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AMRO
ASEAN +3 MACROECONOMIC RESEARCH OFFICE

AMRO Annual Consultation Report

Japan - 2021

ASEAN+3 Macroeconomic Research Office (AMRO)

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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 September 27 to October 15, 2021 (Article 5 (b) of 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); Dr. Jerry Xianguo Huang, Economist; Ms. Kana Yoshioka, Economist; Mr. Kimi Xu Jiang, Economist; Dr. Trung Thanh Vu, Associate Economist; Mr. Takashi Yonemura, Associate Researcher; and Mr. Sota Nejime, Associate Researcher. AMRO Director Mr. Toshinori Doi and Chief Economist Dr. Hoe Ee Khor also participated in key policy meetings with the authorities. This AMRO Annual Consultation Report on Japan for 2021 was peer reviewed by Dr. Sumio Ishikawa, Group Head and Lead Economist, and Ms. Wanwisa May Vorranikulkij, Economist; format reviewed by Ms. Madeleine D. Vinuya, Research Data Analyst; and approved by Dr. Hoe Ee Khor, AMRO Chief Economist.
3. The analysis in this Report is based on information available up to February 18, 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.

Disclaimer: The findings, interpretations and conclusion expressed in this Report represent the views of the staff of ASEAN+3 Macroeconomic Research Office (AMRO) and are not necessarily those of its members. Neither AMRO nor its members shall be held responsible for any consequence from the use of the information contained herein.

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Executive Summary

1. The Japanese economy experienced a bumpy recovery at 1.7 percent in 2021, after being severely battered by the COVID-19 pandemic in 2020. In 2021, private consumption exhibited highly volatile movements in tandem with repeated waves of COVID-19 infections. Business investment was weak, dragged down by global supply chain disruptions. Exports grew rapidly on strong external demand in H1, before slowing in H2, reflecting a sharp decline in auto shipments due to part shortages. Looking forward, the economy is expected to grow faster at 2.9 percent in 2022, reflecting pent-up private consumption and business investment.

2. Consumer price inflation weakened in 2021 on the back of a decline in prices of services. In 2021, the consumer price index (CPI), less fresh food, fell by 0.2 percent on average, while the prices of services declined sharply, primarily due to reduced mobile phone charges. Meanwhile, the inflation in goods prices accelerated to 3.4 percent (yoy) in December, driven by rising import prices of industrial products. Excluding temporary factors such as reduction in mobile phone charges, CPI inflation would have been slightly positive. Looking ahead, CPI (less fresh food) inflation is projected to rise modestly to 0.7 percent in 2022.

3. Japan's external position stayed strong supported by continued large primary income surplus. In 2020, the current account surplus moderated to 3.0 percent of GDP, mainly reflecting widening services account deficits. In 2021, the current account surplus amounted to 2.8 percent of GDP. The trade balance posted a surplus, driven by a strong recovery in goods exports. The services account deficit widened, led by a sharp drop in the travel account surplus. The primary income surplus remained the main contributor to Japan's continued strong current account surplus.

4. Financial conditions have been accommodative on the back of strong financial and liquidity support from the government and the Bank of Japan (BOJ) since the outbreak of the pandemic. Bank lending grew sharply by 5-6 percent (yoy) from 2020 Q2 to 2021 Q1, before decelerating to 0.5 percent in November 2021. The overall financial system remains stable with sufficient liquidity and capital buffers. The non-performing loan ratio inched up from 1.1 percent in March 2020 to 1.2 percent in March 2021, with a slight increase in "doubtful" and "special attention" loans. In terms of profitability, most banks, particularly regional ones, continue to see low returns on assets. That said, net income improved in FY2020 on the back of rapid loan growth and cuts in administrative expenses.

5. The fiscal deficit widened sharply in FY2020, as a result of massive stimulus packages in response to the pandemic. To support the economy, the government launched an unprecedented large economic stimulus package in FY2020. Government spending spiked on the back of three supplementary budgets. The fiscal deficit will likely widen to 11 percent of GDP in FY2020 from 3.1 percent in FY2019. For FY2021, the government has announced its largest initial budget, of JPY106.6 trillion, including JPY5 trillion for a COVID-19 contingency fund. The fiscal deficit is expected to narrow to 8.6 percent of GDP in FY2021. The government debt-to-GDP ratio is projected to increase from 238 percent in FY2019 to 249 percent in FY2020, and further to 258 percent in FY2021.

6. The Japanese economy is confronted with several near-term risks, including recurrence of COVID-19 infections and supply chain disruptions, and also structural challenges. Any recurrent waves of the COVID-19 infection will have significant impact on economic activities at home and abroad. Sustained global supply chain disruptions and bottlenecks will adversely

affect Japanese manufacturers' production and exports. A prolonged pandemic would also have adverse effects on financial institutions, in particular on regional banks, in the form of deteriorating asset quality and lower profitability. Meanwhile, a premature unwinding of the government's special lending programs for small and medium-sized enterprises, before the pandemic comes well under control, could put an upward pressure on the number of bankruptcies. Structural challenges include weakening fiscal discipline, side effects from prolonged monetary easing, the declining profitability of regional banks, and demographic drag from population aging and low fertility rates.

7. Fiscal policy should remain supportive of the economy in the short term, with targeted measures to hard-hit sectors, backed by a credible medium-term fiscal consolidation plan. Rather than provide universal supports to all households, it is more essential to roll out well-targeted spending measures for vulnerable households and hard-hit businesses in the services sector so as to enhance the efficacy of the stimulus packages given the tight fiscal situation. At the same time, the government should immediately begin preparing for a new medium-term fiscal consolidation plan in order to ensure long-term fiscal sustainability. Given the snowballing demand for government spending to support the economy as well as rising social security expenses, oversight of the budget and the government's compliance with medium- to long-term fiscal targets needs to be enhanced. In this regard, Japan could consider setting up an independent fiscal institution. The medium-term fiscal consolidation plan should prioritize containing social security expenditure, while raising tax revenues in the post-pandemic period.

8. The current easy monetary policy stance should be maintained to support growth and counter deflationary pressures amid the COVID-19 pandemic. If there is another resurgence of COVID-19 infection, the BOJ could implement further easing measures to support the economy. Weakness in the prices of services, albeit due to transitory factors, would warrant closer monitoring of potential spillovers to general price levels. The BOJ's inflation-overshooting commitment remains appropriate as it provides the markets with some assurance that monetary policy stance will remain easy until the current low CPI inflation is above the 2 percent price stability target in a stable manner. However, the feasibility of achieving the 2 percent target is still highly uncertain in the near term. From a medium- to long-term perspective, the BOJ should continue to consider policy options which would allow for a gradual and orderly unwinding of the current prolonged easy monetary policy stance under the normal market conditions.

9. Financial supervisory authorities should remain vigilant to ensure that financial institutions are able to maintain their soundness as the pandemic drags on. The oversight of financial institutions' high-yield investment activities should be further strengthened. In the medium term, financial policy should also continue supporting financial institutions in adapting to a rapidly changing business environment against the backdrop of the aging population.

10.Comprehensive structural reforms should be quickened to address Japan's long-term challenges. Digitalization should be accelerated, in particular, to address challenges posed by the pandemic. To enhance productivity, the government should strive to create a conducive environment where Japanese corporates are encouraged to increase investment in digital transformation and the green economy. To cope with structural labor shortages, embracing female, elderly, and foreign workers should be further encouraged. Strengthening work-style reforms, increasing job mobility and teleworking, employing robotics and automation, and using big data, can all contribute to enhancing productivity growth.

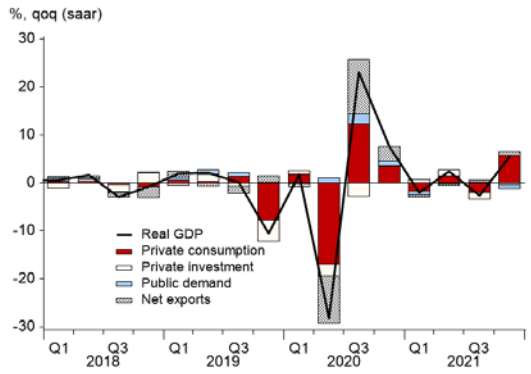
A. Recent Developments and Outlook

A.1 Real Sector Developments and Outlook

1. The Japanese economy experienced a bumpy recovery at 1.7 percent in 2021, after being severely battered by the COVID-19 pandemic in 2020. In 2021 Q1, real GDP contracted by 2.1 percent (saar, qoq) against the backdrop of a renewed state of emergency. The economy expanded by 2.4 percent in Q2 before shrinking again by 2.7 percent in Q3 amid the extension of the state of emergency (Figure 1). In Q4, real GDP rebounded by 5.4 percent, reflecting strong private consumption, which had been highly volatile during the whole year, fluctuating in line with repeated waves of infections. Business investment was weak, dragged down by global supply chain disruptions. Exports grew rapidly led by strong external demand in H1 before slowing in H2, reflecting a sharp decline in auto shipments due to parts shortages. Government consumption increased significantly, partly on account of an expansion in vaccine purchases, while public investment fell.

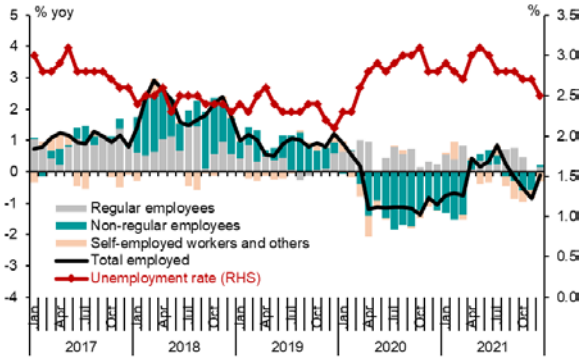
2. Looking forward, the economy is expected to grow faster at 2.9 percent in 2022. The recent wave of the highly contagious Delta variant weakened the pace of Japan's economic recovery in 2021. That said, GDP growth is expected to rebound strongly in 2022 when the rapid spread of the Omicron variant is contained and the economy gradually reopens. The main drivers of growth will likely shift from external to domestic demand, reflecting pent-up private consumption and business investment. Households are expected to increase spending on the back of huge savings accumulated during the pandemic. Firms are expected to expand investments to strengthen their production capacity, to improve their resilience against supply chain disruptions, while boosting digital and green investments. Meanwhile, exports will likely moderate with the global economic slowdown.

Figure 1. Real GDP Growth



Source: Cabinet Office; Haver Analytics

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



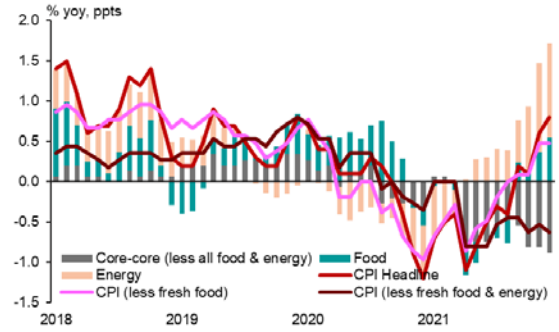
Source: Ministry of Internal Affairs and Communications; Haver Analytics

3. Overall labor market conditions have been resilient, despite the pandemic. The unemployment rate saw only a moderate rise to 3.1 percent in October 2020 on the back of a rise in job losses among non-regular workers, before declining to 2.7 percent in December 2021 (Figure 2). In 2020 Q2 when the economy was hit the hardest by COVID-19, the total compensation of employees dropped sharply, but the government's cash handouts helped to

offset the decline in wage income. Since 2020 Q3, the total compensation of employees has been on a rising trend. Although the pandemic has led to an easing of the overall labor demand, several industries such as construction, transport, and medical services, continue to suffer manpower shortages, partly reflecting lower inflows of foreign workers amid tightened border controls.

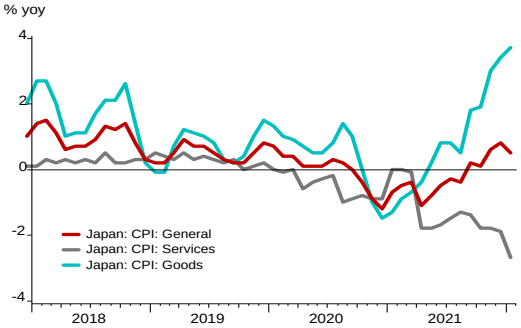
4. Consumer price inflation remained weak in 2021 on the back of a decline in the prices of services, after turning negative in 2020 Q4 during the pandemic. In 2020, weakness in consumer price index (CPI) inflation was mainly attributable not only to the sharp economic downturn and the contraction of energy prices, but also to policy measures such as free education and travel subsidies. In 2021, CPI (less fresh food) fell by 0.2 percent on average (Figure 3) while the prices of services declined sharply, primarily due to reduced mobile phone charges. Meanwhile, the increase in goods prices accelerated to 3.4 percent (yoy) in December, driven by the rising import prices of industrial products (Figure 4). Producers' pass-through of rising commodity prices to overall consumer prices continued to be subdued (Figure 5).[1] Excluding temporary factors such as mobile phone charges, CPI inflation could be at a slightly positive level. Firms' medium-term inflation expectations have been broadly stable at around 1 percent, but are gradually rising (Figure 6), as shown in the Bank of Japan (BOJ)'s Tankan survey. Looking ahead, CPI (less fresh food) inflation is projected to rise modestly to 0.7 percent in 2022.

Figure 3. CPI Inflation



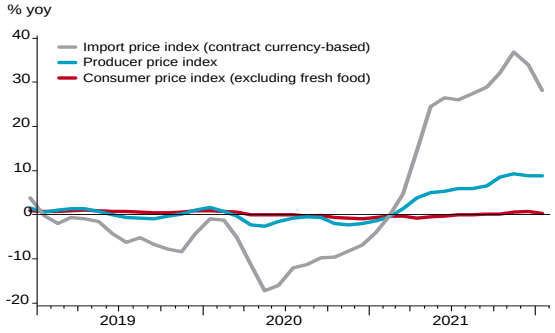
Source: Ministry of Internal Affairs and Communication; Haver Analytics

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

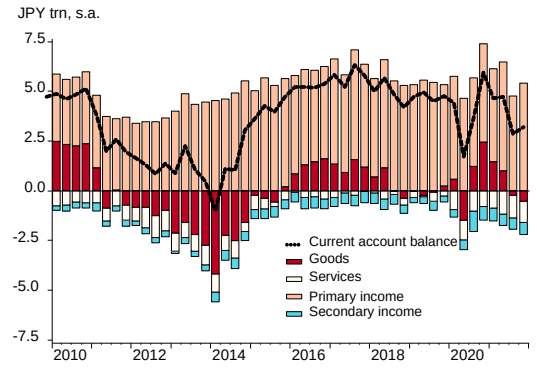
[1] In the FY2021 supplementary budget proposal, the government included measures to respond high oil prices. According to local news media, it plans to temporarily provide subsidies to oil wholesalers if gasoline prices exceed a threshold level to prevent an excessive rise in retail gasoline prices (Japan Times, November 17, 2021).

A.2 External Sector and the Balance of Payments

5. Japan's external position has stayed strong supported by large primary income surplus, while net capital outflows slowed in the midst of the pandemic. In 2020, the current account surplus moderated to 3.0 percent of GDP, mainly reflecting widening services account deficits. In 2021, the current account surplus amounted to 2.8 percent of GDP. The trade balance posted a surplus, driven by a strong recovery in goods exports. The services account deficit widened due to a sharp drop in the travel account surplus. The primary income surplus remained the main contributor to Japan's continued strong current account surplus (Figure 7). On the financial account, net capital outflows continued but at a slower pace in 2021. Outbound foreign direct investment remained robust, albeit softening somewhat since 2020 Q1. Japanese investors continued to buy foreign bonds, while reducing their exposure in foreign equities as part of their portfolio rebalancing. After a sell-off in March 2020, foreign investors increased their purchase of Japanese government bonds (JGBs) in 2021.

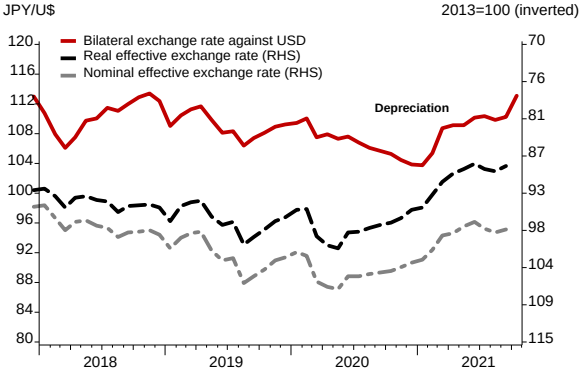
6. The Japanese yen came under downward pressure in 2021, while JGB yields were stable under the BOJ's Yield Curve Control (YCC). Since January 2021, the Japanese yen has depreciated against the U.S. dollar, mainly driven by a widening interest rate differential between Japan and the United States. The Japanese yen has also weakened against a broad range of currencies (Figure 8) due to improved risk sentiments toward global economic recovery that led to an unwinding of safe-haven demand (see Selected Issue 4. *Japanese Yen's Dynamics during the Pandemic*). Meanwhile, 10-year JGB yields rose to about 0.17 percent in February 2021, reflecting heightened market speculations ahead of the BOJ's March assessment (see Selected Issue 2. *Assessing the BOJ's Policy Assessment*), as well as the rise in U.S. bond yields. In Q2, the 10-year JGB yield fell below 0.1 percent in tandem with the drop in global bond yields within the BOJ's clarified range of 10-year JGB yield fluctuations.[2] Japan's stock prices have risen more than 10 percent YtD in 2021, albeit underperforming other advanced markets that have a greater share of tech stocks in their indexes.

Figure 7. Current Account Balance



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

Figure 8. JPY Exchange Rates



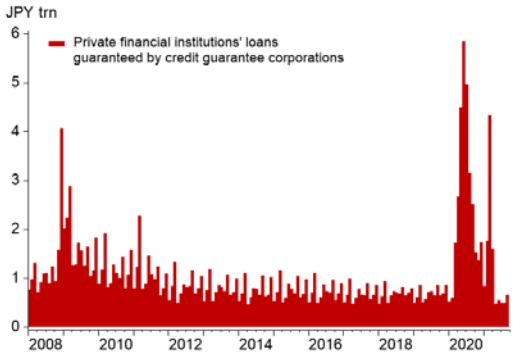
Source: BOJ; Haver Analytics

[2] The BOJ clarified that 10-year JGB yield fluctuations would range between around plus and minus 0.25 percent from the target level of around zero percent, in order to conduct the YCC policy flexibly in normal circumstances.

A.3 Monetary Condition and Financial Sector

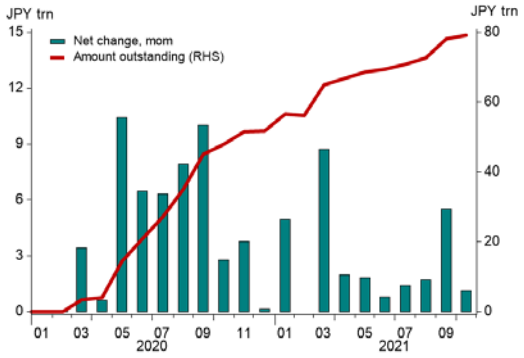
7. Financial conditions have been accommodative in support of the economy since the outbreak of the pandemic, while the BOJ has made some policy tweaks. In response to the COVID-19 pandemic, in April 2020, the government swiftly provided financial support to the corporate sector, including interest-free loans without collateral[3] through policy banks and commercial banks. The government also provided eligible small and medium-sized enterprises (SMEs) with a reduction in or exemption from loan guarantee fees for the entire loan period (Figure 9). Further, the BOJ strengthened liquidity support for corporate financing, mainly through a Special Program that included the central bank's expanded purchases of commercial papers and corporate bonds, and a zero-interest lending program for commercial banks to support firms affected by the pandemic (Figure 10). During the period from May 2020 to March 2021, bank lending grew sharply by 5-6 percent (yoy), mainly driven by a surge in precautionary borrowing by corporates, and reflecting strong financial and liquidity supports from the government and the BOJ. Since then, growth in bank lending gradually slowed, reflecting the reduction in corporates' financing needs, falling sharply to 0.5 percent (yoy) in November 2021 due to base year effect. That said, adverse impacts of COVID-19 on financial conditions were uneven across sectors. In particular, firms in the sectors of accommodation, catering, food and beverage services, and individual services, continued to perceive their financial positions as being tight amid recurrent waves of infection and containment measures.

Figure 9. Newly Accepted Amounts of Credit Guaranteed Loans



Source: Japan Federation of Credit Guarantee Corporations; Haver Analytics

Figure 10. BOJ Special Funds-Supplying Operations to Facilitate Financing in Response to COVID-19



Source: BOJ; Haver Analytics

8. In March 2021, the BOJ conducted an assessment of the need for further effective and sustainable monetary easing. The BOJ determined that it should continue with monetary easing in a sustainable manner and take nimble and effective responses if necessary. To this end, the BOJ announced several policy actions, including a clarification that fluctuations in long-term interest rates should range between ± 25 basis points. The central bank also abolished the guideline of about JPY6 trillion for the annual purchase of exchange-traded funds (ETFs) while maintaining the upper limit of JPY12 trillion, and introduced a new interest rate scheme to offer

[3] Under this program, SMEs with a temporary revenue decline due to the pandemic are eligible to take out loans of up to JPY60 million with a maximum duration of 10 years and the option to defer principal repayments by up to 5 years.

incentives to financial institutions, whereby the interest paid is linked to the short-term policy interest rate.

9. The overall financial system remains stable, although financial institutions may face some pressures from rising credit risks. Overall, the banking sector has sufficient liquidity and capital buffers, both well above the regulatory requirements (Table 1). The non-performing loan (NPL) ratio inched up from 1.1 percent in March 2020 to 1.2 percent in March 2021, with a slight increase in "doubtful" and "special attention" loans. In response, banks' loan loss provisions increased against a potential worsening of borrowers' credit conditions. In terms of profitability, most banks, particularly regional ones, continue to see low returns on assets. That said, net income improved in FY2020 on the back of cuts in administrative expenses and an increase in interest margins, underpinned by rapid loan growth.

Table 1. Selected Financial Soundness Indicators

	(End-of-period, in percent)	2018Q1	2018Q3	2019Q1	2019Q3	2020Q1	2020Q3	2021Q1
Capital adequacy	Regulatory Capital to Risk-Weighted Assets	17.1	17.0	17.2	17.3	16.4	16.9	16.6
	Regulatory Tier 1 Capital to Risk-Weighted Assets	14.9	14.8	15.1	15.1	14.4	14.8	14.6
	Non-performing Loans Net of Provisions to Capital	7.6	7.4	7.6	7.8	8.2	8.4	8.8
Asset quality	Non-performing Loans to Total Gross Loans	1.1	1.1	1.1	1.1	1.1	1.1	1.2
Profitability	Return on Assets	0.2	0.3	0.1	0.2	-0.1	0.2	0.1
	Return on Equity	5.4	7.3	2.3	6.1	-1.3	4.5	3.5
	Interest Margin to Gross Income	62.2	60.8	70.4	56.8	60.3	60.1	63.5
	Non-interest Expenses to Gross Income	69.0	64.5	82.7	66.2	73.5	67.7	70.7
Liquidity	Liquid Assets to Total Assets (Liquid Asset Ratio)	29.6	29.3	29.4	28.9	29.5	32.5	34.4
	Liquid Assets to Short Term Liabilities	49.9	49.4	49.2	47.8	47.4	50.7	52.6
Other indicators	Total Loans (non-interbank) to Customer Deposits	71.7	72.2	71.7	72.1	71.9	69.4	67.8
	Corporate Loans to Total Gross Loans	35.8	35.7	35.9	35.8	35.0	37.8	37.7
	Residential Real Estate Prices	1.6	1.8	2.3	1.2	-0.4	-0.1	3.3
	Commercial Real Estate Prices	4.1	3.6	0.7	0.5	-0.6	-5.4	1.3

Source: IMF Financial Soundness Indicators (FSI) Database; Haver Analytics

A.4 Fiscal Sector

10. The fiscal deficit widened sharply in FY2020 as a result of massive stimulus packages amid the pandemic. In response to COVID-19, the government launched unprecedented large economic stimulus packages in FY2020 (Table 2, Figure 11). Despite the pandemic, tax revenues increased moderately in FY2020, mainly driven by an increase in consumption tax receipts due to the rate hike from 8 percent to 10 percent in 2019. Corporate tax revenue also increased as corporate earnings, particularly of large corporates, rebounded strongly after 2020 Q3, supported in part by the global economic recovery. Meanwhile, government spending spiked up on the back of the three supplementary budgets, although actual spending reached only about 84 percent of the budgeted amount, partly due to the suspension of the Go-to-Travel campaign and the under-utilization in business and investment promotion measures. The fiscal deficit will likely widen to 11.0 percent of GDP in FY2020 from 3.1 percent in FY2019 (Figure 12). For FY2021, the government announced its largest initial budget of JPY106.6 trillion, including JPY5 trillion for a COVID-19 contingency fund. In November 2021, the government announced another sizable economic stimulus package amounting to JPY78.9 trillion, of which the government spending accounts for JPY49.7 trillion.[4]

[4] Key policy measures include cash payouts for people up to 18 years old (JPY100,000 per head), subsidies for SMEs, extension of employment adjustment subsidy, measures to respond to high oil prices, and resumption of Go-to-Travel campaign.

The fiscal deficit is expected to narrow to 8.6 percent of GDP in FY2021. AMRO estimates that the government debt-to-GDP ratio will increase from 238 percent in FY2019 to 249 percent in FY2020, and further to 258 percent in FY2021.

