

# **The *Renminbi* Exchange Rate in the Increasingly Open Economy of China: A Long-Term Strategy and a Short-Term Solution\***

CHEN-YUAN TUNG

*This paper begins by providing two theoretical perspectives on the Renminbi (RMB) exchange rate issue: the principle of the impossible trinity and the self-fulfilling balance-of-payments crises models. Based on these theoretical perspectives, the paper elaborates on China's external and internal economic imbalances. Finally, the paper argues that a practical approach for the Chinese government to consider would be to allow the RMB to appreciate by 10 percent by early 2007, to expand the floating band of the RMB exchange rate from  $\pm 0.3$  percent to 5-7 percent, and to maintain central parity based on a new RMB rate until it is again in disequilibrium by a wide margin.*

*Nevertheless, there is no timetable for an adjustment of the RMB exchange rate as long as the Chinese government can tolerate the expanding economic bubble, escalating financial risks, and foreign political pressure resulting from the undervalued RMB. However, as long as China's economy remains overheated and expectations of a RMB revaluation persist,*

---

CHEN-YUAN TUNG (童振源) is associate professor at the Sun Yat-sen Graduate Institute of Social Sciences and Humanities, National Chengchi University. He received his Ph.D. in international affairs from the School of Advanced International Studies, Johns Hopkins University. Dr. Tung can be reached at <ctung@jhu.edu>.

\*The author would like to express his gratitude to two anonymous reviewers for their helpful comments and Guo-chen Wang for his research assistance on the manuscript.

©Institute of International Relations, National Chengchi University, Taipei, Taiwan (ROC).

*the awesome power of the international financial market will most likely create a "self-fulfilling prophecy" of RMB appreciation in the future.*

**KEYWORDS:** *Renminbi* exchange rate; exchange rate regime; impossible trinity; balance-of-payments crises models; hot money.

\* \* \*



On January 1, 1994, China adopted a managed floating regime with the *Renminbi* (人民幣, RMB) exchange rate at 8.7 per U.S. dollar (USD) and a narrow band of 0.25 percent from the previous day's rate. Under the regime, the RMB/USD exchange rate began to appreciate to 8.3 in May 1995 and 8.28 in October 1997. During the Asian financial crisis, the trading band was narrowed further and the exchange rate of 8.28 RMB/USD was maintained until July 21, 2005. Thus, despite official claims of a managed floating exchange rate regime, China essentially operated in a system of a de facto fixed peg to the dollar from early 1994 to mid-2005.

A stable currency regime has served China well, and it is routinely cited by Chinese policymakers and foreign pundits alike as an important factor in facilitating China's miraculous growth over the past decade, in particular attracting foreign direct investment (FDI) and facilitating trade. Between 1979 and 2006, China's GDP increased by 9.8 percent on average. In 2006, China was the fourth largest economy in the world. In terms of external trade, China's ranking rose from thirty-second position in the world in 1978 to third position since 2004. In terms of utilizing foreign capital, between 1979 and 2006, China attracted US\$877 billion from abroad. Furthermore, by the end of 2006, China had accumulated US\$1,066 billion of foreign exchange reserves and was ranked as the number one holder of reserves in the world. China's economy has been significantly transformed through market reforms and is now profoundly integrated into the global economy.

In the wake of the 1997-98 Asian financial crisis, China's commitment to a fixed exchange rate was widely praised as a key anchor for the global financial system. However, the generally supportive global consensus regarding China's stable exchange rate regime has evaporated over

the past five years. From early January 2002 to early January 2004, the U.S. dollar depreciated against the Euro by approximately 40 percent, against the Japanese Yen by 25 percent, against the Taiwan dollar, the Singapore dollar, and the Korean Won by 5-12 percent. In 2004, the U.S. dollar continued to depreciate against these currencies by 4.1-15.6 percent. Under China's de facto fixed exchange rate regime, the RMB has depreciated against the above currencies by the same margins in nominal terms. From 2002 to 2004, according to the estimate of the Bank for International Settlements, the nominal effective exchange rate of the RMB depreciated by 16.5 percent.<sup>1</sup>

The nominal depreciation of the RMB has resulted in widespread complaints that China is unfairly manipulating its currency to gain a competitive trade advantage. Nevertheless, the Chinese government has firmly insisted on the de facto fixed RMB/USD exchange rate in order to maintain financial stability, protect export competitiveness, and avoid further unemployment pressure.<sup>2</sup> The government argued that the stable RMB exchange rate was in the best interests of both China and the international community.<sup>3</sup>

Mainly responding to political pressure from the United States and the European Union,<sup>4</sup> on July 21, 2005, the Chinese government re-adopted a managed floating exchange rate regime based on market supply and demand with reference to a basket of currencies. In addition, the RMB was revalued by 2.1 percent against the U.S. dollar; i.e., the exchange rate

---

<sup>1</sup>The nominal effective exchange rate is calculated as a weighted average of nominal exchange rates against the currencies of main trade partners. See "BIS Effective Exchange Rate Indices," The Bank for International Settlements, April 2, 2007, <http://www.bis.org/statistics/eer/index.htm> (accessed April 28, 2007).

<sup>2</sup>"Governor Zhou Xiaochuan Answers Questions on RMB Exchange Rate," People's Bank of China, September 3, 2003, <http://www.pbc.gov.cn/english/xinwen/> (accessed August 21, 2004).

<sup>3</sup>Hung Cheng-ji, "Zhou Xiaochuan: Change of the Exchange Rate Regime Will Hurt American Economy," *Gongshang shibao* (工商時報, Commercial Times) (Taipei), March 31, 2004.

<sup>4</sup>Chen-yuan Tung, "Renminbi huili zhi guoji zhengzhi jingji fenxi" (An international politico-economic analysis on the RMB exchange rate), *Wenti yu yanjiu* (Issues and Studies) (Taipei) 44, no. 6 (December 2005): 133-56.

of the U.S. dollar against the RMB was adjusted to 8.11 RMB/USD. From then on, the daily trading price of the U.S. dollar against the RMB in the inter-bank foreign exchange market was allowed to float within a band of  $\pm 0.3$  percent around the central parity published by the People's Bank of China (PBoC), while the trading prices of non-U.S. dollar currencies against the RMB were permitted to move within a band of  $\pm 1.5$  percent.

Why did China adjust its RMB level and exchange rate regime? Will China's current approach succeed in reestablishing both the external and internal balance of the Chinese economy in the near future? Is there a more effective way of achieving external and internal balance? This paper will address these questions. The paper begins by providing two theoretical perspectives on these issues: the principle of the impossible trinity and the self-fulfilling balance-of-payments crises models. Based on these theoretical perspectives, the paper elaborates on the external and internal imbalances in the Chinese economy. Finally, the paper provides an alternative solution to the RMB exchange rate issue.

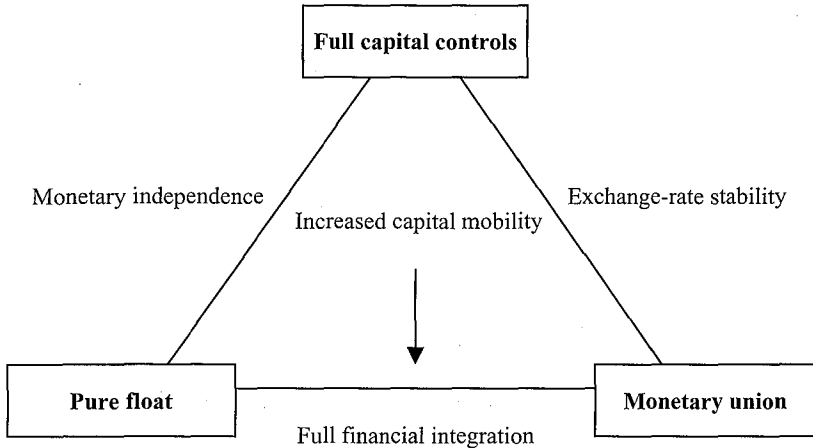
## Theoretical Perspectives

### *The Impossible Trinity*

International monetary theory includes the iron principle of the impossible trinity, which decrees that a country must give up one of three goals—exchange-rate stability, monetary independence, or financial-market integration. Figure 1 is a simple schematic illustration of the impossible trinity. Each side has its own compelling aim—the respective allure of monetary independence, exchange-rate stability, and full financial integration. Any pair of attributes can be attained: the first two at the apex marked "capital controls," the second two at the vertex marked "monetary union," or the first and third at the vertex marked "pure float." It is impossible to simultaneously attain all three.

However, the gradual integration of the global capital market has forced economic entities to choose either monetary union or a pure float for their exchange rate regime. It is perilous for a country to fix its exchange

**Figure 1**  
**The Impossible Trinity**



**Source:** Jeffrey A. Frankel, "No Single Currency Regime Is Right for All Countries or at All Times," *Essays in International Finance* (Princeton University), no. 215 (1999): 7.

rate without institutional commitment (such as dollarization or monetary union). To avoid attacks on exchange rates by international speculators, there is a tendency for fewer and fewer economic entities to choose other systems. Monetary union and a pure float are the two regimes that by construction cannot be subjected to speculative attack.<sup>5</sup> Nevertheless, developing countries have been uncomfortable with free floating regimes. As a result, even countries claiming to "float" their currencies may display a "fear of floating" and instead limit currency fluctuations over long periods.<sup>6</sup>

Due to its closed capital account, the Chinese government was able to remain autonomous in its monetary policy and maintain a de facto fixed

<sup>5</sup>Jeffrey A. Frankel, "No Single Currency Regime Is Right for All Countries or at All Times," *Essays in International Finance* (Princeton University), no. 215 (1999): 5-7; and Stanley Fischer, "Exchange Rate Regimes: Is the Bipolar View Correct?" *Journal of Economic Perspectives* 15, no. 2 (Spring 2001): 3-24.

