Bank of Japan Working Paper Series

Money Market Operations in China: Monetary Policy or FX Policy?

Shigeto Nagai †

shigeto.nagai@boj.or.jp

Hong Wang †

wang.hong@boj.or.jp

No.07-E-13
May 2007

Bank of Japan
2-1-1 Nihonbashi Hongoku-cho, Chuo-ku, Tokyo 103-8660

†International Department, Bank of Japan

Money Market Operations in China: Monetary Policy or FX Policy? [*]

Shigeto Nagai [†] Hong Wang [‡]

Bank of Japan
International Department

Abstract

This paper discusses the role of money market operations by the Chinese central bank in a transition period of the monetary policy framework. We argue that in recent years, especially before and after the change in the foreign exchange rate regime in July 2005, money market operations have been focused mainly on China-US interest rate differentials, which significantly influence the RMB exchange rate. On the other hand, the task of demand control for the purpose of price stability continues to rely on direct control measures taken by the central bank and other government agencies with respect to bank lending and investment.

Keywords: Money Market Operations, Exchange Rate Policy, Interest Rate Differentials

---

[*] We express special thanks to Takeo Nakamura, Wataru Takahashi, Yousuke Tsuyuguchi, Kumiko Okazaki, Rikuichi Niikawa, Tomoyuki Fukumoto, Seisaku Kameda, Yoshiaki Azuma, Ryuukou Uehashi, Yuuji Yamashita, Ryouta Kojima, for their insightful comments and suggestions. We are also grateful to numerous other colleagues at the International Department of the BOJ, who provided substantial research assistance. The views expressed in this paper are those of the author(s), and do not necessarily represent those of the Bank of Japan. This paper was written based on data and information available at the end of February 2007.

[†] E-mail: shigeto.nagai@boj.or.jp

[‡] E-mail: wang.hong@boj.or.jp

Contents

Abbreviations

BIS	Bank for International Settlements
BOJ	Bank of Japan
CBP	Central Bank Paper
CBPR	Central Bank Paper Rate
CBRC	China Banking Regulatory Commission
CDB	China Development Bank
CFEC	China's Foreign Exchange Center
CHIBOR	China Inter Bank Offered Rate
FDI	Foreign Direct Investment
FOREX	Foreign Exchange
IEBC	Import and Export Bank of China
IMF	International Monetary Fund
LIBOR	London Inter Bank Offered Rate
MFESS	Mandate Foreign Exchange Settlement System
MOF	Ministry of Finance
NDF	Non Deliverable Forward
NDRC	National Development and Reform Committee
OMO	Open Market Operation
PBOC	People's Bank of China
RCC	Rural Credit Cooperative(s)
RMB	Ren Min Bi (China's currency)
SAFE	State Administration of Foreign Exchange
SHIBOR	Shanghai Inter Bank Offered Rate
UCC	Urban Credit Cooperative(s)
WGM	Window Guidance Meeting(s)

I. Basic Framework of Monetary Policy in China

This chapter describes briefly the historical development of the monetary policy framework in China. China's monetary policy framework is undergoing a process of transition. The old framework involved direct control of commercial banks through regulations on saving and loan rates as well as administrative measures such as "window guidance." The new framework entails indirect control based on interest rates in which money market operations are supposed to be the starting point of the transmission mechanism.

A. Monetary Policy Objective

According to the *Law of the People's Bank of China* enacted in 1995, the monetary policy objective is "to stimulate economic growth" "through maintaining the stabilization of currency and prices." Stabilization of "currency and prices" means the stabilization of both domestic price levels as well as foreign exchange rates. In reality, the main focus of monetary policy was on the former until the exchange rate regime reform in July 2005.

In July 2005, China shifted to a managed float exchange rate regime based on a referential basket of currencies. The authorities announced three principles for further steps in the regime change: self-decision, self-control, and gradualism. Against this background, the stability of foreign exchange rates increased in importance as a policy objective. The regime change, along with the following capital account liberalization measures, made it inevitable that the PBOC would have to deal with the so-called "impossible trinity" problem of international finance.

B. From Direct Control to Indirect Control

Even after the economic reform of 1978, China continued to be a centrally planned economy from a financial perspective. The authorities maintained strict control over bank lending. The authorities needed more indirect macroeconomic control when reforms marking the shift to a "socialist market economy" started in 1992.

At the same time, direct credit control became increasingly difficult against the background of an increase in the number and types of financial institutions, including

informal financial intermediaries, as well as the diversification of financial products. Controllability was also hindered by intervention by local governments, which competed with each other in seeking faster economic growth.

In 1998, the PBOC officially started its efforts to shift from the direct credit control of state-owned commercial banks to an indirect monetary policy framework. Under the new framework, the PBOC is assumed to pursue the ultimate objective of price stability and economic growth by controlling the monetary base as an operational objective and the money supply as an intermediate objective, using a variety of tools.

More specifically, in 1998, the PBOC abolished the mandatory instructed loan targets for commercial banks previously released annually and quarterly[1]. Instead, the PBOC began to release the annual referential loan target or a guidance plan. The referential target has gradually lost its meaning as a target. It has been used more as a reference for commercial banks when they make fund projections and as an important macroeconomic monitoring indicator for the PBOC.

With this change, the PBOC began to conduct indirect control over commercial banks by enhancing their risk management with regard to the ratio of assets and liabilities and credit exposures. For example, banks are currently required to maintain a loan/saving ratio of under 75%, a ratio of liquid assets to liquid liability of over 25%, loans to a single customer/capital ratio of under 10%, and a ratio of long-medium loans and savings of under 120%.

Another way for the PBOC to control commercial banks indirectly is to ensure that they follow various principles for lending announced by the authorities[2]. Banks can basically make their loan decisions independently. At the same time, they also have to take into consideration industrial and regional economic development policy and have to support important national construction projects and the development of specific regions. They are also required to make efforts to provide loans to small and medium enterprises.

---

[1] *The Notice on Improvement of the Management of State-run Commercial Banks Loan Scales*, PBOC, December 24, 1997.

[2] *How to Take the Abandonment of the Loan Limit Control – Q&A with PBOC*, People's Daily, February 11, 1998.

The PBOC implements supplementary policies such as "window guidance" for those commercial banks which have ignored the guidelines or have provided excessive loans. Major "window guidance" measures are summarized in Appendix 1. Since the authorities maintain a certain influence on commercial banks, including strong ties with banks' senior personnel, the "window guidance" is considered to be reasonably effective in influencing banks' lending behavior. However, the influence of the government has been receding in recent years as many commercial banks have accepted foreign investors as strategic partners and have begun to list their stock on domestic and foreign stock exchanges.

The PBOC is not the only institution influencing bank lending. The National Development and Reform Committee (NDRC)[3] and the China Banking Regulatory Commission (CBRC)[4] have also introduced various restrictive measures to control fresh loan and property-related financing projects for over-capacity industries. They also have substantial influence on the development of bank loans.

C. Towards Macroeconomic Control Based on Price Mechanism

While the PBOC makes efforts to shift from direct to indirect control, the monetary policy transmission mechanism continues to rely on measures affecting the "quantity" of loans and money supply, instead of "prices" such as interest rates. As discussed later, this is partially due to the limited room for adjustment in short-term interest rates for the sake of stability in foreign exchange rates. More importantly, interest rates are not ready to play a central role because financial markets are in an early stage of development and interest rate liberalization still has some way to go.

Interest rate liberalization has so far been carried out step-by-step, as summarized in Appendix 2. Liberalization of money market rates and repo rates preceded that of deposit and lending rates because it was considered easier to implement and to have a

[3] The NDRC is a government institution that determines the grand design of the whole of economic and social policies. It participates in the decision making process of fiscal policy, monetary policy and social fixed asset investments.

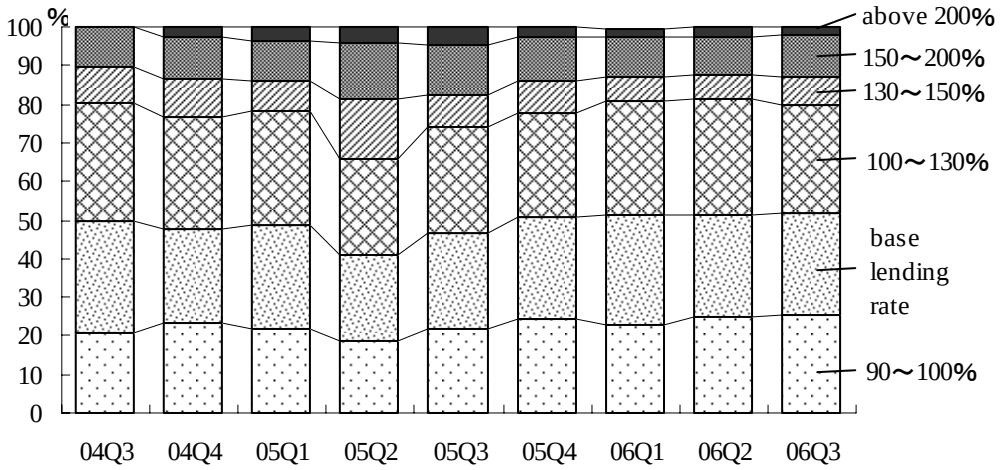
[4] The CBRC is a government institution in charge of surveillance of the banking system. It was separated from the PBOC in 2003. Its major responsibilities include setting bank regulations, providing licenses for the opening of banks and branches, banking system surveillance, uncovering illegal acts, and personnel administration of executives of state-run commercial banks.

relatively small impact on economic entities. The authorities tackled interest rates on loans ahead of deposit rates. Foreign currency-denominated loans and deposits were liberalized ahead of the RMB-denominated ones, and those with long terms went ahead of those with short terms. Liberalization of deposits started from those with a large amount.

