fiscal reforms, which should not lead to narrowing the range of available options for important policies.

[10] Both the fiscal balance and government debt ratios are calculated on the basis of the IMF's general government definition.

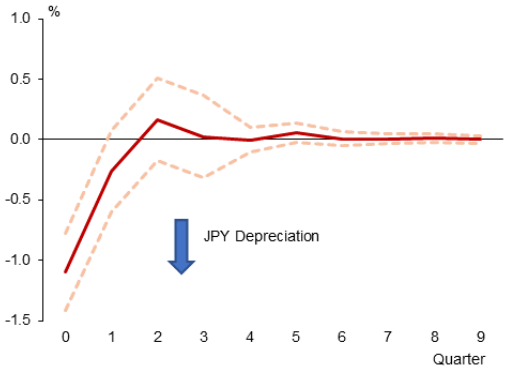
# B. Risks, Vulnerabilities and Challenges

## B.1 Near-term Risks to the Macro Outlook

**11. Japan's macro-financial outlook is tilted to the downside with substantial uncertainties, mainly from the external sector. Key risks and vulnerabilities (Figure 19) include:**

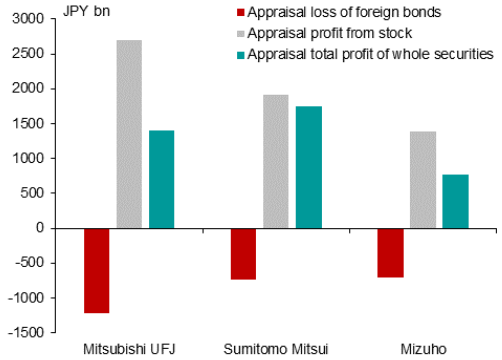
- **Deepening global energy crisis.** With the Russia-Ukraine war becoming protracted, a further escalation of sanctions on Russia, followed by retaliatory measures by Russia to cut off gas supplies, and/or production constraints in other key oil exporters, may lead to a deeper global energy crisis. A resurgence of global energy prices would adversely affect the Japanese economy, which relies on energy imports, by widening the trade deficit, worsening the terms of trade and weighing down domestic consumption.
- **More aggressive U.S. monetary policy tightening.** Heightened concerns about persistently high inflation could force the U.S. Federal Reserve and other advanced economy (AE) central banks to continue raising interest rates more sharply and/or over a prolonged period. A further divergence in monetary policy between Japan and other AEs could lead to a steeper yen depreciation (Figure 17) and higher import prices. This may in turn enhance the effects of imported inflation on Japan's households and small businesses (see Selected Issue 1. *Assessing the Macroeconomic Impacts of a Weaker Yen in Japan*).
- **Sharper slowdown in major global economies.** A recession in both the U.S. and Europe would adversely affect Japan's manufacturing and export sectors by dampening demand for Japanese automobiles and other manufactured goods. A weaker-than-expected recovery in China could also weigh on Japan's exports further.
- **More virulent COVID-19 variant.** The possibility of a new virulent COVID-19 variant would continue to exist as a tail risk, under which scenario the government will likely reimpose controls on both domestic and cross-border flows of people, goods and services. This could lead to a renewed disruption in global supply chains.
- **Heightened market and credit risks in the banking sector.** Japanese banks have large overseas exposures, some of which are exposed to rising global interest rates and exchange rate fluctuations amid the worsening global economic outlook and high inflation. A significant rise in bond yields may severely impair the marked-to-market value of foreign bonds held by Japanese banks (Figure 18). Bank balance sheets could also be badly hit, should the global economy fall into a recession. Further rises in the prices of commodities and raw materials, coupled with the depreciation of the yen, can weaken the loan repayment capability of firms (see Box A. *Rising Interest Rate Risks amid Tighter Global Monetary Policy Conditions*).

**Figure 17. USD/JPY Response to a Positive Shock of 1-Standard Deviation to 5-Year Interest Rate Differentials**



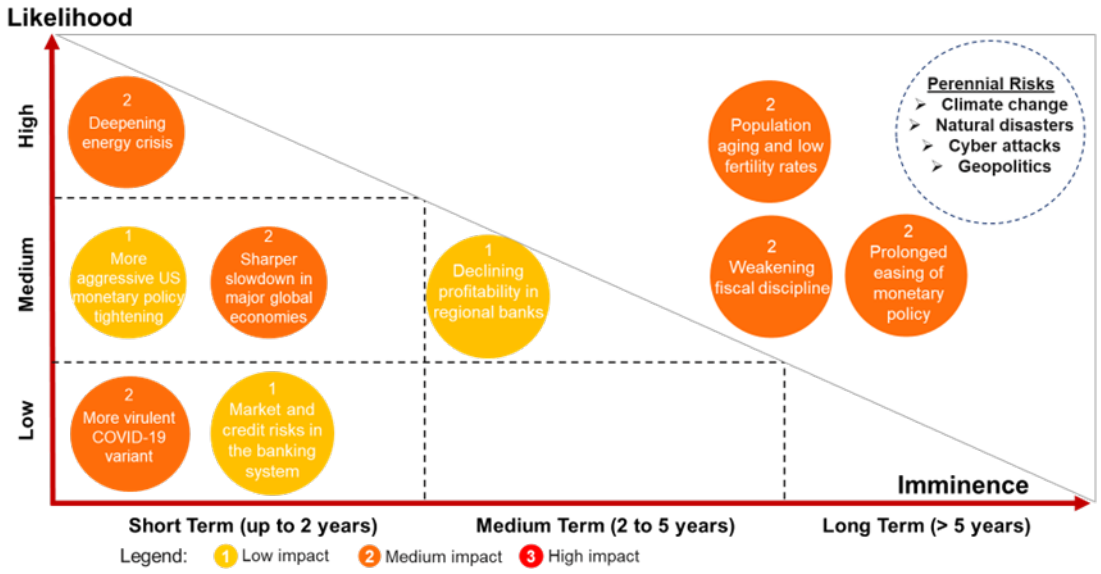

Source: BOJ; Haver Analytics; AMRO staff estimates
Note: Based on VAR model estimation consisting of CBOE's volatility index (VIX), changes in five-year interest rate differentials between Japan and the U.S., Japan's current account, Japan's net portfolio investment, and changes in the USD/JPY exchange rate. The sample includes monthly data from March 1996 to April 2022. See AMRO (2022) for the details.[11]

**Figure 18. Major Japanese Banks' Appraisal Profit and Loss from Overseas Investment**




Source: Each bank's investment relations (IR) materials via Japanese Bankers Association
Note: As of the end of June 2022

**Figure 19. Japan: Country Risk Map**




Source: AMRO staff assessment

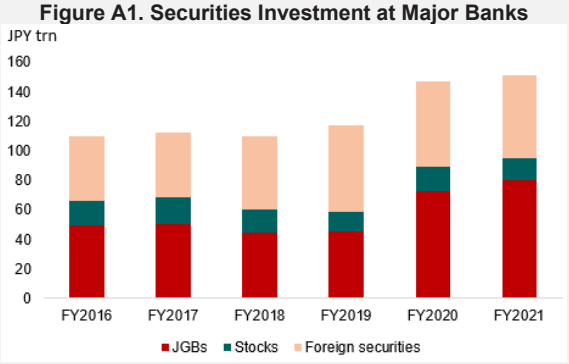
## Box A. Rising Interest Rate Risks amid Tighter Global Monetary Policy Conditions[12]

**Given the tighter global monetary conditions amid a higher inflationary environment, Japanese banks have become more exposed to interest rate risks.** Japanese banks have expanded their foreign securities investment in recent years (Figure A1). Tighter monetary policy in the U.S. and rises in foreign interest rates have resulted in valuation losses on foreign bonds held by banks. As banks hold foreign bonds in their assets, their mark-to-market value will shrink if interest rates keep going up. Moreover, the rising costs of foreign currency funds can narrow the spread

[11] AMRO (2022), "What are the Key Drivers of a Weakening Yen?", *AMRO Analytical Note*, September 8, 2022 (https://www.amro-asia.org/wp-content/uploads/2022/09/AMRO-Analytical-Note-on-JPY_final.pdf)
[12] Prepared by Trung Thanh Vu, Associate Economist.

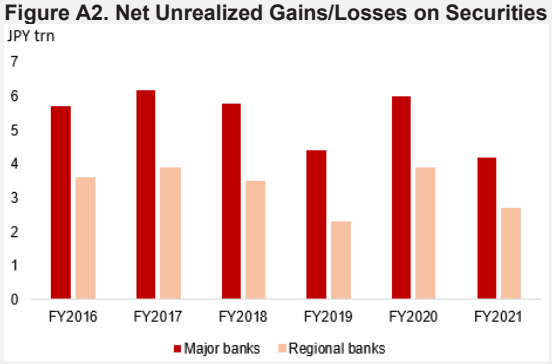
between investment yields and funding rates. Given the context, this box assesses market risks associated with rises in foreign interest rates at Japanese banks.

**Figure A1. Securities Investment at Major Banks**




Source: BOJ

**Figure A2. Net Unrealized Gains/Losses on Securities**



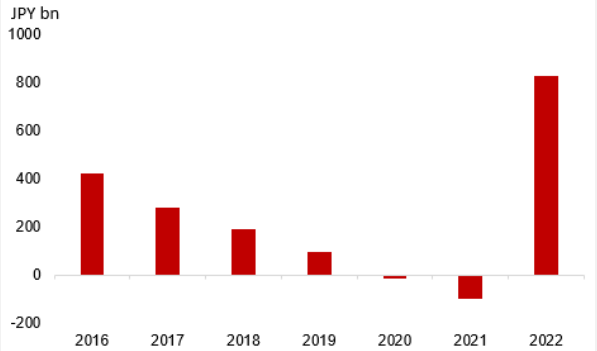

Source: BOJ

**Both major banks and smaller regional banks have already seen a decline in their unrealized gains on securities.** Net unrealized gains decreased in March 2022 compared to a year ago. As of March 2022, net unrealized gains stood at around JPY4.2 trillion at major banks and about JPY2.7 trillion at regional banks, compared to JPY6 trillion and JPY3.9 trillion in March 2021, respectively (Figure A2). Unrealized gains from stockholdings, which accounted for a large proportion of the total gains from securities holdings, also fell at both major and regional banks because of declines in stock prices. Unrealized losses from bondholding and other securities increased at major and regional banks because of the rise in interest rates (BOJ, 2022a).

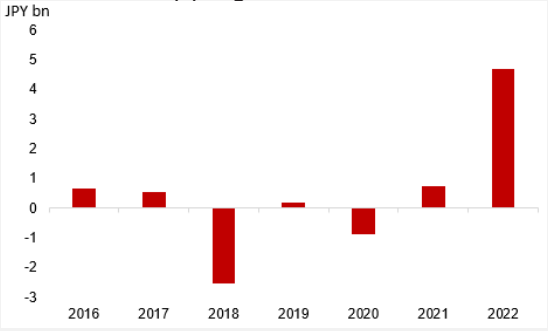
**That said, interest rate risks associated with foreign bonds remain broadly under control.** Being concerned over rises in foreign interest rates, Japanese banks have actively adjusted their foreign bond portfolios. They reduced the outstanding amount of long-term bonds and shortened the duration of their bond portfolios.[13] In addition, the depreciation of the Japanese yen has contributed to mitigating valuation losses on foreign currency-denominated investment products. The Japanese yen depreciation increased the value of banks' foreign currency-denominated assets recognized in the yen (Figure A3); thus, helping banks that have overseas operations offset their valuation losses due to rises in interest rates.

**Figure A3. Gains/Losses in Net Assets due to Foreign Exchange Adjustments**

**(a) City Banks**




**(b) Regional Banks**



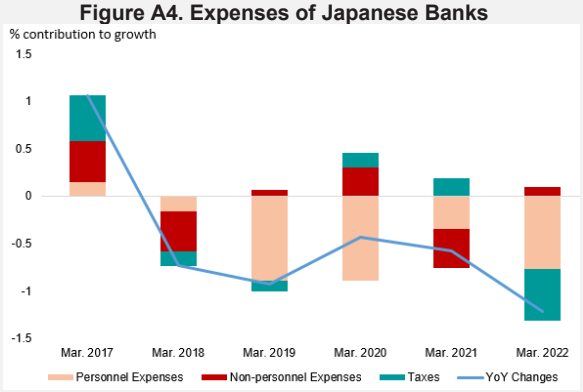

Source: Japanese Bankers Association; Haver Analytics
Note: Data are as of end-March each year.

**Recent improvements in profitability have also given banks more room to adjust their investment strategies**. Japanese banks have been making progress in reducing costs in recent years (Figure A4). Cost-cutting initiatives, such as branch consolidation at regional banks, and efforts to adopt banking digitalization have helped them reduce expenses in the domestic market (Samikawa

[13] The BOJ estimated that interest rate risks associated with foreign bonds at Japanese banks are limited to less than 10 percent of major banks' capital and 5 percent of regional banks' capital (BOJ, 2022b).

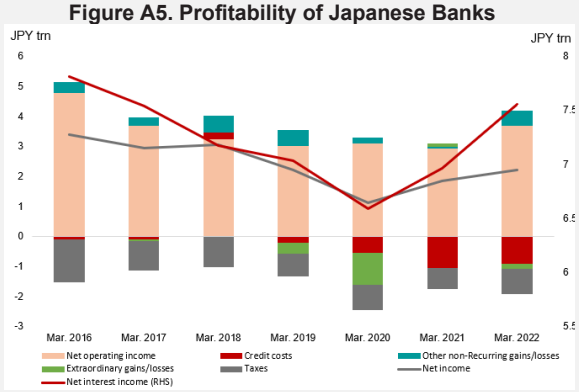
et al., 2021). In addition, banks have earned higher net interest income in recent years, thanks to government support measures such as zero-interest lending during the pandemic (Figure A5). The profitability improvement will allow banks more options, such as reducing their overseas investment, to avoid the effects of a global market downturn.

**Figure A4. Expenses of Japanese Banks**




Source: Japanese Bankers Association; Haver Analytics

**Figure A5. Profitability of Japanese Banks**




Source: Japanese Bankers Association; Haver Analytics

**Coordination between the BOJ and FSA is an appropriate policy move to alert the financial supervisory bodies to any market risks that may emerge amid a rising interest rates environment.** The FSA and BOJ have strengthened their coordination to share information and to jointly conduct research and stress tests. Sharing information such as via the establishment of an integrated data platform will help collect more detailed statistics from financial institutions. Banks often conduct diverse transactions, and their cash flows are continuously changing. Data collection is critical to help the authorities to keep pace with changes in the market. At the same time, conducting joint stress tests will help the authorities deepen their analysis and timely identify potential risks amid uncertainties in the global market.

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BOJ, 2022b, *Financial System Report*, October 2022.
Samikawa, I., Y. Kajita, S. Aiba, K. Narukawa, T. Tezuka, and S. Uzuhashi, 2021, "The Actual State of Branch Consolidation in Japanese Banks", *Regional Bank Restructuring and Branch Strategies*, No. 46, Japan Center for Economic Research (JCER), December 2021.

## B.2 Longer-term Challenges and Vulnerabilities

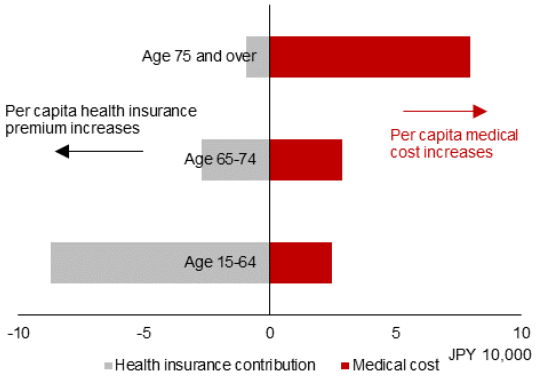
**12. Medium to long-term vulnerabilities and challenges include low profitability of regional banks, weakening fiscal discipline, side effects from prolonged monetary easing, and demographic drag from population aging and low fertility rates.**

- **Declining profitability of regional banks.** Amid demographic changes, regional banks are exposed to structural challenges of declining profitability, a shrinking customer base, and an inability to adapt to more cost-effective business models. As competition intensifies, some small and medium-sized regional banks that rely heavily on local lending may face greater difficulties in shoring up their profitability while maintaining asset quality.
- **Weakening fiscal discipline.** Japan's massive fiscal support to combat the COVID-19 pandemic has made its ambitious fiscal consolidation target to achieve a primary balance surplus by FY2025 even more challenging and difficult. However, persistent and sizable

fiscal deficits would undermine investors' confidence in Japan's debt-servicing capacity and raise concerns about the country's fiscal sustainability in the longer term in the face of increasing social security spending (Figure 20).

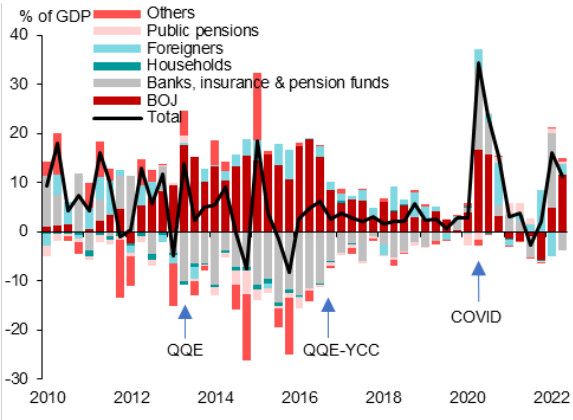
- **Side effects from prolonged monetary easing.** As a result of its prolonged quantitative and qualitative monetary easing (QQE), the BOJ was holding 44.9 percent of JGBs as of Q3 2022, and about 5 percent of stock market capitalization as of March 2022. The JGB market liquidity has declined and the bond market functioning has deteriorated with sizable JGB amounts being held by the BOJ (Figure 21).
- **Demographic drag from population aging and low fertility rates**. In Japan, the number of people over 65 years old comprises 29 percent of the total population as of September 2022. Meanwhile, the number of births continues to be on a declining trend even as the pandemic subsides. Japan's demographic trends have led to a steady decline in the labor force and are a major cause of labor shortage over time, which will continue to weigh on potential growth. At the same time, expanding social security spending, such as medical and long-term care, would pose a significant risk to fiscal sustainability.

**Figure 20. Changes in Medical Benefits/Burden from 2009 to 2019 by Age Group**




Source: JMOF
Note: On the horizontal axis, negative values indicate an increase in per capita health insurance premiums.

**Figure 21. New JGB Issuances Held by Investors**




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

## C. Policy Discussions and Recommendations

### C.1 Maintaining Accommodative Monetary Policy

**13. Under the baseline projection that inflation will peak and start to decline in the near term, the BOJ's current easy monetary policy stance remains appropriate.** Despite current headline CPI inflation, 4 percent, exceeds 2 percent target, the BOJ intends to maintain its existing easy monetary policy stance as such high inflation is not expected to stay above the 2 percent target for long, considering that the recent inflation is mainly driven by supply shocks leading to high energy and food prices while demand pressure has remained subdued, reflecting a negative output gap. Overall, underlying inflationary pressure has remained relatively weak, as can be seen in the so-called "core-core" CPI (less fresh food and energy) inflation just starting

to exceed 2 percent from Q4 2022, while wage growth continues to be muted (see Selected Issue 2. *Wage Development in Japan*). In this regard, we support the BOJ's measured policy to phase out its COVID-19 funds-supplying operations in order to maintain financing support to SMEs during Japan's transition from the pandemic to the endemic phase of COVID-19.

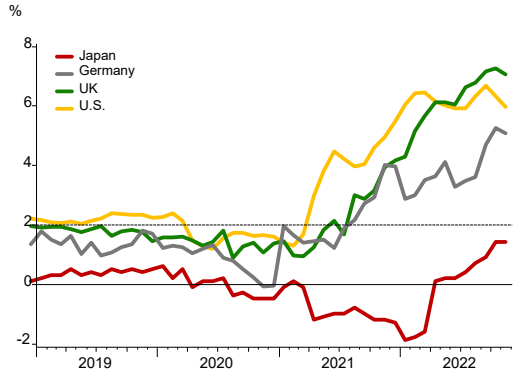
**14. Taking into account the upside risk of a higher inflation rate becoming entrenched, the BOJ should stand ready to adjust the stance of its monetary policy.** According to the BOJ quarterly Tankan survey in September 2022, more than half of Japanese firms responded that the overall prices would rise by 2 percent or higher in the year ahead, which may lead them to change their price-setting behavior and pass-through more of the increase in production costs. The high inflation has already caused some labor unions to demand significantly higher wages, given the tight labor market. The BOJ should closely monitor underlying inflation and wage dynamics to assess if such a shift in behavior is taking place and be ready to respond with timely policy actions. For instance, the BOJ could react by raising its 10-year JGB yield target and/or further expanding the current band, allowing interest rates to be more market driven.[14] Such a policy response would set the stage for a gradual termination of QQE, that is, tapering asset purchases when market conditions permit, and would allow the short-term policy rate to regain its role as the main instrument.

**15. In light of its experiences over the past decade and considering the heightened uncertainties in the post-pandemic global economy, the BOJ's monetary policy framework could be reviewed with an eye to allowing for greater flexibility.** Amid rising global energy price and a rapidly depreciating yen, Japan's "core-core" CPI inflation has risen above 2 percent, although it is still significantly lower than in other AEs such as the U.S. and the United Kingdom, where core inflation has soared to over 6 percent (Figure 22). In addition, a breakdown of Japan's CPI basket indicates that despite sharply rising producer prices, consumer prices, particularly services prices, have not changed for most items (Figure 23). Hence, after a decade of prolonged monetary easing, it is timely for the BOJ to make a comprehensive assessment of the current monetary policy framework, as it heads into the post-pandemic era. In particular, the BOJ may add more flexibility to its monetary policy framework by recognizing that the 2 percent price stability target may not be consistent with underlying price setting behaviors in Japan.[15] In this regard, the BOJ may consider adopting a band for price stability target of 1 to 3 percent as a more practical and realistic goal. This will provide room for the BOJ to adjust its monetary policy stance more flexibly in responding to the needs to maintain the price stability while addressing financial stability risks.

