Impact of Chinese Monetary Policy Instruments on Bank Lending

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Outline

- Background
  - The evolution of the Chinese monetary policy regime
  - The evolution of Chinese banks balance sheets
- Analysis and Findings
  - Empirics – set up and results
  - Robustness checks
- Takeaways

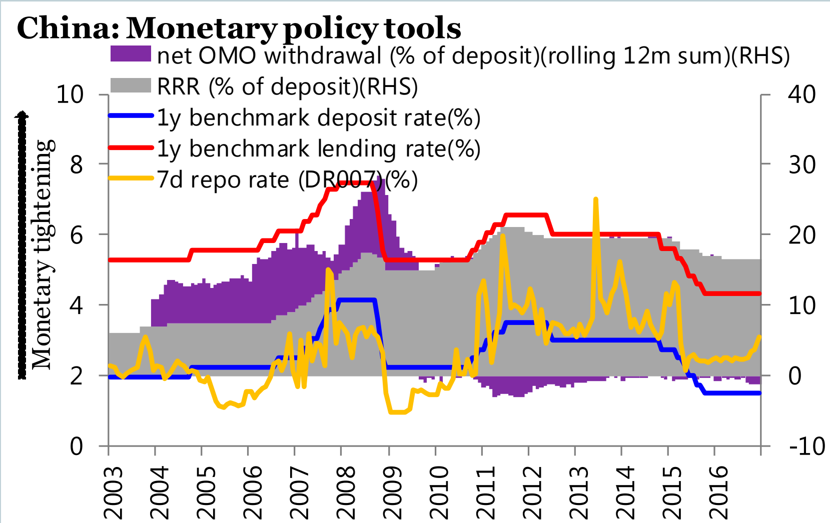
The Evolution of Chinese Monetary Policy

Multiple instruments; multiple objectives:

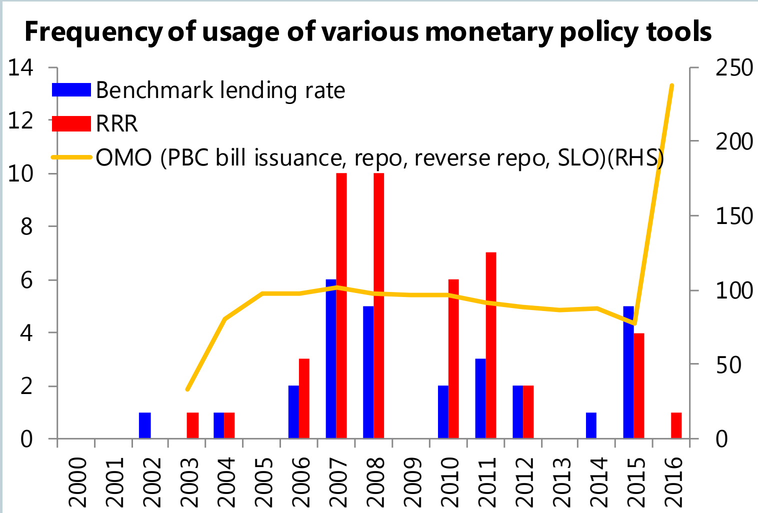
- Quantity-based vs. price-based instruments;

PBoC's reliance on different policy instruments has changed over time:

- Required reserve ratios was the dominant tool until 2011;
- OMOs – primary tool since 2015



Source: PBoC;CEIC.



Source: PBC; CEIC; IMF staff calculations.

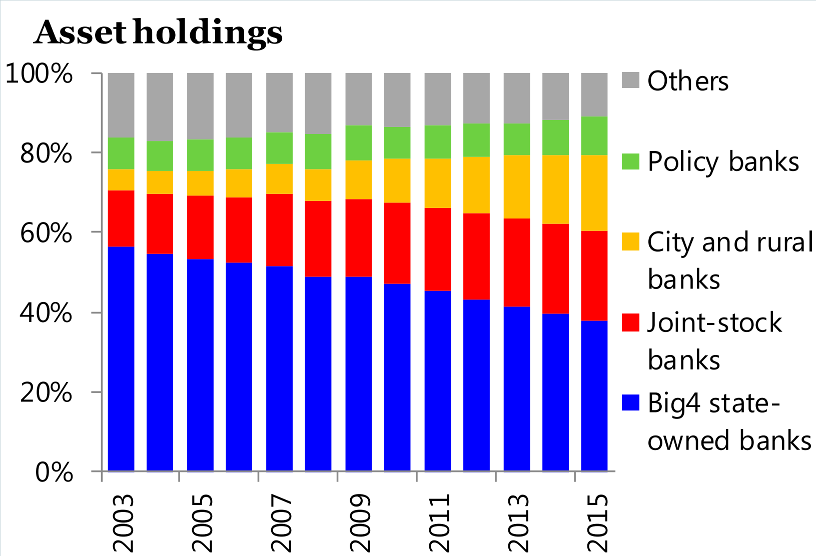
The Evolution of the Banking System – Shifts in Assets and Funding