<sup>6</sup>Guillermo A. Calvo and Carmen M. Reinhart, "Fear of Floating," *Quarterly Journal of Economics* 117, no. 2 (May 2002): 379-408.

peg to the dollar up to 2002. However, with the increased openness of the Chinese economy, the problem of capital account leakage has worsened. According to an International Monetary Fund (IMF) estimate, during 1994-2002, the error and omissions line item in China's balance of payments amounted to a negative US\$14 billion a year, and capital flight during those nine years totaled US\$122 billion.<sup>7</sup> With the surging inflow of speculative hot money after 2002, the error and omissions account has dramatically reversed, posting a US\$7.8 billion surplus in 2002, US\$18.4 billion in 2003, and US\$27.1 billion in 2004. Furthermore, Frank R. Gunter estimates that, based on both balance of payments and residual measures for China, capital flight was US\$69 billion per year during 1994-2001 and reached over US\$100 billion per year during 1997-2000. He estimates that about US\$900 billion fled China or was converted to dollars or gold within China from 1984 to 2001.<sup>8</sup>

According to the impossible trinity principle, China would gradually be forced to choose either monetary union or a pure float *in the long term*. Nevertheless, China can maintain an intermediate regime with a relatively closed capital account *in the short term*. Furthermore, it is in China's best interests to maintain capital account controls *in the short term* due to weaknesses in China's financial system.<sup>9</sup> More complicated yet, the question for China is not simply whether to open its capital account *in the short term*, but how China, as an increasingly open economy, responds to its exchange rate level and regime given current huge capital account leakages, which may lead to self-fulfilling depreciation or revaluation, as discussed below.

---

<sup>7</sup>International Monetary Fund (IMF), *Balance of Payments Statistics Yearbook* (Washington, D.C.: IMF, 2002).

<sup>8</sup>Frank R. Gunter, "Capital Flight from China: 1984-2001," *China Economic Review* 15, no. 1 (2004): 63-85.

<sup>9</sup>Eswar Prasad, Thomas Rumbaugh, and Qing Wang, "Putting the Cart before the Horse? Capital Account Liberalization and Exchange Rate Flexibility in China," *IMF Policy Discussion Paper*, PDP/05/1 (2005).

*Self-fulfilling Balance-of-Payments Crises Models*

*In the short term*, the increasingly large loopholes in capital account controls may cause speculative hot money to shake the de facto fixed exchange rate regime in China. The three generations of models of speculative attacks and balance-of-payments crises fall into two broad categories: those where a collapse is an inevitable consequence of some fundamental imbalances and those where a collapse results from self-fulfilling expectations.<sup>10</sup>

The first category originates from the Krugman model where a balance-of-payments crisis is generated by a monetary authority which operates a policy of domestic credit expansion while simultaneously fixing the exchange rate. Foreign exchange reserves inevitably run out and the fixed rate has to be abandoned. Paul R. Krugman shows that, with forward-looking exchange markets, the final stage of the crisis involves a sudden discrete loss of reserves in a speculative attack.<sup>11</sup> Eichengreen, Rose, and Wyplosz hold that a currency crisis might occur when the currency is expected to devalue and the government is reluctant to defend a fixed exchange rate with a high interest rate.<sup>12</sup>

The second category of model arises from the Obstfeld studies. Maurice Obstfeld asserts that balance-of-payments crises may, indeed, be purely self-fulfilling events rather than the inevitable result of unsustainable macroeconomic policies. He points out that the economy possesses a continuum of equilibria, each corresponding to a different subjective assessment of the likelihood of an exchange rate collapse. If speculators believe that a currency will come under attack, their actions in anticipation of this precipitate the crisis itself; while if they believe that a currency is

---

<sup>10</sup>Paul R. Krugman, "Introduction," in *Currency Crises*, ed. Paul R. Krugman (Chicago: University of Chicago Press, 2000), 1-6.

<sup>11</sup>Paul R. Krugman, "A Theory of Balance-of-Payments Crises," *Journal of Money, Credit and Banking* 11, no. 3 (August 1979): 311-25.

<sup>12</sup>Barry Eichengreen, Andrew K. Rose, and Charles Wyplosz, "Speculative Attacks on Pegged Exchange Rates: An Empirical Exploration with Special Reference to the European Monetary System," in *The New Transatlantic Economy*, ed. Matthew B. Canzoneri, Wilfred Ethier, and Vittorio Grilli (New York: Cambridge University Press, 1996), 191-235.

not in danger of imminent attack, their inaction spares the currency from attack, thereby vindicating their initial beliefs.<sup>13</sup>

Although the above models explain the currency crises of speculative attacks only in terms of a possible *devaluation* of exchange rates, Ronald I. McKinnon provides an explanation of a "self-fulfilling prophecy" *appreciation* as the syndrome of conflicted virtue. Countries that are virtuous in the sense that they have a high saving rate tend to run surpluses in the current account of their international balance of payments. However, with the passage of time, as the stock of dollar claims accumulate, domestic holders of dollar assets worry more about self-sustaining runs on domestic currency forcing an appreciation, and they thus switch dollar assets into domestic currency assets. In addition, foreigners start complaining that the country's ongoing large trade surplus is unfair and the result of having an undervalued currency. Of course, these two effects mutually reinforce each other and thus may trigger a "self-fulfilling prophecy" appreciation.<sup>14</sup>

Based on studies of six episodes of appreciation pressure involving Chile, Hungary, Indonesia, and Singapore since the dissolution of the Bretton Woods system, it is clear that sterilization cannot be effective in an environment of burgeoning inflows, and the expectations of foreign exchange rate appreciation that drive these inflows can only be stopped when the exchange rate actually rises. Historical experience indicates that market forces eventually coerce policy into accommodation. Past experience also shows that conflicts between the exchange rate arrangement and inflation targets are eventually resolved in favor of the latter.<sup>15</sup>

---

<sup>13</sup>Maurice Obstfeld, "Rational and Self-Fulfilling Balance-of-Payments Crises," *American Economic Review* 76, no. 1 (March 1986): 72-81; and Maurice Obstfeld, "Models of Currency Crises with Self-Fulfilling Features," *European Economic Review* 40, nos. 3-5 (April 1996): 1037-47. See also Guillermo A. Calvo and Enrique G. Mendoza, "Mexico's Balance-of-Payments Crisis: A Chronicle of a Death Foretold," *Journal of International Economics* 41, nos. 3-4 (November 1996): 235-64.

<sup>14</sup>Ronald I. McKinnon, "The East Asian Dollar Standard," *China Economic Review* 15, no. 3 (2004): 325-30.

<sup>15</sup>T. J. Bond, Marcel Kasumovich, Yianos Kontopoulos, and Vincent Low, "China's FX Regime: Moving the Great Wall" (Merrill Lynch, March 3, 2004), 14-16; and Jakob



Moreover, in virtually all these cases, there has been a swift, significant, and unannounced shift toward revaluation. There is little point in a gradualist approach with an existing undervalued exchange rate since it only invites speculative pressure and inflows, as speculations of a bigger exchange rate adjustment in the future heighten. A crawling peg would have to be quickly abandoned under such circumstances, a move that will damage policy credibility.

For instance, between 1993 and 1995, international speculators expected the Czech currency (Koruna) to appreciate, resulting in a large amount of hot money pouring into the country, which during the peak period accounted for as much as 18 percent of the Czech Republic's GDP. As a result, the Czech government was forced to implement a large-scale sterilization program, and a series of economic problems ensued, including economic overheating, inflation, rising wages, and the worsening of the international current account. In the end, the Koruna exchange rate was forced to adjust, leading to a financial crisis and a three-year economic recession.

In order to avoid a currency crisis, an individual country would need an exit strategy, from a fixed rate to a more flexible regime. The experience of other emerging markets suggests that it is better to exit from a peg when times are good and the currency is strong, than to wait until times are bad and the currency is under attack. The alternative of waiting for a time of balance-of-payments deficit often turns out to mean exiting the peg under strong downward speculative pressure, with the result that confidence is undermined and the national balance sheet is weak.<sup>16</sup>

These points are drawn largely from the experience of emerging markets such as Colombia and Korea in the early 1990s. Those countries were able to sterilize capital inflows only for a year or two, before it became too difficult due to high interest rates on the sterilization bonds and

---

Christensen, "Capital Inflows, Sterilization, and Commercial Bank Speculation: The Case of the Czech Republic in the Middle-1990s," *IMF Working Paper*, WP/04/218 (2004).