[14] AMRO had shared this view with Japanese authorities during the 2022 Annual Consultation Visit ahead of the BOJ's policy announcement on 20 December 2022. See the details at https://www.amro-asia.org/japan-recalibrating-policy-mix-to-navigate-post-pandemic-challenges/

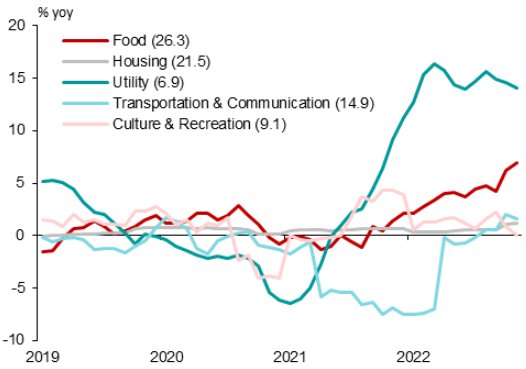
[15] In January 2013, the BOJ announced to set its price stability target at 2 percent under a joint statement with the government to overcome deflation early and achieve sustainable economic growth with price stability.

**Figure 22. Core CPI Inflation (Excluding Food and Energy) in AEs**




Source: Ministry of Internal Affairs and Communications, Eurostat, U.S. Bureau of Labor Statistics, Haver Analytics.

**Figure 23. CPI Inflation by Expenditure Group**




Source: Ministry of Internal Affairs and Communications; CEIC
Note: Figures in parentheses indicate the weightage in the CPI basket.

***Authorities' Views***

**16. The BOJ will maintain the current easy monetary policy stance as the recent inflation in Japan is mainly driven by supply-side factors without accompanying high wage growth.** Cost-push factors such as high energy prices and a weak yen alone cannot drive inflation rates over 2 percent in a sustainable and stable manner. To achieve a virtuous cycle of higher inflation, the Japanese economy needs sustained wage increases which may help boost household incomes and in turn stimulate domestic demand.

## C.2 Macroprudential Policy to Safeguard Financial Stability

**17. Financial supervisory authorities should remain vigilant to ensure that financial institutions are financially sound**. The Financial Services Agency (FSA) and the BOJ could continue to monitor and examine the resilience of the banking system by conducting market and credit risk stress tests to better assess the risks from high interest rates (see Box A. *Rising Interest Rate Risks amid Tighter Global Monetary Policy Conditions)* and exchange rate volatility, especially on small and regional banks. In the search for higher returns, Japanese banks may have ventured into riskier businesses such as investing in non-investment grade securities or participating more in syndicated loans for overseas projects. Financial supervisory authorities should monitor potential stress in foreign currency funding (see Box B. *Foreign Currency Funding Stress in Japanese Banks*) and enhance their oversight of financial institutions' high-risk investments while ensuring that the risk management practices of these institutions remain stringent.

**18. Financial policy should also encourage financial institutions to adapt themselves to a rapidly changing business environment.** Regional banks made progress in cutting their operational costs, especially by closing physical branches through "branch-in-branch" consolidation by around 20 percent, while reallocating existing personnel to new business areas such as consultation services on M&A and business succession. The authorities could encourage other forms of restructuring initiatives by regional banks, such as forging an alliance

among themselves.[16] Financial supervisory authorities could continue to support financial institutions' business diversification strategies, customized to an aging society, while promoting digital transformation through strengthening software investment, IT training support, and cybersecurity management. Several government-led initiatives—such as increasing the availability of cashless payments, improving data privacy regulations, and providing discount and reward points for cashless payments—are strongly encouraged to strengthen the embrace of digitalization. Coordination between the FSA and BOJ, with the establishment of the Financial Monitoring Council (FMC),[17] could deepen the authorities' analysis of banks and help them identify areas where further action is needed. Other ongoing initiatives, such as the "FinTech Support Desk" and the "FinTech PoC Hub[18]" could help promote innovation in financial institutions.

***Authorities' Views***

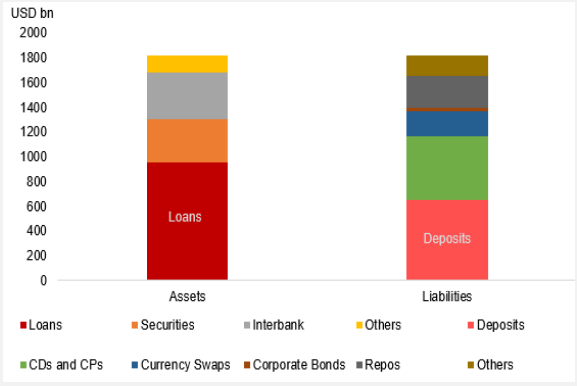
**19. The authorities are closely monitoring the developments of global financial markets, but financial risks to Japan's financial institutions will likely be limited.** Although Japanese megabanks have actively worked on non-investment grade loans in recent years, their credit risks are contained due to their prudence in providing for ample loan loss reserves. The FSA has not seen any significant rise in credit costs triggered by the yen's sharp depreciation. Meanwhile, the recent improvement in banks' profitability may not be sustained with heightened uncertainties in the global economic outlook and low interest rate environments in the domestic market. To grapple with structural challenges such as the aging population and climate changes, Japanese banks are increasingly adopting digital transformation and adjusting their business models. The FSA will continue to promote digital transformation, sustainable finance and corporate governance reform.

**Box B. Foreign Currency Funding Stress in Japanese Banks[19]**

**Banks that have overseas operations may face higher stress in their foreign currency funding amid rises in global interest rates.** In March 2020, Japanese banks experienced stress in their U.S. dollar funding after a liquidity crunch in the U.S. dollar funding market that caused a surge in funding costs and a tightening in liquidity in the foreign exchange (FX) swap market. The event highlighted the importance of securing more stable deposit funding rather than relying on the market-based funding as they can dry up during market turmoil. As of September 2022, on the asset side, loans that represent illiquid assets continued to account for more than 50 percent of banks' assets, while deposits that represent one of the foreign currency funding sources accounted for less than 50 percent (Figure B1).

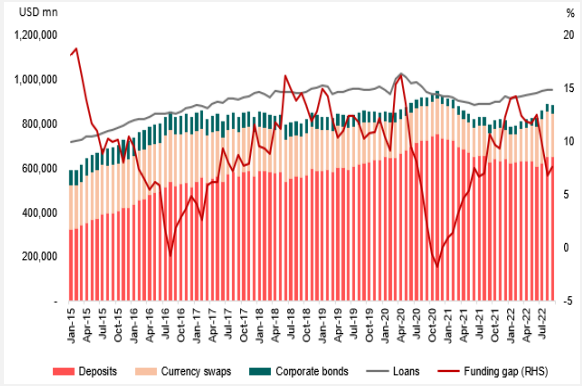
[16] The BOJ's Special Deposit Facility, which aims to strengthen the business foundations of regional banks and promote their mergers, business integrations and acquisitions, has incentivized banks to achieve cost reductions.
[17] In March 2021, the FSA and BOJ released initiatives for further strengthening their joint coordination. The two bodies established the Financial Monitoring Council (FMC) in June 2022 to reduce the burden on financial institutions and conduct monitoring of higher quality. Financial institutions will submit their data to the FSA in its capacity as a single contact point, then the FSA will transfer the information to the BOJ. All the financial institutions will use the same standardized data format for their submissions. More information can be found at: https://www.fsa.go.jp/en/news/2022/20220708/20220708.html
[18] "PoC" stands for "proof-of-concept."
[19] Prepared by Trung Thanh Vu, Associate Economist.

**Figure B1. Foreign Currency-denominated Balance Sheet**




Source: BOJ; Haver Analytics
Note: Data are as of September 2022 and cover internationally active banks.

**Figure B2. Foreign Currency Funding Gap**

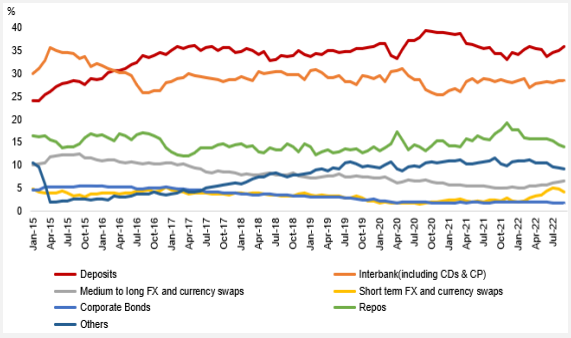



Source: BOJ

**Rises in the U.S. interest rate have pushed up funding costs of foreign currency funding instruments.** For certificates of deposits (CDs) and commercial papers (CPs), rises in the U.S. interest rate often lead to increases in CDs and CPs funding rates (BOJ, 2021). For FX and currency swaps, higher U.S. interest rate also drives up funding costs (BOJ, 2021). In addition, the funding gap,[20] calculated as the difference between the amount of illiquid loans and stable funding in banks' foreign currency balance sheets, widened again in early 2022 after a significant decrease in October 2020 (Figure B2).

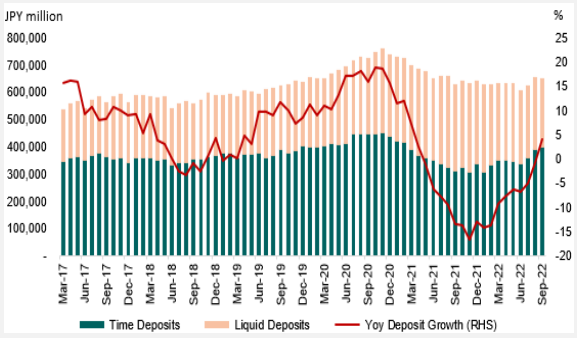
**That said, Japanese banks have sought to enhance the stability of their foreign currency funding.** The funding structure of banks has changed since 2017. Deposits have been taking up an increasing share, while other funding instruments have remained flat or registered a downward trend (Figure B3). In addition, the growth of foreign currency deposits has picked up in 2022 after a slowdown in 2021. A recent increase in foreign currency time deposits in 2022 partly reflects the fact that Japanese banks are setting higher interest rates on deposits and striking a better balance between profitability and the stability of their foreign currency funding (Figure B4).

**Figure B3. Components of Foreign Currency-denominated Liability**




Source: BOJ

**Figure B4. Foreign Currency-denominated Deposits**




Source: BOJ

**Japanese banks have also diversified their funding counterparties and obtain foreign currency deposits that are less likely to flow out in the event of market turmoil.** Non-Japanese companies located abroad tend not to retain the funds in their deposit accounts at Japanese banks during times of financial stress. During market turmoil, they tend to put their funds in their main bank

[20] Funding gap is calculated as the difference between (i) loans and (ii) deposits, short-term, medium-term and long-term currency swaps, and corporate bonds, as a percentage of total loans. A positive gap occurs when loans are not fully covered by stable funding, while a negative gap happens when loans are fully covered by stable funding. However, a negative funding gap does not guarantee a sufficient funding base, because the funding gap does not capture other factors, such as the degree of stability of foreign currency deposits and clients' drawdowns of commitment lines.

settlement accounts so that they can arrange urgent payments. Most of the loans provided by Japanese banks to non-Japanese companies may flow out from Japanese banks to settlement accounts that are typically held at foreign banks (Aoki et al., 2021). Furthermore, as Japanese banks still rely on wholesale funding overseas and have non-Japanese clients, the reaction of counterparts in the wholesale market and of the non-Japanese clients during market turmoil will have a big impact on the banks' funding situation. Aware of these factors, in recent years, Japanese banks have tried to expand their transaction account deposits and further cultivate their relationship with the non-Japanese depositors (BOJ, 2022).

**The authorities have adopted policy actions to help banks stabilize their foreign currency funds**. The BOJ offered U.S. dollar liquidity support such as the U.S. dollar funds-supplying operations[21] to help stabilize the market during U.S. dollar funding stress in 2020-2021. Although this support can be used as a temporary measure during market turmoil, improving authorities' visibility of U.S. dollar funding activity by keeping pace with changes in market structure and offering liquidity support when needed would enhance their ability to assess vulnerabilities. It can also help authorities identify the timing and areas where further action might be the most helpful.

**Accurate data collection and greater data sharing play an important role to help the authorities to monitor and identify any stress in foreign currency funding.** Since banks use multiple funding sources to maintain their foreign currency liquidity, it is important to consolidate data on foreign currency funding at each location. In addition, strengthening coordination between the BOJ and FSA and establishing an integrated data platform to promptly collect statistics from banks will help the authorities keep track of foreign currency liquidity conditions at banks.

**It is necessary to encourage banks to adjust their business model to balance stability and profitability, and further enhance their liquidity risk management.** Obtaining foreign currency deposits that are less likely to flow out even during market turmoil will help banks maintain the long-term stability of their overseas businesses. Banks can attract more retail deposits by considering the characteristics of depositors and offering relevant financial services for depositors based on their sensitivity to changes in interest rates. In addition, it is also essential to ensure that banks adapt and upgrade their liquidity risk management framework. Together with stress tests, adapting early warning indicators to incorporate a larger number of influencing factors will help banks project the risk of large future outflows in their foreign currency funds and better manage their funding gap.

**References**

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BOJ, 2021, *Financial System Report*, October 2021.
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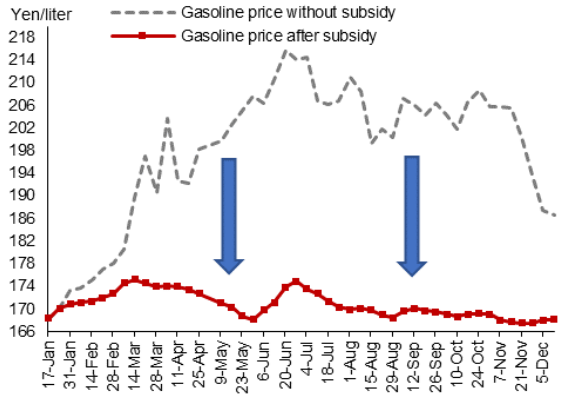
## C.3 Strengthening Fiscal Prudence

**20. With the pandemic becoming endemic and the economy recovering strongly, the government should place a higher priority on strengthening fiscal prudence while providing targeted support to low-income households suffering from the effects of higher energy and food prices.** As the pandemic subsides and economic activities resume, extensive fiscal stimulus measures should be terminated or phased out so that the pre-crisis fiscal

[21] The U.S. dollar funds-supplying operation can be funded through a currency swap between central banks, such as the BOJ and the Fed. For example, information can be found at https://www.boj.or.jp/en/mopo/measures/mkt_ope/ope_h/index.htm/

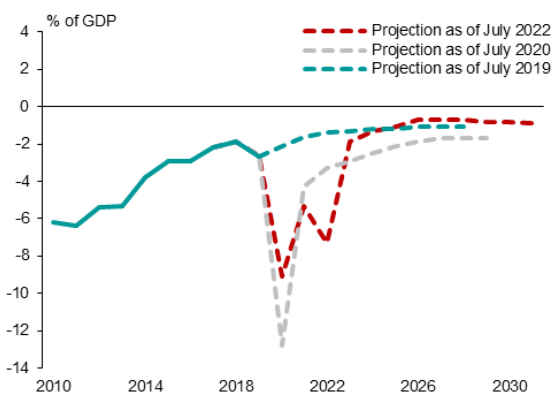
consolidation program can be put back on track. In response to high energy and food prices, fiscal policy should continue to play a role in providing targeted social assistance to vulnerable groups. The government's swift response to subdue wholesale prices of gasoline and wheat have helped to stabilize retail prices (Figure 24), but such measures are costly and distortionary and should be phased out. Meanwhile, targeted supports to low-income households can be handled under the social security system with enhanced capacity to identify those in need in a timely manner. In this regard, newly proposed energy subsidies for electricity and gas in the second supplementary budget should be time-bound and mainly targeted at the most vulnerable groups. Incentivizing a wider use of the "My Number" national identification system will improve administrative efficiency.

**Figure 24. Policy Effects of Gasoline Subsidy**




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

**Figure 25. Primary Balance of Central and Local Governments**

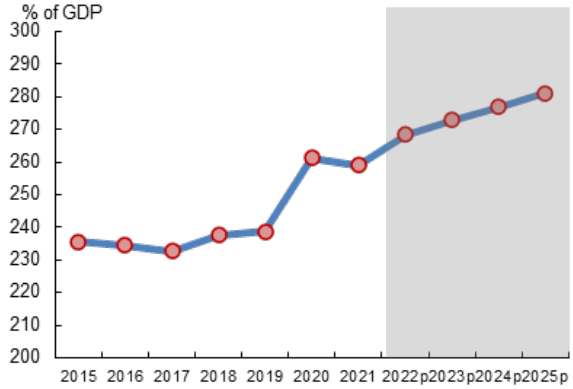



Source: Cabinet Office
Note: Based on each year's "baseline case" projections

**21. To achieve its primary balance target, the government should formulate a comprehensive post-pandemic fiscal consolidation plan with specific fiscal targets and policy measures.** It is commendable that the government has maintained its fiscal consolidation target to achieve a primary surplus by FY2025, despite the unexpected pandemic, which led to massive fiscal stimulus in FY2020. However, given that the authorities' optimistic economic growth assumptions under the Growth Achieved Case, achieving the primary surplus target by FY2025 would require implementing very stringent fiscal measures, including the withdrawal of a large amount of COVID-19 related spending to normalize the size of expenditure to the pre-pandemic levels (Figure 25). To avoid fiscal cliff effects, the current medium-term fiscal consolidation plan should be reviewed and recalibrated incorporating recent fiscal developments and based on more realistic macro assumptions. Furthermore, a persistent rise in interest rates in anticipation of the BOJ's policy adjustments would gradually push up the government's debt servicing burden (Figure 26). The authorities should take into account the impact of higher interest expenses on their medium-term fiscal consolidation plan. Figure 27 illustrates that Japan may need to cut the primary deficit significantly to about 2.4 percent of GDP or lower in order to stabilize the government debt ratio at the current level or below, under the authorities' long-term projections, according to a debt-stabilizing primary balance

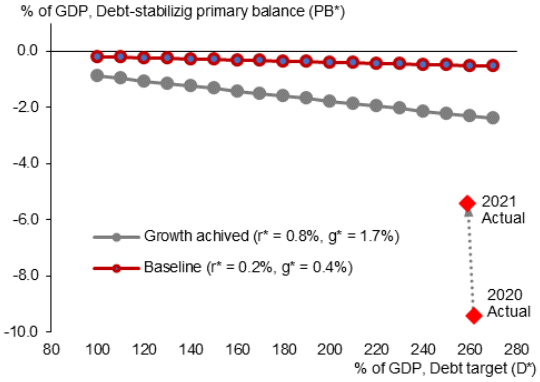
approach.[22] In addition, there is room to strengthen the government's current fiscal reform plans under "flexible" fiscal policies by specifying fiscal adjustment measures and quantitative targets for each measure. Moreover, formulating long-term repayment strategies on the additional debt arising from the COVID-19 spending will help maintain investors' confidence in the country's debt-servicing capacity.[23] In this regard, the authorities may need to establish an independent fiscal institution or to reform the existing Council on Economic and Fiscal Policy (CEFP) so that it can play a critical role in assessing the government's long-term economic and fiscal projections while providing policy suggestions to help achieve its fiscal consolidation target as committed.

**Figure 26. Long-term Projection of General Government Debt**




Source: Cabinet Office; AMRO staff projections
Note: Debt figures for FY2022-2025 are based on AMRO projections.

**Figure 27. Debt-stabilizing Primary Balance Under Different Growth Scenarios**




Source: Cabinet Office; AMRO staff estimation
Note: Debt-stabilizing primary balances are calculated from the debt dynamics equation $pb^* = \left(\frac{r^*-g^*}{1+g^*}\right) \times d^*$ as in Cheng et al. (2018), using the Cabinet Office's long-run projections of long-run real interest rates and long-run growth rates, and hypothetical debt-to-GDP target levels.

**22. From a longer-term perspective, concerted efforts to reform the social security and tax systems are needed to address post-pandemic challenges amid rapid population aging in Japan.** Structural imbalance between social security benefits and contributions requires the government's budgetary support, which is projected to rise with the rapidly aging population (Table 1). To mitigate the fiscal costs of population aging, the rapid increase in social security spending, in particular, medical and long-term care benefits, needs to be rationalized. Meanwhile, revenue reforms should be accelerated in addition to the government's recent efforts to raise out-of-pocket medical payments for elderly people who have higher income. Distributing cost-burden sharing across all generations based on their capacity to pay would help improve inter-generational equality in the social security system. Further tax reforms are essential to mobilize tax revenues while supporting inclusive and sustainable growth. To mobilize higher tax revenue, enhancing tax efficiency and administration capacity is essential. Special tax treatments for property tax should be rationalized. Given Japan's relatively low tax burden rate among AEs, further increases in the consumption tax rate to over 10 percent should remain a viable policy option. Promoting environmental taxation would help increase tax revenues and

[22] Cheng, H., and I. Pitterle, 2018, "Towards a More Comprehensive Assessment of Fiscal Space." *DESA Working Paper* No. 153, Department of Economic and Social Affairs, United Nations, New York.
[23] Launching a special account could be one way of separating the pandemic-related expenditures and financing them through surtaxes or other revenues, similar to the Special Account for Reconstruction from the 2011 Great East Japan Earthquake (AMRO's 2021 Annual Consultation Report on Japan, https://www.amro-asia.org/amros-2021-annual-consultation-report-on-japan/)

support the government's target of achieving carbon neutrality by 2050. Considering the ongoing global tax reform initiative, Japan's tax system needs to be reviewed for incorporate global trends. An effective mechanism for VAT collection on electronically supplied services through the digital platforms would help increase tax revenues (see Box C. *Key Developments of Taxation on Cross-Border Electronic Services in Japan*).

