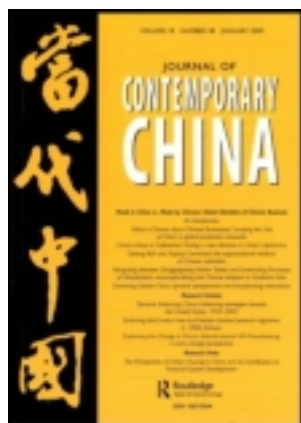


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Changing Money Market and Monetary Policy Operations in China: an institutional perspective

MAN-KWONG LEUNG and QIANJIN LU*

This paper uses an institutional perspective to examine the changing monetary policy operations in China since the 1978 reform. It shows that the establishment of money markets has enabled the central bank to shift its policy approach of direct control over credits to a set of indirect monetary tools. Under the constraint of exchange rate stability and other institutional factors, the effectiveness of these indirect tools is limited. Establishing an interbank money market policy rate through SHIBOR will provide a means of signaling the cost of funds to banks and the public. Its success in China is conditional on improved corporate governance and the competitive structure of banks, increased flexibility in its exchange rate determination, and a more cost-conscious state sector.

Before the 1978 reform, the operation of monetary policy in China was passively confined to the provision of cash and credit in support of the national production plan. Currency issues and the allocation of funds were under the strict control of the state. It followed that the role of banks in intermediating funds was residual and financial markets were non-existent.¹ In September 1983, the State Council decreed that the People's Bank of China (PBOC) would function as the country's central bank. The subsequent establishment of a fractional bank reserve system provided the PBOC with an operational basis for implementing its market-based monetary policy. In 1988, the PBOC replaced the direct control over credits with a set of indirect monetary tools, following and reinforcing the development of interbank financial markets. There has been much literature on the transmission mechanism and effectiveness of monetary policy in China² but the institutional constraints

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1. For a more detailed description of the money and banking system in China before the 1978 reform, see Yi Gang, *Money, Banking and Financial Markets in China* (Boulder, CO: Westview Press, 1994).

2. See Y. Wang and M. Ma, 'Reforming the transmission mechanism of monetary policy in China', *China & World Economy* 9(6), (2001), pp. 34–43; Bernard J. Laurens and Rodolfo Maino, 'China: strengthening monetary policy implementation', *IMF Working Papers No. 07/14* (New York: International Monetary Fund, 2007); and M. Geiger, 'Instruments of monetary policy in China and their effectiveness: 1994–2006', *UNCTAD Discussion Papers 187* (United Nations Conference on Trade and Development, 2008).

and relationships among its various monetary policy tools have received little attention.

Against this background, this paper is aimed at providing an institutional framework for analyzing the changing, mutually reinforcing, money markets and monetary policy operations, and assessing the constraints to, and implications of, achieving a money market policy rate in China. The paper is organized as follows. Section I outlines the rise of various money market instruments. In Section II, the shift from direct control over credits to a set of market-based monetary policy tools will be illustrated, using a bank balance sheet approach. The operations of various monetary policy tools and their limitations are analyzed in Section III. The importance of establishing interbank money market policy rate and its monetary policy implications in China will be investigated in Section IV. Section V concludes the paper.

I. Rise of money markets³

The economic reform started in 1978 has led to the rapid growth of the Chinese economy over the past three decades. To sustain this growth momentum, the Chinese government has taken a gradualist and cautious approach to reforming its inefficient banking and financial markets. In September 1983, the People's Bank of China (PBOC) was designated to be the country's central bank, to which banks were required to surrender a specified proportion of their deposits as reserves. This fractional reserve system has provided the necessary foundation for the rise of interbank money markets.

Interbank credit lending

In October 1984, the PBOC issued the *Rules for the Management of Credit Funds*, which allowed banks to lend credit funds based on their deposits. The rule hence encouraged lending from banks with excess reserves to others in the same region or across the regions. These interbank activities for (unsecured) credit lending were initially largely unregulated.⁴ It was not until September 1986 that the first organized physical interbank market was established in Shanghai.

In March 1990, the PBOC issued the *Provisional Rules on Administration of Interbank Lending Business*, in an attempt to control the interbank markets scattered across the country by setting a limit of one organized market per city. In the early 1990s, further restrictions were imposed as the speculative bubbles in real estate and stock markets were attributed to the unregulated flow of funds from the money

3. With its focus on individual money market instruments, this section seeks to extend and update the earlier works on the money markets in China. See H. Chang, B. Chen and Y. Li, 'Money market in China', in B. Chen, J. K. Dietrich and Y. Feng, eds, *Financial Market Reform in China: Progress, Problems, and Prospect* (Boulder, CO: Westview Press, 2000), pp. 171–194; D. Xie, 'Analysis of the development of China's money market', *China & World Economy* 10(1), (2002), pp. 29–37; M. Imam, 'The China inter-bank markets: cornerstone of financial liberalization', *China & World Economy* 12(3), (2004), pp. 17–33.

4. Banks met on an *ad hoc* basis at meetings that were usually called by the local branch of the PBOC, which was kept well informed about the funding position of banks. The interest rates and the maturity of lending were negotiated among participants freely. See *Zhongguo Jinrong* [*China Finance*] no. 3, (1987), p. 33.

markets. In 1993, it was stipulated that credit funds borrowed in interbank markets could not be used for the purchase of bonds and stocks, real estate and equity investments in enterprises. In July 1995, the PBOC set upper limits for interest rates on interbank transactions.

In January 1996, the government unified the interbank markets across the country by establishing the nationwide National Interbank Funding Center (NIFC) in Shanghai, which would provide PBOC-approved members with the services of price quotation, trading, clearing and settlement.⁵ In June 1996, the government abolished the upper limits on interest rates after the markets had been consolidated. The China Interbank Offered Rates (CHIBOR), which measured the unsecured lending rates from overnight to four months in the interbank market, came into existence. In January 2007, CHIBOR was officially replaced by the Shanghai Interbank Offered Rates (SHIBOR), which covers rates from overnight to one year.

