Despite the rise in public debt, Japanese Government Bond (JGB) yields have remained low and stable, supported by steady inflows from household and corporate sectors, high domestic ownership of JGBs, and safe-haven flows in light of ongoing European debt crisis. Nonetheless, the market capacity to absorb new government debt will likely decline over time as the population ages, posing risks for the JGB market. This paper examines the key risks of the JGB market, including a decline of private sector savings and potential spillovers from global financial distress, which could push up the government bond yields. A sharp rise in interest rate could pose challenges on public debt dynamics and financial stability in Japan. In that regard, more ambitious fiscal reforms to reduce public debt will help limit these risks.

Keywords: Fiscal sustainability; sovereign risk; government yields; financial distress.

JEL Classification Numbers: E44, E60, E62

1. Introduction

Despite the rise in gross public debt to over 200% of Gross Domestic Product (GDP), yields on Japanese Government Bonds (JGBs) have remained low and stable. After the earthquake in March 2011, despite expectations of additional JGBs to finance reconstruction, 10-year JGB yields have remained below 1%. Auctions since the earthquake have been met with steady demand across all key maturities, from banks which continue to purchase short-term securities to life insurers looking to lengthen the duration of their bond portfolios to match their liabilities (Fig. 1).

Nevertheless, over the medium term, the market’s capacity to absorb new debt is likely to diminish as the population ages and risk appetite recovers. In the absence of fiscal adjustment, the mounting financing needs of the government due to large deficits would further widen the gross public debt ratio further to about 250% of GDP over the medium term. Japan’s large pool of domestic savings, stable investor base and high share of domestic ownership of JGBs has helped maintain stability in the JGB market.
However, these favorable factors are likely to diminish over time as population aging reduces household saving and risk appetite recovers. Without a significant policy adjustment, the stock of gross public debt could exceed household financial assets in around 10 years, at which point domestic financing may become more difficult (Tokuoka, 2010).

Figure 1. Overview of the JGB market.

Despite the rise in public debt, JGB yields have declined and remained low.

Since the earthquake in March 2011, 10-year JGB yields have stayed stable between 1.0-1.2 percent.

Corporate and households sectors have been recording large financial surpluses, which have been invested mainly in JGBs through banks.

...with a very low reliance on foreign financing.

...and the market has been supported by stable domestic players.

...amid steady demand as shown by recent auction results.

W. R. Lam & K. Tokuoka
In the near term, the JGB market also faces domestic and external risks. Domesti-
cally, the supply of funds for financing JGBs could decline as private spending to
repair the earthquake’s damage picks up. An increase in market volatility could also
push banks to shorten the maturity of their JGB holdings or reduce their JGB pur-
chases or exposures to limit losses. On the external side, given the high correlation
between yields on JGBs and sovereign debts of key advanced countries, a sudden rise
in global risk premia could create spillovers and affect the JGB market. All these
factors could eventually contribute to a sustained rise in yields, worsen the public debt
dynamics, and pose a risk to financial stability.

This paper attempts to assess the risks to the JGB market by examining the
following key questions:

- What are the key risks to stability in the JGB market? What are the possible channels
  through which a domestic shock or global financial distress could affect the JGB
  market?
- What would be the implications of sustained high interest rates for public debt
dynamics and financial stability? What should be the policy priority to mitigate the
risks to the JGB market?

The paper is structured as follows. Section 2 elaborates on the shrinking fund
supply to finance JGB over the medium term as a key risk to stability in the JGB
market. Sections 3 and 4 illustrate the possible financial channels that could pose risks
to the JGB market through higher market volatility and global spillovers. Section 5
suggests that a sharp rise in government bond yields could weigh on fiscal sustain-
ability and financial stability, highlighting a need for more ambitious fiscal reforms to
mitigate the risks. Finally, Sec. 6 concludes the paper.