**Table 1. Per-capita Social Security Benefits by Age (2019)**

| | Medical Care | | | | Long-term Care | | | |
|---|---|---|---|---|---|---|---|---|
| (Unit: JPY) | 0-64 | 65-74 (a) | 75+ (b) | (b/a) | 0-64 | 65-74 (c) | 75+ (d) | (d/c) |
| Care benefits | 192,000 | 567,000 | 931,000 | 1.6 | - | 49,000 | 474,000 | 9.7 |
| Public aid | 27,000 | 80,000 | 324,000 | 4.1 | - | 13,000 | 127,000 | 9.8 |
| Total | 219,000 | 647,000 | 1,255,000 | 1.9 | - | 62,000 | 601,000 | 9.7 |

Note: Per capita care benefits and public aid indicate national medical care expenditure and publicly funded expenditures per age group respectively, divided by the population of each generation as of 2019.
Source: JMOF

### *Authorities' Views*

**23. Despite its expansionary fiscal policy stance in FY2020 and FY2021, the government is committed to the current fiscal consolidation target to achieve a primary surplus by FY2025.** The past two years' large supplementary budgets had clear policy priorities to support those who suffered from the pandemic or the recent high inflation, both of which have temporarily suspended policy efforts toward fiscal consolidation. That said, fiscal sustainability remains an important goal to be achieved by normalizing spending as the economy recovers. For example, although the recent energy subsidies are provided very broadly without targeting specific groups as the current pace of energy price increase is too rapid, careful consideration should in general be given to designing targeted support measures. The target of achieving a primary surplus by FY2025 will remain challenging, although a stronger-than-expected revenue collection from faster economic recovery, coupled with additional spending reform measures, would help achieve the fiscal consolidation target. Meanwhile, the Cabinet Office disagreed with the idea of establishing a new independnt fiscal institution, or reforming of the CEFP, stressing that the government will continue discussing the economic and fiscal policy under the current framework as the CEFP, as an institute for the Prime Minister to take strong leadership for the economic and fiscal policy, already plays a crucial role in this area.

#### Box C. Key Developments of Taxation on Cross-Border Electronic Services in Japan[24]

**With the rise of the so-called "digital economy", taxation on cross-border electronic services have recently become an important issue in international community.** Tax experts are in the process of considering the OECD's new global taxation rules, especially, Pillar One. To embrace the digital economy facilitating cross-border transactions, tax authorities need to review and revamp existing tax administration system.

**Since October 2015, Japan has started to impose consumption tax on cross-border digital or electronic services.** The National Tax Agency lists the following types of transactions as electronic services:

- Provision of e-books, digital newspapers, music, videos and software on the internet, including applications such as games

[24] Prepared by Thiri Aung, Associate

- Services that allow customers to use software and databases stored on cloud servers
- Services that provide customers with storage space to save their electronic data on cloud servers
- Distribution of advertisements via the internet
- Services that allow customers to access shopping and auction sites on the internet, such as platforms that charge for posting goods online for sale
- Services that let customers sell game software and other products on the internet
- Accommodation and restaurant reservation websites, which charge accommodation and restaurant businesses for posting on the website

**With the 2015 tax reform, overseas electronic service providers to Japanese firms and individuals became obliged to pay consumption tax.** To this end, the Consumption Tax Act was amended to redefine the place of digital services provided as the address of the service recipients, which was changed from the location of the service provider. Table C1 indicates that the electronic service providers to Japanese customers need to pay consumption tax directly, or through Japanese corporate clients when providing business-to-business (B2B) electronic services. A foreign business who has recorded annual sales of JPY10 million in the previous two financial years is subject to consumption tax on the sales of electronic services.

**Table C1. Key Changes After the 2015 Consumption Tax Reform on Cross-border Electronic Services (Effective from October 1, 2015)**

| Case | Service Provider | Service Recipient | Before the 2015 Reform | After the 2015 Reform | Taxation Scheme |
|---|---|---|---|---|---|
| 1 | Japanese business | Foreign business | Domestic transaction: Taxable | Foreign transaction: Not taxable | - |
| 2 | **Foreign business** | **Japanese business** | Foreign transaction: Not taxable | Domestic transaction: **Taxable** | Japanese firms liable to file and pay tax ("Reverse charge mechanism") |
| 3 | Japanese business | Foreign consumers | Domestic transaction: Taxable | Foreign transaction: Not taxable | - |
| 4 | **Foreign business** | **Japanese consumers** | Foreign transaction: Not taxable | Domestic transaction: **Taxable** | Overseas firms liable to file and pay tax |

Source: JMOF

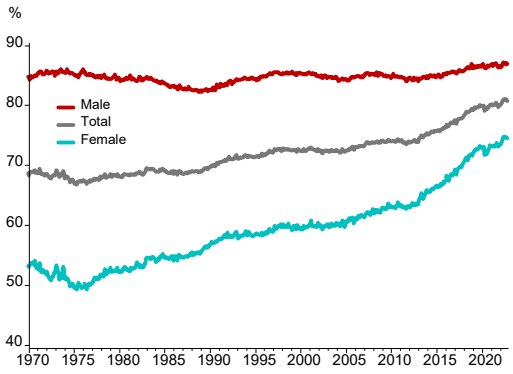
**The tax authorities continue to make efforts to mobilize tax revenues from cross-border electronic service providers in blind spots.** It is reported that Japan is planning to revise the Consumption Tax Act in fiscal year 2024 or later to improve consumption tax collection from the sales of smartphone games made by major digital platform operators like Apple and Google, which have been not well captured under the existing tax administration. An effective mechanism for consumption tax collection on electronically supplied services through the digital platforms would help increase tax revenues.

## C.4 Structural Reforms

**24. Structural reforms should be implemented with greater urgency to enhance growth potential as short-term stimulus measures are phased out in the post-pandemic new normal.** The drop in fertility rate in 2021 to a historical low during the pandemic highlighted a declining trend in Japan's working-age population and a steady decrease in the number of future taxpayers as the population ages. In this regard, a recent policy to provide financial support for child rearing and early childhood education is encouraging. At the same time, measures such as greater efforts to attract more people to participate in the labor market, particularly female, elderly and foreign workers, should be strengthened (Figures 28 and 29). Furthermore, the government should continue to ramp up work-style reform and digital transformation initiatives to incentivize Japanese firms to adjust their traditional working styles

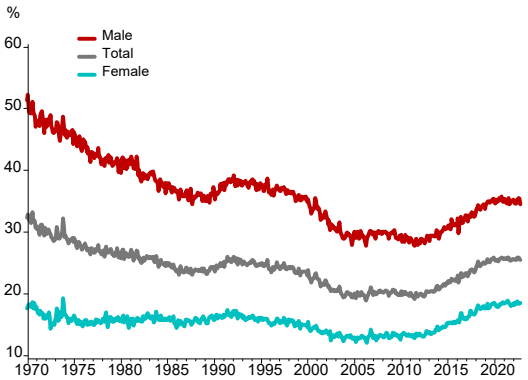
to new trends in employment such as teleworking and gig workers, and leverage new technologies to enhance total factor productivity. Continued efforts to foster human resources customized in the post-pandemic era, would help to boost Japan's declining growth potential and revitalize the economy.

**Figure 28. Labor Force Participation Rate: 15-64 Years Old**




Source: Ministry of Internal Affairs and Communications; Haver Analytics

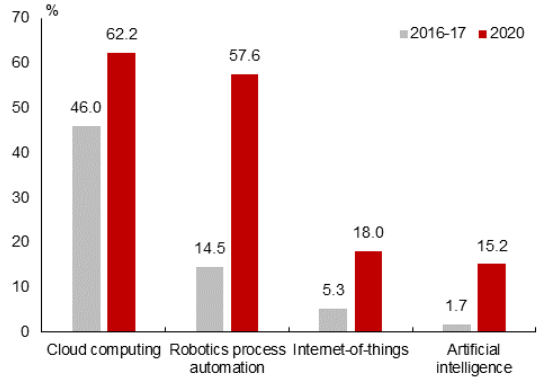
**Figure 29. Labor Force Participation Rate: 65 Years Old and Above**




Source: Ministry of Internal Affairs and Communication; Haver Analytics

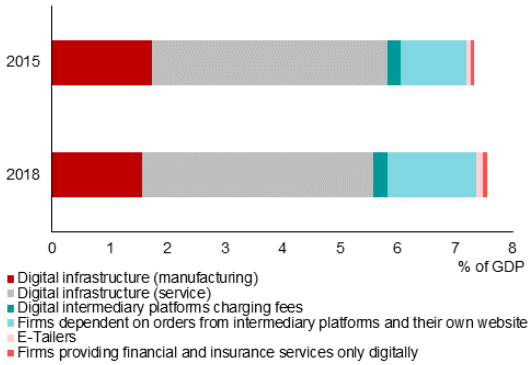
**25. The government should foster supply chain diversification and digital transformation, which are most critical to economic dynamism and resilience in a post-pandemic world**. The pandemic has acutely demonstrated the importance of enhancing an economy's ability to adapt to rapidly changing circumstances by strengthening supply chain resilience and digital innovation (Figure 30). The government should help firms develop a strategy to diversify supply chains and promote digital transformation. Authorities can also further develop existing projects and international cooperation for overseas supply bases and the relocation of production bases to Japan. The implementation of the New Growth Strategy and the Strategy for the Digital Industry should be prioritized. In particular, the development of smart factory is essential to addressing labor shortage and enhancing productivity. Moreover, continuous improvement in IT infrastructures and systems in both the public and private sectors is fundamental to digitalization (Figure 31). Promoting cashless payment usage is also pivotal to enhancing Japan's financial digitalization.

**Figure 30. Japanese Corporates' Adoption of Digital Solutions after COVID-19**




Source: Japan Users Association of Information Systems' (JUAS) Corporate IT Trends Survey Report 2021
Note: Cloud computing figures are based on the "Software as a Service" (SaaS) type of solution.

**Figure 31. Scale of Digital Industry in Japan (Value Added)**




Source: Cabinet Office

***26.*** **The government should continue with corporate governance reforms to help Japanese firms enhance operational transparency, efficiency and profitability.** The traditional corporate governance framework in Japanese companies has been blamed for being one of the causes of inefficiency and low profitability. Corporate governance reforms can encourage firms to enhance technological capabilities and improve efficiency. Furthermore, corporate governance improvement may have a positive effect on encouraging Japanese firms to invest more of their cash savings. Most importantly, this requires strong alignments across the public and private sectors and between labor and management. The government should continue to play a catalytic role as a coordinator and initiator, which is illustrated with its recent efforts including the enhanced disclosure of corporate non-financial information[25] and the launch of a corporate governance forum[26] to seek a wide range of opinions from stakeholders.

**27. The government should continue efforts to achieve its greenhouse gas (GHG) emissions reduction target while taking measures to mitigate the transition risks of climate change policy.** The government targets cutting its GHG emissions by 46 percent in 2030 from 2013 levels in its Nationally Determined Contribution (NDC). In line with the NDC, the Ministry of Economy, Trade and Industry (METI) has set an energy mix target in 2030 that includes having 36-38 percent in renewable energy and 20-22 percent in nuclear energy under the Strategic Energy Plan, and has started discussions with line ministries on policy incentives such as carbon pricing. That said, there could be some inadvertent spillover effects on some sectors in the transition period. For instance, introducing high carbon pricing could negatively impact low-income households through an energy cost pass-through. The government should accelerate policy actions for climate change to meet the NDC target. At the same time, authorities should consider mitigating the transition risks of their climate change policy going forward through targeted social policies to protect the most vulnerable. The climate change policies should be fully costed, and the source of funding should be long term in recognition of intergenerational benefits of the policies (see Selected Issue 4. *Transition Risks of Climate Change Policy in Japan*).

**28. The authorities should strengthen efforts to develop Japan's future growth engines.** Nationalism surrounding a country's resources and semiconductor chips has gained momentum globally during the pandemic, posing a significant threat to Japan, which is short of the necessary natural raw materials. The global chip shortage continues to hit Japan's manufacturing activities, including the automotive industry. At the same time, the country, where high-tech manufacturing has been the key growth engine, has also the potential to lead the global trend of the "Big Blur".[27] Against this backdrop, upgrading the ecosystem for Japanese manufacturers should be a policy priority to help them survive among globally fierce competition for resources, new technologies and markets. Japan's moves to boost the next-generation vehicle industry are among the key policy initiatives to stimulate the economy's new growth momentum. In addition, a green economy is becoming a key pillar to fuel growth and address

[25] https://www.fsa.go.jp/news/r4/sonota/20230131/20230131.html
[26] https://www.fsa.go.jp/en/refer/councils/japan_corporate_governance_forum/index.html
[27] A phenomenon in which the ambiguity between heterogeneous industries grows based on the convergence between existing industries and information and communication technology.

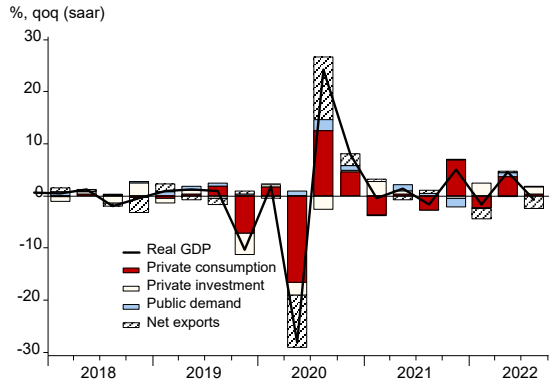
energy constraints in a holistic way. The government should continue to accelerate its Green Growth Strategy and promote investment in resource-efficient technologies (see Selected Issue 3. *Japan's Manufacturing as a Growth Engine in Changing Global Trends*).

# Appendices

## Appendix 1. Selected Figures for Major Economic Indicators

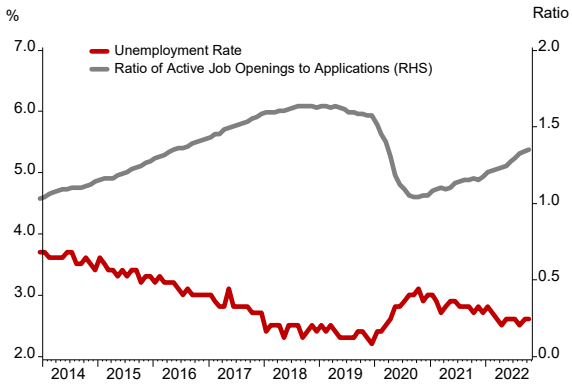
### Figure 1.1. Real Sector

The Japanese economy continued to expand at a moderate pace in 2022...



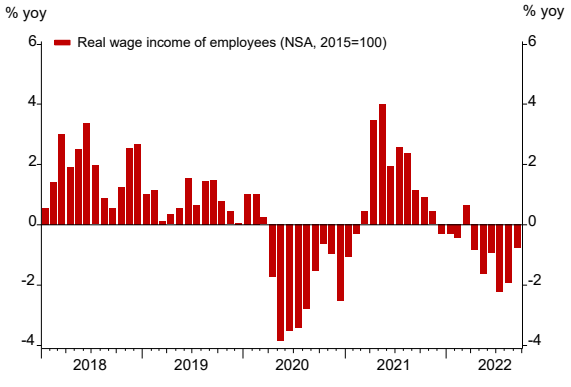

Source: Cabinet Office; Haver Analytics

…while the unemployment rate declined gradually.



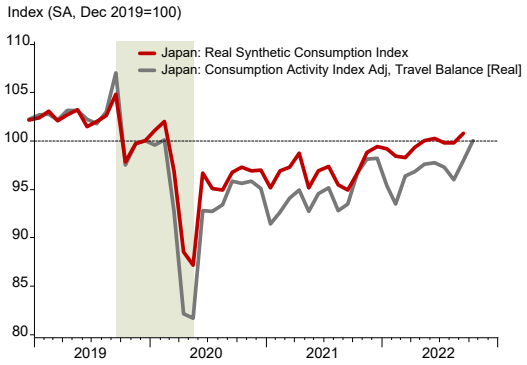

Source: Ministry of Health, Labour and Welfare (MHLW); Ministry of Internal Affairs and Communications; Haver Analytics

Employees' real income growth turned negative in H1 2022, reflecting the surge in inflation.



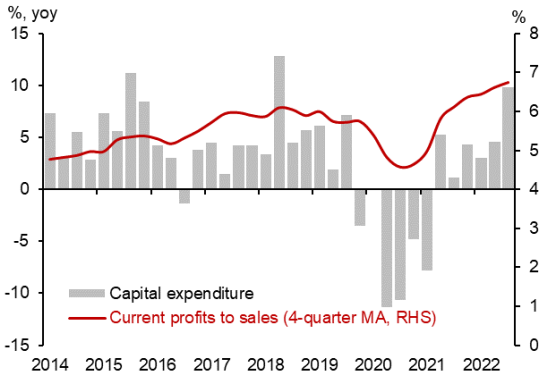

Source: Cabinet Office; Haver Analytics

Private consumption continued to recover in 2022, approaching pre-pandemic levels.



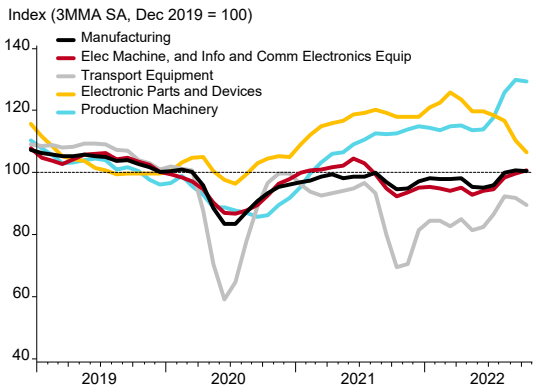

Source: Cabinet Office; Bank of Japan (BOJ); Haver Analytics

Business investment growth accelerated in 2022, while corporate profits soared.




Source: Ministry of Finance Japan (JMOF); CEIC

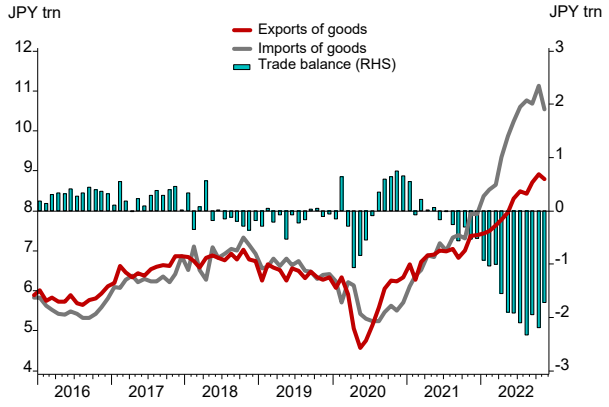
Industrial production recovered in 2022 to pre-pandemic levels as supply chain disruptions eased.




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

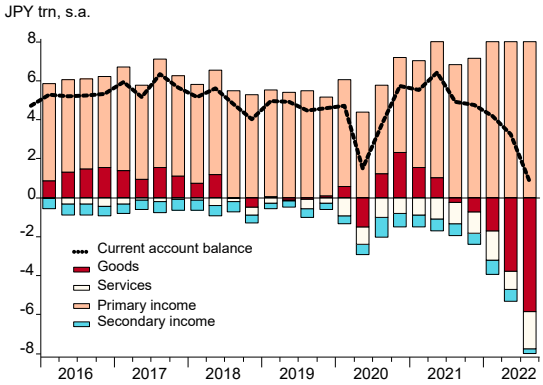
## Figure 1.2. External Sector

Merchandise trade deficits continued to widen in 2022, reflecting high energy prices…



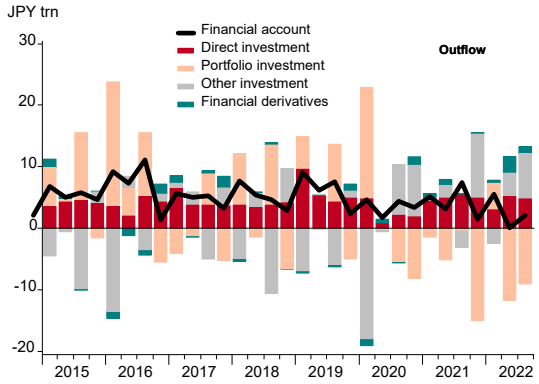

Source: JMOF; Haver Analytics

while the current account balance remained resilient in 2022 on the back of a large primary balance surplus.



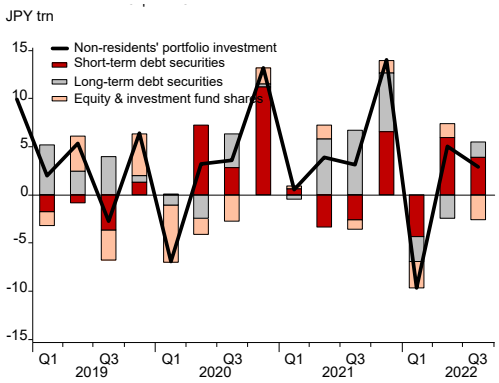

Source: BOJ; JMOF; Haver Analytics

Capital outflows softened with slower overseas portfolio investment.