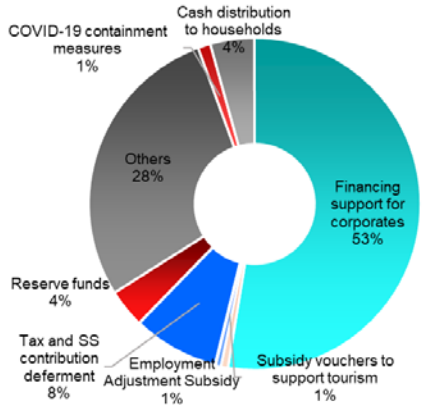
Table 2. Economic Stimulus Measures in FY2019-2021

(Unit: JPY trillion; % of GDP)

Fiscal Year	Economic Stimulus Packages	Project Scale	Fiscal Expenditure		Others
			Central & Local gov't expenses	FILP loans (off-budget lending)	
2019	- Comprehensive Economic Measures (Dec 5, 2019)	19.8	9.8	7.3	2.5	10
	-1st and 2nd rounds of Emergency Measures (Feb 13 & Mar 10, 2020)	2.1	0.5	0.5	0	1.6
2020	- 1st Emergency Economic Measures (Apr 20, 2020)	95.2	38.1	27.5	10.1	57.1
	- 2nd Emergency Economic Measures (May 29, 2020)	117.1	72.7	33.2	39.3	44.4
	- Comprehensive Economic Measures (Dec 8, 2020)	73.6	40.0	32.3	7.7	33.6
2021	- Comprehensive Economic Measures (Nov 19, 2021)	78.9	55.7	49.7	6.0	23.2
	Total	**371.9**	**216.5**	**148.8**	**65.6**	**155.4**
	% of GDP (2020 Fiscal)	69.3	40.3	27.7	12.2	29.0

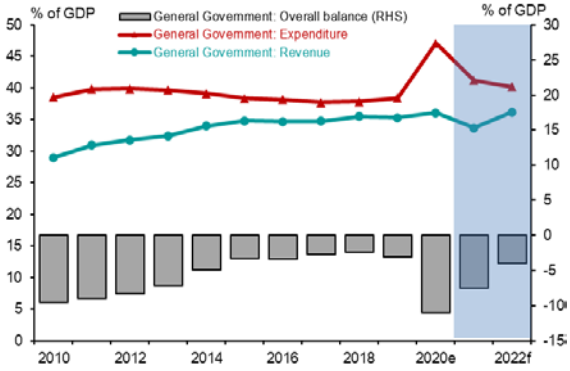
Source: Cabinet Office; JMOF; AMRO staff calculations
Note: Based on the amounts announced by the government; 'Others' item includes financial support via policy banks, deferment of tax and social security contributions, as well as capital investment by private corporations.

Figure 11. Breakdown of Economic Stimulus Packages in FY2019-2020



Source: JMOF; AMRO staff calculations
Note: Based on all Comprehensive Economic Measures and Emergency Economic Measures announced in FY2019-2020.

Figure 12. Fiscal Balance



Source: Cabinet Office; AMRO staff projections
Note: Based on the general government; FY2020 figures are based on AMRO staff estimates; FY2021-2022 figures (shaded area) are based on AMRO staff projections.

11. Economic policies continue to focus on overcoming the COVID-19 pandemic and accelerating structural reforms. In June 2021, the government announced the "Basic Policy on Economic and Fiscal Management and Reform 2021", which placed top priority on overcoming the pandemic. To support robust long-term growth, the government identified four key areas of structural reforms with action plans: i) moving toward a green society through decarbonization, ii) accelerating digitalization in both the private and public sectors, iii) revitalizing regional economies through robust job creation and income growth, and iv) addressing the declining birth rate by offering comprehensive childcare support measures. As for fiscal sustainability, although the government remains committed to the fiscal consolidation target of achieving a primary surplus by FY2025, the target year will be reviewed in FY2021 based on the government's assessment of COVID-19 impacts on the macroeconomic and fiscal situation.

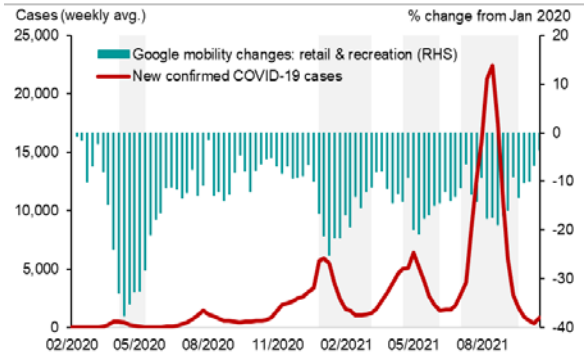
B. Risks, Vulnerabilities and Challenges

B.1 Near-term Risks to the Macro Outlook

12. The Japanese economy is confronted with several near-term risks, including recurrence of COVID-19 infections and supply chain disruptions. Key risks and vulnerabilities (Figure 15) include:

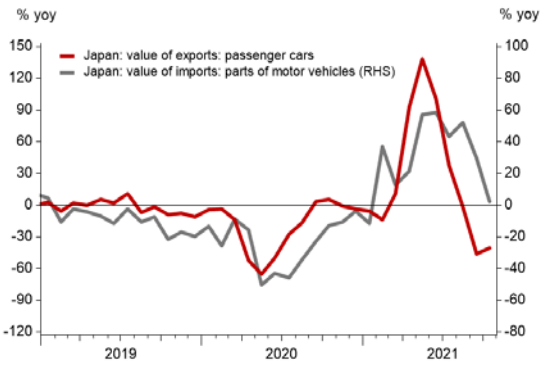
- **Repeated waves of the pandemic.** Recent experiences show that the virus is becoming endemic and more recurrent waves of the virus infection are likely given the continuing mutation of the virus, which will continue to significantly affect economic activities at home and abroad (Figure 13). This could, in turn, lead to further postponement of Japanese firms' investment decisions while impairing labor market conditions and SME operations, particularly in the services sector. Delayed economic recovery may continue to put downward pressure on the prices of goods and services, while dampening the inflation expectations of both households and firms.
- **Prolonged global supply chain disruptions and bottlenecks.** In 2021, Japanese automakers suffered from global semiconductor shortages. Furthermore, recurrent waves of infection in ASEAN countries led to parts suppliers' closing their factories, which resulted in Japanese automakers cutting back on their annual production schedules (Figure 14). Sustained global supply constraints, particularly of semiconductors, will adversely affect Japanese manufacturers' production and exports (see Box A. *Japan's Supply Chain Disruptions and Responses during COVID-19*).
- **Corporate insolvency risks mainly from SMEs with low profitability.** During the pandemic, swift and massive financing support from the government and the BOJ helped SMEs better cope with their income shortfall and liquidity crunch. A premature unwinding of the government's special lending programs for SMEs before the pandemic comes well under control could put an upward pressure on the number of bankruptcies, particularly of SMEs with low profitability. This could also have adverse impacts on financial institutions, especially regional banks, in the form of deteriorating asset quality (see Selected Issue 3. *Stress Testing the Resilience of Regional Banks in Japan*).

Figure 13. New COVID-19 Cases and Recreation Mobility



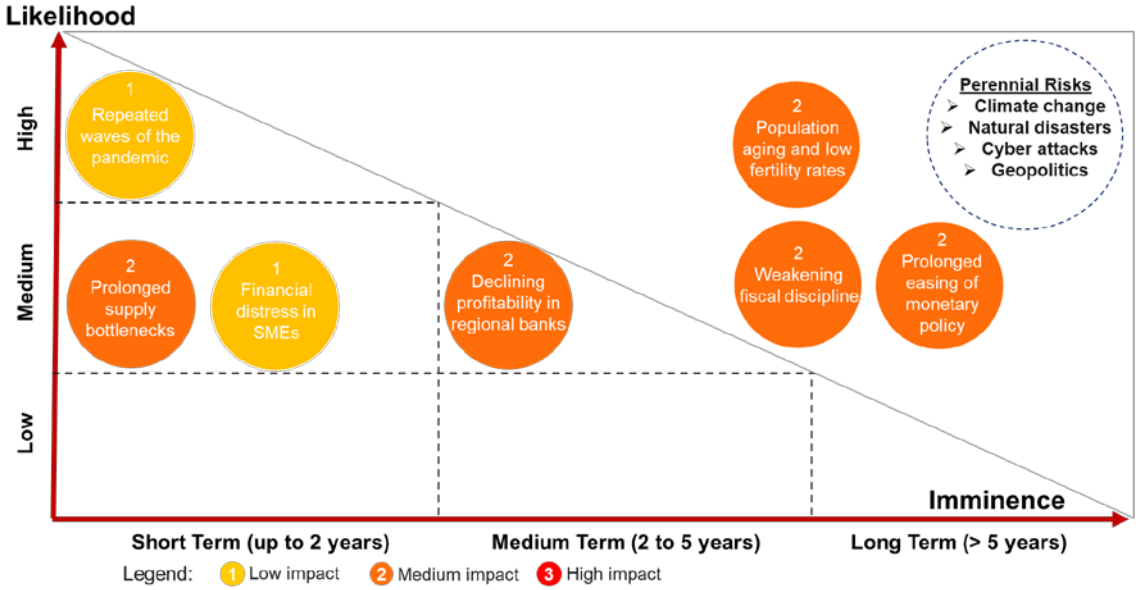
Source: Google LLC; Ministry of Health, Labour and Welfare (MHLW); CEIC

Figure 14. Imports of Auto Parts and Exports of Passenger Cars



Source: JMOF; Japan Tariff Association via Haver Analytics

Figure 15. Japan: Country Risk Map



Source: AMRO staff assessment

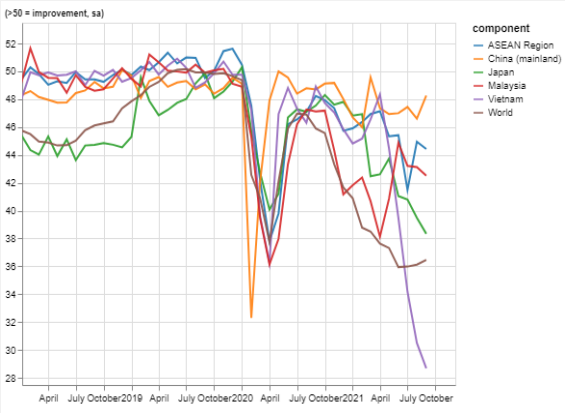
Box A. Japan's Supply Chain Disruptions and Responses during COVID-19[5]

The COVID-19 pandemic has caused significant disruptions in the global supply chain, triggering a debate on resilience that led to a review of existing supply chain strategies. Japanese manufacturers' supply chains have not been spared from the negative impacts arising from the pandemic. In response, some Japanese firms are focusing on short-term enhancements to their supply chains, while others have a longer horizon in mind and are choosing to diversify supply sources or relocate their production facilities. Meanwhile, the Japanese government has also supported Japanese firms in their efforts to deal with supply chain disruptions during the pandemic, in particular, by facilitating their onshoring activities. This could potentially result in a large-scale supply chain reconfiguration that would reduce source dependency amidst concerns about supply chain resilience and economic security in the medium term. This box examines recent developments related to supply chain disruptions and discusses the private sector's adjustments and the government's policy responses.

[5] Prepared by Jerry Xianguo Huang, Economist.

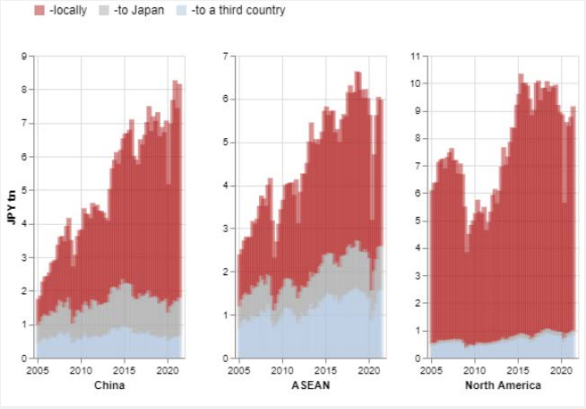
The pandemic containment measures significantly affected Japanese manufacturers' production and operations, with deteriorating supply chain performance. The economic impact on the Japanese firms' production is significant in both their domestic and overseas operations, especially in China and ASEAN. China's lockdown affected Japanese manufacturers locally in 2020 H1, although those spillovers were short-lived due to the Chinese New Year effect, which had led to front-loading of manufacturing activities before COVID-19 started, and also because of the country's quick recovery and government support. According to survey data from the Japan Bank for International Cooperation (JBIC), large-scale lockdowns in April-May 2020 globally had a significant impact on Japan's supply chains. Although the country was able to recover somewhat in 2020 H2, recurrent waves of infection in various countries, primarily due to the Delta variant in several ASEAN economies – such as the spike in Malaysia and in Vietnam starting from 2021 Q2 – have had a significant and lasting negative impact on the delivery performance of supply chains (Figure A1). Japan has substantial local manufacturing activities and sales in these countries, and some locally produced goods have been exported back to Japan. Local disruptions caused by the pandemic have resulted in spillover effects on Japan (Figure A2).

Figure A1. Supplier's Delivery Times Index



Source: HIS Markit

Figure A2. Japanese Overseas Manufacturers' Sales by Destination



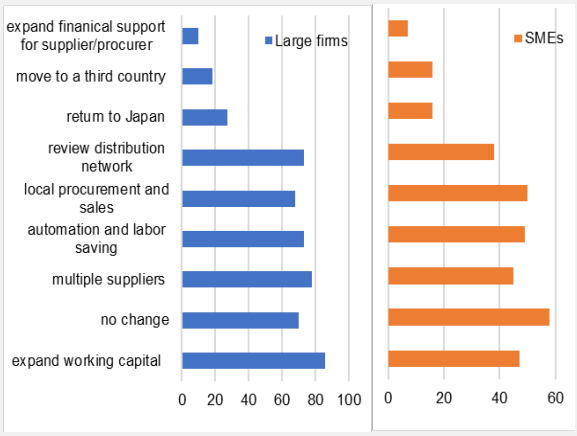
Source: Ministry of Economy, Trade and Industry

COVID-19 has also increased uncertainty for business planning amidst rising logistic costs. Logistics require advance planning and prediction of demand management, which has been very challenging in such an uncertain environment under the pandemic. For instance, wrong projections of chip demand—together with other causes such as temporary suspension of chip production in Texas stemming from severe weather conditions and power shortage of chip factories in China — have led to the ongoing chip shortages in the automotive sector. In addition, disruptions caused by COVID-19 in 2021 in ASEAN – a manufacturing base for automotive parts – have made it more difficult for Japanese automakers to secure timely supplies of components, leading to lower production than targeted.[6] On the other hand, strong demand and port congestions have driven up international transport costs. In September, the price index of ocean freight transport spiked by 34.9 percent (yoy) while air freight was up 28.5 per cent.

While the pandemic has forced businesses to rethink their existing supply chain strategies, so far most companies remain focused on improving the resilience of their current supply chains through diversification and not only on boosting or relocating their production facilities in the short term. In general, economic factors, including labor costs, infrastructure, and the market size of the trading partners, have been the key drivers of foreign direct investment and international sourcing thus far. COVID-19 and the associated costs of disruptions it inflicts on supply

[6] Japanese auto makers announced reducing global production, with Suzuki cutting its vehicle output by 350,000, Toyota by 300,000 vehicles, Nisan by 250,000, and Honda by 150,000.

Figure A3. JBIC Survey



Source: Japan Bank for International Cooperation

Figure A4. Programs for Promoting Investment in Japan and Strengthening Overseas Supply Chains

	Application		Finalized	
Date	Number	JPY bn	Number	JPY bn
Program for Promoting Investment in Japan				
Jul 2020	90	99.6	57	57.4
Nov 2020	1679	1760	146	247.8
Jul 2021	280	311.8	151	209.5
Total	2049	2171.4	354	514.7
Program for Strengthening Overseas Supply Chains				
Jul 2020	124	-	30	-
Nov 2020	64	-	21	-
Dec 2020	155	-	30	-
Mar 2021	38	-	11	-
Total	381		92	35

Source: Ministry of Economy, Trade and Industry

chains have caused businesses to rethink the resilience of their business operations. According to a JBIC survey on reinforcing supply chains, larger firms would more likely respond by increasing their own buffers through expanding working capital or increasing suppliers and reviewing the existing network. In comparison, smaller firms are less likely to change or strengthen their supply chains through local sources and sales (Figure A3). Most companies would prefer not to make significant changes such as relocation amidst uncertainties across the world. However, among those choosing to do so, more would prefer returning to Japan to moving to a third country, especially those in the electronics, chemistry, and automobile sectors.

Overseas Japanese manufacturers, which could optimize their operations through relocation, have been able to take advantage of the government policy efforts to enhance supply chain resilience via relocation, particularly by onshoring back to Japan. A government program to promote investment in Japan was initially packaged as part of COVID-19 support measures, focusing on health-related applications, and later expanded to broader sectors, covering electric cars and semiconductors. It provided a total of JPY514 billion of financial incentives to Japanese manufacturers to build new plants and other facilities in their home country in order to strengthen supply chains. Policy efforts to attract more foreign investment into strategic areas to enhance supply chain resilience have also been ongoing, including building more chip production facilities in Japan. At the same time, a separate government program to support diversification to ASEAN countries, was also implemented at the same time but on a smaller scale, with a total 381 applications in four rounds and 92 selected as of March 2021, valued at around JPY35 billion (Figure A4).

B.2 Longer-term Challenges and Vulnerabilities

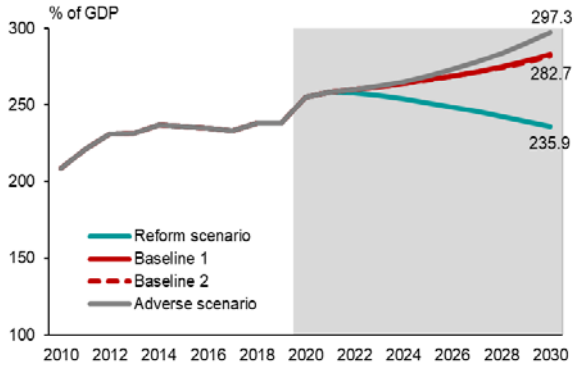
13. Structural challenges include weakening fiscal discipline, side effects from prolonged monetary easing, the declining profitability of regional banks, and demographic drag from population aging and low fertility rates.

- **Weakening fiscal discipline.** Japan's economic stimulus packages to combat the pandemic have made its long-term fiscal consolidation plan more challenging. Government spending tends to remain elevated once it is expanded as seen in the post-GFC period. The government's strong capacity to finance debt, its strong external position, and the low interest rate environment continue to support the maintenance of Japan's public debt at an exceptionally high level. That said, the roll-out of large-scale economic stimulus packages

in FY2020-2021 has raised Japan's government debt level further and made the authorities' fiscal consolidation plan to achieve the primary balance surplus by FY2025 even more unattainable. Protracted fiscal deficits could lead to a weakening of fiscal discipline and raise concerns on Japan's fiscal sustainability in the medium-term in the face of increasing social security spending amid the aging population (Figure 16; see Selected Issue 1. *Japan's Sovereign Rating in the Post-pandemic Era*).

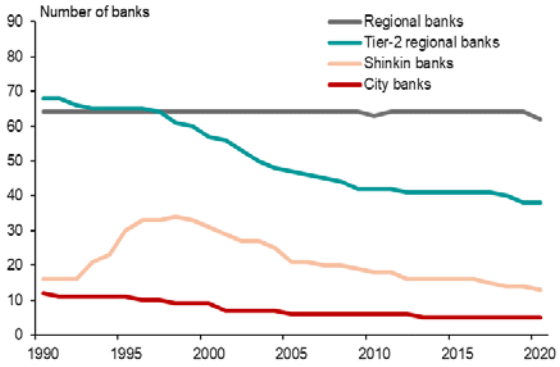
- **Side effects from prolonged monetary easing.** Despite ultra-easy monetary policy stance, consumer price inflation has remained weak and has heightened the risk of deflation. Narrow interest margins and flattened yield curves under the YCC policy, in addition to demographic challenge, have led to declining profitability in financial institutions. As a result of the extended asset purchase program, the BOJ holds about 48 percent of JGBs[7] and 7 percent of stock market capitalization. This could in turn hamper the price discovery function of the JGB and stock markets, and hinder corporate governance improvements in many of Japan's leading companies whose shares are held to a significant extent by the BOJ. Even though the BOJ allows asset management firms to exercise voting rights instead, such a practice may still undermine effectiveness of the board of directors if the BOJ is a passive shareholder and the companies are under less pressure to pursue business reforms for the interest of their shareholders.

Figure 16. Long-term Projections of Government Debt



Source: Cabinet Office; AMRO staff projections
Note: See Selected Issue 1 on the scenario assumptions and other details.

Figure 17. Changes in Number of Japanese Banks



Source: Deposit Insurance Corporation of Japan

- **Declining profitability of regional banks.** Regional banks have suffered declining profitability, a shrinking customer base and an inability to adapt to more cost-effective operation models amid demographic changes. Over the past three decades, the total number of regional banks has decreased by about 25 percent, mainly among second-tier banks. That said, the number of the first-tier regional banks, which tend to be large, has remained almost unchanged, only declining from 64 in 1990 to 62 in 2020 (Figure 17). If the current trends continue, the financial excess will intensify in most prefectures.[8] Amid intensifying competition, some small and medium-sized regional banks that rely highly on

[7] Based on JGBs outstanding, excluding T-Bills, as of end-June 2021.
[8] A recent study by the Japan Center for Economic Research indicates that the degree of financial excess, or over-banking, as measured by business scale, competitive environment, and inefficiency, is more significant in rural areas. See JCER (2021), "Realignment of Regional Banks Accelerated by COVID-19" (https://www.jcer.or.jp/english/realignment-of-regional-banks-accelerated-by-covid-19).

lending to local businesses may face greater difficulties in improving their profitability and asset quality.

- **Demographic drag from the population aging and low fertility rates**. Japan's demographic changes have been a major cause of labor shortage, which will continue to dampen the growth potential. Expanding social security-related expenditures, including medical and long-term care spending, would pose a risk to fiscal sustainability. Furthermore, a declining trend in fertility rate has accelerated since 2016. While the long-term impact of the pandemic is not yet clear, the number of new births is expected to decline sharply in the short term, mainly due to greater health concerns (see Box B. *COVID-19's Impacts on Birth Rate*).

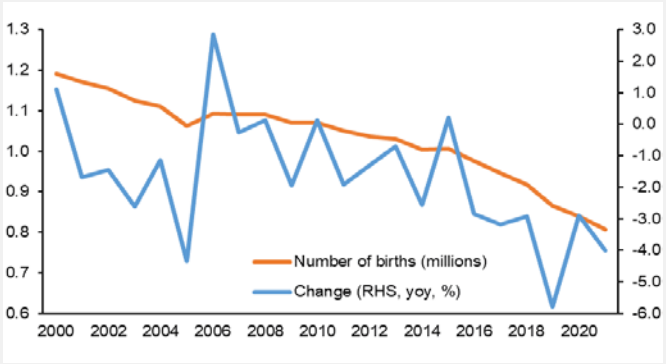
Authorities' Views

14. The Japanese authorities broadly agree with the risks, vulnerabilities and challenges presented above, but with some reservations. In the assessment conducted in March 2021, the BOJ clarified the range that 10-year JGB yield can fluctuate, aiming to strike a balance between maintaining market functioning and controlling interest rates. Regarding the ETF purchases, the BOJ views that they remain effective, while it takes note of some points including side effects on corporate governance, especially when the amount of ETF holdings increases further. More concretely, the voting rights in ETF component firms are to be exercised appropriately by asset management companies that have accepted the Stewardship Code, thereby exerting management discipline. In March 2021, the BOJ revised the guideline of ETF purchases based on the finding that large-scale purchases during times of market stress are effective. It also decided to only purchase ETFs tracking the TOPIX (an index with the largest number of component stocks), after several amendments to increase their weights, to avoid distortionary impacts on individual stocks as much as possible. Furthermore, regarding the impacts on the BOJ's balance sheet, the BOJ shall record provisions for possible losses in case the total market value of ETFs purchased falls below their book value. These measures duly help alleviate the side effects that AMRO has pointed out.

Box B. COVID-19's Impacts on Birth Rate[9]

The number of births each year in Japan, which has been in gradual decline, dropped sharply since 2016. The annual birth rate in the country has recorded a quickened pace of decrease since 2016 (Figure B1) amid a shrinking female population of childbearing age, of between 15 and 45 years old (Table B1). This trend is led by the baby boomers' children who were born between 1971 and 1974, becoming 45 or older by 2020. As a result, the rate of decline in the annual birth rate has accelerated in the last decade, more than doubling from -1.3 percent in 2011-2015 to -3.5 percent in 2016-2020.

Figure B1. Number of Births



Source: MHLW; National Institute of Population and Social Security Research (NIPSSR); AMRO staff projections
Note: The 2021 birth data is a projection that takes into account the number of pregnancy notification.

Table B1. Female Population by Age Group

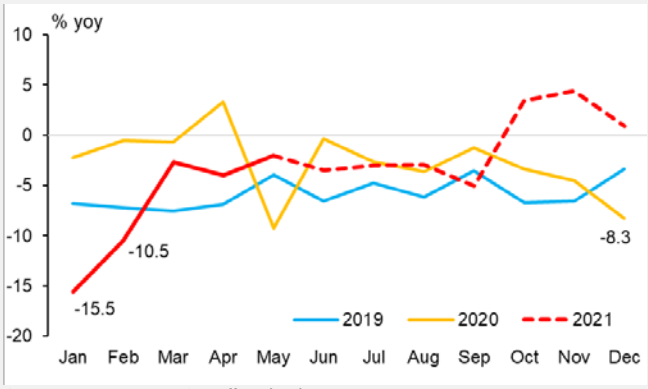
(thousand)

Age group	2000	2005	2010	2015	2019
15 - 19	3,659	3,204	2,966	2,921	2,868
20 - 24	4,120	3,607	3,344	3,018	3,075
25 - 29	4,831	4,095	3,656	3,235	3,005
30 - 34	4,346	4,837	4,191	3,654	3,380
35 - 39	4,024	4,347	4,811	4,237	3,769
40 - 44	3,881	4,027	4,271	4,852	4,440
45 - 49	4,454	3,869	3,918	4,294	4,803

Source: MHLW

COVID-19 took a heavy toll on child-birth in Japan in early 2021. The number of births in 2021 will probably fall by 4 percent in 2021, larger than the five-year average since 2016. In particular, the number of births dropped significantly during December 2020 to February 2021 (Figure B2). For babies who were born during this period, the timing of their mothers' pregnancy overlaps with the first wave of COVID-19 in 2020 and the first state of emergency in Japan (Table B2). This drop reflects the socio-economic impacts arising from the pandemic during the first wave of COVID-19, in addition to the existing factors such as the declining trend that is due to demographic changes in the female population of childbearing age.

