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## **Valuation and Currency Risks: The Bank of Japan's Room for Manoeuvre is Limited<sup>1</sup>**

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### Abstract

The Bank of Japan has come under pressure to tighten monetary policy. The study examines the risks of an interest rate hike for the Japanese government, the Bank of Japan and the Japanese financial sector and derives possible repercussions for the international financial stability. It finds that there are significant valuation and currency risks in the private financial sector that limit the Bank of Japan's room for manoeuvre. Although further interest rate cuts in the USA reduce the risk of valuation changes in US government bonds, they increase the risks resulting from an appreciation of the yen against the dollar.

### Zusammenfassung

Die Bank von Japan ist unter Druck geraten, die Geldpolitik zu straffen. Die Studie untersucht die Risiken einer Zinserhöhung für den japanischen Staat, die Bank von Japan und den japanischen Finanzsektor und leitet mögliche Rückwirkungen für die internationalen Finanzmärkte ab. Sie kommt zu dem Ergebnis, dass im privaten Finanzsektor maßgebliche Bewertungs- und Währungsrisiken liegen, die den geldpolitischen Handlungsspielraum der Bank von Japan einschränken. Erneute Zinssenkungen in den USA senken zwar das Risiko von Bewertungsänderungen bei US-amerikanischen Staatsanleihen, erhöhen aber die Risiken, die aus einer Aufwertung des Yen gegenüber dem Dollar resultieren.

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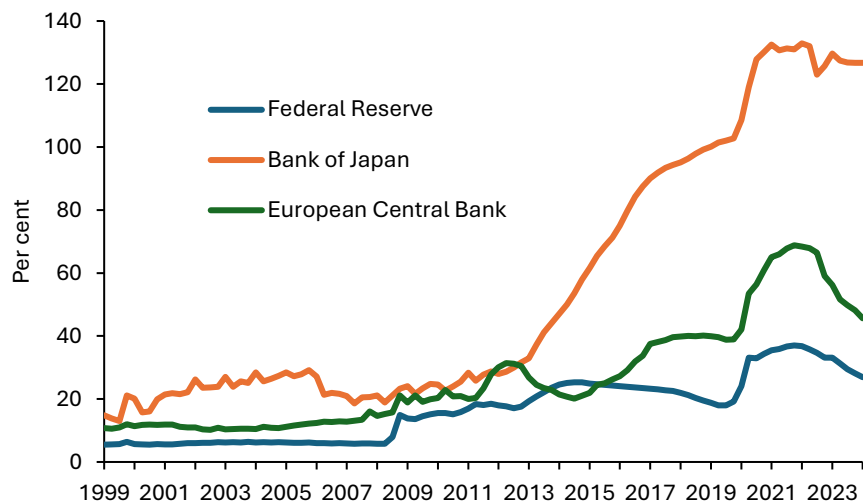
<sup>1</sup> We thank Taiki Murai and Philipp Becker for their excellent support.



## 1. The Bank of Japan Did Not Follow the Interest Rate Hikes of Other Central Banks

With the rise in consumer price inflation from 2021, the US Federal Reserve (Fed) and the European Central Bank (ECB) have raised interest rates sharply and shorten their balance sheets. In the US, the target corridor for money market interest rates has risen to between 5.25 and 5.5 per cent, while the main refinancing rate in the eurozone stands at 4.25 per cent following a rate cut in June 2024. In contrast, the Bank of Japan (BoJ) has only raised its key interest rate slightly from minus 0.1 per cent to 0.25 per cent since the first rate hike in 17 years in March 2024.

Figure 1: Fed, ECB and Bank of Japan: Share of Balance Sheets in GDP



Source: Bloomberg, Federal Reserve of St. Louis, Flossbach von Storch Research Institute, as at June 2024. GDP = gross domestic product.

*The Bank of Japan has lagged far behind the Federal Reserve and the European Central Bank in terms of the level and momentum of the reduction in the central bank balance sheet, known as **quantitative tightening**.*

The Bank of Japan (BoJ) has also lagged far behind the Fed and ECB in terms of the level and momentum of the reduction in the central bank balance sheet, known as *quantitative tightening* (see Figure 1). The Bank of Japan has not only expanded its balance sheet significantly more in the past. While the Fed has been reducing the volume of its balance sheet since January 2022 and the ECB since November 2022, the Bank of Japan is currently still buying the equivalent of three trillion yen worth of government bonds per month and has allowed the long-term interest rate to rise to only around one per cent. Goldman Sachs expects the Bank of Japan to raise the key interest rate to between 1.25 and 1.50 per cent by 2027. Yields on ten-year Japanese government bonds could then reach two per cent by the end of 2026 (Teso and Yamanaka 2024).



Research on Japanese monetary policy has so far focussed on the effects of unconventional monetary easing since 2001.<sup>2</sup> Ikeda et al. (2024) find that the Bank of Japan's unconventional monetary policy has been effective (with delays). In contrast, Ouliaris and Rochon (2024) argue that the effectiveness of quantitative easing was low and has decreased since 2013 with the so-called Abenomics<sup>3</sup>. Basu and Wada (2023) identify an influence of quantitative and qualitative easing on bond yields, Harada and Okimoto (2021) on the Nikkei 225 stock index.

In light of the relatively high key interest rates in other industrialised countries and rising inflation rates in Japan, the study investigates the possible effects of further monetary policy tightening on the government, the Bank of Japan and the financial sector in order to derive implications for international financial market stability.

## **2. Japan's Government: Debt and Interest Burdens**

Rising interest rates pose a risk for the Japanese government, as government debt has risen from 63 per cent of gross domestic product (1990) to over 250 per cent since the Japanese bubble economy burst at the end of the 1980s (Figure 2).<sup>4</sup> The outstanding debt of the Japanese central government stood at 1,297 trillion yen (8,684 billion dollars) at the end of March 2024<sup>5</sup> (Japan Ministry of Finance 2024a). For a long time, the share of interest payments in the Japanese central government's budget remained moderate despite the steep rise in government debt because the Bank of Japan kept interest rates low with extensive purchases of government bonds (Schnabl 2015). The Bank of Japan currently holds 53.9 per cent of the Japanese government's outstanding longer-term bonds (JGBs) and continues to purchase government bonds. It has kept interest rates on ten-year government bonds at zero since September 2016 with the so-called yield curve control. Most recently, it has allowed interest rates on ten-year government bonds to rise to around one per cent. Japan's long-term interest rate level has stayed substantially below the USA (Figure 3).

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<sup>2</sup> This has culminated in so-called yield curve targeting - the control of interest rates at both the short and long end of the yield curve at a level close to zero.

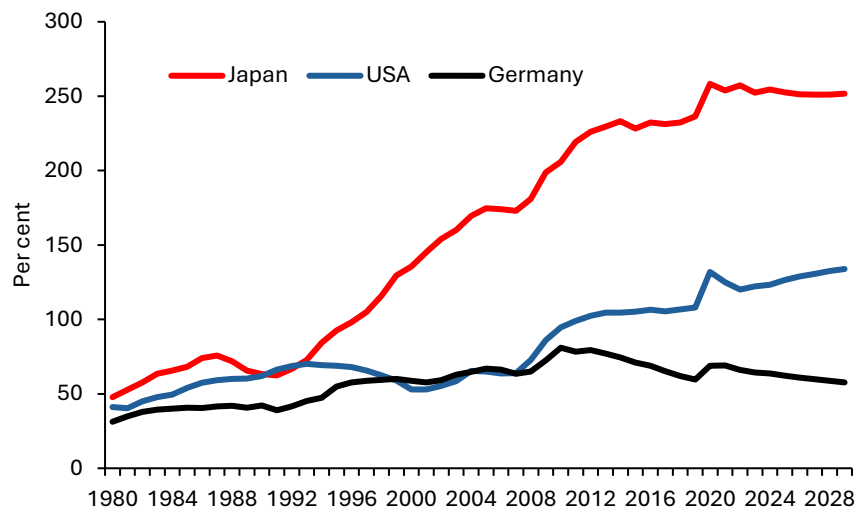
<sup>3</sup> A combination of strong monetary and fiscal policy expansion and (limited) structural reforms.