<sup>16</sup>Barry Eichengreen and Paul Masson, "Exit Strategies: Policy Options for Countries Seeking Greater Exchange Rate Flexibilities," *IMF Occasional Paper*, no. 168 (1998).

prolonged strong capital inflows. As Asia's pre-crisis experience showed, persistent under-valuation may generate economic overheating, asset market bubble, and strong credit growth that threatens the future health of the financial system.

Balance-of-payments crises models throw useful light on the impact of speculative capital inflows on China's external imbalances. Despite the Chinese government's insistence on the de facto fixed RMB/USD exchange rate by mid-2005, the general expectation of a RMB appreciation in the market resulted in the dramatic accumulation of foreign exchange reserves and surging inflows of speculative hot money to China. These inflows increased pressure on RMB appreciation and will probably cause "self-fulfilling prophecy" appreciation, which will be analyzed in the following sections.

### **China's External Imbalances**

#### *Rapid Accumulation of Foreign Exchange Reserves*

In order to maintain a de facto peg rate, the PBoC was forced to purchase US\$13.5 billion of foreign exchange every month in 2003 and US\$17.3 billion every month in 2004-05. Including the injection of US\$45 billion into the Bank of China and the China Construction Bank by the Chinese government at the end of 2003, China's foreign exchange reserves increased by US\$161.9 billion or 56.5 percent in that year. In 2004, these reserves increased by US\$206.6 billion or 27.7 percent, in 2005 by US\$209.0 billion or 1.2 percent, and in 2006 by US\$247.4 billion or 30.2 percent. By the end of 2006, China's foreign exchange reserves had reached US\$1,066.3 billion. In particular, the ratio of the yearly increase of China's foreign exchange reserves to its GDP increased from an average of 2.3 percent in 1995-2001 to around 10 percent in 2003-06 (see table 1).

As a matter of fact, the rapid increase in foreign exchange reserves between 2001 and 2004 was mainly attributable to the surge in speculative hot money. Between 1995 and 1999, the error and omissions line item in China's balance of payments was negative US\$18.4 billion on average.

**Table 1**  
**Foreign Exchange Reserves in China, 1994-2006**

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Amount (US\$ billion)	51.6	73.6	105.0	139.9	145.0	154.7	165.6	212.2	286.4	403.3 (448.3)	609.0	818.9	1,066.3
Yearly increase (US\$ billion)	/	22.0	31.4	34.9	5.1	9.7	10.9	46.6	74.2	116.9 (161.9)	206.6	209.0	247.4
Percentage of GDP (%)	/	3.0	3.7	3.7	0.5	0.9	0.9	3.5	5.1	7.1 (9.9)	10.7	9.5	9.4
Growth rate (%)	/	42.6	42.6	33.2	3.6	6.7	7.0	28.1	35.0	40.8 (56.5)	27.7	1.2	30.2

**Notes:**

1. The number in parentheses in 2003 includes the injection of US\$45 billion into two state-owned banks by the Chinese government at the end of 2003.
2. China's GDP figures are adjusted based on the results of China's economic survey of late-2005.

**Source:** China's State Administration of Foreign Exchange, <http://www.safe.gov.cn>.

This item changed rapidly from negative US\$11.9 billion in 2000 and negative US\$4.9 billion in 2001 to positive US\$7.8 billion in 2002. This was the first positive number since 1989, indicating that overseas speculative hot money had begun to enter China through illegal channels. While China's current account balance remained around US\$20-70 billion and net foreign direct investment (FDI) held steady at around US\$40-50 billion between 2000 and 2004, non-FDI capital flow increased from negative US\$35.6 billion in 2000 to positive US\$57.6 billion in 2004. Consequently, China's foreign exchange reserves increased from US\$10.9 billion in 2000 to US\$206.7 billion in 2004 (see table 2).

Chinese officials have estimated that the international hot money pouring into China amounted to at least US\$100 billion in 2004.<sup>17</sup> This

<sup>17</sup>Wang Xiaobo, "Premier Wen Warns against Speculators," *Gongshang shibao*, December 1, 2004; Wang Chuzhong, "Expectation on RMB Appreciation Draws More Hot Money," *Zhongguo shibao* (中國時報, China Times) (Taipei), December 2, 2004, A13; and Xu Sichia, "International Speculative Money Bids for RMB Appreciation," *Zhonghua gongshang shibao* (中華工商時報, Chinese Commerce Times) (Beijing), May 13, 2005.

**Table 2**  
**Summary of China's Balance of Payments, 1997-2005**

	Unit: US\$ billion									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	
Balance of payments	58.0	25.2	26.3	22.4	52.2	67.7	98.6	179.4	223.8	
Current account	37.0	31.5	21.1	20.5	17.4	35.4	45.9	68.7	160.8	
Capital and financial account	21.0	-6.3	5.2	1.9	34.8	32.3	52.7	110.7	63.0	
Foreign direct investment	41.7	41.1	37.0	37.5	37.4	46.8	47.2	53.1	67.8	
Non-FDI capital flows	-20.7	-47.4	-31.8	-35.6	-2.6	-14.5	5.5	57.6	-4.8	
Foreign exchange reserves	-34.9	-5.1	-9.7	-10.9	-46.6	-74.2	-116.8	-206.7	-208.9	
Net errors and omissions	-22.3	-18.7	-17.8	-11.9	-4.9	7.8	18.4	27.0	-16.8	

Source: China State Administration of Foreign Exchange, <http://www.safe.gov.cn>.

estimate is reached by subtracting the increase in FDI and trade balance from the increase in China's foreign exchange reserves.<sup>18</sup> Based on this formula, the hot money flowing out of China (capital flight) reached an average of US\$62.1 billion annually between 1997 and 2000, declining to US\$22.8 billion in 2001 and US\$8.9 billion in 2002. Since 2002, China has received enormous hot money inflows: US\$82.8 billion in 2003, US\$114.0 billion in 2004, and US\$46.7 billion in 2005. The hot money declined to US\$6.9 billion in 2006 (see table 3).

Why did international investors believe that the RMB was undervalued in the beginning and thus pour enormous amounts of speculative hot money into China after 2002? The following section will discuss the equilibrium exchange rate of the RMB.

<sup>18</sup>China's researchers at the Development Research Center of the State Council and the National Bureau of Statistics use the same method to estimate the international hot money flowing into China. See He Jingping, "Dalu you duoshao reqian?" (大陸有多少熱錢? How much hot money is there in China?), *Gongshang shibao*, August 10, 2006; Xia Bin and Chen Daofu, "Guoji huobi tixi shihengxia de Zhongguo huilu zhengce" (China's foreign exchange rate policy in the disequilibrium of the international monetary system), *Jingji yanjiu* (Economic Research), 2006, no. 2 (February): 4-15.

**Table 3**  
**Estimates on International Hot Money into China, 1990-2006**

Unit: US\$ billion

Year	Increase of foreign exchange reserves	Increase of FDI	Trade balance	Estimate on hot money
1990	5.5	3.5	8.7	-6.7
1991	10.6	4.4	8.1	-1.8
1992	-2.2	11.0	4.4	-17.6
1993	1.8	27.5	-12.2	-13.5
1994	30.4	33.8	5.4	-8.8
1995	22.0	37.5	16.7	-32.2
1996	31.4	41.7	12.2	-22.5
1997	34.9	45.3	40.4	-50.8
1998	5.1	45.5	43.6	-84.0
1999	9.7	40.3	29.2	-59.8
2000	10.9	40.7	24.1	-53.9
2001	46.6	46.9	22.6	-22.8
2002	74.2	52.7	30.4	-8.9
2003	161.9	53.5	25.5	82.8
2004	206.6	60.6	32.0	114.0
2005	208.9	101.9	60.3	46.7
2006	247.4	177.5	63.0	6.9

**Note:** Estimated hot money = increase of foreign exchange reserves — increase of FDI — trade balance.

**Source:** Calculated by the author.

### *Estimates of the Equilibrium Exchange Rate of the RMB*

Studies that attempt to estimate the "equilibrium" exchange rate of the RMB have proliferated in recent years. Generally speaking, two broad approaches can be employed to estimate the equilibrium exchange rate of the RMB: a macroeconomic balance approach or an extended purchasing power parity (PPP) approach. Dunaway and Li examined a sample of these studies, with estimates of RMB undervaluation ranging from zero to nearly 50 percent. They attribute the wide variation in these estimates to the influence of such factors as which methodology is used, which explanatory variables are included, the subjective judgments of the various researchers

in deriving their results, and instability in the underlying economic relationships, especially in a rapidly developing economy like China.<sup>19</sup>

Even within a given approach, estimates for undervaluation of the RMB vary widely. The bottom line is that there is no consensus among these economists on the equilibrium level of the RMB exchange rate based upon the econometric models, but there is a consensus among most studies that the RMB is undervalued to some extent. In most of the studies, the estimated undervaluation by mid-2004 ranges between 15 and 30 percent.<sup>20</sup>

The IMF often calculates the equilibrium exchange rate as the rate that produces equilibrium in a country's balance of payments, where normal net capital flows equal the underlying current account, leaving a country's international reserves unchanged.<sup>21</sup> In China's case, steadily rising current and capital account surpluses over the last several years clearly suggest that the current level of the exchange rate is lower than its equilibrium level. China's balance of payments (BoP) surpluses increased by US\$25.8 billion in the first half of 2002 and reached US\$105.6 billion in the first half of 2005. Even with China's revaluation of the RMB after July 21, 2005, China's BoP surpluses continued to increase to US\$118.2 billion in the second half of 2005 (a 12.5 percent rise) and to US\$130.5 billion in the first half of 2006 (a 23.6 percent rise) (see figure 2). Such consistent surpluses imply that a further RMB appreciation would be needed to generate a deterioration in China's current account and restore China's balance of payments. For instance, in the first quarter of 2006, Goldman Sachs es-