Figure B2. Changes in Monthly Number of Births



Source: MHLW; AMRO staff projections
Note: Forecast figures in June 2021 and beyond, based on pregnancy reports.

Table B2. Declarations of State of Emergency in Japan (Tokyo)

	Length	From	To	Year	9 monts later
1	49 days	7-Apr	25-May	2020	Dec.2020-Feb. 2021
2	73 days	8-Jan	21-Mar	2021	Oct.-Dec. 2021
3	57 days	25-Apr	20-Jun	2021	Jan. 2021-Mar. 2022
4	81 days	12-Jul	30-Sep	2021	Apr.-Jun. 2022

Source: Cabinet Office

That said, the sharp drop in birth rate could be partly eased, as the number of new-borns is likely to rebound modestly in late 2021. The number of births fell sharply in early 2021, but are

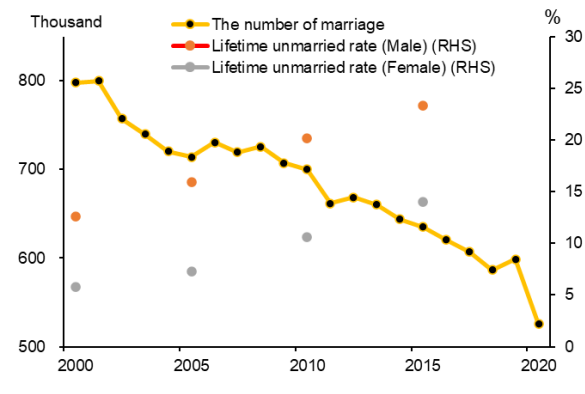
[9] Prepared by Kana Yoshioka, Economist, with contributions by Takashi Yonemura, Associate Researcher.

forecast to recover in the fourth quarter despite several waves of infection this year, which bodes well for fertility going forward. This implies that the sharp decrease recorded early in the year may be a one-off shock and that the number of births in the first half of 2022 will likely be higher than the corresponding period in 2021. This could partly ease another sharp drop in birth rate in 2021, however, the long-term impacts stemming from the recurrent waves of COVID-19 warrant continued monitoring, considering the anaemic economic recovery under the prolonged state of emergency in 2021.

Overall, the total number of births in 2021 will likely hit another record low. According to pregnancy data in the first half of 2021, the number of births is likely to increase in the latter half of 2021 and hence, the change in number of births (yoy) might turn positive at the end of the year (Figure B2). This might partly offset the sharp drop in the number of births observed in early 2021; however, the total number of births in 2021 will very likely hit another record low despite a pick-up in the number of marriages in 2019 (Figure B3).

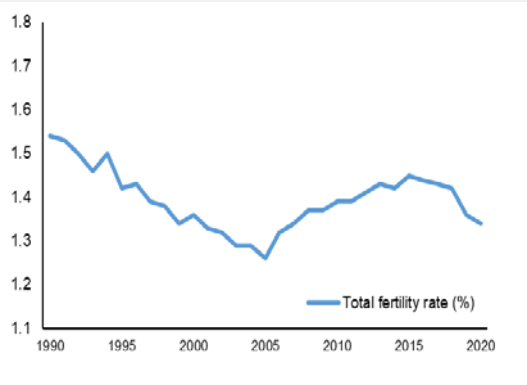
In the medium term, the gradual downward trend in the number of births is expected to continue due to the declining fertility rate and number of marriages. Based on the recent declining trend in total fertility rate (Figure B4) and the shrinking female population of childbearing age, the number of births will likely keep decreasing in the medium term at the current pace. A declining trend in number of marriages, including a modest recovery in the first half of 2021 after a sharp drop in 2020, also suggests a sluggish recovery for birth numbers after 2022. In the medium term, as the one-off but significant shock due to the pandemic will likely decrease the total number of births in 2021 substantially, medium-term demographic forecasts should be reviewed to incorporate this drop, which may further widen the existing gap between forecast and actual numbers (Figure B5).

Figure B3. Number of Marriages and Lifetime Unmarried Rate



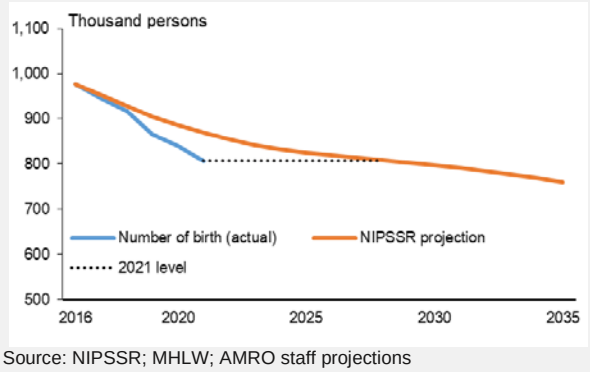
Source: MHLW

Figure B4. Total Fertility Rate



Source: MHLW

Figure B5. Long-term Projection of the Number of Births



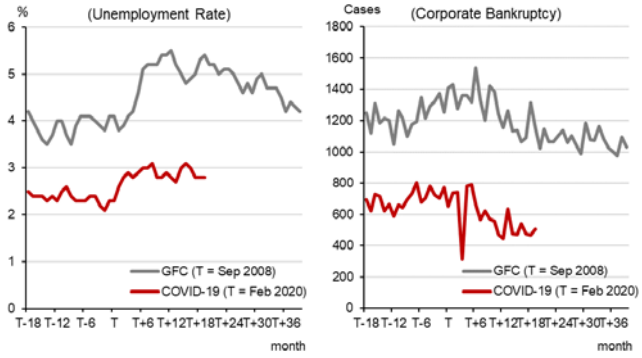
Source: NIPSSR; MHLW; AMRO staff projections
Note: NIPSSR projection was prepared in 2017.

C. Policy Discussions and Recommendations

C.1 Restoring Fiscal Sustainability

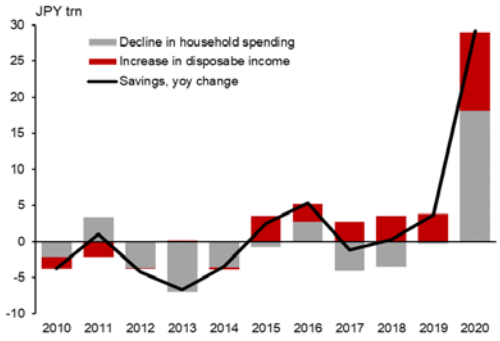
15. Fiscal policy should remain supportive of the economy in the short term, with targeted measures for hard-hit sectors. Economic relief packages to support those affected by the pandemic should be continued in the short run. The government expanded its employment adjustment subsidy programs in the early phase of the pandemic, which was highly effective in relieving strains in the labor market (Figure 18). The government's swift and massive financing support programs, including interest-free loans, also contributed to mitigating liquidity stress in the corporate sector. In contrast, the government's universal cash handout program to all households has not boosted private consumption significantly, but has resulted in a spike in household savings in 2020 (Figure 19). Going forward, rather than providing universal supports to all households, it would be more efficient to roll out well-targeted spending measures for vulnerable households and hard-hit businesses in the services sector so as to enhance the efficacy of the packages and conserve fiscal resources. In order to identify the needy beneficiaries in a timely manner, the authorities should promote a broader use of the newly adopted tax identification numbers ("My Number") system and establish a highly integrated information technology (IT) system to expedite information sharing among the central and local governments.

Figure 18. COVID-19 Impacts on Labor Market and Corporate Sector



Source: Ministry of Internal Affairs and Communications; Tokyo Shoko Research; Haver Analytics

Figure 19. Changes in Household Savings

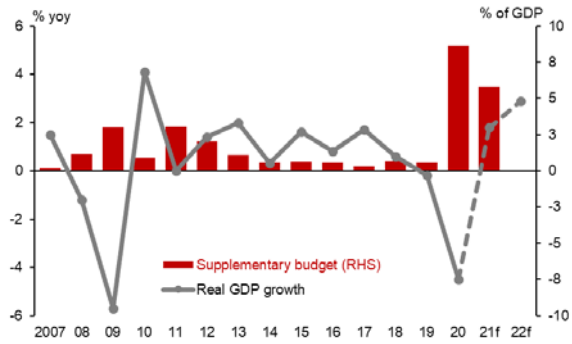


Source: Cabinet Office; AMRO staff calculations

16. The overall size of the supplementary budget for FY2021 is exceptionally large and not fully warranted, given the anticipated economic recovery. The use of supplementary budget has recently become a common practice in Japan. That said, the scale of the supplementary budget should be commensurate with the magnitude of economic downturns. For instance, large stimulus packages were needed during 2008-2009 (Global Financial Crisis), 2011 (Great East Japan Earthquake), and 2020 (COVID-19 pandemic). Given that Japan's COVID-19 infection rate is well under control and the economy is expected to rebound more robustly in 2022, the size of the current supplementary budget, equivalent to nearly 6 percent of GDP, appears to be larger than warranted (Figure 20). In terms of the composition, it is commendable to allocate a significant share of the supplementary budget to the hard-hit sectors such as restaurants and other small businesses, which cooperated in

shortening their business hours (Table 3). However, the supplementary budget still contains some elements of universal supports, such as cash handouts to households with children. The carry-over of the FY2020 budget to FY2021 has been steadily executed, but improvements in the expenditure process, such as more frequent monitoring of the progress of budget execution, could be considered. The Additional supplementary budgets for FY2021 should not be taken for granted without careful consideration of its contents and effects.

Figure 20. Real GDP Growth and Total Size of Supplementary Budgets



Source: JMOF; AMRO staff estimation
Note: Real GDP figures for 2021-2022 are based on AMRO projections.

Table 3. Composition of Supplementary Budget Proposal for FY2021

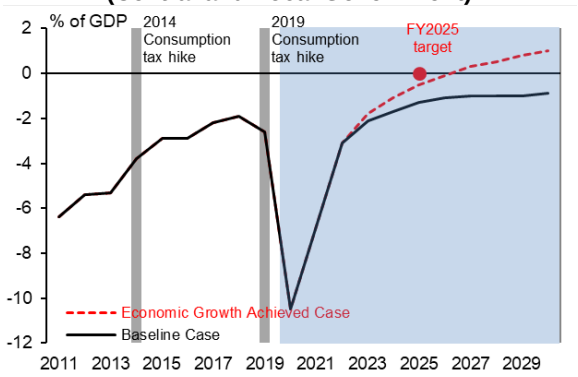
Key item	JPY tn
I. Containment measures for COVID-19	**18.6**
1. Securing the medical treatment system, etc.	4.5
2. Support for business	9.4
3. Support for daily life and livelihood	4.5
4. Measures against soaring energy prices	0.1
II. Resumption of socioeconomic activities in the "Living with COVID" era	**1.8**
1. Resumption of socioeconomic activities with ensured safety and relief	0.8
2. Fundamentally strengthening contingency plans for infectious diseases	0.9
III. Lauching a "New Form of Capitalism"	**8.3**
1. Growth strategy	6.3
2. Distribution strategy	2.0
IV. Securing safety and relief with respect to disaster management	**2.9**
Total additional spending of the supplementary budget	**31.6**

Source: JMOF; AMRO staff calculations

17. The government should begin preparations immediately for a new medium-term fiscal consolidation plan, which takes into account the additional fiscal burdens arising from the pandemic, in order to ensure long-term fiscal sustainability. In 2018, the government had set intermediate benchmark indicators for the interim period FY2019-2021 that it hoped to achieve before reaching a primary surplus by FY2025 (Figure 21). However, the COVID-19 pandemic outbreak in 2020 has derailed the plan by forcing the government to roll out massive fiscal stimuli in FY2020-2021 to mitigate the economic fallouts from the containment measures. The latest wave of pandemic has subsided in recent weeks although there is significant risk of a resurgence of the infection, especially with the emergence of a new variant Omicron which appears to be more infectious. Nevertheless, the government should begin reviewing the old medium-term fiscal consolidation plan and preparing a new one based on realistic macroeconomic assumptions and projections. Given the snowballing demand for government spending to mitigate the impact of the COVID-19 pandemic, combined with rising social security expenses, enhancements are needed to improve oversight of the budget and the government's compliance with medium- to long-term fiscal targets. In this regard, the establishment of an independent fiscal institution may be considered so that long-term fiscal projections and interim targets could be critically assessed and analyzed by a non-partisan, third party with greater transparency (see Box C. *Establishment of an Independent Fiscal Institution in the Context of Japan*). In line with Japan's advanced economy peers (Table 4), the Japanese government should immediately start contemplating how to repay the additional debt from the pandemic spending (Figure 22). Launching a special account could be one way of separating

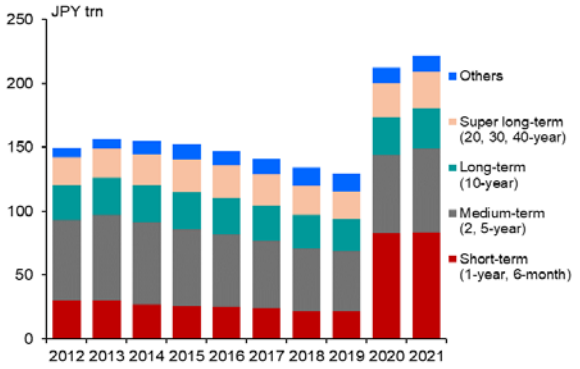
the pandemic-related expenditures and financing them through surtaxes or other revenues, similar to the Special Account for Reconstruction from the 2011 Great East Japan Earthquake.[10]

Figure 21. Primary Balance (Central and Local Government)



Source: Cabinet Office (July 2021)
Note: Based on the central and local governments, excluding the fiscal resources for recovery and reconstruction measures.

Figure 22. JGB Market Issuance by JGB Type



Source: JMOF
Note: Up to FY2020, the figures are based on supplementary budgets; FY2021 figures are based on the initial budget.

Table 4. Medium-term Fiscal Consolidation Strategies from Selected Advanced Economies

Country	Focus of Fiscal Consolidation	Key Policy Measures	Latest Projections for Overall Fiscal Balance
Japan	• Fiscal consolidation target	• The government maintains the fiscal consolidation target of achieving a primary surplus by FY2025, which was reconfirmed in January 2022 by reviewing the impact of the COVID-19 pandemic on the economy.	-10.2% (2020) → -8.9% (2021) → -0.9% (2025) → -0.1% (2030)
France	• Gradual expenditure containment	• The government aims at limiting annual growth of public expenditure to 0.7% between 2022 and 2027.	-9.2% (2020) → -9.0% (2021) → -2.8% (2027)
Germany	• Fiscal rule	• The debt brake rule (Schuldenregel), which caps the federal government's net borrowing at 0.35% of GDP, will be re-applied from 2023 after the temporary suspension since 2020 due to the pandemic.	-4.2% (2020) → -9.0% (2021) → 0% (2025)
UK	• Tax revenue mobilization	• In April 2023, the main rate of corporate income tax will increase from 19% to 25%. • The government will take new steps to tackle tax avoidance and evasion that will raise GBP 2.2 billion by 2025-2026.	-17.1% (2020/21) → -10.6% (2021/22) → -3.1% (2025/26)
US	• Tax revenue mobilization	• The government aims to reduce deficits in the long run through tax reforms, in particular, by including corporate tax on large enterprises, and taxes on capital gains and dividends for the wealthy.	-14.9% (2020) → -16.7% (2021) → -5.5% (2025) → -4.7% (2031)

Source: Cabinet Office Japan (Basic Policy on Economic and Fiscal Management and Reform 2021); France Ministry of the Economy and Finance (France Stabilisation Programme 2021); Federal Ministry of Finance Germany (German Stabilisation Programme 2021); UK Office for Budget Responsibility (Budget 2021); US Office of Management and Budget (Budget of the US Government Fiscal Year 2022); AMRO staff compilations

18. The medium-term fiscal consolidation plan should prioritize containing social security expenditure, while raising tax revenues post-pandemic. To mitigate fiscal costs of population aging, the trend increase in social security-related spending, in particular, medical and long-term care benefits, needs to be contained. In this regard, the government's plan to

[10] In 2011, the government established a Special Account for Reconstruction from the Great East Japan Earthquake. Under this account, all spending programs were time-bound and funded by government-issued reconstruction bonds, whose redemption would be financed by a combination of temporary surtaxes and the sale of government assets. The surtaxes added 2.1 percent to each taxpayer's (national) income tax liability for 25 years and JPY1,000 to the local inhabitants' tax for 10 years. Under this scheme, the entire reconstruction debt is expected to be paid off by 2037 (Morinobu, S. (2021), "Fiscal Management Lessons from the Great East Japan Earthquake", Tokyo Foundation for Policy Research).

raise out-of-pocket medical fees for people over 75 years old with high income (from 10 percent to 20 percent of their medical expenses) is commendable. Over-treatment tendency in private clinics should be closely monitored to control ballooning medical costs. Continued efforts to mobilize tax revenues are warranted. The 2019 consumption tax hike from 8 to 10 percent has played a pivotal role in avoiding a large shortfall in tax revenues during the pandemic. This highlights the need for further raising the consumption tax rate to over 10 percent in the medium term. Increasing the environment tax, including by introducing a carbon tax, would yield more tax revenues and, at the same time, support the government's target to achieve carbon neutrality by 2050. Furthermore, there is room to review excessive preferential tax treatment for property tax; for instance, land with residential structures is taxed at a lower rate, which discourages the demolition of vacant houses.

Authorities' Views

19. The sizable carry-over budget from FY2020 will be steadily executed in FY2021 in accordance with the purpose. The financial support for COVID-19 measures in the FY2020 supplementary budget was to ensure that sufficient funds would be available to provide uninterrupted support to people and businesses affected by the COVID-19. The carry-over of about JPY30 trillion will be steadily executed according to the purpose of the carry-over in FY2021. Any supplementary budget for FY2021, if prepared, would be separated from the carry-over budget.

20. The authorities (Cabinet Office) do not consider that the establishment of an independent fiscal institution is necessary. Currently, the government discusses economic and fiscal management at the Council on Economic and Fiscal Policy, which consists of external experts who are knowledgeable in economic and fiscal issues and are neutral and unbiased. Based on the Council's discussion, the government makes economic and fiscal projections for medium- to long-term analysis. At the Council, the government also discusses the basic policy of budget formulation, the fiscal consolidation target, policies to achieve the target, and the assessment of progress among other issues. Hence, the Cabinet Office is of the view that the Council should continue to play a leading role.

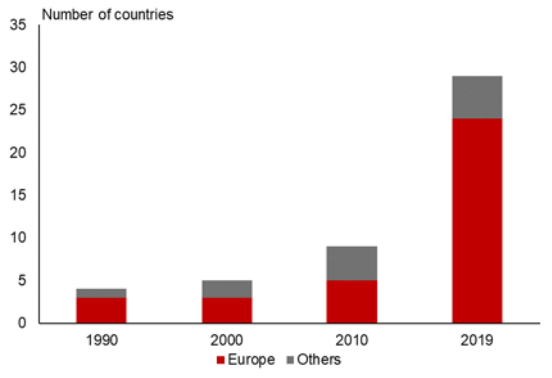
Box C. Establishment of an Independent Fiscal Institution in the Context of Japan[11]

Independent fiscal institutions (IFIs) are defined as independent public institutions with a mandate to critically assess, and in some cases provide non-partisan advice on, fiscal policy and performance, according to the OECD (2017).[12] In many countries, IFIs play important roles in making economic and fiscal projections, analyzing the executive's budget proposals, monitoring compliance with fiscal rules and official targets, screening the cost of major legislative proposals, and conducting analytical studies on selected fiscal issues. By doing so, IFIs are expected to exert indirect pressure on the government to comply with fiscal rules by assessing and preparing macroeconomic and fiscal forecasts. IFIs can be pivotal in ensuring transparency and accountability in the government's fiscal management, and enrich the public debate by releasing their analyses in public.

[11] Prepared by Sota Nejime, Associate Researcher.
[12] Lisa von Trapp, and Scherie Nicol. 2017. "Designing Effective Independent Fiscal Institutions". OECD report

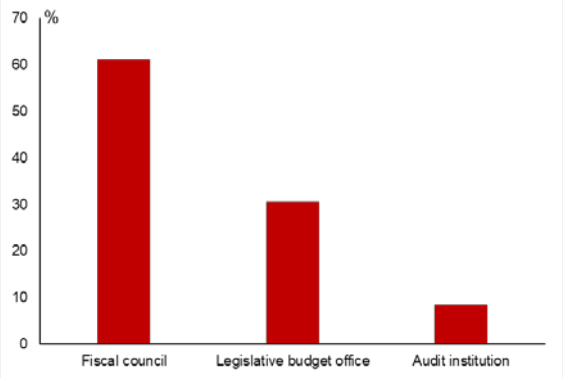
Institutions with the functions of an IFI have been established for decades around the world, and have increased significantly since the 2008 global financial crisis (GFC). Examples of such bodies included the High Council of Finance in Belgium (1936), the Bureau for Economic Policy Analysis in the Netherlands (1945) and the Congressional Budget Office in the U.S. (1974). That said, the importance of IFIs became well recognized after the GFC, a crisis which led to a significant deterioration in the fiscal positions of countries and a renewed awareness of the importance of fiscal discipline. Since then, the number of OECD countries with their own IFIs has increased to 29 in 2019 from nine in 2010 (Figure C1). Although the structure of an IFI differs from country to country, it can be broadly categorized into three models: (i) the fiscal council model, (ii) the parliamentary budget office model, and (iii) other models such as audit institutions (Figure C2).

Figure C1. OECD Countries with IFIs



Source: OECD IFI Database (2019)

Figure C2. Institutional Model in OECD Countries



Source: OECD IFI Database (2019)

Currently, forecasts and analyses of Japan that are related to fiscal policy are conducted separately by several public-sector agencies, each with its own assumptions and frequency of review (Table C1), and these analyses are affected by the government's policy directions. According to Nemoto (2019),[13] these analyses can be roughly divided into three categories. The first one is the Cabinet Office's medium and long-term economic and fiscal forecasts, conducted twice a year. The second is the Ministry of Finance's long-term fiscal sustainability analysis on Japan's public debt balance, although this is examined on an irregular basis. Separately, the projections for social security expenditures, pensions, medical care, nursing care, children and child-rearing are mainly done by the Ministry of Health, Labour and Welfare. The third category is the Board of Audit's ex-post analysis of the fiscal situation, which is described in its annual financial report. All these analyses and evaluations are made for different purposes and based on different assumptions and data at irregular intervals, which produce inconsistencies when they are compared with each other. Moreover, the agencies that conduct the analyses and projections tend to use the results to support the policies they advocate.

Establishing a new IFI can help guide the government's fiscal policy based on objective fiscal projections, and thus ensure fiscal sustainability in the medium term. With this purpose in mind, several international organizations, including the IMF (2016, 2018)[14] and AMRO (2018),[15] have called for the establishment of an IFI in Japan as in other advanced economies. This idea has also drawn the support of some interest groups and politicians in Japan in recent years.[16] An IFI can

[13] Hiroyuki Nemoto. 2019. "The role of independent fiscal institutions in fiscal consolidation - Experience of the Office for Budget Responsibility in the UK and Implications for Japan". Japan Research Institute Review Vol.5, No.66
[14] International Monetary Fund. 2016. "Japan: 2016 Article IV Annual Consultation" IMF Country Report No. 16/267, International Monetary Fund. 2018. "Japan: 2018 Article IV Annual Consultation" IMF Country Report No.18/333
[15] AMRO. 2018. "AMRO Annual Consultation Report Japan - 2018"
[16] Keizai Doyukai, which is a Japanese professional association of independent leading executives, proposed Japan's IFI establishment in 2019. Besides, in June 2021, a bipartisan Diet members' federation commenced with the aim of creating an IFI.

provide objective economic and fiscal forecasts for the medium to long term on a regular basis, which can be used for formulating medium to long-term fiscal consolidation plan. It can also objectively evaluate the government's budget plan and the progress made in fiscal performance.

Table C1. Examples of Analyses on Macroeconomy and Fiscal Policy that are Conducted in Japan

Item	Name	Ministry	Frequency	English
Macroeconomic and fiscal forecasting	Economic Outlook and Basic Stance for Economic and Fiscal Management	Cabinet Office	Twice a year	Yes
	Economic and Fiscal Projections for Medium- to Long-term Analysis	Cabinet Office	Twice a year	Yes
Monitoring compliance with fiscal rules	Integrated Economic and Fiscal Reforms	Cabinet Office	Irregular	No
Long-term fiscal sustainability analysis	Long-term Analysis for Japan's Fiscal Budget	Ministry of Finance	Irregular	No
	Future Prospects for Social Security	Cabinet Secretariat Cabinet Office Ministry of Finance Ministry of Health, Labour and Welfare	Irregular	No
	Future Prospects for Pensions	Ministry of Health, Labour and Welfare	Every five years	No
Ex-post analysis	Audit Report	Board of Audit	Once a year	No

Source: Board of Audit; Cabinet Office; Cabinet Secretariat; Japan Research Institute; JMOF; Ministry of Health Labour and Welfare

To set up an IFI, the OECD's Recommendation of the Council on Principles for IFIs (2014)[17] provides useful guidelines for designing an effective and efficient fiscal institution. The principles spell out guidance for i) local ownership, ii) independence and non-partisanship, iii) a mandate, iv) resources, v) the IFI's relationship with the legislature, vi) access to information, vii) transparency, viii) communication, and ix) external evaluation. In particular, the principle on the local ownership, ensuring a legal basis for the IFI, is critical as it guarantees that several other key principles above, such as having a mandate and access to information, can be determined. Moreover, this can prevent politicians from operating IFIs arbitrarily.