<sup>4</sup> This is far higher than in the USA (126%) and the eurozone (89%).

<sup>5</sup> All yen amounts are converted into dollars at an exchange rate of 149.36 yen per dollar (1 August 2024) as comparative values.



Figure 2: Japan, USA, Germany: Government Debt as a Percentage of GDP



Source: Bloomberg, International Monetary Fund, Flossbach von Storch Research Institute, as at August 2024. Forecast from 2024 onwards.

*The Japanese government's net interest burden is much lower than many people assume. The risk of interest rate hikes is therefore limited for Japan's government.*

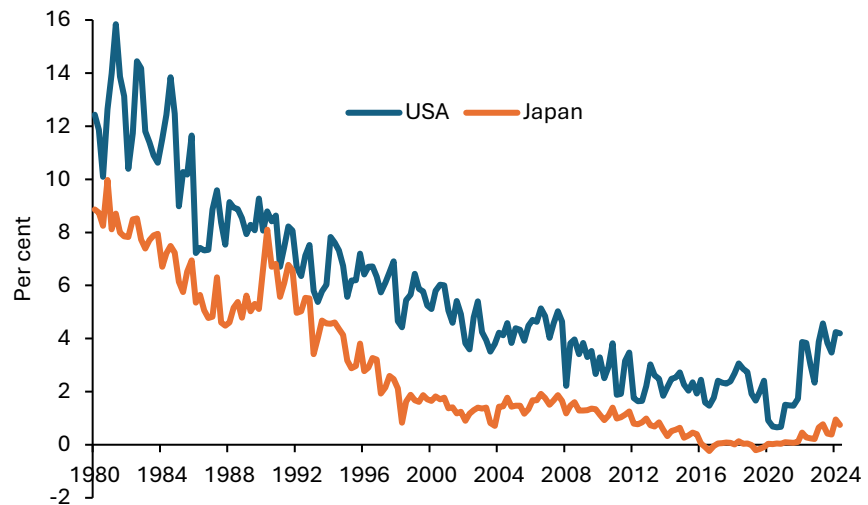
If the Bank of Japan, like the Fed and the ECB, were to further push ahead with a reduction in the amount of government bonds on its balance sheet, the Japanese government's interest burden would likely increase for three reasons. Firstly, a major buyer would withdraw from the market for Japanese government bonds, which is why private investors would only buy at higher interest rates. Secondly, the Japanese government has the highest level of public debt as a proportion of gross domestic product among industrialised countries. The risk premium would rise sharply, especially as the structural budget deficit remains high.<sup>6</sup> Thirdly, an increase in long-term interest rates in Japan would slow down the already weak economy, which would further dampen tax revenues that have been declining gradually with the budget deficit increasing.

The Japanese central government's debt stood at 1,297 trillion yen (8,684 billion dollars) at the end of 2023. The expected interest expenditure in the 2024 fiscal year is estimated at 9.7 trillion yen, or 8.6 per cent of the total budget (Japan Ministry of Finance 2024a). According to an estimate by the Cabinet Office of the Japanese government, average long-term interest rates will rise from 0.6 per cent in the 2023 fiscal year to 1.5 per cent in 2028 and 3.4 per cent by the 2033 fiscal year. In a high growth scenario, this would triple the Japanese government's interest payments from 7.6 trillion yen (2023) to 11.5 trillion yen (2028) and finally to 22.6 trillion yen (2033) (Arai 2024).

<sup>6</sup> The IMF's forecast for the government deficit for 2024 is 6.5% of gross domestic product.



**Figure 3: Japan and USA: Ten-year Government Bond Yield**



Source: Bloomberg, ECB, Flossbach von Storch Research Institute, as at August 2024. **Historical performance is not a reliable indicator of future performance.**

Due to the persistently weak economy, there is great uncertainty regarding the expected tax revenue. In addition, the Japanese government's expenditure obligations in the social sector are likely to continue to increase significantly due to the rapidly ageing society (Japan Ministry of Finance 2024a). The probability of a default of the Japanese government and a debt crisis in one of the largest industrialised countries would increase significantly.

However, the Japanese government not only has a high level of debt, but also considerable financial assets. These include high foreign exchange reserves (Japan Ministry of Finance 2024b), which the Japanese Ministry of Finance has accumulated in particular in the course of recurring foreign exchange market interventions against yen appreciation (dollar purchases and yen sales) (Ito 2003, Hillebrand and Schnabl 2008).<sup>7</sup> It can therefore be assumed that a large proportion of the foreign exchange reserves are in dollars. The Ministry of Finance's foreign exchange reserves totalled just under 1,232 billion dollars at the end of May 2024.

As the currency reserves are held by the Japanese Ministry of Finance, i.e. the Japanese government<sup>8</sup>, this has an impact on its net interest liabilities. The outstanding government bonds of the Japanese government are much higher in total than the dollar assets of the Japanese government. However,

<sup>7</sup> Between 26 April and 29 May 2024, the Japanese Ministry of Finance purchased 9.788 trillion yen for 62.2 billion dollars to counteract the sharp depreciation of the yen (Obe 2024). In the past, however, interventions against yen appreciation dominated.

<sup>8</sup> In contrast to many central banks of smaller industrialised countries and emerging economies as well as the European Central Bank, the Bank of Japan's foreign currency holdings are low. They correspond to around 1.5 per cent of total assets (Bank of Japan 2024a).



the interest rate on ten-year US government bonds was most recently around four percent (1 August 2024), while ten-year Japanese government bonds only yielded around one percent (Figure 3). With a national debt of 1,297 trillion yen, the Japanese central government has an estimated interest burden of 9.7 trillion yen (65 billion dollars) in 2024 (current fiscal year).

According to the Japanese Ministry of Finance, the Japanese government held almost USD 928 billion of its foreign exchange reserves in bonds at the end of May. Over the past ten years, a ten-year US government bond has yielded an average annual return of 2.39 per cent. Using this as a benchmark, Japan earned interest income on its current bond holdings in the USA totalling 22.2 billion dollars, which is equivalent to 3.32 trillion yen at the current exchange rate of 149.36 yen per dollar. The net interest burden thus falls to 6.39 trillion yen (43 billion dollars).<sup>9</sup> If the yen were to depreciate further against the dollar, the significance of dollar interest income relative to interest liabilities in yen would increase, whereas it would decrease if the yen were to appreciate.