2. Shrinking Fund Supply

In Japan, large savings by the corporate and household sectors have provided a steady
supply of funds to the JGB market. At the macro level, lending and borrowing by the
non-financial sectors, which consist of the general government, the private corporate
sector, the household sector, and private non-profit institutions are mostly inter-
mediated by the financial sector.\(^1\) At end-2010, financial assets held by the private
corporate and household sectors stood at ¥2,275 trillion (450% of GDP), exceeding
liabilities by ¥840 trillion (about 170% of GDP) (Fig. 2).\(^2\) This large domestic surplus
has contributed to financing nearly 95% of the stock of JGBs domestically.

\(^1\) Indeed, financial assets and liabilities are almost balanced in the financial sector (excluding the Bank of Japan) with
financial assets exceeding liabilities by only 3% of GDP at end-2010.

\(^2\) These numbers are calculated on an unconsolidated basis. For example, JGBs held directly by households are not
subtracted from the assets or liabilities.
Over the past decade, a gradual increase in deposits and a trend decline in corporate loans have provided additional space for investments in JGBs. Since 2000, household deposits have increased by ¥40 trillion or 8% of GDP (Fig. 3), supported by declining but still positive household saving rates. During the same period, the stock of corporate loans declined by about ¥100 trillion (20% of GDP). These two factors have led to a decline in the loan–deposit ratio from 95% to 70% (bottom right chart of Fig. 3) and created significant space for financial institutions to increase their JGB holdings. In addition, the Bank of Japan has also stepped up purchases of JGBs (currently at ¥21.6 trillion per year on a gross basis) since the beginning of the global financial crisis and acquired government securities through the new asset purchase program, which has contributed to stable yields (Bank of Japan, 2011; Lam, 2011; Ueda, 2011).

Over the medium term, however, the market’s capacity to absorb new debt is likely to diminish as the population ages. On a stock basis, the household sector has been financing more than half of JGBs either directly or indirectly through banks and other financial intermediaries, but since 1990s, population aging has reduced the financial surpluses of the household sector (Tokuoka, 2010). Going forward, population aging is likely to reduce household surpluses further, and without a significant policy adjustment, the stock of gross public debt could exceed household financial assets (currently at 300% of GDP) in around 10 years, suggesting that Japan may need to turn more to other sectors, including overseas, to finance its deficit.

In the near term, fund supply to the JGB market from the corporate sector could also decline. Corporate financial surpluses, which amounted to 7% of GDP in 2010, are an
important source of JGB funds through the banks. After the global financial crisis, these surpluses rose sharply as corporates postponed investment and capped wages. Looking ahead, these surpluses could decline as corporates undertake investment for reconstruction or expansion overseas. At the same time, demand for JGBs from pension funds could also weaken if pension payouts accelerate. Amid population aging, one of the largest institutional investors, the National Pension Fund, has already begun reducing assets to make payouts to retirees.

Estimating a basic demand function for government securities can help assess the impact of a decline in corporate and household financial surpluses on banks’ JGB holdings. Here we estimate the following equation:

\[ \text{govtsec} = \beta_1 \text{loans} + \beta_2 \text{deposits} + \beta_3 \text{control variables}, \]

(1)
where \( \text{govtsec} \) is banks’ holdings of central government securities (JGBs and Financing Bills (FBs)), excluding Japan Post Bank due to data constraints, \( \text{loans} \) is the stock of bank loans, and \( \text{deposits} \) is the sum of corporate and household sector deposits (all in percent of GDP). Control variables include real GDP growth, spreads between long-term prime lending rates and 10-year JGB yields, and CPI inflation.\(^3\) Data are the Bank of Japan Flow of Funds statistics from Q4 1997 to Q4 2010 on a quarterly annual basis.

Equation (1) estimates how much \( \text{govtsec} \) would increase when \( \text{loans} \) decline and \( \text{deposits} \) rise. While there is an endogeneity issue between \( \text{govtsec} \) and \( \text{loans} \),\(^4\) Granger causality test suggests that a decline in \( \text{loans} \) leads to an increase in \( \text{govtsec} \), and not in the opposite direction. Specifically, using first differences, the hypothesis that \( \text{loans} \) do not Granger-cause \( \text{govtsec} \) is rejected at the 1% level, while the hypothesis of no Granger-causality in the reverse direction is not rejected at the 10% level.

