Japan Watch

Impact of potential BoJ rate hikes (part 3): Effect on BoJ finances

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Economics
Japan

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Impact of potential BoJ rate hikes (part 1): Effect on housing market 27 December 2022

Impact of potential BoJ rate hikes (part 2): Effect on corporate funding 30 January 2023

Central bank losses in focus amidst policy normalization

The worldwide rush toward tighter monetary policy has drawn attention to the relationship between central bank finances and conduct of monetary policy. Rising interest rates, prompted by a turn toward monetary tightening, has led to valuation losses on central banks' substantial bond holdings. It may also put downward pressure on their profits, as the spread between the interest rate on central banks' government bond holdings falls below the interest rate paid on excess reserves (IOER), resulting in "negative carry." Indeed, many central banks today are recording negative net income or facing negative equity. Though the BoJ has been an exception, owing to its cautious pace for normalization, the issue of the BoJ's finances may become a focal point in Japan given growing expectations of eventual policy tightening.

"Breakeven IOER" for avoiding negative carry = 0.5-0.6%

The BoJ's total assets represent 130% of Japan's GDP, well above the Fed's 32% and the ECB's 53%. This includes ¥582tn in JGBs, and a 1ppt increase in yields would result in valuation losses of around ¥38tn. The BoJ does not book valuation losses on JGB holdings. But even if it did, it could offset a rise of the policy to up 0.5-0.6% through ETF valuation gains and by drawing on provisions for possible losses on bond transactions.

In P&L terms, the 0.24% average yield on the BoJ's JGB holdings means that an increase of more than 0.25ppt in the IOER would result in a negative spread. It should be able to partly offset this with ETF dividends and reserve drawdowns, but would still face a greater risk of negative net income if interest rates rise beyond 0.5-0.6%.

Higher political hurdle for hiking beyond breakeven IOER

As it stands, there are no rules about how the BoJ would cover potential losses. The range of possible options includes: 1) booking deferred assets, 2) a government capital injection, 3) a substantial change in the structure of BoJ deposit scheme, 4) the sale of ETFs and other assets, and 5) pushing ahead with quantitative tightening (QT)— but all come with shortcomings, and would likely involve fierce political and public debate or—worse—a financial market shock.

We therefore think that front-end hikes beyond the BoJ's break-even IOER of 0.5-0.6% would likely involve even more careful deliberation. The pressure on the BoJ's finances should ease over time if the BoJ pursues gradual normalization, as the central bank rolls over its bond holdings into higher-yielding JGBs, and eventual QT causes reserve balances to shrink. The upshot, however, is that the BoJ would likely hike the policy rate only gradually. We also see the need for an early and, more open, discussion on the BoJ's exit strategy, in order to ensure that concerns around the central bank's finances do not constrain monetary policy in the future.

Debate over central bank finances amidst policy normalization

The worldwide rush toward tighter monetary policy has drawn attention to the relationship between central bank finances and conduct of monetary policy. As a result of prolonged monetary easing and repeated bouts of quantitative easing over the past decade, central banks saw a buildup of low-yield sovereign debt on their balance sheets. This has been followed by a buildup in unrealized losses on these bond-holdings as central banks turned to monetary tightening, causing market interest rates to rise.

The Bank of England (BOE), which has been pursuing active QT (bond sales), has had to book losses on their bond holdings. But even the central banks that are pursuing more passive forms of QT have seen their finances deteriorate, as interest payments on reserves, which accumulated as liabilities on their balance sheets, increased sharply in line with the rapid rise in the policy rate. With these payments exceeding the interest income from their asset holdings, almost all of the key developed market central banks (with the exception of the BoJ) are now booking losses, and some have seen their balance sheets slip into negative equity (Exhibit 1)

Exhibit 1: Major central bank finances and their accounting rules

Major CBs' balance sheets and earnings trajectories differ depending on the pace of monetary tightening and the accounting rules

