

# Financial System FSR Report

## Summary

October 2017  
Bank of Japan



# Comprehensive assessment of the financial system

## Financial intermediation

- No imbalances in financial and economic activities can be observed on the whole while the funding conditions for the non-financial private sector have been highly accommodative.
- The real estate market does not seem overheated on the whole, although transaction prices remain high in some places such as the Tokyo area.

## Stability of the financial system

- No major imbalances have been observed in financial and economic activities, and FIs on the whole have generally strong resilience in terms of both capital and liquidity. Thus, it can be judged that Japan's financial system has been maintaining stability.
- FIs' portfolio rebalancing through more active lending has been contributing to an improvement in economic developments, and if this leads to more proactive economic activities by firms and households, this in turn is likely to bring about a recovery in FIs' profitability.

## Potential vulnerabilities due to the decline in FIs' profitability

- The low profitability of Japanese FIs is striking from an international perspective. The number of FIs' employees/branches may be in excess relative to demand. This structural factor in turn leads to a decline in FIs' profitability through the intensified competition among FIs in Japan.
- If it becomes common for firms to choose the FI offering the lowest loan interest rate among a number of FIs when taking out a loan, this may lower the efficiency of capital allocation by discouraging FIs' information production activities in the medium to long run.

## Challenges from a macroprudential perspective

- The decline in population and the number of firms is a common shock occurring across Japan. In this situation, the intensification of competition among regional FIs would affect the systemic risk by increasing the effects of a common exposure, that is, by decreasing net interest income.
- In order to ensure both the efficiency and stability of Japan's financial system in the future, it is important for FIs to improve their profitability under the appropriate competitive environment.

\* FI stands for financial institution.

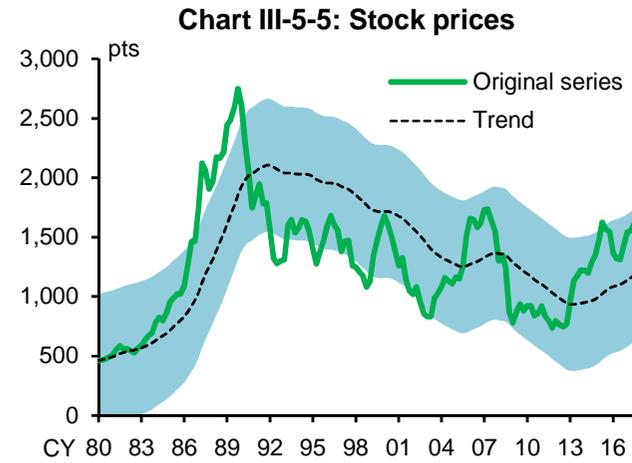
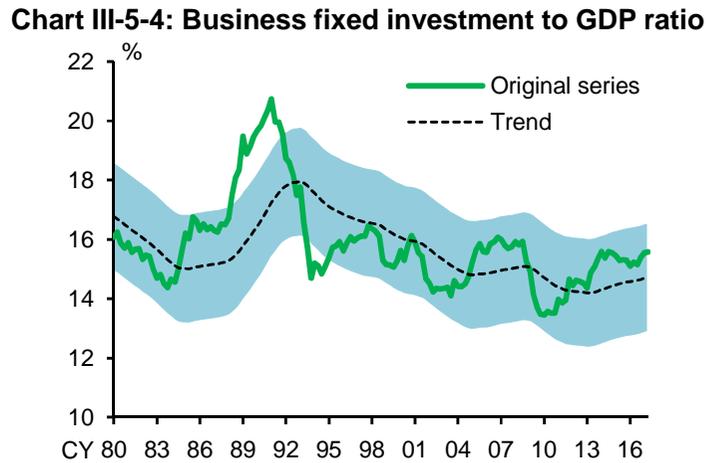
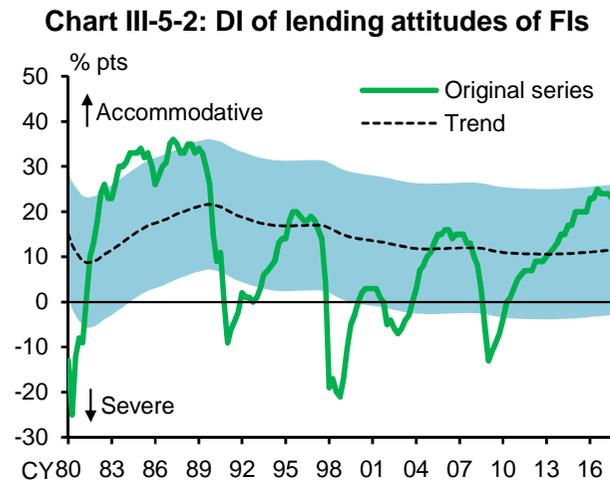
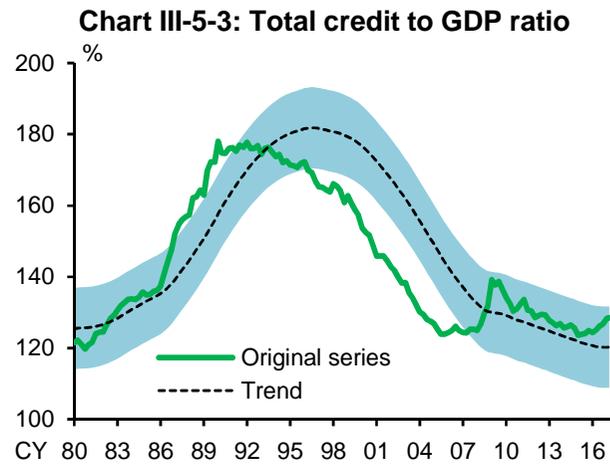
## **Part I. Financial cycle and the resilience of financial system**

- Assess the financial cycle using the Financial Activity Indexes.
- Assess the resilience against the acute stresses in the macro stress testing framework.



# Firms' funding environment and business fixed investment

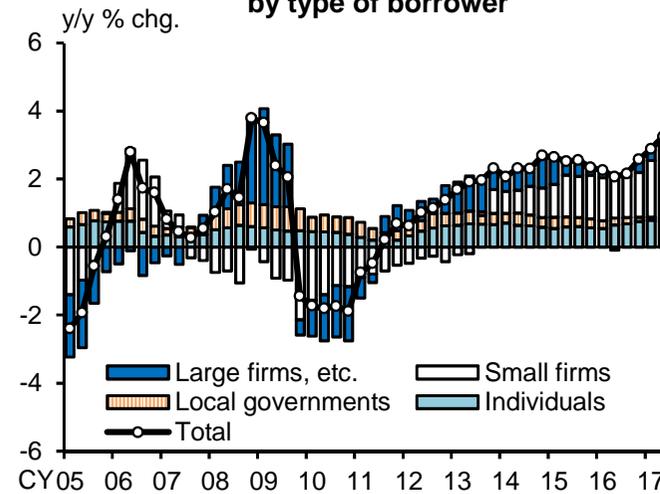
- "Total credit to GDP ratio" has been increasing. "Business fixed investment to GDP ratio" and "stock prices" have risen in tandem, suggesting that an expectation of improved corporate profits is driving the expansion of corporate investment.
- "DI of lending attitudes of FIs" remains at the highest level since the bubble period (in a zone close to "red").
  - The active lending stance of banks helps to improve business sentiment among firms.



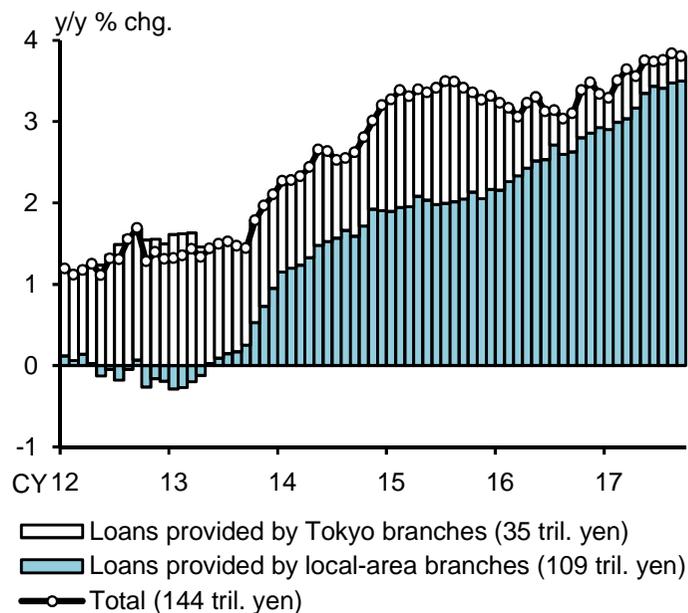
# Domestic loans

- FIs' domestic loans outstanding have been growing at a moderately faster pace on a year-on-year basis.
- By type of borrower, while growth in FIs' loans to local governments has slowed, loans to firms and individuals have continued to grow.
  - Regional FIs have continued to make efforts to revitalize local economies. Meanwhile, they have held back from extending loans in Tokyo, including syndicated loans to large firms.
  - By industry, loans to a large number of industries have been increasing.

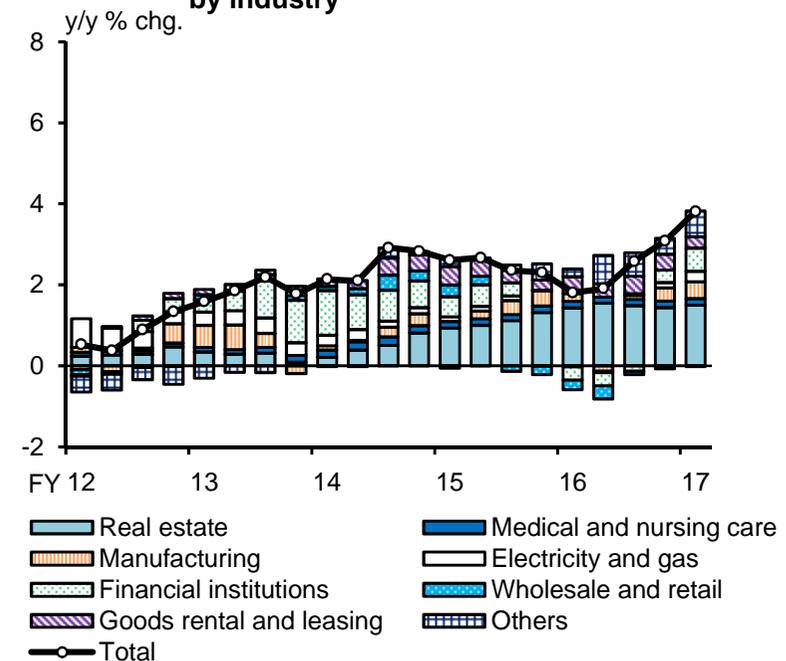
**Chart III-1-2: Loans outstanding among FIs by type of borrower**



**Chart III-1-6: Corporate loans provided by regional banks**



**Chart III-1-7: Banks' corporate loans outstanding by industry**



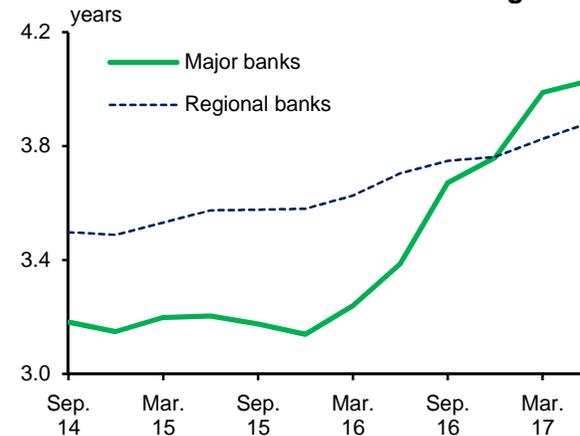
## Domestic loans (2)

- FIs' average contract interest rates on new loans are hovering around historically low levels.
  - While competition among FIs and the improvement in firms' financial conditions have exerted downward pressure on interest rates on long-term loans, a shift toward fixed-rate loans with longer lending periods is one of the factors that have put upward pressure on interest rates.
  - Interest rates for loans linked to short-term prime lending rates and fixed-rate loans, which make up a relatively large share of regional FIs' loan portfolios, have continued on a declining trend under continuing monetary easing. This also reflects the effects of competition among FIs.

