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# Who is hurt worst by negative rates?

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## Executive Summary



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*While the BOJ's negative interest rate policy's adverse impact on financial institutions cannot be ignored, the one ultimately hardest hit by NIRP may be the BOJ itself when it attempts to normalize its currently ultra-accommodative monetary policy.*

### NIRP affected BOJ itself

On January 29, the Bank of Japan (BOJ) adopted a negative interest rate policy (NIRP) as a new means of monetary easing.

NIRP does not mean that interest rates throughout the economy turn from positive to negative all at once, but negative rates are nonetheless uncharted territory. The Japanese public consequently seems more concerned about NIRP's side effects, including its impact on financial institutions' earnings and deposit rates, than enthused about its potential benefits.

However, little has been said about NIRP's impact on the BOJ itself. The diagram below presents a simplified picture of the BOJ's balance sheet (as of April 20, 2016). Japanese government securities account for ¥354trn of the BOJ's ¥410trn of total assets at April 20. The BOJ's liabilities consist mostly of ¥285trn of current deposits and ¥95.3trn of banknotes issued by the BOJ. The Japanese government securities holdings on the asset side of the BOJ's balance sheet and current deposits on the liability side have burgeoned unprecedentedly as a result of the BOJ's quantitative and qualitative easing (QQE) program ongoing since April 2013.

### BOJ's balance sheet

Assets	Liability & net assets
Japanese government securities (¥354.1trn)	Banknotes (¥95.3trn)
Other assets (ETFs, J-REITs, loans receivable, etc.)	Current deposits (¥285.0trn)
	Capital, government deposits, reserves, etc.

**Total assets: ¥410.0trn**

Source: NRI, based on Bank of Japan Accounts data (as of April 20, 2016)

If the BOJ's balance sheet were that of a private financial institution instead of central bank, the financial institution would be a huge carry trader that funds itself with demand deposits and interest-free banknotes and invests in higher-yielding government securities. The BOJ in fact earns large profits from spreads between short- and longer-term interest rates. Its ordinary income for the six months through September 2015 was ¥659.1bn.

### NIRP will restrict BOJ's exit

How will NIRP affect the BOJ's profitability?

First, on the liability side of the BOJ's balance sheet, the interest rate the BOJ pays on current deposits has changed. Previously, the BOJ was paying 0.1% interest on excess reserves (i.e., current deposits in excess of required reserves). Upon adopting its NIRP, the BOJ divided excess reserves into three tranches to mitigate NIRP's impact on bank earnings. One tranche continues to earn interest at a positive rate of 0.1%. Another tranche is charged negative interest at a rate of 0.1%. The third tranche neither earns nor is charged any interest.

The positive-rate tranche is roughly ¥210trn, equivalent to excess reserves' average balance during 2015<sup>1)</sup>. The BOJ has pledged to continue to pay 0.1% interest to the financial institutions to which these ¥210trn of excess reserves belong.

Meanwhile, the BOJ will continue its policy of expanding the monetary base<sup>2)</sup> at an annualized rate of ¥80trn. This monetary base expansion will be accompanied by roughly equivalent growth in excess reserves. The BOJ plans to charge negative interest of 0.1% on between ¥10trn and ¥30trn of excess reserves to drive short-term market rates below zero. Beyond these first two tranches, the remainder of excess reserves, together with required reserves, will form the zero-rate tranche.

In other words, while excess reserves on deposit at the BOJ will continue to grow by about ¥80trn annually, the positive- and negative-rate tranches will be capped at ¥210trn and ¥10-30trn, respectively. The zero-rate tranche will consequently grow at a rate of roughly ¥80trn per year. Of the aforementioned ¥285trn of current deposits on the BOJ's balance sheet as of April 20, ¥45-65trn will be in the zero-rate tranche ( $¥285\text{trn} - (¥210\text{trn} + ¥10\text{-}30\text{trn}) = ¥45\text{-}65\text{trn}$ ).