Interbank bond repurchase

A money market bond repurchase (repo) is an acquisition of funds through the sale of securities, with a simultaneous agreement by the seller to repurchase them at a higher price at a later date, usually within one year. A pledged bond repo is therefore equivalent to a secured short-term loan that the buyer of the securities lends to the seller, with the underlying securities as collateral. In China, the bond repo market first began in Shanghai when the Shanghai Stock Exchange was established in 1991. The repurchase was first confined to national bonds and the maturity ranged from overnight to one year.⁶

In order to facilitate the control over the bond repo market, the government required that from June 1997, trading in bond repo (money market) and the outright trading in bonds (capital market) among banks had to be conducted at the NIFC.⁷ Since then, more than 90% of the bond repo transactions have taken place in the interbank market. In May 2004, a buy–sell bond repo was introduced, which allowed the borrower of funds to transfer the ownership title of a bond to the lender before it is repurchased. As the secondary trading in the bond market was not active, the buy–sell bond repo has proved to be rather unpopular with banks, accounting for less than 2% of the total bond repo amount during 2005–2008.

In Table 1, credit lending and bond repo in the nationwide interbank market are compared. With stricter control over entry, the number of approved participants for credit lending was much less than that for bond repo. In addition to almost all members of the financial sector, participants at the bond repo market have also included the central bank and non-financial large corporations. Bond repo is essentially a collateralized loan such that its corresponding interest rate (risk) is lower than that of credit lending for the same borrower. The great majority of transactions have been

5. The National Interbank Funding Centre (NIFC) was established, based on the market infrastructure of the China Foreign Exchange Trade System founded in 1994. With a back-up centre in Beijing, the NIFC operates the National Unified Interbank Loan Trading Network System and is electronically connected to 18 sub-centers in developed cities across China.

6. The underlying securities now include national bonds, financial bonds and PBOC bills.

7. Through the stock exchanges, securities companies at the time could borrow from banks on bond repo and their lending was linked to the asset price inflations in the stock market.

Table 1. Comparisons between the interbank credit lending and bond repo (31 December 2008)

	Credit lending	Bond repo ^a
Number of members	1,596	8,849 ^b
Interest rates: ^c		
1-day (o/n)	0.9565% p.a.	1.0054% p.a.
7-day	1.1500% p.a.	1.1187% p.a.
Mostly transacted term-to-maturity (% total) ^d	≦ 7-day (96%)	≦ 7-day (88%)
Restrictions on members:		
Amount of borrowing and lending	8% of the deposits for Chinese banks; 200% of the capital for foreign banks	Based on the value of the underlying securities
Restrictions over borrowed funds	Cannot invest in fixed asset loans	No
Turnover value for 2008 (Rmb billion)	15,000	59,900

Notes: ^aIncludes pledged and buy–sell repo.

^bInterbank bond clearing members in July 2009.

^cWeighted average rates.

^dFigures in December 2007.

Source: The Law of the PRC on Commercial Banks, *Measures for the Administration of Interbank Borrowing*, issued by the PBOC (2007), available at: <http://www.chinamoney.com.cn> and <http://www.chinabond.com.cn>.

concentrated in seven-days or less in both credit lending and repo. Hence, with a much higher turnover value, the seven-day repo rate was the only benchmark wholesale rate for floating rate bonds and interest rate swaps until the launch of SHIBOR in January 2007. With the various restrictions on credit lending in place, its annual transaction value was just one quarter of repo in 2008. Figure 1 shows that the increase in transactions was slower for credit lending than bond repo during the period 2005–2008, indicating that bond repo has still been a more preferred means of securing short-term funds, possibly prompted by the growth of the domestic bond markets.

A close look at the structure of interbank transactions reveals that the five state-owned commercial banks (Agricultural Bank of China, Bank of Communications, Bank of China, China Construction Bank, Industrial and Commercial Bank of China) have been the net providers of funds in the bond repo market to all other banks and non-bank financial institutions. Over the period 2005–2008, the total annual amounts lent out by these five banks were Rmb Yuan 8.80 trillion, 12.48 trillion, 13.26 trillion and 13.67 trillion, indicating their cautious approach in short-term borrowing. Apart from the state-owned banks, all other commercial banks have been lenders of funds in the credit lending market, supplying Rmb Yuan 0.41 trillion, 0.52 trillion, 2.86 trillion and 3.58 trillion during the corresponding period. This would suggest that the relatively smaller non state-owned commercial banks have been willing to take more risks for higher returns in the credit lending market.⁸

Built on the nationwide interbank market infrastructure, four other money market instruments (discounted bills, treasury bills, PBOC bills and corporate bills) with a maturity of one year or less have grown and become available for trading among

8. See the PBOC Monetary Policy Implementation Report 4th Quarter 2008.

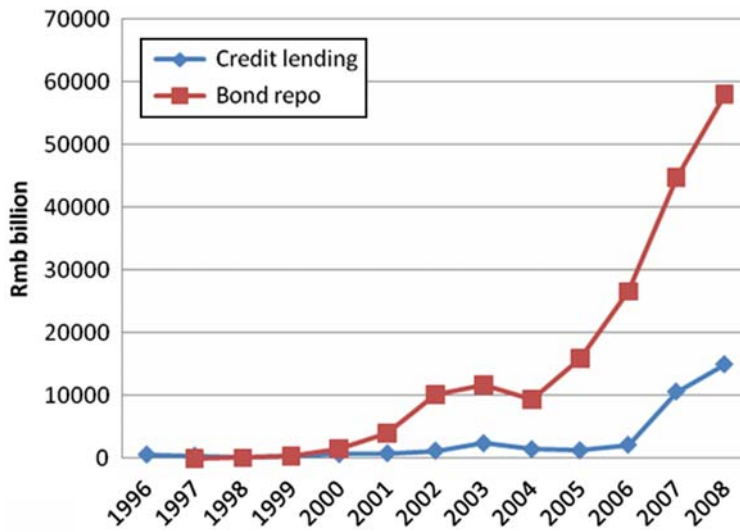


Figure 1. Turnover value of interbank credit lending and bond repo (1996–2008).