Financial surpluses of the corporate and household sectors channeled through the banking sector are observed when \( \text{loans} \) decrease or \( \text{deposits} \) increase, or both. Thus, if financial surpluses of these sectors have a positive impact on banks’ holdings of central government securities, the coefficients in the regressions should read as \( \beta_1 < 0 \) and \( \beta_2 > 0 \). We run regressions in levels assuming cointegration (where estimates are robust to endogeneity). Unit root is not rejected for \( \text{govtsec} \), \( \text{deposits} \), or \( \text{loans} \), but is rejected for the residual in the estimated equation. This suggests that the three variables (\( \text{govtsec} \), \( \text{deposits} \), and \( \text{loans} \)) are cointegrated and that the results are not subject to endogeneity bias.

The results suggest that a decline in financial surpluses of the corporate and household sectors could significantly reduce banks’ purchases of central government securities (Table 1). The estimates indicate that a 1% of GDP increase in loans would reduce banks’ holdings of central government securities by 0.3–0.6% of GDP, while a similar decline in deposits would cut banks’ holdings of these securities by 0.5–0.9% of GDP. The last column of the table shows the results with the main independent variables interacted with the post-Lehman dummy. These additional terms are statistically insignificant, suggesting that the effects of loans and deposits have not changed substantially before and after the peak of the global financial crisis. The estimates in the table in turn imply that if (net) repayment of loans and accumulation of deposits of the corporate sector cease — as happened at the peak of the previous business cycle in 2007 — and corporate financial surpluses decline by 4% of GDP, banks’ net government security purchases could fall by 1–3% of GDP. This would be a sizeable reduction, compared to the annual net government debt issuances in recent years (10% of GDP).

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\(^3\) These variables are included to control for business cycles and risk appetite. Including other variables (e.g., equity returns) to control for risk appetite does not change the results much.

\(^4\) For example, banks may reduce loans to purchase government bonds.
A decline in corporate financial surpluses does not necessarily lead to higher JGB yields. This is because a decline in corporate financial surpluses is typically accompanied by a recovery in domestic demand and higher tax revenue, which would reduce the need for debt financing. This also occurred during Japan’s previous expansion between 2003 and 2007 (middle right chart of Fig. 1) when corporate financial surpluses fell from nearly 10% of GDP in 2003 to zero in 2007 as business investment boomed. However, overall fiscal deficits also declined by 5.5% of GDP thanks to a cyclical tax recovery and spending cuts, while the household sector maintained its financial surpluses. Consequently, the JGB market experienced little funding pressure, with 10-year JGB yields staying below 2% even at the peak of the recovery. There are three risks to such a “good” scenario in the current business cycle.

One, the corporate sector might accelerate its overseas expansion. In recent years, corporate outward direct investment (equity acquisition) has remained around 1% of GDP, but corporate companies are increasingly looking overseas given the strong yen and shrinking domestic market. A further shift in investment overseas would reduce corporate surpluses held in bank deposits to finance JGBs.

Table 1. Impact of loans and deposits on banks’ holdings of government securities.\(^1\), \(^2\)

<table>
<thead>
<tr>
<th>Sample period: Q4 1997 — (quarterly data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent variable: banks’ holdings of central government securities</td>
</tr>
<tr>
<td>(1)</td>
</tr>
<tr>
<td>loans</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>deposits</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>loans * post Lehman dummy</td>
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<tr>
<td></td>
</tr>
<tr>
<td>deposits * post Lehman dummy</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Num of obs</td>
</tr>
<tr>
<td>R-squared</td>
</tr>
</tbody>
</table>

\(^1\)Cointegration is assumed. Other regressors include a lag of quarterly growth (SA), spreads between long-term prime lending rates and 10-year JGB yields, quarterly CPI inflation, and quarter dummies.

\(^2\)Figures in parentheses indicate (robust) standard errors. Numbers in bold indicate a 5% level of significance.

