

The recent flow of “hot money” in China

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It is difficult to obtain a clear picture of the flow of short-term funds – so-called hot money – in to and out of China from balance of payments statistics because of the effects of three measures introduced by the Chinese authorities. They are monetary policy measures of the People’s Bank of China (PBC), namely (1) foreign-exchange swap transactions with banks in China and (2) requests to some major banks that reserve requirements be deposited in the form of foreign currency, together with (3) the authorities’ establishment of China’s sovereign-wealth fund, China Investment Corporation (CIC). When the effects of these measures are taken into account, it is apparent that a huge amount of “hot money” flowed into China during 2007 and the first half of 2008, and then flowed out of China in the second half of 2008. Active arbitrage transactions which utilized the movement of the RMB forward exchange rate vis-à-vis the USD away from interest rate parity seem to be a key factor in the inward and outward flows of “hot money”.

1. Introduction

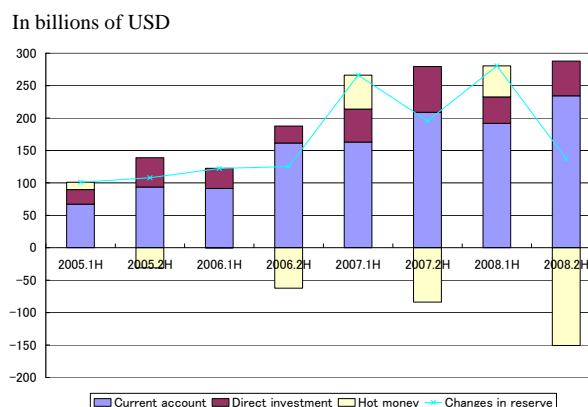
China’s renminbi (RMB) exchange rate regime was reformed in July 2005, moving from a system in which the RMB was virtually pegged to the USD, to a managed floating exchange rate system. Following this change, the RMB rate vis-à-vis the USD appreciated, at a gradually accelerating pace, by more than 20% up until July 2008. The RMB rate has been stable since then at around 1USD=6.83RMB.

Restrictions on capital flows were eased, with the introduction of the two designations of qualified foreign institutional investors (QFII) and qualified domestic institutional investors (QDII), and outward foreign direct investment has recently been promoted, thereby activating capital movement in to and out of China. Against this background, the generally accepted view is that the inflow of short-term speculative money (so-called hot-money) began in 2007, targeting capital gains derived from rising stock and property prices and the anticipated appreciation of the RMB.

“Hot money” flows through various channels even through trade transactions or foreign direct investment in a number of ways.¹ In this paper, however “hot money” is defined as the flow of funds counted as

capital and financial account other than for direct investment and errors and omissions. In other words, “hot money” is defined as “changes in reserve assets” minus “changes in current account” minus “direct investment flows”. This is the simplest way to express the movement of short-term funds, and the most conservative, as the estimates tend to be smaller.

Figure 1: Flows of “hot money”



(Source) CEIC

Under this definition, the flow of “hot money” after 2005 indicates huge outflows in the second half of 2006 and in the second half of 2008 (Figure 1). These outflows contradict the market view which pointed to

a huge inflow of “hot money”.

This paper shows that a clearer picture of “hot money” can be obtained from balance of payments (BoP) statistics by adjusting for the various measures introduced by the Chinese authorities. The paper also argues that arbitrage transactions related to RMB forward exchange rate movements seem to be a major factor behind recent “hot money” flows.

2. Three measures influencing China’s capital account

When analyzing flows of “hot money” in to and out of China using BoP statistics, it is helpful to adjust for the three measures introduced by the Chinese authorities. They include the monetary policy measures of the People’s Bank of China (PBC), specifically, (1) foreign-exchange swap transactions with banks in China, (2) requests to some major banks for reserve requirements to be deposited in the form of foreign currency, and (3) the establishment of China’s sovereign-wealth fund, China Investment Corporation (CIC). The effects of these measures are summarized as follows (Table 1).

