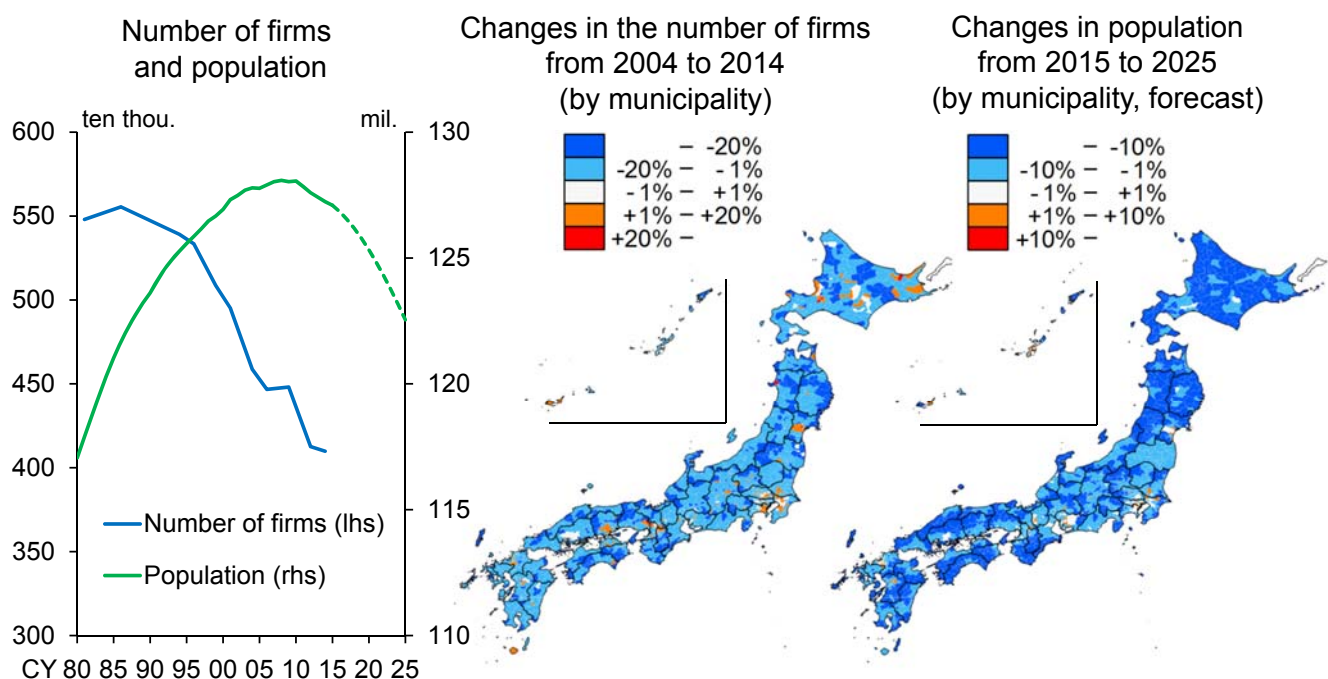# New Frontier of Macroprudential Policy: Addressing Financial Institutions' Low Profitability and Intensified Competition

November 29, 2017

Speech at the Kin'yu Konwa Kai (Financial Discussion Meeting) Hosted by the Jiji Press

Hiroshi Nakaso
Deputy Governor of the Bank of Japan

Chart 1   Decline in population and the number of firms

Number of firms and population

Changes in the number of firms from 2004 to 2014 (by municipality)

Changes in population from 2015 to 2025 (by municipality, forecast)

Note: 1. The number of firms is that of privately owned establishments, which cover single-unit establishments and head offices (headquarters and main offices). The "Establishment and enterprise census" is used in and before 2006, and the "Economic census for business frame and business activity" in and after 2009.
2. The dashed line in the left-hand chart represents forecasts.
3. The rates of change in population for municipalities in Fukushima Prefecture are substituted by the average rate of change in population for the prefecture.
Source: Ministry of Internal Affairs and Communications; Ministry of Land, Infrastructure, Transport and Tourism; National Institute of Population and Social Security Research.

Chart 2 — Financial cycle
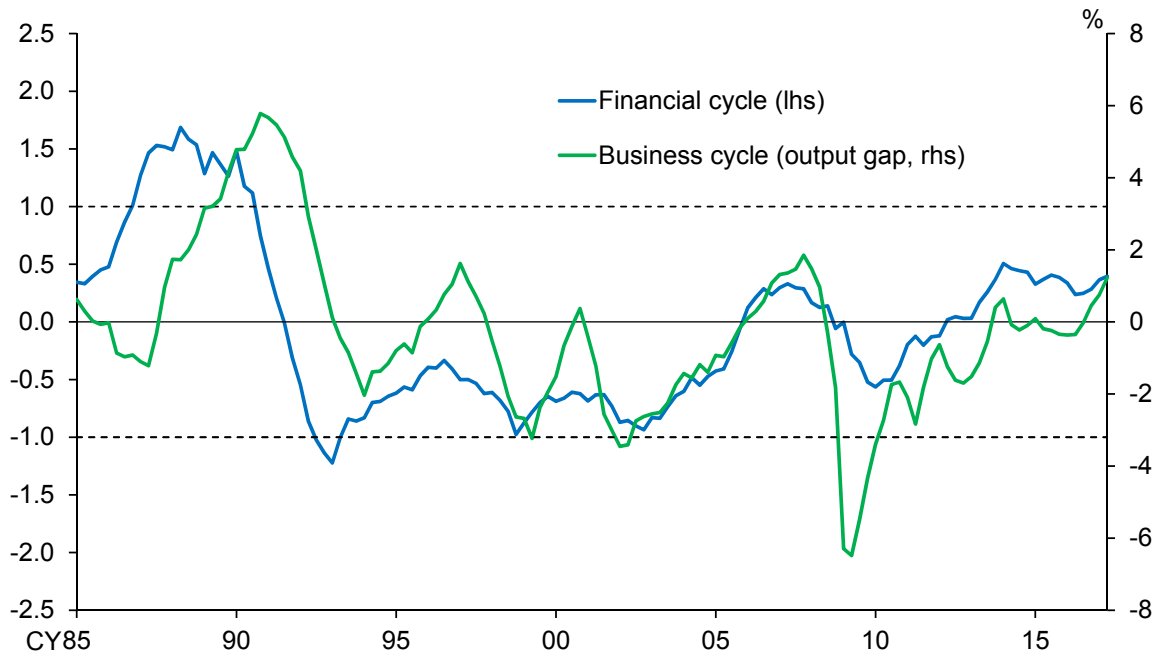
Note: Financial cycle is an indicator that aggregates 14 Financial Activity Indexes (FAIXs) shown in the *Financial System Report,* using time-varying weights that take the cross-correlation between these indexes into account. The indicator approaching +1 is a sign of "financial overheating" and approaching -1 is a sign of "financial contraction." Latest data as at the April-June quarter of 2017.
Source: BOJ.