					Accounting rule	
	Current policy rate	QT started from	Profit	Equity	Holding bonds are valued at	How to cover CB's loss
Fed	5.25-5.5%	Jun-22	Loss (de facto)	Effectively Negative	Book value	Deferred asset
ECB	4.00%	Mar-23	Loss (de facto)	Positive (provision withdrawn)	Book value	Deferred asset
BoE	5.25%	Feb-22*	Loss (de facto)**	Positive (covered by govt.)	Market value	Covered by the government
RBA	4.10%	May-22	Loss	Negative	Market value	Continued negative equity
BoJ	-0.1%	-	Profit	Positive	Book value	No rule

Source: BofA Global Research *BoE started passive QT in Feb '22 and active QT in Nov '22. **In their income statement, QE/QT-related gains/losses are excluded.

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In practice, central banks' balance sheets and earnings trajectories during exit phases differ depending on the pace of monetary tightening, as well as the accounting rules that they use. Increased unrealized losses on bond holdings hurts profit/losses in the case of the Reserve Bank of Australia (RBA) and BOE, given their use of fair value accounting for its government bond holdings. In contrast, they have no direct impact on profits/losses at the Fed, ECB, and other central banks that use the amortized cost method to value their bond holdings.

Meanwhile, as discussed above, almost all central banks have seen payments on reserves exceed the income earned on their assets (primarily bond holdings), resulting in negative net income. However, in the case of the Fed, these losses do not affect equity, since the Fed books the accumulated negative net income as a deferred asset (which it will draw down when net income turns positive), while, in the Euro zone, the losses have been offset by drawing on the considerable provisions that have been built up thus far (Exhibit 1).

Leaving aside differences in accounting treatment, many major developed-market central banks already have negative net income or are even facing negative equity. Is this necessarily a bad thing, and is it an obstacle to monetary tightening?

Theoretically, the answer to both questions is "no." As a rule, central banks manage monetary policy to achieve their mandates, in most cases price stability (inflation). Given their ability to raise revenue through seigniorage (i.e. "print money"), central banks cannot "run out" of money and thus losses and negative equity should not affect their ability to fulfil their mandates.

In practice, however, central bank losses have consequences for government finances as the losses are absorbed through reduced transfers to the treasury, or resolved via recapitalization—both of which may lead to increased government bond issuance. In the worst case, persistent losses could damage central banks' autonomy and credibility.[1]

The message was echoed in a 30 September speech by Governor Kazuo Ueda, aptly-titled "Central Bank Finances and Monetary Policy Conduct."[2] In the speech Governor Ueda noted that "in general, decreases in the central bank's profits and capital do not immediately impair its ability to conduct policy in an operational sense" but warned that "a resulting decline in credibility would have an adverse effect on policy conduct."

Indeed, there is some evidence that concerns around financial losses are affecting policy choices at some central banks. The ECB's decision, for example, to revise the terms of its targeted longer-term refinancing operations (TLTROs) and lower the interest rate on minimum reserves is likely being driven by its concern over accounting results, which we think damages the effectiveness of its actions (see European Rates Viewpoint: ECB's cost minimization problem, 1 August 2023).

BoJ balance sheet concerns: Valuation losses on large JGB holdings

Concerns over the central bank's finances could also become an issue in Japan, where monetary policy normalization is on the horizon (we expect the BoJ to exit NIRP and YCC between December 2023 and April 2024, with the January '24 MPM our base case; for details, see Japan Viewpoint: Inching closer to normalization, 21 September 2023).

As of end-March 2023, the BoJ's assets totaled ¥735tn, or 130% of nominal GDP, a massive figure compared with the Fed's 32% and the ECB's 53%. Aggressive QE over the past decade has brought the BoJ's JGB holdings to ¥581.7tn, and it also has ¥94.4tn in outstanding loans under its liquidity support program as well as ¥37tn in ETF holdings (Exhibit 1).

The counterpart to the BoJ's outsized asset holdings are excess reserves held in private financial institutions' current account balances at the BoJ. This is booked on the liability side of the BoJ's balance sheet and totaled ¥549.1tn as of end-March. As we discuss below, the BoJ's net assets stood at just ¥5.5tn at the end of March, reflecting the transfer of most of its profits to the national treasury.