Sources: Same as Table 1. 2008 data were from the PBOC Monetary Policy Implementation Report 4th Quarter 2008.

banks, the PBOC, the Ministry of Finance and other financial institutions. Together with these instruments, the interbank markets have laid the foundation for the management of the monetary base through open market operations by the PBOC.⁹

Commercial bills

A commercial bill (CB) is a draft from a buyer who promises to pay a seller upon delivery of goods at a future date. The rise of CBs has been prompted by the strong growth in local trade since the 1978 reform. Commercial banks in China started discounting CBs in Shanghai in 1982. This business has provided a major source of short-term finance for small and medium-sized firms which have often found it difficult to get credit facilities from banks. Given the strong demand for commercial bills, an electronic trading platform affiliated to the NIFC was established in June 2003. Meanwhile, competition for discounting transactions among banks has intensified because of the safe, self-liquidating nature of commercial bills. In 2007, the gross issue value of CBs exceeded Rmb Yuan 5,867 billion. The total amount of CBs outstanding was Rmb Yuan 2,436 billion, with discounting at Rmb Yuan 1,218 billion.

Treasury bills

Treasury bills with a maturity of three and six months were first issued by the Ministry of Finance (MOF) in 1994. In order not to add a drain on bank liquidity during the Asian financial crisis, the issues were suspended between 1997 and 1999. New issues were resumed in the interbank market in December 2000. From 1982 to

9. Hassanali Mehran and Bernard Laurens, 'Interest rate: an approach to liberalization', *Finance & Development*, (June 1997), pp. 33–35.

2005, MOF debt issues were based on an ‘annual quota’ system, which, by issuing all long-term debts, MOF used to maximize the use of funds on a long-term basis. Since 2006, national debt issues have been based on ‘outstanding balance’. This change has led to more issues of short-term debt which would not affect the outstanding balance at the end of the year. As a result, the issue of treasury bills with a maturity of one year or less saw a marked increase from Rmb Yuan 140 billion in 2005 to 212 billion in 2006.

PBOC bills

The enactment of the Budget Law in 1994 has effectively placed a limit on the holding of treasury bonds and bills by the PBOC.¹⁰ In September 2002, the PBOC ran out of bonds to make repo transactions with commercial banks. The central bank then converted the outstanding bond repo between June 2002 and September 2002 into a new instrument, namely PBOC bills.¹¹ The first auction of PBOC bills started in May 2003 in the interbank market. Since then, PBOC bills have grown rapidly from 105 issues with gross value of Rmb Yuan 1.7 trillion in 2004 to 122 issues valued at Rmb Yuan 4.3 trillion in 2008. These bills have been deployed as an important tool to absorb or sterilize the excess liquidity in the interbank market in the central bank’s open market operations.

Corporate bills

Corporate bills are the unsecured short-term promissory notes issued by large companies, based on their credit rating. From 2005 the PBOC has actively promoted this trade in the interbank market as a means to further liberalize the lending rates for enterprises. Unlike corporate bonds, a bank guarantee and the approval from the National Development and Reform are not required for the issue of corporate bills. They therefore allow large companies to have a much cheaper rate of funds from the interbank market. Issues of these bills saw a marked increase from Rmb Yuan 142 billion in 2006 to 335 billion in 2007.

Table 2 shows that the yields of corporate bills are higher than those of PBOC bills and treasury bills. This is because corporate bills are unsecured and carry a default risk. With a much larger issue, PBOC bills carry a lower price or higher yield than treasury bills. At the same time, corporate bills provide a much cheaper source of funds for enterprises than direct borrowing from banks. Before these money market instruments were available, commercial banks had to place their excess reserves with the central bank and earned a low rate of return. Banks can now invest in an array of instruments depending on their own risk preferences and liquidity needs. Furthermore, the development of these money market instruments has provided the

10. The Law specifies that the central government could not finance its budget deficits through direct borrowing from the PBOC.

11. See Stephen Green, ‘Making monetary policy work in China: a report from the money market front line’, *Working Paper No. 245* (Stanford, CA: Stanford Center for International Development, Stanford University, July 2005).

Table 2. Yields of PBOC bills, treasury bills and corporate bills (31 December 2008)

	PBOC bills (% p.a.)	Treasury bills (% p.a.)	Corporate bills (% p.a.)
Term-to-maturity:			
1-day (o/n)	0.6793	0.6082	1.0280
1 week	0.7720	NA	1.102
1 month	0.8276	NA	1.2197
3 months	1.0478	0.9503	1.5727
6 months ^a	1.0854	0.9700	1.6573 [4.86]
1 year	1.1251	1.1102	1.7584 [5.31]
Gross issue for 2008 (Rmb billion)	3,328	174.9	433.2
Turnover for 2008 (Rmb billion)	9,691.4	NA	178.9

Notes: ^aThe discounting rate on commercial bills = 1.8% + margin; [] show the benchmark loan rates charged by commercial banks.

Source: Chinabond website, available at: www.chinabond.com.cn.

PBOC with additional tools to influence short-term interest rates and the amount of liquidity in the banking sector.

II. Shift from direct control to financial market-based policy tools

Before 1998, implementation of monetary policy by the PBOC was through the credit plan, which was an aggregate of industry and local financing needs compiled from the bottom up. There was an inherent expansionary bias in the system as most borrowers would overstate their needs for finance. Tables 3 and 4, which present simplified balance sheets for a commercial bank and the central bank, respectively, between the 1978 reform and January 1998, serve to illustrate their financial interactions and the PBOC's direct control over money supply through bank credits.

From Table 3, by definition, total assets = total liabilities, such that

$$LP + R = CD + LB \quad (1)$$

Equation (1) highlights that in the absence of money markets, customer deposits (CD) and loans from the PBOC (LB) were the sources of funds for banks, which financed their lending to the public (LP), and deposits with the central bank as reserves (R).

In similar fashion, from Table 4,

$$LG + NFA + LB = C + R + GD \quad (2)$$

Table 3. Balance sheet of a commercial bank

Assets	Liabilities
Lending to the public (LP)	Customers deposit (CD)
Total reserves in central bank (R)	Loans by central bank (LB)

Table 4. Balance sheet of the central bank

Assets	Liabilities
Lending to the government (<i>LG</i>)	Currency issue (<i>C</i>)
Net foreign assets (<i>NFA</i>)	Commercial bank reserves (<i>R</i>)
Lending to banks (<i>LB</i>)	Government deposits (<i>GD</i>)

Equation (2) shows that bank reserves (*R*), together with currency issues (*C*) and government deposits (*GD*) are the liabilities of the central bank, against which assets of lending to the government and commercial banks (*LG* and *LB*), and net foreign assets (*NFA*) are created.