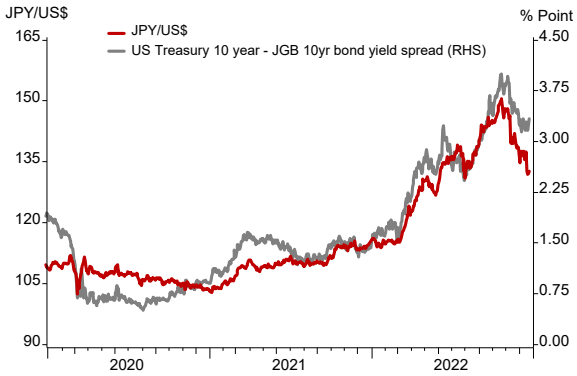

Source: BOJ; JMOF; Haver Analytics

Foreign investors increased their purchase of Japanese government T-bills from Q2 2022.



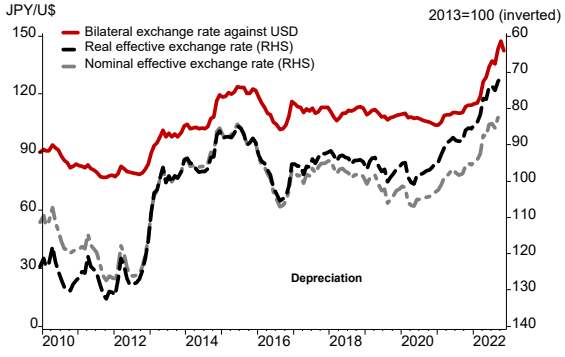

Source: BOJ; JMOF; Haver Analytics

JPY has appreciated against USD since November, reflecting the narrowing interest rate differentials.




Source: BOJ; Federal Reserve Board; Haver Analytics

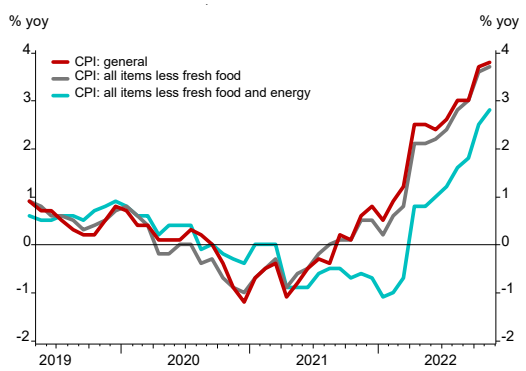
Effective exchange rates indicate that the JPY has weakened against key currencies since H2 2020.




Source: BOJ; BIS; Haver Analytics

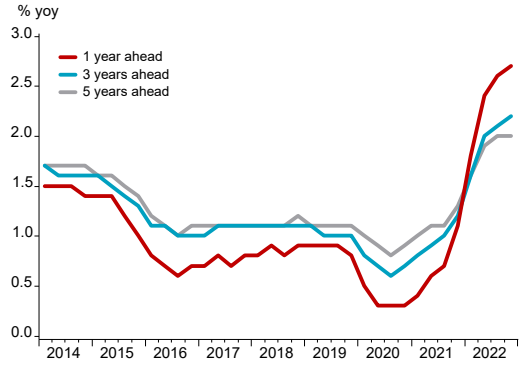
## Figure 1.3. Monetary and Financial Sector

CPI inflation accelerated in 2022 on the back of soaring energy and food prices…



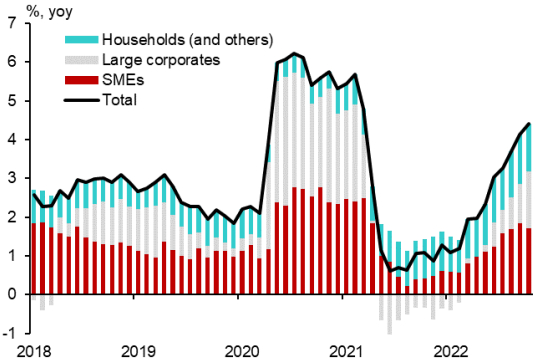

Source: Ministry of Internal Affairs and Communications; Haver Analytics

…while firms' medium-term inflation expectations recently picked up to over 2 percent.



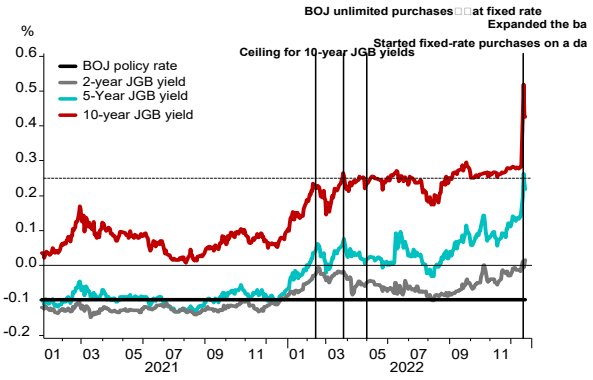

Note: Based on the BOJ's quarterly Tankan survey for all enterprises
Source: BOJ; Haver Analytics

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



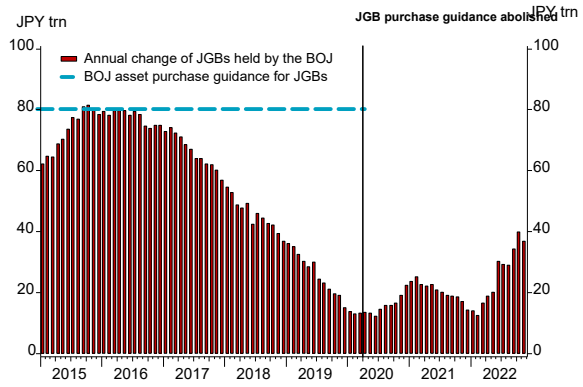

Source: BOJ

Long-term JGB yields soared in 2022 in tandem with the spike in global bond yields.



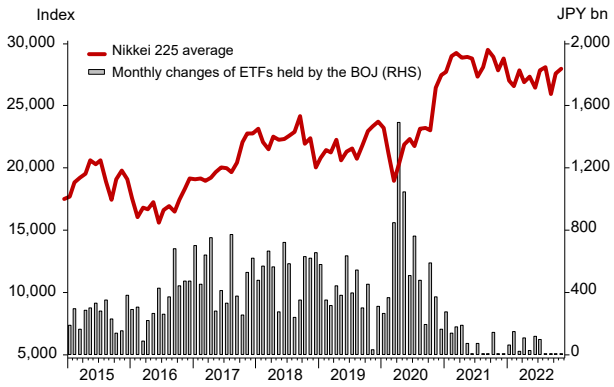

Source: BOJ; JMOF; Haver Analytics

The amount of the BOJ's JGB purchases has picked up since Q2 2022.




Source: BOJ; Haver Analytics

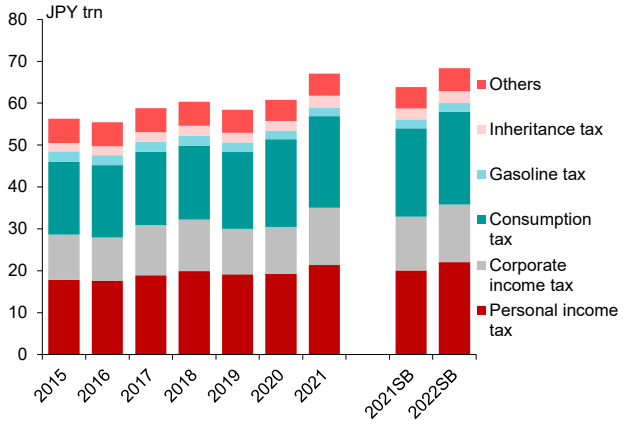
Stock prices remained weak in 2022, but the BOJ made limited ETF purchases.




Source: Tokyo Stock Exchange; BOJ; Haver Analytics

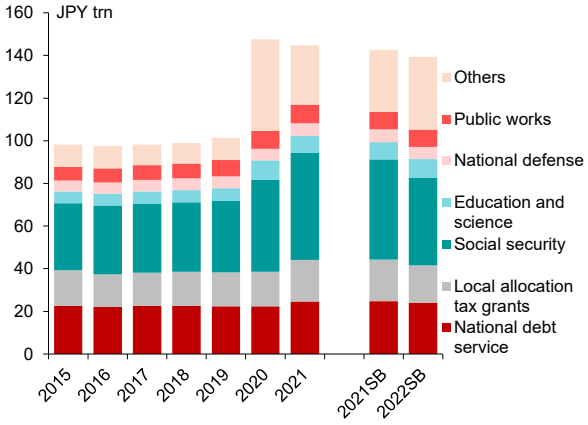
## Figure 1.4. Fiscal Sector

In FY2021, tax revenues posted a record high, mainly driven by PIT and CIT...



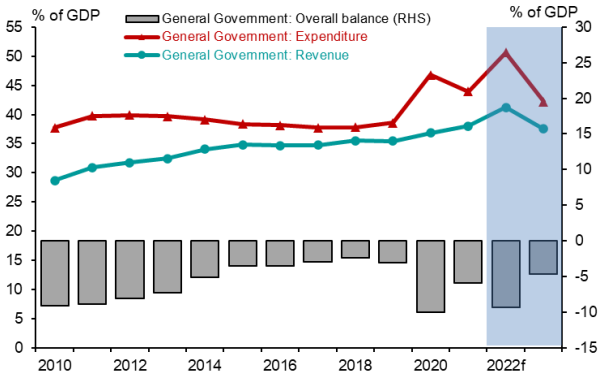

Note: Data in the two right-hand columns comes from the supplementary budgets (SBs) for FY2021 and FY2022.
Source: JMOF

…while government spending declined.



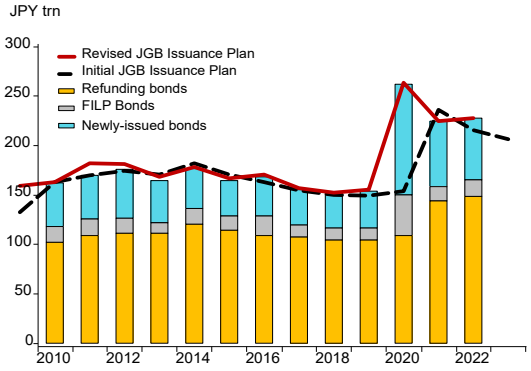

Note: Data in the two right-hand columns comes from the SBs for FY2021 and FY2022.
Source: JMOF

The fiscal deficit narrowed to 5.9 percent in FY2021 after widening sharply in FY2020.



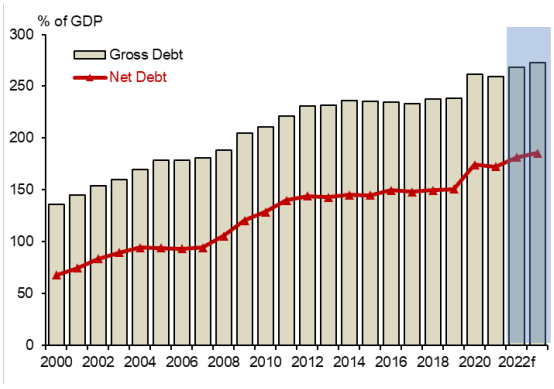

Note: Figures for FY2022-2023 are based on AMRO staff projections.
Source: Cabinet Office; AMRO staff estimates

Government bond issuances are expected to remain elevated in FY2021-2022 to finance large-scale budget formulations.



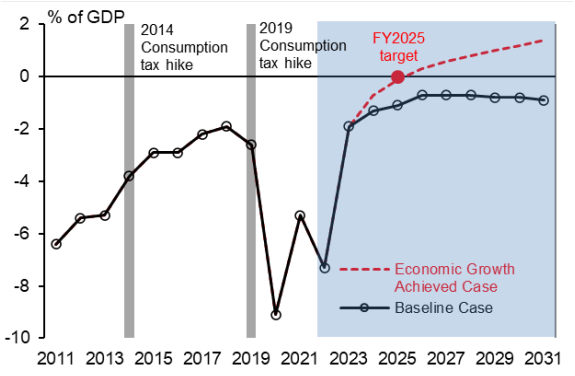

Source: JMOF; Haver Analytics

Government debt is expected to rise to nearly 270 percent of GDP in FY2022.




Note: Figures for FY2022-2023 are based on AMRO staff projections.
Source: Cabinet Office; AMRO staff estimates

Achieving the government's target of primary balance surplus will highly likely be postponed further.




Note: The primary balance is for central and local government.
Source: Cabinet Office (July 2022)

## Appendix 2. Selected Economic Indicators for Japan

| | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|
| | | | | | Projection | |
| **Real Sector and Prices** | (Annualized percent change, unless otherwise specified) | | | | | |
| GDP growth (CY) | 0.6 | -0.4 | -4.3 | 2.1 | 1.4 | 1.2 |
| Private consumption | 0.2 | -0.6 | -4.7 | 0.4 | 2.4 | 1.3 |
| Private non-residential investment | 2.3 | -0.7 | -4.9 | 0.8 | 2.3 | 4.2 |
| Private residential investment | -6.4 | 4.1 | -7.9 | -1.1 | -4.7 | -0.9 |
| Government consumption | 1.0 | 1.9 | 2.4 | 3.5 | 1.6 | 1.2 |
| Public investment | 0.6 | 1.9 | 3.4 | -1.9 | -6.4 | 1.9 |
| Net exports (ppts) | 0.0 | -0.4 | -0.8 | 1.0 | -0.6 | -0.4 |
| Exports of goods and services | 3.8 | -1.5 | -11.6 | 11.7 | 4.9 | 3.2 |
| Imports of goods and services | 3.8 | 1.0 | -6.8 | 5.1 | 8.3 | 4.9 |
| GDP growth (FY) | 0.2 | -0.8 | -4.1 | 2.5 | 1.7 | 1.1 |
| Labor market (CY) | (Average of monthly data) | | | | | |
| Unemployment rate (%, sa) | 2.4 | 2.4 | 2.8 | 2.8 | 2.6 | 2.5 |
| Active job openings-to-applicants ratio (sa) | 1.61 | 1.60 | 1.18 | 1.13 | 1.28 | 1.40 |
| Prices (CY) 1/ | (Average of monthly data) | | | | | |
| Headline CPI (all items) | 1.0 | 0.5 | 0.0 | -0.3 | 2.5 | 1.5 |
| Core CPI (less fresh food) | 0.9 | 0.6 | -0.2 | -0.2 | 2.2 | 1.2 |
| Core-core CPI (less fresh food and energy) | 0.4 | 0.6 | 0.2 | -0.5 | 0.9 | 1.3 |
| **External Sector** 2/ | (USD billion unless otherwise specified) | | | | | |
| Current account balance | 177.8 | 176.3 | 147.9 | 197.3 | 68.3 | 78.4 |
| Percent of GDP | 3.5 | 3.4 | 2.9 | 3.9 | 1.7 | 1.8 |
| Trade balance | 11.0 | 1.3 | 26.6 | 15.6 | -119.8 | -88.0 |
| Exports, f.o.b. | 735.8 | 695.0 | 630.6 | 748.6 | 706.2 | 768.3 |
| Imports, f.o.b. | 724.9 | 693.6 | 604.0 | 733.0 | 826.1 | 856.3 |
| Service balance | -9.2 | -10.0 | -34.2 | -38.5 | -46.1 | -15.3 |
| Primary income balance | 194.2 | 197.6 | 179.6 | 242.4 | 253.2 | 198.5 |
| Secondary income balance | -18.2 | -12.6 | -24.2 | -22.2 | -19.0 | -16.8 |
| Financial account balance | 183.9 | 228.2 | 130.2 | 154.5 | 207.4 | 145.0 |
| International reserves (end of period) | 1,271.0 | 1,323.8 | 1,394.7 | 1,405.8 | 1,250.0 | 1,300.0 |
| **Fiscal Sector (FY, General Government)** 3/ | (In percent of GDP) | | | | | |
| Primary balance | -1.6 | -2.5 | -9.4 | -5.4 | -8.8 | -4.1 |
| Fiscal balance | -2.4 | -3.1 | -10.0 | -5.9 | -9.4 | -4.7 |
| Outstanding debt | 237.7 | 238.8 | 261.6 | 259.0 | 268.4 | 273.0 |
| **Monetary Sector** 4/ | (In annual percent change, unless otherwise specified) | | | | | |
| Monetary base | 7.3 | 3.6 | 9.1 | 15.9 | 4.0 | 2.5 |
| Uncollateralized overnight call rate (%, end of period) | -0.06 | -0.07 | -0.03 | -0.02 | -0.10 | -0.10 |
| **Memorandum Items** 4/ | | | | | | |
| Trade balance, customs cleared (USD bn) | -11.1 | -15.3 | 3.6 | -16.2 | -188.4 | -170.4 |
| Exports of goods, customs cleared (USD bn) | 738.0 | 705.7 | 640.6 | 756.9 | 742.9 | 756.3 |
| Imports of goods, customs cleared (USD bn) | 749.1 | 721.0 | 636.9 | 773.1 | 931.3 | 926.6 |
| Exchange rate (USD/JPY, period average) | 110.4 | 109.0 | 106.8 | 109.8 | 131.5 | … |
| Exchange rate (USD/JPY, end of period) | 110.4 | 109.2 | 103.3 | 115.1 | 132.5 | … |
| Nikkei 225 (JPY, end of period) | 20,014.8 | 23,656.6 | 27,444.2 | 28,791.7 | 26,235.3 | … |
| JGB 10 year yield (%, end of period) | 0.01 | -0.02 | 0.04 | 0.09 | 0.43 | … |
| Non-performing loan ratio (%, end of FY, All banks) | 1.1 | 1.1 | 1.2 | 1.3 | … | … |
| Nominal GDP (USD bn, CY) | 5,041.8 | 5,117.8 | 5,048.5 | 5,004.3 | 3,982.8 | 4,371.1 |
| Nominal GDP (JPY tn, CY) | 556.6 | 557.9 | 539.1 | 549.4 | 557.6 | 572.6 |

Note: 1/ The BOP data in the external sector follows the IMF BPM6 standard.
2/ 2022-23 figures are based on AMRO staff projections.
3/ Based on calendar year, unless otherwise mentioned. Financial market data (exchange rate, Nikkei 225, and JGB 10 year yield) for 2022 are as of 23 Dec, 2022.
Source: Japanese authorities; AMRO staff estimates and projections.

## Appendix 3. Balance of Payments

| | 2018 | 2019 | 2020 | 2021 | 2022 Projection | 2023 Projection |
|---|---|---|---|---|---|---|
| | (JPY trillion unless otherwise specified) | | | | | |
| **Current account balance (I)** | 19.5 | 19.3 | 15.8 | 21.6 | 9.6 | 10.3 |
| Trade balance | 1.1 | 0.2 | 2.8 | 1.7 | -16.8 | -11.5 |
| Exports, f.o.b. | 81.2 | 75.8 | 67.3 | 82.3 | 98.9 | 100.7 |
| Imports, f.o.b. | 80.1 | 75.6 | 64.5 | 80.6 | 115.6 | 112.2 |
| Services, net | -1.0 | -1.1 | -3.7 | -4.2 | -6.4 | -2.0 |
| Receipts | 21.4 | 22.8 | 17.5 | 18.7 | 21.3 | 21.4 |
| Payments | 22.5 | 23.9 | 21.2 | 22.9 | 27.7 | 23.4 |
| Primary income, net | 21.4 | 21.6 | 19.2 | 26.6 | 35.5 | 26.0 |
| Secondary income, net | -2.0 | -1.4 | -2.6 | -2.4 | -2.7 | -2.2 |
| | | | | | | |
| **Capital account (II)** | -0.2 | -0.4 | -0.2 | -0.4 | -0.1 | -0.2 |
| | | | | | | |
| **Financial account (III) (+ indicates net outflows) 1/** | 17.5 | 22.1 | 12.7 | 10.0 | 29.0 | 19.0 |
| Direct investment (net) | 14.9 | 23.9 | 9.2 | 19.5 | 17.4 | 14.0 |
| Portfolio investment (net) | 10.1 | 9.4 | 4.4 | -22.0 | -15.2 | 12.0 |
| Financial derivatives (net) | 0.1 | 0.4 | 0.8 | 2.4 | 5.3 | 1.0 |
| Other investment (net) | -7.6 | -11.5 | -1.7 | 10.1 | 21.6 | -8.0 |
| | | | | | | |
| **Errors and omissions (IV)** | 0.8 | 6.0 | -1.7 | -4.3 | -0.6 | 0.1 |
| | | | | | | |
| **Overall balance (= I + II - III + IV)** | 2.7 | 2.8 | 1.2 | 6.9 | -20.1 | -8.9 |
| | | | | | | |
| **Reserve assets (+ indicates increases)** | 2.7 | 2.8 | 1.2 | 6.9 | -20.1 | -8.9 |
| | | | | | | |
| **Memorandum items:** | | | | | | |
| Current account balance (In percent of GDP) | 3.5 | 3.5 | 2.9 | 3.9 | 1.7 | 1.8 |
| Gross reserves (USD billion, end of period) | 1,271.0 | 1,323.8 | 1,394.7 | 1,405.8 | 1,250.0 | 1,300.0 |
| (In months of imports of goods and services) | 16.0 | 16.9 | 19.4 | 18.0 | 14.6 | 13.7 |
| Changes in gross reserves (USD billion) | 6.7 | 52.8 | 70.9 | 11.1 | -155.8 | 50.0 |
| Nominal GDP (USD billion) 2/ | 5,041.8 | 5,117.8 | 5,048.5 | 4,633.1 | 3,982.8 | 4,371.1 |