Considering that banks hold a dominant share in financial intermediation in China, the slow pace of liberalization of deposit and lending rates is the biggest obstacle to the development of a monetary policy transition mechanism. Commercial banks are currently free to set deposit and lending rates within floating bands determined by the base rates set by the PBOC. Deposit rates have to be set at or below the base rates without a floor. The ceiling for lending rates was abandoned in October 2004 and the floor has been raised to 90% of the base rate. The authorities have encouraged commercial banks to add sufficient lending margins depending on credit risks.

However, when we look at actual lending by all financial institutions, including commercial banks, almost half was conducted at rates below the base rate and little change has been observed with regard to the composition of lending by credit spreads (figure 1).

Figure 1 Actual Lending Rates of Financial Institutions



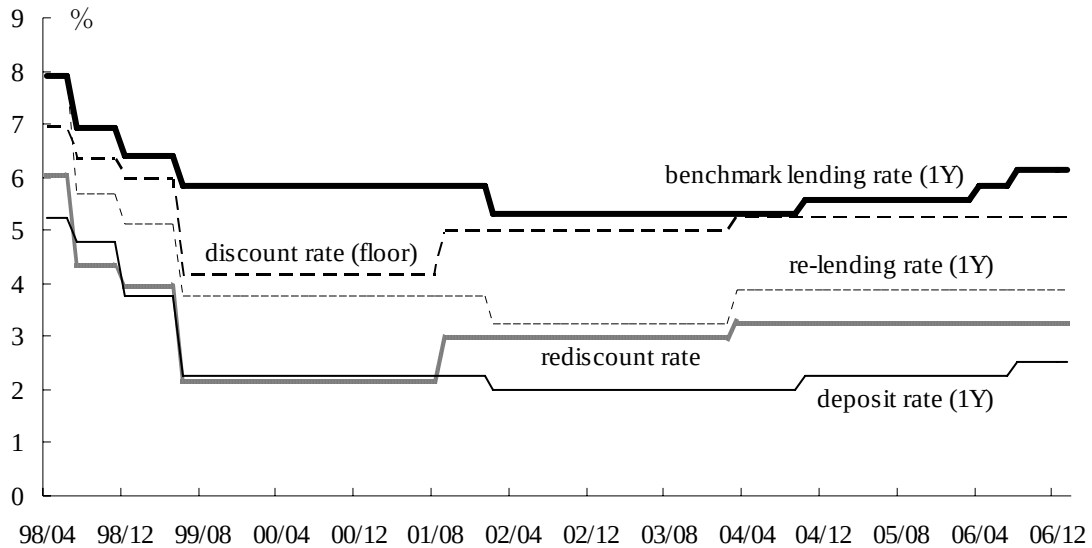
Source: PBOC China Monetary Policy Report various issues.
Note: The percentage represents the ratio of lending rate to base rate.

Why have banks not pursued more spreads in lending rates? First, it might be difficult for banks to raise lending rates against a background of severe competition in the loan market. Second, given the already sufficient spread between deposit and lending rates, banks may not have enough incentive to become engaged in tough negotiations for rate

hikes. Third, political and social factors, instead of price mechanism, might be more important in defining the bank-borrower relationship in China as demonstrated by many anecdotes of local government intervention.

In the meantime, the deposit-lending spread of one-year base rate has been maintained at 360bps (figure 2). When the base lending rate was raised in April 2006, the spread widened as the base deposit rate was kept unchanged. There are several hypotheses to explain such a wide spread. First, the authorities may be concerned about the still-fragile banking system, with some banks holding large amounts of non-performing loans. Second, the authorities may intend to promote consumption and restrain high rates of money growth by maintaining low deposit rates. In China, households have no investment options other than bank deposits.

Figure 2 Regulated Interest Rates



Source: CEIC Latest:2007/1

II. Money Markets and Central Bank Operations

This chapter describes the structure and characteristics of China's money markets as well as various tools used by the central bank for money market operations.

A. Structure and Characteristics of Money Markets[5]

[5] The description of the structure of the interbank market in this section owes much to Kuwada (2006).

Interbank call transaction has been permitted since 1986, and intermediary institutions for money market transactions were set up in cities such as Guangzhou, Wuhan and Shanghai. During 1992-93, the interbank market experienced a very volatile period with rocketing interest rates and a large number of unauthorized transactions. This was caused by widespread speculative transactions investing money funded in the interbank market in real estate and stocks. Various measures were introduced to cope with such a situation, including a ceiling on call rates. The regulation on money market rates was removed only in June 1996 after the national interbank call market was set up by the PBOC in Shanghai in January 1996.

The range of participants in the interbank market was initially limited to domestic financial institutions, but gradually expanded to include branches of foreign banks, credit unions, and securities companies. The number of participants has increased over time, reaching 1,335 in September 2006. Among them, state-run commercial banks are major providers of funds, with a prevailing share of more than 50% in the deposit and lending market, while other commercial banks, financial institutions, securities companies, and fund asset management companies are major borrowers (figure 3).

Figure 3 Lenders and Borrowers in the Interbank Money Market

(100mn RMB)

	2003	2004	2005	2006/1-9
State-run Commercial Banks	▲75,150	▲51,254	▲94,270	▲92,780
Other Commercial Banks	45,361	27,486	35,277	40,122
Other Financial Institutions	17,341	9,892	23,522	14,605
Insurance Companies	605	1,941	9,956	10,010
Securities and Fund Asset Management Companies	11,561	11,156	18,630	18,249
Foreign Financial Institutions	282	779	6,885	9,794

Source: *China Finance*, Vol.3, 21, 2006.

Interbank transactions are mainly composed of interbank lending (call), cash bond and bond repurchase (repo) trading. In terms of volume, call trading has stagnated at a low level, while bond trading has grown fast with substantial expansion in repo trading. Bond trading accounts for more than 90% of total interbank trading, of which repo trading accounts for about 70% (figure 4).

Figure 4 Transaction Amount by Category

(100mn RMB)

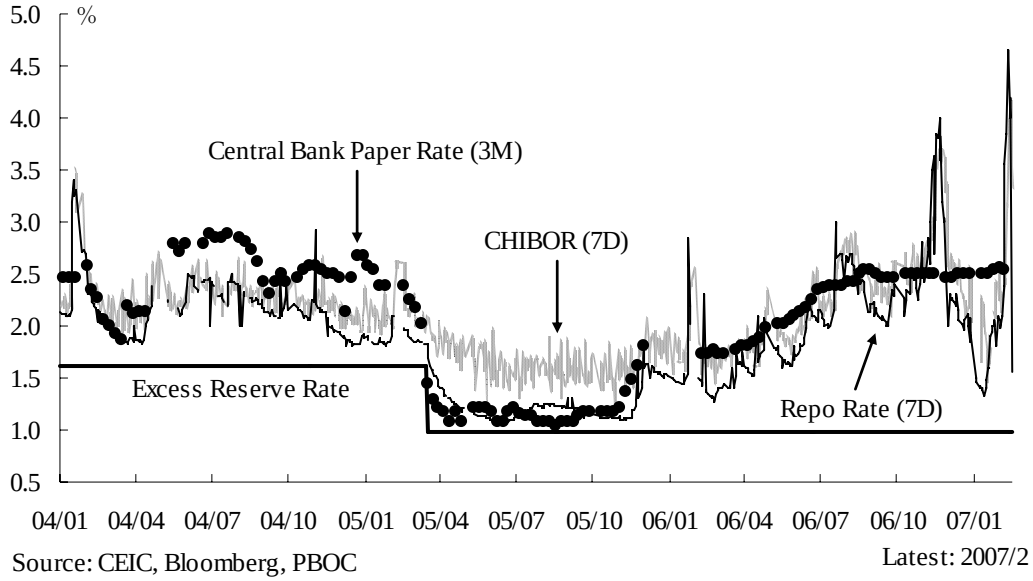
	2003	2004	2005	2006/1-9
Total	172,165	133,964	231,923	274,968
Interbank lending (call)	24,113	14,556	12,783	13,714
Cash Bond	30,849	25,041	60,133	76,815
Repo	117,203	94,368	159,007	184,439

Source: *China Finance*, Vol.3, 21, 2006.

B. Various Short-term Interest Rates

Repo rates, call rates and Central Bank Paper Rates (CBPR) are major reference rates in money markets (figure 5). Among them, the repo rate[6] (7-day) is considered the most influential benchmark rate due to its prevailing volume of transaction. CHIBOR (CHina Inter Bank Offered Rate) is the average rate of the call transactions that take place in the market. Given that the volume of 7-day transaction records 60-70% of total transactions, the CHIBOR 7-day is the most important but is still less often referred to than the 7-day repo rate.