Combining equations (1) and (2), equation (3) is arrived at:

$$LP + LG + NFA = CD + C + GD \quad (3)$$

Given that the money supply (*M*) in China is defined as the aggregate of customer deposits with commercial banks (*CD*) and currency issue (*C*), such that $M = CD + C$, Equation (3) can be re-written as:

$$M = LP + (LG - GD) + NFA \quad (4)$$

With the government using the central bank as a cashier to disburse its funds such that $LG = GD$, and *NFA* accumulating very slowly at the earlier stage of the reform, the central bank could effectively control the money supply (*M*), by setting a quota for *LP*, based on the growth forecast of the economy. However, the state-administered credit plan proved to be increasingly deficient, since unanticipated and more rapid changes resulting from the open-door policy and fast economic growth due to the reforms could not be taken into account.

With the increase in more diversified ownership and competitiveness of the domestic banking market; and more specifically the start of money market transactions at the NIFC in 1996, the conditions were ripe for the PBOC to abolish the mandatory credit quota system for banks in January 1998. Since then, China's monetary policy operations have formally switched from direct control over bank credits to the use of indirect market-related policy tools to cope with the macroeconomic changes in the Chinese economy.

Following the development of the financial markets, commercial banks can diversify their assets in treasury bills and bonds, financial bonds and PBOC bills (SH_1), and lending to enterprises through commercial bills discounting (DL_1).

From the enhanced commercial bank balance sheet in Table 5,

$$LP + R + SH_1 + DL_1 = CD + LB \quad (5)$$

Similarly, from the enhanced central bank balance sheet of Table 6, and with $LG = GD$

$$NFA + LB + SH_2 + RDL = C + R + PB \quad (6)$$

Table 5. Balance sheet of a commercial bank (financial markets)

Assets	Liabilities
Lending to the public (<i>LP</i>)	Customers deposit (<i>CD</i>)
Total reserves in central bank (<i>R</i>)	Loans by central bank (<i>LB</i>)
Securities holding (<i>SH</i> ₁)	
Discounted lending (<i>DL</i> ₁)	

Table 6. Balance sheet of the central bank (financial markets)

Assets	Liabilities
Lending to the government (<i>LG</i>)	Currency issue (<i>C</i>)
Net foreign assets (<i>NFA</i>)	Bank reserves (<i>R</i>)
Lending to banks (<i>LB</i>)	Government deposits (<i>GD</i>)
Security holdings (<i>SH</i> ₂)	PBOC bills (<i>PB</i>)
Re-discount lending (<i>RDL</i>)	

Equation (6) shows that currency issues (*C*); bank reserves (*R*); and PBOC bills (*PB*) constitute the part of monetary liabilities of the central bank, which are defined as the monetary base (*MB*), such that $MB = C + R + PB$. An increase in *MB*, for example through *R* will lead to a multiple increase in money supply (*M*), through the lending (*LP*) and deposit operations (*CD*) of banks shown in Table 5, other things being equal.

Equation (6) can then be rewritten as

$$NFA + LB + SH_2 + RDL = MB = C + (RR + ER) + PB \quad (7)$$

where bank reserves can be further decomposed into the required reserve (*RR*) and the excess reserve (*ER*), i.e. $R = RR + ER$.

The central bank can influence the monetary base through its assets and/or liabilities. On the assets side, assuming net foreign assets (*NFA*) are exogenous, the central bank can effect changes in lending to commercial banks (*LB*) and securities holding (*SH*₂) with banks through open market operations (*OMO*) and re-discounting with banks (*RDL*). On the liabilities side, assuming currency issue (*C*) is exogenous, the central bank can change required reserves (*RR*) and excess reserves (*ER*) by altering the reserve ratio and/or through changes in issues of PBOC bills (*PB*). equation (7) then provides a basis for understanding monetary policy operations in China through its operating target, the monetary base (*MB*) with various policy tools.

III. Operations and limitations of the monetary policy tools

Given the legal obligations placed on the PBOC in 1995, the objective of China's monetary policy is to maintain the stability of the value of the currency and thereby to promote economic growth.¹² Stability of the value of the currency however has two dimensions: internal domestic price stability and external exchange rate stability. Given China's bank-dominated financial system, the transmission channel of

12. See Article 3 of Chapter I of the Law.

monetary policy is essentially through bank credit.¹³ The multiplicity of monetary policy objectives and the monopolistic structure of the banking sector have nevertheless interacted to undermine the effectiveness of monetary policy.

After the currency (Rmb) was made fully convertible on current accounts in 1996, China operated a pegged currency system with the exchange rate fixed at around Rmb 8.27 to the US dollar. The PBOC would then just focus on controlling domestic inflation.¹⁴ Since the country's admission to the World Trade Organization in December 2001, China's financial sector has undergone more rapid structural changes. In July 2005, Rmb was revalued to 8.11 to the US dollar and the currency exchange value was set with reference to a basket of currencies under a managed float system or a crawling peg system whereby the exchange rate could change at a controlled pace. Since then the PBOC has had to strike a balance between domestic price and exchange rate stability. Moreover, the PBOC is not independent and the government may be more concerned with the growth of the economy for the generation of incomes and employment under a stable exchange rate.¹⁵ Faced with these multiple objectives, the PBOC's monetary policy operations to stabilize the exchange rate against a rising Rmb over the past few years have resulted in rapid growth in bank liquidity and diminished effectiveness of the monetary policy tools.

The last decade has witnessed changes in the corporate structure of the Chinese banking sector. The four once fully state-owned banks (Industrial and Commercial Bank of China, China Construction Bank, Bank of China and Agricultural Bank of China) have now become government majority-owned joint-stock banks.¹⁶ Together with the Bank of Communications, the Chinese banking sector has been dominated by these big five state-owned banks, which in December 2008 had a 49.3% share of total customer deposits and a 57.8% share of total loans.¹⁷ With an average loan deposit ratio of 57% against the prescribed ratio of 75%, these banks hold excess reserves and have considerable room for loan expansion. On the one hand, these banks will be able to absorb rises in interest rates with reduced profit margins over their lending. On the other, within the government hierarchy, the state-owned banks may still be tempted to make loans to large state-owned enterprises because of the latter's size, political and market power in their industries. Against this institutional background, we shall examine the operations and limitations of the six monetary policy tools that the PBOC has utilized:

- a. required reserve ratio;
- b. central bank re-lending;

13. There are five major channels of transmission of monetary policy: financial assets, the short-term interest rate, the exchange rate, bank credit, and expectations. Given the absence of a money market policy rate, the quantitative-based bank credit channel is the most important one in China, though the expectations channel is gaining some importance. See M. S. Mohanty and Philip Turner, 'Monetary policy transmission in emerging market economies: what is new?', *BIS Paper No. 35* (Bank for International Settlements, January 2008), pp. 1–60.