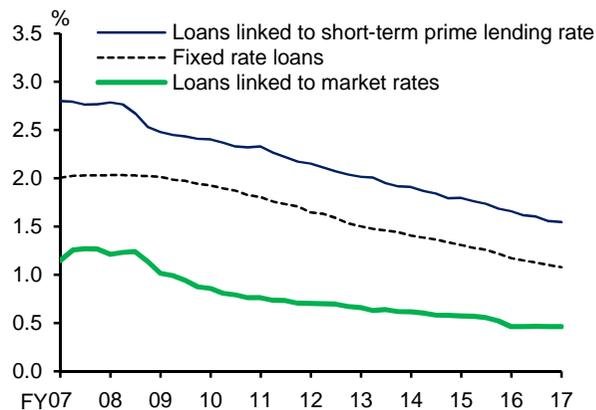
**Chart III-1-14: Average contract interest rates on new loans and discounts among domestically licensed banks**



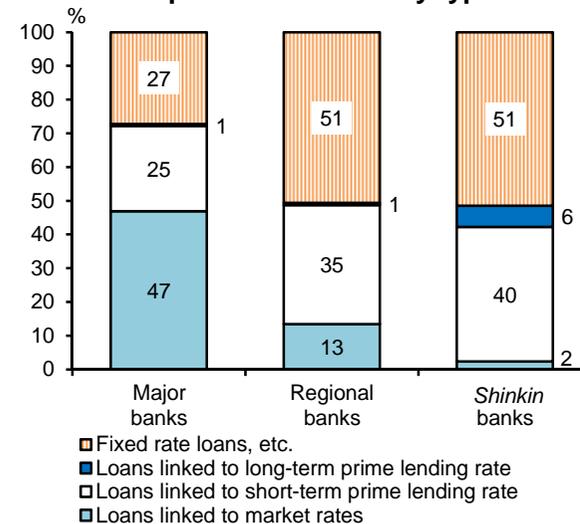
**Chart III-1-15: Average remaining maturity of fixed-rate loans among banks**



**Chart III-1-17: Lending rates among regional banks by type of interest rate**



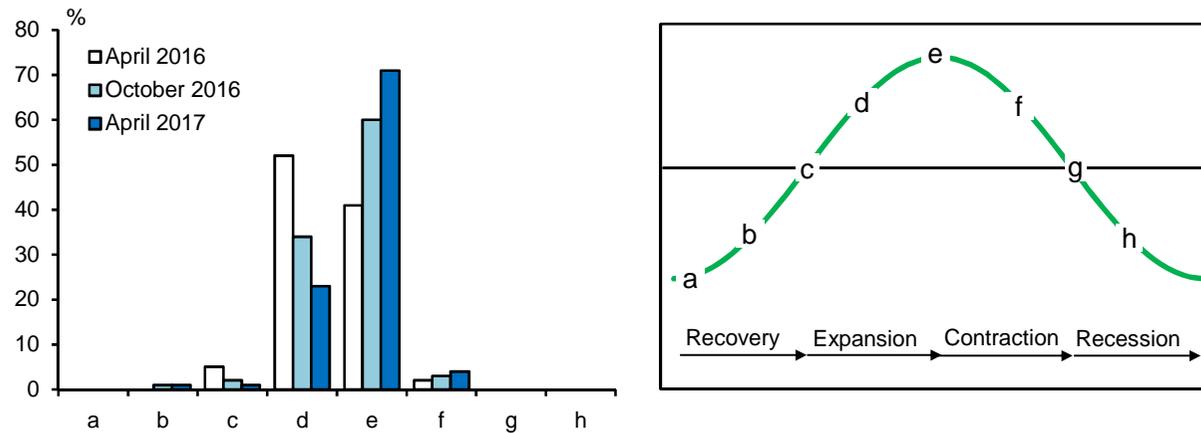
**Chart III-1-18: Composition of loans by type of interest rate**



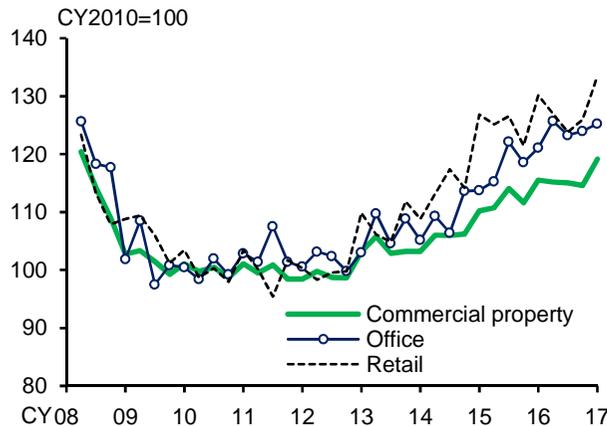
# Real estate market

- The real estate market does not seem overheated on the whole, although transaction prices remain high in some places such as the Tokyo metropolitan area.
  - In the commercial real estate market, the increase in real estate prices has been leveling off; the increase in investment by real estate developers has come to a pause, and "real estate firms' investment to GDP ratio" has recently declined. In the REIT market, there is no sign of further bullish expectations among investors. The J-REIT capitalization rate has recently been rising somewhat.

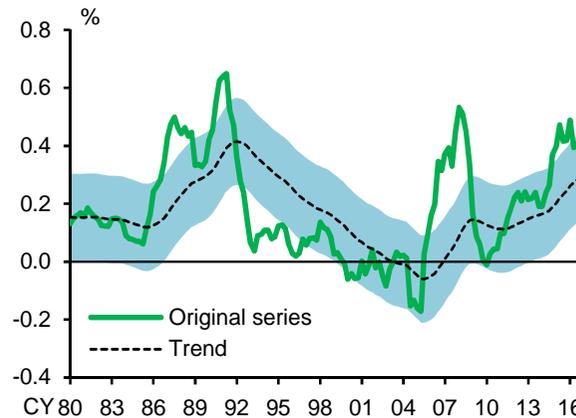
**Chart III-5-6: Real estate investors' assessment of the market cycle**



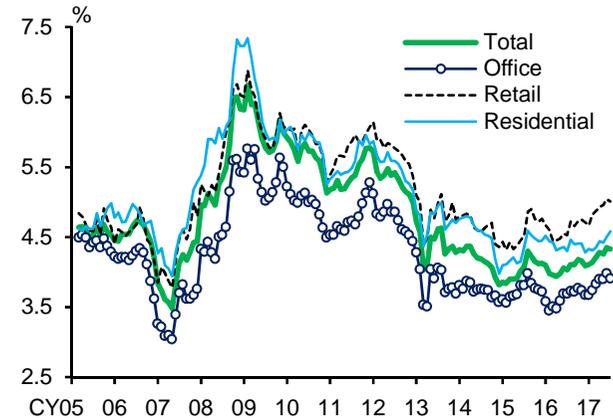
**Chart III-5-7: Commercial property prices**



**Chart III-5-8: Real estate firms' investment to GDP ratio**



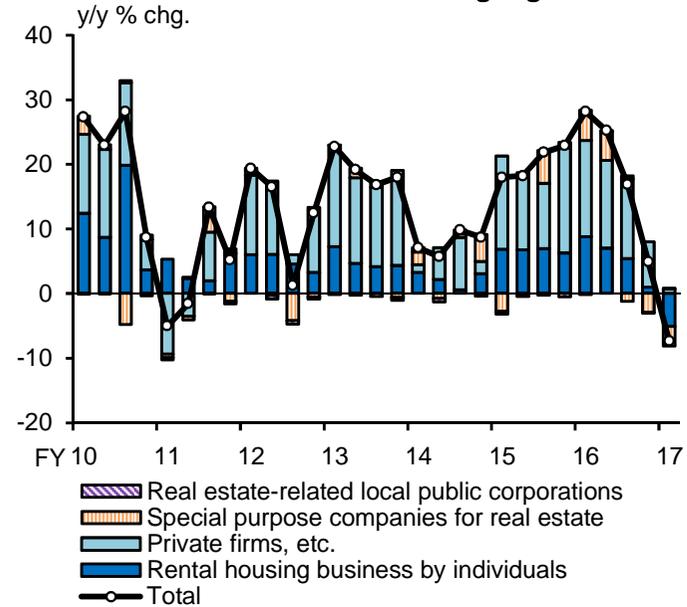
**Chart III-5-9: Capitalization rates of J-REITs**



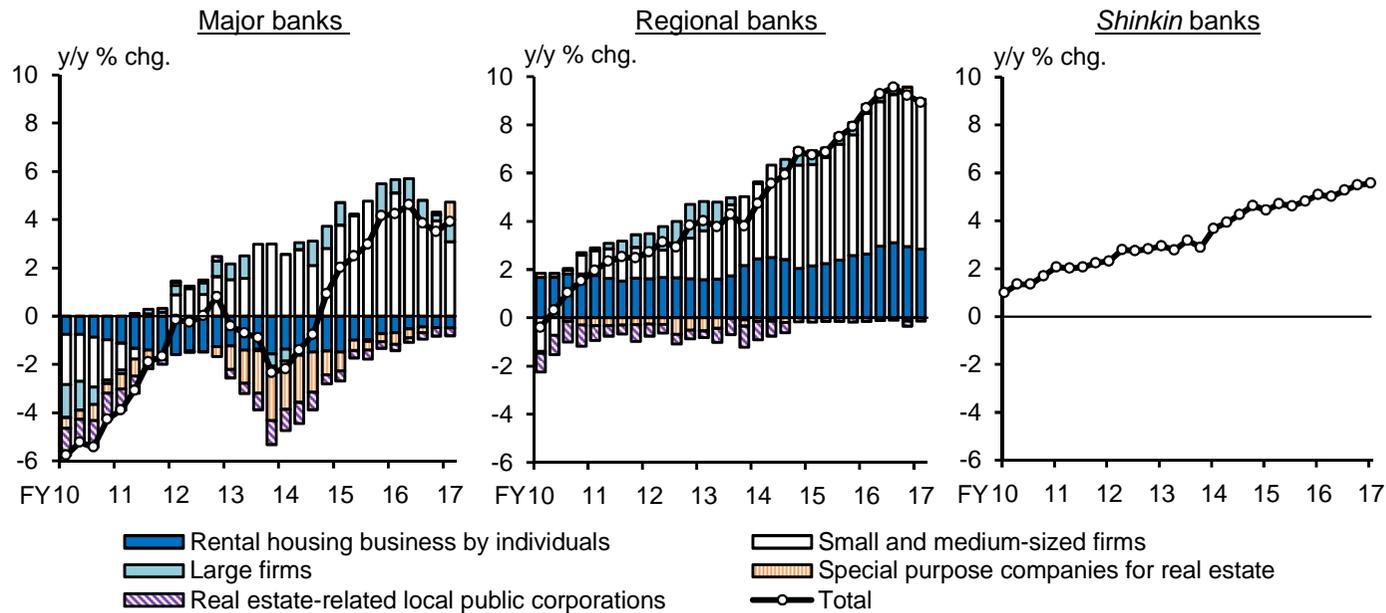
# Real estate loans

- While loans to the real estate industry have continued to grow, the pace of growth has recently decelerated somewhat.
  - The outstanding amount of real estate loans among regional FIs has continued to grow at a relatively faster pace, driven by increasing demand to build rental properties, etc.
  - However, the year-on-year rate of change in new loans to rental housing businesses by individuals has recently turned negative, while the growth rate of new loans to SMEs has rapidly declined.

**Chart III-1-12: Newly extended real estate loans for fixed investment among regional banks**



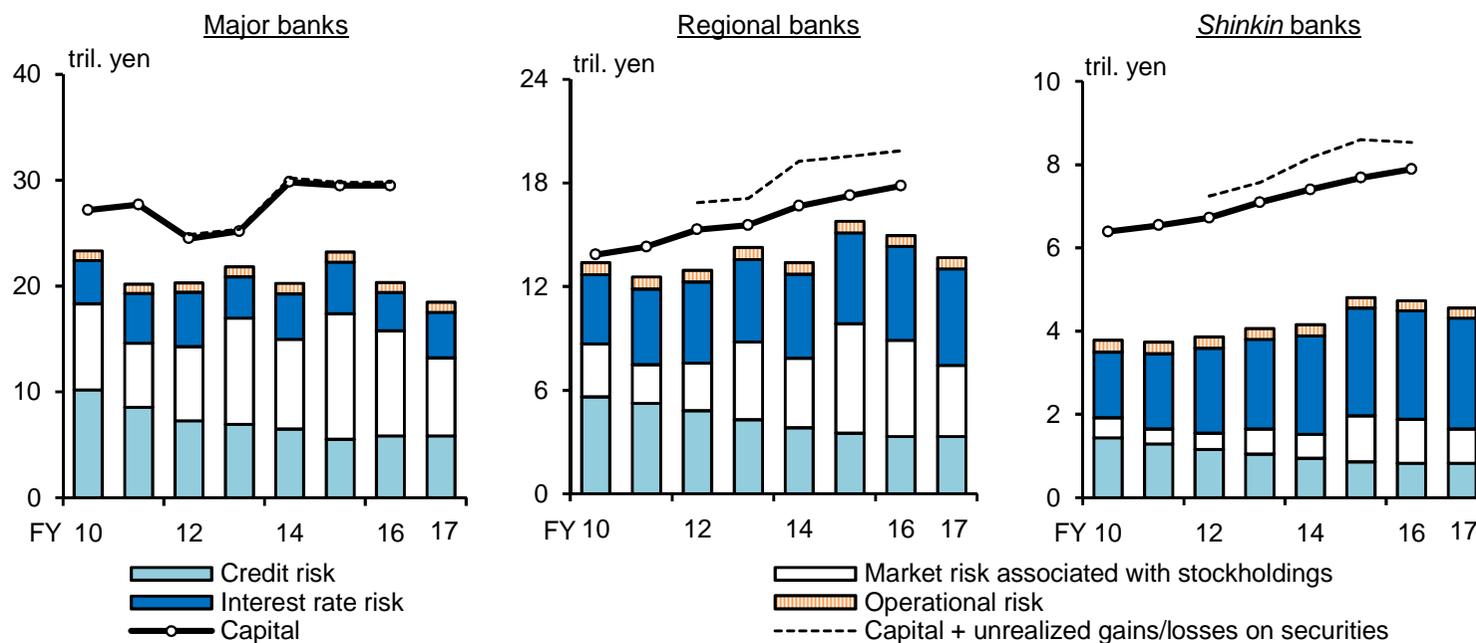
**Chart III-1-13: Breakdown of real estate loans**



# Capital adequacy

- FIs' capital levels are generally adequate relative to the amount of risk they undertake.
  - The amount of risk borne by major banks and regional banks has decreased somewhat, mainly reflecting the decline in market risk associated with stockholdings, while the amount of risk borne by *shinkin* banks is largely unchanged.
- FIs currently have sufficient capacity to absorb losses and to take on risks.