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

## Appendix 4. Statement of Government Operations

| | FY2018 | FY2019 | FY2020 | FY2021 | FY2022 | FY2023 |
|---|---|---|---|---|---|---|
| | | | | | Projection | |
| **General Government** 1/ | (In percent of GDP) | | | | | |
| **Revenue (I)** | 35.5 | 35.4 | 36.8 | 38.0 | 41.2 | 37.4 |
| Taxes | 19.1 | 18.9 | 20.0 | 21.1 | 21.1 | 20.9 |
| Personal Income Tax | 5.3 | 5.1 | 5.4 | 5.6 | 5.7 | 5.3 |
| Corporate Income Tax | 4.7 | 4.6 | 4.6 | 5.3 | 5.2 | 5.4 |
| Consumption Tax | 6.4 | 6.5 | 7.2 | 7.4 | 7.3 | 7.6 |
| Others | 2.6 | 2.7 | 2.7 | 2.8 | 2.8 | 2.6 |
| Social Contributions | 13.1 | 13.4 | 13.7 | 13.8 | 13.7 | 13.5 |
| (o/w Social security contribution) | 12.9 | 13.9 | 14.9 | 13.4 | 13.4 | 13.2 |
| Other revenues | 3.3 | 3.2 | 3.1 | 3.1 | 6.5 | 2.9 |
| (o/w interest income) | 1.0 | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 |
| | | | | | | |
| **Expenditure (II)** | 37.8 | 38.6 | 46.8 | 43.9 | 50.6 | 42.0 |
| Expense (III) | 37.2 | 37.8 | 45.9 | 43.3 | 49.7 | 41.2 |
| Compensation of employees | 5.2 | 5.2 | 5.4 | 5.2 | 5.2 | 5.1 |
| Use of goods and services | 3.2 | 3.4 | 4.0 | 4.3 | 3.6 | 3.5 |
| Consumption of fixed capital | 3.3 | 3.3 | 3.5 | 3.5 | 3.3 | 3.3 |
| Social benefits | 21.0 | 21.3 | 22.1 | 22.6 | 25.5 | 22.4 |
| (o/w Social security benefits) | 19.0 | 20.0 | 21.0 | 22.0 | 23.0 | 24.0 |
| Interest | 1.7 | 1.7 | 1.6 | 1.5 | 1.7 | 1.7 |
| Subsidies | 0.5 | 0.6 | 0.6 | 0.7 | 0.5 | 0.5 |
| Grants | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Other expense | 2.1 | 2.3 | 8.6 | 5.2 | 9.8 | 4.6 |
| Net Acquisition of Nonfinancial Assets (IV) | 0.7 | 0.7 | 0.9 | 0.7 | 0.9 | 0.9 |
| | | | | | | |
| **Net Operating Balance (= I - III)** | -1.7 | -2.4 | -9.1 | -5.3 | -8.5 | -3.8 |
| **Net Lending/borrowing (Overall Balance) (= I - II)** | -2.4 | -3.1 | -10.0 | -5.9 | -9.4 | -4.7 |
| **Primary Balance** | -1.6 | -2.5 | -9.4 | -5.4 | -8.8 | -4.1 |
| | | | | | | |
| **Gross Debt** | 237.7 | 238.8 | 261.6 | 259.0 | 268.4 | 273.0 |
| | | | | | | |
| **Central and Local Government 2/** | (In percent of GDP) | | | | | |
| **Primary Balance** | -1.9 | -2.6 | -9.1 | -5.3 | -8.3 | -3.6 |
| Central Government | -2.3 | -2.9 | -9.3 | -6.4 | -8.6 | -3.9 |
| Local Government | 0.4 | 0.2 | 0.2 | 1.1 | 0.3 | 0.3 |
| **Fiscal Balance** | -3.1 | -3.7 | -10.2 | -6.4 | -8.6 | -3.9 |
| Central Government | -3.2 | -3.8 | -10.2 | -7.2 | -8.7 | -4.0 |
| Local Government | 0.1 | 0.0 | 0.0 | 0.8 | 0.1 | 0.1 |
| **Outstanding Debt** | 189.4 | 191.1 | 209.9 | 215.8 | 225.2 | 229.8 |

Note: 1/Based on the Government Finance Standard Manual (GFSM) 2014 standard; FY2022-2023 figures are based on AMRO staff projections.
2/ Excludes expenditures and fiscal resources spent on recovery and reconstruction measures. FY2022-2023 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.

# Annexes: Selected Issues

## 1. Assessing the Macroeconomic Impacts of a Weaker Yen in Japan[28]

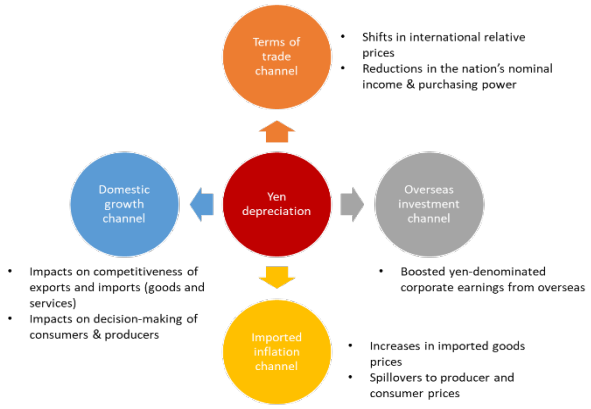
### *Background*

**1. The Japanese yen sharply weakened against key currencies in 2022, with the yen-dollar rate touching a historic low exceeding the 150-level at one point.** In the first 11 months, the yen depreciated more than 16 percent against the U.S. dollar. Furthermore, in terms of the real effective exchange rate, the yen devalued by 17 percent against a basket of key currencies from January to October 2022. The rapid depreciation is mainly attributable to a diverging monetary policy stance with the U.S. and Japan's widening trade deficits. Such excessive volatilities in the yen may have affected Japan's economy through various direct and indirect channels.

**2. This selected issue aims to analyze the overall impacts of a weaker yen on Japan's economy by investigating key channels.** A sharp depreciation of the yen can influence the Japanese economy through adjustments in: real GDP output, international relative prices, imported inflation, and overseas investment (Figure A1.1).

- *Domestic growth channel*: On one hand, Yen depreciation can support real GDP growth by boosting Japan's exports of goods and services thereby boosting capital investment. On the other hand, domestic demand may be negatively affected if households and firms need to adjust consumption[29] and investment to a weaker yen.
- *Terms of trade channel*: Yen depreciation would shift international relative prices between export and import goods, which results in a loss in Japan's nominal incomes and purchasing power.
- *Imported inflation channel*: Yen depreciation would raise the prices of imported goods, which may spill over to domestic producer and consumer prices.
- *Overseas investment channel*: With a weaker yen, investment incomes and earnings of Japanese firms and households from overseas investments should be larger in yen terms.

**Figure A1.1 Key Channels of Yen Depreciation on Japanese Economy**




Source: AMRO

[28] Prepared by Jinho Choi, Deputy Group Head and Senior Economist.
[29] Consumers' switching demand from imported goods to domestic goods would offset adverse effects on consumption.

## *Economic Impacts of a Weaker Yen*

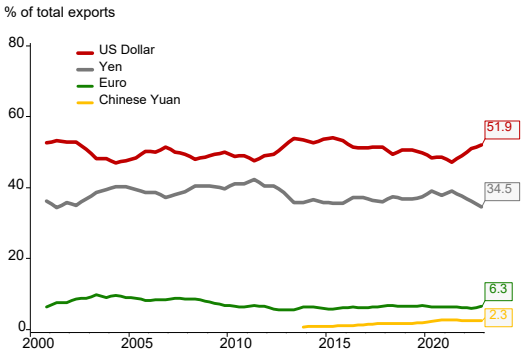
### *Domestic Growth Channel*

**3. Although a weaker yen could expand Japan's exports potentially, the effect of a weak yen on export volume has decreased over time as Japanese manufacturers expanded overseas production.** In theory, the yen's depreciation is expected to enhance Japanese exporters' price competitiveness, resulting in improved net exports. However, recent years have witnessed weaker linkages between Japan's exchange rate and export volume, mainly due to its manufacturers' changed global operational strategy. That is, with the expansion of their overseas production, Japanese exporters tend to strategically focus on high value-added products which have lower exchange rate elasticity in their production bases back home.

**4. Besides the exchange rate movements, exporters' price competitiveness pertains to their choice of trade-invoicing currency.** If the trade settlement is contracted based on the yen, exporters' sales volumes may increase because the importers may pay less in their own currency when the yen depreciates. In contrast, if the trade is settled using the importers' currency or the U.S. dollar, the sales volume may not rise despite a weaker yen. The latest trade data indicates that only 35 percent of Japan's total exports were invoiced in yen, whereas 52 percent were invoiced in the U.S. dollar, as of Q4 2022 (Figure A1.2). These statistics suggest that a weaker yen may boost Japan's export volumes only to a limited extent.

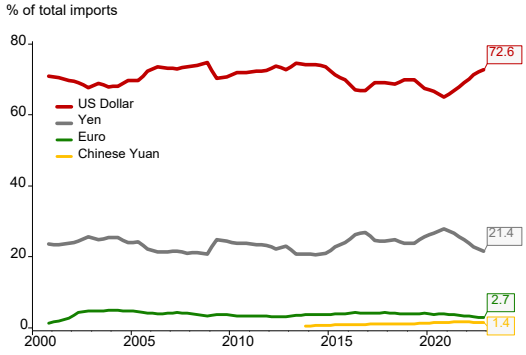
**5. Under the environment of a sharply depreciating yen, the U.S. dollar's dominance as the invoicing currency may worsen Japan's trade deficits.** The choice of trade-invoicing currency is related to both trading parties' exchange rate risk exposures. The data shows that nearly 73 percent of Japan's total imports are invoiced in U.S. dollar (Figure A1.3), which is higher than the U.S. dollar's 52 percent share of total exports. This suggests that as a whole, a weak yen or strong U.S. dollar may adversely affect Japan's net trade balances in yen terms as the FX losses from USD-invoiced imports may outweigh the gains from USD-invoiced exports.

**Figure A1.2 Japan's Exports by Currency**




Source: Ministry of Finance Japan (JMOF) via Haver Analytics

**Figure A1.3 Japan's Imports by Currency**

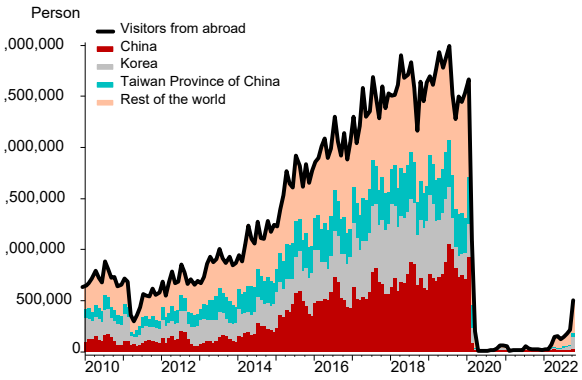



Source: JMOF via Haver Analytics

**6. On the other hand, a weaker yen could contribute to domestic growth by attracting inbound tourists and boosting exports of services, recently supported by Japan's border reopening in October 2022.** Before the COVID-19 pandemic, inbound travellers to Japan had surged, reaching about 32 million in 2019, on the back of strong policy support under the Abenomics to boost the tourism sector. The success of attracting foreign tourists led to a nearly

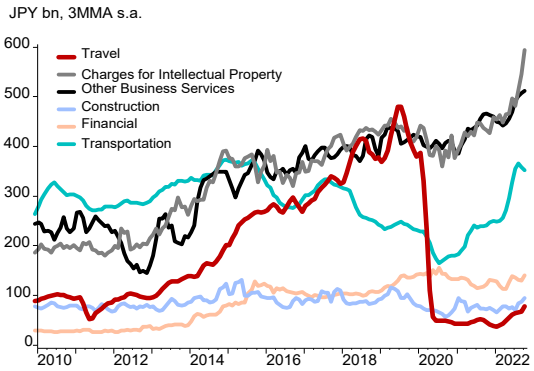
five-folded increase in the receipts from Japan's travel services exports during the period from 2012 to 2019. A weaker yen will likely attract more inbound tourists, fuelled by Japan's border reopening from October 2022, which will in turn help to offset some of the Japan's widening trade deficits.

**Figure A1.4 Visitor Arrivals to Japan**




Source: Japan National Tourism Organization via Haver Analytics

**Figure A1.5 Receipts from Services Exports**

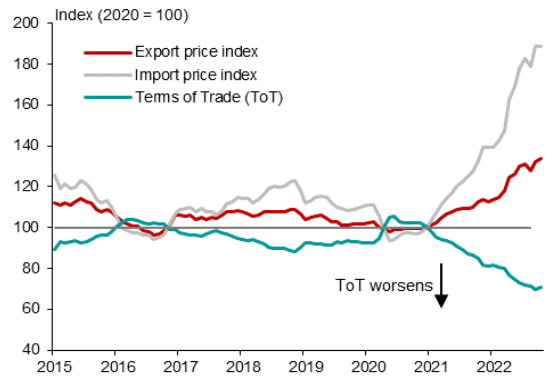



Source: BOJ, JMOF via Haver Analytics
Note: Based on the Balance of Payments (BoP) data

### *Terms of Trade Channel*

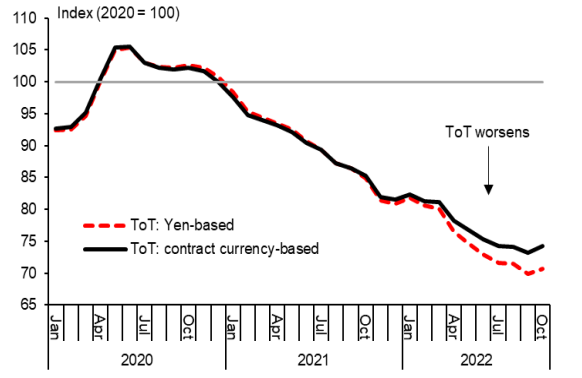
**7. A weaker yen tends to increase the price of imports and reduce the price of exports, which will shrink the aggregate income and purchasing power of Japanese households and corporates.** Japan's terms of trade have sharply deteriorated since the outset of 2021, as import prices surged much faster than export prices (Figure A1.6). The worsening in the terms of trade was initially driven by a steep rise in international commodity prices, which was amplified through global supply chain disruptions. The sharp yen depreciation, which started from March 2022, put additional pressure on Japan's terms of trade in various sectors including raw materials, electric and electronic products, and general machinery. A breakdown of Japan's terms of trade by bilateral trades' contract currency indicates that the yen's depreciation has contributed to a steeper deterioration in trade since Q2 2022 (Figure A1.7), which in turn will adversely affect purchasing power of Japanese households and corporates for imported goods.

**Figure A1.6 Japan's Terms of Trade**




Source: BOJ via Haver Analytics, AMRO staff calculations

**Figure A1.7 Japan's Terms of Trade by Currency**

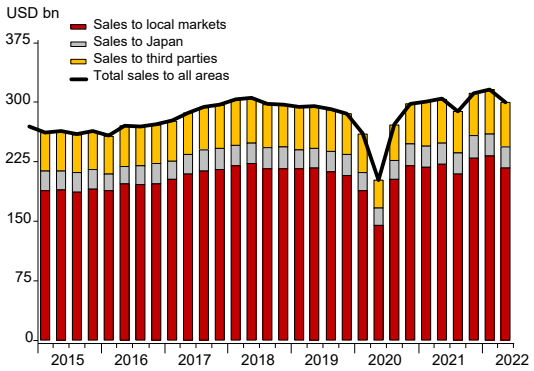



Source: BOJ via Haver Analytics, AMRO staff calculations

### *Overseas Investment Channel*

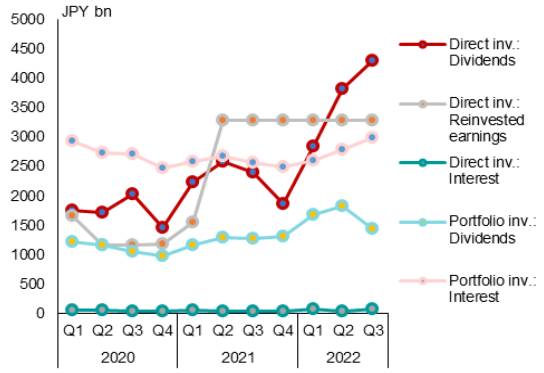
**8. Direct investment incomes and corporate earnings from overseas businesses have benefited significantly from a weaker yen.** The yen's depreciation may have asymmetric effects on Japanese exporters, depending on the choice of invoicing currency, the products' exchange rate elasticity, demand conditions in the importer's market, and competitors' pricing strategies. A weaker yen can directly boost yen-denominated earnings from Japanese corporates' overseas operations, which will in turn help to strengthen Japan's primary balance surplus. Figures A1.8 and A1.9 indicate that although Japanese overseas sales to foreign markets did not increase notably in 2022, primary income inflows from foreign direct investment accelerated significantly. As a result, Japanese manufacturers, including export-oriented sectors such as electric and electronic goods and transport equipment, recorded a windfall in their corporate earnings in 2022 (Figure A1.10). A back-of-the-envelope calculation of the exchange rate valuation effects suggests that the net gains from a rapid yen depreciation may account for about 23 percent of the current account surplus in Q3 2022 (Figure A1.11).

**Figure A1.8 Sales of Japanese Overseas Subsidiaries by Destination**



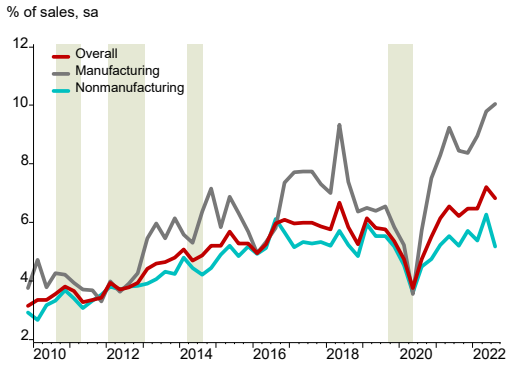

Source: Ministry of Economy, Trade and Industry via Haver Analytics

**Figure A1.9 Primary Income Credit**



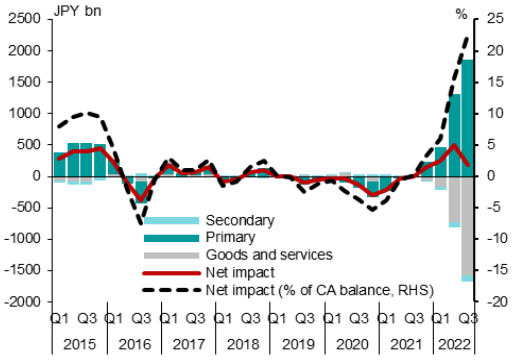

Source: BOJ via Haver Analytics

**Figure A1.10 Current Profits by Industrial Sector**




Source: JMOF via Haver Analytics

**Figure A1.11 FX Valuation Effects on Current Account Balance**



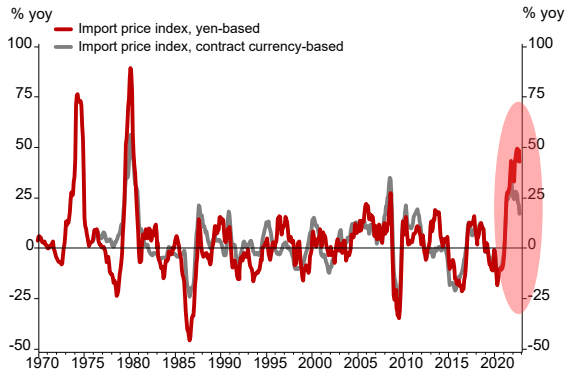

Source: BOJ via Haver Analytics
Note: "FX valuation effect" is calculated as the net gains/losses against a counterfactual scenario in which the USD/JPY conversion rate is assumed to be at the 2015-2021 average of 110-yen.

### *Imported Inflation Channel*

**9. A combination of the yen's rapid depreciation and global energy price surges made Japan's imports more expensive by nearly 50 percent over a year.** As a country

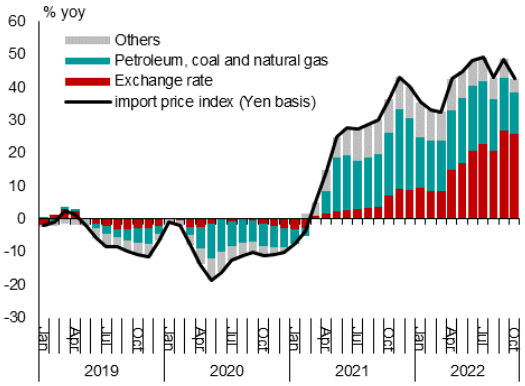
lacking in natural energy resources,[30] Japan is highly reliant on energy imports and significantly vulnerable to global energy shocks, as seen during the oil crises in 1970s (Figure A1.12). In 2021, global commodity prices skyrocketed, raising Japan's import costs. While the commodity prices started to decline from Q2 2022, the yen's rapid depreciation continued to raise Japan's import costs. The contribution to Japan's import price inflation from the exchange rate depreciation, increased from less than 20 percent in 2021 to 61 percent in October 2022 (Figure A1.13).

**Figure A1.12 Japan's Import Price Inflation by Contract Currency**




Source: BOJ via Haver Analytics, AMRO staff estimates

**Figure A1.13 Impact of Yen Depreciation on Japan's Import Price Inflation**




Source: BOJ via Haver Analytics, AMRO staff estimates

**10. The pass-through of higher import prices to producer prices has increased gradually.** Persistently high import prices would eventually translate into higher production costs for producers of goods and services. In this regard, the BOJ's Final Demand-Intermediate Demand (FD-ID) price indexes[31] provide a useful insight into understanding the pass-through of higher costs within a production process. The ID indexes represent 4 different stages in a production process, consisting of Stage 1 (the most upstream sector of a production flow) to Stage 4 (the most downstream sector). The FD index corresponds to the final demand on producers for goods and services. The left panel of Figure A1.14 indicates that for the goods production process, the prices under the upstream sectors in Stage 1 and Stage 2 have closely reflected the surge in commodity prices since 2021. However, the pass-through of cost increases in the downstream sectors in Stage 3 and Stage 4 is milder, mainly because the contribution of imported goods/parts at the downstream production stage tends to be lower.