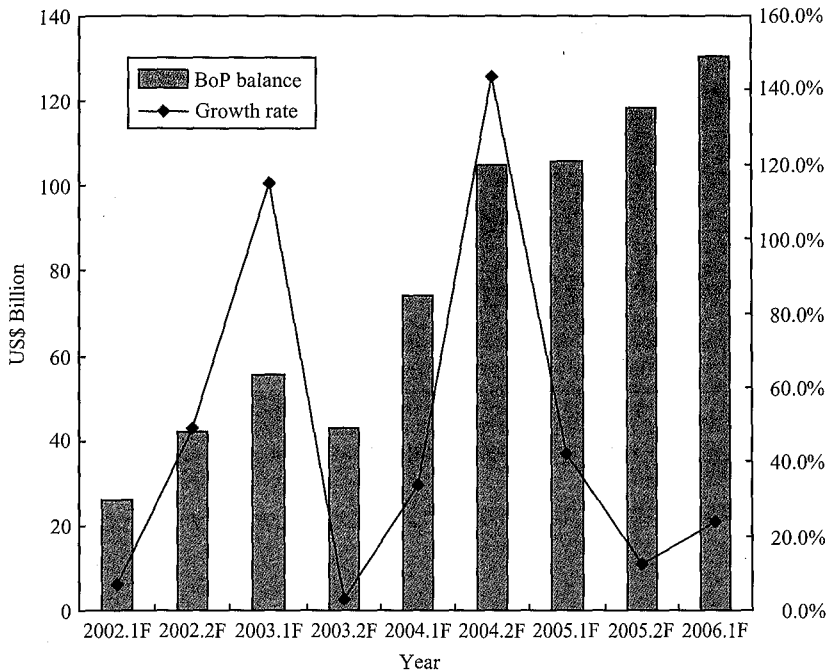
---

<sup>19</sup>Steven Dunaway and Xiangming Li, "Estimating China's 'Equilibrium' Real Exchange Rate," *IMF Working Paper*, WP/05/202 (2005).

<sup>20</sup>*Ibid.*; Fan Zhang and Zuhong Pan, "Determination of China's Long-Run Nominal Exchange Rate and Official Intervention," *China Economic Review* 15, no. 3 (2004): 360-65; Jeffrey A. Frankel, "On the Renminbi: The Choice between Adjustments under a Fixed Exchange Rate and Adjustment under a Flexible Rate," and Morris Goldstein, "Adjusting China's Exchange Rate Policies" (Both revised versions of papers presented at the seminar on China's Foreign Exchange System jointly sponsored by the IMF and the People's Bank of China, Dalian, China, May 26-27, 2004); Jonathan Anderson, "The Complete RMB Handbook," *Asian Economic Perspectives* (UBS Securities Asia Ltd., October 27, 2003); and Bond, Kasumovich, Kontopoulos, and Low, "China's FX Regime: Moving the Great Wall" (March 3, 2004).

<sup>21</sup>Goldstein, "Adjusting China's Exchange Rate Policies."

**Figure 2**  
**The Increase of China's Balance of Payments Surpluses, 2002-06**

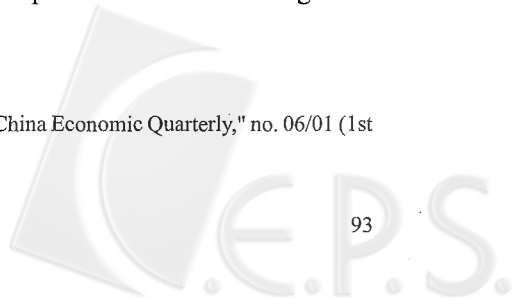


**Source:** China State Administration of Foreign Exchange, <http://www.safe.gov.cn>.

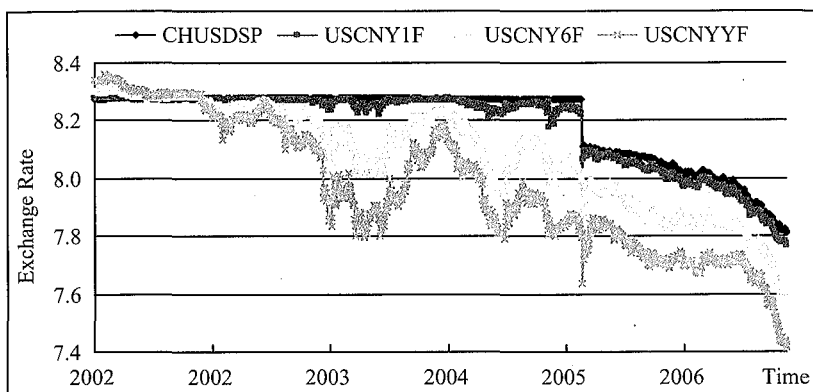
timated that the RMB was still undervalued by 13.5 percent relative to the U.S. dollar on a bilateral basis.<sup>22</sup>

The numerous studies done thus far have stoked further debate, rather than contributed to a consensus on the issue. A definitive answer is not likely to be forthcoming any time soon. Given the methodological and empirical difficulties in trying to measure an "equilibrium" exchange rate, the estimates in these studies may help us understand the long-term

<sup>22</sup>Hong Liang, Helen Qiao, Yu Song, and Eva Yi, "China Economic Quarterly," no. 06/01 (1st Quarter 2006) (Goldman Sachs), 13.



**Figure 3**  
**RMB Spot and Forward Rates, 2002-06**



**Note:** USCNY1F refers to RMB to US\$ 1 month forward; USCNY6F refers to RMB to US\$ 6 month forward; USCNY1YF refers to RMB to US\$ 1 year forward; CHUSDSP refers to RMB to US\$ spot rate.

**Source:** Datastream.

prospects for the RMB exchange rate and this might play a more important role in understanding the trend of the RMB spot rates.

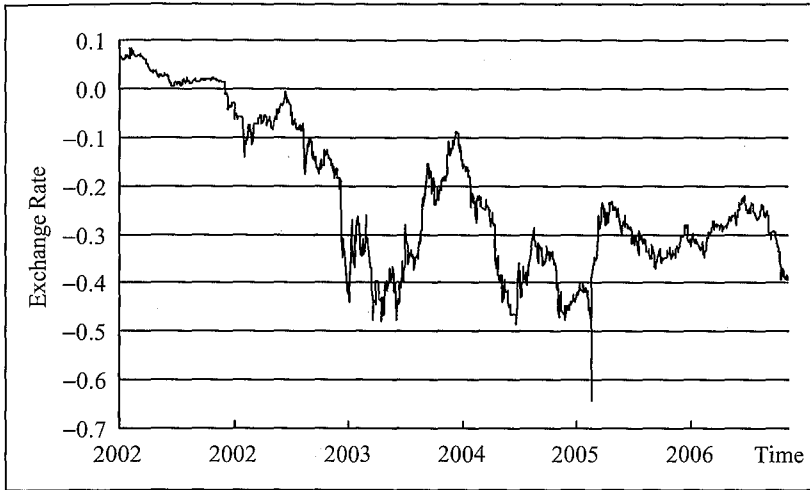
#### *The Expectation of RMB Exchange Rates*

The expectation of RMB exchange rates is reflected by the RMB forward rates. Figure 3 shows the RMB/USD spot rates, one-month RMB/USD forward rates, six-month RMB/USD forward rates, and one-year RMB/USD forward rates. After November 2002, all three forward rates showed that RMB exchange rates were expected to appreciate. The RMB spot rates were highly influenced by the RMB forward rates. Between February 11, 2002, and December 29, 2006, the correlations between the RMB/USD spot rates and the one-month RMB/USD forward rates, the six-month RMB/USD forward rates, and the one-year RMB/USD forward rates were 99.4 percent, 88.7 percent, and 76.7 percent, respectively.

In the long term, the one-year RMB forward rates should generally reflect the expectation of RMB exchange rates. From September 23, 2003,



**Figure 4**  
**Difference between One-Year RMB/USD Forward Rates and RMB/USD Spot Rates, 2002-06**



Source: Datastream.

to April 23, 2004, the one-year RMB/USD forward rate was 7.9063 on average, while the RMB/USD spot rate stayed at 8.2770. The expected appreciation rate of the RMB against the USD was 4.5 percent within one year. From October 25, 2004, to July 20, 2005, the one-year RMB/USD forward rate was 7.8818 on average, while the RMB/USD spot rate remained steady at 8.2766. The expected appreciation rate of the RMB against the USD was 4.8 percent within one year. After the Chinese government adopted a new exchange rate level and regime, between July 21, 2005, and December 29, 2006, the one-year RMB/USD forward rate was 7.7104 on average, while the RMB/USD spot rate remained at 8.0096. The expected appreciation rate of the RMB against the USD was 3.8 percent within one year (see figure 4).