A rise in market interest rates prompted by BoJ rate hikes would therefore result in significant valuation losses on the BoJ's JGB holdings. A simple calculation based on the 6.5-year average residual maturity of its holdings suggests that a 1ppt upshift in yields across the curve would result in valuation losses of ¥38tn[3] (6.7% of GDP).

[1] There is a great deal of academic work on this issue. For example, see "Why are central banks reporting losses? Does it matter?" (BIS Bulletin, 7 February 2023), "Central Bank finances" (BIS Papers No. 71, 29 April 2013), and "The Role of Capital for Central Banks" (BoJ, 25 October 2003).

[2] "Central Bank Finances and Monetary Policy Conduct" (speech by BoJ Governor Kazuo Ueda at Japan Society of Monetary Economics, 30 September 2023).

[3] JGB holdings of ¥581.7tn x 1ppt rise in yield x average remaining maturity of 6.5 years = ¥38tn.

Exhibit 2: Overview of BoJ's balance sheet (as of end-Mar 2023)
Aggressive QE over the past decade has brought the BoJ's JGB holdings to ¥581.7tn

Assets	(trn)	Liabilities/Net assets	(trn)
JGBs	581.7	Current deposits	549.1
Corporate bonds	8.0	Other deposits	28.9
ETF	37.0	Banknotes	122.0
J-REIT	0.7	Other liabilities	29.6
Loans and bills discounted	94.4	Total Liabilities	729.6
Others	13.2	Total net assets	5.5
Total assets	735.1	Total liabilities and net assets	735.1

Source: BofA Global Research, BoJ

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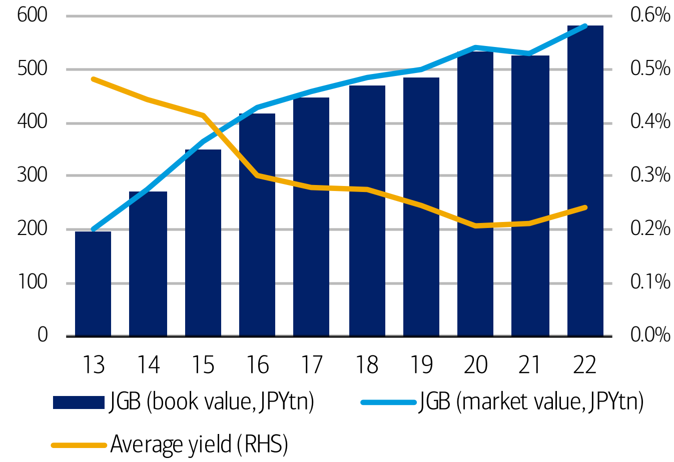
Exhibit 3: BoJ's JGB holdings: amount outstanding and average yield
Average yield of BoJ's JGB holdings have declined over time



Source: BofA Global Research, BoJ

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Even if JGB valuation losses are as large as our simulation suggests, they would not be reported in the BoJ's financial accounts. This is because the BoJ's accounting rules[4] state that its JGB holdings are valued based on the moving average of amortized cost, and it does not book valuation losses resulting from changes in market value (Exhibit 4). It does book losses on sales. But given the considerable impact this would have on the JGB markets, we think BoJ bond sales are unlikely for the foreseeable future. JGBs are also exempt from the write-downs required[5] for corporate bonds and ETFs in the event of a sharp decline in market value.

Backstop from loss provisions, ETF valuation gains

In addition, the BoJ has been preparing for a downturn in profits during a future exit from monetary easing by accumulating provisions for possible losses on its bond transactions. The scheme, which was expanded in 2015, allows the BoJ to set aside a portion of the interest income from its JGB holdings as provisions against future bond trading losses; it has added around ¥500bn per year over the past several years, bringing its provisions to ¥6.1tn as of end-March 2023 (Exhibit 9).

Valuation gains on ETF holdings, which reached ¥16tn at end-March, could also act as a backstop that protects the BoJ's balance sheet. We think that the rise in Japanese equities since the start of the fiscal year will have further boosted the BoJ's ETF valuation gains and we expect this to partly offset JGB valuation losses caused by rising yields, provided share prices hold up.