In light of the OECD Principles, the Japanese government can consider possible options in the context of Japan. Firstly, in terms of the principles guiding independence and non-partisanship, one option is to select the leadership of the proposed IFI on the basis of merit and technical competence, without reference to political or ministerial affiliation. That said, it is desirable to establish the IFI under the Diet, but in that case, an independent leadership is pivotal to avoid influences from politicians. Almost half of the leaders in existing OECD IFIs have a strong background in academia prior to joining the IFI. This recommendation would fit Japan's context. Secondly, ensuring a legal basis to serve as a backbone of the IFI is essential with regard to access to information. It is expected that an IFI without a specific legal framework would be unable to fully obtain confidential data from stakeholders such as government ministries and agencies. In this regard, establishing the IFI under the Diet would also help smooth access to information compared to other options, such as setting it up in the private sector, considering the Diet's investigation function. Thirdly, as for transparency and communications, it is of importance to publish reports that are made freely available to the public. The public release should include not only the results but also the methodology used in the assessment, where applicable. Moreover, the above OECD report suggests that IFIs create communication channels from the outset, particularly with the media, civil society, and other stakeholders. Holding press conferences and publishing press releases around the launch of the work would provide effective communication with them.

[17] OECD. 2014. "Recommendation of the Council on Principles for Independent Fiscal Institutions"

C.2 Maintaining Accommodative Monetary Policy

21. The currently easy monetary policy stance should be maintained to support growth and counter deflationary pressures amid the COVID-19 pandemic, and the BOJ should stand ready to ease further if economic and financial situation worsens due to the pandemic. The BOJ's policy tweaks after its March review, are deemed appropriate to sustain the current easy monetary policy for an extended period amid the pandemic. The BOJ's policy to clarify the range within which 10-year JGB yields can fluctuate freely, and to allow more flexibility in ETF purchases, will contribute to enhancing the functioning of financial markets and corporate governance. That said, if the pandemic worsens, the BOJ could ease its policy further to support the weak economy by expanding asset purchases and loan support programs. Lowering the short-term policy rate would be another option, given that the BOJ's new interest rate scheme would help mitigate the adverse effects of a rate cut on financial institutions' profitability. In the case that further rate cuts are needed, applying the new policy rate to a wider range of current accounts than in the current framework could be also considered. The decline in the prices of services, albeit due to transitory factors, would warrant closer scrutiny of its potential spillovers to general price levels. The BOJ's inflation-overshooting commitment remains appropriate as it provides the markets with some assurance that monetary policy stance will remain easy until the current low CPI inflation is above the 2 percent price stability target in a stable manner. However, the feasibility of achieving the 2 percent target is still highly uncertain as almost a decade has passed since the target's introduction in January 2013, and the target has never been reached. From a medium- to long-term perspective, the BOJ should continue to consider policy options which would allow for a gradual and orderly unwinding of the current prolonged easy monetary policy stance under the normal market conditions.

22. Given the BOJ's massive balance sheets, it should consider a credible exit path from the prolonged monetary easing (see Selected Issue 2. *Assessing the BOJ's Policy Assessment*). Unlike other major central banks, the BOJ's balance sheets continue to grow as its easy monetary policy stance is expected to remain unchanged for a while. To minimize unexpected disruption in both the JGB and the asset markets, closer communication with the market to deepen its understanding of a credible exit path would be prudent, even though the price stability target may only be achieved in the medium term. Given that the BOJ's holding of government debt is very high, gradual steps, with clear guidance and close cooperation with the government, would be necessary to conduct an orderly unwinding of the current monetary easing while maintaining the central bank's financial soundness and the government's credibility in fiscal management.

23. The BOJ should continue its efforts to strengthen close communication with the market and the public (see Selected Issue 2. *Assessing the BOJ's Policy Assessment*). First, priorities among the monetary policy instruments should be made clearer to the market. The BOJ has switched to "interest rate guidance" from "quantity guidance", and thus maintaining the effectiveness of the YCC should be paramount when setting the pace of various asset purchase programs. Second, the BOJ should step up its efforts to promote public understanding of its

inflation target. Public awareness of the 2 percent inflation target is hovering only around 20 percent in Japan, despite the extensive media coverage when the BOJ raised the inflation target from 1 percent to 2 percent in 2013. Third, to enhance credibility of the BOJ's inflation forecast, which is subject to frequent downward revisions, greater efforts should be made in explaining to the market and the public how the central bank identifies trends in price movements in a timely and accurate manner.

Authorities' Views

24. The BOJ is committed to maintaining the current easy monetary policy stance until the 2 percent price stability target is achieved in a stable manner. The BOJ is of the view that the 2 percent inflation target remains appropriate. As it takes time to achieve the target, it is premature to discuss exit strategies in concrete. They will be discussed at the Monetary Policy Meeting and appropriately communicated when CPI will approach towards the target. Regarding applying the policy rate to a wider range of current accounts, it would have an adverse impact on bank profits that could hinder the financial intermediation function. With respect to financial soundness, the BOJ shares the view that it is important. However, regarding JGBs, which account for a large part of assets, the BOJ applies amortized cost method thereby it would not write down in case of interest rate increase. In addition, due to the seigniorage that arise continuously, the BOJ's credibility and policy conducts will not be hindered. With regard to clarifying the order of possible easing measures, the BOJ views that it is not effective to communicate this in advance as appropriate measures can be different depending on the nature of the adverse shocks. Regarding inflation forecast, the BOJ has deleted the timing on when the 2 percent inflation would be achieved since April 2018 Outlook Report, as some market participants focused too much on the timing and simply linked it with policy change. In addition, the BOJ has communicated clearly on how the underlying inflation would develop, especially since 2015 when it started to release measures of underlying inflation on its website. With these moves, the BOJ has continued to enhance its communication.

C.3 Macroprudential Policy to Safeguard Financial Stability

25. Financial supervisory authorities should remain vigilant to ensure that financial institutions can maintain their financial soundness amid the pandemic. While the overall financial system remains sound, financial institutions face a tougher challenge in maintaining financial soundness due to the periodic resurgence of COVID-19. The swift and massive financial support from the government and the BOJ to the corporate sector has helped mitigate adverse impacts of the pandemic on the asset quality of financial institutions. However, due to disruptions caused by the pandemic, SMEs, in particular hard-hit businesses in the services sector, risk incurring a severely impaired balance sheet, which poses higher credit risks to financial institutions, especially regional banks. The authorities should continue to closely monitor and examine the resilience of regional banks by conducting stress tests, under various assumptions with regard to the pandemic development. If the pandemic worsens, NPL ratios could rise, particularly in small- and medium-sized regional banks. Hence, the government's special lending programs for SMEs should be unwound in a gradual way to avoid a cliff effect.

26. The oversight of financial institutions' high-risk activities should be further strengthened. Risks to Japanese financial institutions could also come from their active investment, particularly in domestic and overseas credit products and investment trusts, in their search for yield amid an ultra-low interest rate environment, severe competition, and weak credit demand in an aging population. Japanese financial institutions are also focusing on the investment banking business for higher profits. In March 2021, related risks were realized in some large financial institutions, which suffered significant losses because of their large exposures to an American investment firm. Financial supervisory authorities should enhance their oversight of potentially high-risk activities by financial institutions, while ensuring that the institutions' risk management practices remain stringent.

27. Financial policy should also keep supporting financial institutions to adapt themselves to a rapidly changing business environment in the medium term as the population ages. A recent amendment to the Banking Act eased restrictions on the scope of banks' business activities and equity investments.[18] This will help create a more favorable environment for financial institutions to expand their businesses and diversify income sources. Financial supervisory authorities could continue to support financial institutions' business diversification strategy, in the context of an aging society, while promoting digital transformation such as software investment, IT training supports, and cybersecurity management. Meanwhile, heightened uncertainties due to the pandemic have led financial institutions, especially regional banks, to accelerate their plans for longer-term sustainability. In this regard, the government can further expand its support to strengthen the business foundations of regional banks and to boost the local economy through a newly adopted grant scheme to cover merger costs.[19] Furthermore, the BOJ's Special Deposit Facility, which offers the incentive of additional interest, should strive to its objective of encouraging regional banks to carry out initiatives that strengthen their business foundations.

Authorities' Views

28. The authorities will continue to hold dialogues with financial institutions and carefully monitor any systemic risks that may arise. As the risk of further resurgence of the pandemic persists, the Financial Services Agency (FSA) is maintaining dialogue with banks to monitor weaknesses in their current risk management models. For example, after some Japanese banks suffered losses in March 2021 due to their exposure to an American investment firm, the FSA followed up with banks to identify the root causes and requested them to strengthen risk management where appropriate. Even if the extremely unlikely worst-case scenario were to materialize, and NPLs were to increase sharply and threaten the viability of

[18] The revised Banking Act allows banks to engage in new business activities, such as selling smartphone applications and IT systems and dispatching IT staff members to clients who need to digitize their operations through the banks themselves or their subsidiaries. In addition, the Act loosens restrictions on the maximum investment in businesses from 5 percent in principle and 15 percent in the case of holding companies, while allowing banks to take a 100 percent stake in unlisted companies that contribute to the regional economy, such as those revitalizing towns or promoting tourism. The revised Act came into effect in November 2021.

[19] According to a new grant scheme enacted in July 2021, regional banks can get help to strengthen their business foundations through measures such as business integration among regional financial institutions. The government will pay up to JPY3 billion to each institution to cover about one-third of the initial costs related to business integration, including mergers and system and branch consolidation.

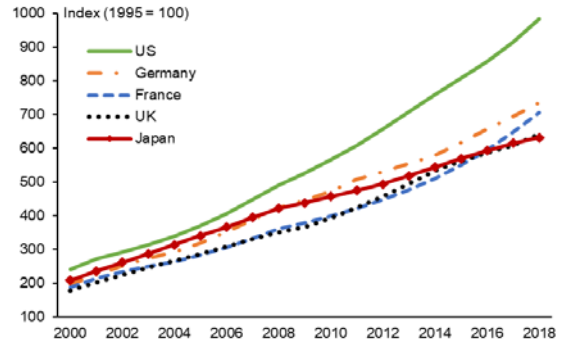
banks, the FSA assured that Japan had resolution frameworks[20] in place to maintain financial stability and prevent the disorderly failure of a bank in the event of a crisis.

C.4 Structural Reforms

29. Digitalization should be accelerated, in particular, to address the challenges posed by the pandemic and improve labor productivity. COVID-19 has revealed weaknesses of the Japanese economy, especially its limited capacity to deal with the crisis, stemming from a high reliance on physical documents and procedures, and incompatible IT systems among central and local government bodies. The government's strong commitment to digitalization, as seen in the establishment of the Digital Agency, should help turn the pandemic crisis into an opportunity for the aging society to transform itself into a highly digitalized and vibrant economy with enhanced labor productivity. To this end, the government should take the lead to upgrade the public sector by developing integrated IT systems. Enhancements to IT infrastructure should be prioritized to support digital transformation in the private sector and the work-style reform via more efficient use of teleworking.

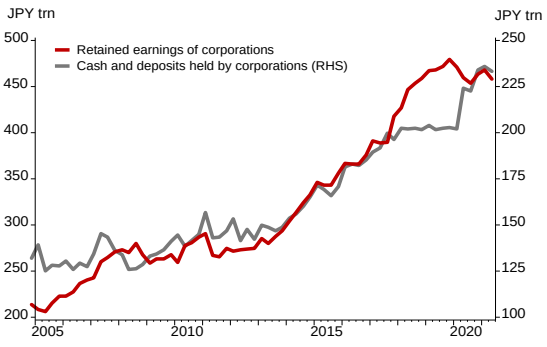
30. The government should strive to create a conducive environment in which Japanese corporates are encouraged to expand investments preemptively for digital transformation and the green economy in order to raise productivity. Due to low growth expectations and relatively weak corporate governance, Japanese corporates have not invested sufficiently to spur innovations compared with their U.S. counterparts (Figure 23). This has resulted in high and rising corporate savings over the past decades, which continued during the pandemic (Figure 24). With corporates and households remaining net savers, only the government has continued to spend or invest more, but this is not sustainable, given Japan's massive public debts. Against this background, the government can promote corporates' investments in the digital and green economy by improving their business outlook and strengthening corporate governance practices.

Figure 23. ICT Capital Investment



Source: OECD
Note: ICT investment is defined as the acquisition of computer hardware, telecommunications equipment, and computer software and database.

Figure 24. Corporates' Retained Earnings and Savings

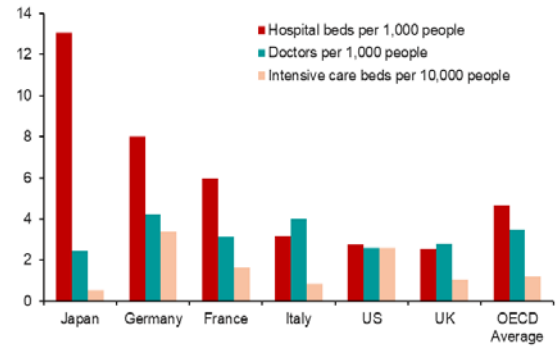


Source: JMOF; Haver Analytics

[20] Under the Japanese legal framework for crisis management and resolution, the Deposit Insurance Act provides multiple resolution regimes and tools, covering from small deposit-taking institutions to systemically important financial institutions.

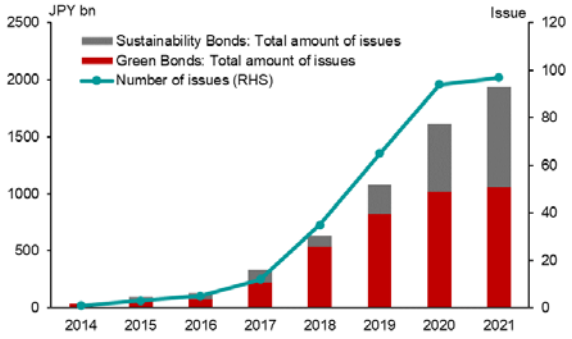
31. Comprehensive health-care reforms should be undertaken in a timely fashion to enhance Japan's social and economic resilience. An inefficient allocation of resources in Japan's health-care delivery system was seen as the main obstacle to lifting the state of emergency during the pandemic, which delayed Japan's economic recovery despite relatively low infection numbers. Japan has one of the highest numbers of hospital beds per capita in the world. That said, the number of practicing doctors and intensive care units are relatively low (Figure 25), and private hospitals, which account for about 80 percent of all hospitals and two-thirds of acute care hospitals, have accepted only limited number of COVID-19 patients even amid the pandemic. To avoid a collapse of the healthcare system should another pandemic occurs in the future, a comprehensive reform should be considered. In the short term, enhanced coordination should be pursued among hospitals, local health centers, and regional governments in the preparation of beds and healthcare staff that are necessary to support infected people in the next wave. The efficiency of Japan's medical system as a whole could be further improved by allowing swift distributions of medical resources among health-care facilities, including small privately-owned clinics. Furthermore, integration and reorganization of hospitals and clinics should be prioritized as a precautionary measure to prepare for a sudden surge in new infections. Regulatory reforms that enable a broader use of online, remote diagnosis and care services, should also be accelerated to reduce the burden on the health-care sector and prevent contagion risks among medical facilities.

Figure 25. Numbers of Hospital Beds and Doctors in Selected OECD Countries



Source: OECD
Note: The figures for hospital beds and doctors are valid as of 2017 or the nearest year; the figures for intensive care beds are valid as of 2020 or the nearest year.

Figure 26. Green Bonds and Sustainability Bonds Issued by Japanese Companies and Other Entities



Source: Ministry of Environment Japan
Note: The 2021 figures are valid as of October 25, 2021.

32. Policy support to address climate change should continue, in order to enhance economic resilience against natural disasters and achieve a green society. Japan's economic performance has been adversely affected by the high frequency of natural disasters. The government's strong policy initiatives for a green society is therefore an important contribution to the global campaign to reduce carbon emission and mitigate the risk of natural disasters becoming even more frequent and severe. In October 2020, the Japanese government set a goal of reducing greenhouse gas emissions to net-zero by 2050, to realize a carbon-neutral society. In June 2021, the government further updated the Green Growth Strategy with action plans to pursue decarbonization in the energy sector and other industries. In addition, in July 2021, the BOJ published its strategy on climate change including the new Climate Response

Financing Operations. The government's strong commitment to climate change initiatives should help further broaden investor base in the local green bond market, which has seen outstanding growth in the recent years (Figure 26). To foster greater participation from corporates and financial institutions in carbon neutrality-related investments, the government should continue to provide various policy incentives through taxes and subsidies while imposing stricter environmental regulations.

33. To cope with structural labor shortages, more effective use and development of human resources are warranted. Efforts should be enhanced to attract more people to join the labor market, in particular, female, elderly and foreign workers. Although the inflow of foreign workers fell sharply due to the tightened border controls during the pandemic, Japan should embrace more foreign workers, particularly those with specific skills, as the impact of the pandemic wanes. The government's strong commitment to digital transformation should be linked to strengthening work-style reforms, increasing job mobility and teleworking, employing robotics and automation, and using big data, all of which can contribute to enhancing productivity growth (Table 5).

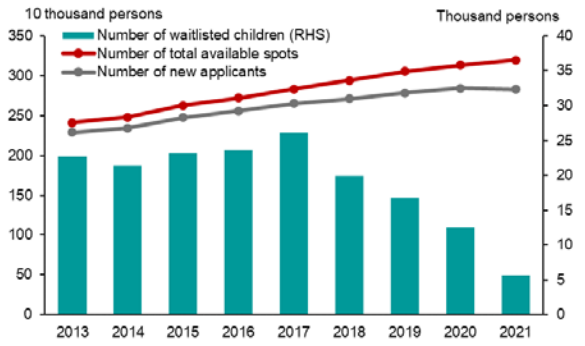
34. Further reforms are needed to address the structural demographic challenges, which may have been exacerbated by COVID-19. The pandemic could accelerate the declining trend in birth rates by heightening peoples' concerns over health and financial conditions. To ease uncertainties about future income and employment, the government should ensure the fair treatment of workers regardless of the type of employment in order to protect vulnerable groups such as non-regular or gig workers. To relieve the burdens of the child-raising generation, comprehensive support measures, including more flexible working arrangements and greater access to childcare services need to be provided to assist couples who would like to have more children. Although the number of children on waiting lists for child-care facilities has decreased in recent years (Figure 27), potential needs remain in urban areas.

Table 5. Selected Major Factors that Negatively Affect WFH Productivity in Japan: Firm Survey

Factors	Response % (Multiple choices)
• Some tasks cannot be conducted at home even though these are not required by rules and regulations	76.1
• Poor telecommunication environment at home	60.8
• The requirements by rules and regulations that some tasks must be done at workplaces	57.7
• Loss of quick communication that is only possible through face-to-face interactions at workplace	46.0

Source: Morikawa (2021)
Note: Based on a survey for 781 Japanese firms conducted by the Research Institute of Economy, Trade and Industry (RIETI) in August-September 2020.

Figure 27. Number of Waitlisted Children for Child-care Facilities



Source: Ministry of Health, Labour and Welfare
Note: As of April 1 each year.

Authorities' Views

35. The authorities broadly agree with AMRO that greater efforts toward expanding the workforce and further reviews of social security expenditures are inevitable amid the population aging. In order to contain the rise in social security expenses, decisive measures should be taken to encourage healthy and productive life style and improve productivity in the healthcare sector, while reviewing the balance between benefits and costs in social security expenditures. At the same time, the Ministry of Health, Labour and Welfare has encouraged healthy and active elderly people to continue working and remain productive by offering more diversified working arrangements. For women, a legal reform[21] was made in 2019 to further promote their participation and career advancement in the workplace. Despite the strict border controls since the outbreak of the pandemic, the total number of foreign workers has continued to increase in 2020, by 60 thousand, although the growth was slower than in 2019. As the labor shortage is structural, especially in the construction, transport, and health-care sectors, inflows of foreign workers will likely continue, especially after Japan lifts its border controls.

36. The authorities stressed that progress has been made in work-style reform, mainly through teleworking. Teleworking has become more popular in Japan since the pandemic broke out. It has supported work-style reform by allowing people to work more flexibly. This trend is also starting to change, to some extent, the tradition of working long hours in Japanese companies. On the other hand, face-to-face industries, such as restaurants, need careful monitoring, as the tendency for more people to seek jobs with teleworking options may worsen the labor shortage in such businesses.

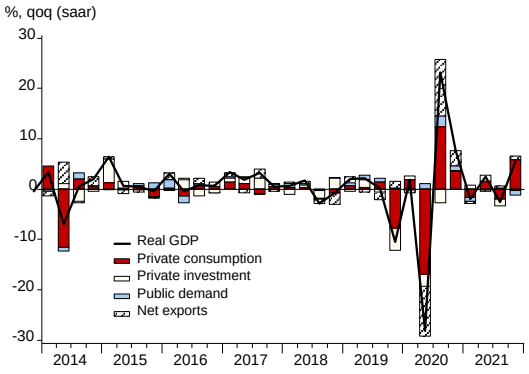
[21] Revised Act on the Promotion of Female Participation and Career Advancement in the Workplace.

Appendices

Appendix 1. Selected Figures for Major Economic Indicators

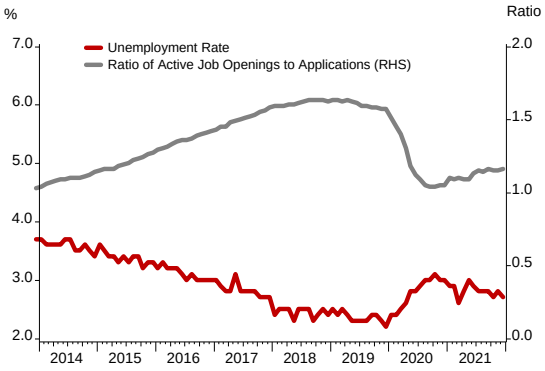
Figure 1.1. Real Sector

The Japanese economy experienced a bumpy recovery in 2021 after being severely hit by the COVID-19...



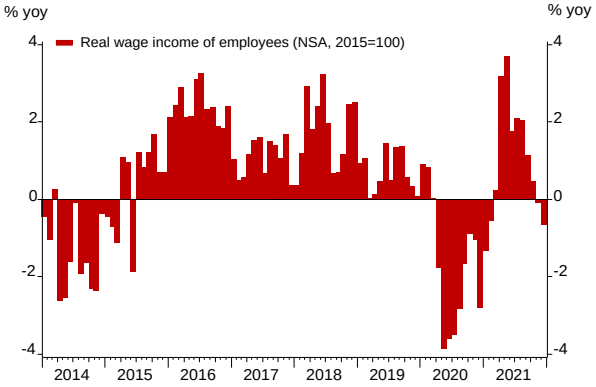
Source: Cabinet Office; Haver Analytics

…while the unemployment rate declined gradually.



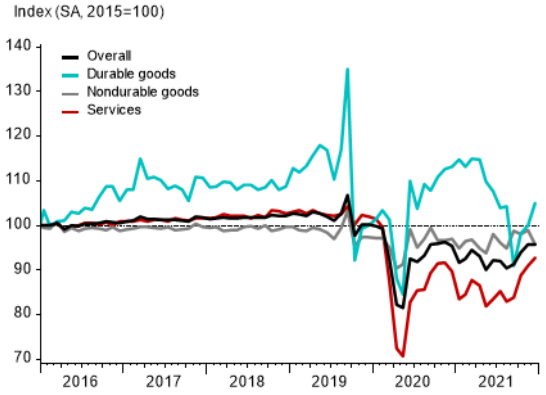
Source: Ministry of Health, Labour and Welfare (MHLW); Ministry of Internal Affairs and Communications; Haver Analytics

Employees' real income growth rebounded sharply in 2021 Q2 before slowing in Q3.



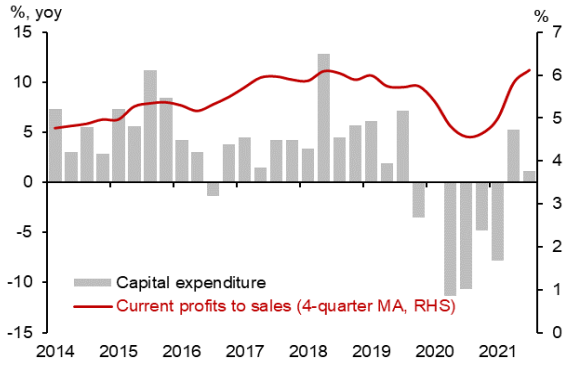
Source: Cabinet Office; Haver Analytics

Private consumption recovered moderately in Q4 2021, mainly driven by durable goods and services.



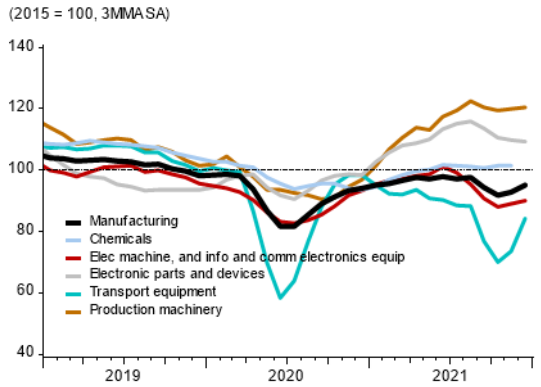
Source: Cabinet Office; Bank of Japan (BOJ); Haver Analytics

Business investment expanded sharply in 2021 Q2 while corporate profits improved.



Source: Ministry of Finance Japan (JMOF); CEIC

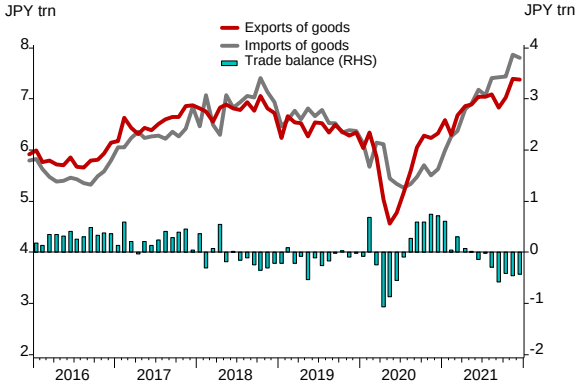
Industrial production bottomed out in Q4 2021 with supply chain disruptions eased to some degree.