Figure 5 Money Market Rates



Source: CEIC, Bloomberg, PBOC

Latest: 2007/2

In January 2007, another set of reference interest rates called SHIBOR (ShangHai Inter

[6] Repo rates have eleven categories including overnight, 7-day, 14-day, 21-day, 1-month, 2-month, 3-month, 4-month, 6-month, 9-month and 1-year.

Bank Offered Rate) was introduced. It is hoped that SHIBOR will be used in the future as a benchmark short-term market rate for long-term derivative transactions. This is because, compared to CHIBOR, SHIBOR a) is the weighted average rate of offered rates like LIBOR and prices are available every day even without any actual transaction, and b) has a total of sixteen categories from overnight to 1-year, many more than CHIBOR[7].

In recent years, CBPRs (3M & 1Y) have also become important referential rates in money markets, due to the increasing amount of central bank paper issuance. Under the strong influence of the PBOC, CBPRs have been moving in a stable manner compared to repo rates and call rates. Market participants regard CBPRs as reflecting the PBOC's policy intentions more explicitly than other interest rates.

Looking at interest rates for various terms, those for longer terms move in an unstable manner and are not suitable as reference rates. This is because short-term transactions dominate both repo and call trading, and both the frequency and amount of long-term transactions are limited.

C. Open-Market Operations by PBOC

PBOC money market operations are mainly carried out through open market operations (OMO) and adjustments in reserve requirements. The PBOC can also affect market interest rates by changing remuneration rates for required reserves and excess reserves[8].

The basic principles, direction and specific operational target of the OMO are basically decided at the regular meeting held at the PBOC early every month. Members of the meeting include the Governor, Deputy-Governors, Assistant Governors, and Directors of related departments of the PBOC.

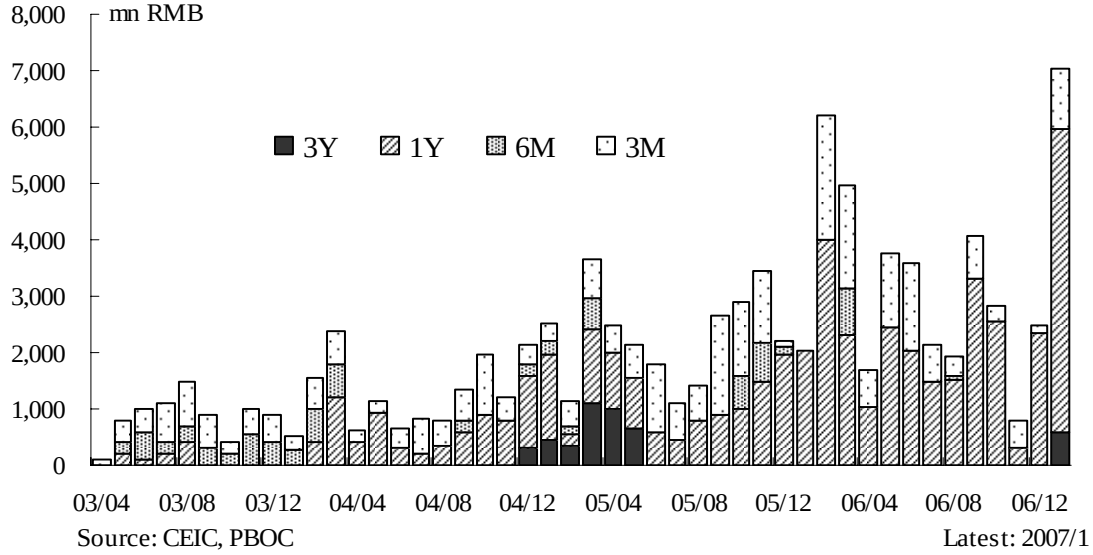
---

[7] CHIBOR has a total of seven categories including overnight, 7-day, 14-day, 1-month, 2-month, 3-month and 4-month. On the other hand, SHIBOR has eight released categories including overnight, 1-week, 2-week, 1-month, 3-month, 6-month, 9-month and 1-year, and eight referential (unreleased) categories including 3-week, 2-month, 4-month, 5-month, 7-month, 8-month, 10-month and 11-month.

[8] Rediscounting and refunding are other tools available to the PBOC. Rediscounting is to provide funds for financial institutions by rediscounting the once discounted bill of exchange before the expiration (within four months). Refunding is also a tool to provide funds to commercial banks which fall into fund shortage. However, the volume of rediscounting and refunding fell sharply after 2005 due to abundant liquidity in the banking system.

The origin of the OMO is the interbank foreign exchange transactions started in 1996. The OMO had for a long time been centered on government bonds and treasury bonds. However, it became difficult to rely on those securities because the variety of government bonds was limited and the outstanding amount of treasury bills was small. In April 2003, the PBOC began to issue central bank papers as a new tool of the OMO. The issuance of central bank papers has increased rapidly, reaching 3,652 billion yuan in 2006, approximately 30% more than the 2,746 billion yuan in 2005.

Figure 6　Issuance of Central Bank Paper



Source: CEIC, PBOC　　Latest: 2007/1

The terms of central bank papers are basically three months, six months and one year. Since April 2006 the issuance has concentrated on 3-month and 1-year (figure 6). 3-year paper was issued during the period from December 2004 to May 2005 and, after one-and-a-half year's break without any explanation, was resumed again in January 2007[9].

Central bank papers have been issued to primary dealers (financial institutions) periodically twice in a week (1Y on Tuesday and 3M on Thursday), and the rates are decided by bid-offer deals, in principle. Occasionally, fixed-rate-issuance has been conducted in order to keep interest rates stable at a certain level (figure 7). After July

[9] No official reasons were given for the issuance, cancellation and resumption of 3-year paper. It is possible that the PBOC may have found it necessary to lock up liquidity in order to avoid the concentration of retirement of central bank paper within a certain period.

2006, when the central bank paper rate (1Y) reached its then peak of 2.7961% for 1-year and 4-month, the PBOC conducted fixed-rate-issuance (1Y) five times. As a result, the issue was under-subscribed three times due to expectations of a further rate hike.

Figure 7 Fixed-Rate-Issuance of Central Bank Paper

Date of Issuance	Projected Amount of Issue (100mn RMB)	Amount of Issue (100mn RMB)	Maturity	Issuance Rate (%)	Subscribers
August 1, 2006	100	80.9	1Y	2.7961	Open market primary dealers
August 8, 2006	200	171.3	1Y	2.7961	
December 19, 2006	400	300.5	1Y	2.7961	
December 26, 2006	600	600	1Y	2.7961	
January 4, 2007	800	800	1Y	2.7961	

Source: PBOC

In 2006, the PBOC also conducted specific subscriber targeted issuance, the so-called "penalty issue," to those commercial banks that had increased their lending rapidly (figures 8 & 9). From May to July 2006, the PBOC conducted penalty issuances three times, targeting several banks including four state-run major commercial banks. The issue rates were all fixed at a penalizing 2.1138%, much lower than any of the previous issue rates of 2.2704%, 2.4800% and 2.6694%.

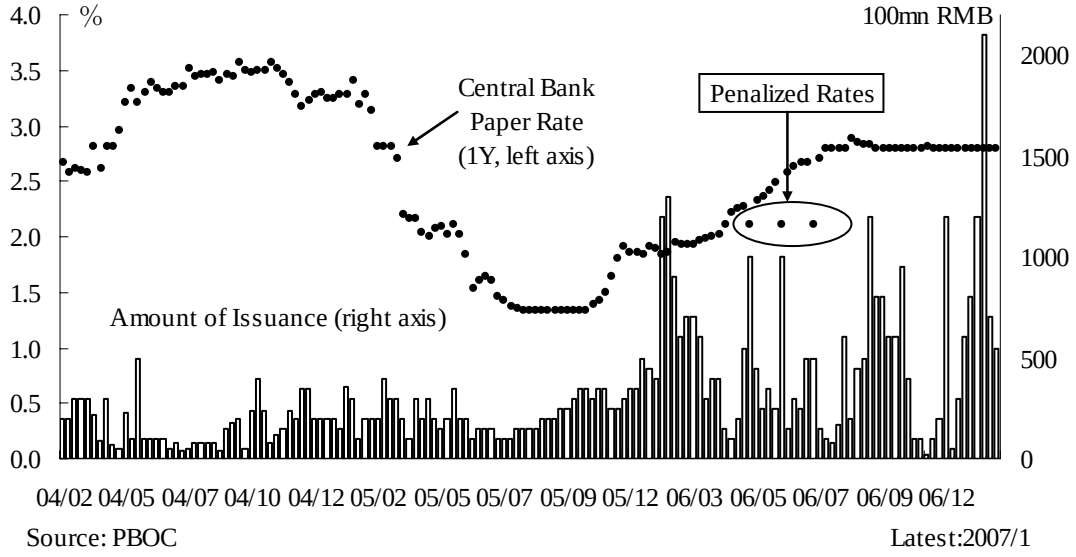
Figure 8 Specific Subscriber Targeted Issuance of CBP

Date of Issuance	Amount (100mn RMB)	Maturity	Issue Rate (%)	Subscribers
May 17, 2006	1,000	1Y	2.1138	Some commercial banks and corporate banks
June 14, 2006	1,000	1Y	2.1138	
July 13, 2006	500	1Y	2.1138	
December 11, 2006	1,200	1Y	2.7961	Some open market primary dealers[10]

Source: PBOC

[10] On December 11, 2006, the PBOC conducted specific subscriber targeted issuance of 120bn yuan. This time, however, the issuance appeared to have no penalizing intent because the range of subscribers was expanded to include major open market primary dealers and the issue rate was set at the same level as the previous rate decided by a bid-offer deal.