14. Under a fixed exchange rate and free capital mobility, an increase in the interest rate will induce capital inflows fully offsetting the interest rate rise and undermining the effectiveness of a restrictive monetary policy. In China, a rise in the interest rate to combat inflation has been made possible by foreign exchange control.

15. See Geiger, 'Instruments of monetary policy in China and their effectiveness'.

16. In January 2009, the Agricultural Bank of China was the last one of the big four banks to become a joint-stock bank.

17. These figures are based on the 2008 annual reports of the five banks, and the central bank.

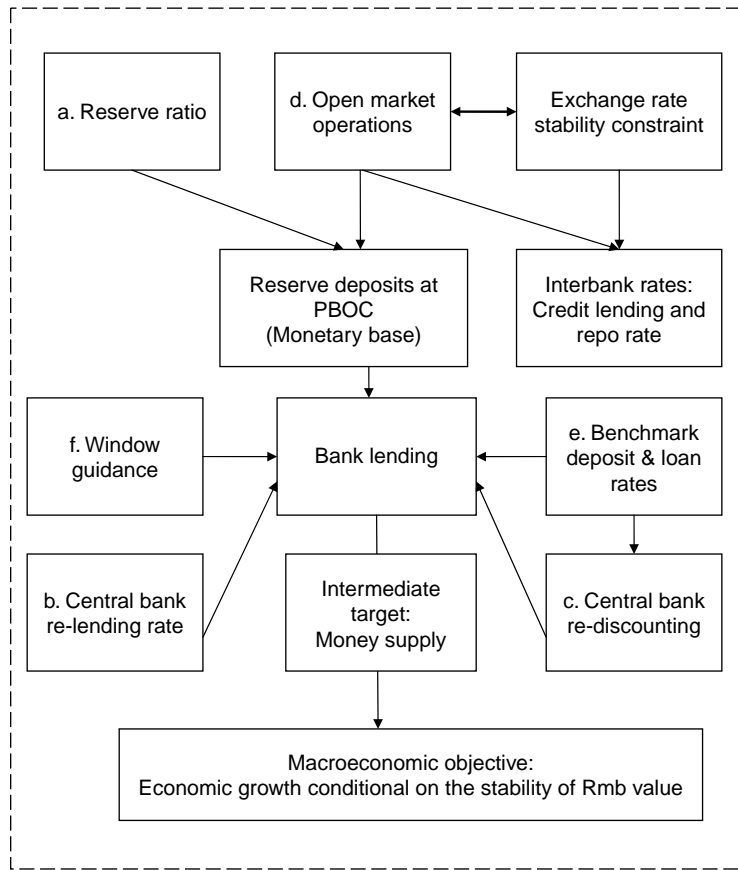


Figure 2. Bank-based transmission mechanism of monetary policy in China.

- c. central bank re-discounting;
- d. open market operations;
- e. benchmark deposit and loan rates; and
- f. window guidance.

Figure 2 shows how the above six monetary policy tools will affect the monetary base and bank lending directly in an attempt to achieve macroeconomic objectives. The operation and limitations of each of these policy tools are examined below.

a. Required reserve ratio

Table 7 shows the changes in the required reserve ratio between 1998 and 2008.¹⁸ In 1998, the PBOC reduced the reserve ratio from 13% to 8% and consolidated the accounts of legal reserves with reserves against payment. Since then, reserves have

18. In 1984, differential reserve ratios (%) were imposed on enterprise deposits (20%), agricultural deposits (25%), savings deposits (40%), and payments (5–7%). The ratios were unified to 10% in 1985. The ratio stood at 13% between 1988 and 1998. There was also a ratio against bank payments (5–7%) until 1998.

Table 7. Required reserve ratio (1998–2008)

Year	1998–2000	2001–2002	2003	2004–2005	2006	2007	2008
Reserve ratio	8%	6%	7%	7.5%	9% [3]	14.5% [10]	14.5% [9]

Note: [] show the number of changes during the year.

Sources: *International Finance News Daily*, (25 March 1998); and PBOC website, available at: www.pbc.gov.cn.

been used for payment, clearing and settlement by banks. To reduce their financial costs, the PBOC pays interest on both required and excess reserves. In December 2008, the interest rates on required reserves and excess reserves were 1.62% and 0.72%, respectively.¹⁹

To contain inflation, the PBOC in 2007 increased the reserve ratio on ten occasions taking it from 9% to 14.5%. The reserve ratio was further increased five times to a peak of 17.5% in June 2008. After that, the ratio came down four times finishing at 14.5% at the close of 2008, by which time the Chinese economy was also hit by the global financial crisis.

The reserve ratio is a powerful monetary tool. It is, however, inflexible and changing it can bring about a huge monetary expansion or contraction of liquidity across the banking sector. Nonetheless, a rise in the reserve ratio will not tighten banks' funding capability when they have excess reserves. On the contrary, a drop in the reserve ratio will encourage bank lending only if the banks' opportunity cost of holding excess reserves is high and they are comfortable about the risk prospects of the new lending, as holding of more government securities is a much safer alternative (SH_1) shown in Table 5. The frequent use of the reserve ratio as a key monetary policy tool has indicated that China lacks an effective interest rate-based policy tool.

b. Central bank re-lending

PBOC re-lending to banks once served as a primary means of providing short-term funds to the banks. The development of interbank markets has reduced banks' reliance on this and also allowed them to access funds at a lower interest cost.²⁰ As a result, the share of re-lending to banks in the total assets of the PBOC dropped from 43.49% in 1999 to just 4% in 2008. Central bank re-lending has now become a major source of funds, usually at subsidized interest rates for other financial institutions such as asset management companies and rural credit co-operatives as they try to solve their problem of non-performing loans. It follows that re-lending has no longer been perceived to be an active monetary policy tool by the PBOC.