The interest burden for the central government is even lower if the government and central bank are seen as a single entity.<sup>10</sup> The Bank of Japan holds just under half of all government bonds (Figure 5). The interest burden on the Japanese government including the central bank is thus arithmetically reduced to just over half, i.e. to 5.05 trillion yen (and to 1.73 trillion yen if interest income on foreign exchange reserves is taken into account). However, the Bank of Japan's profit in the 2023/2024 fiscal year was only 2.29 trillion yen, which is significantly less than the Bank of Japan's calculated interest income on the government bonds it holds.<sup>11</sup>

*Lower net debt only provides limited protection against a sovereign debt crisis.*

As the Japanese Ministry of Finance holds large foreign currency reserves and public pension funds have built up high reserves, Japan's net debt is significantly lower than its gross debt. After deducting financial assets such as Japanese government bonds, currency reserves, loans granted and assets of public pension funds, the IMF puts the net debt of the Japanese state

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<sup>9</sup> The Japanese government also held reserves of over USD 159 billion as well as USD 63.9 billion in gold and gold receivables with other central banks and the Bank for International Settlements (Japan Ministry of Finance 2024b).

<sup>10</sup> Takahashi (2022) describes this as "intergovernmental approach". The Japanese government could significantly increase its debt further if the Bank of Japan were to continue to buy these bonds. The Japanese government owns 55 per cent of the Bank of Japan, which is listed on the stock exchange. The remaining 45 per cent is held by a large number of private and semi-public shareholders. The central bank only pays out symbolic dividends totalling five million yen per year. In accordance with Article 53 of the Bank of Japan Act, the Bank of Japan transfers all net income for the relevant period to the government after deducting the necessary expenses and taxes. In the last fiscal year ending 31 March 2024, this amounted to 2.17 trillion yen (around 14 billion dollars) (Goso 2024).

<sup>11</sup> See Central Banking (2024).

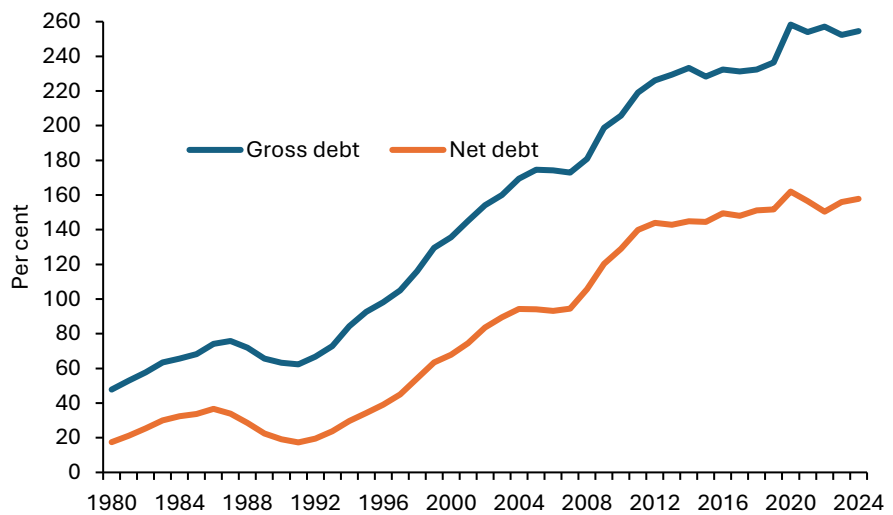


(excluding the central bank) at 158 per cent of gross domestic product (Figure 4). According to the IMF calculation, the net debt of the USA was 98 per cent.

Koshima (2019) points out that a considerable proportion of outstanding Japanese government bonds are held by the Japanese government itself - for example by the central bank or public pension funds. Chien and Stewart (2023) put the net debt of the public sector in Japan at around 119 per cent of gross domestic product, as the Bank of Japan (amounting to 100 per cent of gross domestic product) and the social security funds (amounting to 14 per cent) hold large amounts of government bonds. However, it should be borne in mind that the Bank of Japan's large holdings of government bonds are offset by corresponding liabilities in the form of commercial bank deposits at the Bank of Japan (Figure 6).

Net debt can be considered more meaningful in terms of the sustainability of government debt because high assets can help to cushion a debt crisis. The counterargument is that only a small proportion of assets such as cash reserves are liquid, whereas in a debt crisis, tangible assets such as roads and buildings cannot be liquidated promptly. In addition, government assets in Japan, such as outstanding loans from the Fiscal Loan Fund and assets of pension funds, are offset by corresponding liabilities.<sup>12</sup> This is why the OECD (2015) considers gross debt to be the best measure of public debt (and the associated risks).

**Figure 4: Japan's Gross and Net Debt as a Percentage of Gross Domestic Product**



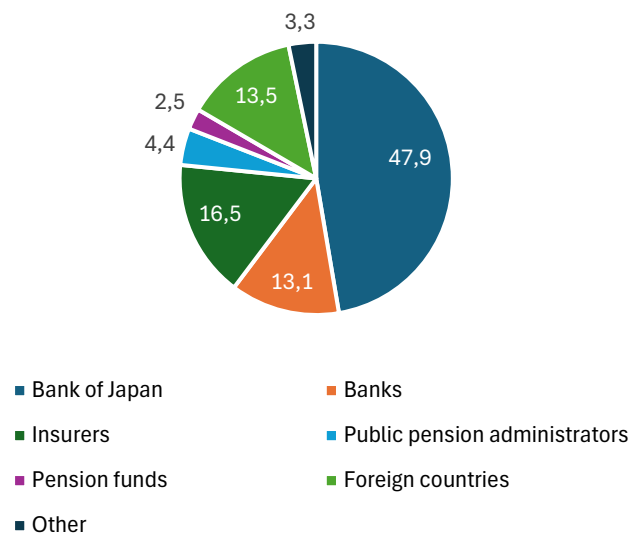
Source: IMF, World Economic Outlook, Flossbach von Storch Research Institute, as at August 2024.

<sup>12</sup> In addition, there are concerns about the quality of public assets such as the receivables of the Fiscal Loan Fund, which has financed public investment projects.



A balance of payments or exchange rate-related debt crisis such as that experienced in Southeast Asia in 1997/98 is unlikely for Japan. In the course of the 1990s, Southeast Asian banks borrowed abroad in foreign currencies, including from Japanese banks. When the Southeast Asian currencies depreciated sharply against the dollar and yen after the outbreak of the Asian crisis, external debt rose sharply in terms of domestic currency, causing the banks to run into difficulties (Krugman 1998). Such a devaluation-driven foreign currency risk does not exist for Japan, because Japan has no net foreign debt due to the persistent current account surpluses since the early 1980s, but has large net foreign assets (see Chapter 4). Only 13.5 per cent of Japanese government bonds are held abroad (see Figure 5).<sup>13</sup>

**Figure 5: Holders of Japanese Government Bonds\* as at 31 December 2023**



Source: Bank of Japan, Flossbach von Storch Research Institute, as at May 2024 \* Long-term government bonds (JGBs) and T-bills.

### 3. The Bank of Japan as the Central Financier

Like the central banks of other industrialised countries, the Bank of Japan has been buying assets on a large scale since the turn of the millennium to stabilise the financial sector and the economy. Compared to other major central banks, the Bank of Japan's balance sheet volume has grown significantly faster (Figure 1). On the asset side of the balance sheet, government bonds (78 per cent of total assets at 31 March 2024) and other loans and discounted bills (14 per cent) are the most important items. The liability side is

<sup>13</sup> In contrast, many US government bonds are held abroad. However, as the government bonds held abroad are denominated in dollars, there is no currency risk for the USA (see McKinnon 2012).