Figure 9　Issuance Rates of Central Bank Paper



D. Reserve Requirements

In recent years, to cope with abundant liquidity in money markets, the required reserve ratio plays a more important role in money market operations[11]. Since June 2006, the PBOC has raised the required reserve ratio to lock up the liquidity piled up as excess reserves in order to lessen the downward pressures on money market rates.

[11] The required reserve ratio was set at an exceptionally high level of 13% during the 10 years from September 1988 through March 1998. In 1998 the framework of reserve requirements was amended. First, given the increasing importance of money as an intermediate target of monetary policy, the authorities wanted to strengthen the adjustment mechanism through reserves. Second, the authorities also intended to enhance the competitiveness of commercial banks. More specifically, the system of "different account, different remuneration rates" for required reserves and excess reserves was amended to a system of "same account, same remuneration rates." At the same time, the required reserve ratio dropped from 13% to 8% in 1998, and down further to 6% in November 1999. The remuneration rate for excess reserves was differentiated from that for required reserves at a lower level in December 2003.

Figure 10　Changes in Required Reserve Ratio since 2006[12]

Date of Release	Date of Implementation	The amount of liquidity locked (RMB)	Required Reserve Ratio*
June 16, 2006	July 5	About 150 bn	7.5%→8.0%
July 21, 2006	August 15	About 150 bn	8.0%→8.5%
November 3, 2006	November 15	About 170 bn	8.5%→9.0%
January 5, 2007	January 15	About 170 bn	9.0%→9.5%
February 16, 2007	February 25	About 170 bn	9.5%→10.0%

Source: various press releases.

* Ratios for state-run commercial banks and corporate commercial banks.

In addition, the authorities set the remuneration rate on excess reserves which also works as an effective tool to control money market rates by setting the floor. From figure 5, we can see that the rate acted as a floor rate to support other short-term rates, especially during 2005, when the repo rate and CBPR dropped to a level very close to the floor.

III. PBOC Responses to a Glut of Liquidity

This chapter examines the mechanism by which rising international capital inflows result in abundant liquidity in money markets, and overviews policy responses taken so far by the PBOC.

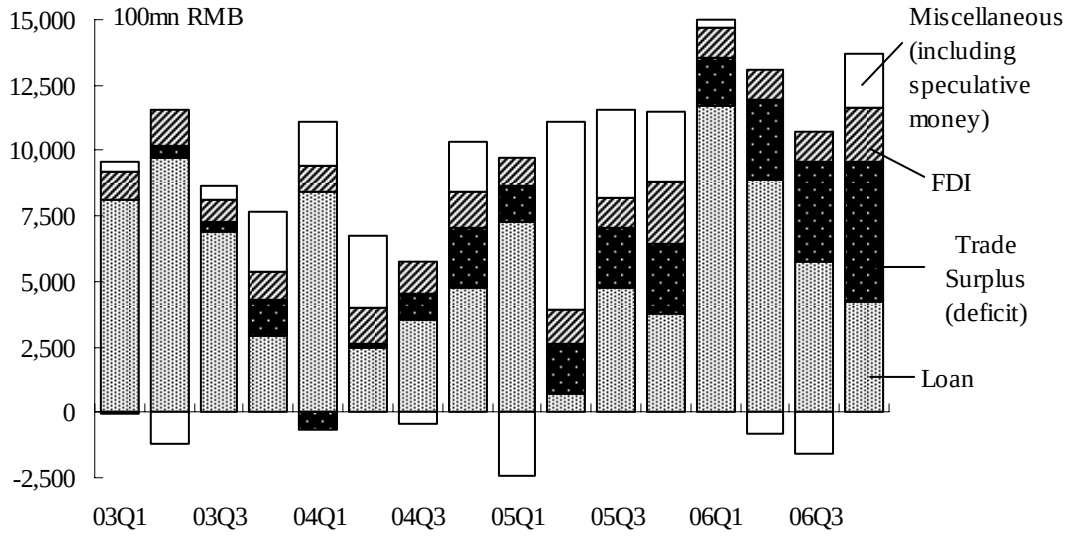
A. Capital Inflows and Rising Liquidity in Money Markets

In recent years, China's money supply and bank loans have increased at an annual growth rate of 15-20 percent - far exceeding the target set by the government. Looking at the corresponding assets of the M2 increase, while bank loans contributed substantially to the increase, financial inflow from overseas through a trade surplus and Foreign Direct Investment (FDI) has also become a major contributor (figure 11). In addition, although difficult to measure statistically, foreign capital inflows, including remittances from overseas relatives and speculative short-term funds through various

[12] In addition, the PBOC raised the required reserve ratio for foreign currency deposits on September 15, 2006. The estimated liquidity lock-up effect was about 12.8 billion RMB.

channels, appear to have contributed to changes in money supply on some occasions[13].

Figure 11 Sources of M2 Increase



Source: CEIC and authors' calculations. latest: 06Q4

A substantial portion of foreign currency inflow from overseas is required to be exchanged for RMB under the *Mandate Foreign Exchange Settlement System*[14]. Under the system, export companies may reserve in their bank account 50-80%[15] of foreign currency income from current account transactions[16]. The remaining foreign currency income has to be sold to banks in exchange for RMB liquidity. The PBOC has to purchase most of the foreign currency amassed by commercial banks in order to

---

[13] In the calculation of corresponding assets of M2 increase, the item *miscellaneous (including speculative money)* was calculated as the residuals after subtracting the amount of increase in loans, trade surplus and FDI, due to the lack of direct data in the balance sheet of the banking system. In theory, this item includes an increase in foreign capital through speculative money influx as well as changes in banks' investment in government bonds.

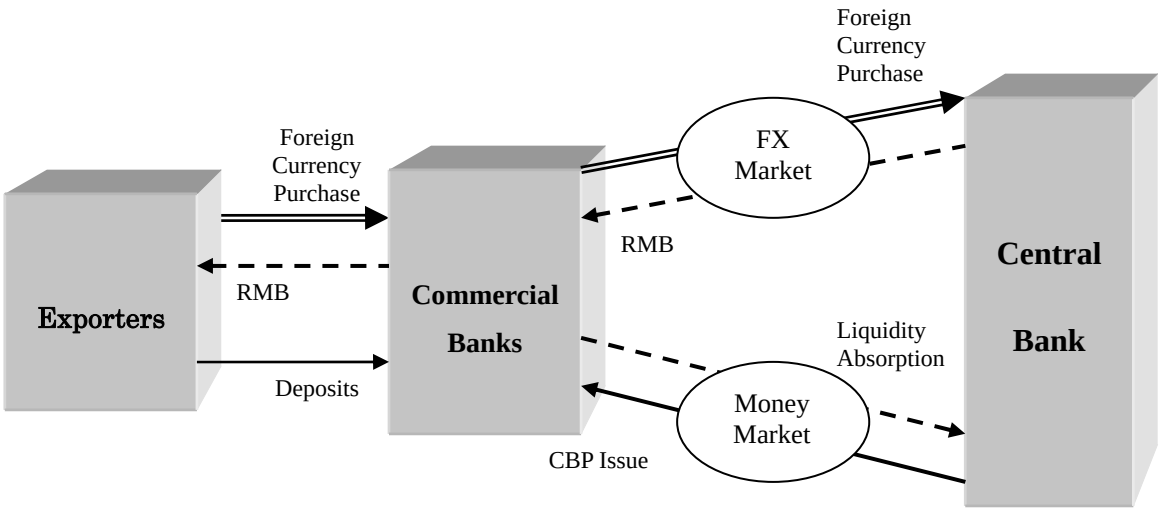
[14] In April 2006, the rules for current-account-based foreign currency settlement accounts were amended. First, preliminary examination for the opening of the account was abolished. Second, the amount of initial reservation for surrender requirement is now calculated based on the total amount of 80% of foreign currency income and 50% of foreign currency expenditure. Previously it was based only on foreign currency income. As a result, even for companies without any foreign currency income, an initial reservation of US$500 thousand is permitted when opening their account.

[15] Export companies were allowed to keep foreign currency reserves of only up to 20% of foreign currency income until March 2004, and 30-50% until August 2005.

[16] When this system was first implemented in 1994, export companies were not allowed to open a foreign currency account at banks. In 2001, the ban was lifted for those companies with an annual foreign currency export income of US$2 million or more and expenditure of US$0.2 million or more.

maintain stability of the foreign exchange rate and, in turn, RMB liquidity is supplied to money markets (figure 12).