A simple calculation suggests that valuation losses on the BoJ's JGB holdings would only exceed the total of the above provisions and ETF valuation gains (¥22.1tn) if interest rise more than 0.6ppt across the yield curve (0.8% if we include statutory reserves and other capital account items). We therefore think the BoJ would be able to absorb the JGB valuation losses resulting from a hike in the short-term interest rate of up to 0.5-0.6%: not only can it avoid reporting these losses in an accounting sense, we also think it would avoid negative equity (Exhibit 5).

[4] See Article 13 (1), "Standards and methods for valuation of securities".
[5] For example, if TOPIX fell 30-50% below the average 1,700 level at which we estimate the BoJ purchased ETFs, it would take write-downs that are booked as losses in the relevant fiscal year.

Exhibit 4: BoJ's evaluation method on securities holdings
JGB valuation losses and impairment losses are not reported in the BoJ's financial accounts

	Valued at market value	Impairment accounting
JGBs	No	No
Corporate bonds	No	Yes
CP	No	Yes
Foreign bonds	Yes	No
Equity/ETF	No	Yes

Source: BofA Global Research, BoJ *JGB are valued at amortized cost determined by the moving-average method. Stocks and ETFs are valued at cost determined by the moving-average method

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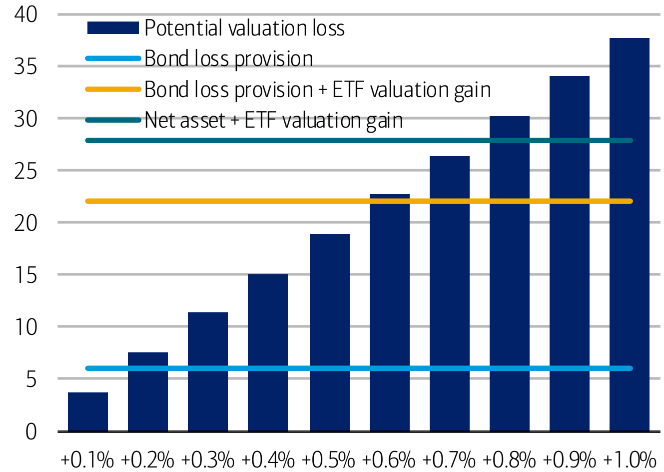
Exhibit 5: Estimated valuation losses of BoJ's JGB holdings under rate hike scenarios (JPYtn)
The BoJ would be able to absorb the JGB valuation losses resulting from a hike in the short-term interest rate of up to 0.5-0.6%



Source: BofA Global Research, BoJ *Net asset includes provisions. **Valuation losses are simply calculated by JGB amount outstanding*average maturity*rate hikes

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Earnings concerns: Higher IOER and "negative carry"

In contrast to valuation losses resulting from a drop in the price of its bond holdings, which are not booked according to the BoJ's accounting rules, the potential deterioration of the BoJ's P/L is a greater concern.

The BoJ's FY22 income statement shows that the more than ¥1tn in interest income from its ¥581tn in JGB holdings represents a key source of earnings (Exhibit 6; its JGB holdings have an average yield of 0.24%). However, the BoJ's negative interest rate policy (NIRP) has kept annual interest payments on excess reserves on the liability side below ¥200bn (Exhibit 7; simple average yield on IOER in financial institutions' current account deposits with the BoJ is 0.04%). Combined with ETF dividends, this resulted in an FY22 surplus of ¥2.1tn, the highest level since the new BoJ Act came into effect in 1998 (Exhibit 6; ¥1.9tn of this was paid into the national treasury).

