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# Interest Rate Pass-through in Thailand: New Evidence from Loan-level Data

Presented by

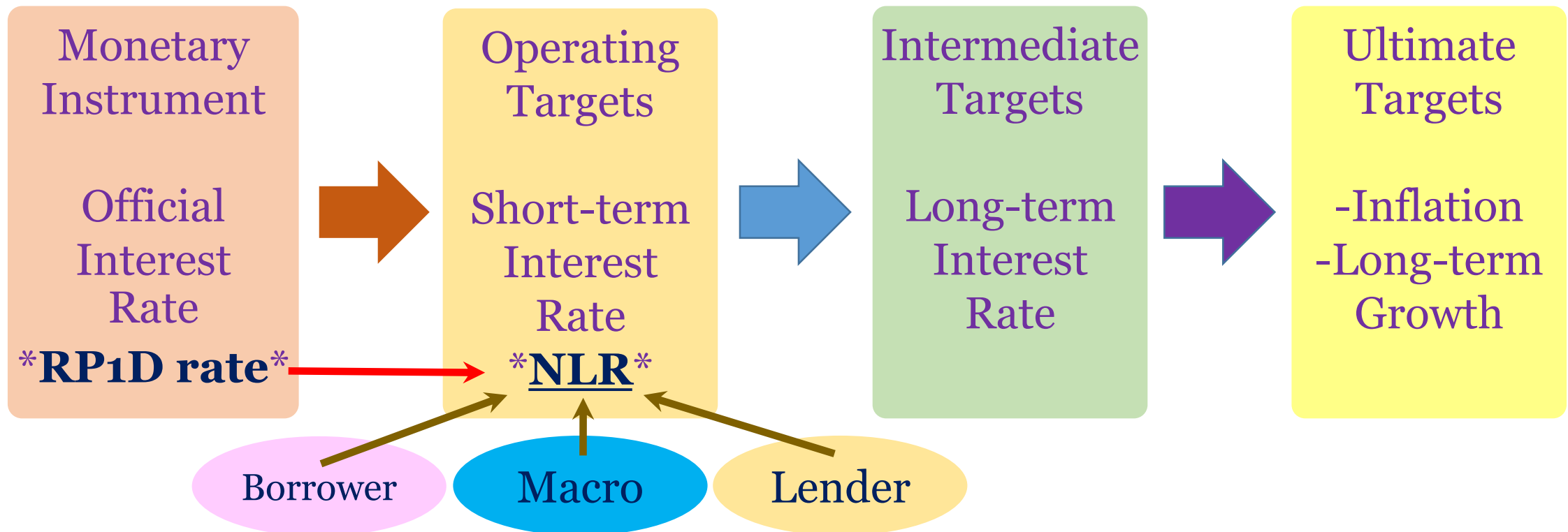
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Discussed by

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# Main Message

- Interest rate pass-through analysis is interest rate transmission analysis from interest rate policy to the now loan rate (NLR) with loan-level data.



# Main Message

- $NLR = f(\text{RP1D, loan characters, bank characteristics, borrower characteristics, macroeconomic variables})$
- Loan characters: duration, type, purpose.
- Bank characters: capital, liquidity, funding structure, business modes, operation cost, risk appetite.
- Firm characters: profit/loss, balance sheet, business type, bargaining power, asset size, key financial ratio (quick ratio, ROE, debts to equity (DE) ratio, debts-service coverage ratio (DSCR)).
- Macroeconomic variables: GDP growth, inflation, market volatility (VIX), policy rate expectations (government yield slope).

# Main Message

- Techniques:

- Fixed effect model for panel data analysis
- Quantile regression
- Structural break

- Data:

- The loan-level data (45,491 obs.) is a kind of Big Data.
- Combine 3 sources data: LAR database, CPFS database, BOT:
  - => How do you combine and make it to be balance panel data???
- Data frequency is monthly data, time period of study???

# Empirical Results

- $NLR = f(\text{RP1D}, \text{loan characters}, \text{bank characteristics}, \text{borrower characteristics}, \text{macroeconomic var.}, \text{interaction term}, \text{structural break})$

- Panel unit root test?
- Panel Fixed Effect Model, (individual bank and individual firm) Testing?  
, Results?

- Table 5:  $R^2$  vs Adjust  $R^2$ , AIC or BIC?

