The summary of the presentation at the IMF-Bank of Russia Workshop

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- “The BoJ’s Initiative on the Macroprudential Front,” (2011).
  - ✓ *The stability of the entire system is not necessarily achieved solely by ensuring the financial soundness of individual financial institutions.*
  - ✓ *The interconnectedness among financial institutions, and feedback loops between the real economy and the financial system should be addressed.*

- The BoJ has effectively used macro stress testing to better assess the resilience of the entire financial system.
  - ✓ *Particular attention is paid to dynamic feedback loops between the real economy and the financial system.*

Macro stress testing at the Bank of Japan.

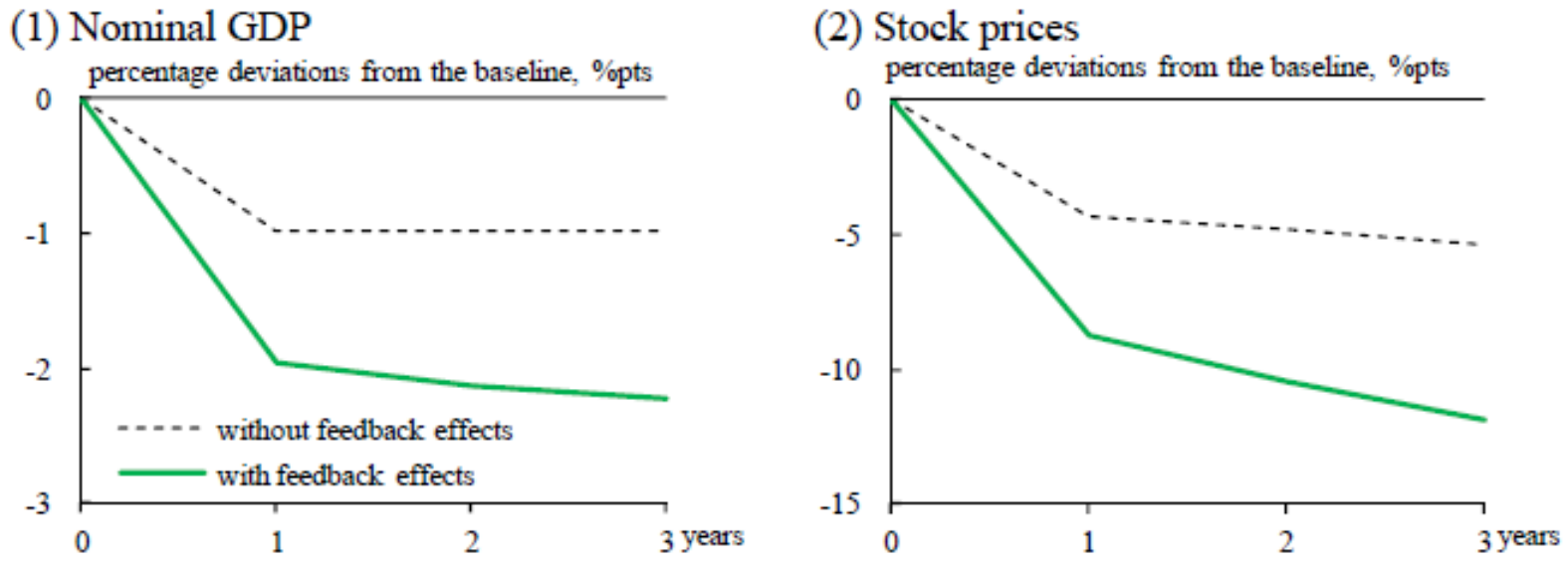
- The Financial Macro-econometric Model.
  - ✓ *The mainframe of the BoJ's macro stress testing.*
  - ✓ *Gauge the resilience of the banking system against "acute stress."*
- Long-term simulation of the profitability.
  - ✓ *Gauge the resilience of the banks which are now subject to "chronic stress."*
- Communication with banks.

Macro stress testing using the FMM.

- The Financial Macro-econometric Model. (FMM)
  - A solvency stress testing model.
  - **Feedback loops between real economy and financial sector.**
  - Incorporate the balance and the behaviour of 370 individual banks.
- Results are published in *the Financial System Report*.