Heterogeneous ownership types and growth pattern:

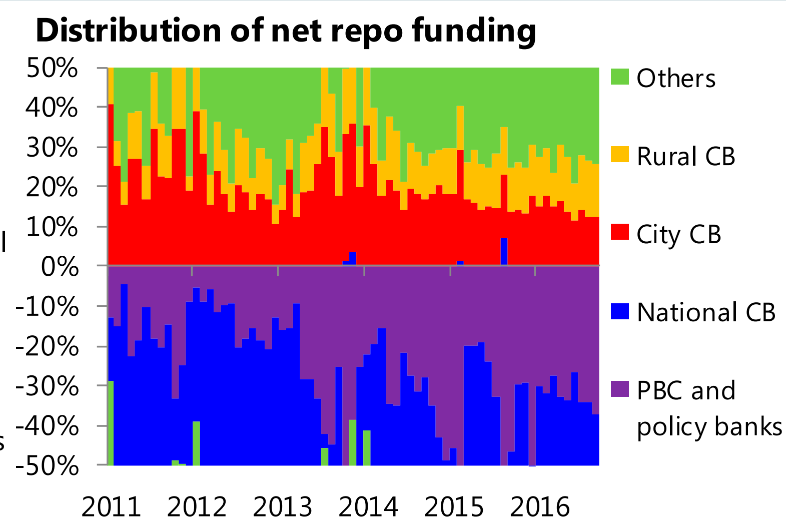
- Big-4; joint-stock banks, city and rural commercial banks, policy banks and foreign banks
- Banking sector asset growth has come primarily from smaller banks

Reliance on interbank funding not uniform:

- Large banks are net lenders; smaller banks net borrowers



Source: CEIC, WIND, annual reports; staff estimates.