Chart 3 — EDF and P/B ratio of regional banks

Short-term EDF

Medium- to long-term EDF
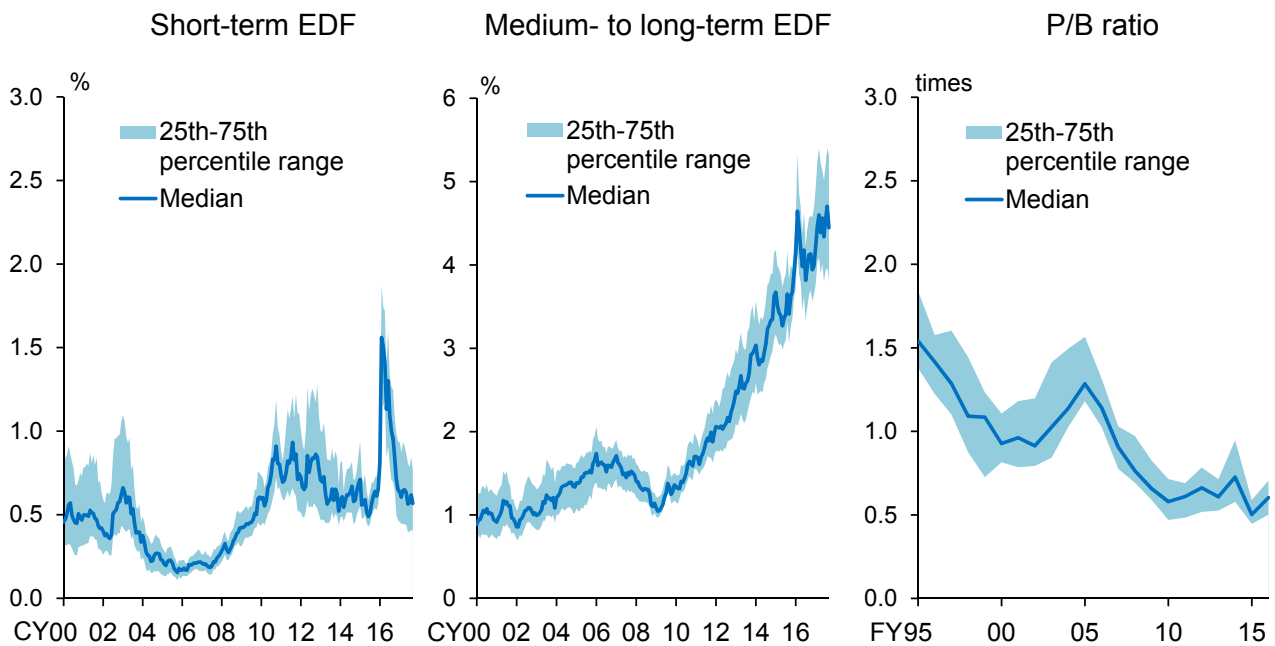
P/B ratio

Note: 1. The expected default frequency (EDF) and price-to-book (P/B) ratio cover 56 and 35 regional banks, respectively.
    2. The short-term EDF is 1-year EDF, and the medium- to long-term EDF is 5-year forward EDF. Latest data as at end-September 2017.
    3. Latest data as at end-fiscal 2016 for P/B ratio.
Source: Bloomberg; Moody's; BOJ.