Exhibit 6: BoJ's Income Statement (bn)
BoJ's annual interest payments on excess reserves are limited relative to interest income from JGB holdings

	FY21	FY22
Ordinary income	1,160	1,521
Interest income from JGBs	1,123	1,332
Foreign exchange related gains and losses	722	749
Others	739	1,179
Income gains from pecuniary trusts (ETFs)	843	1,104
Interest payment on excess reserve balances	-180	-177
General and administrative expenses and costs	-202	-211
Operating profit	2,419	3,231
Special profits	-754	-819
Transfer to provision for possible losses on bonds transactions	-403	-461
Transfer to provision for possible losses on foreign exchange transactions	-361	-375
Net income before taxes	1,664	2,412
Net income	1,325	2,088
Transfer to legal reserve	66	104
Payment to the government	1,258	1,983

Source: BofA Global Research, BoJ

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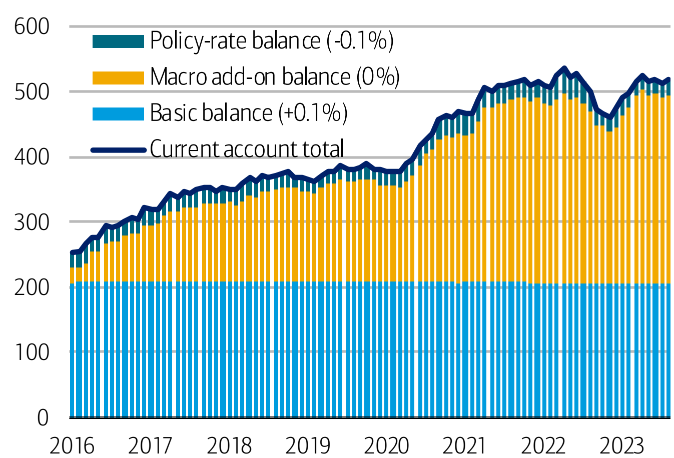
Exhibit 7: BoJ current account balance under three-tier system (JPYtn, average balance)
The BoJ current account balance has increased as a result of massive QE



Source: BofA Global Research, BoJ *Applied IOER are in the parenthesis *Amount outstanding of excess reserves

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Simulating BoJ earnings impact from rising yields

Yields on JGB holdings on the asset side would remain unchanged even if the BoJ raises short-term interest rates and the IOER. However, assuming for the sake of simplicity that size of reserve balances and the structure of the BoJ's three-tiered deposit rate scheme remains unchanged, a 0.1ppt increase in the interest rate applied to all current account deposits would increase the BoJ's annual interest payments by ¥520bn (i.e., pretax profits would fall by ¥520bn).

As noted, the average (investment) yield on the BoJ's JGB holdings is 0.24% and the average (funding) yield on BoJ current account deposits is 0.04%, suggesting that a 25bp or greater hike in the interest rate on reserves would result in "negative carry" for the BoJ (Exhibit 8).

In reality, the BoJ has a cushion against negative net income even if spreads turn negative: it receives around ¥1tn in annual dividends from its ETF holdings, which are a stable source of earnings provided it does not sell (indeed, we would not expect the BoJ to turn to sales of its ETF holdings for at least the next several years, if not longer).

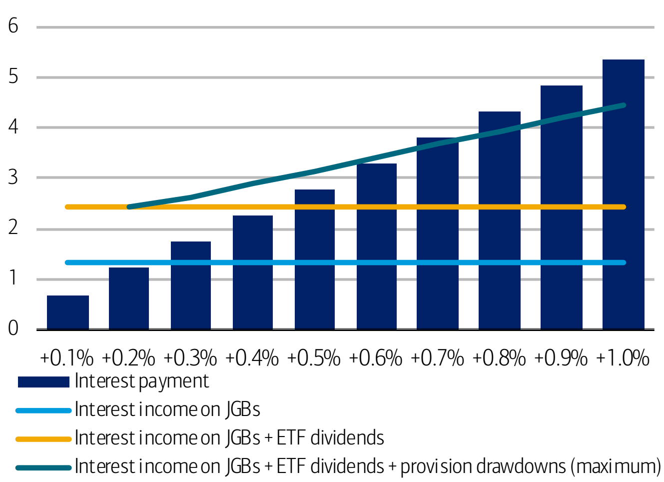
As noted, the BoJ has also set aside a total of ¥6.1tn in provisions against bond trading losses, and its transitional measures allow it to offset up to 50% of net interest losses by drawing down these provisions if spreads turn negative.[6]

This suggests that the interest rate on current account balances would need to rise by 0.7ppt for interest payments on BoJ current account deposits to exceed the aggregate value of the BoJ's JGB interest income, ETF dividends, and maximum permitted drawdowns from provisions. In other words, front-end hikes of up to around 0.6ppt from the current level should still allow the BoJ to eke out positive net income (Exhibit 8).