There has been no sign of the RMB exchange rate reaching its equilibrium level, thus stopping China's rapid accumulation of foreign exchange reserves. The following section will elaborate on the impact of

China's increasing external imbalances on its internal macroeconomic fundamentals.

### **China's Internal Imbalances**

#### *Rising Sterilization Costs*

Sterilization can, for a period of time, be a good response to a huge capital inflow. In order to reduce the impact of increasing foreign exchange reserves on the domestic money supply, the PBoC conducted open market operations through issuing central bank bills of RMB722.7 billion (5.3 percent of GDP) in 2003, RMB1,507.2 billion (9.4 percent of GDP) in 2004, RMB2,788.2 billion (15.3 percent of GDP) in 2005, and RMB3,650 billion (17.5 percent of GDP) in 2006. However, this may become increasingly difficult over time as China accumulates foreign exchange reserves at an accelerating pace. Moreover, it may prolong, not solve, the balance-of-payments disequilibrium.

#### *Losing Monetary Autonomy*

More troublesome yet, China's central bank sterilized only part of the excess foreign exchange inflow, seriously undermining its monetary policy independence. From 2003 to 2006, the PBoC has had no choice but to throw in RMB6,380.4 billion of base currency to purchase the unimpeded flow of foreign exchange into China. This is called by the PBoC reserve coverage of money supply. After the PBoC carried out the sterilization through open market operations, Chinese foreign exchange deposits contributed net RMB328.6 billion of base money or 53.8 percent of increased base money in 2003, net RMB2,097.9 billion of base money or 367.7 percent of increased base money in 2004, net RMB344.9 billion of base money or 62.9 percent of increased base money in 2005, and net RMB1,280.9 billion of base money or 97.7 percent of increased base money in 2006. Between 2003 and 2006, Chinese foreign exchange deposits contributed net RMB4,106.3 billion of base money or 123.1 percent of increased base money (see table 4).

**Table 4**  
**Reserve Coverage of Money Supply, 2003-06**

Year	2003	2004	2005	2006	2003-06
Reserve increase (US\$ billion)	116.9	206.6	208.9	247.4	779.8
Reserve coverage of money supply (RMB billion)	967.9	1,710.6	1,729.7	1,972.2	6,380.4
Net sterilization (RMB billion)	-585.3	387.3	-1,384.8	-691.3	-2,274.1
Net reserve contribution to base money increase (RMB billion)	328.6	2,097.9	344.9	1,280.9	4,106.3
Increase of total base money (RMB billion)	611.1	570.6	548.7	1,311.5	3,334.5
Proportion of net reserve contribution to total base money increase (%)	53.8	367.7	62.9	97.7	123.1

**Note:** Reserve coverage of money supply is calculated based upon an 8.28 RMB/USD exchange rate.

**Source:** Calculated by the author.

As a result of this, the money supply is heavily influenced by foreign reserve accumulation. Broad money M2 amounted to RMB13.2 trillion (133.5 percent of GDP) at the end of 2000 and increased to RMB34.6 trillion (165.5 percent of GDP) at the end of 2006, more than doubling within six years. The average growth rate of M2 was 17.9 percent between 2002 and 2006, up from 14.1 percent between 1998 and 2001. Meanwhile, the outstanding balance of RMB loans from financial institutions increased from RMB9.9 trillion (100.2 percent of GDP) at the end of 2000 to RMB22.5 trillion (107.7 percent of GDP) at the end of 2006, more than doubling within six years.

#### *Rising Investment Rate*

Rising money supply and loan provision have led to very high investment rates. The rates of investment in 2003, 2004, and 2005 were 42.3 percent, 44.2 percent, and 44.8 percent, respectively. The average rate of investment between 2003 and 2005 was 43.8 percent, which was

**Table 5**  
**China's Investment Rate, 1990-2006**

Year	Investment rate (%)	Growth rate of fixed asset investment (%)
1990	35.2	2.4
1991	35.3	23.9
1992	37.3	44.4
1993	43.5	61.8
1994	41.3	30.4
1995	40.8	17.5
1996	39.3	14.8
1997	38.0	8.8
1998	37.4	13.9
1999	37.1	5.1
2000	36.4	10.3
2001	38.0	13.0
2002	39.2	16.9
2003	42.3	27.7
2004	44.2	26.6
2005	44.8	25.7
2006	N.A.	25.3

**Source:** National Bureau of Statistics of China, <http://www.stats.gov.cn>.

even higher than the 40.7 percent average between 1992 and 1994, when the Chinese economy was suffering from severe overheating, and much higher than the 37.8 percent average for the entire reform era between 1979 and 2005 (see table 5).

#### *Understated Inflation with an Asset Market Bubble*

Surprisingly, rising money supply, loan provision, and investment in China did not result in high inflation. Affected by rising prices of food and production materials, the consumer price index (CPI) in China increased from negative 1.3 percent in April 2002 to positive 5.3 percent in July-August 2004, the highest in seven years. The monthly CPI increased by 6.6 percent over two and a half years, indicating the rising pressure of

**Table 6**  
**Inflation Rates in China from 2003 to 2006 (%)**

<b>Time</b>	<b>Inflation rate</b>	<b>Growth rate of food prices</b>	<b>Growth rate of non-food prices</b>
September 2003	1.1	3.2	0.1
November 2003	3.0	8.1	0.4
January 2004	3.2	8.0	0.7
March 2004	3.0	7.9	0.5
May 2004	4.4	11.8	0.6
July 2004	5.3	14.6	0.8
September 2004	5.2	13.0	1.3
November 2004	2.8	5.9	1.2
January 2005	1.9	4.0	0.8
March 2005	2.7	5.6	1.2
May 2005	1.8	2.8	1.2
July 2005	1.8	2.3	1.5
September 2005	0.9	0.3	1.2
November 2005	1.3	1.6	1.2
January 2006	1.9	3.6	1.0
March 2006	0.8	0.8	0.8
May 2006	1.4	1.9	1.1
July 2006	1.0	0.6	1.2
September 2006	1.5	2.4	1.1
November 2006	1.9	3.7	1.0
December 2006	2.8	6.3	N.A.

**Source:** National Bureau of Statistics of China, <http://www.stats.gov.cn>.

inflation in China. The rise in food prices was the primary factor underlying the CPI increase in China. As a result of declining food prices, the CPI fell to 0.9 percent in September 2005, then rose slightly to 2.8 percent in December 2006 after another rise in food prices. Between September 2003 and December 2006, the correlation between the monthly CPI and the growth rate of food prices was 98.4 percent (see table 6).

However, China's inflation is understated by the CPI. The low weights assigned to several categories of goods and services included in

China's CPI—in particular housing, medical care, and education—are no longer realistic.<sup>23</sup> In particular, the market price of real estate in China has been increasing rapidly since 2003. According to surveys conducted by the Chinese government in 35 medium and large cities, the rise in house prices increased from 1.6 percent in 2000-01, to 3.2 percent in 2002, 4.8 percent in 2003, 9.7 percent in 2004, 7.6 percent in 2005, and 5.5 percent in 2006.

The asset market bubble was evident with the expanding gap between the rise in house prices and the rise in rents. The difference was negative 0.5 percent during 2000-01, increasing to 2.2 percent in 2002, 2.9 percent in 2003, 8.3 percent in 2004, 5.7 percent in 2005, and 4.1 percent in 2006 (see table 7). The still overheated real estate market was the primary factor contributing to investment expansion in real estate and other sectors, including iron and steel, cement, and electrolytic aluminum.

#### *Interest Rate Dilemma*

Up to mid-2005, the Chinese government primarily relied on administrative measures rather than monetary policy to cool down economic overheating and prevent an asset market bubble. The government raised the deposit-reserve ratio by 1 percentage point (from 6 percent to 7 percent) on September 21, 2003, and by 0.5 percentage points (from 7 percent to 7.5 percent) on April 11, 2004. After its reforms of the foreign exchange rate regime on July 21, 2005, China further raised the deposit-reserve ratio by 0.5 percentage points on seven occasions, increasing it to 11 percent on May 15, 2007. In addition, the PBoC decided to raise the central bank benchmark rates for deposit and lending by 0.27 percentage points on October 29, 2004, to remove the ceiling on lending rates, and allow financial institutions to lower RMB deposit rates. In 2006, the PBoC further raised the benchmark lending rates by 0.54 percentage points to 6.12 percent.

---

<sup>23</sup>Pieter Bottelier, presentation note at the China Seminar, sponsored by the American Enterprise Institute, January 10, 2005.