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

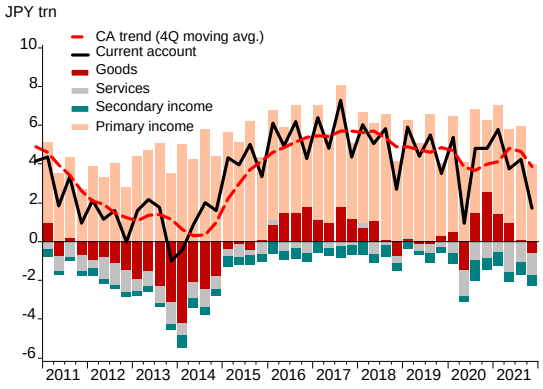
Figure 1.2. External Sector

Merchandise trade went on a decline from May 2021, reflecting slower growth in exports and sharper rise in energy prices.



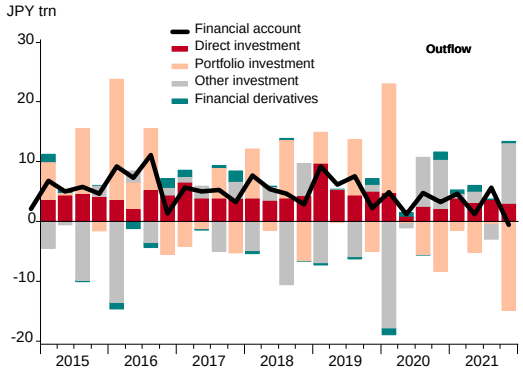
Source: JMOF; Haver Analytics

The current account balance remained strong in 2021 on the back of a large primary balance surplus…



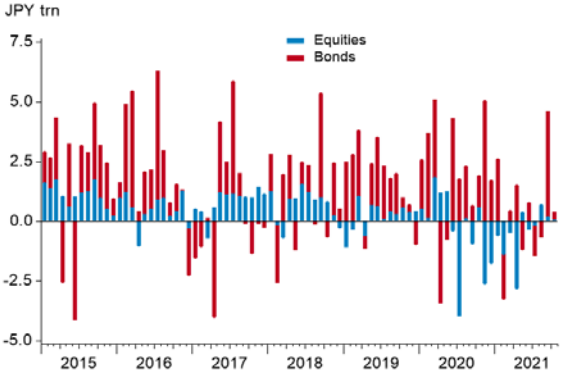
Source: BOJ; JMOF; Haver Analytics

…while capital outflows softened with slower overseas portfolio investment.



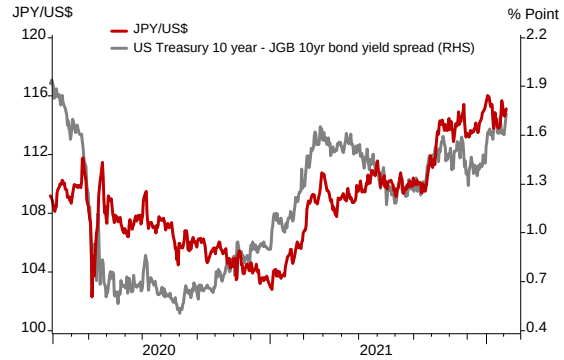
Source: BOJ; JMOF; Haver Analytics

Japanese investors continued a net purchase of foreign bonds, while reducing their exposure to foreign stocks.



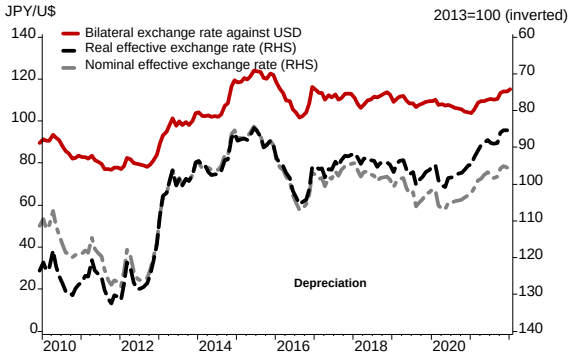
Source: JMOF; Haver Analytics

Since January 2021, the JPY has depreciated on the back of a stronger USD and rising long-term U.S. interest rates.



Source: BOJ; Federal Reserve Board; Haver Analytics

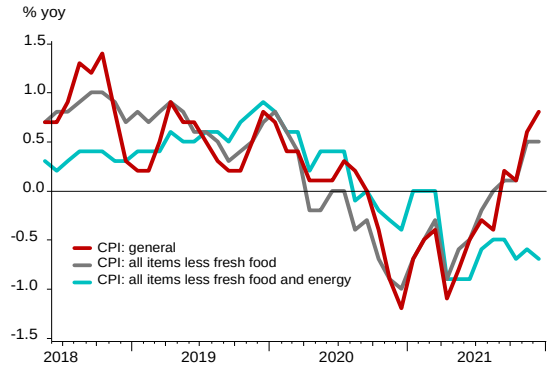
Effective exchange rates indicate that the JPY has weakened against key currencies since 2020 H2.



Source: BOJ; BIS; Haver Analytics

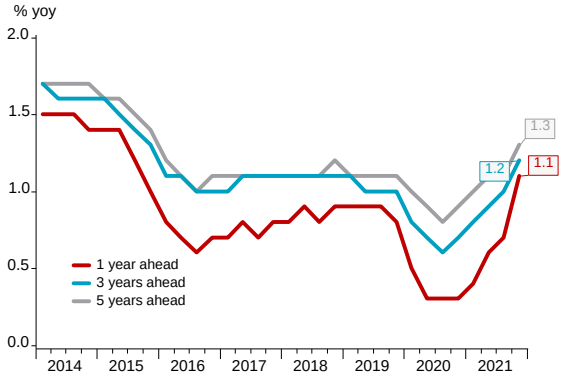
Figure 1.3. Monetary and Financial Sector

CPI inflation remained weak in 2021, but turned positive in the second half of the year reflecting rising oil prices.



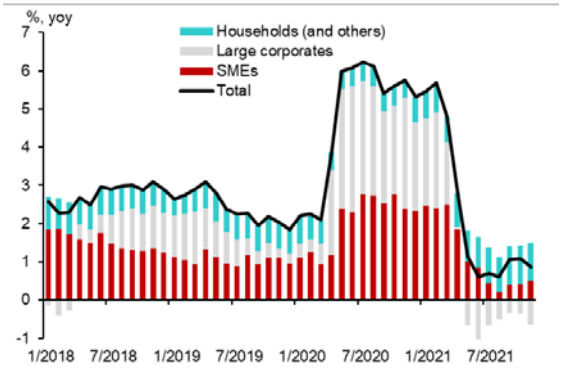
Source: Ministry of Internal Affairs and Communications; Haver Analytics

Firms' medium-term inflation expectations recently picked up to over 1 percent.



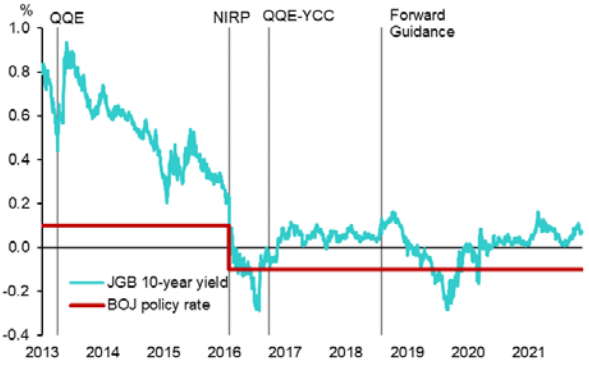
Note: Based on the BOJ's quarterly Tankan survey for all enterprises
Source: BOJ; Haver Analytics

Loan growth declined significantly, mainly led by lending to large corporations.



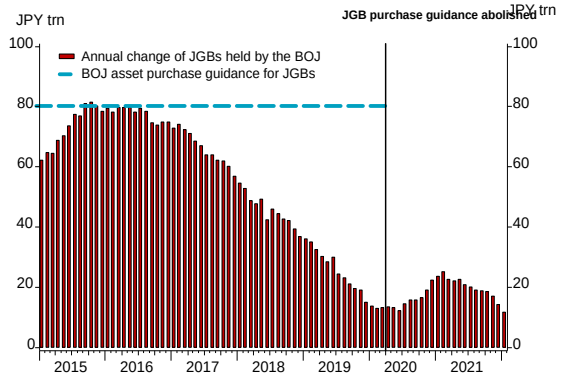
Source: BOJ

10-year government bond yields fell in Q2 in tandem with the drop in global bond yields…



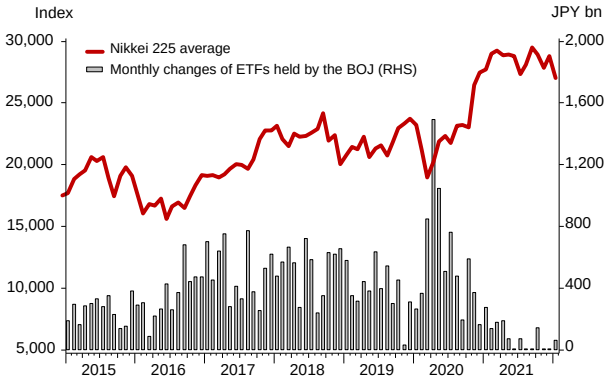
Source: BOJ; JMOF; Haver Analytics

…leading to a continued decline in the BOJ's JGB purchases even after the guidance was abolished in April 2020.



Source: BOJ; Haver Analytics

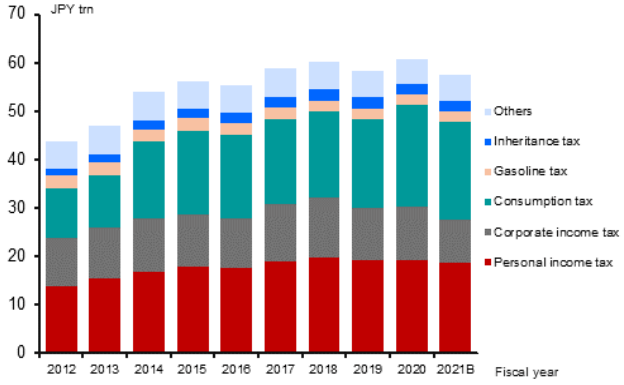
Stock prices showed some corrections in 2021 Q2, but the BOJ's ETF purchases diminished sharply.



Source: Tokyo Stock Exchange; BOJ; Haver Analytics

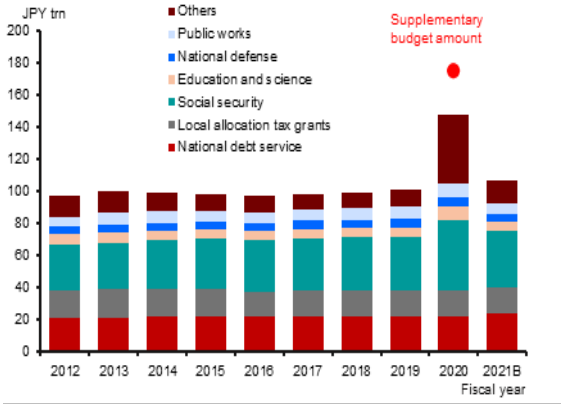
Figure 1.4. Fiscal Sector

In FY2020, tax revenues posted a record high, mainly driven by consumption tax, despite the pandemic.



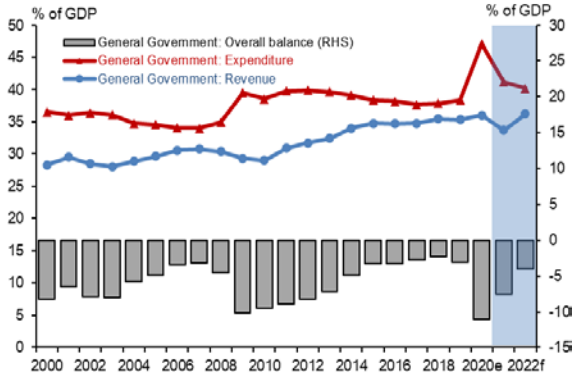
Note: Figures for FY2021 are based on the initial budget.
Source: JMOF

…while government spending spiked with massive economic stimulus packages.



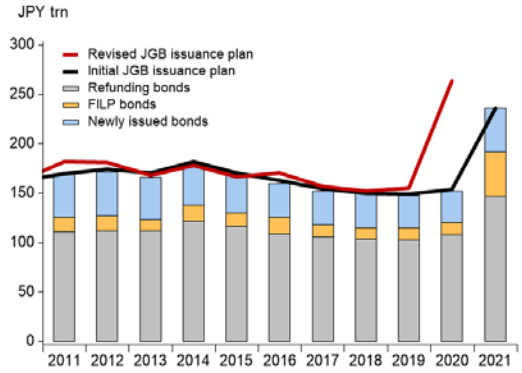
Note: Figures for FY2021 are based on the initial budget.
Source: JMOF

The fiscal deficit is expected to narrow in FY2021 after widening sharply in FY2020.



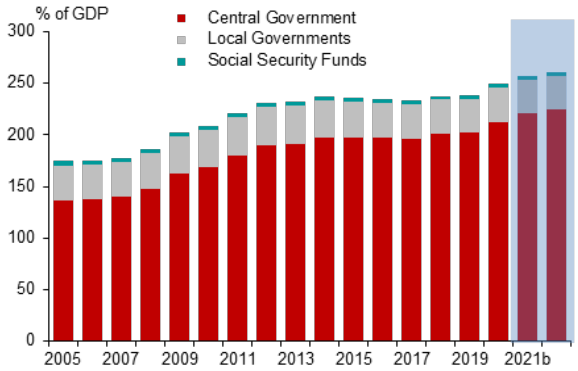
Note: Figures for FY2020 and FY2021 are based on AMRO staff estimates and projections, respectively.
Source: Cabinet Office; AMRO staff estimates

Government bond issuances rose steeply to finance the three supplementary budgets in FY2020.



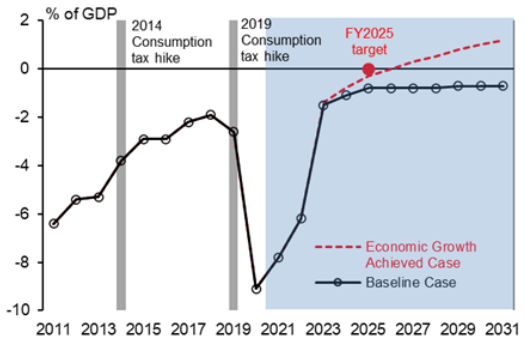
Source: JMOF; Haver Analytics

Government debt is expected to jump above 250 percent of GDP in 2021.



Note: Figures for FY2020 and FY2021 are based on AMRO staff's estimates and projections, respectively.
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 (January 2022)

Appendix 2. Selected Economic Indicators for Japan

	2017	2018	2019	2020	2021	2022
					Projection	
Real Sector and Prices	(Annualized percent change, unless otherwise specified)					
GDP growth (CY)	1.7	0.6	-0.2	-4.5	1.8	2.9
Private consumption	1.1	0.2	-0.5	-5.3	1.0	3.0
Private non-residential investment	2.4	1.9	0.1	-6.5	0.3	2.6
Private residential investment	0.5	-6.4	4.1	-7.9	-1.3	0.8
Government consumption	0.1	1.0	1.9	2.3	2.4	2.8
Public investment	0.1	0.6	1.7	3.9	-1.5	1.0
Net exports (ppts)	0.6	0.0	-0.4	-0.8	0.9	0.0
Exports of goods and services	6.6	3.8	-1.5	-11.8	11.6	5.4
Imports of goods and services	3.3	3.8	1.0	-7.2	6.1	5.2
GDP growth (FY)	1.8	0.2	-0.7	-4.5	3.1	2.2
Labor market (CY)	(Average of monthly data)					
Unemployment rate (%, sa)	2.8	2.4	2.4	2.8	2.8	2.7
Ratio of job offers per one applicant (sa)	1.50	1.61	1.60	1.19	1.10	1.20
Prices (CY) 1/	(Average of monthly data)					
CPI (all items)	0.5	1.0	0.5	0.0	-0.3	0.7
CPI (less fresh food)	0.5	0.9	0.6	-0.2	-0.3	0.7
CPI (less fresh food and energy)	0.1	0.4	0.6	0.2	-0.5	0.3
External Sector 2/	(USD billion unless otherwise specified)					
Current account balance	203.1	176.7	176.2	148.7	133.8	149.8
Percent of GDP	4.1	3.5	3.4	3.0	2.8	3.1
Trade balance	43.8	10.2	1.4	28.2	13.5	-8.8
Exports, f.o.b.	688.8	735.7	695.1	630.9	719.2	733.9
Imports, f.o.b.	645.0	725.5	693.7	602.7	705.7	742.7
Service balance	-6.2	-9.3	-9.9	-35.0	-38.1	-8.8
Primary income balance	184.4	193.9	197.3	179.4	178.8	185.0
Secondary income balance	-19.0	-18.1	-12.6	-23.9	-20.4	-17.6
Financial account balance	167.7	182.4	227.7	128.7	109.9	145.1
International reserves (end of period)	1,264.3	1,271.0	1,323.8	1,394.7	1,341.4	1,389.8
Fiscal Sector (FY, General Government) 3/	(In percent of GDP)					
Primary balance	-2.0	-1.6	-2.4	-10.4	-7.8	-4.2
Fiscal balance	-2.9	-2.4	-3.1	-11.0	-8.6	-5.0
Outstanding debt	232.8	237.8	238.0	249.1	257.6	261.6
Monetary Sector 4/	(In annual percent change, unless otherwise specified)					
Monetary base	17.0	7.3	3.6	9.1	18.0	11.0
Uncollateralized overnight call rate (%, end of period)	-0.06	-0.06	-0.07	-0.03	-0.10	-0.10
Memorandum Items 4/						
Trade balance, customs cleared (USD bn)	25.9	-11.1	-15.3	5.0	-1.2	-0.2
Exports of goods, customs cleared (USD bn)	698.0	738.0	705.7	640.6	721.9	757.4
Imports of goods, customs cleared (USD bn)	672.1	749.1	721.0	635.6	723.1	757.6
Exchange rate (USD/JPY, period average)	112.2	110.4	109.0	106.8	…	…
Exchange rate (USD/JPY, end of period)	112.7	110.4	109.2	103.3	…	…
Nikkei 225 (JPY, end of period)	22,764.9	20,014.8	23,656.6	27,444.2	…	…
JGB 10 year yield (%, end of period)	0.05	0.01	-0.02	0.04	0.00	0.00
Non-performing loan ratio (%, end of FY, All banks)	1.1	1.1	1.1	1.2	…	…
Nominal GDP (USD bn, CY)	4,931.1	5,038.8	5,123.1	5,039.8	4,736.6	4,867.0
Nominal GDP (JPY tn, CY)	553.1	556.3	558.5	538.2	535.2	552.4

Note: 1/ For the 2020 data, the red figures are based on AMRO staff estimates.
2/ The BOP data in the external sector follows the IMF BPM6 standard, while being expressed in terms of U.S. dollars based on AMRO staff calculations using the yearly averages of USD/JPY exchange rates.
3/ FY2020-2022 figures are based on AMRO staff projections.
4/ Based on the calendar year, unless otherwise stated.
Source: Japanese authorities; AMRO staff estimates and projections (as of December 10, 2021)

Appendix 3. Balance of Payments

	2017	2018	2019	2020	2021	2022
					Projection	
	(JPY trillion unless otherwise specified)					
Current account balance (I)	22.8	19.5	19.2	15.9	15.1	17.0
Trade balance	4.9	1.1	0.2	3.0	1.5	-1.0
Exports, f.o.b.	77.3	81.2	75.8	67.4	81.3	83.3
Imports, f.o.b.	72.3	80.1	75.6	64.4	79.7	84.3
Services, net	-0.7	-1.0	-1.1	-3.7	-4.3	-1.0
Receipts	21.0	21.4	22.8	17.3	18.0	20.0
Payments	21.7	22.5	23.9	21.0	22.3	21.0
Primary income, net	20.7	21.4	21.5	19.2	20.2	21.0
Secondary income, net	-2.1	-2.0	-1.4	-2.5	-2.3	-2.0
Capital account (II)	-0.3	-0.2	-0.4	-0.2	-0.3	-0.3
Financial account (III) (+ indicates net outflows) 1/	16.2	17.5	22.0	12.5	5.1	10.3
Direct investment (net)	17.4	14.9	23.8	9.6	11.5	12.5
Portfolio investment (net)	-5.7	10.1	9.4	4.2	-13.0	3.0
Financial derivatives (net)	3.5	0.1	0.4	0.9	2.6	0.8
Other investment (net)	0.9	-7.6	-11.5	-2.2	4.0	-6.0
Errors and omissions (IV)	-3.7	0.8	6.0	-2.0	-2.4	-0.2
Overall balance (= I + II - III + IV)	2.7	2.7	2.8	1.2	7.4	6.2
Reserve assets (+ indicates increases)	2.7	2.7	2.8	1.2	7.4	6.2
Memorandum items:						
Current account balance (In percent of GDP)	4.1	3.5	3.4	3.0	2.8	3.1
Gross reserves (JPY trillion, end of period)	142.4	140.3	144.5	144.2	151.6	157.7
(In months of imports of goods and services)	17.6	16.0	16.9	19.4	81.6	90.1
Changes in gross reserves (JPY trillion)	-0.2	-2.1	4.2	-0.3	7.4	6.2
Nominal GDP (USD billion) 2/	4,931.1	5,038.8	5,123.1	5,039.8	4,736.6	4,867.0

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 (as of December 10, 2021).

Appendix 4. Statement of Government Operations

	FY2017	FY2018	FY2019	FY2020 Estimate	FY2021 Projection	FY2022 Projection
General Government 1/	(In percent of GDP)					
Revenue (I)	34.8	35.5	35.4	36.1	33.9	36.4
Taxes	18.6	19.1	18.8	20.4	18.8	19.8
Personal Income Tax	5.2	5.3	5.2	5.4	5.2	5.2
Corporate Income Tax	4.4	4.7	4.5	4.9	3.8	4.8
Consumption Tax	6.4	6.4	6.5	7.7	7.3	7.5
Others	2.6	2.7	2.7	2.4	2.6	2.4
Social Contributions	12.8	13.1	13.3	13.8	13.8	13.9
(o/w Social security contribution)	12.3	12.9	13.9	14.9	13.4	13.4
Other revenues	3.4	3.3	3.2	1.9	1.3	2.7
(o/w interest income)	0.9	1.0	1.0	1.1	1.1	1.1
Expenditure (II)	37.7	37.9	38.4	47.1	41.5	40.4
Expense (III)	37.2	37.2	37.7	45.9	40.7	39.7
Compensation of employees	5.2	5.2	5.2	5.4	5.3	5.2
Use of goods and services	3.2	3.2	3.4	7.5	4.0	3.6
Consumption of fixed capital	3.2	3.3	3.3	4.7	3.3	3.3
Social benefits	20.9	21.0	21.2	23.2	23.1	22.9
(o/w Social security benefits)	18.8	19.0	20.0	21.0	22.0	23.0
Interest	1.8	1.7	1.6	1.7	1.9	1.9
Subsidies	0.5	0.5	0.6	0.9	0.7	0.5
Grants	0.1	0.1	0.1	0.2	0.2	0.1
Other expense	2.3	2.1	2.3	2.4	2.3	2.1
Net Acquisition of Nonfinancial Assets (IV)	0.6	0.7	0.7	1.2	0.8	0.7
Net Operating Balance (= I - III)	-2.4	-1.7	-2.3	-9.8	-6.8	-3.3
Net Lending/borrowing (Overall Balance) (= I - II)	-2.9	-2.4	-3.1	-11.0	-7.6	-4.0
Primary Balance	-2.0	-1.6	-2.4	-10.4	-6.8	-3.2
Gross Debt	232.8	237.8	238.0	249.1	256.6	260.6
Central and Local Government 2/	(In percent of GDP)					
Primary Balance	-2.2	-1.9	-2.6	-10.5	-7.0	-3.4
Central Government	-2.5	-2.3	-2.9	-10.4	-6.9	-3.5
Local Government	0.3	0.4	0.3	-0.1	-0.1	0.1
Fiscal Balance	-3.5	-3.2	-3.7	-11.7	-8.3	-4.7
Central Government	-3.6	-3.3	-3.8	-11.3	-7.9	-4.6
Local Government	0.0	0.1	0.1	-0.4	-0.4	-0.1
Outstanding Debt	188.9	192.2	190.7	209.2	216.8	220.8

Note: 1/Based on the Government Finance Standard Manual (GFSM) 2014 standard; FY2020 and FY2021-2022 figures are based on AMRO staff estimates and projections, respectively.
2/ Excludes expenditures and fiscal resources spent on recovery and reconstruction measures. FY2021-2022 figures are based on AMRO staff projections.
Source: Japanese authorities; AMRO staff estimates and projections (as of December 10, 2021)

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.	-	-	-
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 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.

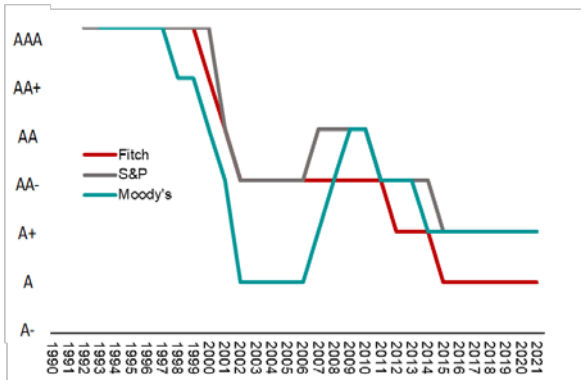
Source: AMRO staff compilation. This preliminary assessment will form the “Supplementary Data Adequacy Assessment" in the EPRD Matrix.

Annexes: Selected Issues

1. Japan's Sovereign Rating in the Post-pandemic Era[22] [23]

1. Japan's sovereign credit rating has been on a downward trend over the past three decades (Figure A1.1), largely due to its declining growth potential and deteriorating fiscal health. On the one hand, Japan's high government debt has led to rating downgrades by credit rating agencies and sparked concerns over its sustainability. Academics (Hoshi and Ito, 2014) and market commentators have been worried that the elevated government debts could eventually lead to a sovereign debt crisis in Japan that could have spillover effects on other economies, given Japan's systemic importance to the world economy. On the other hand, Japan's sovereign rating has historically been supported by the home bias for its government debt, the Japanese yen's international reserve currency status, sizable net external assets, and strong institutions.