The caveat, though, is that in this scenario where the IOER was around 0.6%, the BoJ would be drawing down around ¥1tn every year. This would cause the central bank to run out of provisions in six years, after which it would be unable to offset losses (Exhibit 9). Rapidly drawing down these provisions would also eliminate the balance-sheet backstop that we discussed above.

Exhibit 8: Estimated interest payment on BoJ current account deposits under rate hike scenarios (JPYtn)

Front-end hikes of up to around 0.6ppt from the current level should still allow the BoJ to eke out positive net income



Source: BofA Global Research, BoJ *Assuming that size of reserve balances and the structure of the deposit rate scheme remains unchanged. Also assuming that the BoJ draws down its provisions up to the maximum permitted.

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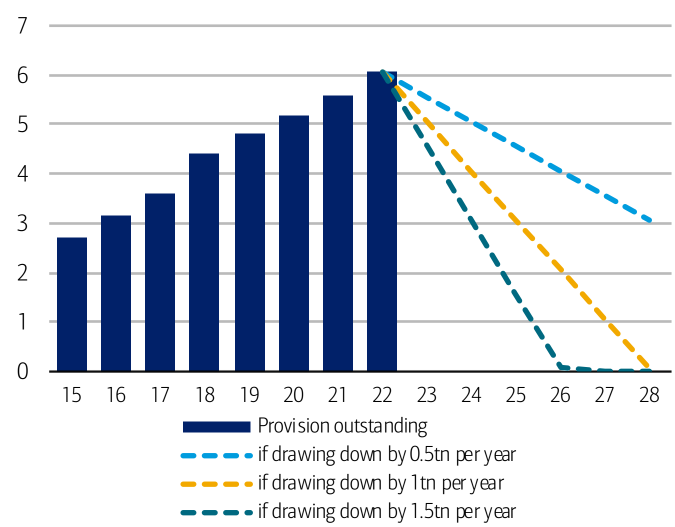
Exhibit 9: Amount outstanding of provisions on bonds transactions and projections under each drawdown scenario (JPYtn)

Fast drawdown would cause the BoJ to run out of the provisions earlier



Source: BofA Global Research, BoJ *For the sake of simplicity, we assumed that further transfer to provisions are zero from FY23 onwards

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[6] See Bank of Japan Act, Supplementary Provisions Article 3 "Transitional measures pertaining to the amount of revenue from allowances for losses on bond transactions, etc."

The BoJ's options in case of negative carry

We look next at who would cover losses at the BoJ. At present, the BoJ is required by law to pay its earnings into the national treasury, but there are no provisions regarding losses. The old BoJ Act, which was in force through March 1998, included loss compensation provisions. But these were removed from the new law with the aim of increasing the BoJ's autonomy.

We see the following main options for the BoJ in the event that it actually incurs losses.

1. **Book as deferred asset:** The BoJ could emulate the Fed and book cumulative negative net income as a deferred asset. However, this would create issues about the recoverability of these large cumulative losses, and would also require changes to the BoJ Act to allow it to switch its accounting rules.

2. **Government capital injection:** The BoJ pays profits into the national treasury, and it therefore seems natural that the government would cover its losses. However, this would risk harming the BoJ's independence, and as with option (1) would require changes to the BoJ Act. In particular, it is unclear whether the government and the public would support an injection of capital given that it would mainly be used to increase interest payments to private-sector financial institutions.

3. **Major changes to BoJ deposit scheme structure:** The BoJ could sharply increase the minimum reserve ratio and reduce the interest rate paid on excess reserves; the ECB is currently debating a similar move. However, this would likely act as an effective curb on short-term interest rates, reducing the tightening effect of policy rate hikes.