19. Bank reserves impose costs on commercial banks as they generally do not generate any interest income from central banks. With developed money markets, a reserve requirement therefore does not exist in the United Kingdom, Hong Kong, or Australia. In the US, the reserve ratio (10%) is only imposed on demand deposits.

20. From 2004, the PBOC could impose a premium on its re-lending to financial institutions, depending on their creditworthiness and the support of collateral.

c. Central bank re-discounting

In 1986, the PBOC provided re-discounting services to banks which had engaged in bills discounting in order to help with their liquidity needs. The PBOC fixed the benchmark re-discounting rate. Since March 1988, commercial banks have been allowed to charge their customers at a discounting rate equal to the re-discounting rate plus a margin. The profit margin of commercial banks is related to the risks and the degree of competition in the market. A rise in the benchmark re-discounting rate will lead to a reduction in demand for bills discounting from firms. Moreover, the rise in re-discounting could be partially absorbed by a drop in the banks' profit margin, diminishing the intended policy effect of the rate change. Furthermore, re-discounting with the PBOC appears unattractive where there exist excess reserves within the banking sector as the costs of interbank borrowing will be low. As such, in 2007, the total amount of bills discounting and re-discounting with the PBOC was Rmb Yuan 1,218 billion and 5.7 billion, respectively, against the legally permitted amount of re-discounting of 609 billion.²¹

d. Open market operations

Open market operations (OMO) refer to the purchase and sale of domestic securities or foreign currency between a central bank and financial institutions. OMO therefore have both a domestic (DOMO) and foreign (FOMO) component. The PBOC began the FOMO in March 1994 and formal DOMO started in May 1998, when the central bank engaged in outright transactions in bonds.²²

When the PBOC makes a definite purchase of foreign currency or securities or conducts a bond repo with a bank, the central bank will pay by increasing the reserves of the bank.²³ With DOMO, the PBOC not only influences the volume of bank reserves but also sends a signal of the desired level of interest rates to banks. Restricted by the limited holding of national bonds, the PBOC found it difficult to carry out open-market operations with outright sale of national bonds.²⁴ From 2003, the PBOC therefore started issuing its own PBOC bills and undertaking repurchases regularly to control China's monetary base.

The money and foreign exchange markets are inter-linked. Given the decomposition of open market operations discussed earlier, changes in these components may be depicted as $\Delta OMO = \Delta DOMO + \Delta FOMO$, where $\Delta DOMO$ denotes the change in money market operations, and $\Delta FOMO$ is the change in foreign exchange open market operations. When exchange rate stability is the primary policy objective in a managed float system, $\Delta FOMO$ operations become passive such that the central bank has to purchase the excess foreign currency with Rmb from the

21. According to the *Temporary Measure for Commercial Bills Acceptance, Discounting and Re-discounting* issued by the PBOC in 1997, the ratio of the commercial bills, discounting and re-discounting outstanding are 4:2:1. The re-discounting amount could have reached Rmb 609 billion in 2007.

22. DOMO first started in 1993 and were suspended in 1997 (see Laurens and Maino, 'China').

23. A definitive sale of bonds will reduce the level of bank reserves permanently. The reduction effect of a bond repo on bank reserves will be reversed when the bonds are bought back by the central bank.

24. The conduct of OMO also depends on the holding of bonds by commercial banks. Bonds only accounted for 5% of the total assets held by banks in 1997. With the interbank bank market, the ratio increased to over 20% in 2008 (figures compiled based on the data from the websites of Chinabond and China Banking Regulatory Commission).

continuing balance of payments surpluses. Meanwhile, if the PBOC intends to maintain a stable monetary base and money supply, $\Delta DOMO$ and $\Delta FOMO$ must be equal in volume and opposite in direction.²⁵ At this juncture, the PBOC issues its own bills or uses bond repo to sterilize or absorb excess bank reserves. However, the issue of PBOC bills may impose a net cost on the central bank as the interest received on the foreign exchange may be less than that paid on its own bills. Furthermore, the foreign exchange might depreciate against the Rmb. As a result, the PBOC needs to rely on the reserve ratio as another key tool to reduce excess reserves.

e. Benchmark loan and deposit rates

Along with the interest rates on required and excess reserves, re-discounting, and re-lending, the PBOC has, since 1991, also fixed the benchmark floor rates for loans and ceiling rates for deposits in a bid to forestall vicious competition among banks. Furthermore, control over the loans and deposits rate is deemed to have the most direct and effective impact on the lending behavior of banks. In 2004, the PBOC removed the upper limit of the floating range for loan rates for commercial bank operations in cities. Figure 3 shows the interest rates on the benchmark one-year loan, one-year deposit, re-lending and re-discounting rates during the period 1998 and 2008. Due to the control on the benchmark loan and deposit rates, commercial banks in the Mainland have a higher net interest margin (defined as the net interest incomes divided by the total earning assets) than banks in a more competitive banking market such as Hong Kong. In 2008, whereas the big Chinese banks reported an average net interest margin (NIM) of over 3%, the commercial banks in Hong Kong reaped an NIM of 1.84%.²⁶ The higher NIM in China has been attributed to its less competitive banking structure, large proportion of bank deposits in low interest bearing reserve and the restrictions on banks from providing insurance and securities services as sources of non-interest incomes. Higher NIM for Chinese commercial banks is to ensure the profitability of Chinese banks, and hence the stability of the Chinese banking sector. With increased competitiveness of the banking market, improved interbank markets and widening scope of businesses, the NIM for banks is expected to be reduced in future.

The spread between re-lending and re-discounting reflects the risks perceived by the PBOC of lending to banking and other financial institutions. At present, PBOC re-lending rates vary from 2.79% (20 days) to 3.33% (one year) which are much higher than the corresponding interbank credit lending rates of 1.60% and 2.26%. As discussed before, PBOC re-lending facilities are now mainly offered to non-bank financial institutions which do not have access to the cheaper source of funds in the interbank markets. Re-discounting at the rate of 1.80% now provides the cheapest source of funds from the PBOC to commercial banks. Re-discounting however is subject to quota and large banks can borrow from the interbank markets using bond repo and credit lending at lower rates between 1.6% and 1.7% respectively for

25. Boke Jiang and Qianjin Lu, *Operations on Money Market under Open Economy* (Fudan University Press, 1999) (in Chinese).