Figure A1.1 Japan's Long-Term Local Currency Issuer Ratings



Source: Fitch; S&P; Moody's; AMRO staff calculations

2. The rapid build-up of the fiscal burden amid the pandemic warrants an in-depth review of Japan's sovereign credit risk. During the COVID-19 crisis, Standard & Poor's (S&P) and Fitch[24] revised down their sovereign rating outlooks for Japan in June and July 2020, respectively, on the adverse fiscal impact of the pandemic, and warned about further actions due to the country's legacy of high debt stock and projected increase in fiscal outlays. Moreover, further sovereign rating downgrades could have market repercussions on both sovereign and corporates.[25]

3. Against this backdrop, this study aims to address two relevant issues. Would Japan's sovereign rating be further downgraded after the pandemic? If so, how would this affect the Japanese economy? To answer these questions, we analyze Japan's historical rating dynamics using a fundamental model-implied ratings approach to gain insights into its sovereign rating outlook. This approach seeks to explain changes in a country's sovereign ratings through its macroeconomic and institutional factors from a long-term perspective. Previous studies have considered per capita income, GDP growth, inflation, real exchange rate changes, external debt, external reserves, economic development, the default history, government effectiveness indicators, and corruption (Cantor and Packer, 1996; Afonso, 2003; Mellios and Paget, 2006; Afonso et al., 2007; Afonso et al. 2010).

[22] Prepared by Jinho Choi, Deputy Group Head and Senior Economist, and Kimi Xu Jiang, Economist.
[23] This selected issue is a key summary of the forthcoming AMRO working paper (Choi, den Ruijter, Jiang and Moshammer, "Japan's Sovereign Rating in the Post-Pandemic Era"). Please refer to the paper for the complete analysis.
[24] Bloomberg, 2020. "S&P Cuts Outlook on Japan's Debt Outlook"; and "Japan's Long-Term Rating Outlook Cut to Negative by Fitch".
[25] Studies show that sovereign rating downgrades could lead to tighter funding conditions for both sovereigns (Afonso et al. ,2012) and domestic private firms (Gande and Parsley, 2005; BIS, 2011; Holten et al., 2014; Tsuji, 2005; Bedendo and Cola, 2015). The transfer of sovereign risk to corporates can also occur via the "sovereign ceiling channel". Borensztein et al. (2013) documented, using rating data for advanced and emerging economies from 1995-2009, that sovereign ratings still significantly affected corporate ratings, especially in countries with capital restrictions and high political risk.

4. To explain sovereign ratings with fundamental factors, a panel regression model is constructed. We estimate a Tobit regression on a sample of 41 E.U. and OECD countries using annual data from 1990- 2020 to explain the average ratings of Moody's, S&P, and Fitch. For explanatory variables, GDP per capita (in PPP terms, in logs) and unemployment rate are included to proxy each country's macroeconomic strength. General government debt as a percentage of GDP is included as the country's indebtedness. The spread of 10-year government bonds relative to the U.S. Treasury bonds is included to measure each country's debt financing burden. The degree of government effectiveness, which is proxied by the World Bank Worldwide Governance Indicator, and its interaction with government debt are also considered.[26]

5. Our panel regressions provide highly significant correlation between key variables, in particular, a country's sovereign rating is driven by GDP per capita, while high government debt, high bond yield spreads relative to the U.S. and high unemployment are negative factors for ratings (Table A1.1)**.** For Japan, we observe that improvements in economic variables – such as GDP per capita, governance, and employment – added positive rating signals ("Economy relative to peers"), but were not sufficient to compensate for the country's economic underperformance against its peers (Figure A1.2). Next to "Economy relative to peers", public debt is another major rating determinant. With its debt-to-GDP ratio above 250 percent, Japan has unquestionably the most indebted government in the world.

6. A comparison of Japan's current fundamental rating with its actual ratings suggests that rating agencies would apply a "crisis bonus[27]" for some time during crises, as evidenced by the fact that all countries have recently been hit by a common pandemic shock**.** Japan's sizable negative yield spread compared with its U.S. counterpart was a distinguishing feature and a justification for its relatively strong rating despite its large public debt burden, in particular until other central banks launched large-scale bond buying programs in response to the global financial crisis.

[26] Ratings are sourced from rating agencies, and bond yields from the OECD, IMF and Haver Analytics. Government effectiveness refers to World Bank Worldwide Governance Indicators, while all other data is sourced from the IMF WEO database. Ratings refer to long-term foreign currency ratings, translated to a numerical scale from 1 to 21 where 21 refers to AAA and 1 refers to a default, however for Moody's rating on Japan, we use the long-term local currency rating in our data.

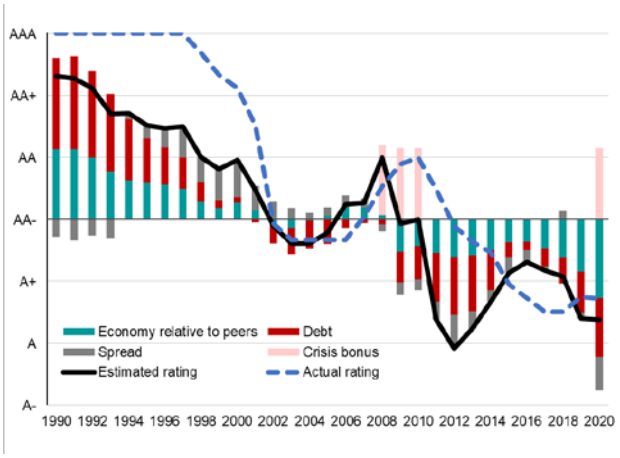
[27] In essence, rating agencies assign credit ratings, based on the relative ranking among debt issuers including sovereigns. For instance, according to Fitch Ratings' definition, credit ratings express risk in relative rank order, which is to say they are ordinal measures of credit risk and not predictive of a specific frequency of default or loss (https://www.fitchratings.com/products/rating-definitions). Hence, the outbreak of global financial crisis, or pandemic may lead to delayed, or no downgrade actions from rating agencies due to common impacts among peer rating group.

Table A1.1 Panel Regression Estimation Results

Dependent variable: Average sovereign rating by S&P, Moody's and Fitch		
Explanatory variable	Coefficient estimate ($\hat{\beta}$)	Robust t-stat
GDP per capita (log)	5.129***	10.73
Government debt	-0.035***	-8.40
Governance	1.569***	5.25
Government debt*Governance	0.012***	4.02
Bond yield spread	-0.343***	-13.02
Unemployment rate	-0.081***	-3.84
Year	-0.151***	-12.99
Crisis (2008-10, 2020)	1.142***	5.62
Constant	303.7***	13.26
Sigma	4.097***	12.11
N	1005	
R^2 (pseudo)	0.294	

Source: Choi, den Ruijter, Jiang and Moshammer (forthcoming)
Note: Robust t statistics in parentheses, Country-FE and Arellano-Bond estimator standard errors are clustered by country.
* p < 0.05, ** p < 0.01, *** p < 0.001

Figure A1.2 Contributing Factors to Japan's Sovereign Ratings



Source: Choi, den Ruijter, Jiang and Moshammer (forthcoming)
Note: Variables in the model are relative to the Japanese mean, apart from the crisis dummy. AA- in the y-axis refers to the average rating Japan has during the sample period. Economy rel. to peers refers to GDP per capita, governance, unemployment and time trend. Debt refers to government debt as a percentage of GDP and debt*governance is an interaction term. Spread refers to the 10-year bond yield spread between Japan and the U.S. Crisis bonus refers to crisis dummies, estimated rating refers to the sum of contributing factors or the predicted rating, and actual rating refers to the average of the Moody's, S&P and Fitch ratings.

7. We use our estimated regression model to make long-term projections of Japan's sovereign ratings in two steps. In the first stage, we make key assumptions about Japan's post-pandemic macroeconomic and financial circumstances which would, in turn, affect the government debt's trajectory. Furthermore, we take into consideration structural and demographic factors including higher social security spending and government efficiency. Based on these scenarios, we obtain long-term projections of Japan's government debt-to-GDP ratio. In the second stage, we make long-term projections of Japan's sovereign ratings by applying our model to our forecasts of Japan's GDP per capita, unemployment rate, government debt, bond yield spreads, and governance efficiency.

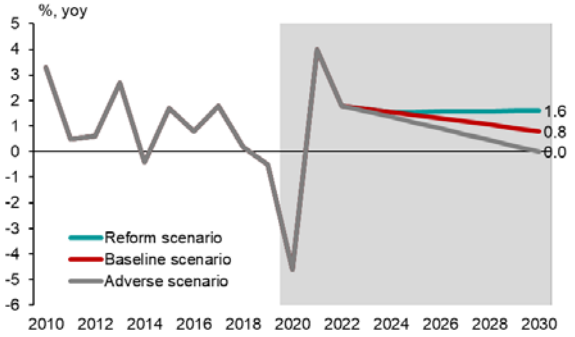
8. We formulate a set of three scenarios — reform, baseline and adverse — on key macroeconomic and financial variables through FY2030. A pivotal consideration in our scenarios is the economic fallout of the COVID-19 pandemic, which may lead to a temporary or permanent loss in Japan's long-term growth potential, depending on the duration of the crisis.

- **(Reform scenario)** The economy can gain greater growth momentum post-pandemic by successfully transforming into a digital and green economy while boosting productivity and building up its labor force. Under this reform scenario, real GDP growth and CPI inflation reach 1.6 percent (Figure A1.3) and 2 percent by FY2030. 10-year JGB yields are assumed to rise gradually by 1.5 percent by FY2030 (Figure A1.4), widening the spread over the U.S. Treasury yield from the 2020 levels, albeit at a slower pace than in the baseline scenario.
- **(Baseline scenario)** The economic impact of the pandemic is short-lived and Japan's potential growth resumes a pre-crisis downward trend with a shrinking working-age population. Under this scenario, real GDP growth is expected to slow down gradually to 0.8 percent by FY2030, while the unemployment rate will slowly increase to 2.7 percent. CPI

inflation will stay at 0.7 percent, far below the BOJ's inflation target. On long-term interest rates, alternative paths are considered for 10-year JGB yields – one constructed from market expectations (Baseline 1, Figure A1.4) and the other assuming no changes in the BOJ's YCC policy (Baseline 2).

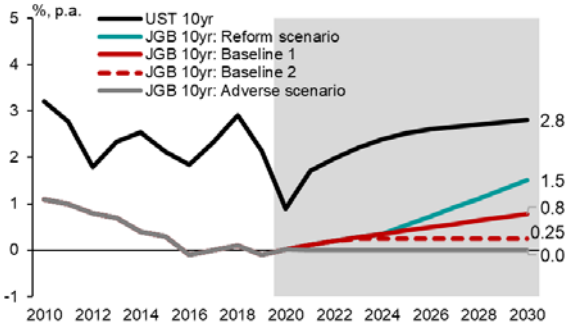
- **(Adverse scenario)** The scars of the COVID-19 pandemic persist for a long time, becoming a drag on growth and reducing Japan's growth potential.

Figure A1.3 Real GDP Scenario



Source: Cabinet Office; Ministry of Internal Affairs and Communications; AMRO staff estimates
Note: Based on Japan's fiscal year, starting from April.

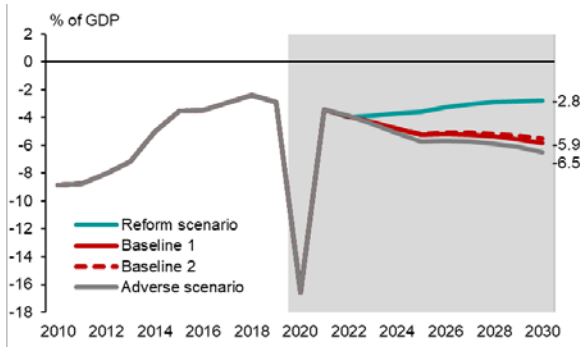
Figure A1.4 Long-term Interest Rate Scenario



Source: Ministry of Finance Japan; Haver Analytics; U.S. Congressional Budget Office; AMRO staff estimates
Note: Baseline 1 assumes a long-term projection of 10-year JGB yields in line with market expectations; Baseline 2 assumes a long-term projection of 10-year JGB yields with the BOJ's YCC policy remaining unchanged.

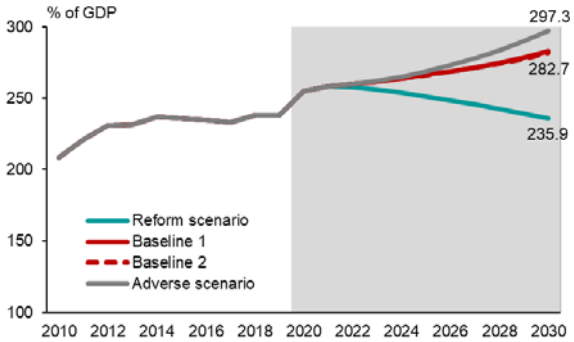
9. All three scenarios project that Japan's fiscal balance will remain in deficits in the post-pandemic period (Figure A1.5), mainly due to ballooning social security spending.[28] Japan's aging demographic structure has led to an increase in the government's fiscal spending to fill the gaps between social security benefits and contributions. Structural mismatches in social security benefits and contributions will continue to weigh on the government's fiscal burden, regardless of the scenarios.

Figure A1.5 Fiscal Balance Projection



Source: Cabinet Office; AMRO staff' estimates
Baseline 1 assumes a long-term projection of 10-year JGB yields in line with market expectations; Baseline 2 assumes a long-term projection of 10-year JGB yields with the BOJ's YCC policy remaining unchanged.

Figure A1.6 Government Debt Projection



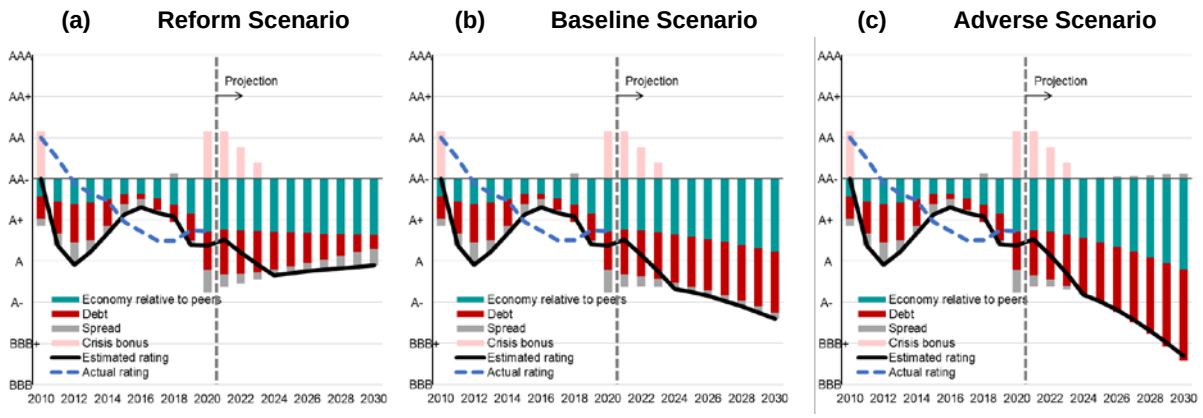
Source: Cabinet Office; AMRO staff estimates

[28] To make long-term revenue projections for the general government, we assume tax-to-GDP ratios to be broadly in line with the Cabinet Office's long-term forecasts while interpolating social contributions from the government's latest projections, released in 2018. On the expenditure front, we forecast social security benefits using the government's projections while assuming that government expenditures other than social security spending will increase at the growth rate of nominal GDP per worker, following related literature such as Doi, Hoshi and Okimoto (2011).

10. Government debt is expected to increase to more than 280 percent of GDP by FY2030 under the baseline scenario (Figure A1.6). In contrast, the reform scenario projects that the debt will decrease to 236 percent of GDP by FY2030, after peaking at 258 percent of GDP in FY2021. A comparison of projected debt dynamics for the different scenarios indicates that the debt-increasing pressure from persistent primary balance deficits could be offset only when stronger economic growth and inflation are achieved.

11. Our fundamental rating regression model forecasts sovereign rating downgrades of one to three notches for Japan in the coming decade, depending on the scenarios. Estimates from the fundamental rating model indicate that two dominant drivers of sovereign rating adjustments are a country's economic performance relative to its peers, and its government debt level. Japan's sovereign rating is expected to be lowered by one notch to A by FY2024 under the reform scenario (Figure A1.7), mainly due to a lagged impact of debt accumulation during the pandemic. In contrast, the baseline scenarios suggest a downgrade of Japan's rating by two notches to A- during the next decade, driven by slowing growth momentum and expanding government debt. Finally, under the adverse scenario, Japan's sovereign rating is projected to deteriorate by three notches to BBB+, with much slower growth and faster debt accumulation. Our long-term projections of fundamental model-implied ratings point to a downside risk to the Japanese economy that its sovereign ratings can fall to the BBB level in the long term.

Figure A1.7 Estimation Results for Fundamental Model-implied Rating



Source: Cabinet Office; Choi, den Ruijter, Jiang and Moshammer (forthcoming)
Note: The Baseline Scenario indicates "Baseline 1", which assumes a long-term projection of 10-year JGB yields in line with market expectations.

12. Drastic sovereign rating downgrades could trigger higher currency funding costs and lower credit ratings for the private sector. In the real world, as opposed to our model projections, credit rating agencies may follow the past and apply a "discretionary bonus" to Japan's sovereign rating only if the country can maintain its strengths – a strong capacity to finance government debt, the Japanese yen as an international reserve currency, an exceptionally strong external position, and robust institutions and overall governance – under any circumstances moving forward. Even under a drastic rating downgrade scenario, JGB interest rates may not rise significantly if the BOJ continues to maintain its ultra-easy monetary policy. However, the ramifications of Japan's sovereign rating downgrades could emerge in the form of higher foreign currency funding costs and lower credit ratings in the private sector.

13. This exercise has highlighted the importance of getting Japan's fiscal consolidation back on track, and of boosting the growth potential through structural reforms in the post-pandemic era. Our scenario analysis indicates that fiscal deficits would remain sizable even under the reform scenario, mainly driven by higher social security spending amid population aging, highlighting the risk of a further increase in debt-to-GDP ratio without structural reforms. The risk that there would be more sovereign downgrades highlights the need for the government to recalibrate its fiscal consolidation plan to revive long-term fiscal sustainability. Structural reforms, including measures toward digitalization, should be further accelerated to boost Japan's long-term growth potential and contain further increases in the debt-to-GDP ratio.

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2. Assessing the BOJ's Policy Assessment[29]

1. The BOJ conducted a policy assessment in March 2021 with a view to enhance the sustainability of its monetary policy. The BOJ's monetary easing responses have been significant, swift and effective (Table A2.1)[30], with massive lending programs and asset purchases, while its YCC has helped keep the funding costs low domestically. As a result, the size of the balance sheet to GDP for the Fed, the European Central Bank (ECB) and the BOJ reached 40 percent, 60 percent, and 131 percent respectively (Figure A2.1). Alongside the prolonged low inflation and sluggish growth over the past decades, the BOJ conducted the assessment in March 2021, following a systemic review of the monetary policy framework in September 2016. Against this backdrop, we are reviewing the BOJ's policy assessment and our take on the policy outlook.

Table A2.1 Monetary Policy Responses of the Fed, the ECB and the BOJ during the Pandemic

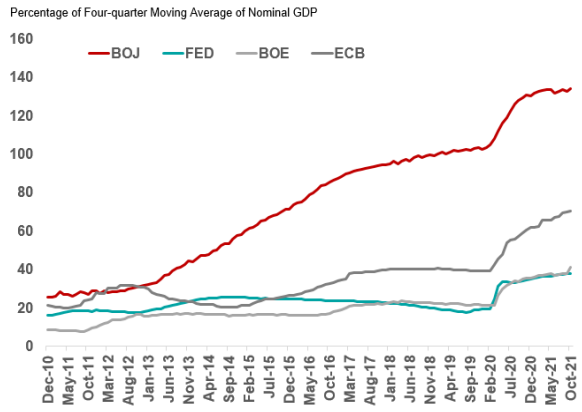
Tool type	Measures	US	EA	JP	GB	CA	AU	CH
Interest	Policy rate cut	✓			✓	✓	✓	
Lending operations	Liquidity provision	✓	✓	✓	✓	✓	✓	
	Targeted lending	✓	✓	✓	✓		✓	✓
Asset purchases[1]	Government bonds	✓	✓	✓	✓	✓	✓	
	Commercial paper	✓	✓	✓	✓	✓		
	Corporate bonds	✓	✓	✓	✓	✓		
	Other private		✓	✓		✓		
Foreign exchange	USD swap line		✓	✓	✓	✓	✓	✓
	Swaps[2]							
	Spot intervention							✓
Reserve policy	Remuneration						✓	✓
	Requirement ratio	✓						
	Compliance							

Source: Bank for International Settlements; Central Bank Websites
Note: EA: Euro-Area; GB: United Kingdom; CA: Canada; AU: Australia; CH: Switzerland. 1 Includes operations conducted with assets of different maturity or risk profile (i.e. operation twist and swap operations). 2 Includes non-deliverable forwards.

2. We agree with the BOJ's policy assessment that the QQE with the YCC has had positive and intended effects (Figure A2.2), although the BOJ should monitor closely the side effects of the prolonged monetary easing. The policy assessment concluded that overall economic activities, employment, and corporate profits had improved and the economy was no longer in deflation. However, inflation expectations have remained subdued as it will take time to change consumers' deflationary mindset and businesses' backward price-setting behavior. In addition, the BOJ reckoned that the profitability of banks had declined due to low interest rates and other structural factors, such as the aging population. Hence, the BOJ should continue to pay attention to potential risks, particularly those induced by the negative interest rates and ample excess liquidity, to the financial institutions.

[29] Prepared by Kimi Xu Jiang, Economist, and Kana Yoshioka, Economist
[30] Key monetary policy measures included (1) purchases of commercial papers (CPs) and corporate bonds (CBs) with an upper limit of JPY20 trillion and the execution of special funds-supplying operations; (2) ample and flexible provision of liquidity in both the Japanese yen and the U.S. dollar to stabilize financial markets; and (3) purchases of ETFs and J-REITs, capped at, respectively, about JPY12 trillion and JPY180 billion a year.

Figure A2.1 Balance Sheet of G4 Central Banks



Source: BOJ; Bank of England (BOE); ECB; Fed; and Bloomberg

Figure A2.2 Main Findings of BOJ's Policy Assessment

Source: BOJ

3. Based on the results of the policy assessment, the BOJ outlined three key actions to enhance the sustainability of its monetary easing. These actions were (1) the establishment of an Interest Scheme to Promote Lending[31]; (2) clarification of the 10-year yield fluctuations at +/-25 basis points around the target level of 0 percent, and (3) new guidelines for ETF purchases.

4. Overall, the policy actions will provide a balancing act which allows the BOJ greater scope to reduce asset purchases and shore up the sustainability of the monetary easing.

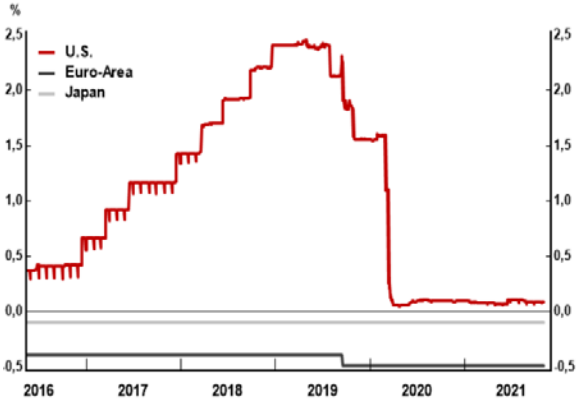
5. First, the interest rate scheme would help mitigate the negative impacts of a more negative policy rate on the profitability of financial institutions should the BOJ decide to cut the policy rate further. This is a welcome policy initiative as the interest rate subsidies would be directly linked to banks' lending to the economy. It is sensible also because the BOJ's policy space to further lower the policy rate cut remains unchanged (Figure A2.3). Credit growth during the pandemic has jumped up, a sign that the policy rate in Japan is still above the reversal rate [32]. That said, the marginal effects of the transmission to bank lending would still likely diminish as the policy rate further declines. As a reference, the growth of credit in both Euro-area and Japan has not picked up strongly since the adoption of the negative interest rates (Figure A2.4). Meanwhile, in the implementation of the interest rate scheme, it would be important for the authorities to ensure that funds are indeed channelled to spending by corporates and households to boost the real economy and inflation. For instance, evidences showed that some Euro-Area banks borrowed from the ECB via Target Long Term Refinancing

[31] The interest rate scheme applies incentives linked to the short-term policy interest rate, currently at -0.10 percent, to financial institutions' current account balances, corresponding to the outstanding funds provided through fund-provisioning measures. The eligible fund-provisioning measures and the incentives will be categorized into three groups. For details, please refer to "Establishment of "Principal Terms and Conditions of the Interest Scheme to Promote Lending" published by the BOJ on March 19, 2021. For all categories, twice as much as the amount of increase in loans will be included in the Macro Add-on Balances in current accounts held by financial institutions at the BOJ. Should the policy rate decline further, applied interest rates in each category will be adjusted.

[32] According to Brunnermeier and Koby (2019), "The Reversal Interest Rate", IMES Discussion Paper, 2019-E-6, the reversal interest rate is the rate at which accommodative monetary policy reverses and becomes contractionary for lending.

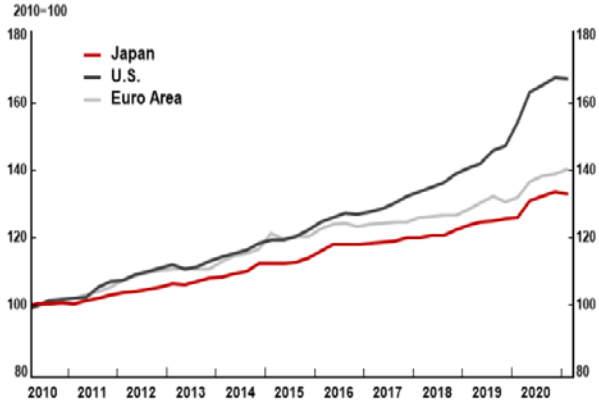
Operations and used some of these funds to purchase higher-yielding medium-term bonds, such as Italian or Portuguese government bonds, instead of granting loans to the real economy[33].