Table 1: Three measures influencing China’s capital account

	In billions of USD				
	2006 2H	2007		2008	
		1H	2H	1H	2H
FX swaps	▲60	+ 30	+ 30		
Reserve requirements in foreign currency			▲114	▲ 91	+ 34
CIC			▲ 70		
Effects	▲60	+ 30	▲154	▲ 91	+ 34

(1) Foreign-exchange swap transactions with banks in China

As a means of absorbing RMB liquidity from money markets, the PBC transacted foreign exchange swaps with major banks in China – selling USD and purchasing RMB in spot transactions, and purchasing USD and selling RMB in forward transactions.

In the BoP statistics, FX swap transactions are recorded at the time of the actual payment of funds. At the start of transactions, these kinds of FX swaps are recorded as capital account outflow transactions. The PBC buys back the same amount of USD on the maturity date of those transactions. These transactions are recorded as capital account inflow transactions in

the BoP statistics.

The PBC announced that they transacted 1-year swaps to the value of 6 billion USD with major banks in China after the transactions were made in November 2005. They have made no announcement on swap transactions since then. However, documents published by major banks, for example the annual reports of the Bank of China and the Construction Bank of China, confirm that these banks also made swap transactions with the PBC in 2006. Estimations from the figures in the annual reports and statistics in the balance of payments suggest that around 60 billion USD of FX swap transactions were made in the second half of 2006.² Estimations made by a number of market participants suggest a figure in the range from 45 to 62 billion USD.³

In 2007, as described below, the RMB forward rate vis-à-vis the USD began to deviate from the interest rate parity between the USD and RMB, and the pace of its appreciation accelerated. At the same time, foreign exchange swap transactions with banks ceased. This seems to be because the authorities considered it inappropriate to transact using the forward rate deviated from interest rate parity as this would raise the possibility of speculation on future RMB rates. Markets estimate that around 30 billion USD were unwound in the first half of 2007. These unwound swaps and swaps that matured in the second half of 2007 do not seem to have been rolled over.⁴

(2) Requesting major banks deposit reserve requirements in foreign currency

The PBC requested 14 major banks in China to deposit reserve requirements for RMB denominated deposit in the form of foreign currency. The amount to be deposited was the difference in the ratio after the PBC raised the required reserve ratio as part of its tightening of monetary policy.⁵

This request appears to have been recorded as capital account outflow. More specifically, it seems to have appeared under “other assets” in “other investment”, including suspense receipt accounts, which increased abruptly by 106.1 billion USD in the second half of 2007.

On the balance sheet of the PBC, foreign currency deposited with the Bank seems to have been recorded under “other foreign assets”, which are not included in foreign exchange reserves, rather than as “foreign exchange”, which is included in foreign exchange

reserves. “Other foreign assets” increased by around 800 billion RMB (114 billion USD) during the second half of 2007. The amount of required reserves calculated from the total amount of RMB deposits of the 14 major banks at the end of 2007 (25 trillion RMB) and a 3 percentage point difference in ratios between August and December 2007 was 750 billion RMB, which is almost consistent with the 800 billion RMB increase in “other foreign assets”.

Before the implementation of this policy, the PBC purchased foreign currency through foreign exchange market intervention, provided RMB liquidity and then absorbed this liquidity by increasing the required reserve ratio. After implementation of this policy, the PBC directly increased the amount of foreign currency holdings by increasing the required reserve ratio without foreign exchange market intervention. However, the increased amount of foreign currency held by the PBC seems not to have been recorded in the BoP statistics as an increase in foreign exchange reserves, but as capital account outflow.

In the first half of 2008, the required reserve ratio was raised a further 3 percentage points, “other foreign assets” on the balance sheet of the PBC increased by 570 billion RMB (91 billion USD), and “other assets” on the BoP statistics recorded an outflow of 89.2 billion USD. Subsequently, the PBC loosened its monetary policy, and lowered the required reserve ratio by 2 percentage points for the six major banks and 3 percentage points in principle for other banks during September to December 2008. Parts of this seem to have been refunded by foreign currency, “other foreign assets” on the balance sheet of the PBC fell by 240 billion RMB (34 billion USD) during the second half of 2008, and “other assets” on the BoP statistics also recorded outflows of 30 billion USD.