26. From the 2008 annual reports of the Industrial and Commercial Bank of China, Bank of China, China Construction Bank, Bank of Communications and China Merchant Bank, and the Hong Kong Monetary Authority.

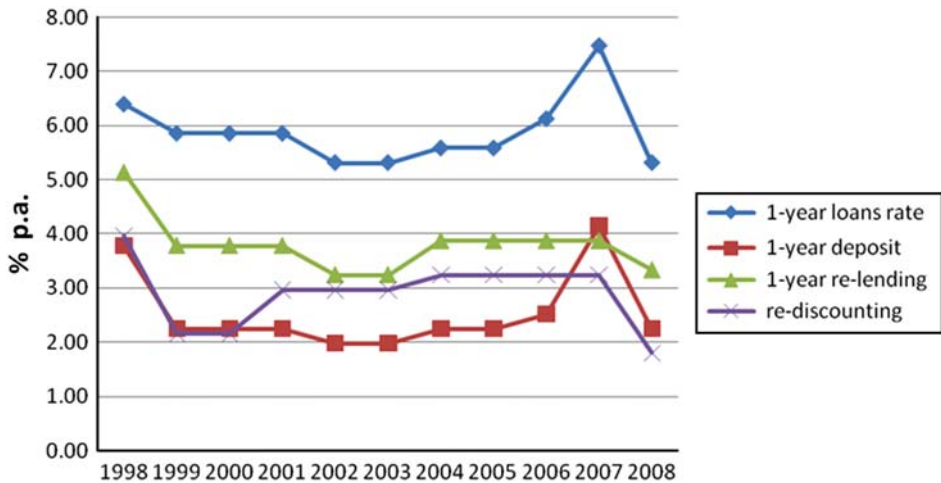


Figure 3. Benchmark money market interest rates at the year end (1998–2008).

Source: PBOC.

a month. In developed financial sectors, the re-discounting rate is usually fixed at a premium (for example, 0.25% in the USA) plus the interbank policy rate. This link however does not exist in China as the benchmark interbank policy rate has not yet been established.

As such, the benchmark deposit and loan rates have become the *de facto* policy rates. The changes (usually at 0.27% each time) have acted as signals of the central bank's policy stance on prevailing monetary conditions. These changes have also been accompanied by fewer but larger changes in the interest rate on reserves, the re-lending rate and the re-discounting rate.²⁷ These interest-rate tools have not been very effective in influencing demand as changes in benchmark rates may involve a bargaining process among various ministries.²⁸ Furthermore, investment and consumption are not interest-elastic in China. Investment demand of large state-owned enterprises may not be responsive to cost and these firms have other objectives such as market share and employment. Despite the growth in auto-financing and mortgage financing, they have yet to grow to have a more significant impact on the consumption sector that will be sensitive to changes in interest rate.

f. Window guidance

As a result of the abolition of the credit quota system in 1998, the government established a 'window guidance' system whereby the PBOC holds meetings with banks, advising them on the direction of credit growth in specific regions and industries. Between 2006

27. Whereas there were ten changes in the benchmark loan and deposit rates between 2007 and 2008, there was only one change in the interest rate on reserve, and three changes in the re-discounting rate and the re-lending rate.

28. Members of the PBOC's monetary policy committee also include deputy ministers from the Ministry of Finance, the National Development and Reform Commission, the Chairman of the Chinese Bankers Association, and the State Administration of Foreign Exchange. The adoption of a monetary policy tool and the extent of its use will involve a negotiation process among different parties representing their own interests.

and 2008, the main themes of these meetings were the encouragement of credit supply to small and medium-sized enterprises, industries relating to agriculture, farmers and rural areas, and the restriction or cessation of credits to over-invested industries or those which have used too much energy or caused pollution.²⁹

China shifted from a 'tight' monetary policy to a 'moderately easy' monetary policy in order to boost the economy amid the global financial crisis in 2008.³⁰ Prompted by the PBOC's window guidance, Chinese banks made loans totaling Rmb Yuan 7.4 trillion in the first six months of 2009, far exceeding the country's initial full year target of Yuan 5 trillion.³¹ Like the moral suasion of monetary policy in developed economies, the advice is not legally binding, but it can be turned into an administrative-based directive if it is a decision directly from the State Council. Furthermore, the governor of the PBOC has a more senior political and governmental position than the governors of the state-owned banks and so the commercial banks are likely to comply with the PBOC's window guidance.³² Hence, the administrative directives underlying window guidance have appeared to be a powerful last resort to constraining or expanding bank credits at a macro and sectoral level. This is to make up for the relative ineffectiveness of the market-based tools. The shift from the reliance on administrative measures to an effective implementation of market-based monetary policy will depend on whether the interbank money market in China can be further developed.

IV. Establishment of a money market policy rate and its implications

Given China's under-developed banking and financial markets, interest rates had been under strict administrative control until the mid-1990s. Along with reforms in the banking and financial markets, China has since then implemented a gradual liberalization of interest rates.³³ Following the de-regulation of the short-term interbank rates in 1996 and 1997, the long-term interest rates were also liberalized when policy financial bonds and national bond prices were allowed to be determined by markets in 1988 and 1989, respectively. A yield curve for government securities ranging from one month to 30 years is now established.³⁴

However, full interest rate liberalization is not in place as the PBOC is still responsible for fixing the benchmark floor rate for bank loans and cap rates for deposits. There are also control and restrictions over entry to, and the amount and use of funds in, the interbank market for credit lending transactions, resulting in a relatively much lower turnover when compared with active money and foreign

29. See the Monetary Policy Implementation Report 2006–2008.

30. *China Daily*, (3 November 2008).

31. *China Daily*, (10 August 2009).

32. Mr Xiaochuan Zhou, governor of the PBOC, is a member of the central committee of the Chinese Communist Party for the 17th Party National Congress and a government minister. On the other hand, the governors of the big four banks, Jinqing Jiang of ICBC, Shuqing Guo of CCB, Junbo Xiang of ABC, and Gang Xiao of BOC, are alternate members of the central committee and have a vice-ministerial role in government.