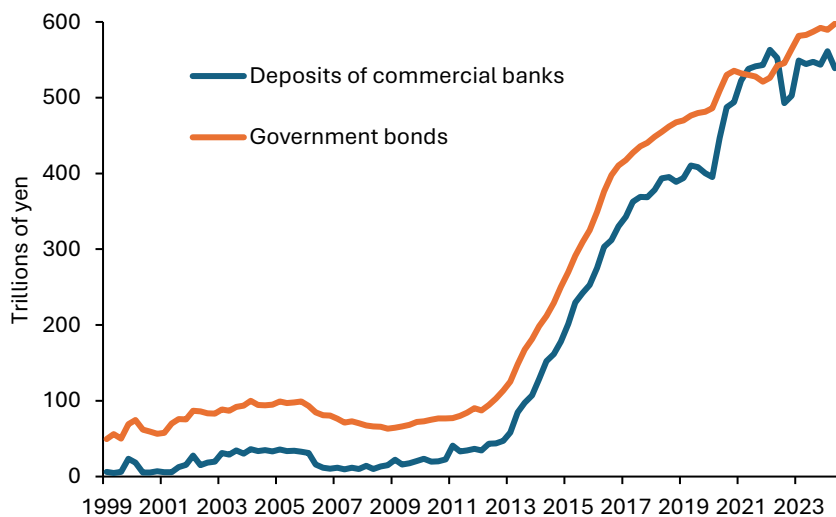




dominated by commercial bank's deposits and other deposits (around 80 per cent), which together with banknotes in circulation (16 per cent of the balance sheet volume) form the monetary base (see also Figure 6).

As the central banks have increased the deposits of commercial banks far above the minimum reserves through quantitative easing, there is a risk of losses from interest rate hikes. In contrast to other major central banks, the Bank of Japan's profits are still positive because it still does not pay interest on commercial bank deposits. By contrast, the average weighted interest rate on government bonds held by the Bank of Japan was 0.77 per cent as at 31 December 2023, according to the Japanese Ministry of Finance. Thus, the Bank of Japan generated net interest gains of 1.7 trillion yen from this positive interest rate differential in the 2023/24 fiscal year.

**Figure 6: Important Balance Sheet Items of the Bank of Japan**



Source: Bloomberg, Bank of Japan, Flossbach von Storch Research Institute, as at August 2024.

*Key interest rate hikes threaten the Bank of Japan with immense losses due to interest obligations. However, the Bank of Japan itself decides on key interest rate hikes.*

On the other hand, the central banks of the Eurosystem have realised losses after the European Central Bank raised the key interest rates and thus also the interest rate on the Eurosystem's deposit facility from -0.5 per cent in June 2022 to 4.0 per cent in September 2023 and most recently to 3.5 per cent. The Eurosystem has so far been slow to reduce its asset holdings, meaning that the euro central banks had to make considerable interest payments to the commercial banks with the key interest rate hikes. As rising interest rates on the ECB's deposit facility take effect immediately, but the average interest rate on the government bonds held changes only slowly, due to this



maturity mismatch net interest income has become strongly negative, resulting in considerable losses.<sup>14</sup>

The larger the volume of bond holdings, the greater the increase in key interest rates and the longer the remaining maturities of the bonds held, the greater the losses (Giles 2024). The deposits of commercial banks at the Bank of Japan are particularly high by international standards and have reached 599 trillion yen (4,010 billion dollars) (Figure 6). At a deposit interest rate of 3.75 per cent - the current deposit interest rate in the eurozone - the Bank of Japan would have to pay interest totalling 22.5 trillion yen (150 billion dollars) to the commercial banks. By comparison, the profit transferred to the government by the Bank of Japan in 2023 was 2.17 trillion yen (14.5 billion dollars).<sup>15</sup>

In addition, there are possible valuation losses on the assets held by the central banks. The central banks of many emerging economies, developing countries and smaller industrialised countries hold large foreign currency reserves on their balance sheets, resulting in valuation losses if the domestic currency appreciates. This was most recently the case for the Schweizer Nationalbank (2024) in the 2023 financial year and the Czech National Bank in the 2021 financial year (Czech National Bank 2022), among others. The Deutsche Bundesbank suffered major valuation losses as a result of the appreciation of the German mark against the dollar following the collapse of the Bretton Woods system in the 1970s (von Hagen 1998). However, the foreign currency reserves of the Bank of Japan are less than 1.5 per cent of total assets, so that this risk is low. The risk is borne by the Ministry of Finance, which holds the majority of Japan's foreign currency reserves.

However, the recent interest rate hikes by the Fed and the ECB have led to significant valuation losses on outstanding low-yielding government bonds (Buiter 2024, Sonnenberg 2023, Anderson et al. 2022). In 2022, Gros and Shamsfakhr (2022) estimated the valuation risks on the government bonds held by the Eurosystem at EUR 700 billion over the next ten years, with higher losses for countries with a lower interest rate level (such as Germany).<sup>16</sup> As the Bank of Japan has purchased far more government bonds as part of its

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<sup>14</sup> For the ECB, the losses in 2023 totalled 1.3 billion euros. The loss would have been greater if the ECB had not utilised the remaining €6.6 billion in provisions. The Deutsche Bundesbank reported a profit of zero for 2023, but had to fully release the remaining risk provision of €19.2 billion and withdraw further reserves totalling €2.4 billion (Mauderer 2023).

<sup>15</sup> The state could siphon off additional income from banks with an additional bank tax.

<sup>16</sup> The estimate was based on the assumption that the average residual maturity of the government bonds held by the Eurosystem is 7 years and that the difference between the average interest rate on the government bonds held (0.5 per cent) and the interest rate on the Eurosystem's deposit facility (3.0 per cent) is 2.5 per cent.



quantitative easing programme than the Federal Reserve System and the Eurosystem in terms of gross domestic product, significantly higher valuation risks can be assumed.

How changes in the value of securities held affect the balance sheet depends on the accounting rules of the respective central bank (Bell et al. 2023).<sup>17</sup> The Bank of Japan uses the amortised cost method to account for valuation changes of securities (Nishizawa and Okajima 2024): It recognises the face value of long-term Japanese government bonds held to maturity on the asset side of the balance sheet and amortises the difference between the acquisition cost and the face value evenly until maturity. If the Bank of Japan changes the status from "held-to-maturity" to "investment", the Bank of Japan must change the valuation to mark-to-market. In the event of a fall in the value of long-term government bonds as a result of rising interest rates, it must devalue them with corresponding book losses.

The Bank of Japan currently accounts for Japanese government bonds at amortised cost, which is why there are no realised losses. The unrealised losses are estimated at around 9.4 trillion yen (65 billion dollars) if long-term interest rates rise by around one percentage point (Jiji Press 2024). By comparison, the Bank of Japan's equity in 2023 was 100 million yen (670,000 dollars); reserves and provisions were 12.1 trillion yen (85 billion dollars) (Bank of Japan 2024b).

The Bank of Japan also holds equities in the form of ETFs<sup>18</sup>, whose prices could fall in the event of interest rate hikes. The same applies to real estate investment trusts, where the default risk is likely to increase in the event of interest rate hikes. However, at 4.9 per cent (ETFs) and 0.9 per cent (real estate investment trusts) of the balance sheet volume, the volume of both asset classes is low compared to government bonds. The greatest risk therefore results from the interest paid on the deposits of Japanese commercial banks at the Bank of Japan, although the Bank of Japan itself can determine this interest rate.

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<sup>17</sup> Changes in the market value of securities can be recognised directly in the income statement, as in the case of the Bank of England, so that losses (or gains) arise immediately. If the securities are recognised at cost, losses are only realised if the securities are (or have to be) sold before maturity. The European Central Bank, the Swedish Central Bank and the Deutsche Bundesbank recognise unrealised losses and gains in revaluation accounts.