**Table 7**  
**Growth Rate of Housing Prices and Rental Prices, 2000-06**

Time	Growth rate of housing prices	Growth rate of rental prices (%)	Difference (%)
2000, quarter 1	0.7	-0.6	1.3
2000, quarter 2	1.1	2.7	-1.6
2000, quarter 3	1.5	2.2	-0.7
2000, quarter 4	1.2	5.2	-4.0
2001, quarter 1	N.A.	N.A.	N.A.
2001, quarter 2	2.5	3.1	-0.6
2001, quarter 3	2.7	1.6	1.1
2001, quarter 4	1.8	0.9	0.9
2002, quarter 1	N.A.	N.A.	N.A.
2002, quarter 2	2.8	1.2	1.6
2002, quarter 3	N.A.	N.A.	N.A.
2002, quarter 4	3.5	0.8	2.7
2003, quarter 1	4.8	1.7	3.1
2003, quarter 2	5.0	1.9	3.1
2003, quarter 3	4.1	1.8	2.3
2003, quarter 4	5.1	2.2	2.9
2004, quarter 1	7.7	0.6	7.1
2004, quarter 2	10.4	1.0	9.4
2004, quarter 3	9.9	2.1	7.8
2004, quarter 4	10.8	2.0	8.8
2005, quarter 1	9.8	1.9	7.9
2005, quarter 2	8.0	1.9	6.1
2005, quarter 3	6.1	2.1	4.0
2005, quarter 4	6.5	1.6	4.9
2006, quarter 1	5.5	1.4	4.1
2006, quarter 2	5.7	1.7	4.0
2006, quarter 3	5.5	1.1	4.4
2006, quarter 4	5.3	1.4	3.9

**Note:**

1. Since July 2005, the Chinese government has expanded its survey coverage from 35 medium-large cities to 70 medium-large cities.

2. N.A. means data not available.

**Source:** China National Development and Reform Commission, <http://www.sdpc.gov.cn>.

Despite these measures, China does not want to raise interest rates dramatically for three reasons. First, the Chinese government worries that an across-the-board increase in interest rates will affect the economic growth rate, leading to high unemployment and social instability. During 2004-06, the official registered urban unemployment rate was 4.2 percent on average, which was much lower than the real rate. For instance, in September 2002, Premier Zhu Rongji (朱镕基) admitted to a 7 percent urban unemployment rate, at a time when the official rate was just 3.8 percent. In 2004, the Chinese economy would have needed to provide another 29 million jobs for the urban labor force, which would have required at least an 8 percent economic growth rate, even to maintain a modest increase in the urban unemployment rate.

Second, no problems will be solved by raising interest rates to reduce credit expansion without corresponding action by the U.S. government. For instance, in March 2004, the interest rate for PBoC loans to Chinese financial institutions was 3.33 percent, whereas the rate for U.S. Federal Funds was 1.0 percent, already a 2.33 percentage point difference. Raising interest rates would draw in more speculative hot money, resulting in an increase in the money supply in China which, in the absence of sterilization, risks intensifying the problem of overheating.<sup>24</sup>

Third, raising interest rates tends to reduce overall consumption and investment growth, which will worsen deflation in most industrial sectors. China's current macroeconomic controls aim to simultaneously cool down and heat up different parts of the economy. This is far more difficult than simply cooling down the economy as a whole. The following section discusses the underlying deflation pressure in China.

### *Deflation Pressure*

According to surveys of the supply and demand of 600 commodities conducted by the Chinese Ministry of Commerce, 527 items or 86.5 per-

---

<sup>24</sup>The U.S. Federal Reserve Board has kept raising the interest rate for Federal Funds since July 2004. The interest rate was above 3.5 percent after August 2005 and reached 4.59 percent in March 2006, which was much higher than China's 3.33 percent.



**Table 8**  
**The Market Condition of Supply and Demand of 600 Commodities, 2001-06**

Time	Unit: item, %		
	Excess supply	Balanced	Excess demand
2001, first half	527 (86.5%)	78 (12.8%)	4 (0.7%)
2001, second half	500 (82.9%)	103 (17.1%)	0 (0.0%)
2002, first half	518 (86.3%)	82 (13.7%)	0 (0.0%)
2002, second half	528 (88.0%)	72 (12.0%)	0 (0.0%)
2003, first half	513 (85.5%)	87 (14.5%)	0 (0.0%)
2003, second half	473 (78.8%)	127 (21.2%)	0 (0.0%)
2004, first half	462 (77.0%)	138 (23.0%)	0 (0.0%)
2004, second half	446 (74.3%)	154 (25.7%)	0 (0.0%)
2005, first half	439 (73.2%)	161 (26.8%)	0 (0.0%)
2005, second half	428 (71.3%)	172 (28.7%)	0 (0.0%)
2006, first half	430 (71.7%)	170 (28.3%)	0 (0.0%)
2006, second half	428 (71.3%)	172 (28.7%)	0 (0.0%)

**Note:** There were 609 commodities in the survey in the first half of 2001, 603 items in the second half of 2001, and 600 items for other years.

**Source:** Department of Market Operation Regulation, Ministry of Commerce of China, <http://scyxs.mofcom.gov.cn>.

cent of total commodities were in a status of excess supply, while only 4 items or 0.7 percent were in a status of excess demand in the first half of 2001. From the second half of 2001 to the second half of 2006, no single item was in excess demand, although the proportion of total commodities that held the status of excess supply declined from 86.5 percent in the first half of 2001 to 71.3 percent in the second half of 2006. That is to say, while most industries have been in a state of deflation, a handful of sectors (such as the real estate sector) have been overheated, leading to serious imbalances among sectors in the economy (see table 8).

#### *Increasing Financial Risks*

The Chinese government was quite concerned about its financial stability before it conducted its reform of the foreign exchange rate regime on

July 21, 2005. Defending a peg rate regime, Premier Wen Jiabao (溫家寶) asserted that "the most important thing is that we need a stable macro-economic environment, a healthy market mechanism, and a healthy financial system."<sup>25</sup> After the reforms, in defense of their go-slow approach to adjusting the RMB exchange rate, Chinese officials asserted that a sudden change in the rate would jeopardize China's fragile banks and financial industry.<sup>26</sup> Nevertheless, given the existing approach to adjusting the RMB exchange rate, China's financial risks are increasing in four respects: increasing sterilization bonds, increasing short-term foreign debts, increasing mismatch of asset and debt maturity structure, and emerging non-performing loans.

First, between 2003 and 2006, the PBoC sterilized foreign exchange reserves by issuing central bank bills of RMB8,668.1 billion (41.4 percent of GDP in 2006). The Chinese government is able to force its enormous sterilization bonds down the throats of Chinese state-owned banks without paying market interest rates, a form of financial repression. This just weakens the balance sheets of banks and raises the odds of a banking crisis somewhere down the road.

Second, China's short-term foreign debts have been rapidly increasing since 2001. Between 1998 and 2001, China's short-term foreign debts were worth US\$15.2 billion on average and the share of short-term foreign debts in total foreign debts was 10.3 percent on average. Then, both figures jumped to US\$50.6 billion and 29.7 percent in 2001, US\$77 billion and 39.8 percent in 2003, and US\$183.6 billion and 56.9 percent in 2006. Although the amount of China's short-term foreign debts is still moderate compared to its immense foreign exchange reserves, the rapid increase would entail risks for the Chinese financial system if China were to have huge current account deficits and lose its foreign exchange reserves rapidly in the future (see table 9).

---

<sup>25</sup>"China's Wen Says Currency Will Only Change When Time Is Right," Agence France Presse, November 29, 2004.

<sup>26</sup>Joe McDonald, "U.S. Pushes China on Currency Value," *Houston Chronicle*, December 15, 2006, 2.

**Table 9**  
**The Share of Short-Term Foreign Debts in Total Foreign Debts, 1998-2006**

Unit: US\$ billion; %

Time	Balance	Medium- and long-term debt balance	Share	Short-term debt balance	Share
December 1998	146.0	128.7	88.1	17.3	11.9
December 1999	151.8	136.7	90.0	15.2	10.0
December 2000	145.7	132.7	91.0	13.1	9.0
December 2001	170.1	119.5	70.3	50.6	29.7
December 2002	168.5	115.6	68.6	53.0	31.4
December 2003	193.6	116.6	60.2	77.0	39.8
December 2004	228.6	124.3	54.4	104.3	45.6
December 2005	281.1	124.9	44.4	156.1	55.6
December 2006	323.0	139.4	43.1	183.6	56.9

**Sources:** National Bureau of Statistics of China, <http://www.stats.gov.cn>; and China State Administration of Foreign Exchange, <http://www.safe.gov.cn>.

Third, in the past five years, Chinese commercial banks have tended to have short-term debts and carry long-term assets, constituting an increasing mismatch of the debts and assets maturity structure. The proportion of short-term savings deposits in total household savings deposits in financial institutions increased from 28.3 percent at the end of 2000 to 34.6 percent at the end of 2005. Meanwhile, medium- and long-term loans as a proportion of total loans increased from 29.8 percent at the end of 2000 to 50.0 percent at the end of 2005.

Fourth, the rapid expansion of investment under the guidance of local governments can easily lead to blind investing and redundant construction and may result in new non-performing loans (NPLs), further aggravating financial risks.<sup>27</sup> The proportion of fixed asset investment conducted by local governments increased from 76.5 percent in 2001 to 80.6 percent in 2002, 86.4 percent in 2003, 87.6 percent in 2004, 88.2 percent in 2005, and

<sup>27</sup>"NPLs of China's Commercial Banks Continue to Decrease During the 3rd Quarter of 2004" (in Chinese), China Banking Regulatory Commission, October 28, 2004.

88.5 percent in 2006. There was a further increase to 90.3 percent in the first quarter of 2007. In particular, once the asset market bubble bursts, NPLs made by the Chinese banking system will increase sharply and thus exacerbate the already serious financial risks in China. During the period 1992-94, 40 percent of new loans became NPLs.<sup>28</sup> If only one-third of the new loans extended between 2002 and 2005 resulted in NPLs, the stock of NPLs would have increased by RMB2.7 trillion (15 percent of GDP in 2005) during this period.