4. **Sale of other asset holdings:** The BoJ could sell ETFs with unrealized gains to cover interest payments. However, there is no consensus on what a scheme for selling ETFs would involve, and such a move would raise the risk of a sharp sell-off in the equity markets. Selling down ETF holdings would also reduce the BoJ's dividend income.

5. **Reduce BoJ current account deposits via passive QT:** In the long term, we think the BoJ could lower interest payments by gradually reducing the amount of reserves on its current account balances by halting re-investments on redemptions to its JGB holdings. However, the process would be gradual. The BoJ could, theoretically, conduct active QT (i.e. sell JGBs), to reduce the level of current account balances more quickly. But aggressive QT raises the risk of a bond market crash.

Exhibit 10: The BoJ's policy options in the event that it actually incurs losses

Each option would require considerable time to implement given the substantial hurdles involved from a political and/or market standpoint

Policy option	Brief description	Main demerit
1. Book as deferred asset	Book cumulative negative net income as a deferred asset, then draw down when net income turns positive	Issues about the recoverability, require changes to the BoJ's accounting rules
2. Government capital injection	The government covers the BoJ's losses as the BoJ pays profits into the national treasury	Damage the BoJ's independence, require changes to the BoJ Act.
3. Major changes to BoJ deposit scheme structure	Reduce the interest rate paid on excess reserves, via for example, a sharp increase in the minimum reserve ratio	Reduce the tightening effect of policy rate hikes
4. Sale of other asset holdings	Realize unrealized gains on ETFs with the sales	Risk of a sharp sell-off in the equity market, reduce the BoJ's dividend income on ETFs
5. Reduce BoJ current account deposits via passive QT	Lower interest payments by gradually reducing the amount of reserves on its current account balances by halting re-investments on redemptions to its JGB holdings	Risk of a bond market crash

Source: BofA Global Research

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Breakeven point for the BoJ's IOER = 0.5-0.6%

While the BoJ could deploy any of these options, they would all likely take considerable time to implement, given the substantial hurdles involved from a political and/or market standpoint and the debate they would provoke both in and outside of the BoJ.

We therefore think that, while the BoJ could quickly hike the front-end to the "breakeven IOER" of 0.5-0.6%, where it would remain profitable, it may be more cautious about raising the policy rate beyond this level.

However, over the longer term it should also be possible to gradually ease concerns about the BoJ's finances. Assuming it continues with JGB redemptions and reinvestments, average yields will gradually rise as the BoJ rolls over around ¥70tn per year into higher-yielding JGBs. If gradual (passive) QT causes current account balances to shrink, the breakeven point for interest rates on these balances would also rise. The upshot is that the BoJ will likely raise its policy rate only gradually to avoid compromising its balance sheet strategy, unless a spike in inflation creates public pressure for curbing rising prices.

Need for more open discussion on exit strategy

In the meantime, the government needs to at least begin the process of creating rules for covering losses from deferred assets to ensure that concerns around the balance sheet do not constrain monetary policy conduct in future. The ideal would be to emulate the ECB and BoE and establish rules when monetary easing begins that anticipate a future exit, dictating that all profits during QE are to be set aside, or that all profits and losses from QE accrue to the government.

Once losses are already occurring, political pressure would likely further complicate the process of determining how to handle them. We therefore think the BoJ needs to pursue a more open debate about its exit strategy.

Uncertainty about the household/markets' reaction

Finally, we highlight the additional risk that even if the BoJ plots a careful course for normalization, and even if central bank losses don't matter in theory, concerns around BoJ finances could affect sentiment. For example, if media reports on the BoJ's financial footing increase anxiety about the future, this could depress household spending. If similar worries gain traction in the market, this could sap confidence in (and thereby weaken) the yen; it could also prompt the view that concerns about the BoJ's finances will prevent it from tightening as needed, depressing real yields and hurting the yen (see "Liquid Insight: Yen's 2024 problem," 17 July 2023). The above risks, again, highlight the need for early and careful communications from the Bank of Japan regarding its exit strategy.

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