<sup>18</sup> On the influence of the Bank of Japan on the Japanese stock market and the sustainability of the ETF buying strategy, see Harada (2021).

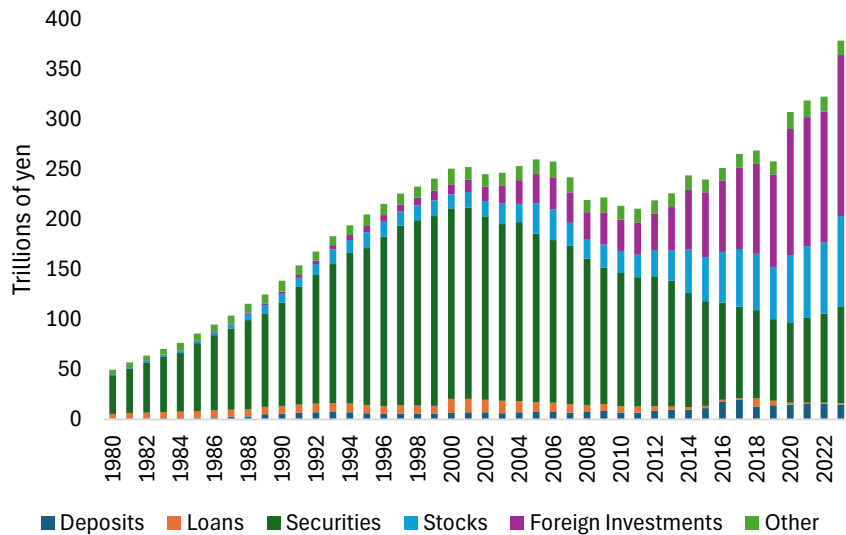


#### 4. Pension Funds, Banks and Insurers as Large and Risky Agents

*During the long period of low interest rates, foreign investments by pension funds, banks and insurance companies have continued to rise.*

Japan's pension system consists of the flat-rate national pension system and employment-related pensions for public and private sector employees. Japan therefore has several public pension funds that have built up reserves for old-age provision in a rapidly ageing society. The largest is the Government Pension Investment Fund (GPIF) with assets totalling about 246 trillion yen (1,540 billion dollars). It finances around ten per cent of Japanese people's basic pensions.<sup>19</sup> In addition to the GPIF, there are numerous other public funds that pay pensions to public employees and civil servants. The Federation of National Public Service Personnel Mutual Aid Associations manages assets totaling around ten trillion yen, the Pension Fund Association for Local Government Officials 30 trillion yen and the Promotion and Mutual Aid Corporation for Private Schools of Japan five trillion yen.

**Figure 7: Investment Structure of Japanese Social Security Funds (incl. Pension Funds)**



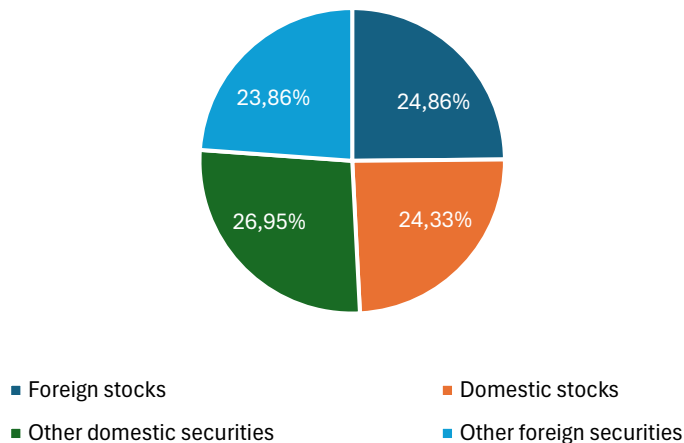
Source: Japan, Cabinet Office, Flow of Funds, Flossbach von Storch Research Institute, as at August 2024.

<sup>19</sup> Japan's government wants to manage an additional 100 trillion yen in public pension reserves more actively and transfer capital from nine smaller pension funds into a second large pension fund. The creation of a second "pension whale" is part of Prime Minister Fumio Kishida's strategy to create a "nation built on asset management" (Morrison 2024). With private savings totalling more than 2,000 trillion yen (13.4 trillion dollars), Kishida wants to support growth. High tax allowances for long-term savings in securities are to be one building block, another the establishment of four special economic zones to facilitate the establishment of foreign asset managers.



Due to the very long period of zero interest rates on Japanese government bonds, Japanese social security funds have reallocated their investments in favour of riskier asset classes such as equities and foreign currency bonds (Figure 7). At the end of 2023, the foreign investments of Japanese social security funds, including pension funds, totalled 161 trillion yen (1078 billion dollars). The pension funds are not completely flexible in their investment behaviour because this is coordinated with the Japanese government (GPIF 2020). As a result, they cannot react quickly to new developments on the international financial markets, which can result in additional currency risks. There are also foreign investments by private pension funds and occupational pension funds.<sup>20</sup>

**Figure 8: Investment structure of the Government Pension Investment Fund (GPIF)**



Source: GPIF, total investments: 246 trillion yen (approx. 1,540 billion dollars). Flossbach von Storch Research Institute, as at July 2024.

Since 1 April 2020, the Government Pension Investment Fund has invested around 50 percent of its deposits in Japan and 50 percent abroad, with half of the investments being made in securities and half in equities (see Figure 8).<sup>21</sup> Assets such as real estate and infrastructure are limited to five per cent and are classified as either securities or equities according to their risk and returns. Foreign securities whose currency risk is hedged are categorised as domestic securities. Deviations from the target values due to price fluctuations are allowed up to a certain limit.

Public pension administrators currently hold 4.4 per cent and other pension

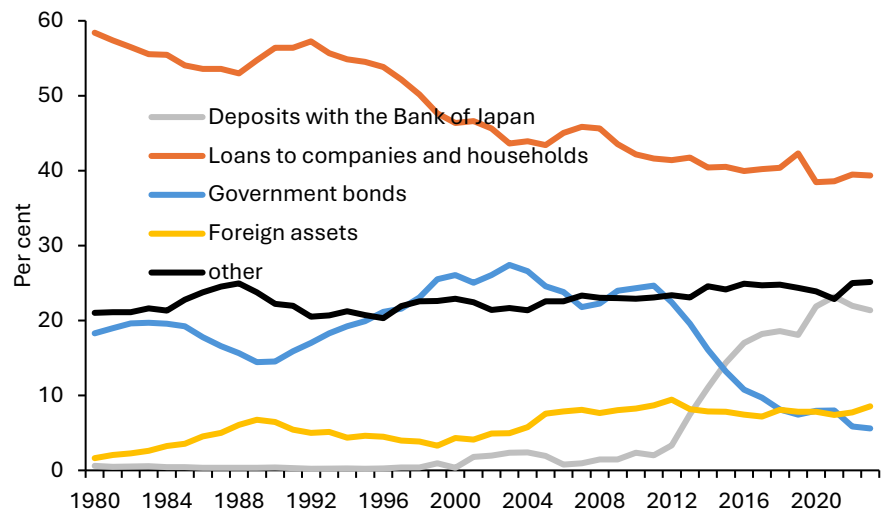
<sup>20</sup> Occupational pension schemes have invested a good 20% of their assets abroad (Japan Pension Fund Association 2023).