**Chart IV-4-2: Risks borne and amount of capital among FIs**



## Credit risk: real estate loans

- As for loans for the rental housing business, FIs that do not employ quantitative criteria in their initial screening and interim management as well as those that do not reflect the results of portfolio monitoring in their screening criteria tend to have loans of lower quality.
- Some sign of changes in the upward trend in the real estate market can be observed and vacancy rates in some regional rental housing markets have continued to rise. Against these backgrounds, FIs need to further increase the effectiveness of their credit risk management of real estate loans.

Chart IV-1-8: Utilization of quantitative criteria at the initial screening of loans for rental housing business

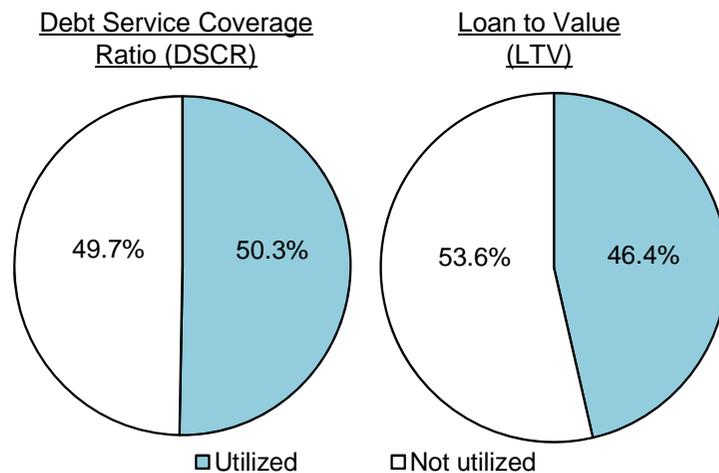
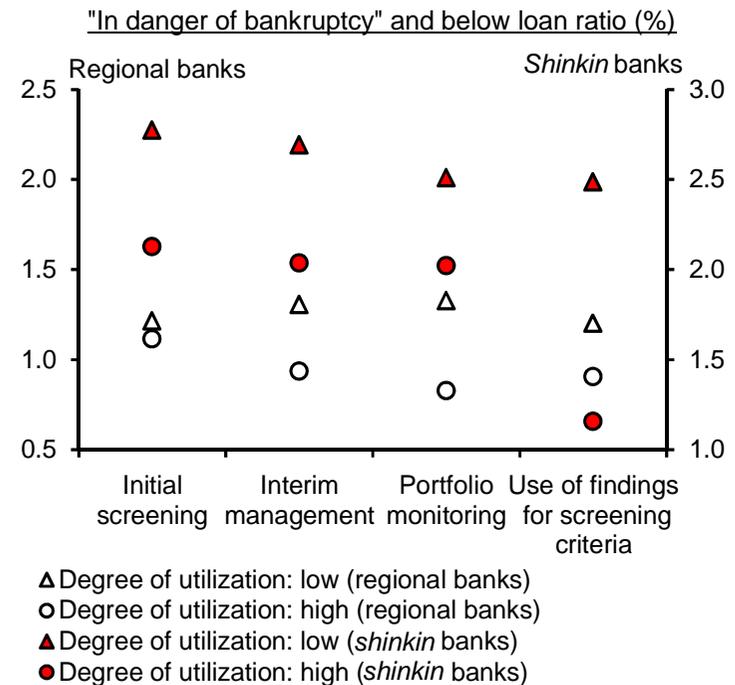


Chart IV-1-9: Utilization of risk management tools and quality of loans for rental housing business

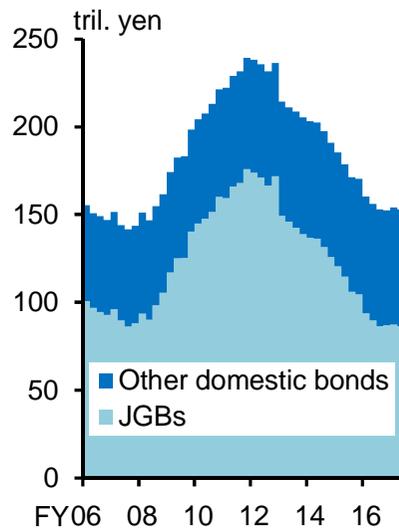


## Market risk (1)

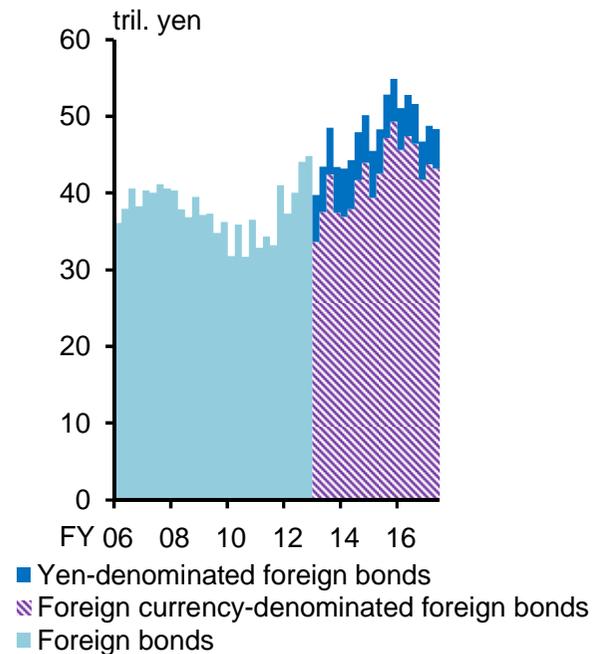
### ➤ FIs have maintained their stance of active risk taking in securities.

- The outstanding amount of FIs' yen bond investment has been on a declining trend, but the pace of decline has recently been moderate.
- The outstanding amount of their foreign bond investment decreased following the rise in U.S. interest rates toward the end of 2016, but most recently has been increasing again somewhat.
- The outstanding amount of their investment trusts has been on an upward trend.

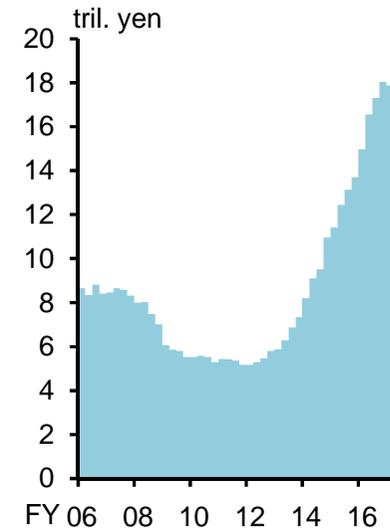
**Chart III-1-25: Outstanding amount of yen-denominated bonds among FIs**



**Chart III-1-26: Outstanding amount of foreign bonds among FIs**



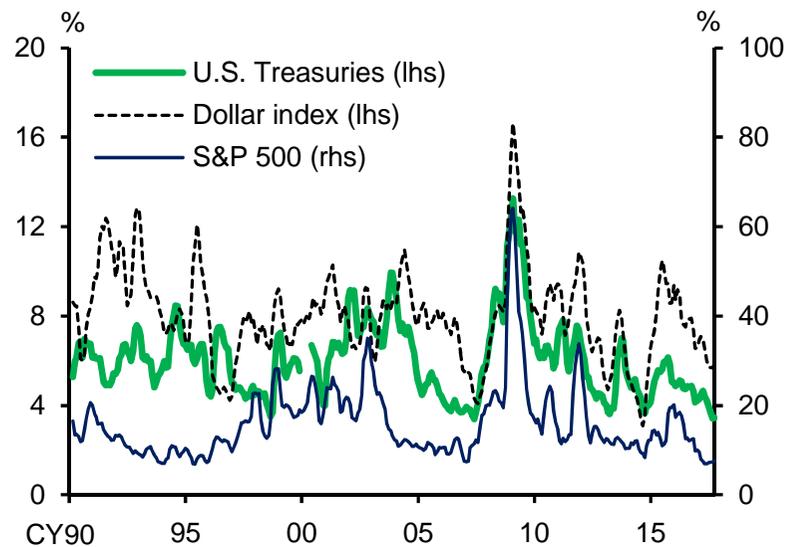
**Chart III-1-27: Outstanding amount of investment trusts, etc. among FIs**



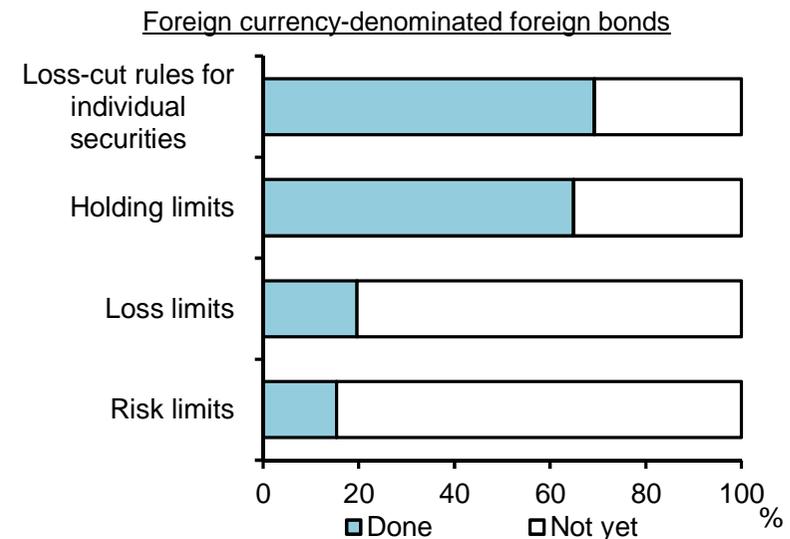
## Market risk (2)

- Interest rate volatility -- especially in U.S. Treasuries -- has been at a historically low level, but such an environment will not necessarily persist in the future.
- If volatility were to return, as it did during the "taper tantrum" in 2013, there is a risk that fluctuations in interest rates will be amplified through a surge in sales by investors, including FIs conducting VaR management.