Figure A2.3 Key Policy Rates in U.S., Euro-Area, and Japan



Source: BOJ; ECB; Fed; Haver Analytics

Figure A2.4 Lending to Non-financial Private Corporates in U.S., Euro-Area and Japan



Source: Bank for International Settlements; Haver Analytics

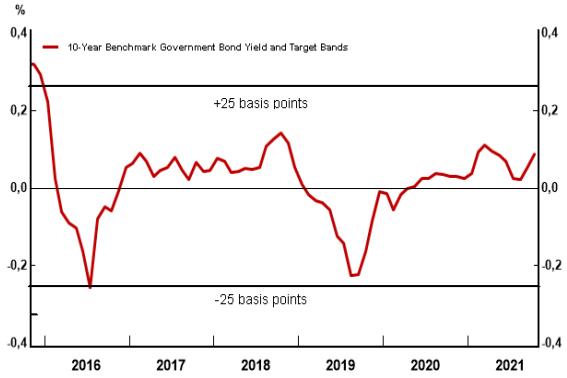
6. Second, clarifying the range in which 10-year bond yield can fluctuate would help facilitate market functioning while securing the effects of monetary easing. 10-year bond yields have not touched the upper bound since the policy assessment was announced, despite the increase in yields of U.S. Treasuries and the volatility has been mainly driven by external market conditions (Figure A2.5). This policy action is a welcome move. After shifting the policy target from quantity to interest rate, the BOJ has no need to purchase long-term JGBs aggressively to anchor the 10-year JGB yield target. In fact, the BOJ has reduced the pace of long-term JGB purchases this year, despite abolishing the annual purchase guidance in 2020 when the pandemic hit (Appendix 1, Figure 1.3). In addition, market liquidity has deteriorated since the introduction of the QQE, although it has been gradually improving in recent years as shown in the bond market survey conducted by the BOJ. However, quantity-based liquidity measures based on actual market transaction, such as market depth and transaction volume, have been showing little signs of recovery. The clarification of the range could help alleviate the concerns over bond market liquidity.

7. Third, the BOJ's change in the way of making ETF purchases is another welcome move. The BOJ abandoned its JPY6 trillion annual target for ETF purchases while retaining the JPY12 trillion annual upper limit, which would allow the central bank more flexibility and enable it to intervene only during a market downturn (Figure A2.6). In addition, the BOJ decided to purchase only ETFs tracking the TOPIX, which is an index with the largest number of component stocks, to avoid distortionary impacts on individual stocks as much as possible. However, there could be some issues around some of the BOJ's past ETF purchases. It first bought Nikkei 225-linked ETFs and TOPIX-linked ETFs, but some investors had complained that the Nikkei 225 stock prices had been distorted by the BOJ's massive purchase. Even with its diversified ETF purchases, the BOJ has become the biggest shareholder of some companies, which could lead

[33] "Euro zone bonds steady ahead of TLTRO take-up", Reuters, June 18, 2020. Fonseca et al. (2015) suggest that Portuguese banks participating in the second 3-year LTRO bought significant amounts of high yielding short-term domestic government bonds for carry trade or liquidity parking motives.

to concerns over the corporate governance. At the same time, the BOJ could face the risk of incurring huge losses on its equity holdings should stock prices fall sharply in the future. This would result in concerns about the solvency of the central bank, and the need for recapitalization from the government.

Figure A2.5 10-year JGB Yields and the Target Band



Source: BOJ; Haver Analytics

Figure A2.6 Pace of ETF Purchases

Source: BOJ; Haver Analytics

8. Looking ahead, the BOJ should maintain the current easy monetary policy stance in the near term to support the economy. Considering the sharp economic downturn since the outbreak of the pandemic, the BOJ's strong commitment to continuing monetary easing in a sustainable manner have been essential in supporting the steady, albeit bumpy, economic recovery. In this regard, the BOJ's policy assessment in March 2021 was an important step to convey its assessment of both the positive and negative policy effects since the introduction of the QQE with the YCC policy, while mitigating side effects in the financial system. If the pandemic worsens, the BOJ should stand ready to ease further under the current flexible framework after the policy tweak in March 2021. When the BOJ further lowers the policy rate, applying the new policy rate to a wider range of current accounts than in the current framework could be an option.

9. To support the sustainability of monetary easing, the BOJ is committed to maintaining the price stability target amid weak inflation in Japan. The BOJ has maintained its stance that the 2 percent target is achievable although it seems that more time would be needed to reach it. To contain persistent deflationary pressures in Japan and anchor inflation expectations, the BOJ has argued that it is necessary to maintain the price stability target at the current level. However, some market participants have questioned the feasibility of achieving the 2 percent target as almost a decade has passed since the target's introduction in January 2013, and the target has never been reached.

10. In addition, the BOJ should continue its efforts to strengthen close communication with the market and the public. First, priorities among the monetary policy instruments should be made clearer to the market. The BOJ has switched to "interest rate guidance" from "quantity guidance", and thus maintaining the effectiveness of the YCC should be paramount compared to setting the pace of various asset purchase programs. Second, the

BOJ is encouraged to further promote public understanding of its inflation target. Public awareness of the 2 percent inflation target is hovering only around 20 percent in Japan, despite the extensive media coverage when the BOJ raised the inflation target from 1 percent to 2 percent in 2013. Third, to enhance credibility of the BOJ's inflation forecast, which is subject to frequent downward revisions, greater efforts should be made in explaining to the market and the public how the central bank identifies trends in price movements in a timely and accurate manner.

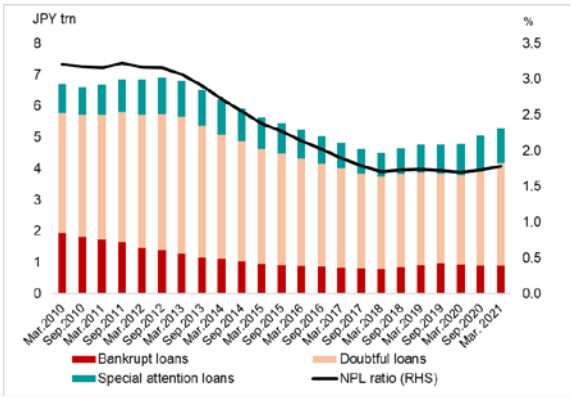
11. Given the BOJ's massive balance sheets, it should consider a credible exit path from the prolonged monetary easing. While major central banks are beginning to taper their monetary policy support for their economies, the BOJ's balance sheets continue to grow as its easy monetary policy stance is expected to remain unchanged over the medium term. To minimize unexpected disruption, both in the JGB and the asset markets, closer communication to deepen the understanding of the market about a credible exit path would be prudent, even though the price stability target may only be achieved in the medium term. As the BOJ's holding of government debt is still high, gradual steps with clear guidance and close cooperation with the government would be necessary to conduct an orderly unwinding of the current monetary easing while maintaining the central bank's financial soundness and the government's credibility in fiscal management.

3. Stress Testing the Resilience of Regional Banks in Japan[34]

Background

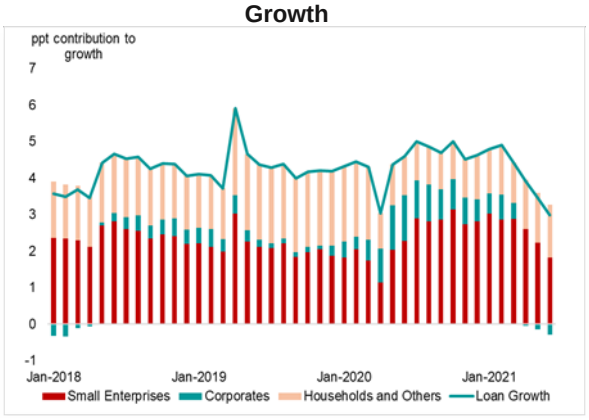
1. Japanese regional banks have been facing tougher challenges in maintaining their financial soundness amid the prolonged COVID-19 pandemic. The non-performing loans (NPLs) of regional banks, while still at a low level, have increased modestly with increases in "doubtful" and "special attention" loans (Figure A3.1). Regional banks also continue to face structural challenges that had existed before the pandemic, such as weak credit demand in an aging population and a low interest rate environment. The loan growth of regional banks has recently decelerated after an increase in the second half of 2020 (Figure A3.2). While capital adequacy ratios (CARs) of regional banks are relatively stable and remain above the minimum regulatory requirements of 4 percent for domestic banks and 10.5 percent[35] for internationally active banks, most banks continue to suffer from relatively low profitability[36] (Figure A3.3, A3.4).

Figure A3.1 Regional Banks: NPLs Outstanding



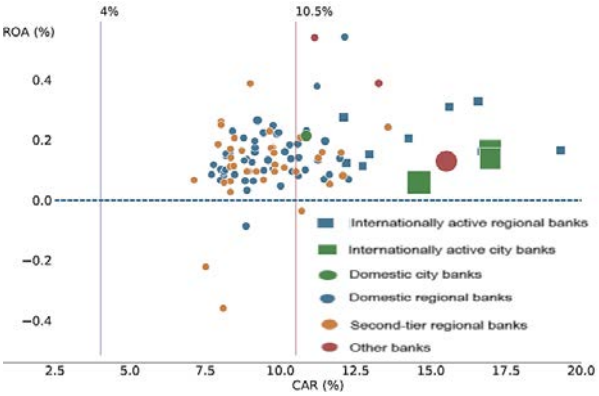
Source: Financial Services Agency (FSA) via Haver Analytics

Figure A3.2 Regional Banks: Contribution to Loan Growth



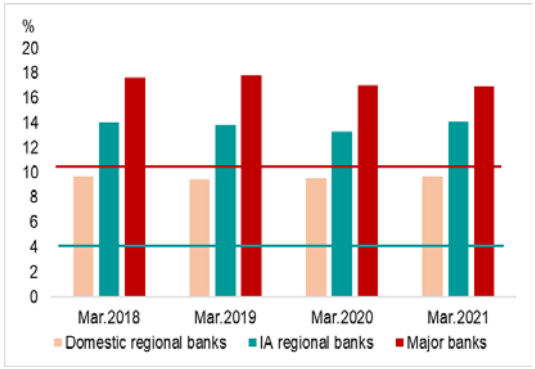
Source: Japanese Bankers Association via Haver Analytics

Figure A3.3 All Banks: CARs vs. ROA



Source: BankFocus and AMRO staff calculations
Note: The size of the bubbles represents the relative asset size of banks. The blue vertical line represents the minimum regulatory CAR of 4 percent for domestic banks. The red vertical line represents the minimum regulatory CAR of 10.5 percent for internationally active banks. The minimum regulatory CAR for internationally active banks includes requirements on the regulatory capital and capital conservation buffer.

Figure A3.4 All Banks: CARs



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

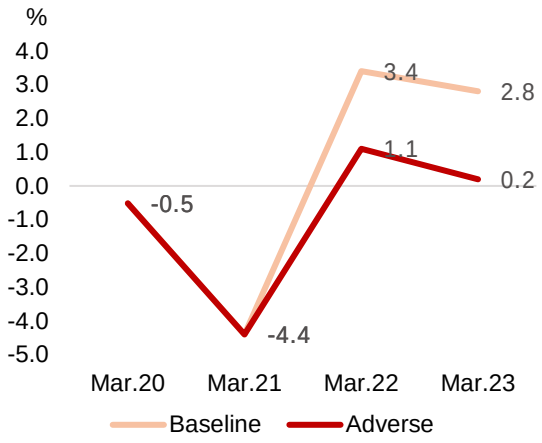
[34] Prepared by Trung Thanh Vu, Associate Economist.
[35] The minimum regulatory CAR of 10.5 percent for internationally active banks includes the capital conservation buffer of 2.5 percent.
[36] Although the return on assets (ROA) varies across countries and depends on factors such as regulatory regime, as a rule of thumb, the ROA smaller than one percent suggests weak profitability; the ROA between one and two percent suggests a healthy level of profitability; and the ROA larger than two percent suggests strong profitability (Golin and Delhaise, 2013)

2. Asset quality deterioration is one of the risks faced by Japanese regional banks. As the pandemic continues, challenges faced by firms have increasingly shifted from liquidity concerns in the early phase of the pandemic to solvency concerns recently (BOJ Financial System Report (FSR), April 2021). Furthermore, although the government's support measures help mitigate the impacts of the pandemic on firms, the default rate of some firms may still increase in the next few years (BOJ FSR, October 2021). This would especially be the case for firms facing a significant decrease in their cash flows during the pandemic, such as companies in face-to-face services sector. Thus, a sharp rise in bad assets could materialize, particularly in small- and medium-sized regional banks. Regional banks could also rebalance toward riskier assets such as high yields securities investments to ease pressure on their profitability amid a low interest rate environment, severe competition, and weak credit demand in an aging population. As a result, the deteriorating asset quality could weaken regional banks' overall financial soundness, threatening their viability.

Objective and Brief Overview of Methodology

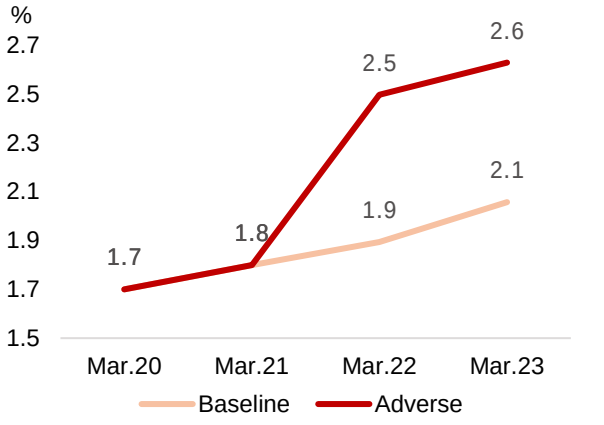
3. Given the risk of asset quality deterioration, this study examines whether regional banks have sufficient capacity to absorb potential credit losses. For this purpose, we conduct three exercises, namely, a forward-looking stress test, an estimate of credit losses, and a reverse credit risk stress test. The forward-looking stress test and the estimate of credit losses help determine whether banks have sufficient capital buffers against credit risks. The forward-looking stress test examines the resilience of banks under hypothetical baseline and adverse scenarios (Figure A3.5, A3.6). The reverse stress test does not require hypothetical scenarios; instead, it estimates the breakeven NPL ratios which would reduce banks' CARs to the minimum regulatory requirements (refer to the Appendix for details on methodology).

Figure A3.5 Forward-looking Stress Test: GDP Growth Scenarios



Source: BOJ
Note: The scenarios are based on "Baseline" and "Financial Stress" scenarios published in the BOJ's FSR October 2021.

Figure A3.6 Forward-looking Stress Test: NPL Ratio Scenarios

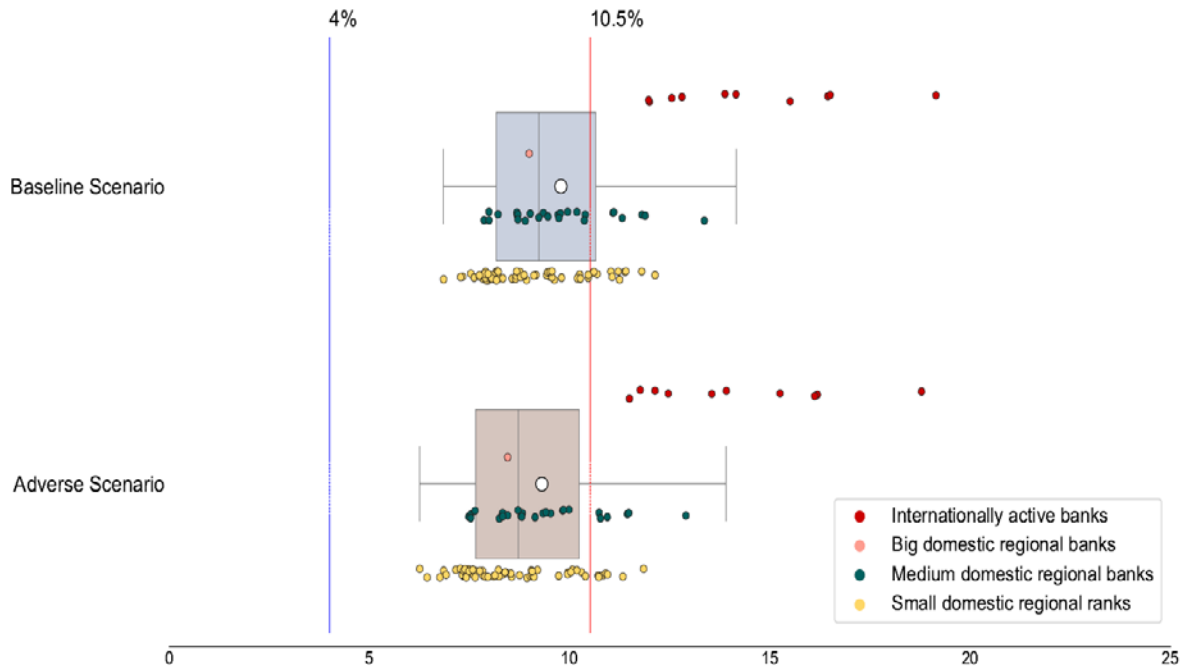


Source: BankFocus; Risk Data Bank of Japan; BOJ; Bloomberg; Haver Analytics; and AMRO staff calculations

Key Findings

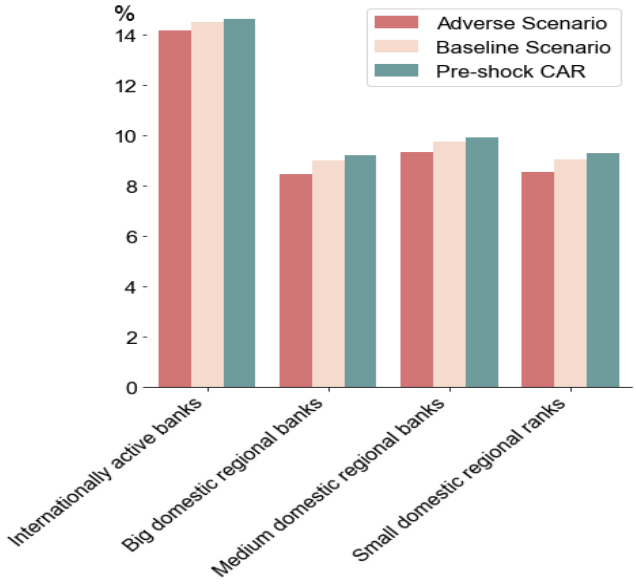
4. Regional banks are broadly resilient in the event of an adverse credit shock, although some banks are more vulnerable, as shown by the forward-looking stress test. The forward-looking stress test results show that regional banks are able to maintain their post-shock CARs above the minimum regulatory requirements. In particular, under an adverse scenario, average post-shock CARs are above 8 percent for all types of regional banks (Figures A3.7, A3.8). The distribution of post-shock CARs reveals that, although small and medium regional banks are less resilient to credit shocks, all banks could sustain their CARs above the minimum regulatory requirement of 4 percent for domestic banks and 10.5 percent for internationally active banks. The resilience of Japanese regional banks could also be seen from the fact that regional banks were able to maintain stable CARs amid the pandemic. The average CAR of regional banks slightly increased in FY2020-2021, mostly because many new loans were guaranteed by credit institutions with zero or low-risk weight (Figure A3.4).

Figure A3.7 Forward-looking Stress Test: Post-shock CARs



Sources: BankFocus, Haver Analytics, BOJ, and AMRO staff estimate
Note: Each dot represents one bank in the sample. Big banks comprise those whose total assets are equal to or greater than 3 percent of the total assets of regional banks in the sample. Medium banks comprise those whose total assets are between 1-3 percent of the total assets of regional banks in the sample. Small banks comprise those whose total assets are equal to or lower than 1 percent of the total assets of regional banks in the sample. The adverse scenario is shown in figures 3.5 and 3.6 in which a decline in GDP growth will translate into an NPL ratio of 2.6 percent over two-year horizon (refer to Appendix for details on methodology). The blue vertical line represents the minimum regulatory CAR of 4 percent for domestic banks. The red vertical line represents the minimum regulatory CAR of 10.5 percent for internationally active banks. The white dot in the middle of the box plot represents the mean of CAR in each scenario.

Figure A3.8 Forward-looking Stress Test: Mean of CAR by Bank Types

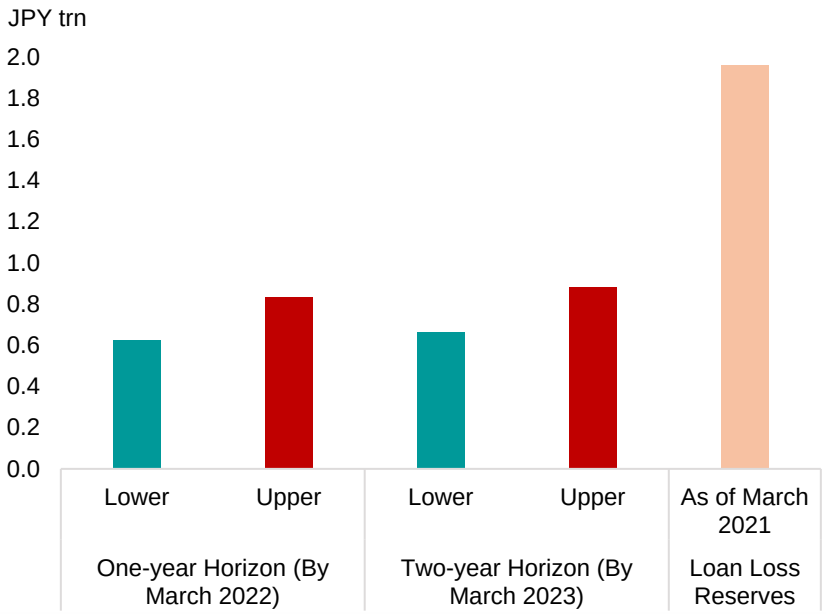


Sources: BankFocus, Haver Analytics, BOJ, and AMRO staff estimate
Note: Big banks comprise those whose total assets are equal to or greater than 3% of the total assets of regional banks in the sample. Medium banks comprise those whose total assets are between 1-3 percent of the total assets of regional banks in the sample. Small banks comprise those whose total assets are equal to or lower than 1 percent of the total assets of regional banks in the sample. The adverse scenario is based on the two-year shock on NPL ratio at 2.6 percent, given an assumption of no change in the current level of loans, loan-loss provisions, and capital.

5. Our credit loss estimation shows that expected credit losses associated with loans provided by regional banks to corporate and small businesses will likely see moderate rises over the years of 2022 and 2023. The expected credit losses by the end of March 2023 are around JPY0.7 trillion if the loss given default (LGD) is at the lower limit of 45 percent and JPY0.9 trillion if the LGD is at the upper limit of 60 percent[37] (Figure A3.9). Additionally, the current level of loan-loss reserves at regional banks, which is around JPY2 trillion JPY by the end of March 2021, will be enough to cover these losses. The moderate rises in expected credit losses are consistent with the fact that Japanese firms have been receiving relatively large precautionary loans on the back of the government's support measures. They have actually obtained more funding during the COVID-19 pandemic than during the GFC, and they are holding the borrowed funds in the form of cash reserves (BOJ FSR, October 2021). If firms continue to hold sufficient cash reserves to cover their obligations, this will likely prevent an increase in their PDs, and hence a sharp rise in potential credit losses at regional banks can be prevented.

[37] The lower and upper limits of LGD are based on Reinders et al. (2020).

Figure A3.9 Regional Banks: Expected Credit Losses

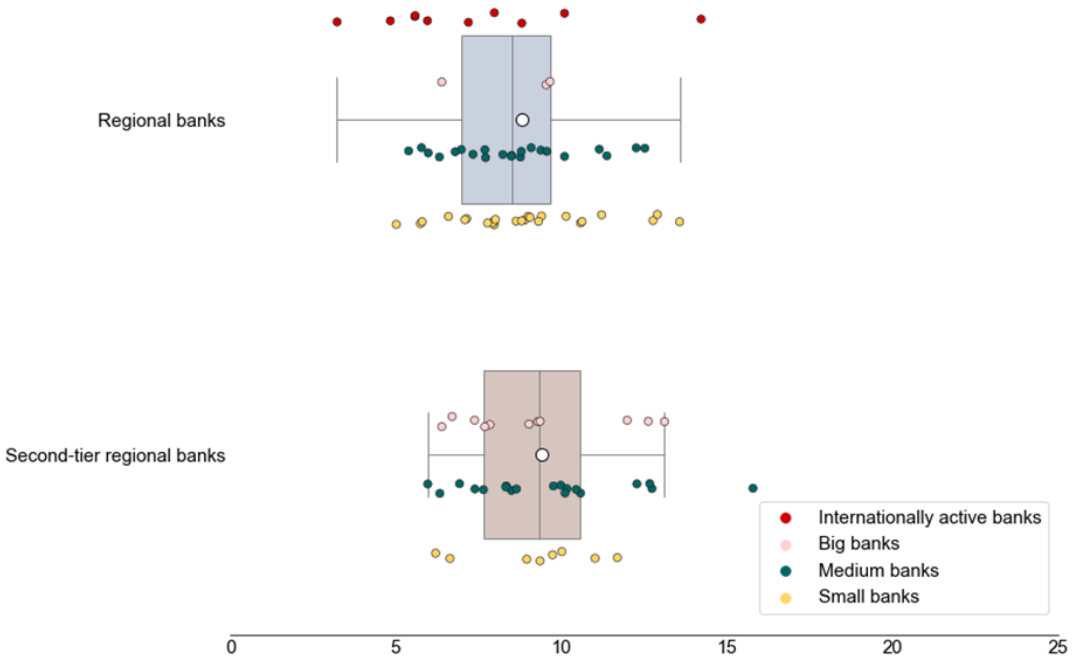


Source: BankFocus; Haver Analytics; and AMRO staff estimates
Note: "Lower" represents the case in which the LGD is at its lower limit of 45 percent, while "Upper" represents the case in which the LGD is at its upper limits of 60 percent. The lower and upper limits of the LGD are based on Reinders et al. (2020).