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\(^5\)According to the July 2011 survey by Teikoku Data Bank, 25% of manufacturing companies believe that overseas investment will accelerate. Overseas mergers and acquisitions activities by Japanese corporations have already increased significantly to a record of ¥3 trillion (0.6% of GDP) in the first six months of 2011.

\(^6\)Over time, overseas investments will contribute to corporate surpluses through repatriation of profits, but in the short term, an increase in overseas investments is likely to result in net cash outflows.
Second, projected declines in fiscal deficits might not be enough to offset the impact of lower corporate financial surpluses. In particular, even under the authorities’ plan, overall fiscal deficits would narrow only by 3% of GDP during the next 5–6 years,\(^7\) compared to 5.5% of GDP during the previous expansion period of 2003–2007. This reflects more limited room for expenditure cuts than in the past.

Third, a shift in households’ asset portfolio could also reduce demand for JGBs. For example, the estimates in Table 1 imply that if households’ net purchases of securities (excluding government securities) and shares bounce back to 2% of GDP (2007 level) as risk appetite recovers, that could reduce banks’ purchases of government securities by 1.5–2% of GDP through slower accumulation of deposits.

Based on historical trends, a decline in corporate and household financial surpluses would likely have a modest impact on yields, but a more substantial response cannot be ruled out. Japan’s historical data suggest that the immediate impact on yields from a decline in corporate financial surpluses even to zero would be at most about 10 basis points.\(^8\) However, the response of yields to a funding shock could be nonlinear and more significant once public debt exceeds a certain threshold.\(^9\)

3. Market Volatility

Banks’ large and increasing holdings of JGBs are a key source of vulnerability. Since mid-2008, banks have increased JGB holdings by ¥40 trillion or 8% of GDP amid a flight to safety and increasing private sector surpluses as discussed above. During this period, they have earned higher returns from JGBs than from alternative investments (for example, nominal returns from United States (US) Treasuries in yen terms have been negative due to the yen’s appreciation and narrowing interest differential). However, with banks’ (excluding Japan Post Bank) outstanding JGB holdings rising to ¥150 trillion (more than 15% of their total assets), they now face higher interest rate risk.

A rise in market volatility that prompts banks to unwind their JGB holdings could be triggered in several ways. First, major banks have been shortening the maturities of their JGB holdings to an average of about 2 years in FY2010 (from 3.2 years in 2002–2003) in response to higher interest rate risk. Higher interest rate volatility could further push banks — particularly the regional banks, which hold longer maturity JGBs (about 3.5 years) — to further shorten the maturity.

Second, higher interest rate volatility could induce a JGB sell-off if banks’ risk exposures exceed the calculated thresholds of their risk management model. A notable

\(^7\) For example, the Cabinet Office projected in August 2011 that assuming an increase in the consumption tax rate to 10% by FY2015, the general government overall fiscal deficit (excluding the social security fund) would narrow by only 3% of GDP between FY2010-15.

\(^8\) Estimated using regression results in Tokuoka (2010) which reports that a decline in corporate or household financial net worth of 1% of GDP would raise 10-year JGB yields by 1–2 basis points.

\(^9\) There is some empirical evidence consistent with the view that the impact of a rise in debt on yields is nonlinear and becomes significant once the debt exceeds a certain threshold (e.g., Faini, 2006; Ardagna et al., 2004).
example was the so-called “VaR shock” in June 2003, when 10-year JGB yields more than tripled over three months, surging from a historically low of 0.5% to 1.6% (Fig. 4). Although banks have now strengthened risk management practices by including qualitative assessment in addition to the quantitative risk measures in VaR models, banks’ JGB holdings are significantly larger, compared to 10 years ago.