**Chart II-1-4: HVs of U.S. stock and Treasury prices and the U.S. dollar exchange rate**



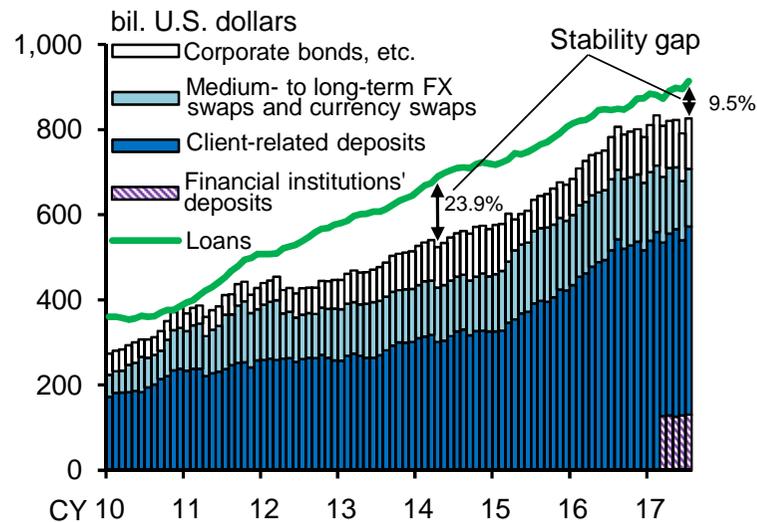
**Chart IV-2-8: Setting limits on securities holdings among regional FIs**



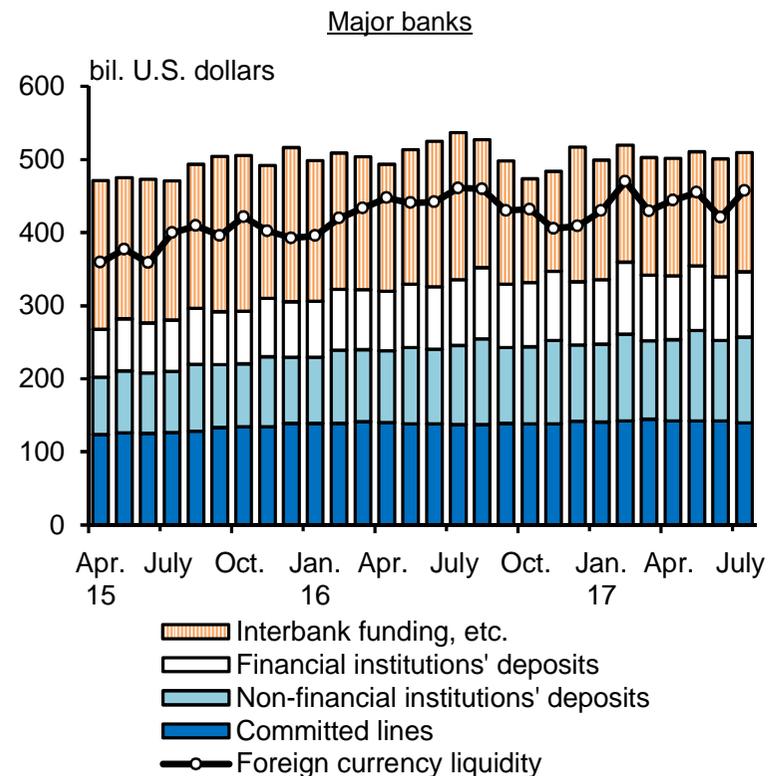
# Funding liquidity risk for foreign currencies

- For major banks, the stability gap -- the gap between the amount of illiquid loans and stable funding -- has continued on a narrowing trend. Amid continuing increases in lending, banks have endeavored to bolster their funding bases.
  - Nevertheless, to some extent, a gap still remains. In particular, given that about a quarter of client-related deposits consist of deposits by FIs, which have relatively low stickiness, it is necessary to carefully manage the risk of outflows.
- As for the resilience of foreign currency funding to short-term stress, banks generally hold sufficient liquid assets to cover the expected outflow of funds under a stress situation.

**Chart IV-3-3: Stability gap among major banks**



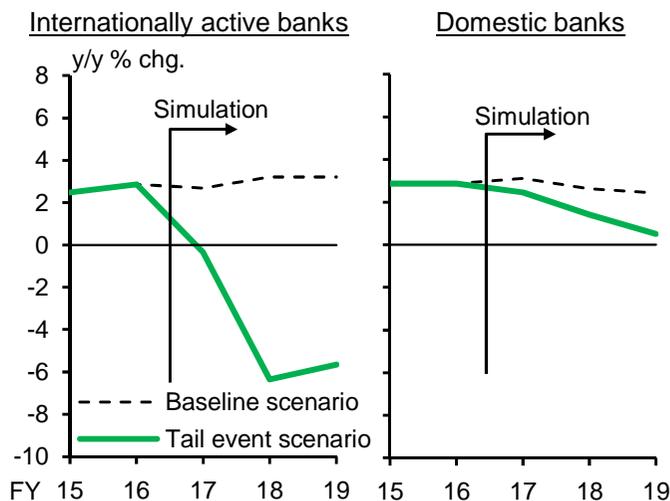
**Chart IV-3-6: Resilience to foreign currency liquidity stress among FIs**



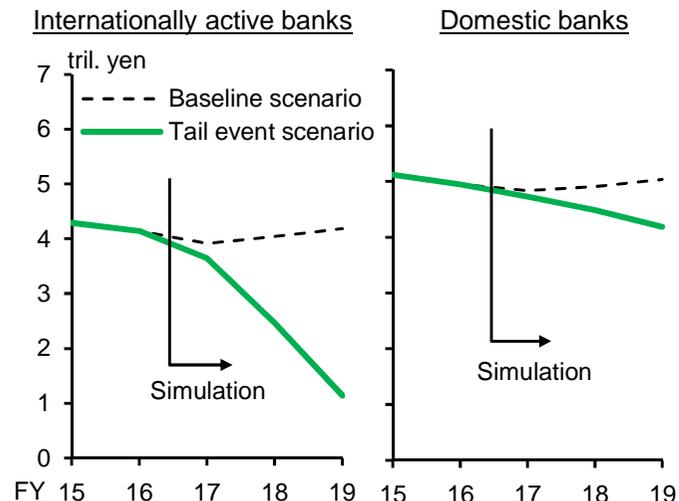
# Macro stress testing: the tail event (1)

- Macro stress testing examines the resilience of the financial system dynamically under the tail event scenario, in which the assumed economic and financial conditions are comparable to those observed at home and abroad during the Lehman shock.

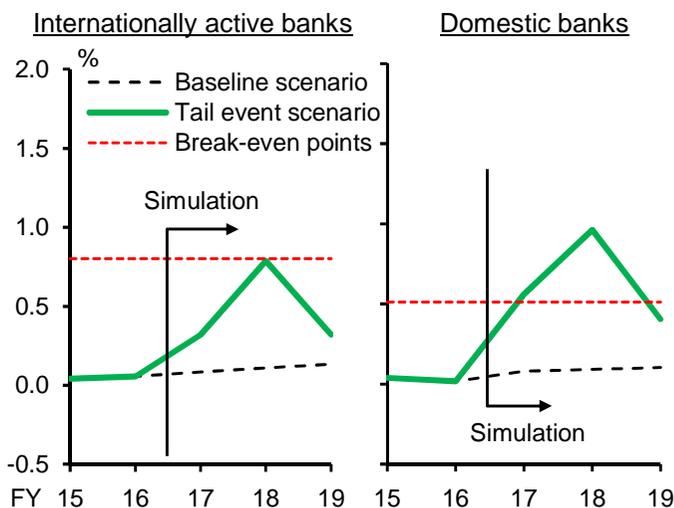
**Chart V-1-1: Loans outstanding**



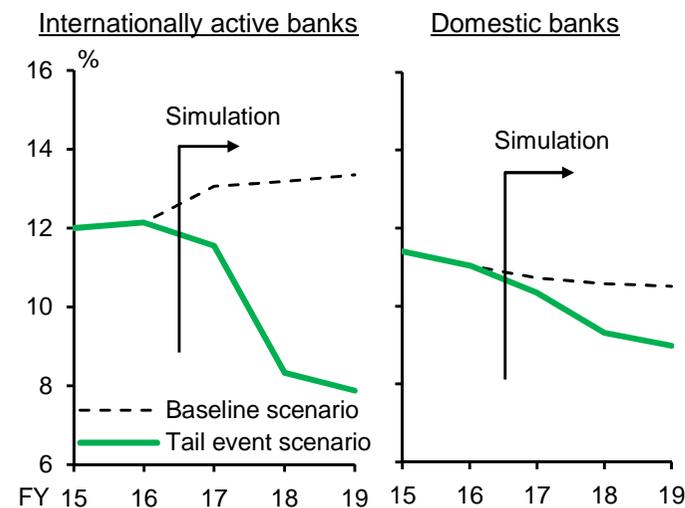
**Chart V-1-2: Net interest income**



**Chart V-1-3: Credit cost ratio**



**Chart V-1-4: CET1 capital ratio and core capital ratio**



## Macro stress testing: the tail event (2)

- At internationally active banks, the capital adequacy ratio falls due to a decrease in PPNR and an increase in unrealized losses on securities holdings. However, on average, the capital adequacy ratio still remains above the regulatory requirements.
- At domestic banks, the capital adequacy ratio declines mainly due to an increase in credit costs, but remains well above the regulatory requirements.
  - There is some heterogeneity among FIs with regard to net income. FIs that record net losses tighten their lending stance to a greater extent.

Chart V-1-6: Distribution of net income

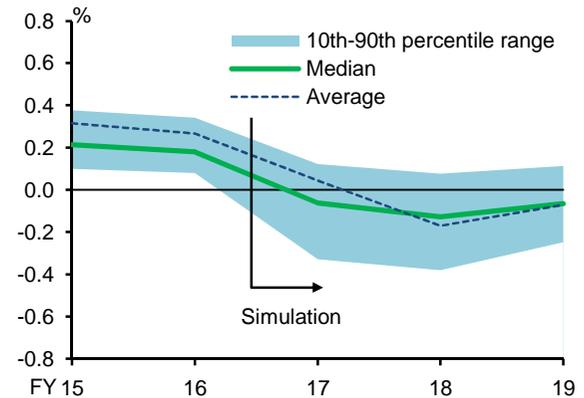


Chart V-1-5: Decomposition of the CET1 capital ratio and the core capital ratio

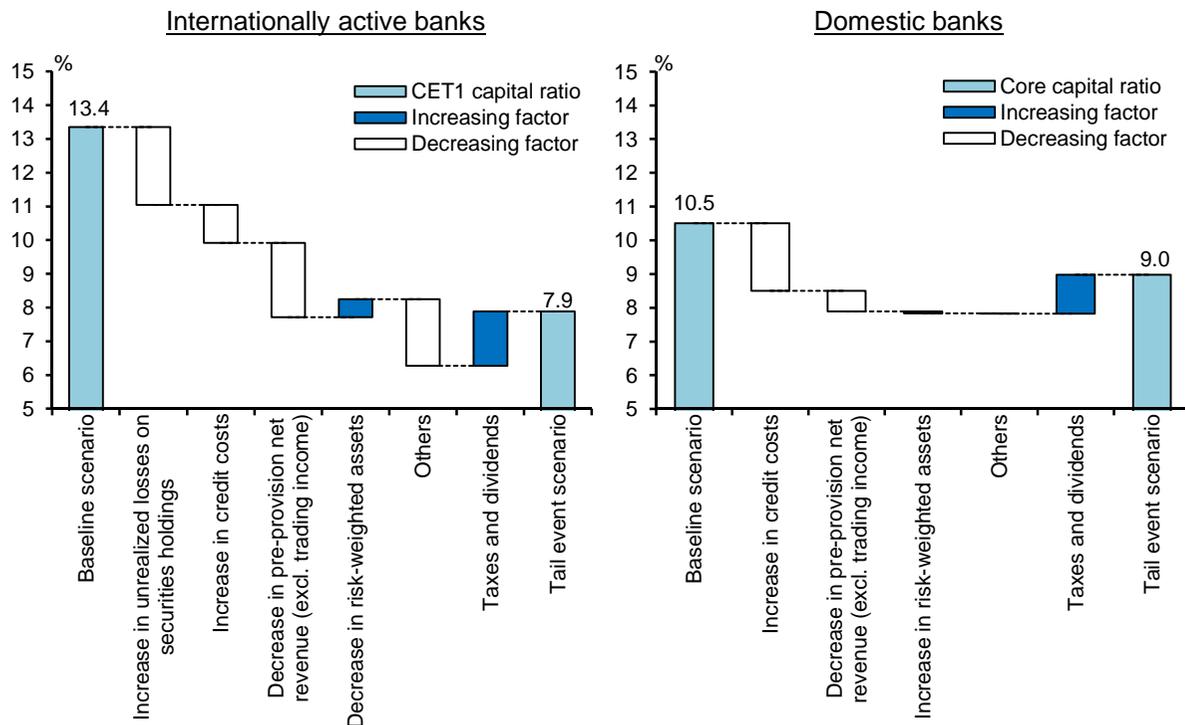
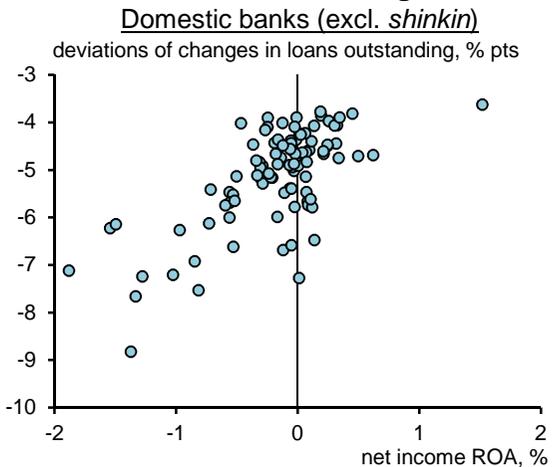