(3) Establishment of China Investment Corporation (CIC)

China Investment Corporation (CIC) was established in September 2007. CIC is a sovereign-wealth fund aiming at the profitability of foreign exchange assets held by the Chinese government. CIC received an initial 200 billion USD in capital, funded by the Chinese government issuing a corresponding 1,550 billion RMB of special government bonds. A proportion of foreign exchange reserves was shifted to CIC using this fund, and this seems to have been recorded as capital account

outflow transactions on the BoP statistics.⁶

The amount of foreign exchange reserves shifted to CIC appears to be around 70 billion USD. Deputy Minister of Finance Li Yong, who is also an executive director of CIC, said in November 2007, “One third of CIC funds will be used for purchasing the Central Huijin Investment Company, one third will be used for capital injection to domestic banks, and one third will be used for global investment.”⁷ On the establishment of CIC, the company purchased Central Huijin Investment Company (Huijin), whose balance sheet is around 130 billion USD. It is appropriate to think the remaining 70 billion USD was used for shifting foreign exchange assets from foreign exchange reserves.

CIC injected capital into the China Development Bank (20 billion USD, in December 2007), and the Agricultural Bank of China (19 billion USD, in November 2008). CIC also aimed for high profitability by investing in Blackstone (3 billion USD) and Morgan Stanley (5 billion USD). To fund these large amounts of investment, in addition to 70 billion USD shifted from foreign exchange reserves on the establishment of the company, CIC used 57 billion USD foreign currency assets held by Huijin when it was purchased by CIC.

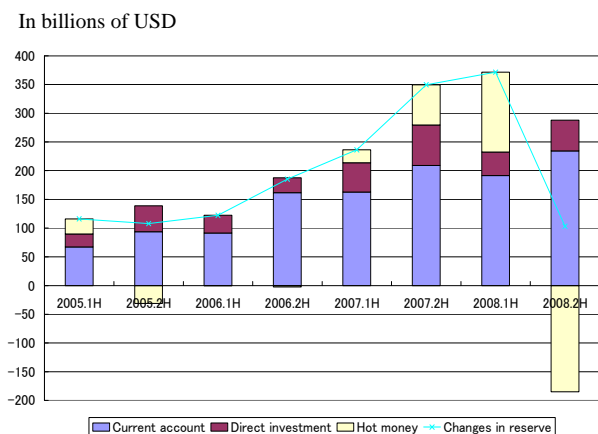
Huijin was established as a subsidiary of the PBC using the foreign exchange reserve in December 2003. Huijin injected a total of 60 billion USD into three banks: 22.5 billion USD each into Bank of China and Construction Bank of China in December 2003, and 15 billion USD into Industrial and Commercial Bank of China in April 2005. Huijin made option contracts with these banks to buy back foreign currency assets at the exchange rate before the exchange rate regime reform in July 2005, and Huijin did buy back 57 billion USD in total from these three banks in 2007 and 2008.⁸ Huijin still holds equities in these three banks to the equivalent of 60 billion USD, which Huijin injected in the first place after buying back foreign currency assets. So in total, Huijin has a balance sheet of around 130 billion USD, including around 10 billion USD equities in other financial institutions.

3. Balance of payments after adjustment

When adjustments are made for the above-mentioned policy measures, the BoP statistics indicate that “hot money” inflows into China

accelerated from 22.5 billion USD in the first half of 2007, to 70.2 billion USD in the second half of 2007, and up to 139.1 billion USD in the first half of 2008. In contrast, a huge 184.8 billion USD of “hot money” flowed out in the second half of 2008 (Figure 2).

Figure 2: Flows of “hot money” after adjustment



(Source) CEIC, author's calculations.

The three measures mentioned earlier also influenced foreign exchange reserves.⁹ When the figures are adjusted to include the 60 billion USD foreign exchange reserves used for capital injection to commercial banks through Huijin, foreign currency assets under the substantial control of the Chinese government at the end of 2008 (2,247 billion USD) exceed the published figure for foreign exchange reserves (1,946 billion USD¹⁰) by 300 billion USD.