Figure 12 Mechanism of Excess Liquidity Formation

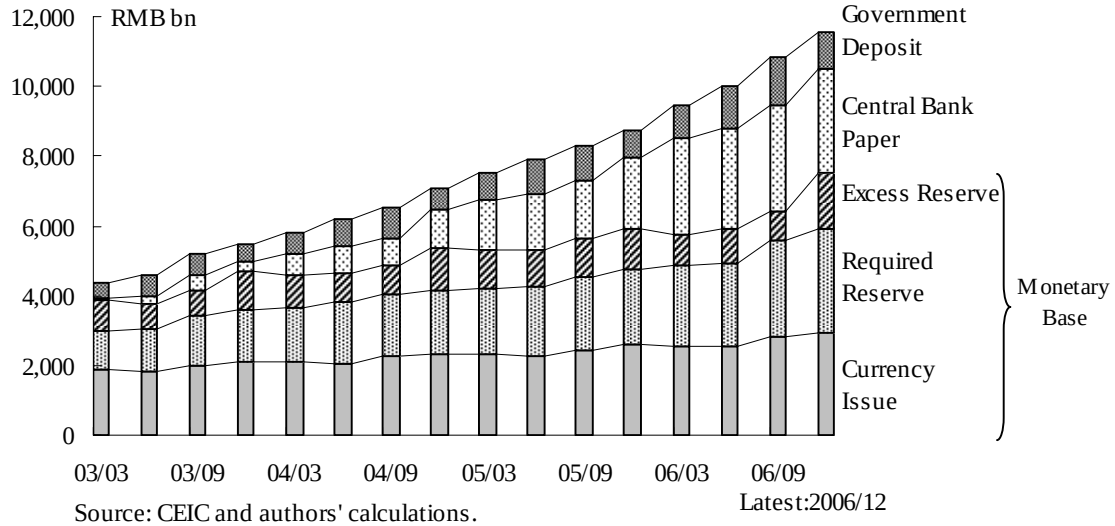


Not all foreign currency accumulated in commercial banks' balance sheets is purchased by the central bank to become foreign reserves. A small portion remains on commercial banks' balance sheets. Due to the unavailability of the data, we must assume that "overseas capital" held by four state-run commercial banks is such remaining foreign currency. This had reached 1,500 billion yuan by September 2006, a 1.4 times increase in a year, and accounted for almost 20% of total foreign reserves.

B. Policy Responses by PBOC

In order to cope with liquidity inflows to the money market, the PBOC has used the OMO to absorb the liquidity to control the amount of the monetary base, and has raised the required reserve ratio to control the amount of excess reserves (figure 13). It is not clear how the PBOC decides the combination of the two instruments to control the amount of excess reserves. It is safe to say, however, that the PBOC appears hesitant to increase the issuance of central bank paper beyond a certain point because of concerns about its impact on the balance sheet, and instead raises the required reserve ratio.

Figure 13　Major Liability Components of the PBOC

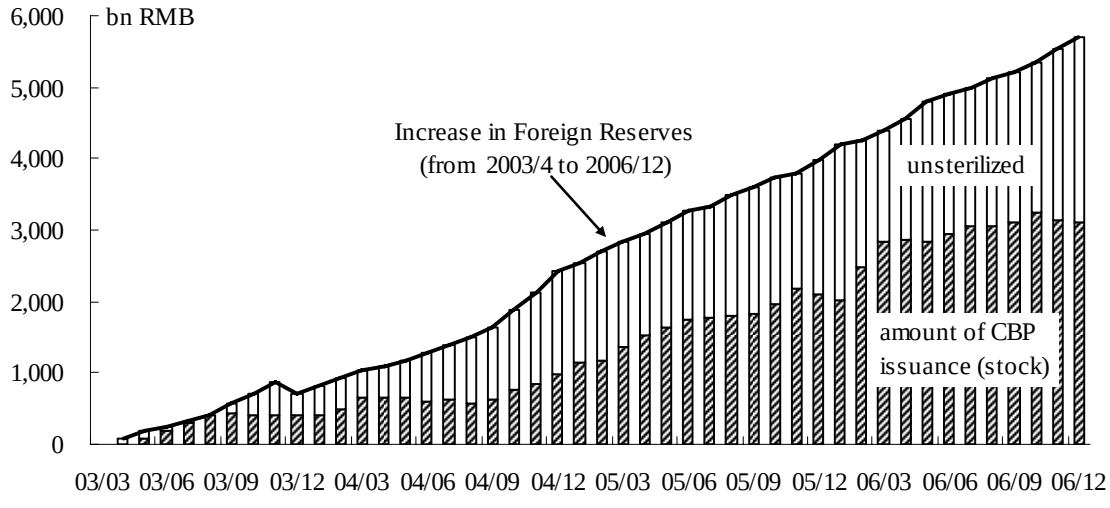


Source: CEIC and authors' calculations.

Notes: Required Reserve =Deposit of Financial Institution×Required Reserve Ratio,
Excess Reserve =Deposit of Financial Institution×Excess Reserve Ratio.

The PBOC's balance sheet has substantially increased in size from 42% of GDP in January 2003 to 61% in December 2006. An increase in foreign reserves has contributed to approximately 80% of the total increase. Comparing the foreign reserve increase and the outstanding amount of CBP issuance, it appears that a large proportion of the PBOC foreign exchange purchase is left unsterilized (figure 14).

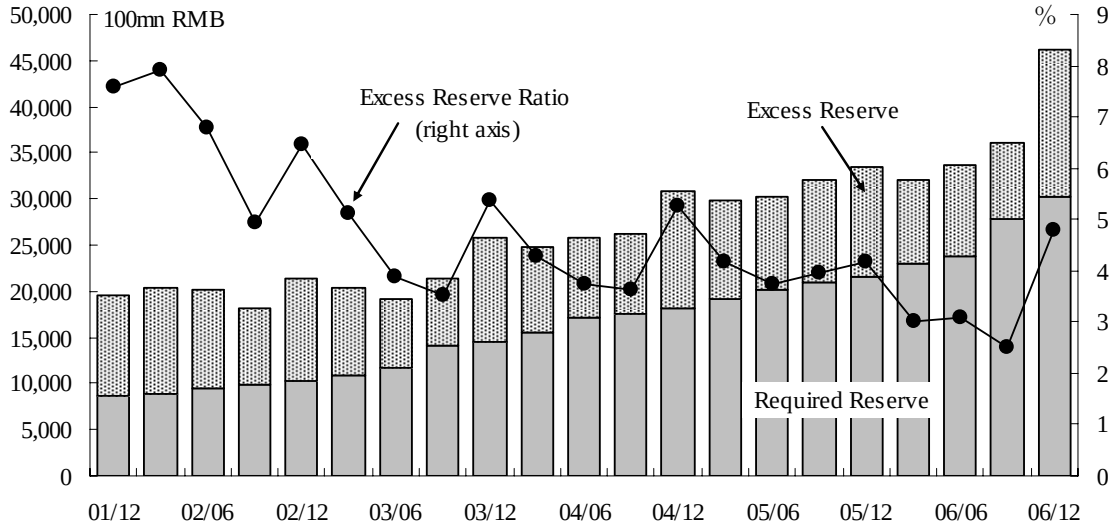
Figure 14　The Extent of Sterilization



Source: CEIC, PBOC　　Latest: 2006/12

As a result of absorption of liquidity by the PBOC and increases in the required reserve ratio, the excess reserve ratio (the ratio to banks' deposits) fell from above 4% between 2003 and 2005, to around 2% in September 2006. At the end of 2006, the rate rose again due to the liquidity inflow from a huge trade surplus (figure 15).

Figure 15 Required and Excess Reserves of Financial Institutions



Source: CEIC

Notes: The calculations of Required Reserve and Excess Reserve are the same as figure 13, Excess Reserve Ratio represents the figure by each end of the quarter.

IV. Tightening Effect of Money Market Operations

In this chapter, we discuss what kind of tightening effect is envisaged and actually observed when the PBOC has conducted money market operations to cope with a glut of liquidity.

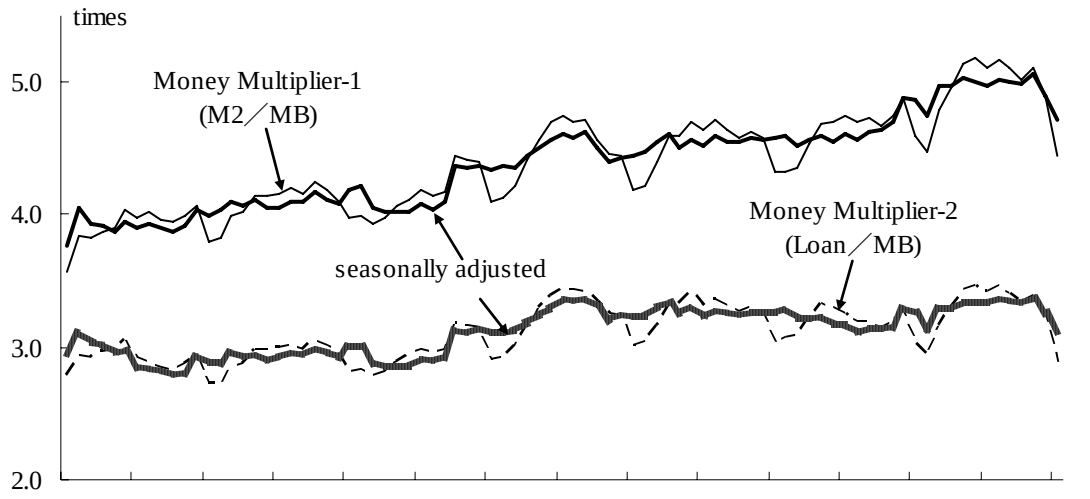
A. Impact of Quantitative Tightening

The typical textbook on monetary policy in China says that the PBOC conducts monetary policy with the monetary base (MB) as an operational objective and money supply as an intermediate objective[17]. In effect, the PBOC seems to control the MB in response to changes in bank loans and money supply assuming a certain level of credit multiplier. In ex post, the credit multipliers derived from M2 and MB as well as from

[17] Some academics argue that the money supply no longer an appropriate intermediate objective due to the increasingly weak correlation between money supply, CPI and GDP growth, and problems with the central bank's ability to control the money supply. Bin, Xia & Liao Qiang (2001).

bank loans and MB have been both broadly stable. The former has been on a gradual upward trend while the latter has stayed at almost the same level (figure 16).