### **Suggestions on China's RMB Exchange Rate Policy**

#### *A Long-Term Strategy and a Short-Term Solution*

In the long term, as its financial system gradually becomes integrated with the rest of the world, China might transform its exchange rate regime into a pure float or monetary union. Monetary union should not be the priority for such a large economic entity as China in the long term, because that would cause China to lose its monetary independence. Nevertheless, it would be premature for China to introduce a pure floating exchange rate regime now, because such a regime might cause an undershooting or overshooting problem in China's fragile financial system, dramatically impacting on overall economic development. In addition, due to the lack of an appropriate risk-prevention mechanism, free floating exchange rates would have an adverse impact on international trade and investment.

Furthermore, it is in China's best interests to maintain capital account controls in the short term due to weaknesses in its financial system. It is extremely perilous for the Chinese government to expand its capital account in order to encourage capital outflow and thus reduce its rapid accumulation of foreign exchange reserves. It will be very difficult to close the Chinese capital account when the massive capital inflow turns into a sudden outflow, which might trigger a balance-of-payments crisis and a

---

<sup>28</sup>Morris Goldstein and Nicholas R. Lardy, "What Kind of Landing for the Chinese Economy," *Policy Briefs* (Institute for International Economics), no. PB04-7 (2004): 6.

hard landing for the Chinese economy.<sup>29</sup>

Obviously, the current gradualist approach cannot reverse the increasing trend toward internal and external economic imbalances in the short term. This approach will not stop the huge capital inflows and the associated vast reserve accumulation. In the first quarter of 2007, China's reserves increased by US\$135.7 billion or 141 percent over the previous year. Indeed, the go-slow approach may actually invite more hot money inflows since speculators will assume that these small policy adjustments are only the precursors of a large exchange rate appreciation. That is, the go-slow approach may well create a "one-way bet" for speculators and thereby increase speculation on a RMB appreciation.

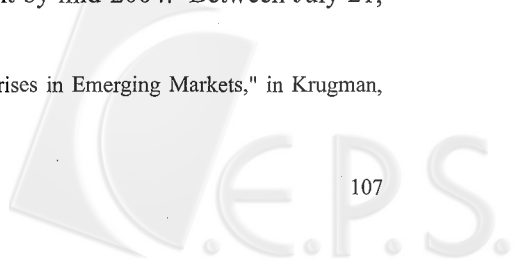
In dealing with the growing loopholes in capital account controls, the Chinese government should consider expanding the floating band of the RMB exchange rate in order to adapt to integration trends in the international capital market. This could serve well as an exit strategy from a fixed rate to a more flexible regime during a transitional period into the long term. In addition, the sharp devaluation of the U.S. dollar against other major currencies between 2002 and 2004 has resulted in persistent expectations of a RMB appreciation since 2002, attracting considerable hot money inflows into China.

Based upon the above concerns, to address China's increasing external and internal economic imbalances, the Chinese government should simultaneously adopt the following three steps: (1) allow the RMB to appreciate immediately by 10 percent by early 2007; (2) expand the floating band from  $\pm 0.3$  percent to 5-7 percent around a central parity; and (3) maintain the central parity based on the new level of the RMB exchange rate until the rate is again out of equilibrium by a wide margin.

These steps will reduce speculative expectation of disequilibrium of the RMB exchange rate in the market, and reduce the need for frequent adjustment of the RMB exchange rate. Most econometric studies show that the RMB was undervalued by 15 percent by mid-2004. Between July 21,

---

<sup>29</sup>Guillermo A. Calvo, "Balance-of-Payments Crises in Emerging Markets," in Krugman, *Currency Crises*, 71-104.



2005, and April 20, 2007, the RMB has appreciated by 6.9 percent. However, the expected appreciation rate of the RMB against the USD was still 4.0 percent within one year on average between July 22, 2005, and April 20, 2007, compared to 4.8 percent between late 2004 and mid-2005. That is, 10 percent is probably the estimated minimum margin of a RMB appreciation by early 2007. A 10 percent appreciation of the RMB by early 2007 will fulfill the market expectation and thus immediately reduce the speculative and foreign political pressure on the RMB exchange rate. In addition, by widening the currency band, China can gain valuable experience in managing greater currency flexibility, at the same time as it improves institutional structures and the depth of the foreign exchange market.

If the Chinese government does not allow for full appreciation of the RMB, the net inflow of international capital and the dramatic increase of foreign exchange reserves, including speculative hot money, will continue. The external imbalances will result in ballooning sterilization costs, loss of monetary autonomy, a growing asset market bubble, and increased financial risks. Meanwhile, it is important to convince market participants that the change in exchange rates is complete, not the first step; the mechanism of the RMB exchange rate formation is reasonable; and the RMB exchange rate will not lose equilibrium in the short term.

*Address Chinese Concerns about the Negative Impacts*

Chinese policymakers have three major concerns about a 10 percent revaluation of the RMB: that it will destabilize the financial system, causing deflation and undermining export competitiveness, which will thus reduce economic growth and increase unemployment pressure. For instance, Fan Gang (樊綱), a member of China's monetary policy committee, has argued that a rapid revaluation of the RMB could have catastrophic consequences for the country's economic development and the employment of millions of poor workers in China.<sup>30</sup> However, with the existing

---

<sup>30</sup>Peter Garnham, "China's Reserves Exceed Dollars 1,000bn," *Financial Times*, November 7, 2006, 46.

approach to adjusting the RMB exchange rate, China's financial risks are increasing, instead of shrinking, as discussed in the previous section. In addition, the other two concerns are overstated. Parenthetically, on August 22, 2006, China's research team on RMB revaluation at the Ministry of Commerce confirmed the above assertion.<sup>31</sup>

First, the vast majority of China's trade is based on processing trade, and almost half of the raw materials or intermediate goods will be re-exported after processing. In 2003-06, around 55 percent of China's exports were processing exports, whereas the processing imports accounted for around 40 percent. The impact of a RMB appreciation on domestic prices would not completely reflect the range of nominal appreciation.

Second, a RMB revaluation would reduce import costs, thus balancing part of the negative impact of the currency appreciation on China's export competitiveness. Labor costs and domestic materials account for only 30 percent of China's processed exports and 50 percent of total exports.<sup>32</sup> Therefore, if the RMB were to appreciate by 15 percent, the total price of China's exports, denominated in foreign currencies, would either remain the same or drop by 6 percent, making China's exports even more competitive.<sup>33</sup>

Third, previous experience tells us that changes in the nominal exchange rate of the RMB do not adversely affect China's export competitiveness. During 1992-2004, the correlation rate between the nominal effective exchange rate (NEER) of the RMB and China's export growth was negative 17.5 percent, while that between the RMB/USD exchange rate and the growth of China's exports to the United States was negative 71.8 percent.

---

<sup>31</sup>Research Team of the Ministry of Commerce (China) on the Impact of the Renminbi Revaluation, "Renminbi shengzhi dui woguo weijingmao fazhan de yingxiang" (The impact of the RMB revaluation on China's external economic and trade development) (August 22, 2006), [http://big5.ce.cn/cysc/main/jtfzspshwll/200608/22/t20060822\\_8235860\\_1.shtml](http://big5.ce.cn/cysc/main/jtfzspshwll/200608/22/t20060822_8235860_1.shtml) (accessed August 31, 2006).

<sup>32</sup>Anderson, "The Complete RMB Handbook," 16.

<sup>33</sup>If labor costs and domestic materials accounted for 30% of China's processed exports, China's export prices, denominated in foreign currencies, would decrease by 6% ( $=30\% \times 115\% + 70\% \times 85\%$ ). If labor costs and domestic materials accounted for 50% of China's total exports, China's export prices, denominated in foreign currencies, would remain at the same level ( $=50\% \times 115\% + 50\% \times 85\%$ ).

**Table 10**  
**The RMB Exchange Rate and China's Export Competitiveness, 1992-2004**

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Nominal effective exchange rate	119.27	95.75	86.68	85.63	89.25	95.11	99.45	97.31	100.0	104.49	103.59	96.48	92.01
Export growth (%)	18.1	8.0	31.9	23.0	1.5	21.0	0.5	6.1	27.8	6.8	22.4	34.6	35.4
RMB/US dollar exchange rate	5.51	5.77	8.45	8.32	8.30	8.28	8.28	8.28	8.28	8.28	8.28	8.28	8.28
Growth of exports to the U.S. (%)	36.7	102.2	26.2	15.5	8.0	22.5	16.0	10.7	24.1	4.2	28.8	32.2	35.1
Share of the global export market (%)	2.3	2.4	2.8	2.9	2.8	3.3	3.3	3.4	3.9	4.3	5.0	5.8	6.5

**Notes:**

1. Nominal effective exchange rate (NEER) is calculated as a weighted average of nominal exchange rates against main trade partner countries' currencies. NEERs are presented as indices. Growth of the index means appreciation of the local currency. Reduction indicates depreciation.
2. The data on China's exports to the United States comes from official Chinese statistics.