Chart 4　Systemic risk indicators of regional banks：CoVaR

CoVaR

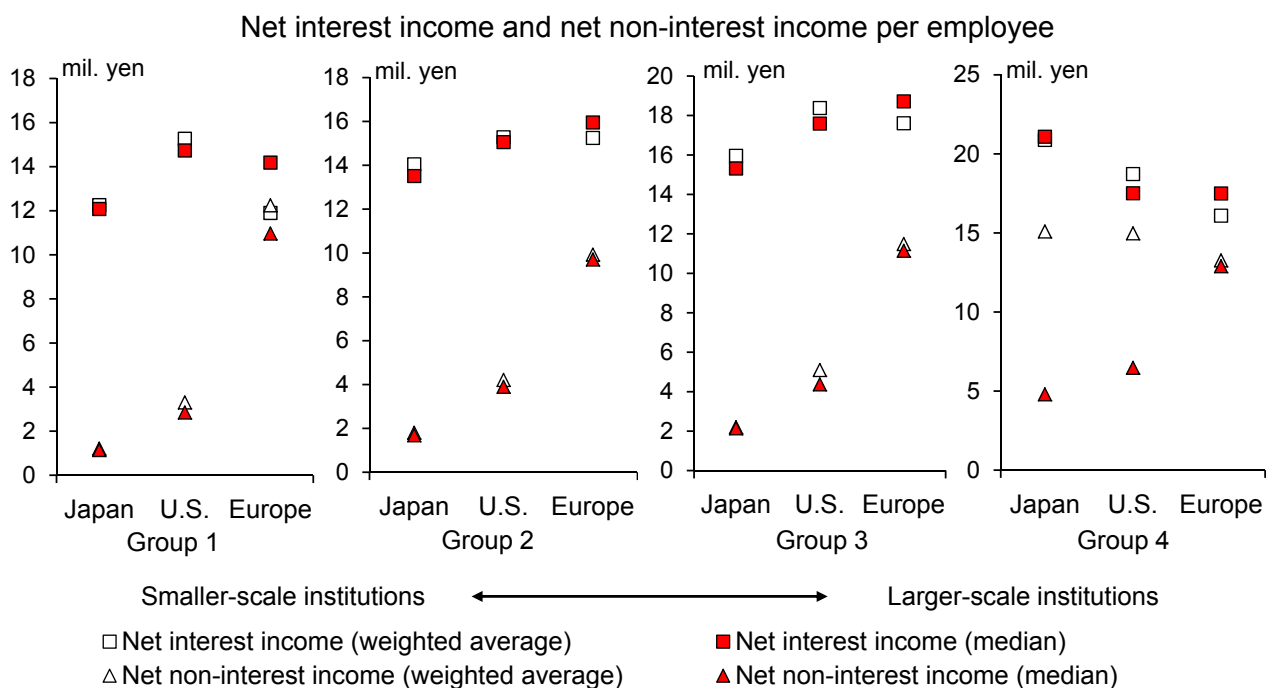### Individual risk (VaR)
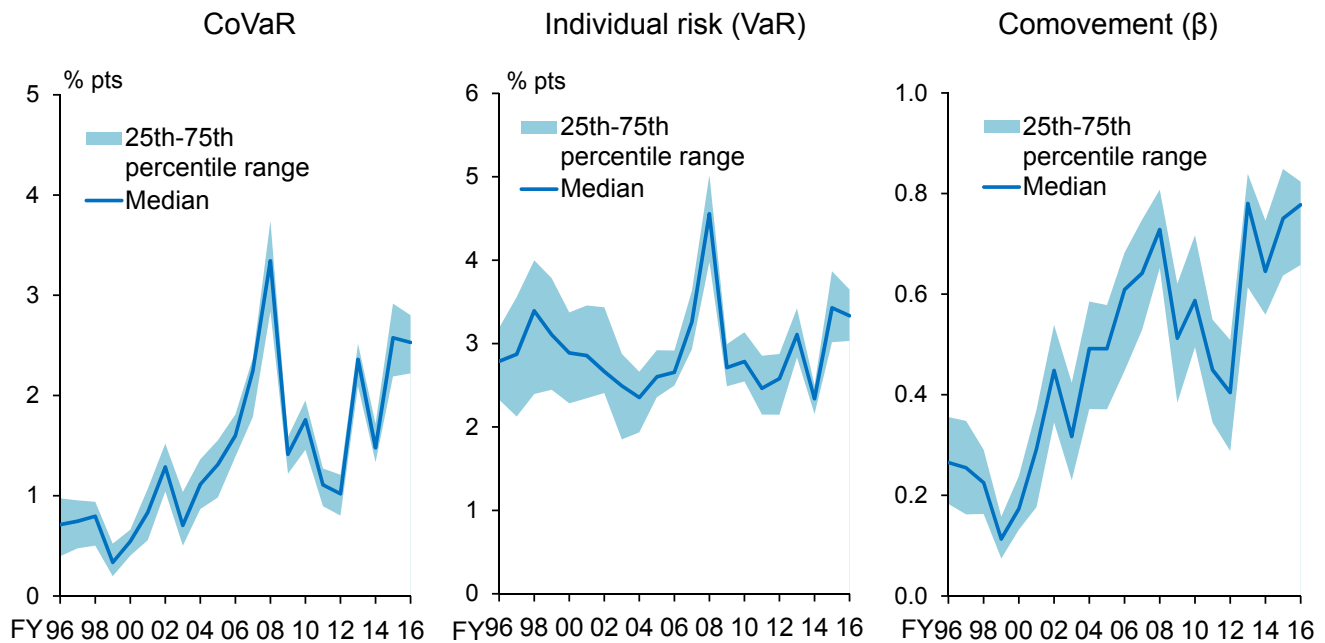
Comovement (β)

Note: 1. Using stock market data, Conditional Value at Risk (CoVaR) measures the size of stress in the financial system, which comprises the following two factors: the stress faced by individual banks (VaR) and the comovement between the stresses faced by individual banks (β). The following relation holds among the indicators: CoVaR = β × VaR.
　　　2. Covers 56 regional banks. Latest data as at fiscal 2016.
Source: Bloomberg.

Chart 5　International comparison of FIs' profits

Net interest income and net non-interest income per employee

□ Net interest income (weighted average)　　■ Net interest income (median)
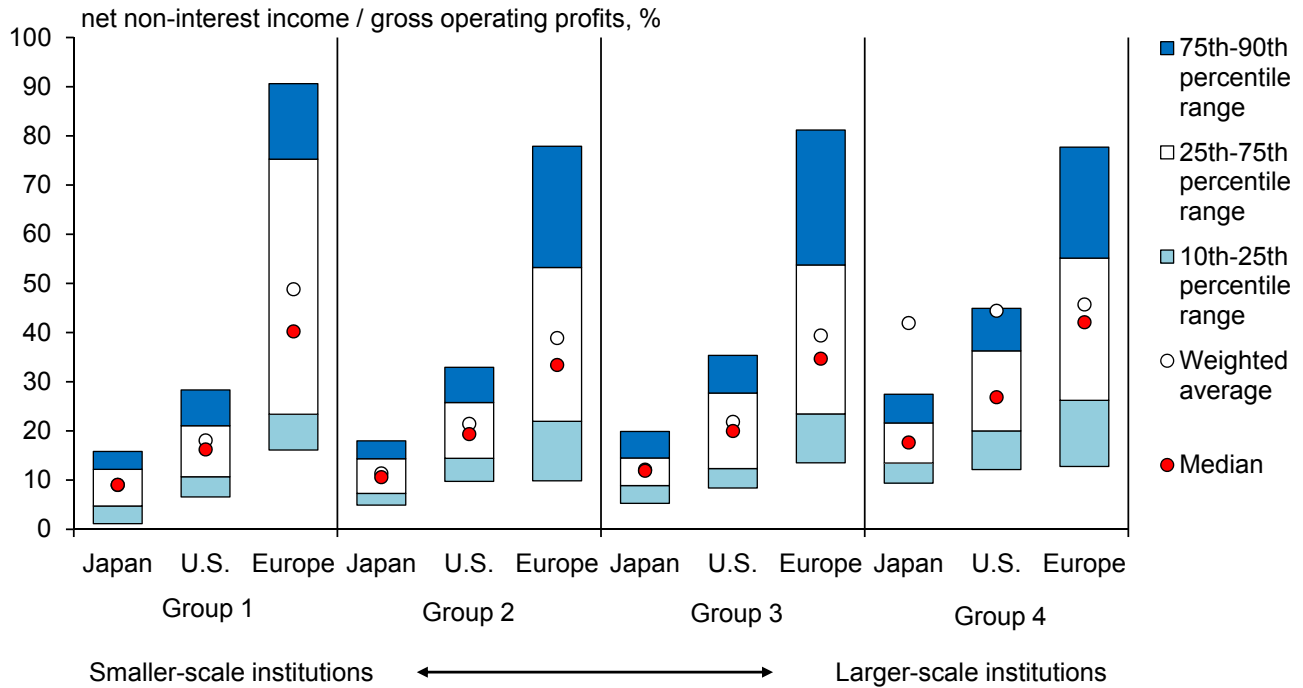△ Net non-interest income (weighted average)　▲ Net non-interest income (median)