Third, although recent sovereign downgrades have had limited impact on JGB yields, a further rating downgrade or a series of weak JGB auctions that push up yields volatility could induce banks to reduce the duration of JGB holdings or to sell JGBs to

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10 This episode was termed as the “VaR shock” because the rise in volatility increased risk measures in banks’ internal value-at-risk (VaR) models and led to one-sided selling by banks as they attempted to shed risk (Bank of Japan, 2010).
limit losses. This could in turn lead foreign investors to unwind their positions in the futures and swaps markets. Specifically, a large portion of JGB holdings are held in banks’ balance sheet as “available-for-sale” or “held-to-maturity” accounts outside the trading book. Banks would need to provide impairments for the valuation losses depending on the magnitude of the losses (in practice if market value falls below 70% of the book value). In case banks apply internal risk-based method and use zero risk weight on their JGB holdings, market investors could price in the perceived increase in risk on bank valuation. A sustained rise in sovereign yields could pose interest rate risks to banks’ balance sheets. Unexpected illiquidity in the JGB market and the uncertain prospect of fiscal consolidation could also dampen their prices.

Fourth, the rollover risks of JGBs have risen along with the government’s annual financing requirement, which now amounts to about 55% of GDP (including financing bills) — the highest among advanced economies. The large financing needs not only reflect the high debt stock, but also their relatively short average maturity, which is still around 5.5–6 years (including financing bills) despite the recent lengthening, compared with other advanced countries.\(^{11}\) Given the large amount of bonds that need to be rolled over, any increase in uncertainty over the supply and demand of JGBs could disrupt the smooth absorption of new issuances and push up JGB yields.\(^{12}\)

### 4. Global Spillovers

Global financial distress could have negative spillover effects on the JGB market through the banking system. Japan’s sovereign yields are sensitive to global risks, such as the investors’ risk appetite. For example, the correlation between 10-year yields (returns) on JGBs and US Treasuries ranges from 0.37 to 0.58 (Table 2). In response to

<table>
<thead>
<tr>
<th>Correlation with 10-year JGB yields(^1)</th>
<th>10-year US Treasury yields</th>
<th>10-year German bond yields</th>
<th>Average yields of adv. countries(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire sample: (Jan 2000–May 2011)</td>
<td>0.58</td>
<td>0.37</td>
<td>0.49</td>
</tr>
<tr>
<td>Before Jan 2008</td>
<td>0.61</td>
<td>0.19</td>
<td>0.44</td>
</tr>
<tr>
<td>After Lehman crisis</td>
<td>0.62</td>
<td>0.87</td>
<td>0.75</td>
</tr>
</tbody>
</table>

*Source*: Bloomberg.

\(^1\) Correlation coefficients refer to the correlation of 10-year JGB yields in levels and they are all statistically significant at the 5% level.

\(^2\) Average yields refer to the average of 10-year yields on U.S. Treasury, German sovereign bonds, and U.K. Treasury bonds.

\(^{11}\) According to the authors’ estimates, the average maturity rose from 4.7 years at end-FY2005 (March 2006) to 5.8 years at end-FY2010.

\(^{12}\) For example, so-called “FILP shock” took place in 1998 when yields spiked due to confusion over the purchases of JGBs by the Fiscal Investment and Loan Program (FILP) Special Account.
capital losses on their foreign bond portfolios, Japanese banks could reduce the maturity to minimize losses. For example, in late 2010, the sudden rise in JGB yields mirrored those in US Treasuries, as Japanese banks sold off some of their long-term JGB holdings and shortened maturities in response to losses on their US Treasuries. So far the European turmoil has pushed down the yields on the JGB market. JGB yields — along with the US and Germany sovereigns — declined during the recent European sovereign distress due to “safe-haven” flows. The development in European debt crisis provides a cautionary tale to Japan that sovereign yields could rise abruptly against the backdrop of slow growth and widening fiscal deficits. If sovereign distresses spread more globally, then that could also raise the risk premium on JGBs.

Another channel for global spillover could be through the derivatives markets where foreign participation is high. Despite low foreign ownership of JGBs (5% of the total outstanding), foreign investors are active in the JGB futures market, holding about one-third of outstanding contracts. Compared to domestic players, foreign investors also appear to be more sensitive to Japanese sovereign risk, as indicated by the rise in spreads on JGB credit default swap (CDS) contracts — traded mostly among foreign investors. Any distress sell-offs in the futures market could affect the JGB cash market given the close arbitrage links. Overseas financial distress could lead to a rise in global yields, which in turn could amplify pressures on JGB yields through the derivatives markets (Fig. 4).