<sup>21</sup> Compared to the previous targets, the weighting of foreign securities (domestic securities) was increased (reduced) by 10 percentage points.



funds 2.5 per cent of outstanding Japanese government bonds (Figure 5). Interest-related valuation losses are only a threat if the government bonds have to be sold prematurely, which is unlikely given the pension funds' calculable payout liabilities. On the other hand, there are risks associated with foreign investments, as the GPIF and other pension funds do not hedge some of their exchange rate risks (see also below).

**Figure 9: Structure of the Balance Sheet of Japanese Commercial Banks**



Source: Bank of Japan, Flossbach von Storch Research Institute, as at July 2024.

Japan's banks have long suffered from the persistently low and negative interest rate environment because the Bank of Japan has squeezed interest margins - credit margins, transformation margins, liability margins - through its highly expansionary conventional and unconventional monetary policy (Schnabl 2020). In addition, following the bursting of the Japanese bubble economy, the demand for credit from companies and households fell from the early 1990s until 2013, meaning that deposits at banks have risen far in excess of lending.<sup>22</sup> As a result, the share of foreign assets in total assets has risen (Figure 9).<sup>23</sup> While the banks initially offset the decline in domestic demand for credit by purchasing Japanese government bonds, the Abenomics replaced the government bonds with rapidly growing reserves held by Japanese commercial banks at the Bank of Japan from 2013 onwards.

<sup>22</sup> This has forced small and medium-sized banks in particular to make significant cost cuts and mergers (Murai and Schnabl 2021), without necessarily resulting in efficiency gains (Hosono et al. 2007). Larger banks have merged to form large financial conglomerates that have been able to generate higher income through financial investments.

<sup>23</sup> During the Asian crisis, significant loan defaults in Southeast Asia triggered the Japanese financial market crisis (1998).



*Banks have also increased their foreign currency risks due to the weak domestic demand for credit.*

In Germany and Europe, the European Central Bank's interest rate hikes had a positive impact on credit margins. As the rising interest rates on the ECB's deposit facility took immediate effect for all commercial bank's deposits with the Eurosystem, interest income from deposits with the Eurosystem in particular rose sharply. From this perspective, the banking sector has profited from the interest rate increases - despite possible valuation and credit default risks. A similar development can be expected for Japan. Commercial banks would benefit greatly if the Bank of Japan were to pay interest on the deposits of commercial banks. On the other hand, the risks of valuation losses on government bonds are comparatively low because the holdings on the banks' balance sheets have fallen as a result of quantitative easing.

However, the foreign currency risks of the Japanese banking sector have increased since the 1980s. Today, assets totalling USD 1,390 billion are held abroad, which corresponds to 8.5 percent of total assets (Figure 9). As foreign assets are generally denominated in foreign currencies, risks arise from an appreciation of the yen against the dollar. In addition, rising interest rates abroad can lead to valuation risks, as the recent case of Norinchukin Bank shows. Norinchukin Bank, which specialises in agricultural businesses, had invested an unusually large amount in foreign government bonds because deposits are high (not least due to generous government subsidies for the agricultural sector) and demand for credit in the Japanese agricultural sector is low (Nihon Keizai Shinbun 2024).<sup>24</sup>

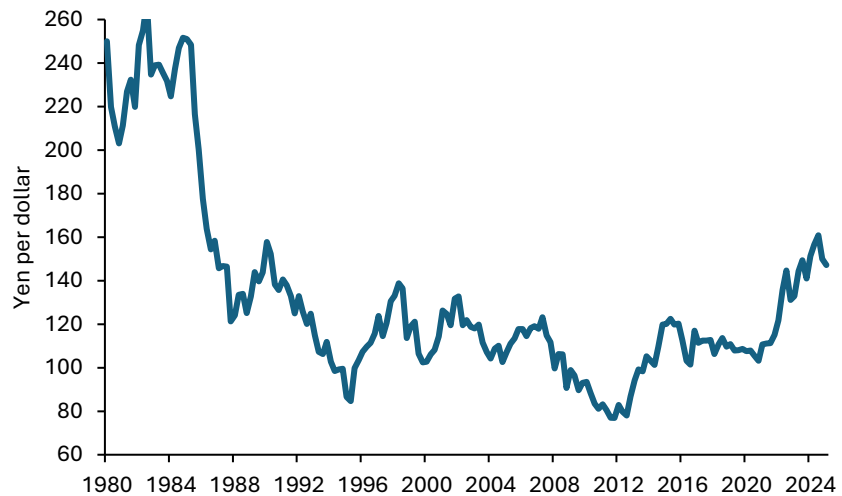
At the end of March 2024, Norinchukin Bank had the equivalent of around 23 trillion yen worth of foreign bonds on its books, which equated to around 42 per cent of its assets. The rise in interest rates in the US has sharply reduced the prices of these bonds. As the bank had to assume that interest rates in the US (and Europe) would not fall as much as expected, it decided to sell around half of the foreign bonds, from which it expects losses totalling 1.5 trillion yen (10 billion dollars) (Kitagawa 2024). The resulting losses in the income statement will be partially offset by the sharp depreciation of the yen since 2012 (see Figure 10). The latter would not be the case, or less so, if many Japanese financial institutions were to liquidate foreign investments before Norinchukin Bank and repatriate the corresponding proceeds, as the yen would then appreciate.

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<sup>24</sup> In the course of the global financial crisis (2008), Norinchukin Bank realised large losses on asset-backed securities, so that it has since invested more in risk-free foreign government bonds.



Figure 10: Exchange Rate of the Japanese Yen Against the Dollar



Source: Bloomberg, Flossbach von Storch Research Institute, as at August 2024. **Historical performance is not a reliable indicator of future performance.**

Credit default risks are a risk that is difficult to calculate for Japanese banks. The loans to companies and households stood at 960 trillion yen (6,427 billion dollars) at the end of May 2024. Due to the prolonged period of low interest rates, some authors assume that many companies are "zombified", i.e. can only survive if interest rates remain low (Caballero, Hoshi and Kashyab 2008, Sekine, Kobayshi and Saita 2003, Peek and Rosengreen 2005). The number of insolvencies have declined to a historic low and have only declined slightly recently. However, if interest rates rise sharply, this could result in more corporate insolvencies. However, a large volume of loans from private banks to private companies is already secured by government loan guarantees (Schnabl 2020), meaning that the losses would not be incurred by the banks but by the state.

*While a devaluation of the yen stabilises the financial sector, an appreciation creates major risks. An uncontrolled run on the yen could result in a dramatic financial crisis.*

Japan has very high net foreign assets totalling USD 3,339 billion, most of which are held by the private sector (Figure 11).<sup>25</sup> Of the gross foreign assets, the government holds 14.4 per cent, banks 19.7 per cent and other financial institutions 39.3 per cent.<sup>26</sup> The foreign positions are only partially hedged against currency fluctuations,<sup>27</sup> because this is expensive.<sup>28</sup> This results in a

<sup>25</sup> Financial institutions outside the banking sector, such as pension funds, held a net position of 397 trillion yen (2,658 billion dollars), accounting for 84 per cent of the total surplus.

<sup>26</sup> Direct investments are at 20.7 per cent.

<sup>27</sup> Last year, Japan's largest life insurers reduced their currency hedging to the greatest extent in more than a decade (Kondo and Teso 2024). Derivatives such as futures, swaps and put options protected 47.8 per cent of foreign securities held by life insurers at the end of September 2023, compared to 52.7 per cent six months earlier.