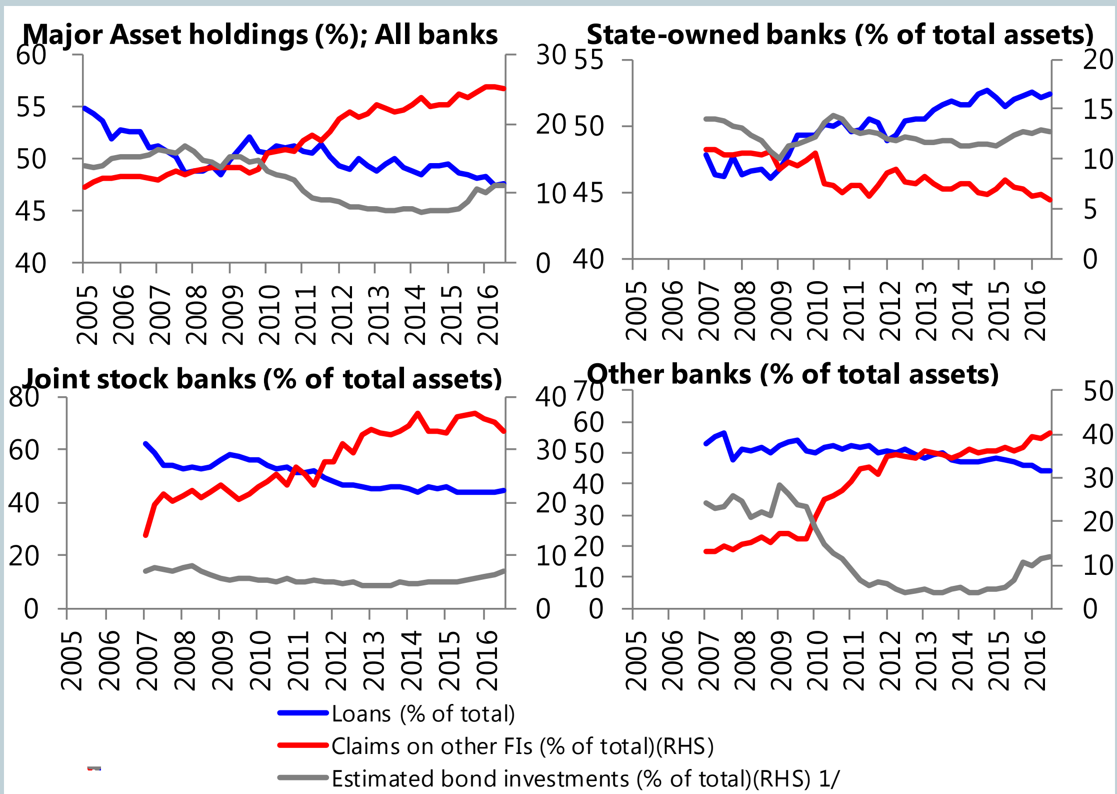


1/ The difference between Rebuy balance and Resell balance.
Source: CCDC; CEIC.

The Evolution of the Banking System – Shifts in Asset Holdings, Part 2

System asset growth from interbank lending and bond holdings:

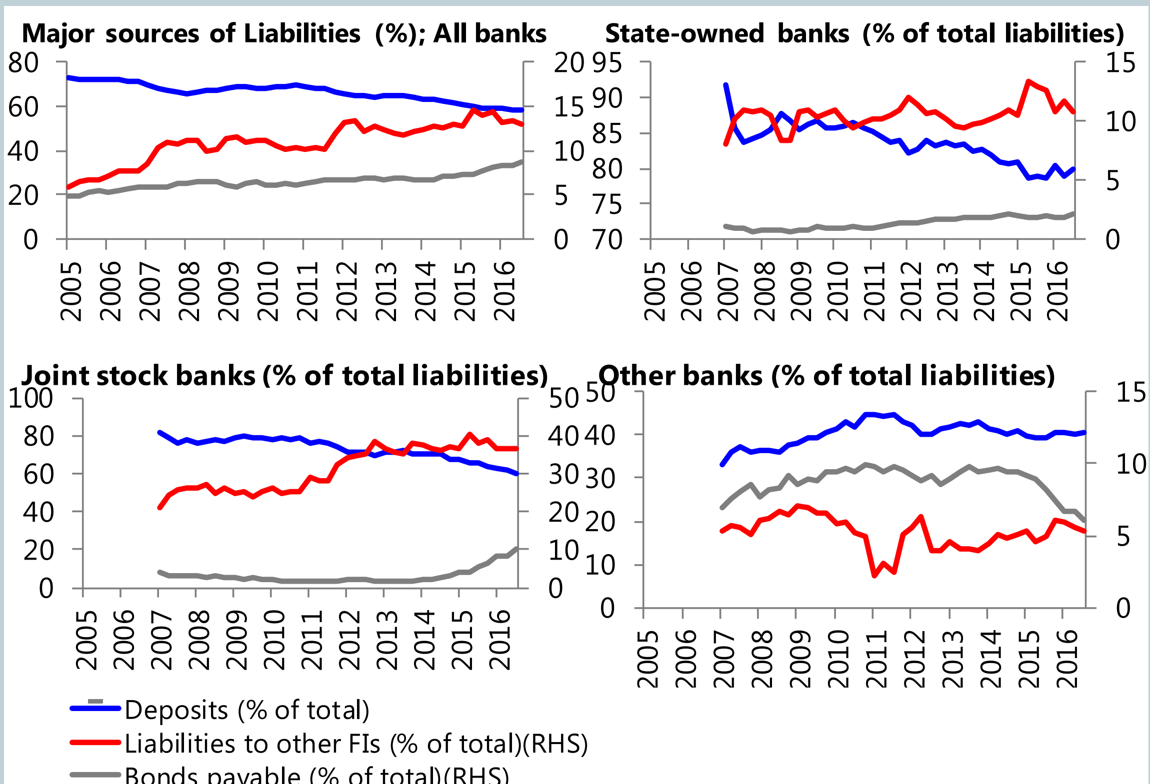
- Loans remain dominant asset for large banks;
- Smaller banks extend into interbank lending and bond holdings



The Evolution of the Banking System – Shifts in Liability Structure, Part 2

Liability shifted away from deposit to interbank funding:

- Deposits remain a dominant source of funding, but significance falling;
- Joint-stock banks saw particularly large increases in reliance on interbank funding



Empirics - Setup

Dependent Variable:

- Average real loan growth rate on an annual basis

Model Setup:

$$\bar{y}_{i,T} = \beta_0 + \beta_1 \Delta d_{i,T-1} + \beta_2 \Delta GDP_{T-1} + \sum \beta_m X_{i,m} + \varepsilon_i$$