Figure 16 China's Money Multiplier



Source: CEIC

Notes: Seasonally adjusted by X-11. MB here includes Excess Reserve.

The ex post stability in multipliers does not necessarily mean that the PBOC intended to control MB in an active manner in order to contain growth rates of money and bank loans, nor did it have such an effect. The reverse is more likely, namely that the PBOC has controlled MB to make it consistent with the given growth in money and bank loans.

The reasons can be considered from two aspects. First, while the growth rate of M2 and bank loans exceeded the initially projected targets, the amount of MB was not reduced and continued to grow, albeit gradually as we can see in figure 13.

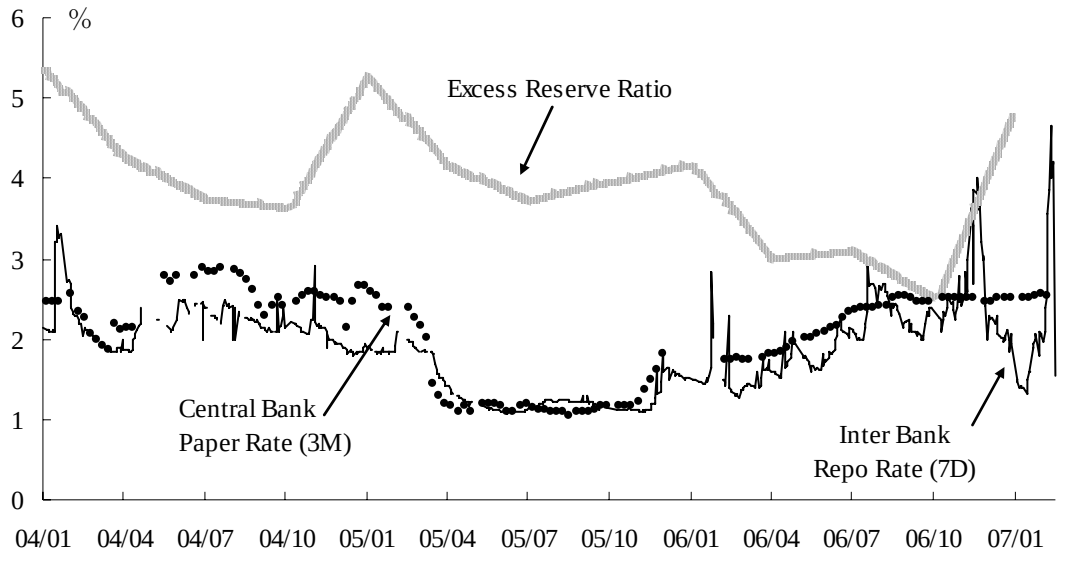
Second, leaving its impact on interest rates aside, controlling the amount of excess liquidity in short-term money markets itself could hardly have a discernible impact on bank lending. Some media reported that increases in the reserve requirement ratio were intended to constrain banks' lending capacity. However, the high level of excess liquidity itself is evidence that banks do not face constraints regarding funds for lending thanks to the flood of liquidity into the money markets and fast growing bank deposits. This is especially the case for the four state-run commercial banks, which are major lenders in the loan market. From this perspective, it is hard to expect any quantitative monetary tightening or easing effect from the control of the amount of excess liquidity

in money markets. The only channels through which we can expect a certain impact on bank behavior are a "signaling" channel and changes in short-term interest rates.

B. Excess Liquidity and Short-term Interest Rates

It seems that the main objective of the PBOC in controlling the amount of excess reserves is to effectively guide short-term interest rates. A high level of excess reserves puts downward pressure on interest rates making it difficult for the PBOC to guide them to a target level. When the repo rate (7D) was left at a very low level during 2005, the excess reserve ratio was as high as above 4%. Since 2006, the PBOC has entered a phase of gradually leading the repo rate higher and, for that purpose, has reduced the excess reserve ratio by absorbing liquidity (figure 17).

Figure 17 Excess Reserve Ratio and Short Term Interest Rates



Source: CEIC, Bloomberg, PBOC. Latest:2007/2

Note: The original Excess Reserve Ratio quarterly data are smoothed into monthly data.

Since late 2006, overseas capital inflows through foreign trade and other channels have accelerated and flooded into money markets. As a result, the excess reserve ratio has risen again while short-term interest rates have fallen. As can be seen in figure 18, the repo rate, the most representative rate in the market, dropped sharply. In the meantime the CBPR remained unchanged, probably under the strong influence of the PBOC.

The repo rate temporarily rose after the PBOC announced a hike in the required reserve ratio on January 5, 2007. But it soon fell sharply again, and the PBOC raised the

required reserve ratio for a second time on February 16. The major purpose of the two-time increase in the required reserve ratio was to raise short-term (repo) rates. At the same time, the PBOC also intended to demonstrate its willingness for tightening.

A natural question is why the PBOC's open market operations are effective in controlling short-term interest rates even when a substantial amount of excess reserves remains. In theory, short-term rates should continue to fall until excess reserves disappear. The answer seems to be that a certain amount of surplus reserves is needed by banks to act as a buffer[18] against uncertainties and inefficiencies with regard to liquidity management.

For example, banks cannot make accurate forecasts of supply and demand in the money market due to a lack of data and statistics. They also have to make transactions on a bilateral basis without money brokers, while the real time prevailing market rates are not available without a broker screen. In addition, interbank markets are segmented by cities. Liquidity management by banks is also not efficient, as liquidity they leave in the accounts held by branches is not counted as part of the required reserves. Under the current reserve requirement system, banks need to maintain the required amount of reserves everyday without a single day of shortage, which makes them more cautious and favor a buffer.

C. The Short-term Interest Rates and Tightening Effects

How does the PBOC decide the target level when guiding short-term interest rates? Do rises in short-term interest rates have any monetary tightening effects?

First, market participants believe short-term interest rates have a "signaling" effect, demonstrating the authorities' monetary policy stance. As we can see in figure 17, the repo rate did indeed rise gradually, albeit with fluctuations, until the summer of 2006, consistent with the authorities' repeated willingness to curb the high rate of growth in liquidity and investment. Entering the second half of 2006 however, the CBPR, the rate most clearly representing the policy intention, remained at the same level. Even the repo rate has declined significantly after a temporary hike in November 2006. Given such developments so far, it is hard to say that short-term interest rates have had a

[18] According to some market participants, the level of buffer needed is around 2.0-2.5% in terms of the excess reserve ratio.

sufficient “signaling effect” by indicating the authorities’ determination to curb liquidity and investment.

Second, apart from the signaling effect, could a change in short-term interest rates effectively determine a bank’s behavior? For the following reasons, it might be safe to say that the tightening effect of an interest rate rise has not been significant. As already discussed, interest rates on deposits and lending are still inflexible. In addition, the four state-run commercial banks, which are dominant in the loan market, have little incentive to raise lending rates in response to rising funding costs in the money market. This is because they have a long position in the short-term money market.

It was a rise in benchmark lending rates rather than a rise in short-term money market rates that affected banks’ lending activities. The benchmark lending rates were raised on April 28 and August 18 of 2006. In April, lending rates were raised by 27bps for 1Y, from 5.58% to 5.85%, while the deposit rate was kept unchanged. In August, both lending rates and deposit rates were raised by 27 bps for 1Y from 5.85% to 6.12% and 2.25% to 2.52%, respectively.

Still, many see that the impact of the hike in benchmark lending rates was not so large. First, the changes in rates were limited and lending rates are still much lower by any standard, including nominal growth rate. Second, when deposit rates remain unchanged, as in April, the widening deposit-lending rate spread may further stimulate a bank’s appetite for lending. Third, in the current situation, higher deposit rates may further enhance demand for bank deposits and increase the availability of funds for lending.

Despite the rise in interest rates described above, bank lending continued to increase rapidly. In 2006, the PBOC set a target of 2.5 trillion RMB for bank loans. In the first half of the year, actual lending increased at a much faster pace than was consistent with the target.

The authorities found that the most effective measure to cope with such a situation was direct administrative guidance. In 2006 the PBOC resorted six times to “window guidance” for commercial banks to urge them to control lending, improve lending structure, and prevent credit risks. At the same time, the National Development and Reform Committee (NDRC) and the China Banking Regulatory Commission (CBRC)

also introduced administrative measures directed at specific industries to control overheated investments. Another reason that the authorities preferred direct administrative measures to macroeconomic tightening was that the problem was not the aggregate level of investment and lending, but its composition.