No. of lags	0 lag	1 lag	2 lags	3 lags	4 lags	5 lags	6 lags
$\sum_{i=0}^p \beta_i$	0.57***	0.59***	0.60***	0.61***	0.62***	0.62***	0.62***
$\beta_0$	0.57***	0.11***	0.19***	0.28***	0.31***	0.29***	0.26***
$\beta_1$		0.48***	0.02	0.00	0.03**	0.07***	0.09***
$\beta_2$			0.39***	-0.09***	-0.10***	-0.10***	-0.06***
$\beta_3$				0.42***	0.09***	0.10***	0.12***
$\beta_4$					0.29***	0.06***	0.04**
$\beta_5$						0.20***	-0.05***
$\beta_6$							0.22***
Constant	7.34***	6.76***	6.48***	6.36***	6.36***	6.32***	6.29***
95% CI of $\sum_{i=0}^p \beta_i$	0.54-0.59	0.57-0.61	0.58-0.62	0.59-0.64	0.59-0.64	0.60-0.64	0.60-0.65
Overall	0.35	0.34	0.34	0.34	0.34	0.34	0.34
R-squared							

Notes: 1) Data from January 2004 to March 2018 2) \*\*\*, \*\*, \* denotes significant level of 1, 5, and 10 percent respectively 3) There are 2,154,064 observations, 28 banks, and 28,624 firms 6) The results include controls for loan characteristics and macro variables (loan types, loan maturity, loan purposes, GDP, headline inflation, VIX, and Thai government yield slope)

# Results

- $NLR = f(\text{RP1D}, \text{loan characters}, \text{bank characteristics}, \text{borrower characteristics}, \text{macroeconomic var.}, \text{bank fixed effect}, \text{firm fixed effect}, \text{interaction terms}, \text{structural break})$
- **Bank characters:**
  - Higher capital, tighter liquidity, less efficient operation, and higher risk appetite tend to set higher loan rates.
  - Banks with more stable funding lend with lower rates and bank business models do not determine price setting.
  - Types of Bank affect to lending rate.
  - **Pass-through:** Every single interaction term affects to lending rate. From 75<sup>th</sup> – 25<sup>th</sup> percentile, higher operational efficiency, higher risk appetite, higher funding structure, and higher capital, generate an economic difference (>5 basis points)

# Results

- **Firm characters:**

- Firms with higher bargaining power, higher profitability and higher cash-flow-to-debt-costs receive lower loan rates. Better abilities to negotiate and bargain should lead to more favorable rates.
- Type of firm, services, real estate, and construction sectors are likely to obtain higher loan rates compared to the benchmark industrial sector whereas agricultural firms tend to get lower loan rate.
- **Pass-through:** High bargaining power, high assets, and low debt servicing costs affect to lending rate. From 75th – 25th percentile, firm size and bargaining power generate an economic difference (>5 basis points).

# Results

- Distributional Effects:
  - The monetary policy pass-through is higher for better firms with lower loan rates (0.6385) than those with higher loan rates (0.4384).
  - The small, medium, and foreign banks receive lower rates than 25th percentiles compared to the baseline large banks.
  - In the 75th percentile compared to the 25th percentile, the firms in real estate and services sectors have higher relative rates than industrial firms.
  - Firms with more bank relationships and higher quick and debt-to-equity ratios get lower rates in the 75th percentile compared to the 25th percentile.
  - While firms with higher assets, ROE ratio, and debt-servicing costs gets higher rates in the 75th percentile compared to 25th.
  - The monetary policy pass-through is higher for better firms with lower loan rates than those with higher loan rates.



# Results

- Structural break (2008/2009):
  - The overall transmission was markedly lowered after the global financial crisis, decreasing from 0.68 to 0.35 which is explained by an increase in liquidity from spillover effect.
  - Specifically, QE taken by the Federal Reserve, Bank of England, and ECB, have increased the flow of funds into emerging market countries such as Thailand
  - The implication here is that policy makers must take into account possible spillover effects from other countries into consideration

# Contributions

- Using big data from loan-level data.
- Consider many factors from
  - balance sheet channel
  - bank lending channel
  - Types of firm
  - Types of bank
  - Type of loan
  - Macroeconomic variables
- Quantile regression is applied for distributional effect studying.
- Realizing the impact of the global financial crisis to NLR.

# Questions

- Is your information or data called panel data or pooled cross sectional data?
- How do you synchronize data from different sources in on panel sheet?
- Are Specification of firm/bank fixed effects a dummy variables? How do you test fixed effect model?
- Is it possible it apply your technique to study the small scale credit (consumption loan and SME-firm loan) which has total credit less than 20 million baht? If possible, what problems should be considered in the analysis?
- Policy recommendation for the Monetary Policy Committee of BOT?