Note: 1. Covers 370 Japanese financial institutions (consisting of major banks, regional banks, and *shinkin* banks), 686 U.S. financial institutions, and 491 European financial institutions from the euro area, the United Kingdom, and Switzerland. Data are basically on a consolidated basis. Financial institutions in each region are classified into 4 groups based on quartiles of gross operating profits of Japanese financial institutions. For details, see the October 2017 issue of the *Financial System Report*.
　　　2. The figures are the averages for the period from fiscal 2014 to fiscal 2016. The figures for U.S. and European financial institutions were converted into yen using purchasing power parity exchange rates (obtained from the OECD) for the period.
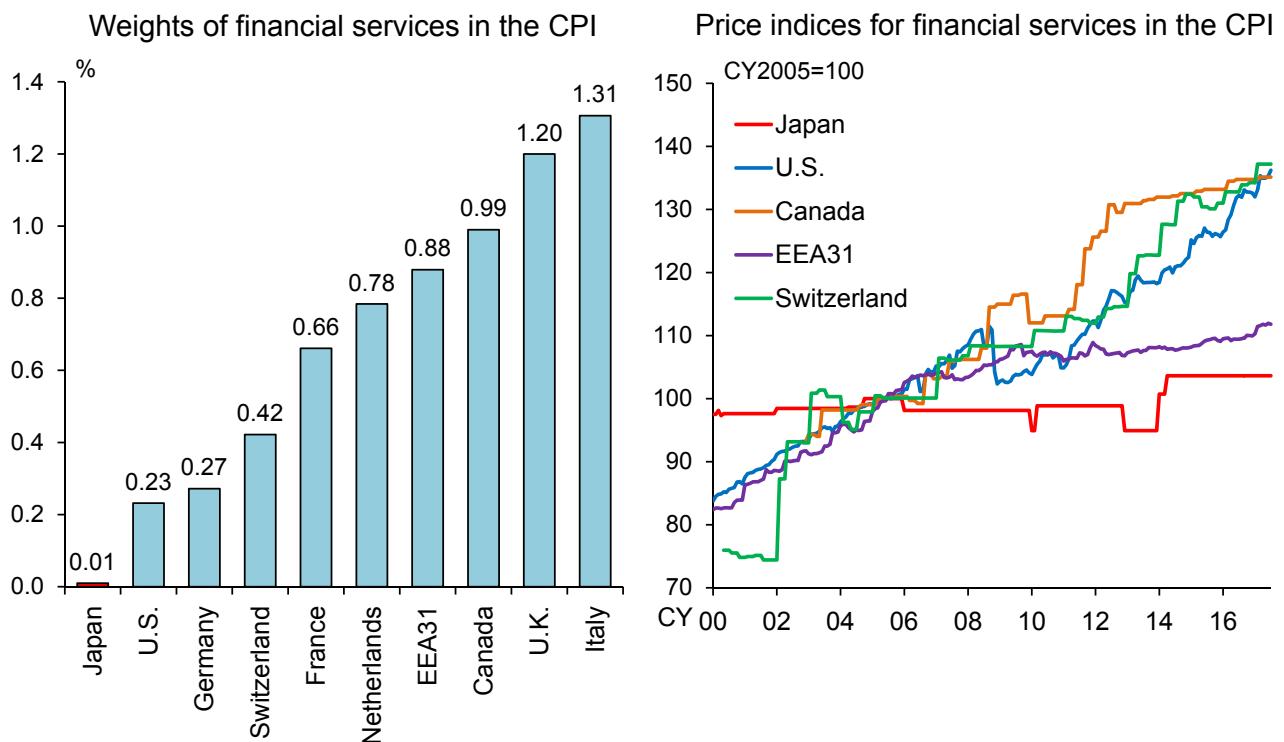Source: OECD; published accounts of each bank; S&P Global Market Intelligence; BOJ.

