Comments on "Disentangling the Supply and Demand Factors of Household Credit in Malaysia: Evidence from the Credit Register"

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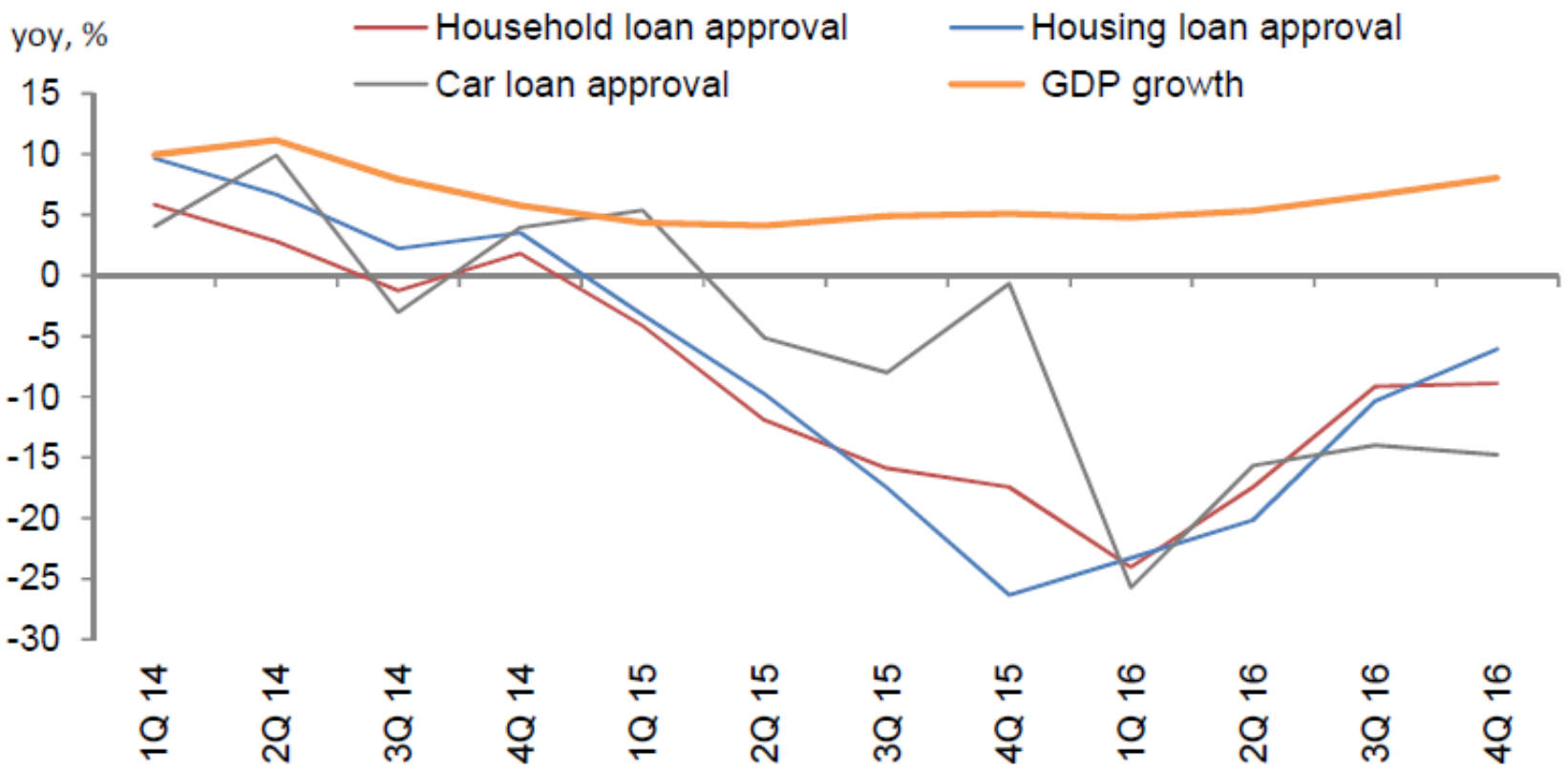
The views expressed here are those of Hibiki ICHIUE and do not necessarily represent the views of the Bank of Japan.

Today's Talk

- Summary
  - Motivation
  - Overview
  - Data
  - Regression models
  - Results
- Comments 1-5 and minor comments

Motivation:
Why did loan approval decrease?