<sup>28</sup> For example, a Japanese investor could have borrowed 155 million yen in May 2024 and exchanged it for dollars. At an exchange rate of 155 yen per dollar, this would have yielded one million in US currency. The investor would have received an interest rate of 4.3 per cent for this million, i.e. 3.3 percentage points more interest than for a yen loan over the term,

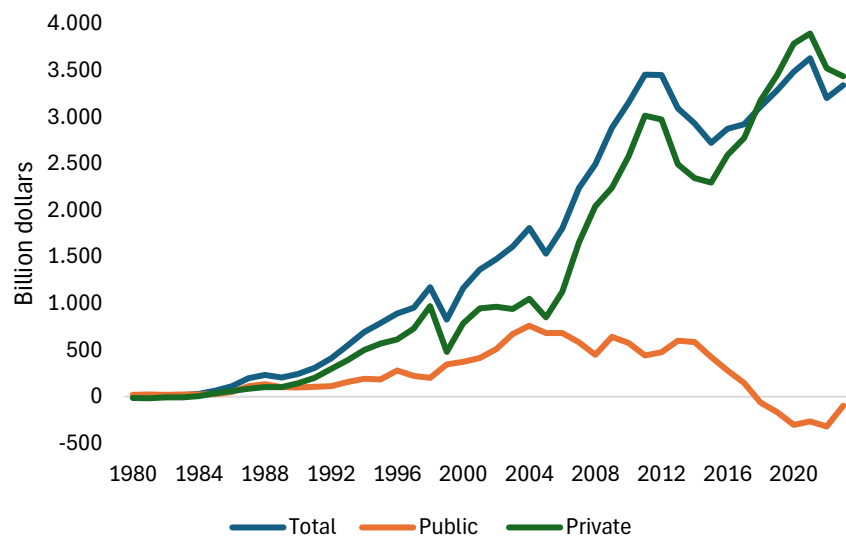




currency mismatch: liabilities and balance sheets are denominated in yen, while large holdings of assets are held in dollars. If the yen-dollar exchange rate fluctuates freely, risks arise for the institutions listed in yen (McKinnon and Schnabl 2004).

As they hold securities quoted in dollars (and euros), an appreciation of the yen against the dollar and the euro has a negative impact on equity. Conversely, a depreciation has a positive impact.<sup>29</sup> High net foreign assets mean persistent inherent upward pressure on the yen (Latsos and Schnabl 2018), as these can be exchanged back at any time.

Figure 11: Net Foreign Assets of Japan



Source: MoF Japan, Flossbach von Storch Research Institute, as at August 2024.

invested at a fixed interest rate in US government bonds for ten years. In the end, the investor would have had a return of 383,577 dollars with compound interest. After ten years, almost 1,384 million dollars would have been available to repay the yen loan. However, it is uncertain where the dollar will then be quoted against the yen. In order to hedge the currency risk, the Japanese investor could have secured a yen-dollar exchange rate for ten years from now. At the end of May 2024, this future price was 109.34 yen per dollar. The investor would end up with only 151.3 million yen (one million dollar investment plus 383,577 dollars in additional interest income multiplied by the future price of 109.34 yen) via a fully currency-hedged carry trade over ten years. The investor would therefore not even be able to repay the original loan. In contrast, a non-loan-financed yen investment with an interest rate of one per cent would have yielded 171.2 million yen including compound interest.

<sup>29</sup> As the yield on dollar investments is given on the global financial markets, the yield on yen investments is inevitably lower, which corresponds to a negative risk premium on Japanese interest rates. When US interest rates fell in the 1990s, the Bank of Japan was therefore forced to cut interest rates further and further, so that they fell towards zero over time (McKinnon and Schnabl 2004).

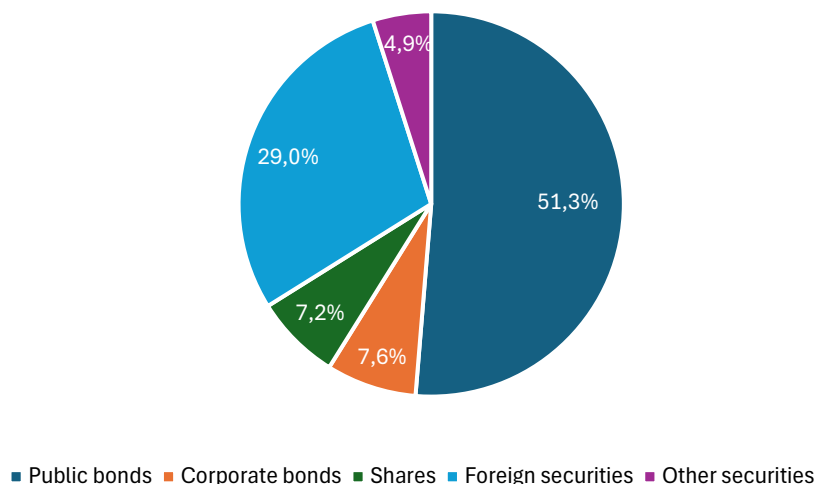


Life insurance companies, banks and other financial institutions therefore benefited from the yen's continued depreciation against the dollar from 2012 until the end of June 2024 (see Figure 10). The appreciation of the yen from July 2024, on the other hand, triggered turbulence and ultimately a sharp fall in prices on the Tokyo Stock Exchange because it affected not only export corporations but also banks and insurance companies. A strong, sustained yen appreciation is therefore likely to be the greatest risk for the Japanese economy.

*In the past, the Bank of Japan have always set interest rates low enough to pre-empt excessive upward pressure.*

For example, Japanese life insurance companies have a double risk if the Bank of Japan raises interest rates. On the one hand, the value of domestic shares and securities falls. On the other hand, an appreciation of the yen reduces the value of foreign investments calculated in yen. In order to minimise the exchange rate risk of Japanese life insurance companies (or other financial institutions), the Bank of Japan has in the past kept interest rates in Japan sufficiently low below interest rates in the USA (Figure 3), also to prevent a run on the yen (McKinnon and Schnabl 2004).

**Figure 12: Structure of Bond Holdings of Japanese Life Insurances**



Source: The Life Insurance Association of Japan (2023).

If appreciation expectations for the Japanese yen were to materialise, Japanese banks, insurance companies and pension funds would have to repatriate their foreign investments in a timely manner in order to anticipate appreciation-related losses.<sup>30</sup> Figure 12 shows the structure of the securities portfolios of Japanese life insurance companies. They hold foreign securities

<sup>30</sup> This does not rule out the possibility that Japanese life insurers and banks have made corresponding provisions during devaluation phases.



worth the equivalent of 97 trillion yen (approx. 650 billion dollars), which corresponds to around 25 per cent of their assets.<sup>31</sup>

The currency risks for the Japanese financial sector could increase if inflation control comes into conflict with upward pressure on the yen. As inflation in Japan has been low to date, the Bank of Japan has always been able to cut interest rates or expand its balance sheet when the yen has come under upward pressure. Recently, however, inflation has risen to 2.8 per cent (July 2024), partly because the trade unions have made greater efforts to compensate for the long-term loss of purchasing power by demanding higher wages. In addition, the US Federal Reserve is again considering interest rate cuts, which could put upward pressure on the yen again. A small interest rate hike by the Bank of Japan of 15 basis points to 0.25 per cent and increased expectations of interest rate cuts in the US led to a shock-like unwinding of yen carry trades and sharp price losses on the global equity markets at the beginning of August 2024 (Flossbach von Storch 2024). The loss on the Tokyo Stock Exchange was particularly severe, where the prices of export companies, banks and life insurance companies fell.