Chart 6 International comparison of net non-interest income ratios

net non-interest income / gross operating profits, %

Legend:
- 75th-90th percentile range
- 25th-75th percentile range
- 10th-25th percentile range
- Weighted average
- Median

Group 1 — Japan, U.S., Europe
Group 2 — Japan, U.S., Europe
Group 3 — Japan, U.S., Europe
Group 4 — Japan, U.S., Europe

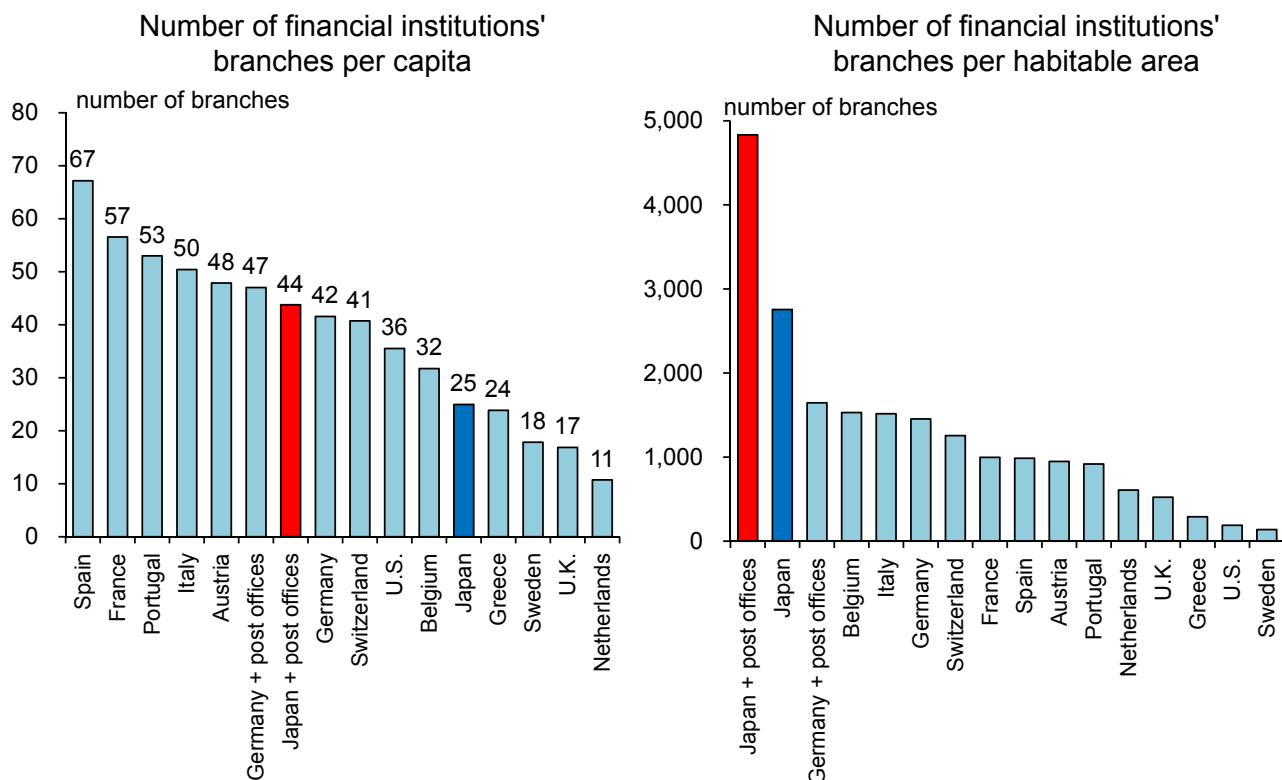Smaller-scale institutions ←→ Larger-scale institutions

Note: The figures are the averages for the period from fiscal 2014 to fiscal 2016.
Source: OECD; S&P Global Market Intelligence; BOJ.

Chart 7 Share of financial services in household expenditure

Weights of financial services in the CPI

%

Country	Weight
Japan	0.01
U.S.	0.23
Germany	0.27
Switzerland	0.42
France	0.66
Netherlands	0.78
EEA31	0.88
Canada	0.99
U.K.	1.20
Italy	1.31

Price indices for financial services in the CPI

CY2005=100

- Japan
- U.S.
- Canada
- EEA31
- Switzerland

CY 00 02 04 06 08 10 12 14 16

Note: 1. Weights in the CPI are on a 2015 basis. The latest data in the right-hand chart are as at July 2017.
　　　 2. EEA31 refers to the European Economic Area member countries, which cover 28 EU member states, Iceland, Liechtenstein, and Norway.
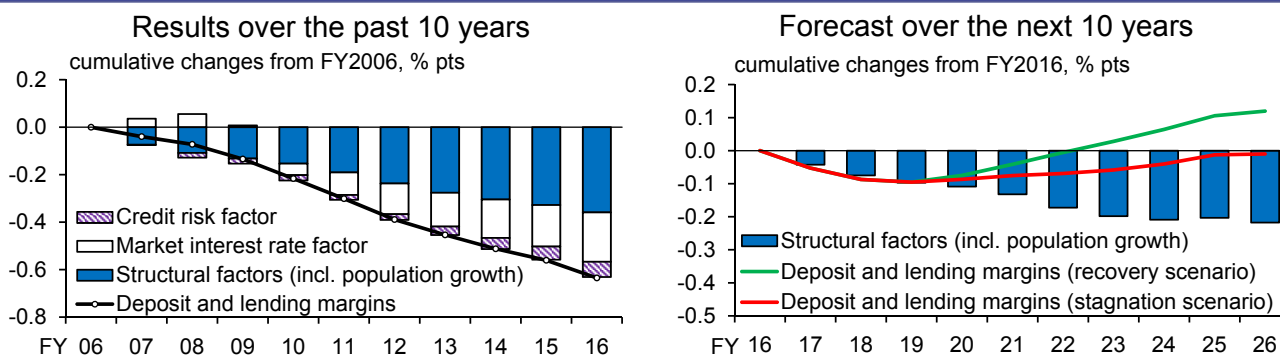Source: Haver Analytics; Ministry of Internal Affairs and Communications.

Chart 8　International comparison of the number of FIs' branches

Number of financial institutions' branches per capita

number of branches

Number of financial institutions' branches per habitable area

number of branches

Note: The number of branches is per 100,000 population in the left-hand chart and per 10,000 km² habitable area in the right-hand chart.
Basically, data as at end-2015 (data for Japan as at end-fiscal 2015).
Source: CUNA; ECB; Eurostat; FAOSTAT; FDIC; FSA; Ministry of Internal Affairs and Communications; published accounts of each entity; SNB; U.S. Census Bureau; BOJ.