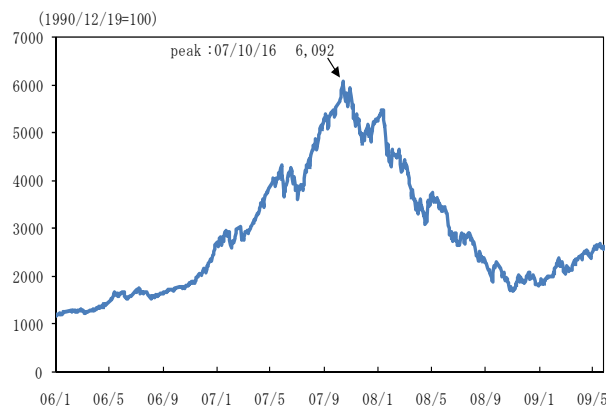
This figure of 300 billion USD exceeds the total amount of foreign exchange reserves of Korea (201.2 billion USD at the end of 2008; the 6th largest in the world), and Brazil (193.7 billion USD at the end of 2008; the 7th largest), and is almost equal to the total foreign exchange reserves of Taiwan (296.3 billion USD at end of 2008; the 5th largest in the world).¹¹ It is important to recognize that such huge amounts of foreign exchange assets are substantially under the control of the Chinese government, but do not appear in the published statistics for foreign exchange reserves.

4. Background to the recent flow of “hot money”

It is difficult to explain the huge inflow of “hot money” in the second half of 2007 and the first half of 2008, and the huge outflow in the second half of 2008, simply in terms of the movement of stock and

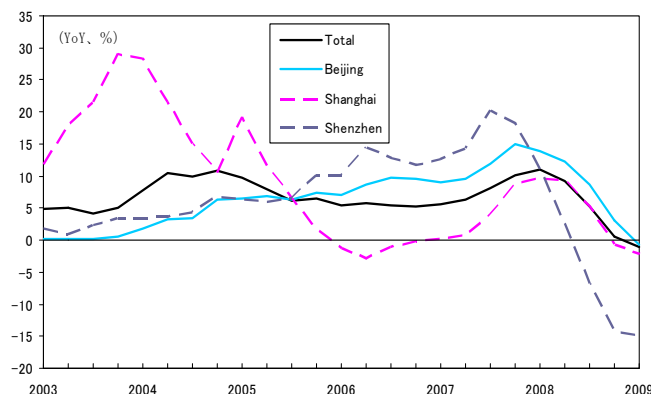
property prices. Stock prices peaked in October 2008, and thereafter began a downward trend (Figure 3). Growth in property prices began to fall in the first half of 2008 (Figure 4).

Figure 3: Shanghai stock index



(Source) CEIC

Figure 4: Property price indexes



(Source) CEIC

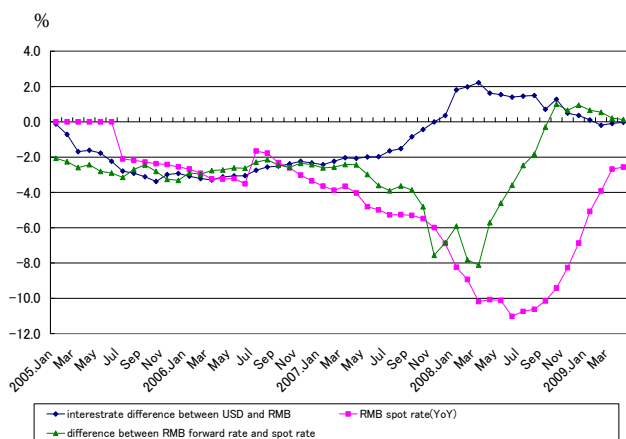
The huge inflow of “hot money” in the second half of 2007 and the first half of 2008 could be explained by the expectations of appreciation in the RMB spot exchange rate, and the possibility of arbitrage transactions utilizing the difference between the actual RMB forward exchange rate vis-à-vis the USD and the theoretical rate derived from USD and RMB interest rates.

Interest rate parity for the RMB forward exchange rate vis-à-vis the USD was almost maintained within China until the first half of 2007. Swap cost levels – the difference between the forward rate and the spot rate – were almost the same as the theoretical rate – the difference between USD and RMB interest rates

(Figure 5). But the RMB forward exchange rate shifted after the rapid appreciation of the RMB spot exchange rate, and deviated from interest rate parity from late-2007 until the autumn of 2008. The distance from interest rate parity widened most in the first half of 2008. This is because spot exchange rates are under the control of the authorities while forward exchange rates are not, and their appreciation reflected market participants' expectation of spot rate appreciation in the following period.