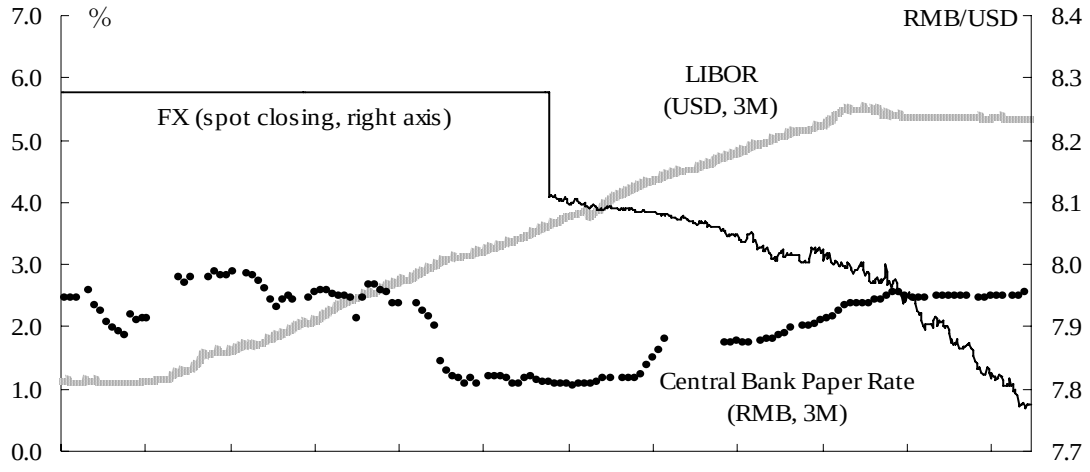
V. Interest Rate Differentials and Foreign Exchange Rates

In this chapter, we argue that the PBOC's money market operations have been focused on international interest rate differentials. Along with the foreign exchange rate system reform since July 2005 and the development of market infrastructures, the management of interest rate differentials has contributed to the stability of foreign exchange rates in the market.

A. Movements of Interest Rate Differentials

Interest rate differentials appear to have been given significant consideration when the PBOC guided short-term interest rates before and after the FX regime reform in July 2005, as shown in Figure 18. In the run-up to July 2005, Chinese interest rates fell sharply, while the "measured pace" tightening in the US continued. The rate decline, which could be perceived as monetary easing, appeared to go against the macroeconomic policy needs of the time. In retrospect, it is much easier to understand that the rate decline was needed to secure a certain interest rate differential against the USD LIBOR before implementing the reform.

Figure 18 Interest Rate Differentials and FX Rates



Source: Bloomberg, PBOC. Latest: 2007/1

After the reform in July 2005, short-term interest rates remained unchanged at the low level until October, probably in order to secure a smooth start for the new FX regime. However, after completing the initial stage of the regime, short-term interest rates rose gradually in line with the measured-pace tightening in the US, in order to maintain a certain level of interest rate differential against LIBOR. After the FED paused a series of its tightening moves in the summer of 2006, Chinese short-term interest rates also stopped rising and remained unchanged.

B. Capital Account Liberalization and FX Market Reform

Control of interest rate differentials has a substantial impact on the stability of foreign exchange rates.

First, if the rate of RMB appreciation is well controlled within the range consistent with the differentials, speculative capital inflows aimed at interest parity can be restrained[19]. In fact, until the autumn of 2006, market expectations about the pace of RMB appreciation against the US dollar have stabilized at around three percent on an annual basis. As the spot rate, forward rate and interest rate differentials all moved along with such expectations, the inflow of hot money was said to have decreased.

Second, with stable interest differentials, economic entities with foreign currency-denominated assets, especially commercial banks, are able to manage foreign exchange rate risks correctly, taking advantage of the recent development of various FX market instruments. Recent movements in capital account liberalization have made this kind of foreign exchange rate risk management more important and more effective.

Partly due to concerns raised by the Asian currency crisis, China continued to impose tight capital controls, especially on capital outflows. In recent years, however, the authorities have gradually liberalized capital controls, partly reflecting the need to ease pressures for RMB appreciation by allowing outward investment. For example, the authorities have allowed QFII (Qualified Foreign Institutional Investors) to invest in

[19] In February 2006, Yi Gang, Assistant Governor of the PBOC, expressed almost the same idea in a statement at the Forum hosted by China Economic Research Center of Beijing University. “Yi Gang says 3% interest rate of US dollar higher than RMB is a chance for exchange rate reform”, Sina.com, February 13, 2006.

overseas securities. Even with existing controls, through household remittance and other channels[20], so-called hot money has circulated on a large scale for arbitrage transactions aimed at interest rate differentials and the rate of RMB appreciation.

Following the regime change in July 2005, a series of steps has been taken to reform the foreign exchange market, including deregulation and the development of new markets and instruments. With respect to forward transactions, interbank transactions have been permitted since August 2005. As for forward transactions with customers, the scope of eligible banks was expanded and the scope of eligible underlying transactions was also expanded from major current account transactions to all current account transactions and some capital account transactions. With regard to spot rate transactions, the so-called Direct Deal system and the Market Maker system have been introduced to encourage transactions beyond the intermediation of currency trading centers.

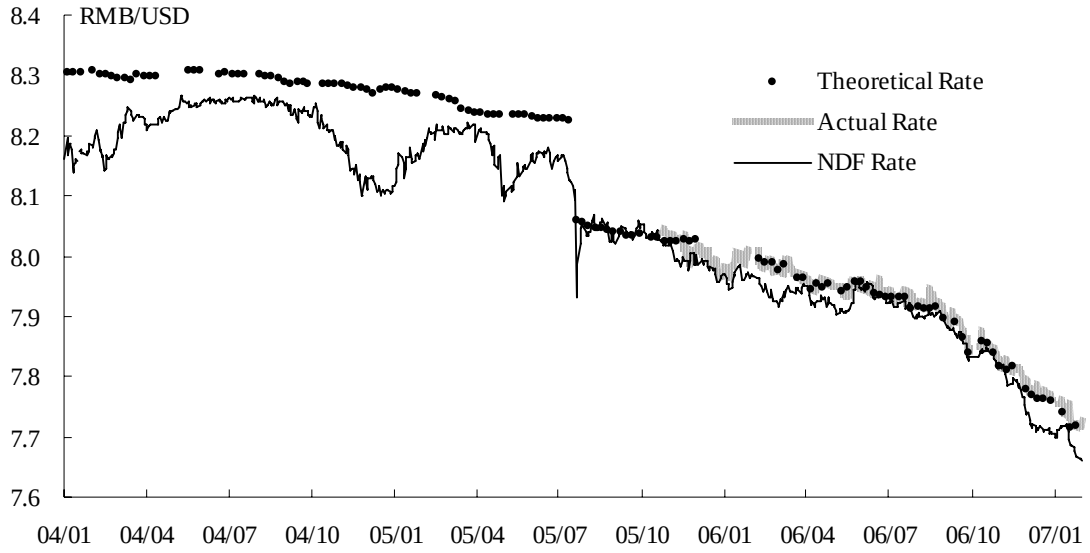
C. Interest Rate Differentials and FX Forward Rate

Against this background of progress in capital account liberalization and foreign exchange market reforms, the actual RMB forward exchange rate has moved consistent with the theoretical forward rate based on the China-US interest rate differentials (figure 19)[21]. It is also clear that the NDF (Non Deliverable Forward) rate, the data available for a longer term, converged with the theoretical rate after the exchange rate reform of July 2005.

[20] These capital movements are usually categorized as “errors and omissions” in the balance of payments statistics.

[21] The calculation in this chart is based on CBPR (3M), but the same results can be derived based on repo rate (7D), repo rate (1Y) and CBPR (1Y).

Figure 19　Theoretical and Actual RMB Forward Exchange Rate



Source: Bloomberg, PBOC and authors' calculations.

Notes: NDF Rate: RMB Non Deliverable Forward Rate, Actual Rate: RMB Onshore Forward Rate.

Theoretical Rate (3M) is calculated as:

$$\frac{ExchangeSpotRate(RMB/USD)\times\{1+CentralBankPaperRate(3M)\times 90\div 360\}}{1+LIBOR(USD,3M)\times 90\div 360}.$$

Since November 2006, the NDF rate has begun to diverge from the theoretical forward rate. This is probably due to the regulation governing overseas RMB derivative transactions announced at the end of October 2006[22]. This regulation forbids domestic financial institutions from conducting foreign exchange derivative transactions in the offshore market. As a result, interest rate differentials have less influence on the formation of the NDF rate, and other factors such as rumors or expectations of further RMB appreciation are having a larger impact.

Until the fall of 2006 the forward rates of the RMB, both the actual onshore and the NDF rate, appreciated by around 3% annually in alignment with the spot rate. Since the fall, however, the pace of appreciation has somewhat accelerated. It is still not clear whether this implies that the Chinese authorities have intentionally accelerated the pace or not. It is possible that the pace accelerated because the authorities were not

[22] On October 20, 2006, SAFE forbade domestic institutions or individuals to participate, by any forms, in overseas FX derivative transactions without government's permission. Till then, there were no explicit regulations to ban those transactions and it was not clear whether the NDF transactions were allowed or not. "SAFE Bans on Overseas' RMB Derivative Transactions", *The First Financial Daily*, October 27, 2006.

able to prevent a decline in short-term interest rates resulting from the flooding liquidity following a surge in trade surplus. In either case, the concerted attempts by the PBOC to absorb liquidity since late-2006 appear to indicate that the Chinese authorities are very eager to stop a fall in short-term interest rates and the associated appreciation of the RMB forward rate.