Chart 9　Regional FIs' deposit and lending margins

Results over the past 10 years

cumulative changes from FY2006, % pts

- Credit risk factor
- Market interest rate factor
- Structural factors (incl. population growth)
- Deposit and lending margins

Forecast over the next 10 years

cumulative changes from FY2016, % pts

- Structural factors (incl. population growth)
- Deposit and lending margins (recovery scenario)
- Deposit and lending margins (stagnation scenario)

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.
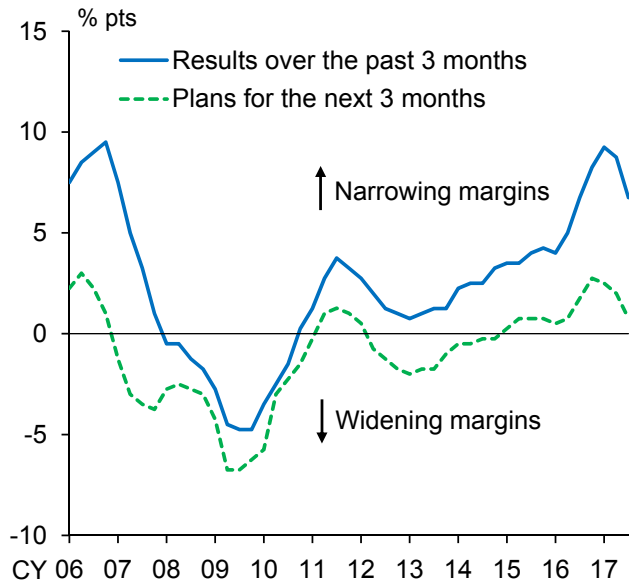
Chart 10 — Lending attitudes of FIs

DI of lending attitudes of financial institutions

% pts

- Original series
- Trend

↑ Accommodative

↓ Severe

CY 80 — 85 — 90 — 95 — 00 — 05 — 10 — 15
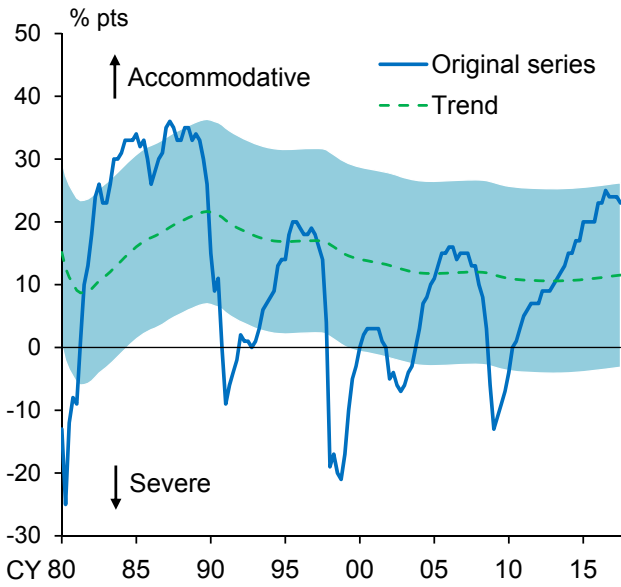
Note: 1. Covers all firm sizes and all industries. Latest data as at the July-September quarter of 2017.
2. The trend is calculated from the historical average. Shaded areas indicate the root mean square of the deviation from the trend.
Source: BOJ, "*Tankan*."

DI for lending margins: plans and results (Loans to small firms)

% pts

- Results over the past 3 months
- Plans for the next 3 months

↑ Narrowing margins

↓ Widening margins

CY 06 07 08 09 10 11 12 13 14 15 16 17

Note: 1. Latest data as at July 2017. 4-quarter backward moving averages.
2. Based on the proportion of responding financial institutions selecting each given choice, the DI is calculated as follows:
DI = "narrowing considerably" + 0.5 × "narrowing somewhat" − 0.5 × "widening somewhat" − "widening considerably."
Source: BOJ, "Senior loan officer opinion survey on bank lending practices at large Japanese banks."

Chart 11 — Number of FIs that each firm transacts with

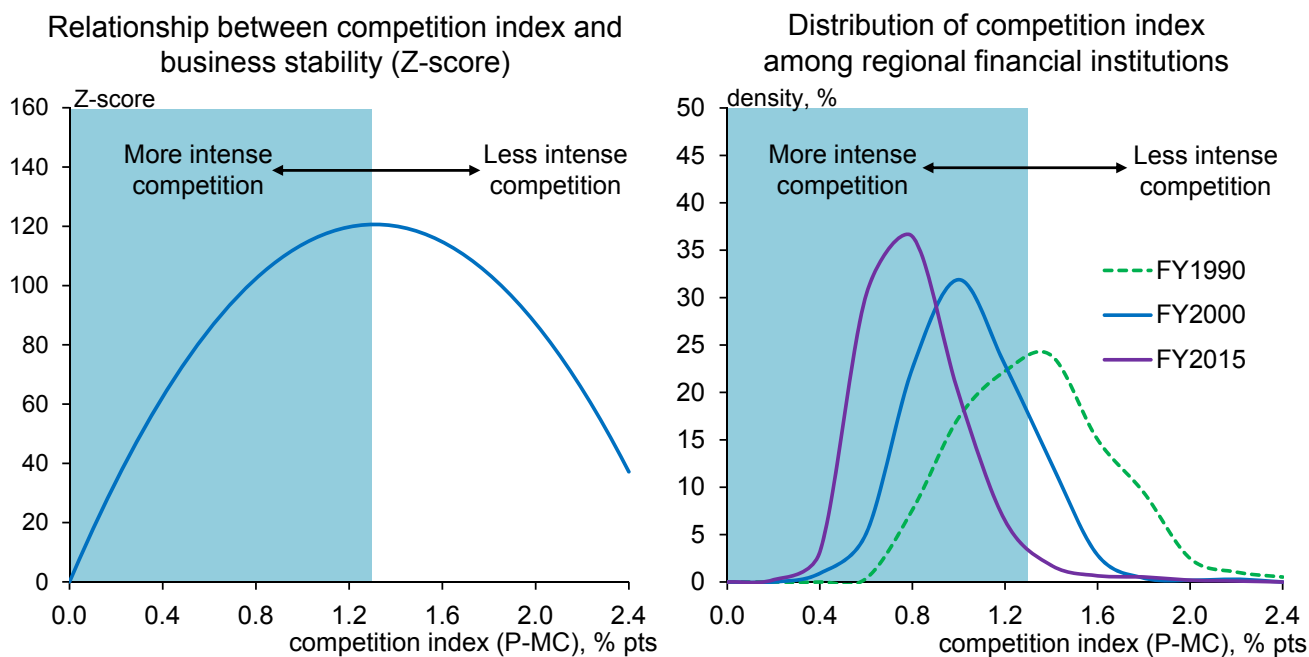### Distribution of the number of financial institutions that each firm transacts with