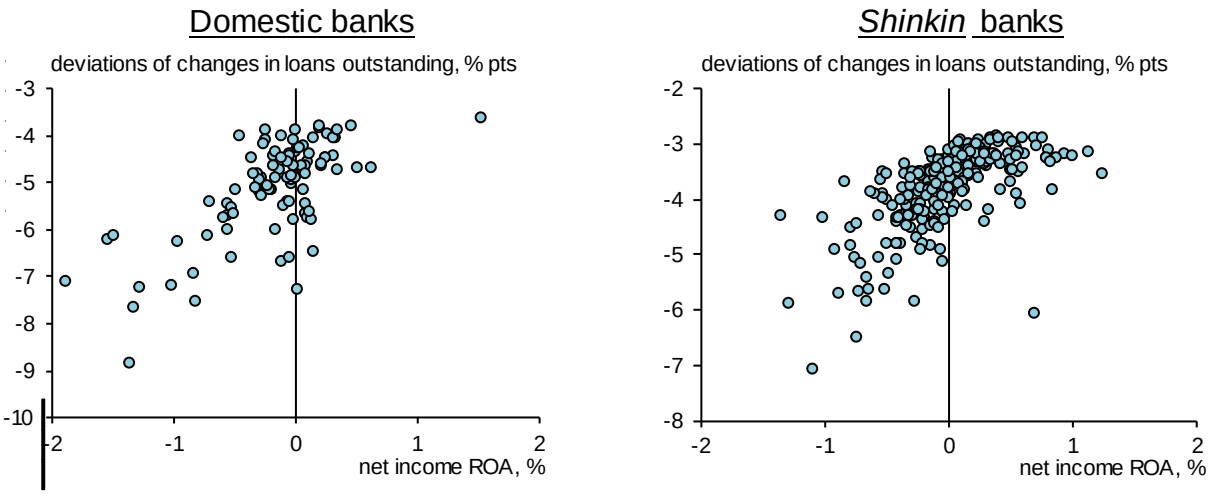
Impact of the feedback loop on the real economy.

Assumption: Nominal GDP growth rates deviate by one percentage point from the baseline for the first year.



Source: Kitamura., et al., (2014), “Macro Stress Testing at the Bank of Japan.”

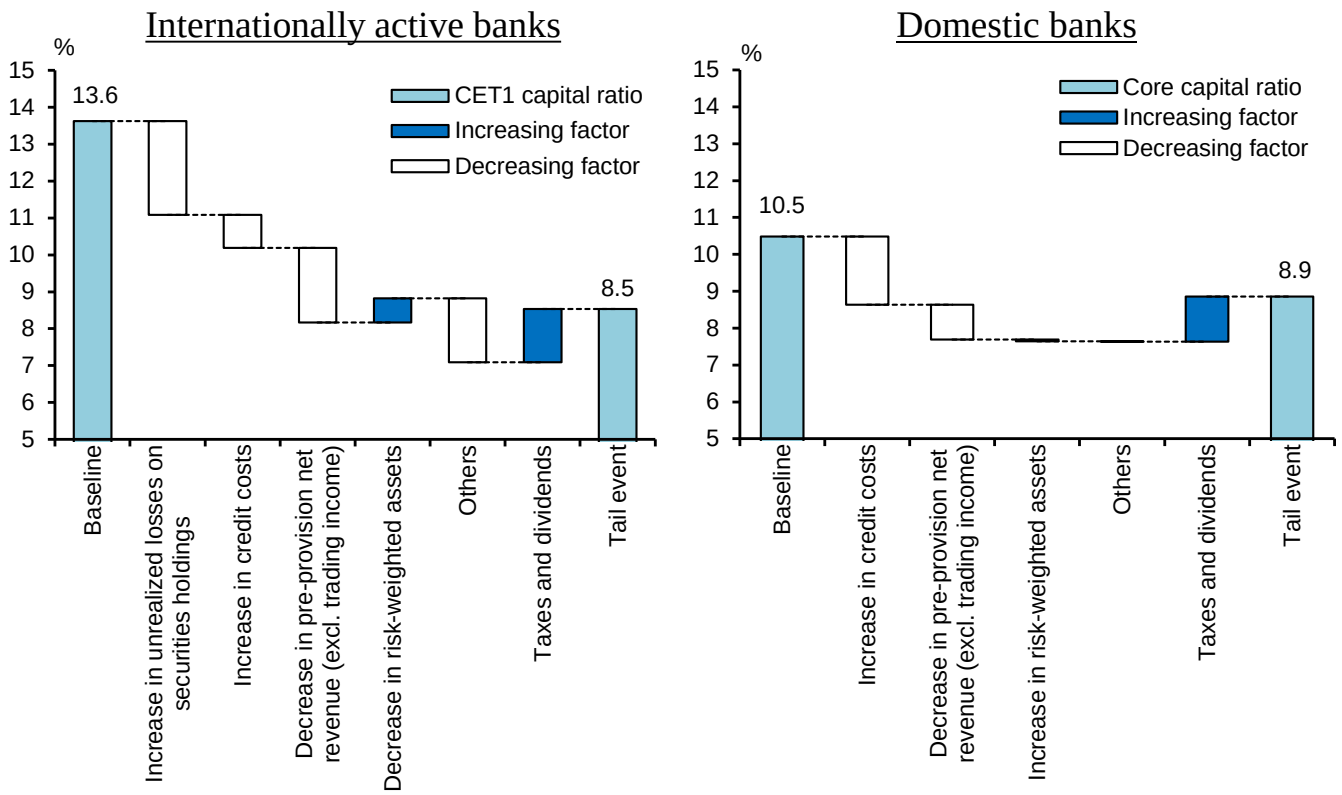
Individual banks' lending volume under the stress scenario.