How much will the effective interest rate that the BOJ pays on total current

#### NOTE

1) Current deposits' average balance during 2015 was roughly ¥220trn, which included ¥9trn of required reserves that do not earn interest in addition to the ¥210trn of excess reserves, the latter of which will earn 0.1% interest going forward.

2) The monetary base comprises banknotes, currency in circulation and BOJ current deposits.

3) If the negative-rate tranche were ¥10trn when current deposits totaled ¥285trn, the weighted-average interest rate payable on current deposits would be 0.070% (=  $[(¥210\text{trn} \times 0.1\%) + (¥10\text{trn} \times -0.1\%) + (¥65\text{trn} \times 0\%)] \div ¥285\text{trn}$ ). If the negative-rate tranche were ¥30trn, the weighted-average interest rate payable would be 0.063% (=  $[(¥210\text{trn} \times 0.1\%) + (¥30\text{trn} \times -0.1\%) + (¥45\text{trn} \times 0\%)] \div ¥285\text{trn}$ ).

deposits decrease as a result of its NIRP? Based on the same ¥285trn of BOJ current deposits as of April 20, we estimate the weighted-average interest rate payable on current deposits at 0.063-0.070%<sup>3)</sup>, at least 3bps lower than the 0.1% rate the BOJ paid on excess reserves before adopting its NIRP. However, because current deposits' zero-rate tranche alone will continue to grow under the current framework, the weighted-average interest rate payable on current deposits will continue to decline toward 0%, albeit at a gradually decelerating pace.

How will NIRP affect the asset side of the BOJ's balance sheet? As the BOJ itself has acknowledged, NIRP has driven the entire JGB yield curve dramatically lower. The 10-year JGB yield, Japan's benchmark long-term interest rate, has declined from above +0.2% immediately before NIRP's inception to the vicinity of -0.1%, a decline of some 30bps.

At the same time, however, the BOJ is purchasing JGBs at such heavily suppressed yields to the tune of ¥80trn per year. The BOJ is thus the party most affected by the yield curve's downshift in its capacity as a money manager. With the BOJ purchasing JGBs with an average residual maturity of 7-12 years under its current policy, it has presumably purchased huge quantities of negative-yielding JGBs since launching its NIRP. The BOJ's JGB holdings' effective yield at September 30, 2015, was 0.436%. If the BOJ's NIRP proves to be a long-lived policy, the effective yield on the BOJ's JGB holdings will likely decline more sharply than the weighted-average interest rate the BOJ pays on current deposits.

From such a perspective, NIRP could substantially reduce the net interest margin (NIM) that the BOJ earns. NIM compression may severely constrain the BOJ's policy options when the BOJ eventually seeks to normalize monetary policy.

4) When the US Federal Reserve hinted in spring 2013 that it was planning to soon taper its government bond purchases, the 10-year US Treasury yield rose as high as 3% from below 2% previously. The IMF warned in its April 2013 "Unconventional Monetary Policies—Recent Experience and Prospects" that if interest rates rise sharply (meaning that bond prices fall sharply), central banks that have conducted quantitative easing by buying government bonds would incur large unrealized losses on their government bond holdings. However, the BOJ values its yen-denominated bond holdings at their amortized cost on its balance sheet. Consequently, any unrealized losses on its government securities holdings would not be reflected in its financial statements, provided that it holds the securities to maturity.

For example, reduction in the BOJ's profitability means that the BOJ would not only reduce its remittances to the government but also be less able to accrete shareholders' equity commensurate with its balance sheet expansion. In other words, the BOJ may be undermining its balance sheet's capacity to withstand a potential backup in long-term rates when it starts preparing to exit QQE by gradually scaling down its JGB purchases<sup>4)</sup>.

Additionally, when the BOJ unwinds its NIRP, it should raise the interest rate it pays on excess reserves, but if its NIM has become severely and chronically compressed, its ability to do so would be constrained by concerns about its

own earnings and balance sheet. By adopting its NIRP, the BOJ appears to have greatly compromised its ability to eventually normalize policy.

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