**11. Despite the surge in import prices, the prices of domestic services remained relatively stable, partly affected by idiosyncratic factors.** The right panel of Figure A1.14 indicates that for services, all ID indexes under different production stages have shown modest price increases since 2021, while the rates of the year-on-year price changes are significantly lower than those of goods prices. Another remarkable feature is that the movements in the FD

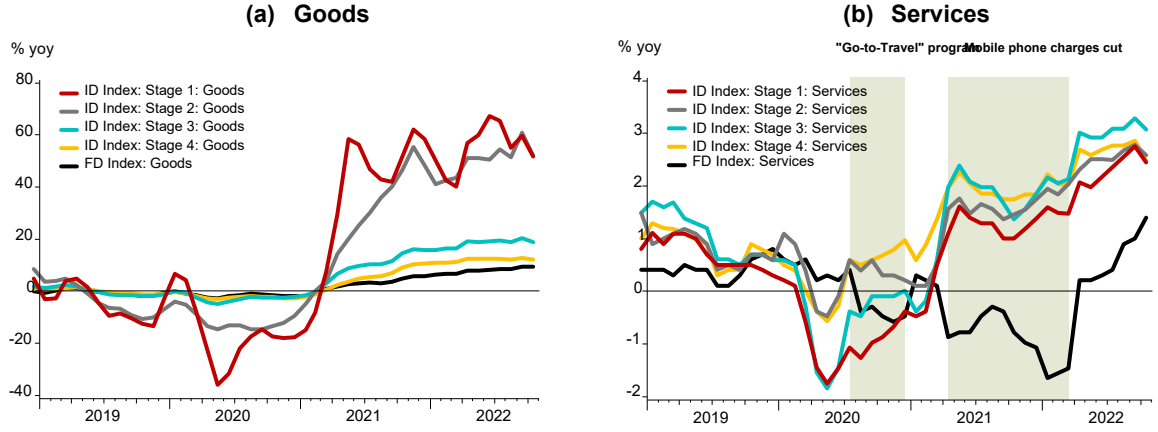
[30] In 2010, Japan's energy self-sufficiency ratio was 20.2 percent. In the aftermath of the Great East Japan Earthquake in March 2011, the ratio fell to 6.3 percent in 2014, then recovered to 12.1 percent as of 2019.

[31] According to Inoue et al. (2021), the classification of representative sectors by production stage is as follows:

- Stage 1: Raw materials and related commodity products; worker-dispatching services; wholesale trade of building materials
- Stage 2: Plastic and steel products; financial services; advertising; internet-based services
- Stage 3: Motor vehicle parts; air transport; wholesale trade of machinery and equipment
- Stage 4: Soft drinks; passenger cars; personal computers; services targeting mainly consumers, such as hotels

price index tend to be independent of those in the ID price indexes, due to idiosyncratic factors such as the government's domestic travel subsidy program and the private sector's cuts to mobile phone charges.

**Figure A1.14 Pass-through of Producer Price Changes by Demand Stage**

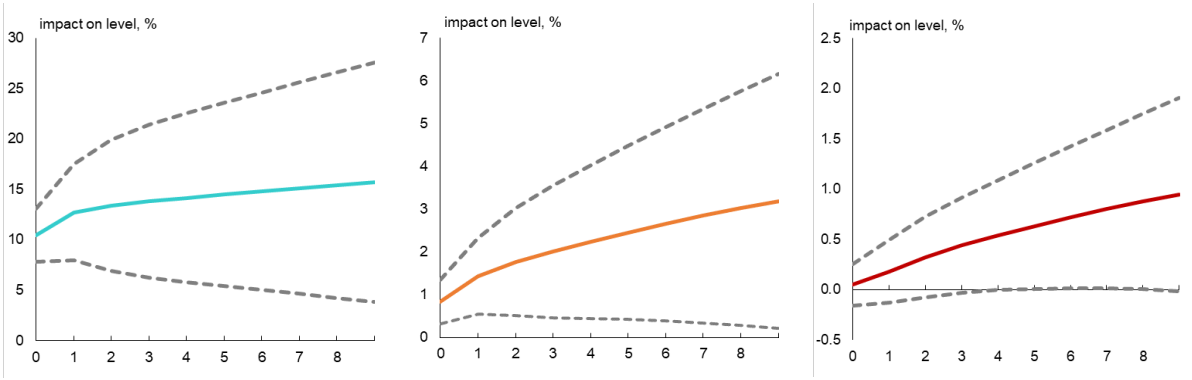



Note: Based on the BOJ's FD-ID price indexes; ID indexes represent 4 different stages in a production process consisting of Stage 1 (the most upstream sector of a production flow) to Stage 4 (the most downstream sector). The FD index corresponds to the final demand on producers for goods and services and excludes exports.
Source: BOJ via Haver Analytics, AMRO staff calculations

**12. Core CPI inflation is expected to respond positively to the yen's depreciation, with some time lags.** Soaring import prices, reflecting the yen's depreciation, pushed up Japan's headline CPI inflation to 3.8 percent in November 2022. Yet the sharp price increases were concentrated in food and energy items and showed no significant signs of second-round effects. As reported in Figure A1.15, a VAR estimation using pre-pandemic data suggests that when a 10-percent yen depreciation shock occurs, the indexes of import price, producer price and consumer price respond positively. In particular, core CPI (less fresh food) inflation tends to rise by about 0.9 percent cumulatively in the next eight quarters. However, this exercise does not consider post-pandemic changes in the economic environment, including the possibility that firms may increase the pass-through of costs to retail prices. According to a BOJ analysis, the contribution of import prices to CPI inflation has increased in tandem with a rise in the import penetration ratio of household appliances and other products (BOJ, 2022). In contrast, the impact of the yen's depreciation on overall CPI inflation will likely be overwhelmed by the government's policy measures, including an extended fuel subsidy program and subsidies to encourage resumption of domestic travel.

**Figure A1.15 Estimated Impacts of 10-percent Yen Depreciation on Price Indices**

(a) Import price (yen basis) (b) Producer price (c) Consumer price




Source: BOJ, Haver Analytics, AMRO staff estimates
Note: The impact of a 10-percent yen depreciation on the core CPI (less fresh food) is estimated for each period by employing a VAR model with a two-period lag, and by using the yen/U.S. dollar exchange rate, the output gap, and the indexes of import price, producer price and consumer price as endogenous variables. A dummy variable is included to control the effects of consumption tax hikes in 1997, 2014 and 2019. The data spans the period from Q1 1995 to Q4 2019. Shocks are identified by Cholesky decomposition, in which variables are ordered as above. Real commodity prices, taken from the CRB Index deflated by the U.S. CPI, are used as an exogenous variable.

## *Conclusion*

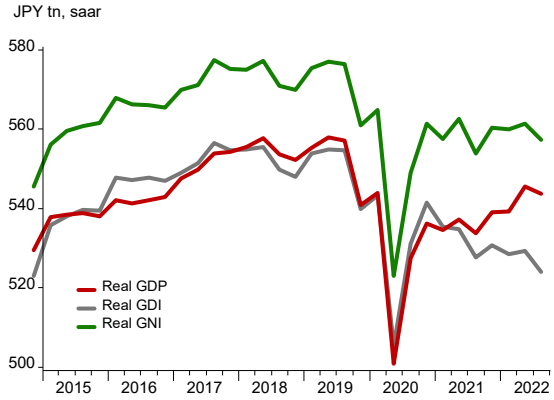
**13. Taking into account the benefits from overseas investments, the overall net impact of the yen's depreciation on Japan's gross national income is assessed to be broadly neutral or slightly positive in the first three quarters of 2022.** Given Japanese firms' active outbound direct investments and the repatriation of overseas earnings, the macroeconomic impact of the yen's depreciation on Japan's economic growth can also be assessed through the lens of real gross national income (GNI), which is composed of real GDP, net gains from terms of trade changes, and net income from abroad. Figure A1.16 contrasts three different indicators from the System of National Accounts, namely, real GDP, real gross domestic income (GDI) and real GNI, according to which Japan's real GDP has recovered moderately since 2021, while real GDI has deteriorated with worsening terms of trade conditions. In contrast, Japan's real GNI has remained stable as the economy's robust income flows from overseas broadly offset the deterioration in the terms of trade. Figure A1.17 breaks down the difference between real GDP and real GNI, that is, the net income gains from overseas activities, suggesting that the positive and negative impacts of the yen's depreciation have largely offset each other.[32]

**14. However, the economic impact of the yen's depreciation on Japan could be increasingly negative should imported inflation become entrenched.** Notwithstanding the cancelation of the effects, if high imported inflation starts to trigger second-round effects on domestic consumer inflation unaccompanied by commensurate wage growth, one cannot rule out the possibility that private consumption will shrink under a sharp reduction in real income. Furthermore, if the yen resumes depreciating sharply in the near term, its adverse impact on terms of trade will overwhelm the positive impact on primary income flows, leading to a net loss in the country's wealth, measured by real GNI. Lastly, the impact of the yen's depreciation may be asymmetric across the different sectors of the economy such as large exporters, SMEs, and

[32] The net impact of the yen's depreciation on net income gains from overseas was estimated to remain positive at about JPY444 billion for the first three quarters of 2022 cumulatively, but turned negative at minus JPY 72.5 billion in Q3 2022.

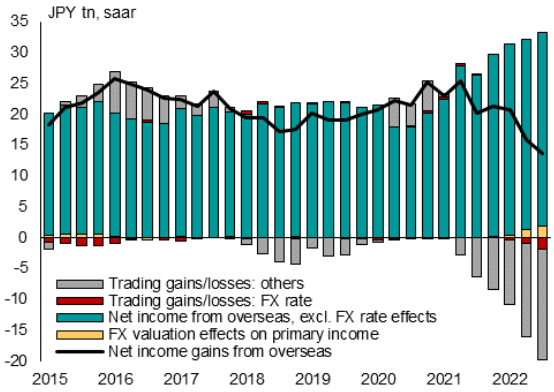
households. Heightening the pass-through of production costs from SMEs to large exporters, and raising wages in tandem with consumer price inflation should be encouraged.

**Figure A1.16 Trends of Japan's Real GDP, GDI and GNI**




Source: Cabinet Office, BOJ via Haver Analytics
Note: Real GDI = real GDP + net gains from terms of trade changes; real GNI = real GDI + net income from abroad

**Figure A1.17 Breakdown of Japan's Net Income Gains from External Trade and Investments**




Source: Cabinet Office, BOJ via Haver Analytics, AMRO staff estimates
Note: The contribution of exchange rates to trading gains and losses is calculated using the difference between export/import price indexes on a yen basis and those on a contract currency basis. FX valuation effects on primary income are calculated as stated in the Figure A1.9 note.

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Inoue, M., A. Kawakami, A. Masujima, I. Muto, S. Nakano, and I. Takagawa, 2021, "Final Demand-Intermediate Demand Aggregation System of Japan's Producer Price Index", *Bank of Japan Working Paper Series*, No. 21-E-6, June 2021.

## 2. Wage Development in Japan[33]

### *Overview*

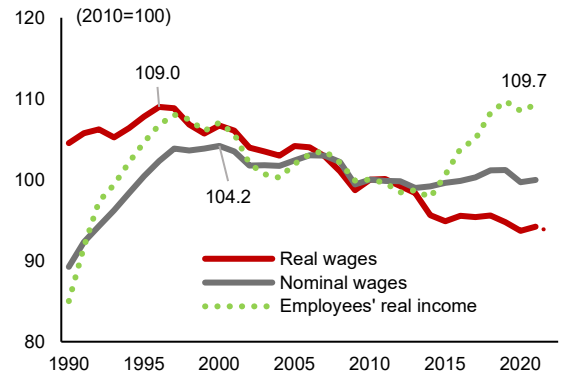
**1. Nominal wages in Japan have been stagnant in the past two decades, after peaking in the late 1990s.** Furthermore, real wages have even declined since then, which has been often pointed out as one of the key factors behind weak domestic demand in Japan. Weak wage growth may have been related to lackluster household consumption and tepid corporate investment, resulting in a prolonged deflationary economic environment.

**2. Against this backdrop, this selected issue analyzes the wage developments since the 1990s with close attention to macroeconomic dynamics in Japan.** The sluggish wage growth has been pointed out by many to be closely related to the deflationary mindset in Japan. Unique characteristics in Japan's labor market, such as the lifetime employment system also may have affected the sluggish wage growth. Since wage development has implications for future trends in private consumption and capital investment, as well as for monetary policy, the study discusses major factors that have affected to wage development, by focusing mainly on the development of wages, followed by recent developments, including policy discussions.

### *Wage Growth in Japan*

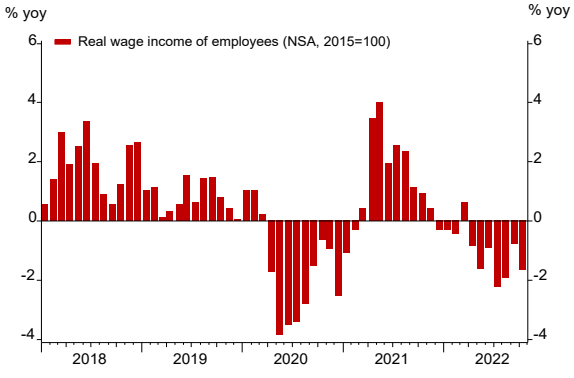
**3. Overall, wages have been declining since late 1990s but real income per working household turned to an upward trend in 2015.** Nominal wage index peaked in 2000 and then declined gradually for several years before starting to recover modestly from 2014. By comparison, the downward trend in real wage index has continued since 1997 (Figure A2.1). Meanwhile, employees' real income, which is calculated, after adjusting for CPI inflation, by multiplying the total number of employees by nominal wages, the latter representing whole wages paid to employees, had continued to increase until 2019 (Figure A2.1 and A2.2). This can be attributed to the fact that the number of workers entering the job market has been boosted mainly by the increase in labor market participation of the elderly and women (Figure A2.3). At the household level, in contrast to real income for all households, which remains at the 2010 level, real income for working households stopped falling in 2014 and continued to increase until 2019.

**Figure A2.1 Wage Development per Capita**




Source: Ministry of Health, Labour, and Welfare, IMF, CEIC, AMRO staff calculations

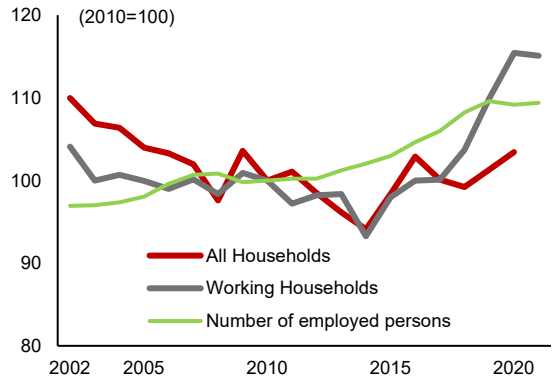
**Figure A2.2 Employees' Real Income**




Source: Cabinet Office, Haver Analytics

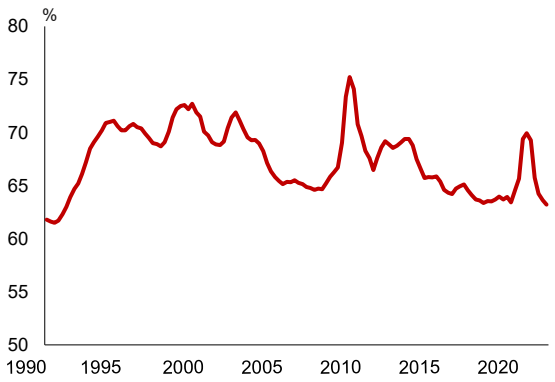
[33] Prepared by Kana Yoshioka, Economist

**Figure A2.3 Household Real Income**




Source: Ministry of Health, Labour, and Welfare, Ministry of Internal Affairs and Communications

**Figure A2.4 Labor Distribution Rate**



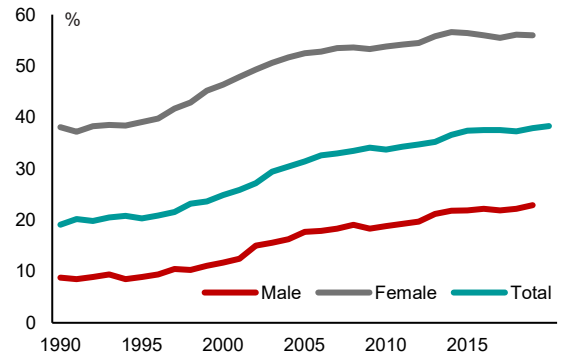

Source: Ministry of Finance, Ministry of Health, Labour, and Welfare

**4. Broadly, the stagnant wage growth is in line with declining labor share in the entire economy.** A declining trend in the labor distribution rate since 2002 suggests that the incentive to raise wages has weakened, reflecting a strong social demand for job security against the backdrop of a worsening employment situation since the late 1990s (Figure A2.4). The low inflation and deflationary environment that has persisted in Japan for more than 20 years is also thought to have been one of the factors which have tempered employees' demand for higher wages or better distribution of labor, as suggested by the fact that there were no requests for base salary increases in the Spring Wage Negotiation from 2002 to 2013, with the exception of 2008.

**5. Weak bargaining power on the employee side in wage negotiations may have been a factor for the increase of non-regular worker and a decline in labor union organization, which could be another reason for the sluggish wage growth.** In Japan, the share of non-regular workers has been increasing since 1995 (Figure A2.5). As non-regular workers are less likely to be union members compared with regular workers, the labor union organization rate has continued to decline, resulting in lower bargaining power in wage negotiations (Figure A2.6). This means that, as around 80 percent of regular workers and 90 percent of non-regular workers are not members of labor unions, wage negotiations are no longer taking place. It has also been pointed out that under the lifetime employment system in Japan, an implicit compact may have been established between employees and employers for the employees not to demand wage increases during economic recovery as a quid pro quo for security in employment during recession and being guaranteed a certain income (Ozaki and Genda, 2019). In this system, employers have provided job security to employees, which is also thought to have led to a decline in the influence of the Spring Wage Negotiation.[34]

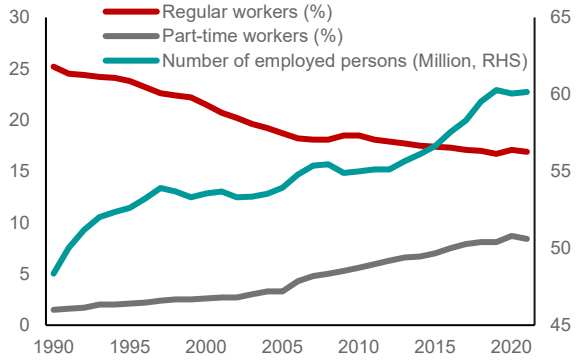
[34] The Spring Wage Negotiation is a unique Japanese labor-management negotiation process on wages, working hours and the work environment that began in 1955, which previously had a benchmark effect for many Japanese companies, both manufacturing and non-manufacturing. Every year, labor unions convey their demands by February to management, including on annual wage increases, and receive the management response by March. These negotiations start from larger companies. The outcomes of management decisions on the wage increase requests are publicized all at once in mid-March (2022: March 16) and attract huge public attention, although their impact on overall wage developments in Japan is now much smaller than it was in the 1970s.

**Figure A2.5 Share of Non-regular Workers**




Source: Ministry of Health, Labour, and Welfare

**Figure A2.6 Rate of Labor Unionization**




Source: Ministry of Health, Labour, and Welfare, Ministry of Internal Affairs and Communications

**6. As economic activities have been recovering, nominal wages have grown by more than 1 percent since 2021, boosted by strong increases in scheduled and special cash earnings.** Although nominal wages have returned to an upward trajectory since 2021, real wages have declined since the beginning of 2022 due to higher inflation. Going forward, nominal wage growth is expected to accelerate because of a possible further increase in special cash earnings, including inflation allowances, in response to higher inflation and the strong likelihood that winter bonus payments will be higher than in 2021. However, the current growth in nominal wages has not been able to fully offset the high inflation, which has been rising since spring 2022, and thus the negative trend in real wages is likely to continue.

**7. Against the backdrop of rising inflation and strong corporate performance, labor unions in Japan have started to demand for higher increases in base salary.** Japanese Trade Union Confederation, the umbrella organization for Japan's labor unions, has announced that it would seek a 5 percent increase in salary[35] in total in the upcoming 2023 Spring Wage Negotiation which would be the highest increase in 28 years. Some labor unions in the manufacturing sector, has announced their policy of seeking a doubling of base pay increases from the current level, reflecting growing pressures from employees for higher wages. This suggests that there may be a change in employees' or labor unions' restrained stance toward base salary increases.

**8. In support of higher wage growth, the government has rolled out policy measures to provide tax incentives for companies to raise salaries for employees.** In 2022, the government raised the maximum percentage of corporate tax deductions to 30 percent for large companies, and 40 percent for small and medium-sized companies that increase their salaries and other payments for their employees. Given that 65.4 percent of firms are in the red in FY 2019, the positive effects from these policy measures on corporate tax incentive is expected to be limited. That said, such incentives should be seen as an opportunity to increase management incentives for higher wage levels. On the other hand, it has been pointed out that there is little need on the part of management to raise wages because of the low share of employees who

[35] The request of 5 percent hike is divided into a 3 percent increase in base salary and a 2 percent rise in regular salary.

are entitled to negotiate their wages. This is another perspective that future policy measures should address to secure a fairer wage negotiation mechanism.