Control Variables (d_i; $X_{i,m}$) **:**

- Changes in policy instruments – price-based and instrument-based:
  - 7-day repo rate
  - Benchmark lending rate
  - Required reserve ratios
  - Net OMO injections as a share of M2
- Bank balance sheet characteristics:
  - Asset size and composition: total asset, non-loans as a share of total assets;
  - Liquidity buffer: CAR, liquidity ratio;
  - Profitability: net interest margins

Empirics – Results (1)

Main Findings on Bank Types:

- SOEs more sensitive to rates and RRR increases, while JSBs more sensitive to liquidity injections
- Full Sample:
  - Increases in RRRs and lending are negatively correlated
  - ... but a tightening in price-based instruments is positively correlated with lending
  - ... and more net OMO injections as a share of M2 reduces lending
- Post-2010:
  - Relationships generally stayed the same, though size of impact smaller
  - ... while the relationship between repo and lending for SOEs and JSBs switched to negative (this makes more sense)

Estimated Coefficients

Increases ==>	Repo Rate		Benchmark Lending Rate		RRR		Net OMO	
	Full Sample	*Post-2010*	*Full Sample*	*Post-2010*	*Full Sample*	*Post-2010*	*Full Sample*	*Post-2010*
Bank Type								
SOE	3.13	-	2.67	+	-1.69	-0.54	-0.64	-0.23
JSB	2.75	-	2.36	+	-1.52	-0.87	-4.55	-2.71
City/Rural Commercials	2.97	+	2.49	+	-1.13	-0.63	0.17	-0.20

Empirics – Results (2)

<u>Main Findings on Bank Balance Sheet Characteristics:</u>

- Full Sample:
  - Composition of asset holdings
    - More non-loan holdings and bigger asset size, more likely to lower loan supply with repo or benchmark rate increases and less vulnerable to a tightening in RRR;
  - Liquidity buffer and NIMs
    - Higher liquidity is able to withstand the impact of tightening in price-based instruments;
    - Higher NIM is able to withstand increases in RRR
- Post-2010:
  - Impact on lending generally diminished, suggesting smaller role for lending

	Estimated Coefficients							
Increases ==>	Repo Rate		Benchmark		RRR		Net OMO	
	Full Sample	*Post-2010*	*Full Sample*	*Post-2010*	*Full Sample*	*Post-2010*	*Full Sample*	*Post-2010*
Balance Sheet Charcteristics								
Non-loan shares	-0.09	+	-0.08	+	0.09	-	-	-
Asset size	-	-	-0.03	-	0.08	-	-	-
CAR	+	-	+	-	+	-	-0.9	-
Liquidity ratio	0.06	+	0.06	-	+	0.05	+	0.18
NIM	-	-	+	-	1.6	+	-	-

Empirics – Results (3)

Main Findings – Policy, Bank Type and Balance Sheet Interactions:

- Full Sample:
  - Bank type matters:
    - Small banks – particularly city/rural commercial banks – are more sensitive to changes in policy instruments
  - Balance sheet considerations matter:
    - Asset composition, size and NIM affect city/rural commercial banks' lending more than others
      - A greater share of non-loan assets, higher asset size and higher NIMs tend to reduce lending with rate increases
    - The greater the share of non-loan assets, the more likely it is to reduce lending with a tightening in rates
    - CAR affects banks differently – while higher CAR reduces lending for JSBs with rate increases, it boosts lending for city/rural commercial banks
- Post-2010:
  - Bank lending channel via loan growth less significant

Empirics – Results (3)