Overview

- This paper examines how supply and demand factors affect household loan approval in Malaysia during the period 2014-16
- To this end, this paper creates borrower-bank pair dataset
- This paper finds that supply factors are more important than demand factors

Data (1): Merge Three Sources

- Credit register
  - Status of loan application (accepted or rejected)
  - Type (housing and car loans comprise 66%)
  - Borrowers characteristics, such as employment
- Income tax database
  - Income
  - Location of residence, age, and marital status
- Bank-level database
  - Capital ratio (i.e., Tier 1 capital/risk-weighted assets)
  - Funding ratio (i.e., deposit/total liabilities)
  - Liquidity ratio (i.e., liquid assets/total assets)
  - Type of bank (commercial, Islamic, …)

Data (2): Size and Limitations

- The dataset consists of 530K borrowers and 47 banks
- Limitations
  - Only individuals who filed the income tax return forms and applied for loans are included
    - The mean income in the dataset is around 3 times the average monthly salaries and wages in the population
  - No information on the risk profile of the borrowers (e.g., credit score), wealth or assets
  - Lack of data for the price of loans (i.e., effective interest rate)
  - The time period of 2014-2016 is too short to differentiate the channels during good and bad economic periods.

Regression Models

- Model 1

  Loan_approval_dummy(i,j,t)

  = Bank_vars(j) + Controls(i,j,t) + FE(i) + FE(t)

- Model 2

  Loan_approval_dummy(i,j,t)

  = Bank_vars(j) + Controls(i,j,t) + Income(i)

  + FE_industry_loation_age_marital_time(i,t)

Results

	Model 1		Model 2	
	Housing	Car	Housing	Car
Capital ratio	0.037***	0.052***	0.025***	0.056***
Funding ratio	0.060***	0.072***	0.051***	0.064***
Liquidity ratio	-0.004	-0.049***	-0.014***	-0.045***
Income			0.029***	0.025***

Note: All independent variables are standardized. *** p<0.01.

Comment 1 (1): On Model Specs

- The author argues that Model 1 originates from Khwaja and Mian (2008, AER), but…
- Model 1

$$Loan\_approval\_dummy(i,j,t)$$
$$= Bank\_vars(j) + Controls(i,j,t) + FE(i) + FE(t)$$

- Khwaja and Mian (2008)

$$\Delta Loan(i,j) = \Delta Deposits(j) + FE(i)$$

  - They examine the impact of liquidity shocks induced by unanticipated nuclear tests in Pakistan in 1998 on loans
  - They focus on changes from pre-nuclear shock average (1996Q3-1998Q1) to post-nuclear shock average (1998Q3-2000Q1)
  - FE(i) absorb borrower-specific demand shocks

Comment 1 (2): On Model Specs

- Why not FE(i,t), rather than FE(i) + FE(t)?

  Loan_approval_dummy(i,j,t)
  = Bank_vars(j) + Controls(i,j,t) + FE(i,t)

- This spec can absorb borrower-specific demand shocks
- Moreover, standard errors must be clustered at bank level, as in Khwaja and Mian (2008), rather than using robust standard errors, since this paper highlights the effects of bank characteristics

Comment 2: On Standardization

- This paper standardizes all independent variables to compare the impacts of different variables
  - β means the sensitivity of loan approval probability to a 1 S.D. change in an independent variable.
- But, the S.D. reflects not only time-series variations but also cross-sectional ones
- If the author is interested in why loan approval declined during the period 2014-2016, time-series dimension must be more important
- Comparing "$\beta \times (X_{2016} - X_{2014})$" is relevant for this purpose