Chart V-1-8: Distribution of profitability and loans outstanding



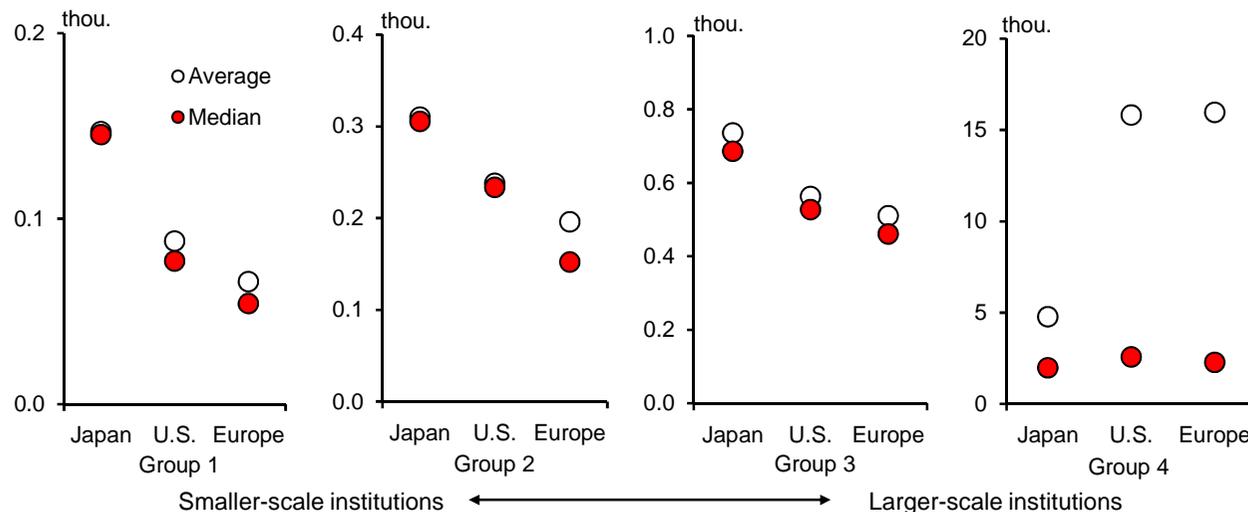
## **Part II. Potential vulnerabilities of the financial system**

- Assess/analyze the structural factors underlying FIs' low profitability -- intensified competition under the chronic stresses -- and their impact.

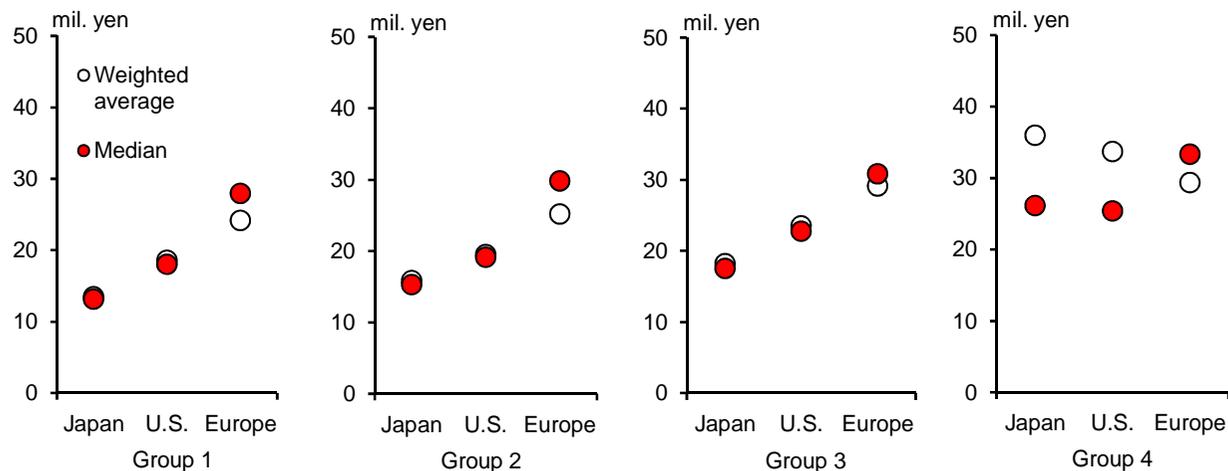
# FIs' profit structure: number of employees, and profits per employee

- The decline in FIs' profits is common in advanced economies under the low interest rate environment. However, the low profitability of Japanese FIs is striking from an international perspective.
  - Regional FIs in particular have a larger number of employees and lower gross operating profits per employee than U.S. and European FIs of a similar size.

**Chart VI-2-1: Number of employees per FI**



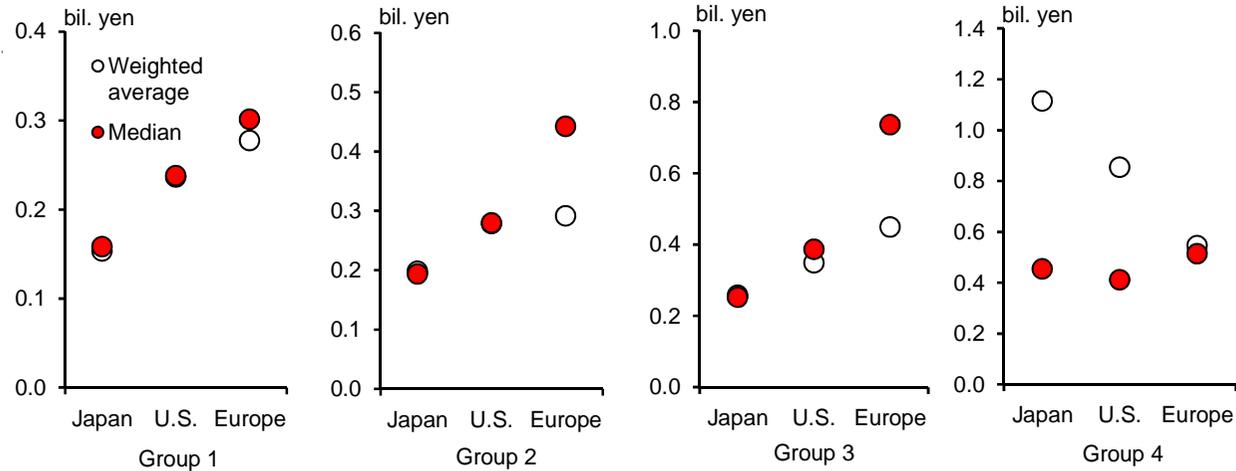
**Chart VI-2-2: Gross operating profits per employee**



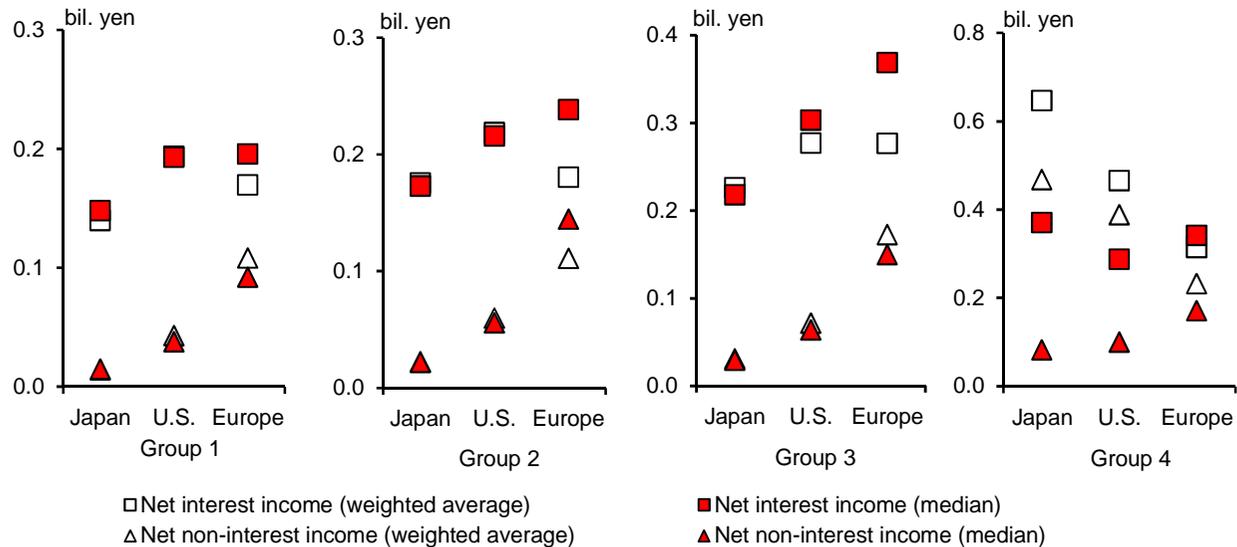
# FIs' profit structure: profits per branch

- Gross operating profits per branch are also low.
- Such low profitability is due to Japanese FIs' low net non-interest income as well as the decline in their net interest income under the prolonged low interest rate environment.

**Chart VI-2-3: Gross operating profits per branch**



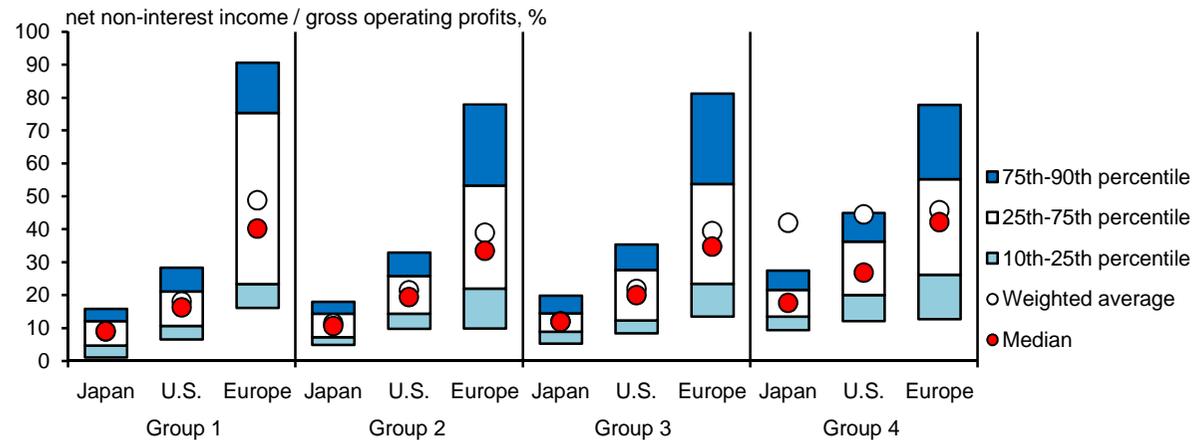
**Chart VI-2-4: Net interest income and net non-interest income per branch**



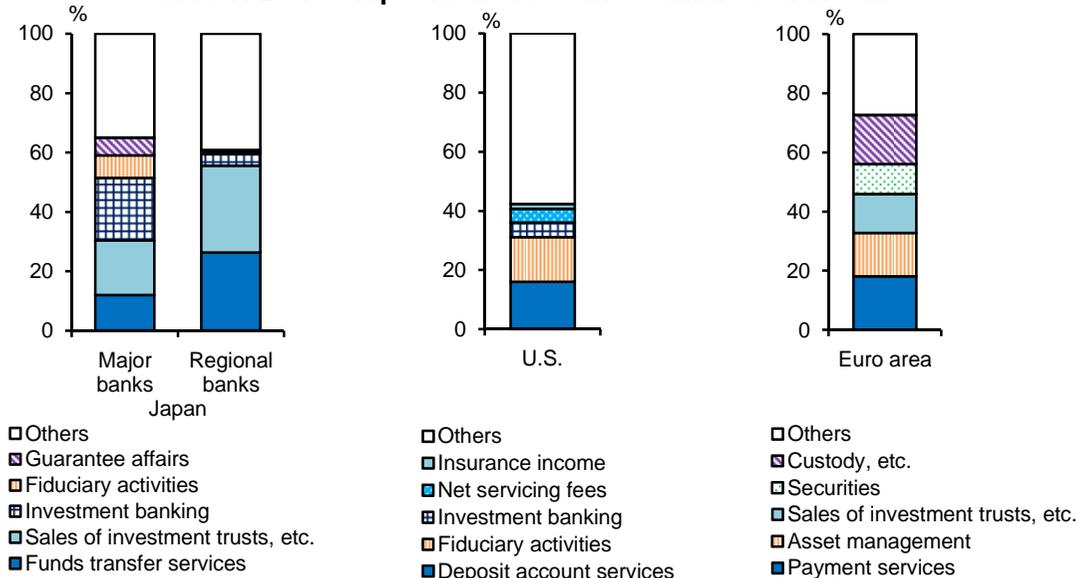
# International comparison: net non-interest income (1)

- Japanese FIs have been making efforts to expand their fee-based business with the aim of diversifying their profit sources, but the net non-interest income ratio is low from an international perspective.
  - In Japan, there are more than a few examples where FIs do not impose any fees on financial services that incur a reasonable amount of costs.
  - In terms of diversity in profit sources, the fees for funds transfer services and investment trust/insurance sales account for a majority of fee income.