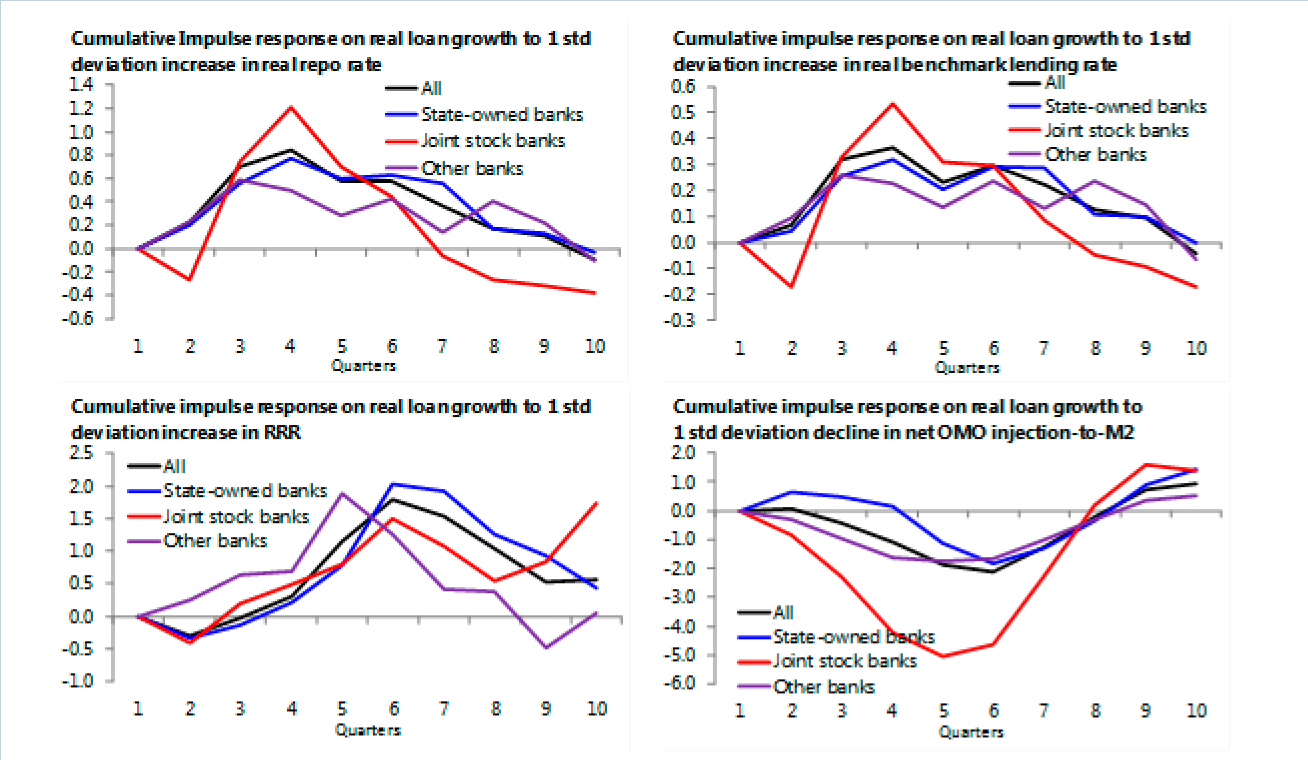
Main Findings – Policy, Bank Type and Balance Sheet Interactions:

		Estimated Coefficients							
	Increases ==>	Repo Rate		Benchmark		RRR		Net OMO	
		Full Sample	*Post-2010*	*Full Sample*	*Post-2010*	*Full Sample*	*Post-2010*	*Full Sample*	*Post-2010*
Bank Type									
SOE	Non-loan shares	+	+	+	+	+	+	+	+
	Asset size	+	-	+	-	-	-	+	+
	CAR	+	+	+	+	+	+	+	+
	Liquidity ratio	+	+	+	+	-	-	+	+
	NIM	-	+	-	-	+	-	-	-
JSB	Non-loan shares	-	-	-	-	0.27	+	-0.22	+
	Asset size	+	-	+	-	+	+	-	-
	CAR	-0.33	-	-0.39	-	+	-	+	-
	Liquidity ratio	+	-	+	-	0.18	0.16	-0.67	0.27
	NIM	-	+	+	+	1.88	-	-0.86	+
City/Rural Commercials	Non-loan shares	-0.28	+	-0.22	+	0.88	-	0.39	+
	Asset size	-5.78	+	-4.73	+	9.46	-	0.56	+
	CAR	0.29	+	0.28	+	-	+	-	+
	Liquidity ratio	+	-	+	+	0.22	-	+	-
	NIM	-6.81	-	-5.93	+	10.23	-	-0.02	-

Empirics – Robustness Checks

Impulse responses using local projections:

- Results qualitatively similar



Summary

- Multiple instruments still necessary
  - RRRs an effective tool in managing bank lending
  - … while impact of price-based instruments less uniform across banks
- Balance sheet characteristics matter
  - The rise of non-loan assets in general reduces the significance of loan lending channel
  - The greater role of NIM in lending decisions suggests increasing importance for profit considerations
- Smaller banks more sensitive to policy changes
  - Perhaps policy changes less blunt than it appears; opportunity to address banking sector vulnerabilities

THANK YOU