**Sources:** World Trade Organization, The International Financial Statistics by the International Monetary Fund, <http://www.wto.org>; and Chinese Ministry of Commerce, <http://www.mofcom.gov.cn>.

Moreover, China's share of the global export market increased from 2.3 percent in 1992 to 6.5 percent in 2004. China's share of the global export market is still expanding, despite the fact that the RMB appreciated against Asian currencies by around 40 percent in the aftermath of the Asian financial crisis of 1997 and 15 percent by late 2003.<sup>34</sup> After China's revaluation of the RMB on July 21, 2005, China's exports continued to increase by 24.6 percent on average between August and December 2005, 27.2 percent in 2006, and 27.8 percent in the first quarter of 2007. That is to say, China's export competitiveness is primarily based on cheap labor in China, rather than on maintaining a cheap RMB (see table 10).

<sup>34</sup>Anderson, "The Complete RMB Handbook," 40.



Finally, the experience of the 1990s does not suggest that nominal appreciation of the RMB will cause China's growth performance to suffer unduly. Between 1994 and 2001, the NEER of the RMB rose by 17.8 percent, while the average growth rate of the Chinese economy from 1994 through 2001 was 9.4 percent and in no single year did the growth rate fall below 7.5 percent. In 2004-06, the overheated Chinese economy grew at 10.4 percent, causing the asset market bubble to grow and financial risks to escalate. The sustainable growth rate is clearly less than that. It is hard to imagine that a 10 percent nominal appreciation of the RMB would cause China's growth to fall much below the desired rate.

### **Conclusion**

In the long term, as China gradually becomes financially integrated with the rest of the world, it might transform its exchange rate regime into a pure float or monetary union. However, it would be premature to do this now. In addition, China should not lift capital account controls in the short term in order to maintain its financial stability. Nevertheless, China needs to face the hard reality of its increasing capital account leakage.

The sharp devaluation of the U.S. dollar against other major currencies between 2002 and 2004 has resulted in an undervalued RMB and caused China to accumulate considerable foreign exchange reserves (including hot money). In turn, mounting external economic imbalances have led to growing internal economic imbalances, characterized by the asset market bubble and ever-increasing financial risks. Furthermore, the major developed economies have been exerting tremendous political pressure on the Chinese government to accelerate the reform of its RMB exchange rate regime. In particular, the U.S. trade deficit with China climbed to US\$232.5 billion in 2006, the highest trade gap ever recorded with a single country.<sup>35</sup>

---

<sup>35</sup>Peter S. Goodman, "Senators Vent on Chinese Currency," *Washington Post*, February 1,

Based on the above trends, a practical approach to the exchange rate issue for the Chinese government would be to allow the RMB to appreciate by 10 percent by early 2007, to expand the floating band of the RMB exchange rate from  $\pm 0.3$  percent to 5-7 percent, and to maintain the central parity based on a new RMB exchange rate until the rate is again out of equilibrium by a wide margin.

There is no need for a timetable for the adjustment of the RMB exchange rate as long as the Chinese government can tolerate the expanding economic bubble, escalating financial risks, and growing foreign political pressure resulting from the undervalued RMB. However, as long as China's economy remains overheated and expectations of a RMB revaluation persist, international hot money is likely to continue to flow into China, investing in overheated sectors and resulting in increased financial risks. This will further exacerbate the pressure on the RMB to appreciate and attract yet more hot money into China, until the point where the RMB is appropriately revalued. In the future, the awesome power of the international financial market will most likely create a "self-fulfilling prophecy" RMB appreciation.

#### BIBLIOGRAPHY

- Anderson, Jonathan, 2003. "The Complete RMB Handbook." *Asian Economic Perspectives*, UBS Securities Asia Ltd., October 27.
- Bond, T. J., Marcel Kasumovich, Yianos Kontopoulos, and Vincent Low. 2004. "China's FX Regime: Moving the Great Wall." Merrill Lynch, March 3.
- Calvo, Guillermo A. 2000. "Balance-of-Payments Crises in Emerging Markets." In *Currency Crises*, ed. Paul Krugman, 71-104. Chicago: University of Chicago Press.

---

2007, D7; Matt Moore, "G-7 Recommends Vigilance on Hedge Funds, Foreign Currency Fluctuations," Associated Press, February 11, 2007; and Reuters, "Paulson, Warning About Trade Barriers, Says Economy Is Slowing but Healthy," *New York Times*, March 2, 2007, 7.

- \_\_\_\_\_, and Enrique G. Mendoza. 1996. "Mexico's Balance-of-Payments Crisis: A Chronicle of a Death Foretold." *Journal of International Economics* 41, nos. 3-4 (November): 235-64.
- \_\_\_\_\_, and Carmen M. Reinhart. 2002. "Fear of Floating." *Quarterly Journal of Economics* 117, no. 2 (May): 379-408.
- Christensen, Jakob. 2004. "Capital Inflows, Sterilization, and Commercial Bank Speculation: The Case of the Czech Republic in the Middle-1990s." *IMF Working Paper*, WP/04/218.
- Dunaway, Steven, and Xiangming Li. 2005. "Estimating China's 'Equilibrium' Real Exchange Rate." *IMF Working Paper*, WP/05/202.
- Eichengreen, Barry, Andrew K. Rose, and Charles Wyplosz. 1996. "Speculative Attacks on Pegged Exchange Rates: An Empirical Exploration with Special Reference to the European Monetary System." In *The New Transatlantic Economy*, ed. Matthew Canzoneri, Wilfred Ethier, and Vittorio Grilli, 191-235. New York: Cambridge University Press.
- Eichengreen, Barry, and Paul Masson. 1998. "Exit Strategies: Policy Options for Countries Seeking Greater Exchange Rate Flexibilities." *IMF Occasional Paper*, no. 168.
- Fischer, Stanley. 2001. "Exchange Rate Regimes: Is the Bipolar View Correct?" *Journal of Economic Perspectives* 15, no. 2 (Spring): 3-24.
- Frankel, Jeffrey A. 1999. "No Single Currency Regime Is Right for All Countries or at All Times." *Essays in International Finance* (Princeton University), no. 215.
- \_\_\_\_\_. 2004. "On the Renminbi: The Choice between Adjustments under a Fixed Exchange Rate and Adjustment under a Flexible Rate." Revised version of a paper presented at the seminar on China's Foreign Exchange System, jointly sponsored by the IMF and the People's Bank of China, Dalian, China, May 26-27.
- Goldstein, Morris. 2004. "Adjusting China's Exchange Rate Policies," Revised version of a paper presented at the seminar on China's Foreign Exchange System, jointly sponsored by the IMF and the People's Bank of China, Dalian, China, May 26-27.
- Goldstein, Morris, and Nicholas R. Lardy. 2004. "What Kind of Landing for the Chinese Economy." *Policy Briefs* (Institute for International Economics), no. PB04-7.
- Gunter, Frank R. 2004. "Capital Flight from China: 1984-2001." *China Economic*

Review 15, no. 1:63-85.

- International Monetary Fund. 2002. *Balance of Payments Statistics Yearbook*. Washington, D.C.: IMF.
- Krugman, Paul R. 1979. "A Model of Balance-of-Payments Crises." *Journal of Money, Credit and Banking* 11, no. 3 (August): 311-25.
- McKinnon, Ronald I. 2004. "The East Asian Dollar Standard." *China Economic Review* 15, no. 3:325-30.
- Obstfeld, Maurice. 1986. "Rational and Self-Fulfilling Balance-of-Payments Crises." *American Economic Review* 76, no. 1 (March): 72-81.
- \_\_\_\_\_. 1996. "Models of Currency Crises with Self-Fulfilling Features." *European Economic Review* 40, nos. 3-5 (April): 1037-47.
- Prasad, Eswar, Thomas Rumbaugh, and Qing Wang. 2005. "Putting the Cart before the Horse? Capital Account Liberalization and Exchange Rate Flexibility in China." *IMF Policy Discussion Paper*, PDP/05/1.
- Ministry of Commerce (China). 2006. "Renminbi shengzhi dui woguo waijingmao fazhan de yingxiang" (人民幣升值對我國外經貿發展的影響, The impact of the RMB revaluation on China's external economic and trade development). August 22. [http://big5.ce.cn/cysc/main/jtfzspssy/shwll/200608/22/t20060822\\_8235860\\_1.shtml](http://big5.ce.cn/cysc/main/jtfzspssy/shwll/200608/22/t20060822_8235860_1.shtml).
- Tung, Chen-yuan (童振源). 2005. "Renminbi huilv zhi guoji zhengzhi jingji fenxi" (人民幣匯率之國際政治經濟分析, An international politico-economic analysis of the RMB exchange rate). *Wenti yu yanjiu* (問題與研究, Issues and Studies) 44, no. 6:133-56.
- Xia, Bin (夏斌), and Chen Daofu (陳道富). 2006. "Guoji huobi tixi shihengxia de Zhongguo huilv zhengce" (國際貨幣體系失衡下的中國匯率政策, China's foreign exchange rate policy in the disequilibrium of the international monetary system). *Jingji yanjiu* (經濟研究, Economic Research), no. 2 (February): 4-15.
- Zhang, Fan, and Zuohong Pan. 2004. "Determination of China's Long-Run Nominal Exchange Rate and Official Intervention." *China Economic Review* 15, no. 3:360-65.