VI. Conclusions

This paper argues that PBOC money market operations have been focused mainly on China-US interest rate differentials for the sake of stability in the RMB exchange rate after the July 2005 reform. On the other hand, the role of monetary policy in the maintenance of domestic price stability has been assumed by the direct control measures taken by various government agencies including the PBOC. These direct control measures include "window guidance" to commercial banks, industrial policies and guidance by local governments. It seems to us that interest rate policy is assigned to the stability of exchange rates, and direct quantitative control (loan) policies are assigned to the stability of domestic prices. This division of labor may be one way of dealing with the so-called *impossible trinity* problem, albeit temporarily.

However, this combination of policy assignment has undesirable consequences. First, the problems of external imbalance and the glut of liquidity are becoming increasingly serious. This may have heightened the risk of a severe adjustment in the future. Second, it is highly likely that the combination of abundant liquidity, little functioning of interest rates and arbitrary intervention by the government have caused a serious distortion in resource allocation in the economy. Third, it has prevented market participants from building confidence in monetary policy. It could destabilize market expectations in many ways and will make it difficult to stabilize capital flows after future capital account liberalization.

The roots of this combination of policy assignment lie in the de facto fixed exchange rate policy. The Chinese government has admitted the necessity of a more flexible exchange rate regime in the long run. At the same time, China has pursued a gradualist approach, paying heed to the impact on less-competitive industries such as agriculture as well as the appropriate sequencing of banking sector reform, liberalization of interest rates, and financial market development. While it is important to secure a stable transition process, it is also true that various imbalances and distortions are

becoming more serious overtime. It should also be noted that the sequencing of the liberalization of interest rates and market reforms has something of the nature of a chicken-and-egg problem. Foreign exchange liberalization promotes the development of domestic financial markets and interest rate liberalization. Liberalization of exchange rates and interest rates will be conducive to China's economic stability, because it will facilitate the establishment of a well-functioning transmission mechanism of monetary policy which begins with money market operations.

* * *

References

Annual Analysis Report on 2005 China Bond Market, Information Department of China Government Securities Depository Trust & Clearing Co., Ltd.,

Bin, Xia & Liao Qiang, 2001, "Money Supply Is Not Appropriate Any More To Be Our Country's Monetary Policy Intermediate Objective", *Economic Research*, Vol.8.

China's Bond Market—Current Situation and Problems, 2004, Mizuho Report, Mizuho Research Institute, March 2004.

China: Banking and Financial Market Development 2005 (Blue Book of Finance), Institute of Finance & Banking, Chinese Academy of Social Sciences, Social Sciences Academic Press (China), May 2005.

Goodfriend, Marvin, and Eswar Prasad, 2006, "A Framework for Independent Monetary Policy in China", *International Monetary Fund Working Paper*, IMF.

Kamin, Steven, Philip Turner and Jozef Van't dack, 1998, "The Transmission Mechanism of Monetary Policy in Emerging Market Economies: an Overview", BIS *Policy Papers*, January 1998.

Kuwada, Yoshimochi, 2006, *China's Financial System and Banks' Transaction – Guidance for Financial Institution Utilization in China*, Mizuho Research Institute, July 2006.

Matsunaga, Miyuki, 2004, "China's Monetary Policy Operation", mimeo, October 2004.

Monetary Policy Analysis Team of PBOC, 2005, *Reports on the Gradual Process of Interest Rates Liberalization*, PBOC, January 2005.

Appendix 1 Recent "Window Guidance" Measures

		Contents
June 2005	PBOC Shanghai Branch released *Shanghai City Guideline for Lenders 2005*	Classified borrowers into three categories: "Support," "Cautious," and "Restricted or Forbidden." Encouraged banks to control lending growth, improve credit structure and manage loan risk.
December 2005	PBOC held a "window guidance" meeting for domestic commercial banks.	Emphasized maintaining control of lending growth (details unreleased).
April 2006	as above	Included instructions to: 1. Closely monitor loan developments and prevent any sharp rise or fall in loan growth, 2. Maintain stable bank management, 3. Improve credit structure, 4. Monitor interest rate risk and credit risk, 5. Monitor risks involved in bill financing.
July 2006	Same as above	Included instructions to: 1. Monitor possible risks from rapid growth of loans and control the amount of lending, 2. Implement the required macro control policy and industrial policy, improve credit structure, and control the amount of medium-long term loans, 3. Maintain stable bank management, 4. Monitor risks involved in bill financing, while promoting the development of the bill market.
September 2006	PBOC Shanghai Branch held a "window guidance" meeting for domestic commercial banks in Shanghai.	Included instructions to: 1. Implement the required macro control policy, 2. Control the amount of lending, improve credit structure (strictly restrain loans to over-capacity industries, and control the amount of medium-long term loans), 3. Strengthen liquidity management, 4. Strengthen the management of property lending.

Source: Various press reports

Notes: According to *Big Events of Monetary Policy in 2006* released by the PBOC, February 12, 2007, the PBOC (branches excluded) also held Window Guidance Meetings in May, August, November and December, 2006.

Appendix 2 Interest Rate Reform in China

Categories		Reforms and Changes
Money market		Interbank call rates were liberalized (1996/6).
Bond Market		MOF issued bonds on the stock exchange by interest rate bidding (1996).
		Interbank repo trading started (1997/6).
		CDB and IEBC issued gov't bonds by market bidding (1998).
		MOF issued gov't bonds on interbank market by interest rate bidding (1999).
Deposits & Loans	Foreign Currency Deposits & Loans	Interest rates on large foreign deposits (over US$3mn) were liberalized (2000/9).
		Interest rates on small amount deposits of British Pound, Swiss Franc, and Canadian Dollar were liberalized (the rates on USD, Euro, HKD and Yen small amount deposits were still decided by the government) (2003/7).
		Floors for small amount deposit rates were liberalized (2003/11).
		Long-term (>1Y) small amount deposit rates were liberalized (2004/11).
	RMB Loans	Ceilings for loan rates of some Rural Credit Cooperatives were raised to twice the base rate (2003/8).
		Ceilings for loan rates of commercial banks and Urban Credit Cooperatives were raised to 1.7 times the base rate (2004/1).
		Ceilings for loan rates of commercial banks were abolished. The floor rates were raised to 0.9 times the base rate (2004/10).
	RMB Deposits	Floors for deposit rates of commercial banks were abolished (2004/10).
Discounting & Rediscounting		Rediscount trading started. The rediscount rate was set at the range of minus 5-10% of the bank lending rate (1986).
		Rediscount rate was linked to refunding rate, and was re-set at the range of minus 5-10% of refunding rate (1996/5).
		Discount rate was set at 90 bps above the rediscount rate which was decided by PBOC (1998/3). The additional spread was raised to 200 bps (1998/7). Ceiling for discount rate was raised to the base lending rate (98/12).
		Rediscount rate was set at 27bps above the base lending rate (2004/3)
Refunding		Refunding rate was set at 63bps above the base lending rate (2004/3)
Required Reserve		"Different accounts, different rates" system of the required reserve and excess reserve was amended to "same account, same rates" (1998/3), and then to "same account, different rates" (2003/12).

Source: *Reports on Gradual Promotion of Interest Rates Liberalization*, PBOC, January 2005 and other press reports.

Appendix 3 FX Market Reform After July 2005

	Policies and Measures	Contents
Deregulation of FX Market	Deregulation of foreign exchange acquisition and retention (2005/8, 2006/4)	● Upper limit for retaining foreign exchange income from current account transactions was raised. ● Deregulation of individual FX purchases
	Expansion of exchange rate intraday range besides USD (2005/9)	● Intra-day range of foreign currencies other than USD (Euro, Japanese Yen) against RMB was increased from 1.5% to 3.0% from the median rate.
	Addition of new trading foreign currency (2006/8)	● British Pound was added as a new trading currency in interbank FX transactions.
Developing FX Market	Introduction of Direct-Deal trading (2005/8). (Implemented from 2006/1)	● Direct FX spot trading among traders was introduced on the negotiation of prices and settlements (until then, traders could only make contracts on competitive prices and complete the settlement with CFEC).
	Introduction of Market-Maker system (2005/11). (Implemented from 2006/1)	● Interbank participants can trade with Market Makers to form an initial FX rate. PBOC can intervene by trading with primary dealers selected from Market Makers.
	Expansion of FX spot trading participants (2005/8)	● Participants expanded from previously designated banks (366) to conditionally permitted non-bank financial institutions and non-financial enterprises.
	Establishing FX broker business (2005/8)	● *Trial Rules Governing Money Brokers* was released.
Developing FX Risk Hedging Instruments	Ban lifted on FX swap trading (2005/8)	● RMB/Foreign Currency swap trading permitted for traders with 6-month beyond forward trading licenses (implemented from 2006/4).
	Expansion of the range of FX forward trading with customers (2005/8)	● Trading partners were expanded from seven institutions (including state-run commercial banks) to all licensed banks. ● FX forward trading was expanded from major current account transactions to all current account transactions and some capital account transactions.
	Ban lifted on interbank exchange forward trading (2005/8)	● Interbank FX trading participants were permitted to conduct interbank exchange forward trading under certain conditions.

Source: Various press reports