frequency, %

- FY2005
- FY2015

number of financial institutions
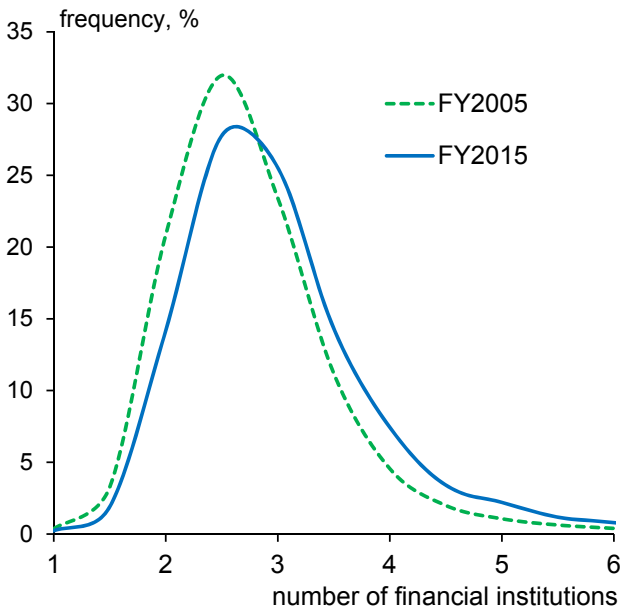
Average number of financial institutions that each firm transacts with

number of financial institutions

FY 96 98 00 02 04 06 08 10 12 14
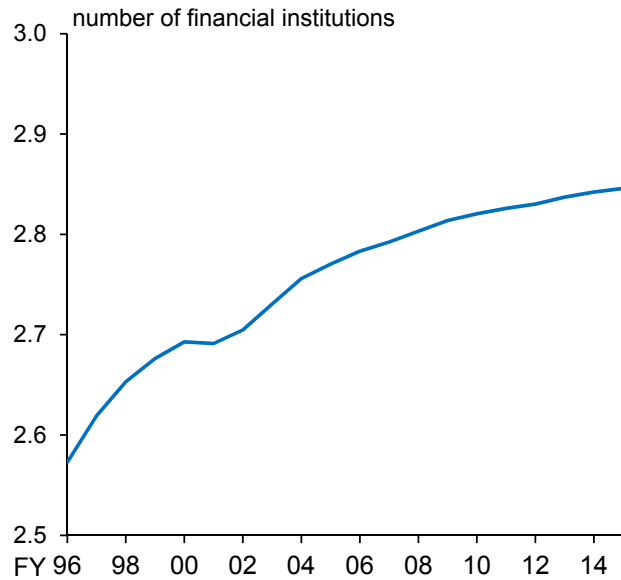
Note: The left-hand chart covers approximately 700,000 firms for which data for the entire observation period are available from fiscal 2005, and the right-hand chart covers approximately 450,000 firms for which data for the entire observation period are available from fiscal 1996. The latest data in the right-hand chart are as at fiscal 2015.
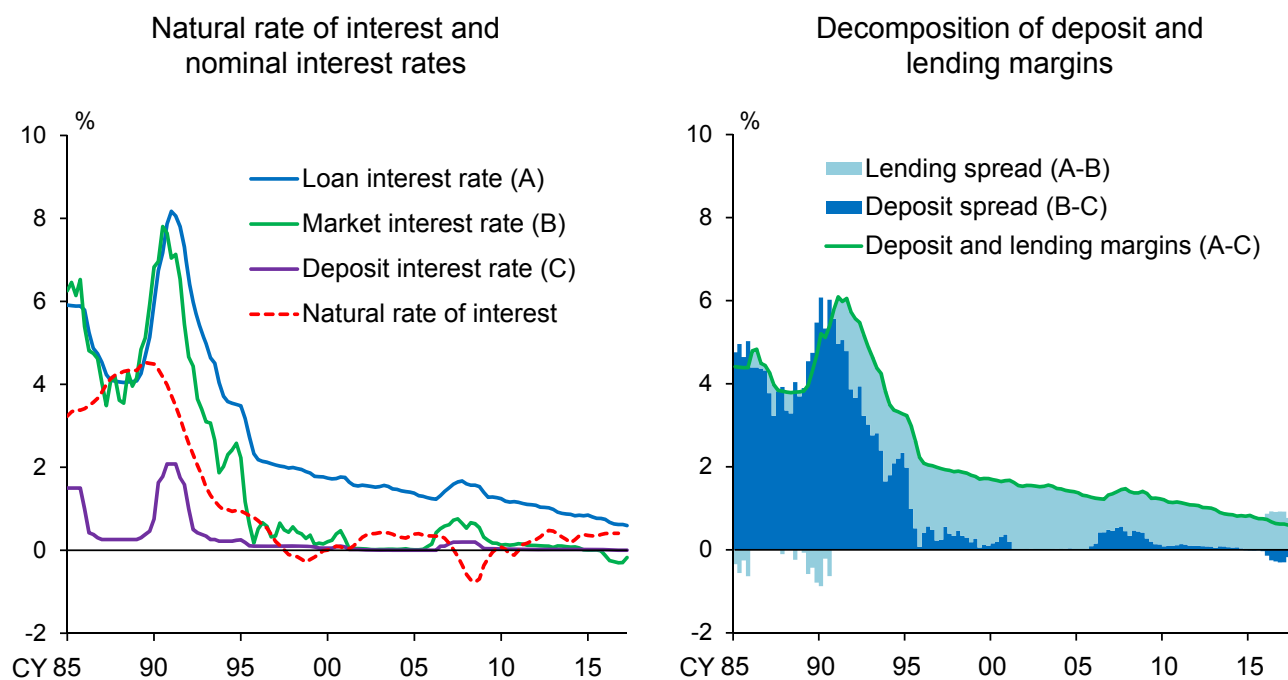Source: Teikoku Databank.