33. See J. Ma, 'China's banking sector: from administrative control to a regulatory framework', *Journal of Contemporary China* 5(2), (1996), pp. 155–169.

34. See Chinabond, available at: <http://www.chinabond.com.cn>.

exchange markets such as those in Hong Kong.³⁵ In China, the much higher turnover value of interbank bond repo over credit lending is indicative of the premium of sovereign credit-rating of national bonds over the default risks of financial institutions.

As part of the continuing financial sector reforms, China further prepared for full interest rate liberalization by launching SHIBOR officially in January 2007.³⁶ With the data compilation and calculation undertaken by the NIFC, SHIBOR has been promoted by the central bank as a substitute for the benchmark lending and deposit rates.³⁷ Being determined by the market, SHIBOR will act as an objective benchmark for banks to price their loans and deposits, floating-rate products and interest rate swaps.

China has moved towards establishing a money market policy rate as found in the two largest single economies, the USA and Japan, as well as in other major economies in the Asia–Pacific.³⁸ A change in this policy rate by the PBOC will spread to the SHIBOR, and the bond repo, bank deposit and loan rates, as well as discount rates and yields on financial assets. Banks, firms and households will respond to these changes in interest rate, underpinning the interest rate channel in the transmission of monetary policy. Due to the intricately-bounded relationships among the state-dominated financial institutions and markets in China, the government has adopted a holistic approach to reforming its financial sector. More specifically, to promote SHIBOR as a representative money market rate, China needs to implement reforms in the banking sector, the exchange rate system and the state enterprise sector.

First, the corporate governance of the banking sector should be improved so that their commercial lending can be completely detached from political influence. Their monopolistic structure, reinforced by state ownership, has allowed banks to keep excess reserves. The big banks may even be tempted to manipulate the SHIBOR to a higher level in order to make more profits. Work therefore should be done to promote the growth of other joint-stock banks and city banks with diversified ownership to create a more competitive banking market in China. The transparency and quality of financial information among banks also need to increase such that they can assess the creditworthiness of one another more accurately.

Second, the Rmb should gradually be made convertible on capital account. A more market responsive exchange rate will provide greater flexibility to the domestic open

35. In 2008, the ratio of annual interbank credit lending to GDP in Hong Kong and China was 259% and 50%, respectively. With an active foreign exchange market, about half of the interbank transactions were accounted for by currency swaps in Hong Kong.

36. The calculation of SHIBOR is based on that for LIBOR as compiled by the British Bankers' Association in London. A group of 16 chosen banks will quote their offer rates for interbank credit lending of different maturities. Both the top and bottom two rates are excluded, and the arithmetic average of the remaining rates will be announced to the market in Shanghai at 11.30 am.

37. PBOC binds the future of money markets and even the whole economy in China to the success of SHIBOR. See Yi Gang, 'The development of SHIBOR as a market benchmark', *BIS Central Bankers Speeches* (Bank for International Settlements, January 2008).

38. The USA and Japan have adopted a designated Fed funds rate and an uncollateralized overnight call rate as their target rates, respectively. Both rates measure the cost of interbank credit lending. Both countries can engage in defensive OMO to safeguard a designated target rate, or offensive OMO if a new rate is desired. Also see M. Loretan and P. Wooldridge, 'The development of money markets in Asia', *BIS Quarterly Review* (Bank for International Settlements, September 2008), pp. 39–51.

market operations of the PBOC. Third, strict financial discipline or a rigorous budget-constraint should be imposed on large state-owned enterprises and local governments so that they should become more cost- and risk-conscious in financing their operations.

As with other reforms, the process of interest rate liberalization will be met with resistance from the vested interests of banks and large state-owned enterprises.³⁹ With interest rate control, the large banks have had an edge in non-price competition because of their extensive branch networks and they are also able to achieve a wider loan–deposit interest margin as administered by the PBOC. State-owned enterprises have benefited too from interest control as they have priority access to low-cost funds from banks.

Faced with Mundell's trilemma of pursuit of independent monetary policy, free capital mobility and fixed exchange rates, the Chinese government has gradually allowed more flexibility in the determination of the exchange rate, and liberalized foreign control on its capital accounts. As the world's third largest economy measured in national incomes, China is keen to be able to independently pursue its own interest rate and monetary policy. The success of SHIBOR will help it to achieve a more flexible exchange rate system, full convertibility of the currency, and an independent monetary policy.

V. Conclusion

To sustain the economic development of the country, the State Council under the Chinese government has adopted a gradualist, coordinated and cautious approach to its financial sector reform. Given the importance of banks in providing finance and the monetary policy implementation, the government has been trying to raise the banks' efficiency through improving their effective corporate governance and competitiveness since the 1978 reform. Corporate and financial restructuring of state-owned banks, followed by their listing on Hong Kong and Shanghai stock markets and involvement of foreign financial institutions as their strategic shareholders, have been the right steps to take. The government has also been expanding the country's bond and capital markets in a bid to reduce the role of banks in providing long-term funds to enterprises. To further integrate into the global economy, China is now promoting the internationalizations of its domestic banks by further opening up its banking sectors to foreign banks and foreign customers abroad.

In parallel to the above developments, China's monetary policy has shifted over the past decade from direct control over bank credits to a set of indirect market-based tools. These indirect tools, especially those based on interest rates, are not very effective as they are constrained by the need for exchange stability and by the inadequacies of the banking sector. To move from a bank credit to an interest-rate transmission channel for monetary policy, China needs to establish a credible money market policy rate. A change in this policy rate will induce changes in SHIBOR, the rates on deposits and loans and the yields of other financial instruments,

39. See Hassanali Mehran, Marc Quintyn, Tom Nordman and Bernard Laurens, 'Monetary and exchange system reforms in China: an experiment in gradualism', *IMF Occasional Paper 141* (New York: International Monetary Fund, September 1996).

when money, capital and foreign exchange markets are integrated. A policy rate however will only be realized if banks have improved their corporate governance and competitive structure, and they are able to assess the creditworthiness of one another, within a sound legal, accounting and regulatory framework. A more market-responsive exchange rate will provide greater flexibility in the PBOC's open market operations to achieve a target money market rate, and the effectiveness of the interest-rate monetary policy tools will increase if banks and state-owned enterprises have become more risk- and cost-conscious in their operations.