As a consequence, the RMB forward exchange rate moved toward appreciation, and the difference between the RMB forward rate and spot rate began to deviate from interest rate parity in May 2007, peaking in March 2008.¹²

Figure 5: RMB foreign exchange rate and interest rates parity



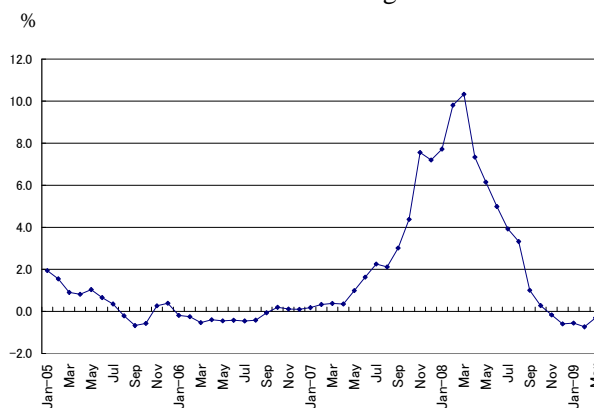
(Source) People's Bank of China, Bloomberg, CEIC, author's calculations

Under such circumstances, domestic companies in China were able, for example, to get fixed returns through arbitrage transactions by borrowing USD using export bills as collateral, exchanging this USD for RMB in swap transactions, and investing in RMB assets until the maturity date of the swap. The returns calculated from the data used in Figure 5 indicate their peak was in March 2008 (Figure 6).

In the BoP statistics, most of the inflow of "hot money" in the first half of 2008 (138.1 billion USD) could be explained by an increase of 92.7 billion USD in the liabilities of "other investment" – "trade credits", "loans" and "currency and deposits". "Loans" from abroad accounted for a particularly large share – 53 billion USD. The year-on-year growth rate of loans in foreign currency by domestic financial institutions, which grew rapidly in the first quarter of

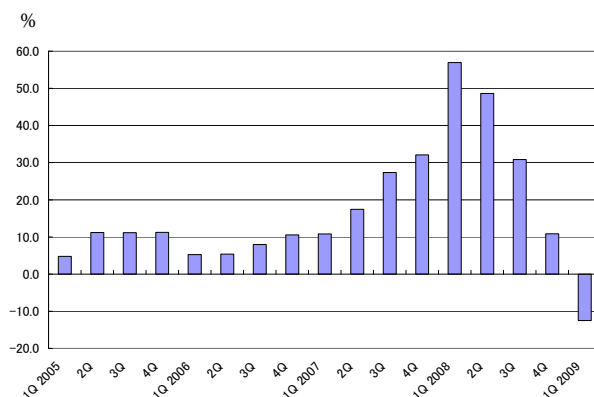
2008 by 56.9%, and in the second quarter by 48.6%, also supports this interpretation (Figure 7). The monetary policy report of the PBC also indicated rapid growth in the turnover of RMB FX swap transactions, totaling 103.8 billion USD in the first quarter of 2008 (a year-on-year increase of 86.4%), and 216.5 billion in the first half of 2008 (a 58.3% year-on-year increase).

Figure 6: Returns from arbitrage transactions using RMB forward exchange rate



(Source) People's Bank of China, Bloomberg, CEIC, author's calculations

Figure 7: Loans in foreign currencies



(Source) CEIC

These facts can be deduced from documents published by the authorities. The PBC said that rapidly expanding foreign currency loans "are apparently used to seek returns from an RMB appreciation".¹³ And State Administration of Foreign Exchange in China said "the increase in trade credit and the increase in the balance of debts of Chinese-funded financial institutions were the major reasons for the rise of short-term external debt in the first half of 2008."¹⁴ These comments suggest that foreign funds aiming at the appreciation of the RMB,

including arbitrage transactions using the movements of foreign exchange forward rates, flowed into China mainly through the channel of an increase in financial institutions' external debt, and domestic loans in foreign currency consequently increased.