Estimating the sensitivity of the JGB yields to global risk factors can help assess the potential impact from global spillover. We estimate the global spillover channel by using a time-series regression and taking into account global factors and investors’ risk appetite. The analysis uses daily data from 2005 with an ARIMA specification that accounts for the autoregressive and heteroscedastic features of short-term yield movement. Lagged variables are used as explanatory variables. An ARIMA model applied as a statistical test on sovereign yields suggests that the time series are non-stationary. The regression includes US Treasury and German Bund yields, and the implied volatility of JGB yields as a proxy for investor’s risk appetite. Other risk factors include exchange rate volatility and term premia. These risk factors in essence capture both domestic and external risks (Table 3).

The results indicate that US Treasury and German sovereign yields are significant at the 5% level (Table 3). These estimates imply, for example, that a one percentage point increase in US Treasury yields (or a change in global risk factors that raise US Treasury yields by one percentage point) could increase JGB yields by nearly 15 basis points. Other things being held constant, JGB yields were more closely driven by US Treasury yields after the global financial crisis. In addition, uncertainty in the financial markets, such as measured by the implied volatility of JGBs, also have a strong impact.

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13 Statistical analysis, however, does not point to a particular direction of causality.
14 Japan’s CDS market is not very liquid and consists mainly of foreign hedge funds. Foreign investors looking to short JGBs typically acquire short positions on JGB futures, or buy out-of-the-money put options on interest rate swaps.
on JGB yields. This would imply that a rise in global uncertainty, which is reflected in a higher volatility of JGBs, could raise the risk premium in JGBs. Based on the estimates, a rise of implied volatility, similar to what took place after the Lehman crisis, could push up JGB yields by more than 40 basis points, holding other variables constant.\(^{15}\)

Granger-causality tests show that movements in global yields generally precede those of JGBs, while the reverse causality from JGB yields to global yields does not appear to be statistically significant. In particular, the hypothesis that 10-year US Treasury yields and 10-year German sovereign yields do not Granger-cause 10-year JGB yields are rejected with \(F\)-statistics equal to 51.7 and 35.4 (both \(p\)-values close to zero), indicating the statistical significance at the 5% level. However, the reverse causality from 10-year JGB yields to 10-year US Treasury yields or 10-year German yields is not statistically significant, with \(p\)-values close to 0.3 and 0.2, respectively.

Further regressions also suggest that market risk to the JGB market is subject to global factors (Table 4). Sovereign risks as measured by the CDS spreads are in

### Table 3. Factors influencing short-term JGB yield movements.\(^{1,2}\)

<table>
<thead>
<tr>
<th></th>
<th>Sample period: Jan 2006–May 2011</th>
<th>Dependent variable: 10-year JGB yields (1) (2) (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-year U.S. Treasury yields</td>
<td>0.16 (0.01)</td>
<td>0.13 (0.01)</td>
</tr>
<tr>
<td>10-year German sovereign bond yields</td>
<td>0.10 (0.02)</td>
<td>0.10 (0.02)</td>
</tr>
<tr>
<td>Implied volatility of JGBs(^3)</td>
<td>0.05 (0.00)</td>
<td>0.05 (0.01)</td>
</tr>
<tr>
<td>Equity returns (Nikkei)</td>
<td>-0.07 (0.03)</td>
<td>-0.09 (0.03)</td>
</tr>
<tr>
<td>Term premium(^3)</td>
<td>0.14 (0.05)</td>
<td>0.14 (0.05)</td>
</tr>
<tr>
<td>Dummy*U.S Treasury yields(^4)</td>
<td>—</td>
<td>0.01 (0.00)</td>
</tr>
</tbody>
</table>

**Source:** Bloomberg.

\(^{1}\)All variables included in the regression refer to the first lags.

\(^{2}\)Figures in parentheses indicate the standard errors. Numbers in bold indicate a 5\% level of significance.