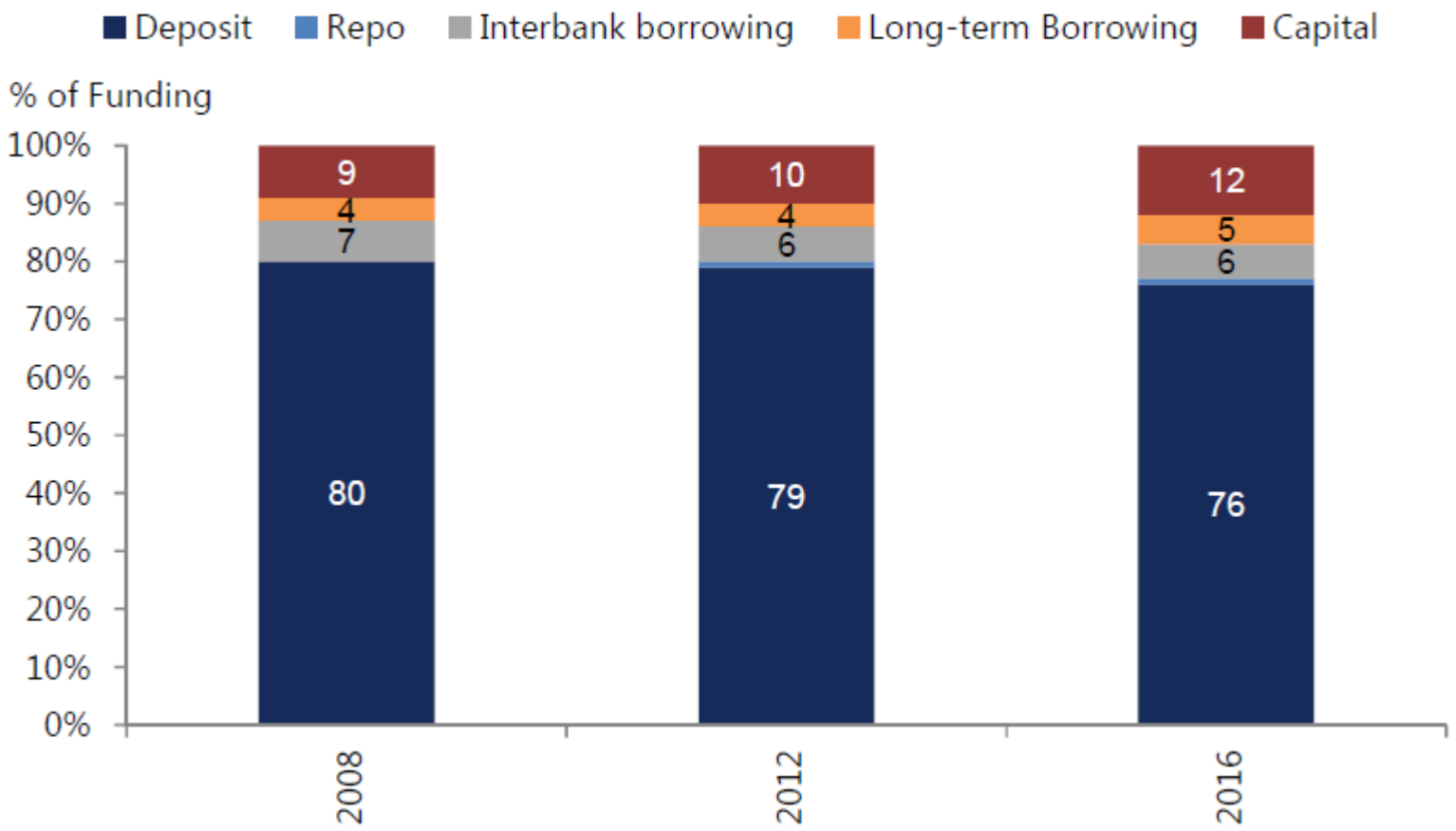
Comment 3: Impacts of Liquid Assets

- The paper finds that banks with higher liquidity ratio are less likely to approve loans
- Is there any quasi-causality? For instance, more risk-avert or regulated banks may hold more liquid assets and be less aggressive for lending?
- Do different types of banks (e.g., commercial vs. Islamic) behave differently? Is there any difference in regulation among commercial banks?

Comment 4 (1): Are Deposits Special?

- This paper calculates the funding ratio as deposit/total liabilities.
- Thus, the paper implicitly assumes that deposits are special while other funding sources, including equity or long-term bonds, are not
- But the author argues:
  - Findings on the importance of banks' funding ratio highlight the importance of promoting diversification of the sources of funding for financial institutions.
  - For instance, deeper bond and equity market will reduce banks' heavy reliance on deposits as the primary source of funding.

Comment 4 (2): Are Deposits Special?



Comment (5): Heckman's two-step approach?

- The author discusses:
  - Many banks in Malaysia pre-filter the loan applications by income before registering the eligible applicants in the credit register.
  - In addition, from the dataset, we do not observe individuals from the lower income group, especially those who did not submit any loan applications given their lower probability of obtaining an approval. In fact, individuals in the sample may consist of those with relatively high income in the population.
- Although the author admits the potential selection bias, it may be too serious to interpret the results.
- Good news is that the author has income tax data even for individuals who did not borrow
- Heckman's 2-step approach may be useful for robustness check, although this is not a perfect solution

Minor Comments

- Why only new loan applications? Applications for renewal of existing loans may be interesting.
- Why removing joint borrowers?
- Why only commercial and Islamic banks?
- Need to use log of income and collateral values because of their skewness as shown in Table 1.
- Why not show the coefficients of controls (loan application amount, collateral value, size of banks, and bank's market share).
- Not clear how to calculate market share
- Not clear whether Model 2 uses robust standard errors or clustered ones