Source: The Bank of Japan., "Financial System Report, October 2017."
Note: The vertical axis shows the three-year cumulative deviations in loans outstanding under the tail-event scenario relative to the baseline scenario.

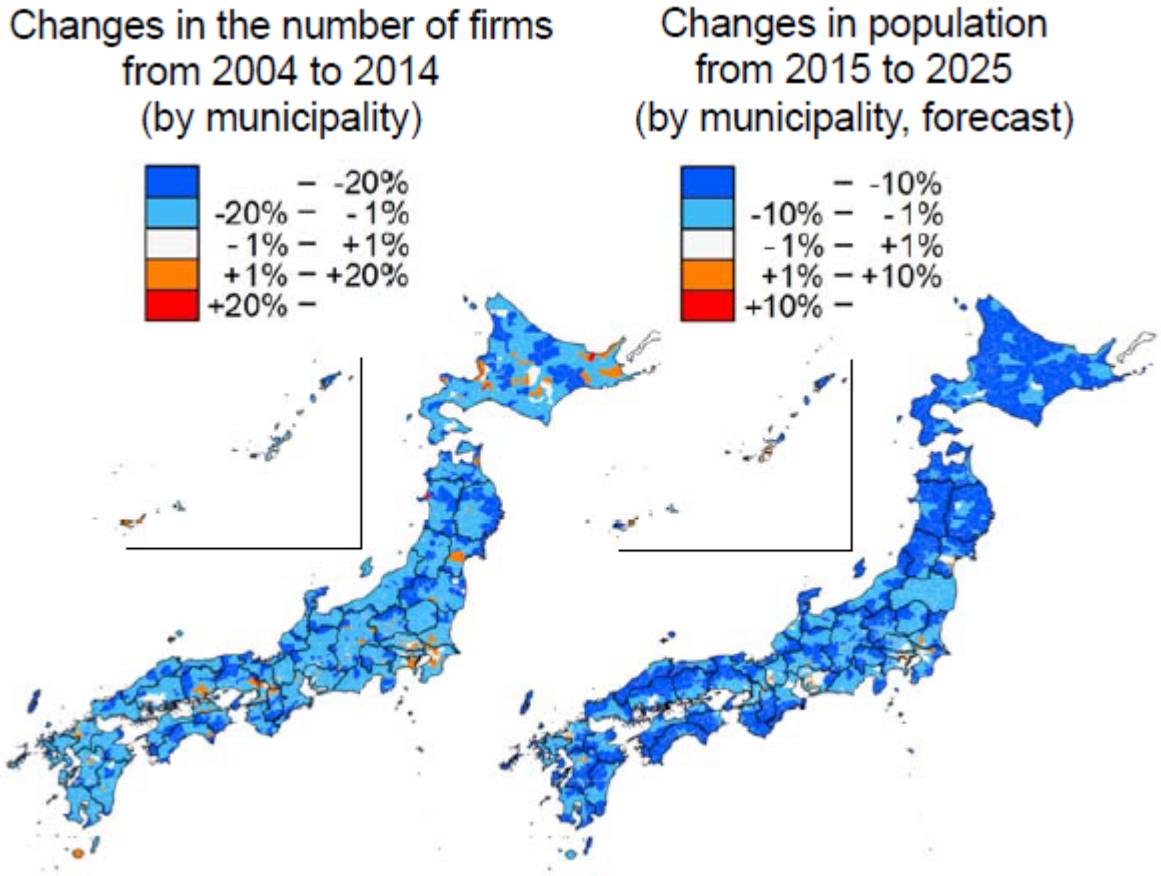
The most recent result: the tail-event scenario.