6. The reverse stress test also confirms that regional banks are relatively well buffered. The reverse stress test results show that the breakeven NPL ratio[38] would rise to an average of at least nearly 10 percent for regional banks (Figure A3.10). The bigger the increase in NPLs that is required to reduce existing CARs to the regulatory minimum, or the bigger the breakeven NPL ratio, the healthier the current buffer. For Japanese regional banks, the breakeven NPL ratio of nearly 10 percent is even higher than the historical peak of around 8 percent seen in the early 2000s, implying that, on average, banks currently have ample buffers. Additionally, the NPL ratio is unlikely to rise to the historical peak of around 8 percent seen in the early 2000s for three reasons. First, the government guarantees most of the new loans from regional banks to firms; thus, banks are immune from most of the credit losses in the short term. Second, after going through the experience of high NPLs in the 1990s, Japanese banks have significantly enhanced their credit risk management. Past experiences, together with enhancements in their credit risk management, could help banks cope with rising NPLs in the post-pandemic period. Third, Japanese banks have preemptively increased their loan-loss provisions as a precautionary measure for rising credit losses in the future.

[38] The breakeven NPL ratio is the ratio that would reduce banks' CARs to the minimum regulatory requirements.

Figure A3.10 Regional Banks: Breakeven NPL Ratios



Source: BankFocus; Haver Analytics; and AMRO staff estimates
Note: Each dot represents one bank in the sample. Big banks comprise those whose total assets are equal to or greater than 3 percent of the total assets of regional banks in the sample. Medium banks comprise those whose total assets are between 1-3 percent of the total assets of regional banks in the sample. Small banks comprise those whose total assets are equal to or lower than 1 percent of the total assets of regional banks in the sample. The regulatory CAR level used for testing internationally active banks is 10.5 percent, including the capital conservation buffer of 2.5 percent. The regulatory CAR level used for testing domestic regional banks is 4 percent. The white dot in the middle of the box plot represents the mean of the breakeven NPL ratio.

Conclusion and Policy Implications

7. Our analyses show that regional banks in Japan remain resilient in the short term, although uncertainty and structural challenges may loom large in the medium term. Regional banks remain sound and resilient thanks to their stable CARs and the government's support measures. However, they will continue to face structural challenges such as severe competition and weak credit demand in an aging population. Furthermore, the extent of any permanent scarring from the pandemic on the Japanese economy – and its impact on credit risks – is yet unknown. If the pandemic persists or worsens, the PD may rise, especially among firms that were already weak before the pandemic or firms that suffered a substantial decline in operating cash flows during the pandemic. If these firms eventually default, regional banks will face a deterioration in their asset quality.

8. Ensuring that regional banks can maintain their financial soundness continues to be a priority. The authorities continue to monitor and assess the resilience of regional banks by conducting stress tests. However, more stringent assumptions could be added to the stress tests, such as the withdrawal of government support measures during the pandemic. The stress tests that assume these support measures would be withdrawn at some point would help identify vulnerable banks and provide some indications of the timeline for unwinding the government's special lending programs in order to avoid a cliff effect. Furthermore, while an amendment to

the Banking Act[39] will help regional banks shift to new business models and expand their businesses to a broader range of financial services such as trading and real estate companies, regional banks could also end up holding riskier assets. Thus, while financial regulators continue to conduct oversight of high-risk investments by regional banks via on-site examination and off-site monitoring, either weekly or daily dialogues with vulnerable banks or with major regional banks would be useful.

9. Support from the authorities is also vital to help regional banks to adapt to a changing business environment amid the aging population in the medium term. Uncertainties due to the pandemic have prompted regional banks to enhance their business foundations. In this regard, the government can further expand its support to strengthen the business foundations of regional banks and to boost the local economy through a newly adopted grant scheme to cover merger costs.[40] Additionally, the BOJ's Special Deposit Facility can offer higher interest rate on deposits at the BOJ to encourage banks to strengthen their business foundations. The use of digital technology could also help banks improve their management efficiency (BOJ Review, May 2021). The authorities could continue to support regional banks' business diversification strategy, customized to an aging society, while promoting digital transformation such as software investment, IT training support, and cybersecurity management.

Appendix: Methodologies

The forward-looking stress test examines banks' capitalization levels under hypothetical stress. The stress test model is adapted from the Credit Risks Stress Test introduced by Cihak (2012)[41]. It has two main scenarios, namely, the baseline and adverse scenarios (Figure A3.5, A3.6). The two scenarios are constructed based on satellite models that estimate the connection between projected macroeconomic variables and asset quality variables of banks. In particular, the projections of GDP growth rates are obtained from "baseline" and "financial stress" scenarios published in the BOJ FSR published in October 2021[42]. The NPLs of banks are projected based on the estimate of credit losses and a panel regression that links the NPL ratios of individual regional banks with GDP growth rates.

Expected credit losses over one-year and two-year horizons are computed based on three risk parameters, including exposure at default (EAD), loss given default (LGD), and probability default (PD). In particular, the expected credit losses are defined as $EL =$

[39] The revised Banking Act allows banks to engage in new business activities, such as selling smartphone applications and IT systems and dispatching IT staff members to clients who need to digitize their operations through the banks themselves or their subsidiaries. In addition, the Act loosens restrictions on the maximum investment in business companies, which had been 5 percent in principle (15 percent in the case of holding companies), while allowing banks to take a 100 percent stake in unlisted companies that contribute to the regional economy, such as those revitalizing towns or promote tourism. The revised Act came into effect in November 2021.
[40] According to a new grant scheme enacted in July 2021, regional banks can get help to strengthen their business foundations through measures such as business integration among regional financial institutions. The government will pay up to JPY3 billion to each institution to cover about one-thirds of the initial costs related to business integration, including mergers and system and branch consolidation.
[41] The template was originally introduced by Cihak (2007), and subsequently updated in Cihak (2012).
[42] The BOJ's FSR and its projection data as of October 2021 can be found at:
https://www.boj.or.jp/en/research/brp/fsr/fsr211021.htm/

$\sum_i EAD_i \times LGD \times PD$ in which the loans and bills discounted of an individual bank are used as the EAD_i for an individual bank *i*. The LGD is assumed at a lower limit of 45 percent and an upper limit of 60 percent based on Reinders et al. (2020). PDs over one-year and two-year horizons are estimated based on the "RDB enterprise default ratio" (EDR) published by the Risk Data Bank of Japan[43]. In particular, the PD is estimated from a vector autoregression (VAR) model using quarterly data on the EDR (interim average), real GDP growth, unemployment rate, and the TOPIX rate of change from the previous quarter. Coefficients obtained from the VAR model[44] are used to project the PD over one-year and two-year horizons. Forecast values of GDP growth and TOPIX are obtained from the financial stress scenario published in the BOJ's FSR October 2021, while forecast values of unemployment rates are obtained from consensus forecasts obtained from Bloomberg.

The reverse stress test (RST) estimates breakeven NPL ratios which would reduce banks' CARs to the minimum regulatory requirements. The RST is adapted from Cihak (2012) and combined with features implemented in Ong, Maino, and Duma (2010), which estimates heterogeneous NPL shocks that would be necessary to bring the CARs of individual banks down to the required minimum. In this regard, it differs from Cihak (2012), which estimates the size of a system-wide NPL shock that would reduce the system CAR to the regulatory minimum.

Simplified assumptions are made in the three exercises above.

- The full impact of any shock to NPLs is assumed to be reflected in bank capital. In other words, profits are assumed to be zero at the time of the shock, and provisions are assumed to be topped up to ensure that the loans are again fully provisioned. Additional provisions in response to increases in NPLs would decrease capital, while write-offs would reduce risk-weighted assets (RWA), bringing down the CAR.
- The provisioning rate is set at 56 percent, which is calculated as the average of 20 percent for substandard loans, 50 percent for doubtful loans, and 100 percent for loss loans.

Stress-testing approaches used in this selected issue come with some caveats.

- Since PD data from household sector are not available, the estimated credit losses do not include the household sector and may not fully capture the expected credit losses faced by regional banks. According to data as of March 2021, household loans accounted for around 40 percent of total loans provided by regional banks. When we estimate the credit losses, the EAD is multiplied by 60 percent to capture losses associated with corporate and small firms.

[43] Historical data on the RDB enterprise default ratio are the default rates of borrowers observed in a pool data of Risk Data Bank (RDB) collected by financial institutions throughout Japan. A default is considered occur if either or both of the two following events take place: (i) a particular obligor will likely be bankrupt or be classified by banks as a bankruptcy, (ii) a particular obligor is past due more than three months on any credit obligation to banks.
[44] The selection of variables for the VAR model is based on research by JCER (April 2021). The lag length is up to four quarters which are selected based on the Akaike Information Criterion (AIC).

- The stress tests do not directly incorporate positive effects arising from the government's support measures, although these positive effects are to some extent captured in the current data used in the test. As most new loans from regional banks to firms are guaranteed by the government, the NPLs of regional banks have remained low. Additionally, as regional banks are making progress in strengthening their business foundation and have achieved some cost reductions, some banks may face less profitability pressure in the future. The stress test does not incorporate such improvements in the business foundation of the banks.

Input data for the three exercises are obtained from several sources. Data on banks' balance sheets are obtained from BankFocus, the Japanese Bankers Association (JBA), and the Regional Banks Association of Japan. Data on banks' balance sheets are as of March 31, 2021. The sample covers 99 regional banks, comprising 61 regional banks and 38 second-tier regional banks.

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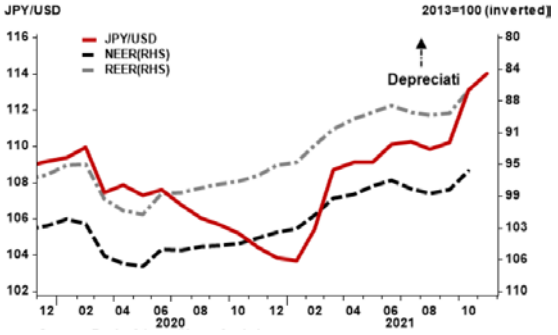
4. Japanese Yen's Dynamics during the Pandemic[45]

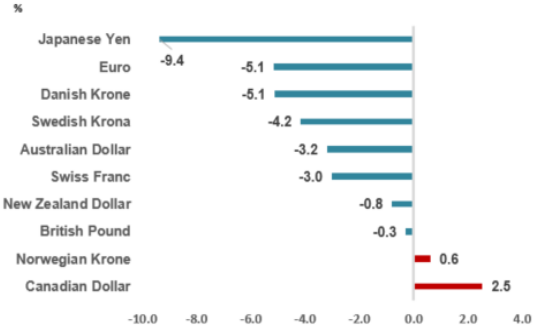
1. The dynamics of the Japanese yen (JPY)[46] followed a tilted "V-shape" during the COVID-19 pandemic. After a V-shape swing in the USD/JPY exchange rate at the outset of the pandemic, sharp declines in U.S. interest rates, a weaker dollar, and drops in unhedged investment outflows, pushed the Yen toward appreciation in 2020. This came after a year of depreciation reflecting large onshore sales of the JPY especially in the latter part of 2019, mainly due to sizable portfolio outflows to the U.S. Market participants had expected the appreciation of the JPY to continue into 2021, but instead, it swung around and depreciated sharply, reaching 114 yen per USD in December on the back of widening in the interest rate differential between the U.S. Treasury and Japanese government bonds (Figure A4.1). Also, the JPY weakened the most against the USD among major currencies in 2021 (Figure A4.2). Against this backdrop, this study looks at key drivers of the JPY movements during the pandemic period, particularly the interest rate differentials, portfolio flows, market positioning, and the JPY's status as a safe-haven currency.

Figure A4.1 The JPY against the USD and a Basket of Currencies



Source: BOJ; Haver Analytics
Note: N(R)EER stands for nominal (real) effective exchange rate including a basket of foreign currencies.

Figure A4.2 Performance of Major Currencies against the USD in 2021



Source: Bloomberg, AMRO Calculations

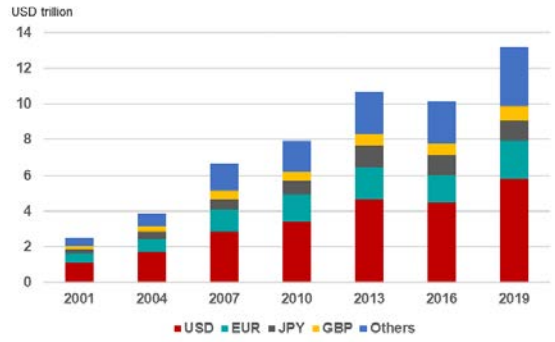
2. From the perspective of a longer horizon, the JPY has been and remains an important international currency in trade and investment. Over 75 percent of trades on the foreign exchange market are made using just four major currencies, and the JPY ranks third in usage (Figure A4.3). It is also the fourth most popular reserve currency behind the U.S. dollar, euro and sterling (Figure A4.4). The JPY has been regarded as a safe haven currency, in particular, when there are political or economic uncertainties in Asia and globally, and has served as one of the most popular funding currencies for investments. Investors mostly trade the USD/JPY currency pair and take JPY exposure largely via the spot and swap markets. The largest amount of the JPY trades take place in the United Kingdom (Figures A4.5, A4.6).

3. From a purchasing power parity (PPP) perspective, the JPY has been on the weak side for over the past two decades. The persistent deviation reflected a slow adjustment of price differentials between the U.S. and Japan, reflecting to a great extent the strong home bias

[45] Prepared by Kimi Xu Jiang, Economist.
[46] Throughout the analysis, we are referring to the USD/JPY currency pair unless stated otherwise.

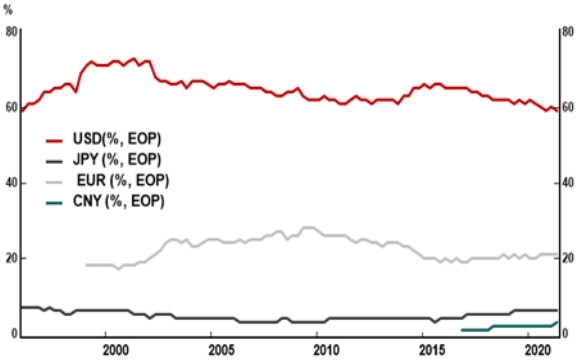
of Japanese consumption. As a reference, consumer prices in Japan had risen by only 2.9 percent over the past two decades, far lower than 59 percent increase in the U.S. The structural weakness mainly reflected Japanese residents' increased overseas investments, which were primarily due to the sluggish economic growth and low interest rates domestically.

Figure A4.3 Turnover of All Currencies



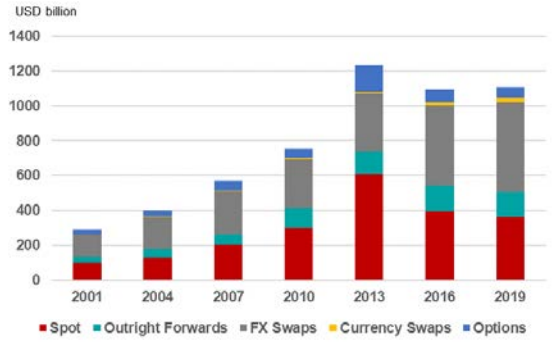
Source: BIS Triennial Central Bank Survey of Foreign Exchange and Over-the-counter (OTC) Derivatives Markets in 2019
Note: Adjusted for local and cross-border inter-dealer double-counting

Figure A4.4 Reserve Currencies



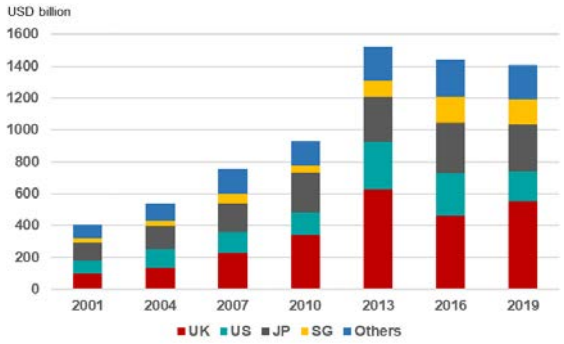
Source: IMF Official Foreign Exchange Reserves (COFER); Haver Analytics
Note: EOP refers to the end of the period in each month.

Figure A4.5 JPY Turnover by Instrument



Source: BIS Triennial Central Bank Survey of Foreign Exchange and Over-the-counter (OTC) Derivatives Markets in 2019
Note: Adjusted for local and cross-border inter-dealer double-counting

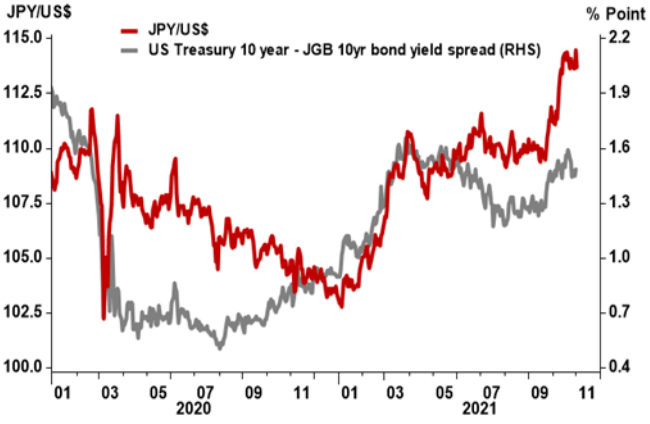
Figure A4.6 JPY Turnover by Location



Source: BIS Triennial Central Bank Survey of Foreign Exchange and Over-the-counter (OTC) Derivatives Markets in 2019
Note: Adjusted for local and cross-border inter-dealer double-counting

4. The interest rate differential between the U.S. Treasury (UST) and Japanese government bonds (JGBs) has been the main driver of USD/JPY movements in the short run (Figure A4.7). A sharp decline in the 10-year yield spread between the UST and the JGB shortly after the pandemic outbreak led to a steady appreciation of the JPY in 2020, producing the first leg of the V-shape exchange rate developments. As interest rates in the U.S. rebounded later in 2020, the JPY reversed direction in early 2021 and has depreciated steadily through December, forming the second leg of the V-shape. The

Figure A4.7 USD/JPY and Yield Differentials

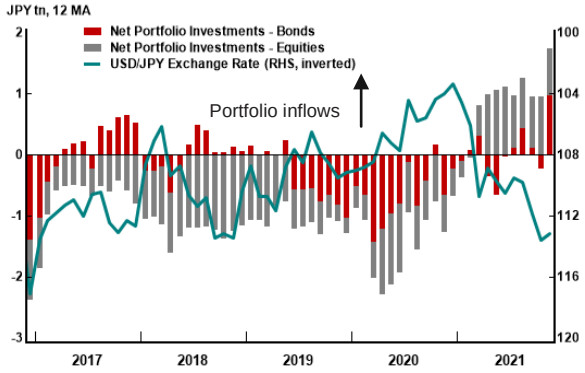


Source: BOJ, Haver Analytics.

depreciation of the JPY followed the increases in the UST yields as inflation rose sharply in the U.S. on account of the massive fiscal stimulus packages, leading to a strong rebound in domestic consumption, coupled with the effects of supply disruptions.

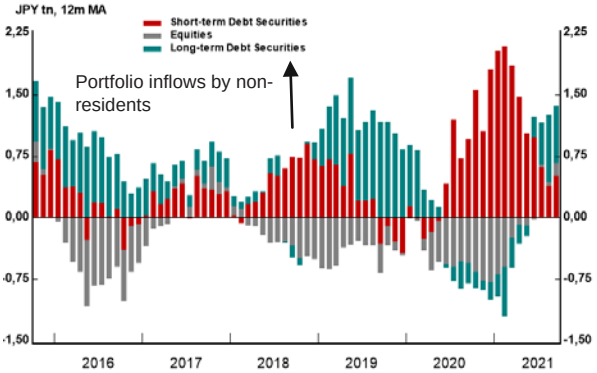
5. Although portfolio investment flows have been considered one of the important drivers of FX movements in the past, they have not been a key driver of JPY movements during the pandemic. Japan's foreign portfolio investment (FPI) account turned from net selling of the JPY in 2020 to net buying in 2021 (Figure A4.8)[47], but the magnitude of the switch was not comparable to the huge net sell-off of the JPY last year, particularly between Q1 and Q3. The main reasons for the FPI balance turning to net JPY buying were twofold: 1) foreign investors ended their sales of Japanese equities [48] and inward FPI recovered (Figure A4.9), and 2) Japanese investors undertook big sales of foreign assets. However, portfolio investment flows have moved in the opposite direction of the actual exchange rate movements, suggesting they have not been the key driver of USD/JPY exchange rate movements. One explanation can be that portfolio investment flows do not necessarily include foreign exchange transactions. As an example, Japanese banks often borrow the US dollars to purchase US Treasuries. This trade is categorized as portfolio outflows, even though it does not involve foreign exchange implications.

Figure A4.8 Net Portfolio Investments by Asset – Bonds and Equities



Source: JMOF; Haver Analytics
Note: Bars denote the difference between net purchases of Japanese assets by non-resident investors and those of foreign assets by Japanese investors. A positive (negative) number shows net portfolio inflows (outflows).

Figure A4.9 Non-resident Net Purchases of Japanese Bonds and Equities



Source: JMOF; Haver Analytics
Note: Bars denote the difference between net purchases Japanese assets by non-resident investors. A positive (negative) number shows net portfolio inflows (outflows).

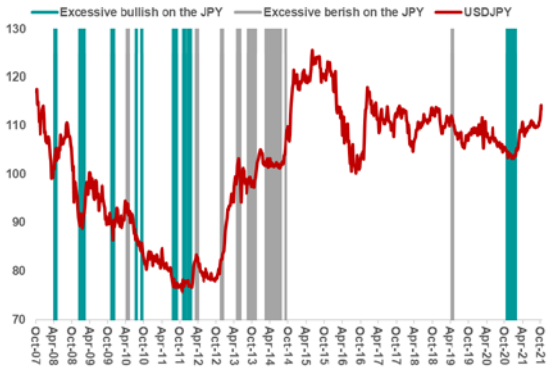
6. Markets have been shorting the JPY, but the size of the short positioning has been neither extreme nor as high as seen in the 2008 GFC. Data from the Commodity Futures Trading Commission (CFTC) are one of the few market positioning indicators available to analyze market sentiment. Based on the number of investors' long and short positions, we calculate a signal which characterizes the market sentiment as excessively bullish or bearish on the JPY. Extreme sentiment gives the warning that the trend is close to ending and that a period of consolidation, or an outright reversal, may follow[49]. As an example, in Figure A4.10, the

[47] In the past, purchases of foreign assets by Japanese investors (outward FPI) were larger than purchases of Japanese assets by non-resident investors (inward FPI), so the FPI balance was usually in deficit and thus contributed to net selling of the Japanese yen in supply-demand estimates.
[48] By asset, notably during the pandemic, foreigners' sales of Japanese equities were particularly large last year, reducing their net equity holdings by about JPY10 trillion in 2020.
[49] Tops and bottoms in price and positioning tend to occur at the exact same time, and often in the same week. There are instances when the tops and/or bottoms in price and positioning occur a few weeks apart.

market became excessively bullish on the JPY in 2020 Q4 and signaled a coming shift to depreciation into this year.

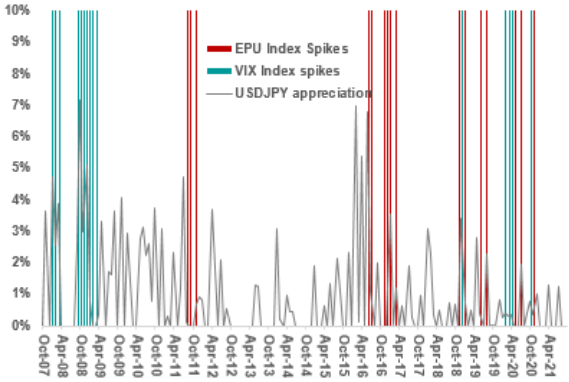
7. The JPY remains a safe-haven currency, although less so than before, and its role as a funding currency has diminished. Japan's currency typically appreciates in risk-off periods when market volatility is expected, proxied by the VIX index or rising, and/or when economic and policy uncertainty, proxied by the global Economic Policy Uncertainty (EPU) Index, is high. That said, the currency has become less sensitive these days (Figure A4.11). According to a study by Bloomberg[50], the JPY has maintained its status as the top safe-haven currency in much of the past decade. However, the U.S. dollar replaced the JPY at the top of the safe-haven currency rankings in 2021 H1. This also happened at the outset of the COVID-19 outbreak when USD funding in the markets was experiencing stress.

Figure A4.10 Net Positioning of the JPY



Source: Bloomberg; CFTC; AMRO staff calculations
Note: Commodity Futures Trading Commission (CFTC) reports weekly on the positioning of speculative and commercial traders in the various futures markets, including the JPY. It can be used as a proxy for positioning in the spot JPY market for which the positioning information is not widely available. The excessive bullish and bearish indicators are defined as the ratio between speculative long positions and total speculative positions. The threshold for the excessive bullish (bearish) indicators is chosen to be 0.8 (0.15).

Figure A4.11 The JPY as a Safe-Haven Currency



Source: Bloomberg; AMRO staff calculations
Note: The grey line shows the monthly appreciation of the JPY against the USD. The line is flat if the JPY is unchanged or depreciates in a month. The EPU index is a global economic uncertainty index. Spikes for both EPU and VIX are identified when the z-score is above 2.

8. Looking ahead, market participants expect the JPY to remain weak in 2022, as indicated by a Bloomberg survey. The survey projects that the USD/JPY rate will stay at the current level of 114 at end-2022. Interest rate differentials between the UST and the JGB would likely continue to be the main driver of near-term developments of the JPY. The U.S. Federal Reserve has announced a plan for its asset purchases to taper off, while the BOJ's Yield Curve Control would probably remain unchanged. Risks for a weaker JPY mainly come from an earlier-than-expected policy rate hike by the Fed, the recovering outward foreign direct investments of Japanese firms, and the weakening trade balance due to higher oil prices, whereas risks for a stronger JPY could arise from demand for a safe haven, triggered by, for instance, a deterioration of U.S.-China relations and larger-than-expected net portfolio inflows into Japan.

[50] "Japan Insight: Dollar Bumps Yen from Top Spot in Haven Shakeup", July 14, 2021, Bloomberg.

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**