### *Policy Implications*

**9. Going forward, the momentum of wage increase would be critical in driving inflation dynamics and thus monetary policy of Japan.** Given the government's wage support program, the recent rise in inflation and the small base pay increase in spring 2022, the 2023 Spring Wage Negotiation will likely see a higher base pay increase compared to this year. Depending on the responses of companies to the demand for a higher base pay increase in 2023, it is quite possible that real wages will turn positive sometime next year, which would in turn help to sustain inflation at a higher level closer to the 2 percent inflation target. The outcome of the upcoming Spring Wage Negotiation could be an important milestone which marks a shift to a higher rate of inflation. It is thus a signal not only for firms' price-setting behaviors, but also for the timing when Japan overcomes the deflationary mindset, which is an important prerequisite for monetary policy normalization.

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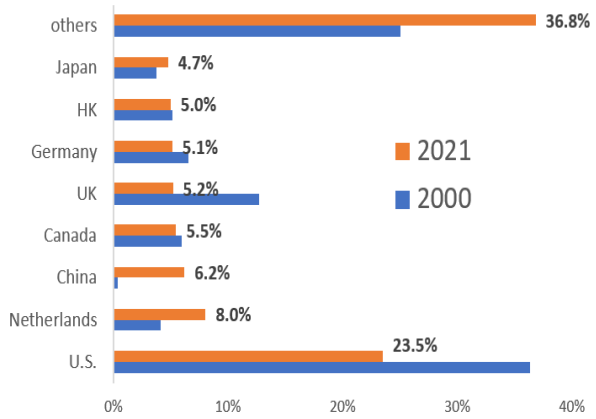
https://www.boj.or.jp/research/wps_rev/wps_2019/data/wp19j06.pdf

## 3. Japan's Manufacturing as a Growth Engine in Changing Global Trends[36]

### *Background*

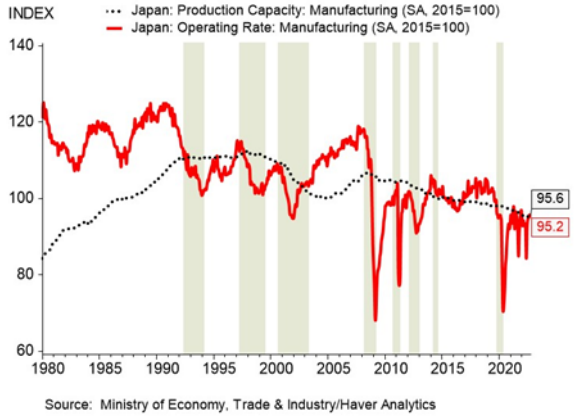
**1. Manufacturing has been the main driving force of the Japanese economy for the last several decades.** Although the share of manufacturing in Japan's GDP has gradually declined from 24 percent in 1995 to 19-20 percent in 2020-21, a huge and highly advanced manufacturing base is still in operation in Japan, led by automobiles and electronics, including semiconductors. Japan is the world's fifth-largest exporter, taking up a 3.4 percent of market share in 2021, behind China, the U.S., Germany and the Netherlands. The exports are mainly driven by high-tech and precision products such as optical instruments, robotics, and hybrid vehicles. Moreover, the country is one of the largest global investors in the manufacturing sector, and its investments have led to a huge stock of overseas production bases, assets and incomes. According to the UNCTAD, Japan's outward FDIs have been concentrated in manufacturing and totals USD1,984 billion as of 2021, the world's eighth largest.[37] In particular, its global share of FDI increased from 3.8 percent in 2000 to 4.7 percent in 2021 despite the rapid growth of China's FDIs. In tandem with this foreign investment momentum, METI statistics show that the overseas production ratio[38] of Japanese manufacturers expanded from 7.9 percent in 1994 to 23.6 percent in 2020, indicating Japan has evolved into a leading manufacturing investor with a huge primary income.

**Figure A3.1 Global Share of Outward FDI Stock by Country**




Source: UNCTAD, AMRO staff calculations

**Figure A3.2 Capacity Utilization of Japan's Manufacturing**




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

**2. That said, the international prestige of Japan's manufacturing has been weakening over time.** The country's share of world exports has shrunk[39] markedly since 1986, shortly after the Plaza Accord to devalue the U.S. dollar, while trade deficits have become the norm to some extent since 2011.[40] WTO statistics show that Japan's share of total global exports fell significantly, from 8.6 percent in 1995 to 3.4 percent in 2021. In

[36] Prepared by Sungtaek Kwon, Senior Economist.
[37] In 2021, outward FDI from Japan rose by 53 percent to USD147 billion, making it the third-largest investor country.
[38] (Net sales of overseas affiliates) / (Net sales of overseas affiliates + Net sales of parent company) × 100, Basic Survey on Overseas Business Activities by the METI.
[39] Japan's declining share in world exports is partly attributable to the paradigm shift of GVCs, including Japanese firms' offshoring of their operations, and therefore does not accurately reflect the status of the Japanese manufacturing sector. (Miura, 2019)
[40] In 2011, the country recorded its first trade deficit in 30 years, due to the shutdown of nuclear plants and the increased imports of energy after the Great East Japan Earthquake.

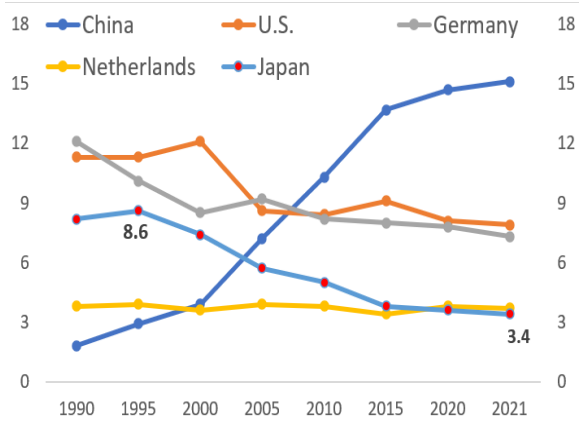
addition, production capacity and its use of Japan's manufacturing facilities have trended down since the 1990s. Looking at the latest data, some people take the view that Japan's flagship industries, such as automobiles and electronics, are lagging behind global trends and major competitors (Climate Group, 2022; Makita, 2022). As a result, Japan's manufacturing competitiveness fell from first place in 1993 to fourth or fifth in 2014-2020, according to the United Nations Industrial Development Organization's (UNIDO) Competitive Industrial Performance index.

**3. This selected issue will review the current status of Japan's manufacturing and discuss the policies.** It uses international comparative data, focusing on the main contributors to the lowering of its competitiveness and on the paradigm shifts of two flagship industries, namely future vehicles and chip nationalism.[41] Thereafter, policy discussions will focus on how to enhance the dynamism and resilience of Japanese manufacturers.

## *Japan's Manufacturing in Changing Global Trends*

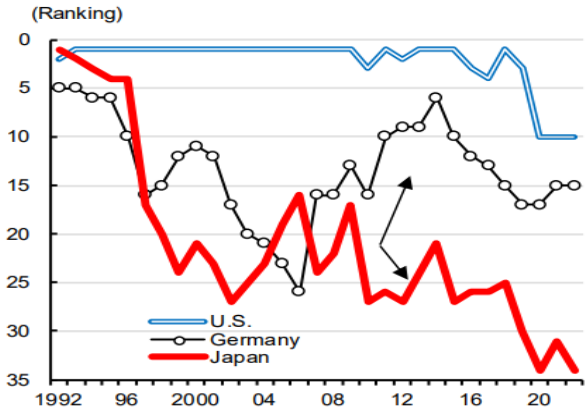
**4. The decline in the competitiveness of Japanese manufacturing has resulted in a lowering of the country's overall status gradually since the 1990s.** According to the IMF, Japan's share of the world's nominal GDP declined from 17.6 percent in 1995 to 5.1 percent in 2021. In addition, Japan's World Competitiveness Ranking out of 63 countries, compiled by the International Institute for Management Development (IMD), dropped from the top spot in 1990 to 34th in 2022. Among the key components, old-fashioned corporate management and IT infrastructure were evaluated as the biggest challenges to the economy.[42]

**Figure A3.3 Japan's Share of World Exports (%)**




Source: WTO, AMRO staff calculations

**Figure A3.4 IMD World Competitiveness Ranking**




Source: IMD, JRI (Makita, 2022)

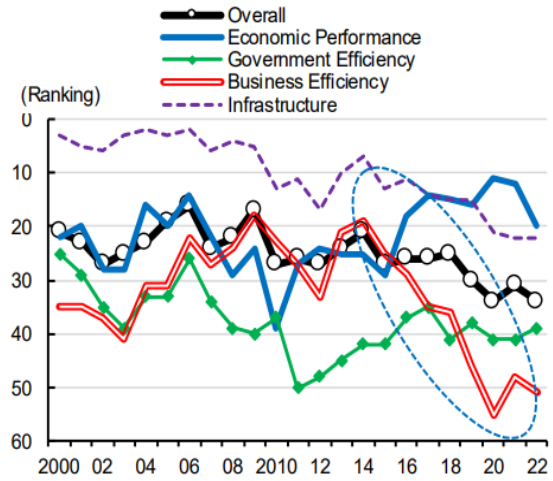
**5. The IMD competitiveness data indicates that Japan has gone down the rankings in various areas within the last decade.** For example, its rankings were sharply revised down in terms of business efficiency, including "productivity and efficiency," "management practices" such as corporate decision-making speed, and "attitudes and values" like

[41] The U.S. put into effect the Chips and Science Act, worth USD52 billion, in August 2022 to support the domestic chip industry, while the E.U. aims to localize 20 percent of semiconductor production by 2030. China has also made development of its semiconductor industry a top policy priority. The U.S. has initiated the Chip 4 alliance with Japan, Korea and Taiwan to ultimately exclude China from the global supply chain.

[42] According to the IMD's World Competitiveness Ranking, Japan scores especially low on "management practices" (63rd), "productivity and efficiency" (57th), and "technological infrastructure" (42nd).

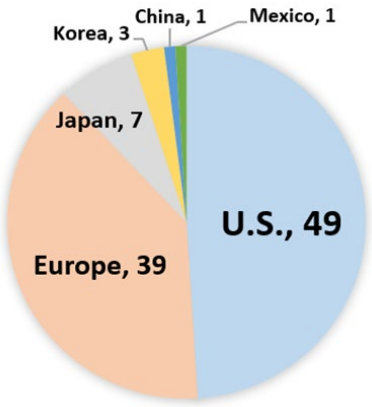
digitalization readiness and adaptability to change. The country's ranking on business efficiency fell from 19th place in 2014 to 51st in 2022, indicating that Japanese corporates' responses to the changing economic environment[43] are lagging behind not only developed countries but also some emerging nations. In tandem with this observation, the brand value of Japanese firms is inferior to the U.S. and European firms. According to Interbrand,[44] seven out of the world's top 100 brands in 2022 were from Japan.[45] The overall value of the top 100 global brands has reached USD3,088.9 billion, of which only 4.4 percent or USD134.6 billion, came from the Japanese brands.[46] In particular, no Japanese company made it to the "technology" sector rankings, which had 11 brands, including the top five.[47] All these indicators reflect the low profit structure of Japanese companies compared to global foreign companies, indicating that the chief executives of Japanese firms tend to prioritize long-term corporate survival over corporate profits (Izumi and Kwon, 2015).

**Figure A3.5 Japan's IMD Competitiveness Rankings**




Source: IMD, JRI (Makita, 2022)

**Figure A3.6 Top 100 Brands by Country**



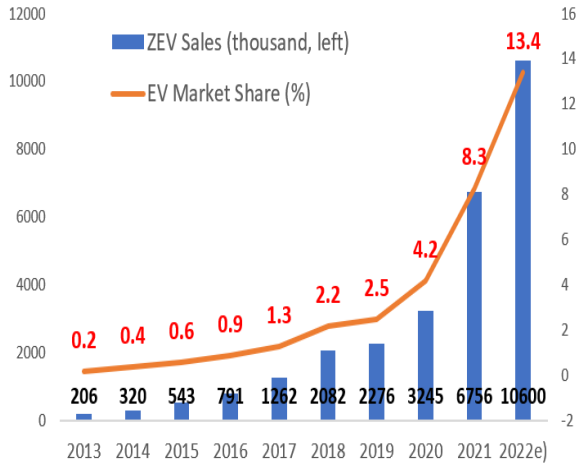

Source: Interbrand, AMRO staff calculations

**6. Historically one of the world's leading auto manufacturing countries, Japan is lagging behind the global trend and its major competitors in the electric vehicle (EV) market.** Japan is the third-largest in the world in both car sales and production, after China and the U.S. It is also the second-largest car exporter, behind Germany, supplying around 12 percent of worldwide car exports[48] and accounting for 18.8 percent of total Japanese exports in 2021. Amid a paradigm shift to future cars, Japanese automotive manufacturing has been gradually moving away from traditional internal combustion engine vehicles (ICEVs) and

[43] In IMD's Global Digital Competitiveness Ranking, which evaluates the capacity of countries to use digital technologies for government, business, and society at large, Japan dropped from 20th place in 2014 to 29th in 2022, mainly due to deterioration in business agility, talent, and the regulatory framework.
[44] Founded in 1974, Interbrand is the world's largest brand consulting firm and has released its annual "Best Global Brands report" since 2000.
[45] Automobiles: Toyota (6th, USD59.8 bn), Honda (26th, USD22.8 bn), Nissan (61st, USD12.2 bn). Electronics: Sony (39th, USD17.0 bn), Nintendo (68th, USD10.7 bn), Panasonic (91st, USD6.3 bn), Canon (97th, USD5.8 bn). In 2001, six brands were from Japan, while four of them were in the top 30, including Toyota (14th, USD18.6 bn), Sony (20th, USD15.0 bn), Honda (21st, USD 14.6 bn) and Nintendo (29th, USD 9.5 bn).
[46] In 2001, six Japanese brands accounted for 6.9 percent of the total value of the global top 100 brands.
[47] Apple, Microsoft, Amazon, Google and Samsung.
[48] According to the World's Top Exports (worldstopexports.com), Germany sold the highest dollar value worth of cars exported during 2021 with 19.6 percent of international car sales (USD710.4 bn). In second place were suppliers in Japan at 12.0 percent, followed by the U.S. (7.7), Korea (6.2) and Mexico (5.6).

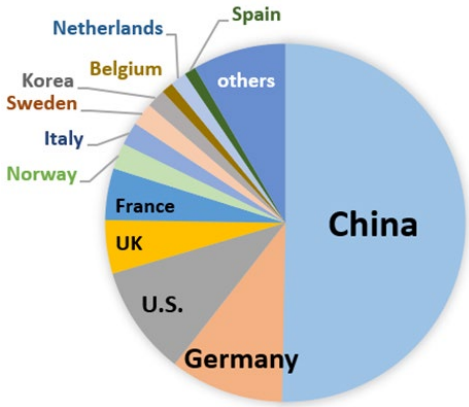
hybrid electric vehicles (HEVs) to zero-emission vehicles (ZEVs), including battery-electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). Looking ahead, all the major car markets are planning to reduce or eliminate the sale of ICEVs in the 2030s. However, Japan is lagging behind major markets in Europe, China and the U.S. in terms of domestic ZEV sales. According to an EV consulting firm, [49] Japan's domestic HEV sales are quite strong, but the country sells very few ZEVs. In 2021, BEVs and PHEVs accounted for just around 3 percent of overall car sales in Japan. Such low ZEV sales in Japan contrast with sharply strengthened ZEV trends in other major markets.

**Figure A3.7 Global ZEV Sales**




Source: EV volumes.com, AMRO staff calculations

**Figure A3.8 Share of ZEV Sales by Country in 2021**




Source: EV volumes.com, AMRO staff calculations

**7. While semiconductors are at the heart of the Fourth Industrial Revolution, chip nationalism was highlighted during the pandemic due to supply disruptions.** The high-tech characteristics of the semiconductor industry, and its intricate and dispersed supply chains have raised concerns over the risk of supply disruptions globally.[50] Japan, which lacks the necessary natural raw materials, is lagging in the decades-long race/demand for semiconductors.[51] As a result, its car industry and overall manufacturing activities continue to be disadvantaged under the global chip shortage. Against this backdrop, Japan's moves to broaden production and R&D bases for high-end semiconductors, including the Taiwanese manufacture TSMC's FDI into the country,[52] are key to driving growth and promoting economic security.

[49] 'EV-volumes.com; Electronic Vehicle World Sales Database' provides the quarterly posts on the sales development of electrically chargeable vehicles and the EV consultancy on decisions about market conditions, optimal portfolios, specifications, pricing, target markets and sales volumes expectations.
[50] In other words, semiconductor manufacturing is one of the most complex industrial processes in the world, and no country has the capacity to make the process entirely domestic.
[51] Japan commanded more than 50 percent of global chip production in 1988, but this share has fallen to below 10 percent today. In particular, domestic foundries are incapable of producing high-end chips due to the change in GVCs and outdated technology.
[52] Tokyo approved a JPY774 bn package for semiconductor investments in November 2021, including a JPY400 bn subsidy for the TSMC's foundry in Kumamoto prefecture and a JPY19 bn subsidy for TSMC's new R&D center in Ibaraki prefecture. In particular, the Kumamoto factory, the first to receive government support under the new initiative, is a joint investment between TSMC and two major Japanese companies, Sony and Denso, the latter of which supplies parts to Toyota. Production is set to begin by the end of 2024. In July 2022, the government also announced that it would provide nearly USD690 million to a joint venture between Kioxia and Western Digital of the U.S. to upgrade a chip facility in Kansai.

**8. Japan once manufactured over half the world's supply of semiconductors in the 1980s, but its market share has fallen significantly as globalization pushes companies in developed countries to contract out their chip production abroad.**[53] Japan still leads the market in some intermediate products that are essential to semiconductor manufacturing, including specialty chemicals and silicon wafers. The country also has a near monopoly on some of the highly specialized and precision tools used in the chip production process. But it lacks the competitive advantage to manufacture the final high-end chips that are mostly produced in Taiwan and Korea. In other words, many of the economic factors that caused Japan's share of the chip market to shrink have not changed, including the change in GVCs and the economies of scale in the semiconductor industry. These will make it difficult and costly for Japan to return the industry to its former glory.

**9. That said, the potential of highly advanced manufacturers as a growth engine remains huge and intact in Japan.** Signs of improvement have emerged over the past few years, mainly owing to high-tech development, government measures and the increasing availability of capital. First, the country has maintained the status of being the world's most competitive in the field of high value-added industrial products, including cutting-edge parts and materials.[54] In particular, the manufacturing trend is to produce more high-performance and high-quality core products, which are essential to the international production collaboration ecosystem.[55] Second, considering that the available investment funds of Japanese companies have increased significantly during the pandemic, there is ample room for investment expansion in high value-added and high-tech businesses. Third, the government has also actively supported firms' efforts to strengthen their competitiveness, including active overseas investment and domestic investment of high-end value chains. Based on these strengths, both government and business can further enhance efforts so that the manufacturing sector can position itself as a sustainable growth engine.

**10. Japan is also developing future growth engines in tandem with changing global manufacturing trends.** High-tech manufacturing has constituted Japan's flagship industries[56] over a long horizon, giving the country the potential to lead global trends such as the "Big Blur."[57] Specifically, the paradigm shift toward future types of vehicles is rapidly progressing, as seen above. The automotive manufacturers can lead the exports and technological development of Japanese industries in the "CASE" (Connected, Autonomous, Shared, Electric) and the "MaaS" (Mobility as a Service) eras. To this end, top priority should be given

[53] Semiconductor foundries such as TSMC that specialized in made-to-order chip manufacturing under the full support of their own governments accumulated enough customers to achieve economies of scale that made it pointless for chipmakers in Japan and elsewhere to continue producing most semiconductors in-house.
[54] Since the 1990s, industrial parts have been increasingly standardized due to the expansion of modular production methods following the spread of digitalization. The technological gap has also narrowed. Both trends have weakened the market dominance of Japanese companies. China, Korea and Taiwan, which are latecomers in general-purpose parts, are improving their competitiveness, but Japan still occupies a monopoly in the field of cutting-edge parts and materials.
[55] For example, Japanese manufacturers account for 80 percent of the high-purity hydrogen fluoride used in radio frequency equipment installed in semiconductor manufacturing and many smartphones.
[56] The flagship industries include automobiles, electronics, high-end machinery, and cutting-edge parts and materials, such as silicon wafers, semiconductor electrolytes and core materials of lithium-ion batteries.
[57] A phenomenon in which ambiguity across heterogeneous industries grows based on convergence between existing industries and ICT.

to preemptively creating an ecosystem for the automobile industry to occupy the next-generation car market ahead of competitors. The country needs to prioritize the complete reorganization of the automotive parts market and related infrastructure such as charging stations, road networks and car insurance, with a focus on cars of the future. Meanwhile, TSMC's investment in Japan has kickstarted the development of an ecosystem, including partnerships with the U.S. and other G7 nations, that can serve as an insurance against supply chain disruptions to automobiles and overall manufacturing activities in Japan.

**11. In addition, supply chain resilience is essential to sustainable growth**. Diversification of overseas production and sales bases is most effective to strengthen market penetration and reduce production and operational costs, while reshoring should focus on attracting high-value-added sectors such as R&D, design and marketing. To this end, it is imperative to speed up the improvement of corporate governance[58] as rational and prompt decision-making is more important than ever. In other words, corporate governance reform can encourage firms to enhance technological capabilities, raise profitability and expand into new markets via R&D and M&A. Most importantly, this requires strong alignments across the public and private sectors and between labor and management to succeed. The government should play a catalytic role as a coordinator and strong initiator.