**Chart VI-2-5: International comparison of net non-interest income ratios**



**Chart VI-2-8: Composition of fee and commission income**



## International comparison: net non-interest income (2)

- The differences in the stance regarding the setting of fees and commissions for financial services in Japan and abroad also show up clearly in the composition of household consumption expenditure and the developments in financial services prices.

Chart VI-2-6: Weights of financial services in the CPI

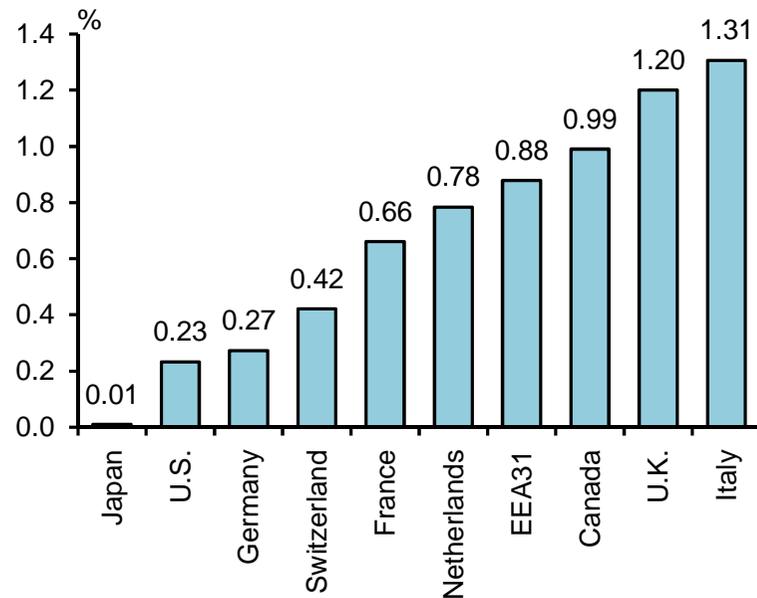
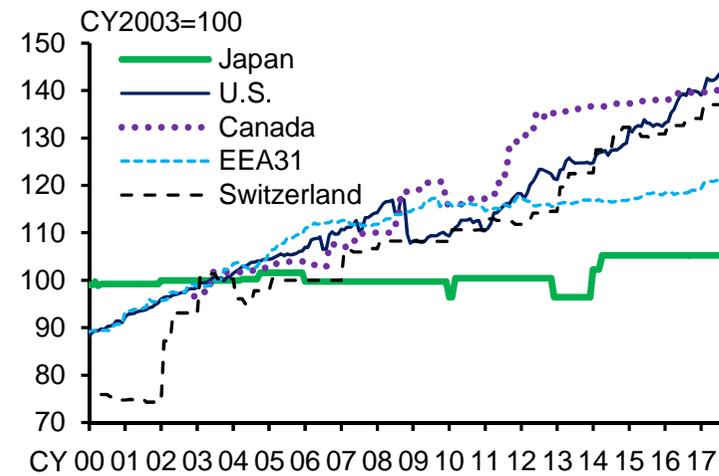


Chart VI-2-7: Price indices for financial services in the CPI



## International comparison: number of FIs and their branches

- If the number of post office branches is included, the number of FIs' branches per capita in Japan is about the same as that in Germany, which is regarded as being overbanked.
- The number of FIs' branches per habitable land area is conspicuously large in Japan.
- If FIs' branches are densely crowded in a small area, the state of competition will intensify. In terms of attracting deposits, FIs in Japan were competing intensely with each other, as well as with the postal savings system. And thus it was difficult for private FIs to adopt a strategy of charging deposit-related fees. Under these circumstances, a business model premised on not charging deposit-related fees seems to become entrenched at FIs.

Chart VI-3-2: Number of FIs' branches per capita

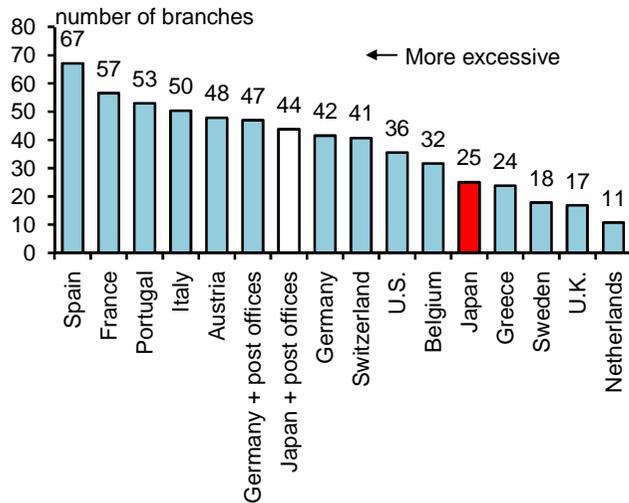
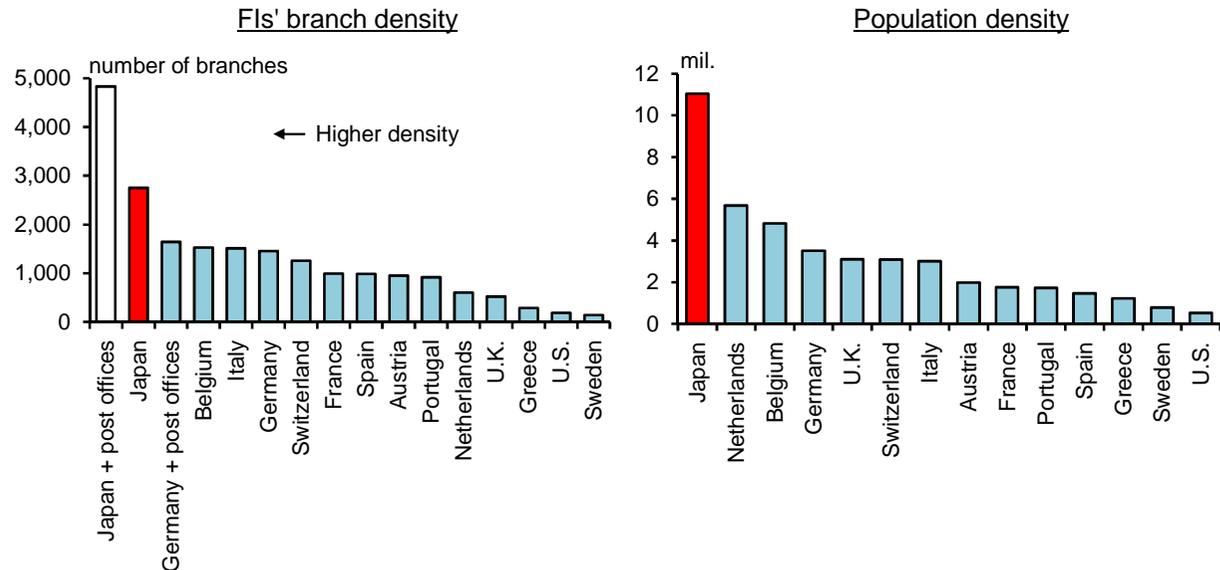


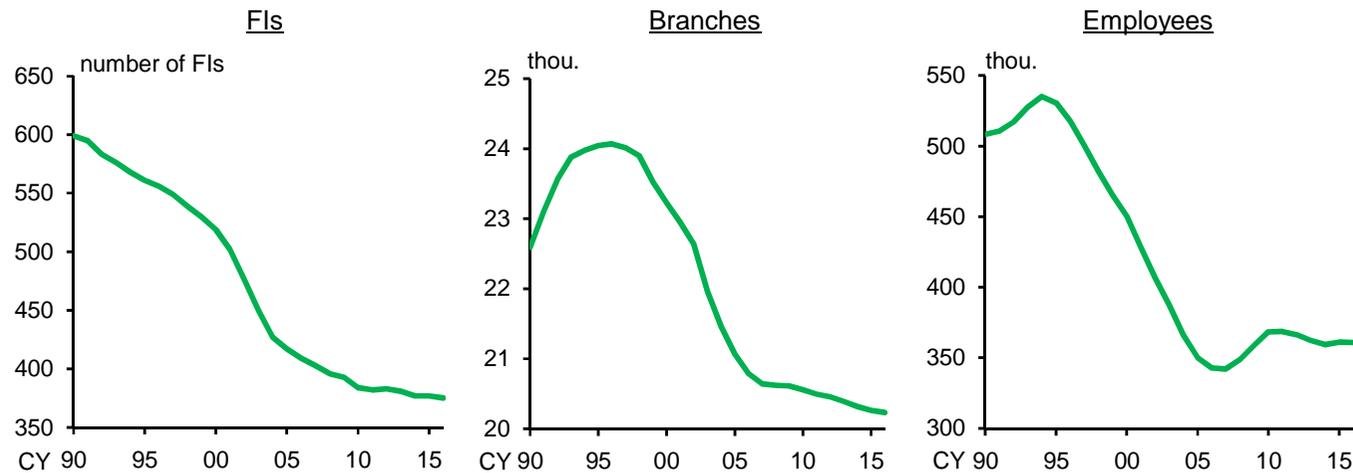
Chart VI-3-3: Number of FIs' branches and population per habitable area



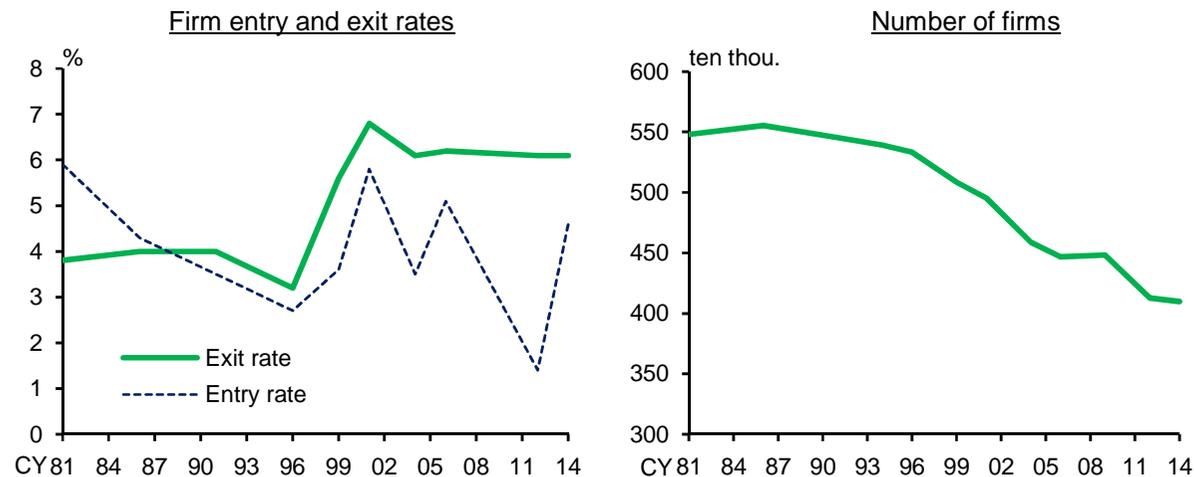
## Number of FIs, branches, employees, and firms

- The number of FIs' employees/branches in Japan may be in excess (overcapacity) relative to demand. Even though the number of branches/employees has fallen through the mid-2000s, overcapacity has remained. This likely reflects that the population and number of firms, which determine the demand for financial transactions, have continued to decline.