\(^{3}\)Implied volatility refers to 30-day implied volatility of 10-year JGBs as calculated based on underlying options. Term premium refers to the slope between 2-year and 5-year JGBs.

\(^{4}\)The dummy variable spans from September 2008 to April 2009 to include the peak of the global financial crisis.

\(^{15}\)Alper and Forni (2011) suggest a notable spillover of government bond yields from advanced countries by as much as 30 basis points on average across the advanced and emerging economies, after controlling for domestic and global fundamentals.
general positively correlated with the fiscal positions. Higher public debt ratio as a percent of GDP is usually associated with higher sovereign CDS spreads. In the case of Japan, the relations between the CDS spreads and fiscal variables are less clear than other advanced countries. Nevertheless, its sovereign CDS spreads are highly correlated to developments in global financial markets, particularly in the US and Europe. A rise in CDS spreads in the US and Europe, and lower global equity returns are found to be correlated with an increase in CDS spreads in Japan at the 5% significance level. Specifically, a one-percentage rise in the composite CDS spreads in advanced countries could raise Japan’s CDS spreads by 30 basis points.

5. Risks from a Rise in JGB Yields

A significant rise in yields would leave the fiscal position extremely vulnerable. If sovereign yields rise by 100 basis points over the next 5 years, the net debt-to-GDP ratio would remain at high levels over the long term, even after a 10 percentage points of GDP adjustment in the structural fiscal balance to anchor sustainability (Fig. 5).16 The high debt levels would leave the fiscal position vulnerable to interest rate or funding shocks and risk undermining public confidence.

16See IMF (2011) for a list of possible measures to achieve a 10 percentage point adjustment.
Yield increases could also pose a risk to banks. With banks holding a large amount of JGBs (more than 15% of total assets, excluding Japan Post Bank), a rise in yields would generate capital losses. For example, according to the Bank of Japan, a 100 basis point increase in interest rates across all maturities raised the value of interest rate risk (including from loans) by around ¥500 billion at the major banks and about ¥400 billion at the regional banks in FY2010. The total value of interest rate risk (including from loans) corresponds to 10% of major banks’ tier 1 capital and more than 30% of regional banks’ tier 1 capital, respectively. Potential spillovers from a sovereign stress in Japan would hit a large segment of the Japanese financial sector.

We use a probability-based distress model (Segoviano, 2006; Segoviano and Goodhart, 2009) to estimate the potential impact arising from a hypothetical sovereign distress event in Japan on Japanese financial institutions based on the daily data of the equity prices and CDS spreads of large Japanese financial institutions from November 2006 to June 2011. The model incorporates the interconnectedness and the common dependence between JGB yields and the CDS spreads of those financial institutions, which help to illustrate the likelihood of the financial institutions facing a tail risk if the JGB market yields encountered a tail event of VaR threshold.

The results suggest that potential spillovers from a distress in JGB market would hit a large segment of the Japanese financial sector. Compared to periods before the global financial crisis, the impact of a sovereign distress on individual financial institutions has significantly risen, partly driven by higher JGB holdings in the financial system and the higher sensitivity of market investors to the linkages between sovereign risks and distress among financial institutions.

Given the risks of a rise in interest rate on debt dynamics and financial stability, stabilizing and reducing public debt is critical to maintaining confidence in the JGB market as the factors holding down JGB yields could diminish over time. Given the limited scope for expenditure cuts, fiscal adjustment should take a balanced approach.

that involves both raising revenue and curbing expenditure growth. Lengthening maturities of JGBs would also lock in low interest rates, while reducing roll-over risks.

6. Conclusion

In summary, the paper assesses the risks to the JGB market. A decline in fund supply, particularly from the corporate sector, higher market volatility, and spillovers from global financial distress could put upward pressure on JGB yields. The ongoing European debt situations provide a cautionary tale for Japan that sovereign yields could rise abruptly through financial channels in the face of slow growth and widening deficits. A sharp rise in government bond yields would pose challenging debt dynamics, which could generate adverse feedback on financial stability. To limit these risks, fiscal policy should aim to reduce public debt quickly.

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