In contrast, a huge 184.8 billion USD of “hot money” flowed out of China in the second half of 2008. In the BoP statistics, it is apparent that liabilities of “other investment”, consisting of “trade credits”, “loans” and “currency and deposits”, which had previously flowed in, were unwound and flowed out of China. This is because the RMB forward exchange rate vis-à-vis the USD began to depreciate from latter half of 2008, and remained around interest rate parity (Figure 5), arbitrage transactions stopped, and short term arbitrage transactions disappeared. Along with this, the year-on-year growth rate of domestic loans in foreign currency declined rapidly from the third quarter of 2008, and turned negative in the first quarter of 2009 (Figure 7).

The opportunity for such arbitrage transactions using the movement of forward exchange rates remained for a long period, from the second half of 2007 until the autumn of 2008. The basic background to this was, as described earlier, the fact that the spot exchange rate was controlled by the authorities while forward exchange rates reflected market participants' views on the future direction of the spot exchange rate. In addition, because foreign exchange and capital controls were still in place, although somewhat loosened, the opportunity for arbitrage transactions was limited to those who were able to present the evidence required under foreign exchange and capital controls, such as evidence of underlying transactions.

5. Conclusion

It is difficult to get a clear picture of the flow of “hot money” in China from the BoP statistics because of the policy measures of the Chinese authorities, including the PBC's monetary policy measures, together with the authorities' establishment of China's sovereign-wealth fund. This paper has given a clearer picture of the flow of “hot money” by eliminating the effects of these measures. It was also shown that arbitrage transactions activated by the difference between the actual RMB forward exchange rate vis-à-vis the USD and interest rate parity seem to have been the main driver of the huge inflow and outflow of “hot money” in 2007 and 2008.

The significance of capital flows in to and out of China, and of China's foreign exchange reserves, has been highlighted by discussion of issues such as the global in-balance and the sustainability of the USD key currency system. In order to examine China's balance of payments and foreign reserve statistics when analyzing these issues, it is productive and important to adjust for the effects of measures taken by the authorities.

(Appendix)

Various flows of funds explained in this paper can be seen in the BoP statistics. Each item in the flow of “hot money” in Figure 1 is shown in this table.

In billions of USD						
	2006		2007		2008	
	1H	2H	1H	2H	1H	2H
Portfolio investment	▲ 29.2	▲ 38.4	▲ 4.8	23.5	19.8	22.8
Assets	▲ 44.8	▲ 65.7	▲ 15.1	12.8	14.8	18.0
Equity securities	0	▲ 1.5	▲ 5.0	▲ 10.2	▲ 1.1	▲ 0
Debt securities	▲ 44.8	▲ 64.2	▲ 10.0	22.9	15.9	18.0
Liabilities	15.6	27.3	10.3	10.7	5.1	4.9
Equity securities	15.6	27.3	10.3	8.3	5.2	3.5
Debt securities	0	0	0	2.5	▲ 0.1	1.3
Other investment	35.2	▲ 21.9	42.6	▲ 112.3	9.7	▲ 130.8
Assets	20.2	▲ 52.1	17.2	▲ 168.6	▲ 83.1	▲ 23.0
Trade credits	▲ 2.8	▲ 23.3	▲ 5.9	▲ 17.9	▲ 4.2	10.1
Loans	18.3	▲ 13.4	12.2	▲ 33.0	▲ 5.4	▲ 13.1
Currency and deposits	0.5	▲ 10.4	9.2	▲ 11.6	15.7	▲ 49.2
Other assets	4.3	▲ 4.9	1.6	▲ 106.1	▲ 89.2	29.3
Liabilities	15.0	30.1	25.5	56.3	92.7	▲ 107.7
Trade credits	6.0	7.2	7.1	22.0	15.4	▲ 34.4
Loans	▲ 0.9	12.0	10.2	7.1	53.0	▲ 49.3
Currency and deposits	5.7	5.0	8.2	26.1	24.2	▲ 21.5
Other liabilities	4.2	5.9	▲ 0.1	1.2	0.2	▲ 2.5
Capital account	1.9	2.1	1.5	1.6	1.7	1.4
Gold, SDR, IMF reserves	0.1	0.3	0.2	▲ 0	▲ 0.2	▲ 1.0
Errors and omissions	▲ 8.4	▲ 4.5	13.1	3.3	17.1	▲ 43.2
Total	▲ 0.3	▲ 62.4	52.5	▲ 83.8	48.1	▲ 150.8

¹ As for the estimates regarding inclusion of “hot money” within trade transactions or foreign direct investments, see Zhang Ming, “Dangqian Reqian Liuru Zhongguo de Guimo yu Qudao”, Working paper No.0811, Institute of World Economics & Politics, Chinese Academy of Social Sciences, June 3, 2008.