**12. The Japanese government has made a welcome move by beginning to accelerate digital transformation[59] to enhance its economic dynamism and resilience in the post-pandemic world.** Digital competitiveness matters particularly for Japan, given its aging population. To compensate, Japan will need to better leverage innovative technologies and further encourage digitalization to improve production and productivity. In light of the aging society, smart factory could be one of the ways to mitigate downward pressures on productivity and growth. In addition, tech start-ups have the stronger potential to bolster innovation and motivate the development of new technologies. Start-ups often have advantages in innovation over larger firms because of their entrepreneurial flexibility, less rigid business cultures and closer team communication. More than ever before, supply chains need to be technologically driven and digitally enabled to be resilient, flexible and transparent (Gartner, 2022).

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[58] Main existing projects of the government are the "New Growth Strategy" (2021) and the "Strategy for the Digital Industry" (2021).
[59] The government has revised the Corporate Governance Code every three years since 2015, with a focus on enhancing board independence and promoting ESG principles. The revised code increases the required number of independent directors for prime market-listed companies and requires the formation of nomination and remuneration committees.

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## 4. Transition Risks of Climate Change Policy in Japan[60][61]

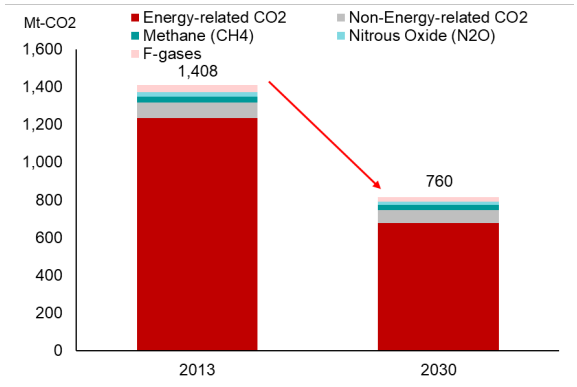
### *Introduction*

**1. The Japanese government has ambitious targets for reducing greenhouse gas (GHG) emissions by 46 percent in 2030, and further achieving carbon neutrality by 2050.** The Paris Agreement, adopted in December 2015, requires that each party submit its proposal for climate action, known as nationally determined contribution (NDC), by 2020 and every five years thereafter. This is to contain the increase in global warming to well below 2 degrees Celsius, and preferably to 1.5 degrees, compared with preindustrial levels. The Japanese government submitted its first NDC in March 2020 to the United Nations (UN) and revised it in October 2021 to strengthen the targets. In the updated NDC, the authorities target reducing Japan's GHG emissions by 46 percent from 2013 to 2030 (Figure A4.1), which aligns with the country's long-term goal of achieving net-zero carbon emissions by 2050. This study aims to take stock of the Japanese government's strategies for the target, assess possible risks—notably transition risks—stemming from the policy, and discuss policy implications.

### *Government's Policy on GHG Emissions Reduction*

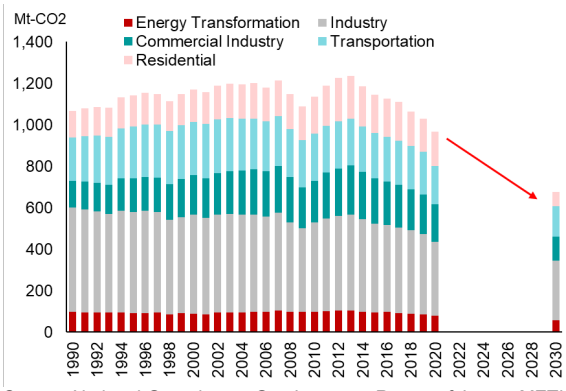
**2. Overall, Japan's total GHG emissions had trended down since 2013.** Between 2013 and 2020, Japan posted an average of 3.3 percent (yoy) decline in total GHG emissions. The reduction pace itself has been on track to lead to the 2030 target of 760 Mt-CO2. In a breakdown of the GHG emissions, energy-related carbon dioxide was the most prominent, taking up more than 90 percent. And within the energy-related carbon dioxide category, the industry sector formed the main component with a 37 percent share, followed by the transportation and commercial sectors with 19 percent. In contrast, the residential sector contributed only 17 percent as of 2020 (Figure A4.2). These figures suggest that the industrial sector should be encouraged to put significant efforts into making the NDC targets achievable moving forward.

**Figure A4.1 Japan's NDC Targets on GHG Emissions**




Source: Japan's NDC

**Figure A4.2 Energy-related CO2 Emissions**



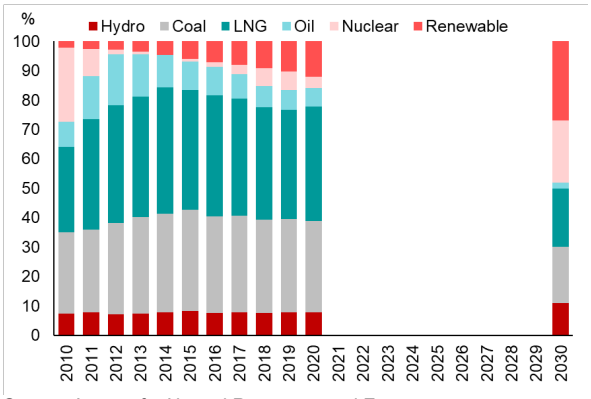

Source: National Greenhouse Gas Inventory Report of Japan; METI

[60] Prepared by Sota Nejime, Associate Researcher.
[61] The author would like to thank Professor Toru Morotomi, Graduate School of Economics at Kyoto University, for his valuable comments and insights on this topic, notably regarding possible transition risks.

**3. The Japanese government has developed strategies to achieve the 2030 target in the NDC and carbon neutrality by 2050.** The first step was Prime Minister (then PM) Suga's announcement in October 2020 that Japan would aim for carbon neutrality by 2050. After the announcement, the Japanese government developed several policies and strategies with a view to achieving the target by 2050. In June 2021, the Ministry of Economy, Trade and Industry (METI) announced the updated Green Growth Strategy, identifying 14 prioritized areas to develop and explore.[62] The strategy also described seven policy tools to underpin green development, including carbon pricing and the establishment of green funds. In addition, METI is compiling a new strategy called the Clean Energy Strategy, which aims to further develop a detailed blueprint for the desired energy transition to decarbonization. The ministry is also coming up with how each sector can work toward the NDC and the carbon-neutrality target in the Clean Energy Strategy.

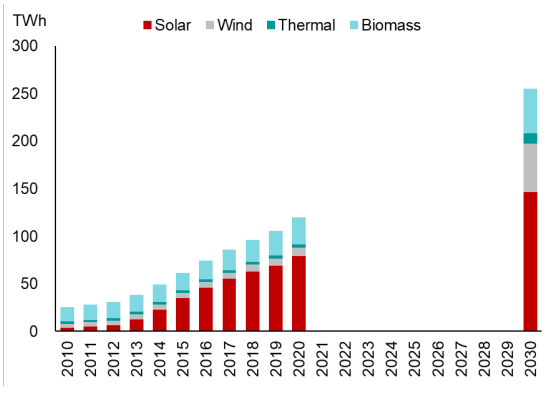
**4. In the meantime, METI updated the Strategic Energy Plan in October 2021 to align it with the Japanese climate change policy, including a specific energy mix target by 2030.** The government's target for renewable energy, excluding hydropower, is around 27 percent of the country's total energy mix in 2030, compared with the 11 percent share in 2020 (Figure A4.3). Among renewables, solar energy is the primary source of power generation, with an 80 percent increase expected in 2030 compared to 2020. A more challenging target is set for wind power, which is projected to increase by more than 450 percent from 2020 to 2030 (Figure A4.4). On top of renewables, the plan calls for nuclear power to contribute 20-22 percent share in 2030, up from 4 percent in 2020. This would require the maximum use of existing reactors with confirmed safety, and the construction of new plants, the discussion of which was only recently restarted; PM Kishida said the government would study replacing old nuclear power plants with reactors equipped with new safety mechanisms. However, public confidence in nuclear power generation remains a challenge due to safety concerns.

**Figure A4.3 Energy Mix**




Source: Agency for Natural Resources and Energy

**Figure A4.4 Renewable Energy Generation by Source**




Source: Agency for Natural Resources and Energy

**5. On policy instruments, carbon pricing has been discussed among line ministries, which are jointly considering a surcharge on large enterprises and an**

[62] The prioritized areas are divided into energy, transport and home. METI created detailed strategies in each area to develop sector-specific action plans for 2050 in the R&D, demonstration, scale-up and commercial phases.

**emissions trading system (ETS).** Thus far, Japan has introduced a tax on fossil fuels, called the Global Warming Countermeasure Tax,[63] and an ETS in Tokyo and Saitama prefectures. However, the carbon price in Japan is around 3 US Dollar per t-CO2, which stands out as low compared to other developed countries (Figure A4.10). METI and the Ministry of the Environment are discussing a new ETS concept known as "GX league," which is set to take effect in April 2023. In addition, in November 2022, the authorities approved a new surcharge on industries that emit a significant amount of GHG, although details have not been decided yet. They will also issue GX transition bonds to finance additional subsidies to big companies working toward green investment. The surcharge revenue will be used to repay the debt incurred by the GX transition bonds, implying that the new surcharge is set to be an earmarked tax. While a detailed picture of the surcharge and GX league ETS has yet to emerge, the authorities aim to apply a low surcharge rate first and to gradually raise it over time, drawing criticism from local fiscal experts as insufficient policy direction.[64]

### *Transition Risks*

**6. Risks regarding climate change can be divided into two categories: physical risks and transition risks.** The physical risks result from climatic events, such as wildfires, storms, and floods. In contrast, transition risks stem from policy actions taken to transform the economy from fossil to non-fossil fuels, such as a shift from coal-fired to renewable energy. The physical risks are obvious in Japan, where storms and earthquakes cause yearly destructions. By comparison, the transition risks on the economy are not immediate but could have a significant impact on the economy over time, as the government pursues its ambitious GHG target; However, it has not been much discussed yet regardless of its importance. The transition risks are classified into four categories (Table A4.1), of which three—technology risk, market risk, and policy and legal risk—are discussed in the following paragraphs.

**Table A4.1 Classification of Transition Risks**

| Transition Risk | Examples of risk |
|---|---|
| Technology risk | • Substitution of existing products and services with lower emissions options<br>• Unsuccessful investment in new technologies |
| Market risk | • Changing consumer behavior<br>• Uncertainty through market signals<br>• Increase cost of raw materials |
| Policy and legal risk | • Carbon pricing and reporting obligations<br>• Mandates on and regulation of existing products and services<br>• Exposure to litigation |
| Reputation risk | • Increased stakeholder concern/negative feedback<br>• Stigmatization of sector |

Source: Task Force on Climate-related Financial Disclosures; Diligent

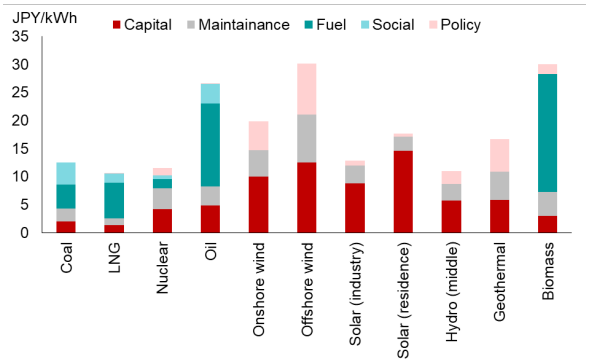
**7. From the technology perspective, reducing the share of coal-fired power in the energy mix is challenging as the country may need to increase electricity charges.** As seen in the energy mix plan, power generation based on coal is expected to decline from 31

[63] All carbon dioxide emissions from fossil fuels are subject to a carbon tax at a rate of JPY289 per t-CO2, with the revenues used for measures that ease global warming.
[64] https://asia.nikkei.com/Spotlight/Environment/Climate-Change/Japan-shelves-carbon-tax-as-energy-prices-soar

percent in 2020 to 19 percent in 2030, with a complete phaseout necessary under the 2050 net-zero emission target. To reduce the share of coal-fired generation and its emissions, the government is working to introduce co-firing coal generation[65] with ammonia so as to reduce carbon dioxide emissions during combustion. This method would, however, drive up production costs since ammonia requires advanced technology to transport and store. Securing a supply chain of ammonia is also a challenge. Furthermore, green ammonia produced by renewable energy sources would increase electricity prices (Figure A4.5). Although European countries are heading toward achieving 0 percent coal-fired power generation, Asian countries, including Japan, may find it difficult to phase out coal completely.

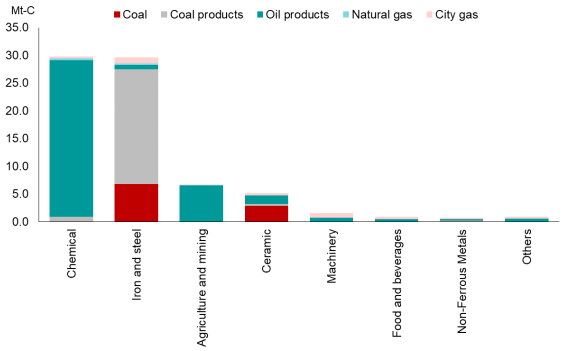
**8. Energy-intensive industries will inevitably face higher costs as they attempt to expand the use of green hydrogen in their production process.** Pressures on energy-intensive industries (Figure A4.6), such as iron and steel, have been ramped up to reduce GHG emissions, leading these companies to steadily shift their stance on climate change mitigation measures. They are considering incorporating hydrogen into their production lines, which would imply higher costs in the production phase. In this process, they also face demand to use "green hydrogen" produced by renewable energy as the hydrogen production process requires a large amount of electricity. Green hydrogen will put additional costs on the final product, given that cheap fuel-based energy currently comprises the bulk of total generation. In general, renewable energy requires high costs of production compared to coal or LNG-based generation, owing to its capital and maintenance expenses. Most likely, renewable energy prices will decline over time, as seen in the downward trend of historical energy prices in tandem with technological advances. Nevertheless, the Japanese economy would be affected by the increase in total energy prices during the transition period.

**Figure A4.5 Electricity Costs in Japan by Source**




Source: METI

**Figure A4.6 Energy Consumption by Industry**



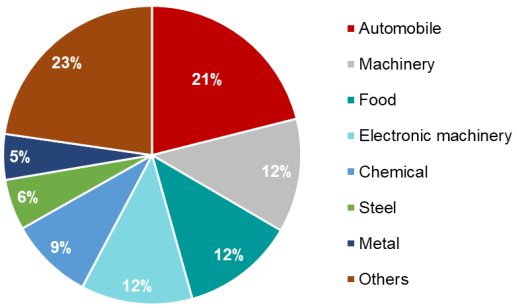

Source: Agency for Natural Resources and Energy, AMRO staff compilation
Note: The y-axis uses the carbon unit

**9. Market risk is the main concern in the transportation sector, as Japanese automakers are lagging the worldwide trend in adjusting to electric vehicles (EV).** The car industry, which has driven Japan's economic growth for decades, is now facing a big wave

[65] Co-firing is a technology that substitutes coal with renewable energy at a certain ratio with due consideration of fuel quality. Usually, biomass or ammonia is incorporated into the generation process as these materials do not contribute to GHG emissions when combusted.

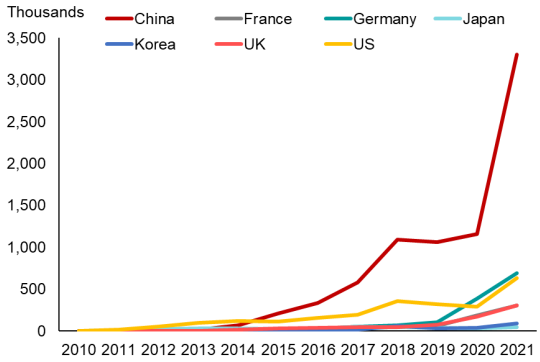
of revolutionary changes due to EV. Automobile sales account for around 20 percent of the overall manufacturing sales in Japan as of 2020 (Figure A4.7). In terms of GDP, the car industry made up 10 percent in 2020, implying that any shift in the car industry will have a significant impact on the overall Japanese economy. The EV trend has progressed rapidly at the global level (Figure A4.8); however, Japanese automakers have been slow to move into the EV market, due to past success in promoting hybrid car sales. Japan's largest automaker Toyota ranked 16th in EV sales in 2021, whereas the U.S. and China are the leading EV market players, their major respective EV manufacturers being Tesla and BYD. The Japanese government aims to transition completely to EV by 2035, which is also the target of other countries such as China and the UK. The target for Japan looks challenging, but if the Japanese automobile industry does not follow the global trend, foreign EV will gain a stronger foothold in the domestic market, eroding the domestic manufacturing-sector and the country's economic growth.

**Figure A4.7 Manufacturing Industry Sales in 2020**




Source: METI

**Figure A4.8 Sales of EV by Country**



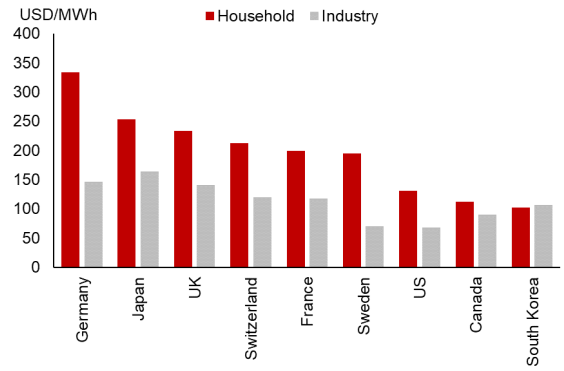

Source: International Energy Agency, AMRO staff compilation
Note: Sales include a battery-run EV and a plug-in hybrid EV.

**10. In terms of policy and legal risk, carbon pricing will likely increase the household cost of living due to a rise in energy prices, as the carbon price recently announced in the government plan is still inadequate.** Japan's energy prices are higher than peer countries in terms of consumer costs. Including taxes and feed-in-tariffs, households pay around USD250 per megawatt hour (Figure A4.9). The negative impact of carbon pricing on low-income households could be substantial since they have no choice but to spend a large sum of their meagre income on energy consumption.[66] In this sense, carbon pricing on energy is inevitably a regressive tax, similar to a consumption tax. Furthermore, the impact of high carbon pricing on industrial activities needs to be considered carefully. A study[67] in 2021 indicated that the short-term effect of a carbon tax which raised the effective carbon tax rate for all industries would affect not only energy-intensive but also downstream industries due to cost passthrough. Although the new surcharge level will be relatively low at the time of introduction, the impact should be monitored once the surcharge rate is raised. On another note, the government currently plans to repay the debt of the GX transition bond with the

[66] In Japan, the share of energy costs in expenditure is 2 percent for households in the income bracket of JPY15 million per year. In comparison, the same share comprises 4 percent for households in the bracket lower than JPY2.5 million per year.
[67] Makoto Sugino. 2021. "The Economic Effects of Equalizing the Effective Carbon Rate of Sectors: An Input-Output Analysis." In Carbon Pricing in Japan: 2021, edited by Toshi H. Arimura and Shigeru Matsumoto: Springer

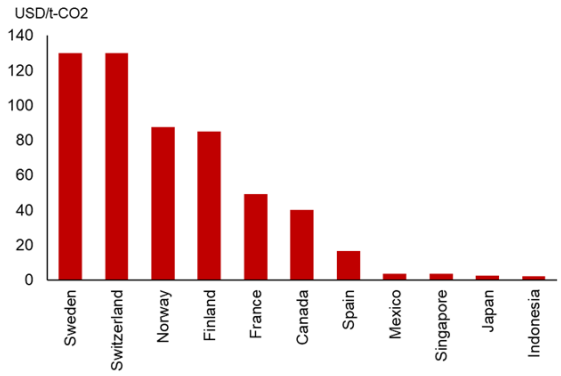
carbon surcharge revenue; however, the surcharge revenue will be smaller than the total bond issuance amount. This implies that there is a risk that the current scheme will have an additional negative impact on the government debt for years, which will exacerbate the overall fiscal stance.

**Figure A4.9 Energy Prices by Country**




Source: Institute of Energy Economics, METI
Note: Data valid as of 2019.

**Figure A4.10 Carbon Prices by Selected Country**




Source: World Bank
Note: Data valid as of 2022. The data comprises only the carbon tax in each country, not the carbon price based on the ETS.

## *Conclusion and Policy Implications*

**11. Looking ahead, the government's policy on the Strategic Energy Plan and the relevant strategies should be steadfastly implemented to achieve the NDC targets, while official efforts to mitigate transition risks are crucial to minimize the negative impacts on the economy.** The energy transition set out in the plan may negatively affect macroeconomic developments via cost increases. It is essential to not only ramp up the share of renewable energy in the energy mix, but also consider how to mitigate the burden of costly renewable energy on industry and households. On market risk, the authorities should maintain the automobile industry's competitiveness and promote incentives for green investment. For instance, more specific regulations encouraging EV adoption in Japan are recommended. As for policy and legal risks, the government should recognize the negative impact of carbon pricing on economic growth, as the current carbon price proposal is still insufficient to curb usage and emissions. If the authorities accelerate carbon price increases moving forward, integrated policies – such as subsidies for low-income households based on surcharge revenues – should be considered to mitigate the adverse impacts on industries and households.


Address: 10 Shenton Way, #15-08
MAS Building, Singapore 079117
Website: www.amro-asia.org
Tel: +65 6323 9844
Email: enquiry@amro-asia.org
**LinkedIn** | **Twitter** | **Facebook** | **YouTube**