Chart 12　Competition among FIs and their business stability

Relationship between competition index and business stability (Z-score)

Z-score

More intense competition ← → Less intense competition

competition index (P-MC), % pts

Distribution of competition index among regional financial institutions

density, %

More intense competition ← → Less intense competition

- - - - FY1990
——— FY2000
——— FY2015

competition index (P-MC), % pts

Note: 1. Z-score is an indicator that measures a financial institution's business stability and is defined as the ratio of a financial institution's loss-absorbing capacity to the volatility of profits.
2. The left-hand chart shows the cumulative effects of markup (P-MC) changes on the Z-score, by using the following estimated equation:
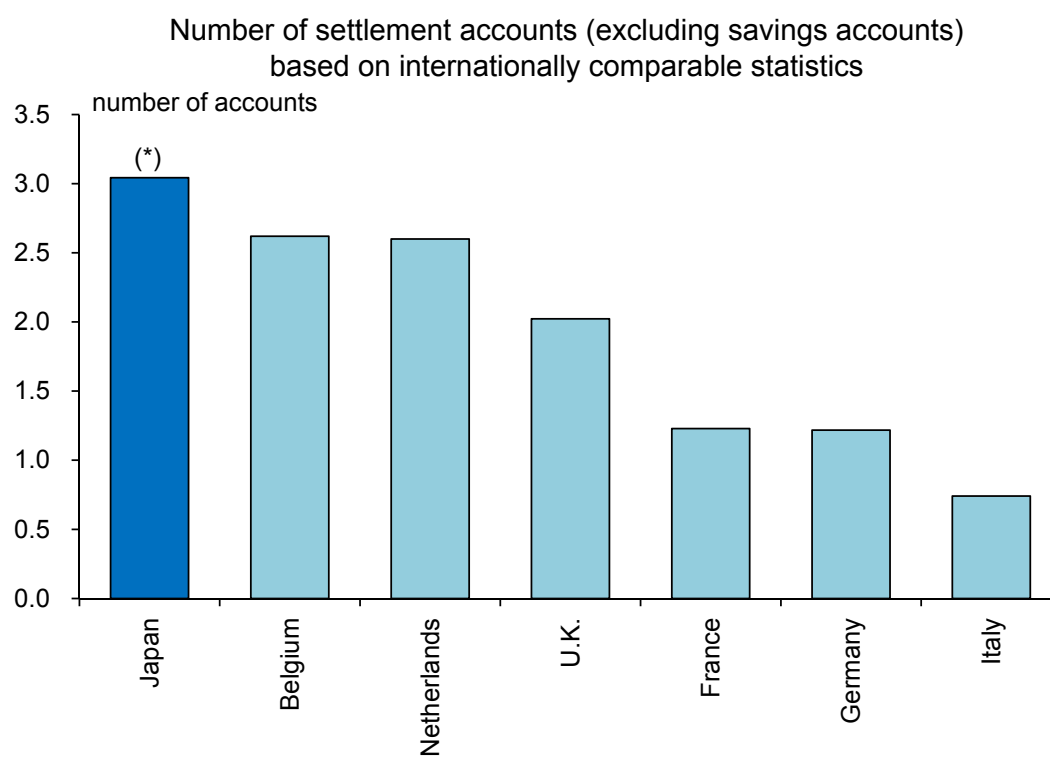$$\text{Z-score} = (30.18 \times (P\text{-}MC) - 11.52 \times (P\text{-}MC)^2) / (1 - 0.84).$$
3. The shaded area indicates the range over which a decline in the competition index (P-MC), suggesting more intense competition among financial institutions, leads to a decline in the Z-score and hence lowers a financial institution's business stability.
4. Density in the right-hand chart is estimated by using the Gaussian kernel function.
5. For details, see the April 2017 issue of the *Financial System Report*.

Chart 13　Natural rate of interest and deposit and lending margins

Natural rate of interest and nominal interest rates

%

——— Loan interest rate (A)
——— Market interest rate (B)
——— Deposit interest rate (C)
- - - - Natural rate of interest

CY 85　90　95　00　05　10　15

Decomposition of deposit and lending margins

%

Lending spread (A-B)
Deposit spread (B-C)
——— Deposit and lending margins (A-C)

CY 85　90　95　00　05　10　15

Note: 1. Loan interest rate is an average contract interest rate on short-term loans outstanding. Aggregate of domestically licensed banks. Market interest rate is the 1-year government bond yield. Latest data as at the July-September quarter of 2017.
2. Natural rate of interest is estimated following Laubach and Williams (2003). Latest data as at the April-June quarter of 2017.
Source: Bloomberg; Ministry of Finance; BOJ.

Chart 14   Number of bank accounts per capita: international comparison

**Number of settlement accounts (excluding savings accounts)
based on internationally comparable statistics**

number of accounts

(*)

Japan   Belgium   Netherlands   U.K.   France   Germany   Italy

(*) Covers only demand deposit accounts held at all financial institutions (excluding the Japan Post Bank). Including time and savings
    deposit accounts and accounts held at the Japan Post Bank, etc., the number of personal accounts per capita amounts to about 10.

Note: Data as at end-2011 for U.K., as at end-fiscal 2015 for Japan, and as at end-2015 for other countries.
Source: BIS, "Red Book."