**Chart VI-3-4: Number of FIs, branches, and employees**



**Chart VI-3-5: Firm entry and exit rates, and number of firms**

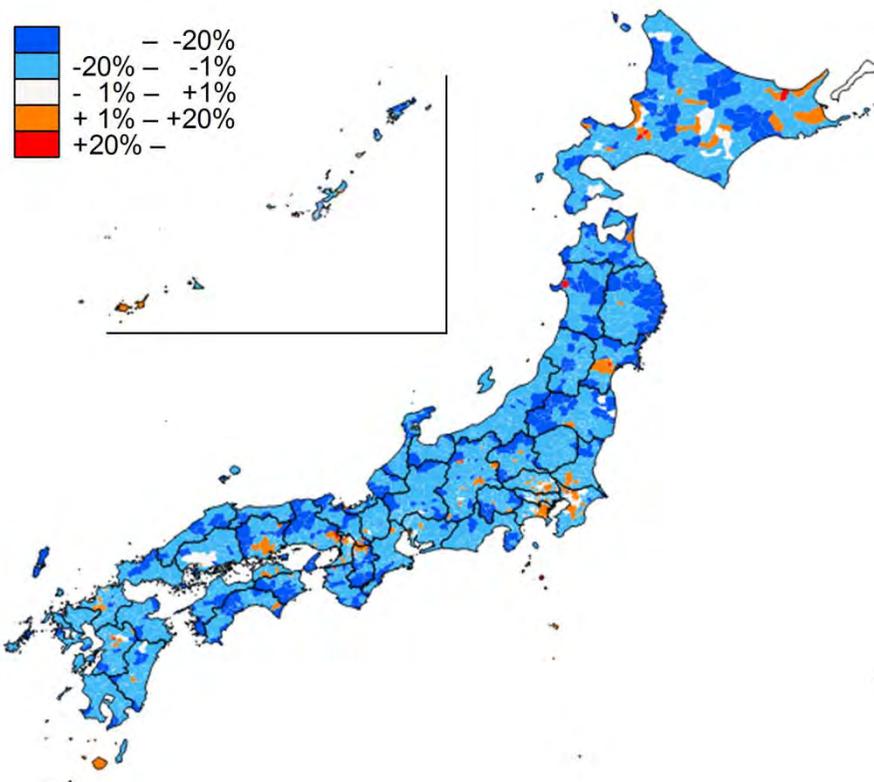


## Regional distribution of FIs' branches

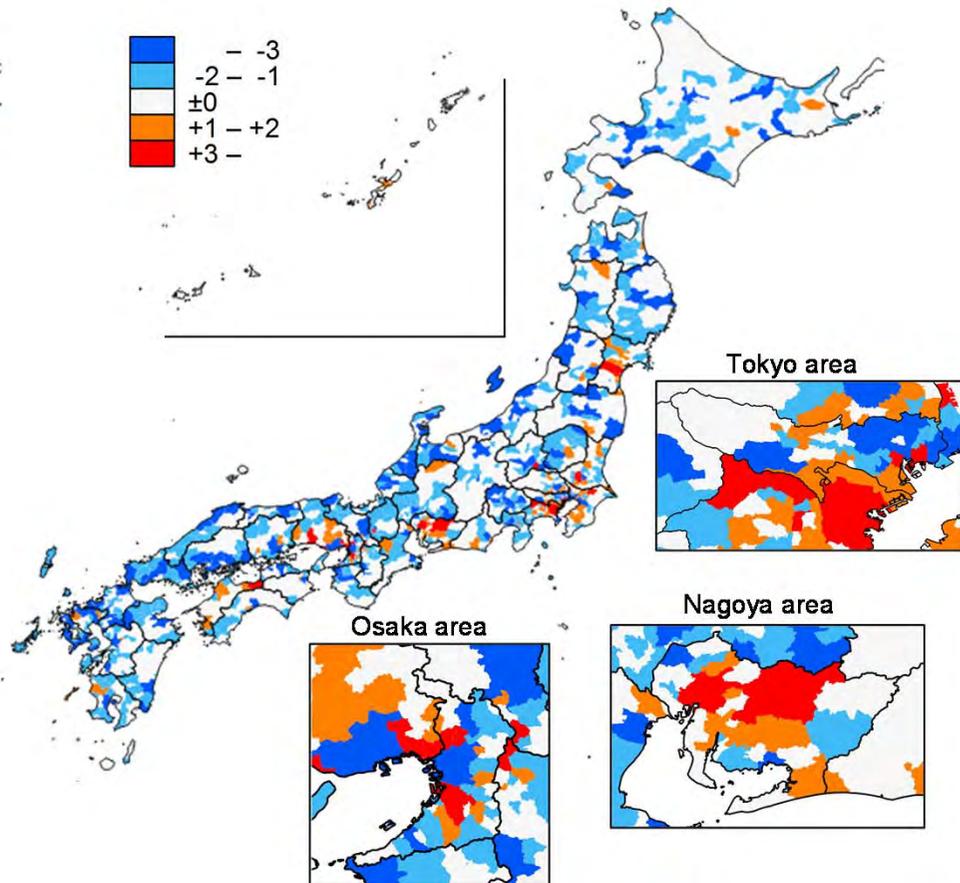
- While the number of firms has declined in almost all regions of Japan over the past decade, there are many regions where the number of FIs' branches has remained unchanged, and there are even some metropolitan areas where the number of branches has increased.

Chart VI-3-6: Number of firms and FIs' branches

Changes in the number of firms from 2004 to 2014



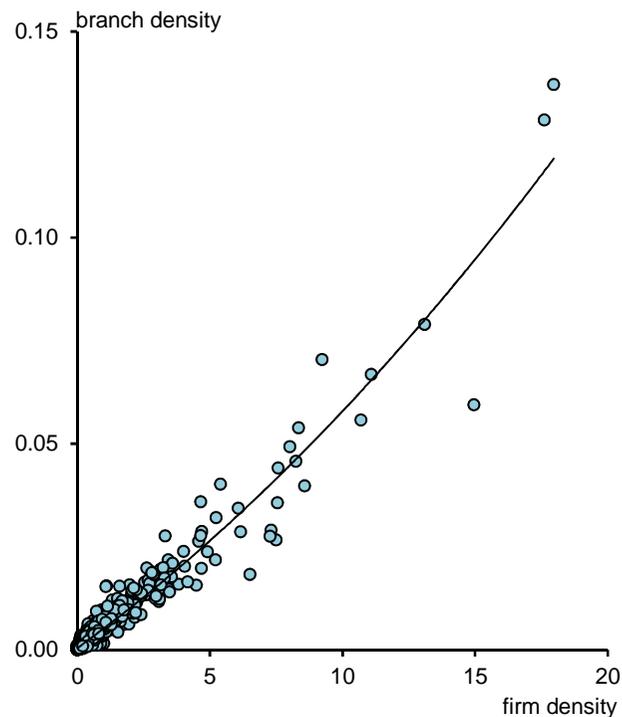
Changes in the number of branches from 2005 to 2015



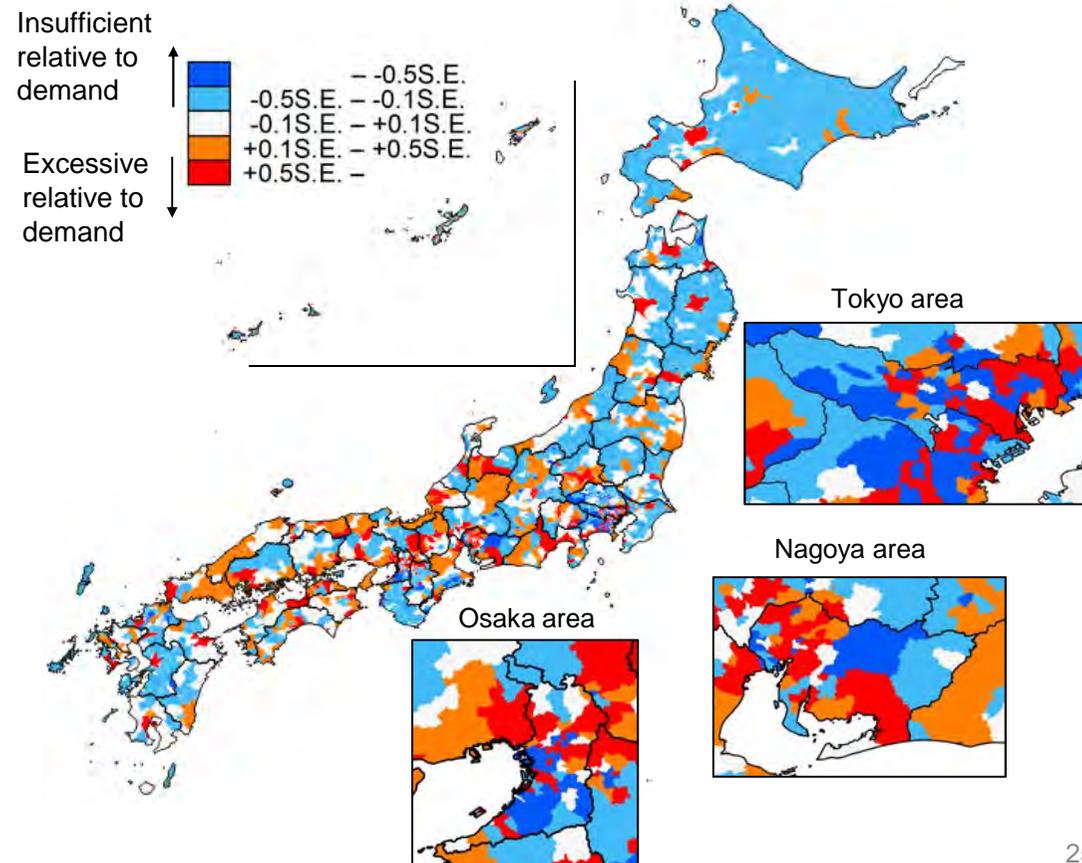
## Excess in the number of branches for each municipality

- FIs tend to concentrate their branches in metropolitan areas with a relatively high density of firms, i.e., the "economies of density" holds.
  - "Economies of density": In service industries, the population density and firm density greatly influence the firms' profitability since the geographical scope of the market is limited based on the face-to-face supply of services at a store.
- For individual FIs, it may be a rational strategy to determine the geographical configuration of branches based on the economies of density. However, if many FIs adopt the same strategy, this may give rise to overcapacity, i.e., the "fallacy of composition."

**Chart VI-3-7: Relationship between branch density and firm density**



**Chart VI-3-8: Excess in the number of FIs' branches for each municipality**

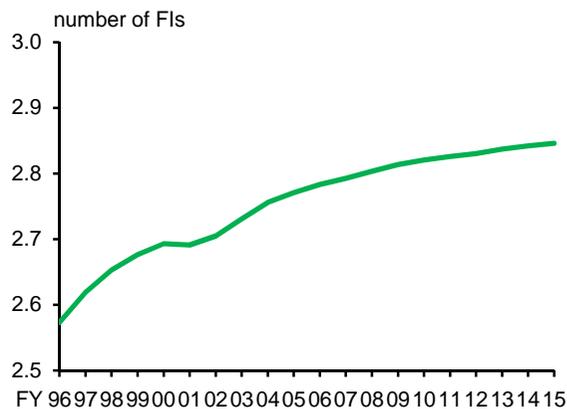


# Changes in relationship with firms (1)

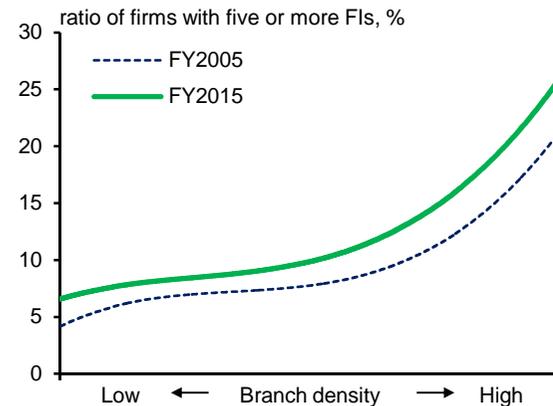
➤ The intensified competition among FIs' branches has started to have a clear effect on the business relationship between FIs and firms. Firms have been able to obtain more favorable loan conditions by increasing the number of FIs that each of them transacts with.

- The increase in the number of FIs that each firm transacts with has occurred especially in areas in which the excess in the number of branches seems to be severe.