*Is the Japanese state operating a 20 trillion dollar carry trade?*

It is difficult to determine how large the volume of global yen-based carry trades is.<sup>32</sup> According to George Saravelos, Head of Currency Analysis at Deutsche Bank, Japan and its public sector (government, Bank of Japan, pension funds and public banks) are engaged in a gigantic carry trade worth the equivalent of 20 trillion dollars, which has been favoured by the persistent low interest rate phase (Business Standard 2024). Over the last three years, yen loans to foreign investors are said to have risen by a further 460 billion dollars to 1,800 billion dollars. In the same period, the weakness of the yen has increased the value of foreign investment income of Japanese investors by USD 233 billion to USD 551 billion. In addition to the valuation risks associated with government bonds, an uncontrolled appreciation of the Japanese yen is therefore likely to pose a considerable risk not only for export companies, but also for insurance companies, banks and pension funds.

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<sup>31</sup> Meiji Yasuda is one of the country's largest life insurers with investments totalling 47.4 trillion yen, 16.5 trillion of which are in Japanese government bonds. Kenichirio Kitamura, Head of Investments at Meiji Yasuda Life, believes it is "quite conceivable" that the yield on ten-year Japanese government bonds could double in the coming years. However, he remained cautious about switching investments (Hidaka 2024).

<sup>32</sup> The size of daily foreign exchange trading is USD 7,500 billion, with the yen being involved in 8.5 per cent of all transactions (daily average equivalent value: USD 1.25 trillion) (BIS 2022).



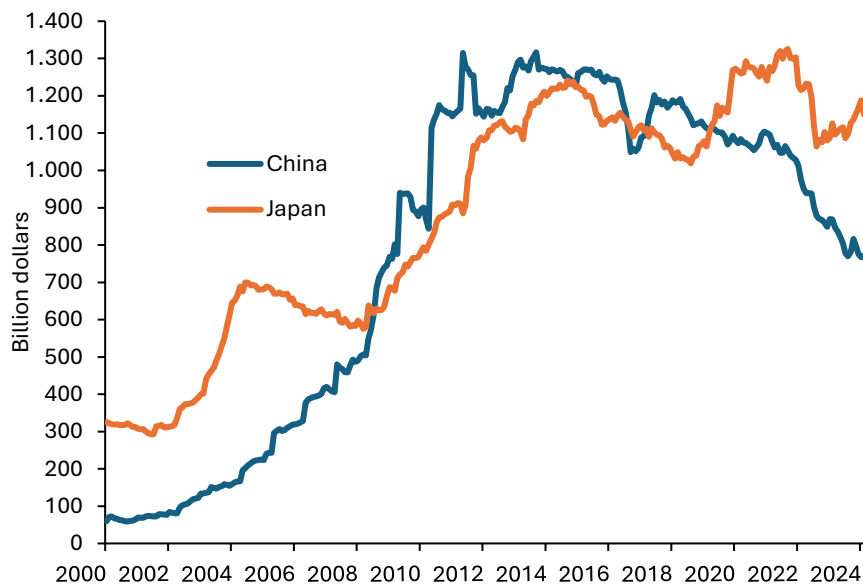
## 5. Outlook

The Bank of Japan's recent very hesitant interest rate hikes and continued bond purchases in an environment of global quantitative tightening suggest that the Bank of Japan's room for manoeuvre in terms of monetary policy is limited (Kihara 2024). This is probably due to the risks arising from interest rate hikes for the government, the financial sector and the Bank of Japan. It is true that each risk position is also offset by positions that (partially) compensate for these risks, which makes the net effect difficult to calculate. In principle, however, it can be assumed that the greater the changes in interest rates and the resulting appreciation of the yen, the greater the risks.

Despite certain risks, the Japanese government and the Bank of Japan cannot go bankrupt. The Japanese government is predominantly domestically indebted and appears to be able to rely on continued bond purchases by the Bank of Japan. The Bank of Japan, like other central banks, can operate with negative equity for an extended period of time, although this would further undermine its independence and the credibility of the currency. On the other hand, the Japanese financial sector (banks, insurance companies and pension funds) is likely to harbour greater valuation and exchange rate risks, which could quickly trigger contagion effects within the financial sector.

*As the Japanese financial sector is closely interwoven with the global financial system, its stability is closely linked with the stability of the global financial system. The Bank of Japan's room for manoeuvre in terms of monetary policy is therefore very limited.*

**Figure 13: Japan and China as Holders of US Treasuries**



Source: Bloomberg, as at 30 April 2024 (excluding treasury bills and TIPS). Flossbach von Storch Research Institute, as at July 2024.



Due to the considerable size of the Japanese financial sector and the deep integration of the Japanese financial market into the international financial markets, a new financial crisis in Japan would undoubtedly also shake the international financial markets. On the one hand, Japanese investors are the largest holders of US government bonds. At the end of April 2024, US government bonds totalling USD 1,150 billion were in Japanese hands (Figure 13).<sup>33</sup> Should Japanese investors turn away from US bonds, this could be associated with a significant rise in long-term interest rates in the US with corresponding turbulence in the US financial system. On the other hand, the risks resulting from the unwinding of carry trades<sup>34</sup> worldwide in the event of a rise in interest rates in Japan are considerable.

It is unlikely that the Bank of Japan will allow this to happen. Accordingly, in response to the recent turbulence, it has signalled a continuation of its expansionary monetary policy (Uchida 2024).<sup>35</sup> The deep fall in the yen since 2012 not only reflects the low interest rate level compared to the US, but also the weakness of the Japanese economy, which has continued since the bursting of the Japanese bubble economy at the end of the 1980s. By slowly increasing short and long-term interest rates, the Bank of Japan could counteract the depreciation of the yen and thus inflation in Japan in the long term. However, it appears that the risks for the Japanese and global financial system are too high, so that the Bank of Japan's room for manoeuvre in raising interest rates seems to be getting smaller and smaller, also in view of an ageing population and growing geopolitical risks.

Interest rate cuts in the US and other industrialised countries would take the pressure off the Bank of Japan to raise interest rates. On the other hand, however, the resulting upward pressure on the yen could cause painful instability in the Japanese and international financial system due to the renewed unwinding of carry trades. The Bank of Japan may be forced to abandon its current monetary tightening programme before it has really begun. This could point to a permanently expansionary monetary policy, which could permanently remove the incentive for Japanese investors to exchange dollars back into yen (Schnabl 2024). The result would be a permanent

*Is there a threat of a permanent crash of the yen?*

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<sup>33</sup> While China appears to be steadily withdrawing from this market, Japanese investors have remained loyal to US government bonds.

<sup>34</sup> Carry trades are not only used to finance interest rate investments, but also equity transactions. When the Indian stock exchange slumped by up to eight per cent in one day at the beginning of June 2024, market observers blamed the unwinding of such trades. The yen gained 0.8 per cent against the dollar and 1.2 per cent against the Indian rupee on that day. Substantial purchases of tech stocks also appear to have been financed by carry trades.

<sup>35</sup> "However, since recent developments in financial and capital markets at home and abroad have been extremely volatile, the Bank is monitoring developments in these markets and their impact on economic activity and prices with utmost vigilance, and it will conduct monetary policy as appropriate. Let me reiterate my view that the Bank needs to maintain monetary easing with the current policy interest rate for the time being." (Uchida 2024)



decline in the value of the yen, both internally and externally, which would bring the value in line with the country's economic weakness, which has persisted for more than 30 years.

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