² Bank of China announced in its annual reports that it transacted swaps with the People’s Bank of China, and the outstanding amount of their foreign exchange swaps was 4.2 billion USD at the end of 2005, and 41.5 billion USD at the end of 2006. Construction Bank of China also announced in its annual reports that it transacted an 8,969 million USD swap with the People’s Bank of China on December 5, 2005, and it rolled over the same amount in December 2006. Supposing Bank of China’s share (70%) of 6 billion USD at the end of 2005 was the same in 2006, the outstanding amount of swaps between the People’s Bank of China and banks in China at the end of 2006 is estimated to be around 68 billion USD, and the increased amount in 2006 is estimated to be around 60 billion USD.

³ Hong Liang and Eve Li, “China’s surging current account surplus and FX asset in the banking system”, Goldman Sachs, February 16, 2007; Zhongguo Zhengquan Bao, “Jiekai Waihui Shizong Midi, Huobi Diaoyi Chidiao Shubaiyi Meiyuan”, March 28, 2007; Diyi Jingji Ribao, “600 Yi Meiyuan Huobi Diaoyi Zhongguo Reqian Wailiushuo”, April 12, 2007.

⁴ Stephen Green, “Those who seek will find...USD 49bn” Standard Chartered, April 16, 2007. According to the Bank of China’s annual report, it transacted 3-year swaps as part of its total swap transactions with the People’s Bank of China. There is a possibility that these 3-year swaps remain.

⁵ The People’s Bank of China started this system on a trial basis in August 2007, and introduced it officially by issuing the “Notice of the People’s Bank of China on depositing RMB required reserves in foreign currency” (“Zhongguo Renmin Yinhang Guanyu Yi Waihui Jiaocun Renminbi Cunkuan Zhunbeijin de Tongzhi”) on September 14, 2007. However, the People’s Bank of China has not published this notice on its website or in other forms.

⁶ The movements cited in the text can be confirmed from the balance sheet of the PBC. On the balance sheet, when the government issued 600 billion RMB of special government bonds underwritten by the PBC in August 2007, holdings of special government bonds increased; “Claims on Government” increased, and loans to Huijin (described later) transferred to CIC; “Claims on Other Financial Corporations” decreased by 580 billion RMB. The government issued 200 billion RMB of special government bonds in the market during September to December 2007. The government issued 750 billion RMB of special government bonds underwritten by the PBC in December 2007. On the balance sheet of the PBC, holdings of equity in Huijin decreased; “Other Assets” decreased by 490 billion RMB.

⁷ Zhengquan Shibao, “Zhongtuo Gongsu Zibenjin Touzi Fangxiang Chuding 1/3 Tou Quanqiu Jinrong Shichang”, November 8, 2007.

⁸ Annual reports of each bank.

⁹ Brad Setser and Arpana Pandey, “China’s \$1.7 Trillion Bet: Understanding China’s External Portfolio”, Council on Foreign Relations, January 2009 analyzed Chinese foreign exchange reserves in a similar way. This paper uses a different method for dealing with the foreign exchange assets held by state-owned banks and of calculating foreign exchange assets held by CIC.

¹⁰ Figure published by the PBC, which does not include gold,

SDR or reserve position in the IMF.

¹¹ Figures for Korea and Brazil are those published by the IMF, which include gold, SDR and reserve position in the IMF. Taiwan’s figure includes gold.

¹² 1-year interest rates and 1-year forward exchange rates are used in Figure 5. In cases where shorter term rates such as 3-month interest rates and 3-month forward exchange rates are used, the results are almost the same.

¹³ The People’s Bank of China, “China Monetary Policy Report: Quarter One, 2008”

¹⁴ State Administration of Foreign Exchange, “China’s Balance of Payments Reports for First Half of 2008” (Chinese)

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