Decompositions of the CET1 capital ratio and the core capital ratio



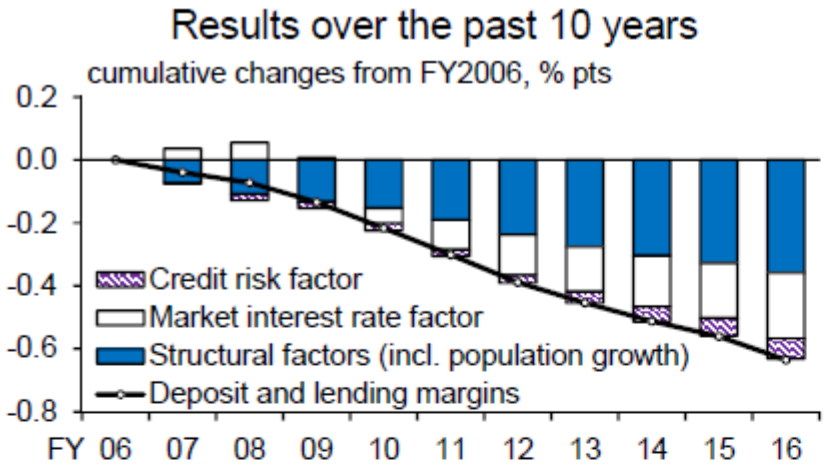
Source: The Bank of Japan., “Financial System Report, April 2018.”

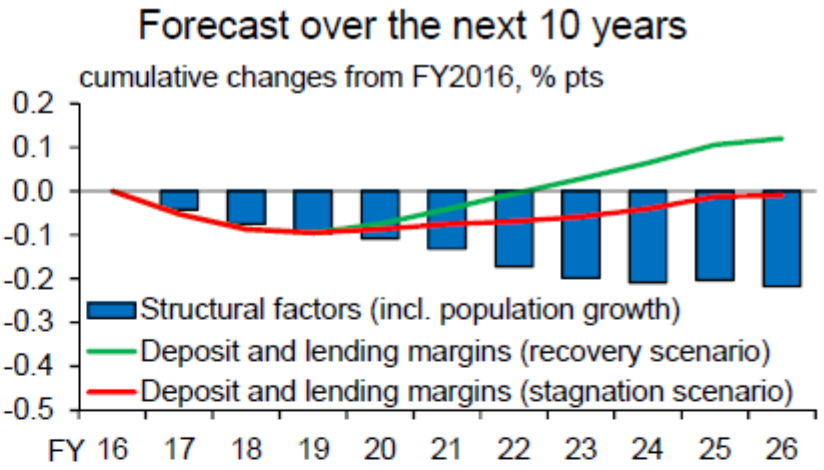
Chronic stress in Japan's economy: persistent decline in the number of firms and population.



Source: Hiroshi Nakaso., former Deputy Governor of the Bank of Japan., "New Frontier of Macroprudential Policy: Addressing Financial Institution's Low Profitability and Intensified Competition," November 2017.

Long-term simulation of lending margins.





Methodology for decomposing and forecasting deposit and lending margins

A panel estimation is conducted from fiscal 2001 to 2016 for regional financial institutions (FIs, covering 105 regional banks and 255 *shinkin* banks), regressing deposit and lending margins on the following explanatory variables:

Market interest rate: Due to the zero lower bound on deposit interest rates, a decline in the market interest rate leads to the narrowing of deposit and lending margins. Moreover, when government bond yields decline, FIs further compete on loan interest rates to increase their loans. We use 5-year JGB yields, taking into account the average maturity of bondholdings by regional FIs. 3-year backward moving average is taken for the market interest rate to match the fact that both the deposit interest rate and the loan interest rate are calculated based on the amount outstanding.

Population growth in business areas of each FI: When the population declines, sales of and loan demand from small enterprises (especially non-manufacturing ones) are expected to decline, which exerts downward pressure on the loan interest rate.

Population aging in business areas of each FI: In areas where the population is aging, deposits tend to increase while the demand for housing loans decreases. This leads to the intensification of competition among FIs, lowering the loan interest rate.

Number of branches in business areas of each FI: The higher the number of branches in the business area, the lower the deposit and lending margins.

Nonperforming loan ratio of each FI: FIs with high nonperforming loan ratios tend to offer higher loan interest rates, reflecting their higher credit costs.

Two different scenarios of the future market interest rate

Market interest rate (5-year JGB yields) is regressed on the nominal GDP growth rate, and using the estimated results, we assume that the market interest rate is 1.6% when the nominal growth rate is 2%, and 0.8% when the nominal growth rate is 1%.

Recovery scenario: The economy follows a sustainable growth path with a nominal growth rate of 2% from fiscal 2019, and the market interest rate gradually rises to 1.6%.

Stagnation scenario: The nominal growth rate remains lackluster at around 1%, and the market interest rate rises only to 0.8%.

Note: 1. Contributions of population growth effect, population aging effect, and number of branches effect are put together as "structural factors."
2. As for population growth and population aging, forecasts by the National Institute of Population and Social Security Research are used. It is assumed that the nonperforming loan ratio and number of branches in business areas are constant throughout the forecast period.