**Chart VI-3-10: Number of FIs that each firm transacts with**

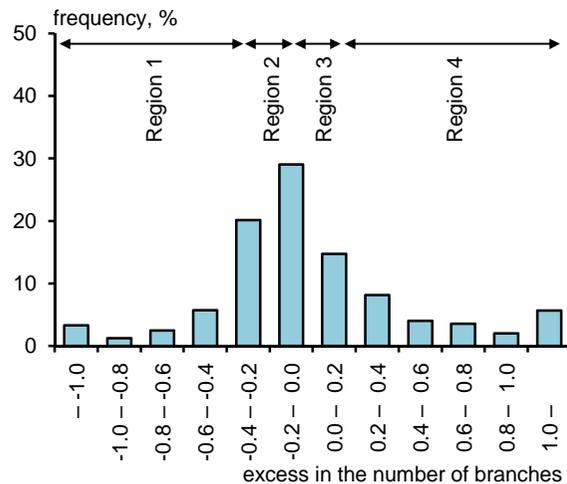


**Chart VI-3-12: Distribution of the number of FIs that each firm transacts with in each municipality**

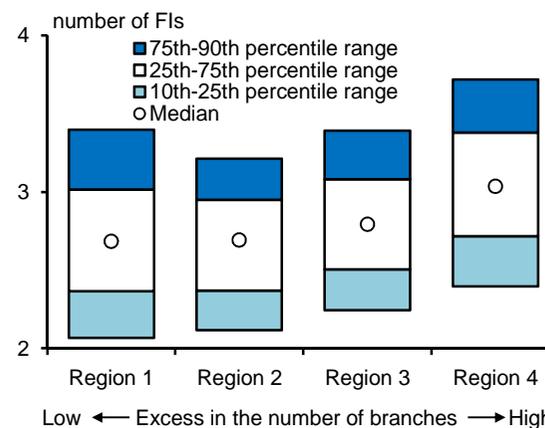


**Chart VI-3-11: Relationship between branch density and the number of FIs that each firm transacts with**

**Distribution of the excess in the number of branches**



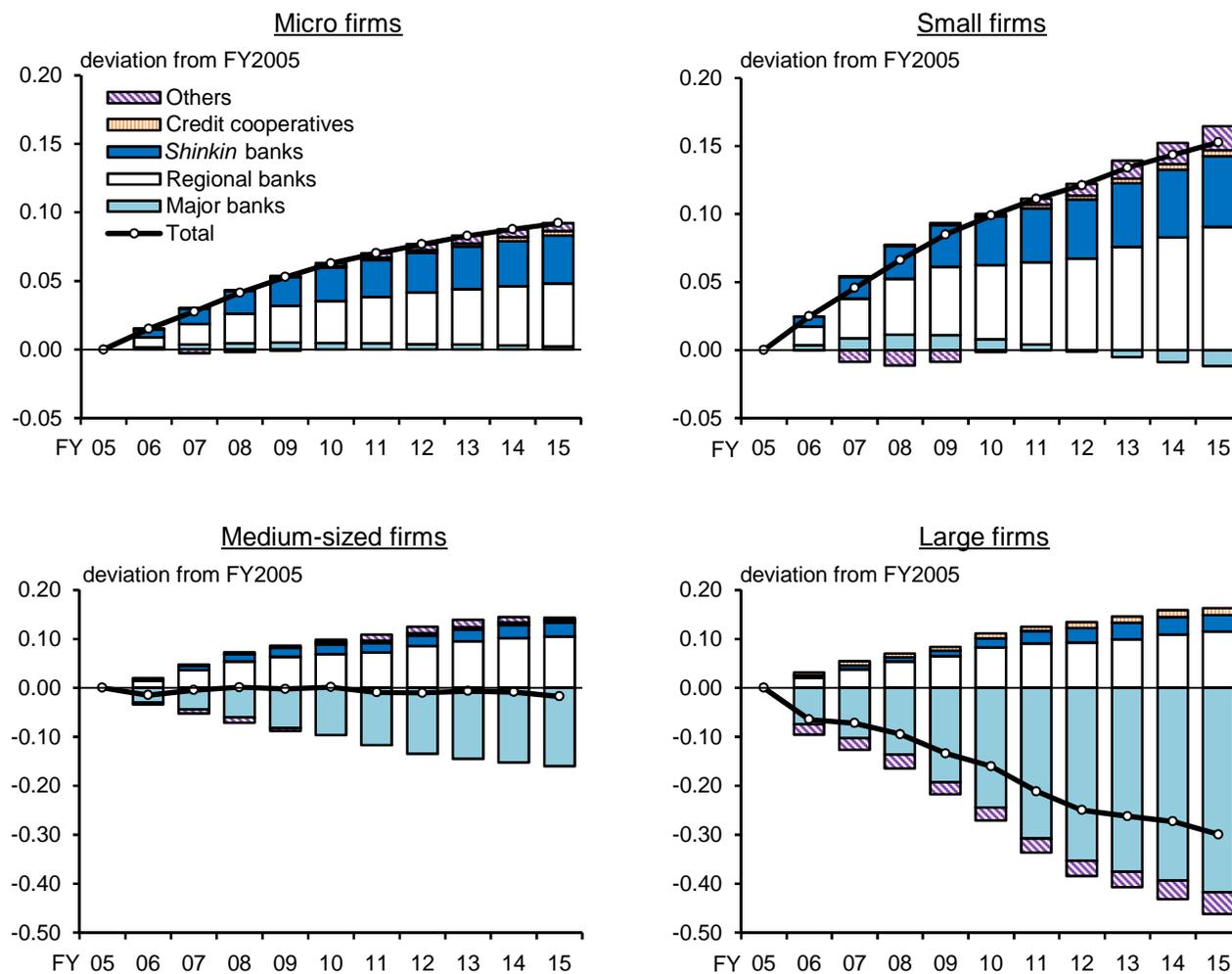
**Number of FIs that each firm transacts with in each region**



## Changes in relationship with firms (2)

- Whereas for micro and small firms, the number of FIs that each of them transacts with has increased, for large firms, the number has decreased.
- If it becomes common for firms to choose the FI offering the lowest loan interest rate among a number of FIs when taking out a loan, business relationship between firms and their main bank will weaken. This may lower the efficiency of capital allocation by discouraging FIs' information production activities.

**Chart VI-3-13: Decomposition of changes in the number of FIs that each firm transacts with**



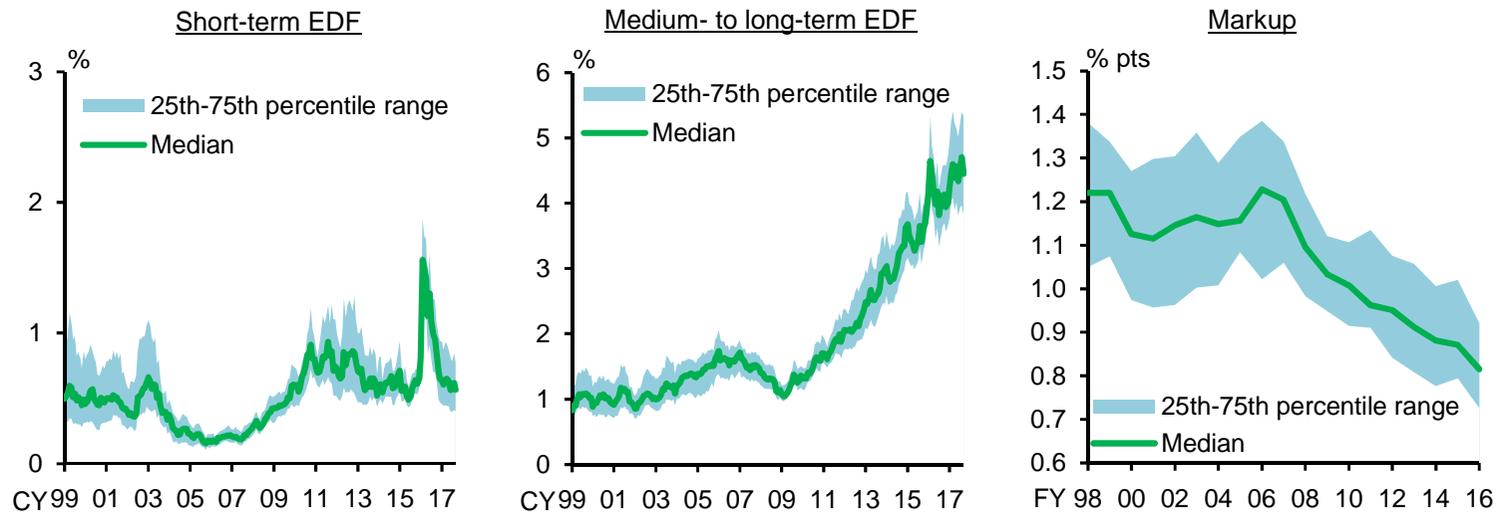
# Intensified competition and FIs' markups

- FIs, which have business areas with the excess in the number of branches, tend to face fierce competition and have lower pricing power.
- If competition among FIs continues to be excessively severe, there is a risk that FIs' stability will be undermined. The upward trend of regional banks' EDF coincides with the declining trend of their markups over the long run.

**Chart B2-1: Cross-sectional estimates:  
effects of branch density on FIs' markups**

		Dependent variable: markups	
		Regional banks	
Explanatory variables	Branch network excess	-0.05 *** (0.02)	
	Number of FIs that each firm transacts with		-0.11 *** (0.04)
	Loan-to-deposit ratio	0.01 ** (0.00)	0.01 *** (0.00)
	Nonperforming loan ratio	0.00 (0.03)	0.02 (0.03)
	Capital adequacy ratio	0.01 (0.01)	0.00 (0.01)
Adj. R <sup>2</sup>		0.07	0.07
S.E.		0.20	0.21

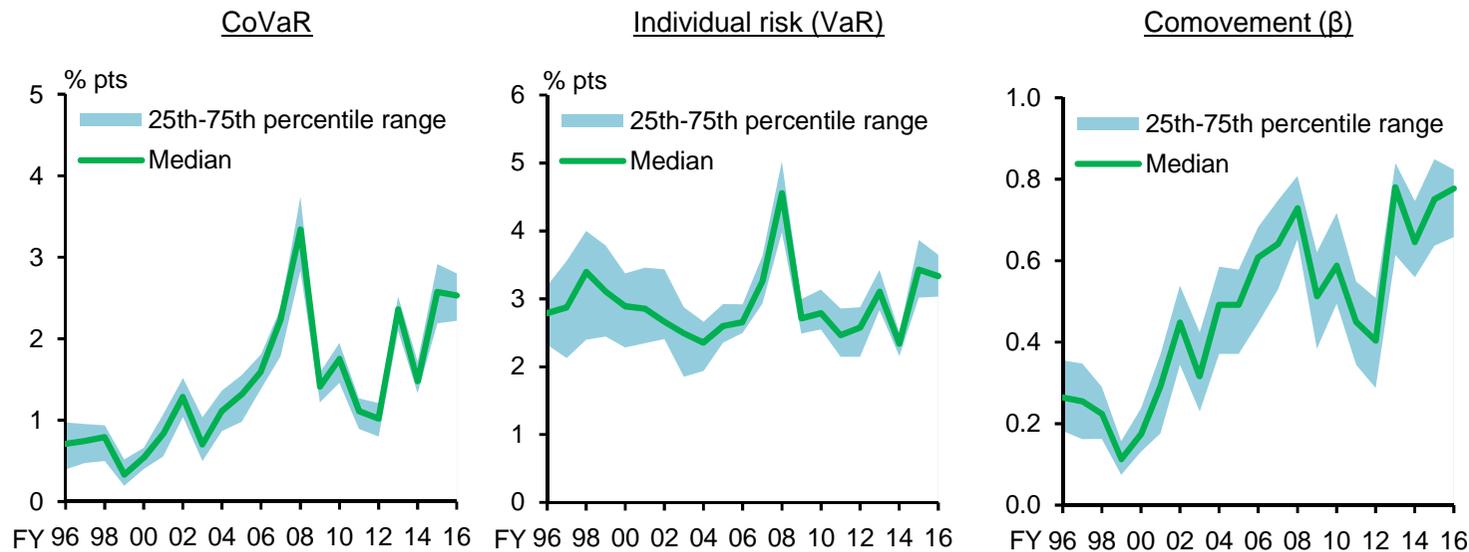
**Chart VI-3-15: Expected default frequency and markup of regional banks**



## Intensified competition among FIs and systemic risk (1)

- If regional FIs continue to face the common and chronic stresses and remain under the intensified competition without diversifying their profit sources and properly adjusting their resource input relative to demand, many FIs will simultaneously lose their loss-absorbing capacity in the medium to long run, and this could develop into systemic risk.
- In fact, with competition among regional FIs intensifying, the CoVaR, a systemic risk indicator extracted from the stock market, is moderately increasing.
  - Decomposing the size of stress in the financial system (CoVaR) into the two factors, while any significant change is not observed in the size of individual banks' risk (VaR), the comovement between the risk ( $\beta$ ) has been increasing on the whole.

Chart B3-1: CoVaR among regional banks



## Intensified competition among FIs and systemic risk (2)

- When regressing CoVaR and  $\beta$  on the markups, a decline in markups is found to exert upward pressure on systemic risk.
- An increase in common exposure among banks (i.e., an increase in  $\beta$ ) is an important channel through which competition among banks raises systemic risk.

Chart B3-2: Panel estimates: impact on systemic risk

		Dependent variables: systemic risk indicators		
		CoVaR	Individual risk (VaR)	Comovement ( $\beta$ )
Explanatory variables	Markup	-0.394 *** (0.093)	0.165 (0.123)	-0.130 *** (0.033)
	Total assets [logarithmic value]	0.508 *** (0.041)	0.213 *** (0.070)	0.159 *** (0.015)
	Loan-to-asset ratio	-0.028 *** (0.004)	-0.003 (0.006)	-0.010 *** (0.002)
Adj. R <sup>2</sup>		0.298	0.102	0.201
S.E.		0.694	0.799	0.244