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THE ROLE OF THE RENMINBI IN CHINA’S EXTERNAL ADJUSTMENT

Jingtao Yi

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China Policy Institute
China House, University of Nottingham
University Park
Nottingham NG7 2RD
United Kingdom
Tel: +44 (0)115 846 7769
Fax: +44 (0)115 846 7900
Email: CPI@nottingham.ac.uk
Website: www.chinapolicyinstitute.org

Centre for Global Finance
199 Taikang East Road
University of Nottingham Ningbo, China
Ningbo 315100
China
Tel: +86 (0)574 8818 0031
Fax: +86 (0)574 8818 0031
Email: gfc@nottingham.edu.cn
Website: www.nottingham.edu.cn/gfc

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The Role of the Renminbi in China’s External Adjustment

Jingtao Yi *

Abstract
The renminbi debate in recent years raises the interesting question of whether correcting China’s external imbalances requires a revaluation of the Chinese currency. This paper addresses the issue based on the analysis of international adjustment mechanism (Krugman, 1987) and discusses possible ways for China to achieve an external balance. According to this study, China’s saving-investment imbalances have contributed to its external imbalances; correcting these imbalances therefore requires both a reversal of national saving-investment imbalances and an appreciation of the renminbi.

KEYWORDS: Renminbi, exchange rate, currency revaluation, external imbalance, current account adjustment
JEL Classification: F31, F32, F41

*Dr. Jingtao Yi is Associate Post-Doctoral Research Fellow of the China Policy Institute, School of Contemporary Chinese Studies at the University of Nottingham, UK. He is also Senior Research Fellow of the Centre for Global Finance at the University of Nottingham Ningbo, China.
The Role of the Renminbi in China’s External Adjustment

Jingtao Yi

1. Introduction

China’s astonishing sustained external imbalances since 2001 have sparked an exhaustive and continuous global debate over China’s exchange rate regime. Of concern are the revaluation of the renminbi (RMB) and the feasibility of the dollar peg in China before the state introduced a managed float linked to a basket of currencies in July 2005. Critics have called on China to allow a real appreciation of the RMB and move to a free float. Like most policy debates, the exchange rate debate stems in part from conflicts of interests and in part from legitimate disagreements over how the mechanism of international adjustment works among countries.

The debate on the role of the exchange rate in the international adjustment system confronts a widely-held notion that the high mobility of financial capital somehow allows changes in savings or investment to influence the trade balance directly, rather than via a mechanism in which the exchange rate plays a crucial role. To a large extent, the argument appears to stem from confusion over how the mechanism of international adjustment works. Krugman (1987) provides us with valuable insights into the workings of the mechanism by investigating the source of, and cure for, current account imbalances. His arguments contribute greatly to the understanding of the role of the RMB in China’s external adjustment.

In line with Krugman, the standard view of the international adjustment mechanism explains external surplus as a result of a rise in domestic saving relative to investment. The saving surplus leads to a decline in domestic real interest rate and in turn to an increasing real interest rate differential between the home country and the rest of the world, which stimulates capital outflows. These flows will induce a real depreciation that is effected by a nominal depreciation. This has implications for the role of the nominal exchange rate adjustment in correcting external imbalances.

China’s external surpluses have put the spotlight on the revaluation of the RMB. Economists worldwide hold diverse opinions on the issue. Goldstein (2004) and Frankel (2004) report a large degree of undervaluation and pressed for revaluation, whereas Lau and Stiglitz (2005), as well as Funke and Rahn (2005) argue that there
was no credible evidence to support the claim that the RMB was significantly undervalued. McKinnon and Schnabl (2003) claim that the RMB should not appreciate, given its stabilizing role in East Asia. The question boils down to whether the RMB exchange rate has to be adjusted in order to reduce China’s external surpluses. This study intends to address this question using the Krugman (1987) analysis of international adjustment mechanism and to discuss possible solutions for China.

The remainder of the paper is organized as follows: Section 2 explores the role of the exchange rate in international adjustment through the standard view; Section 3 investigates the source of China’s external imbalances; Section 4 analyses the role of the real exchange rate in China’s external balance; Section 5 discusses the role of the RMB exchange rate adjustment in correcting the external imbalances of China and concludes the paper.

2. The Role of the Exchange Rate in International Adjustment Mechanism

The standard understanding of the international adjustment mechanism starts with an exploration of the source of current account imbalances. It takes as its starting point the basic identity:

\[ S - I = Y - E = X - M + rF \]  \[ \text{(1)} \]

where \( S \) and \( I \) are national savings and investment; \( Y \) and \( E \) national income and expenditure; \( X \) and \( M \) national export and import expenditure; \( F \) national net foreign assets; and \( r \) the return on the foreign assets. An external surplus on the right-hand side must correspond to an excess of domestic saving over domestic investment on the left-hand side, which justifies looking for the source of a surplus in an autonomous change in national savings or investment. The identity may be further rewritten as:

\[ S_p + S_g - I = X - M + rF \]  \[ \text{(2)} \]

where \( S_p \) and \( S_g \) are private and government savings respectively. This suggests that the external balance will also be affected by the government budget. An increase in a budget deficit, that is, a fall in government saving, unless offset by a rise in private saving, must correspond to either a decline in investment or a fall in external surplus.

Although an economy must respect the accounting identity, the key issue concerns how the identity is translated into incentives that affect individual behaviours.
(Krugman, 1987). The standard view of how national saving-investment behaviour results in an external imbalance emphasizes the channel through which changes in the interest rate affect the exchange rate. A rise in aggregate national savings relative to investment demand leads to a fall in the real interest rate, which in turn motivates capital outflows. The result is a real depreciation, which is a decline in the prices of products and factors of production in the home country relative to the rest of the world. As domestic products become cheaper than foreign products, imports tend to decrease and exports increase, leading to an external surplus. The counterpart of this surplus is the capital outflow that fills the gap between domestic saving and investment. In accordance with this standard view, real depreciation is effected by nominal depreciation, which in part is associated with an adjustment in the relative price of products between countries.

In summary, the standard view is that an external surplus arises from a rise in domestic saving relative to investment which is followed by a real depreciation that is effected by a nominal depreciation triggered by the real interest rate differential. This clearly indicates three major linkages in the process: saving-investment behaviour drives external imbalance; saving-investment divergence leads to external imbalance via real exchange rate changes; and nominal exchange rate movements facilitate real exchange rate adjustments. Restoring the external balance of the economy requires a combination of a reversal of the saving-investment divergence and real exchange rate changes.

3. China’s Saving-Investment Behaviour Drives the External Imbalance

Do national savings affect the current account? Changes in national savings can in principle be reflected either in changes in domestic investment or in the current account. Even with perfect capital mobility, one should not expect the national saving surplus to spill over into the external surplus without having any effect on domestic investment. Instead, real interest rate changes induced by national saving behaviour will have a major impact on domestic investment. For this reason, domestic investment should to some extent absorb a fraction of the national saving surplus, with the current account absorbing the rest of it. Due to the fact that most parts of the world are not open to free capital mobility, the current account should absorb less of the surplus. The remaining gap between national savings and investment, though relatively small, will ultimately be reflected in the external imbalance.
Does national investment influence the current account? Changes in national investment can also influence national savings through real interest rate changes. Apart from national savings, the current account can partly absorb changes in national investment. If national savings are high owing to factors other than the real interest rate, i.e. private saving for the purpose of paying for the education of the next generation, the external side should absorb more of the changes in national investment, which will have a major impact on the current account.

Does fiscal policy affect the current account? Since fiscal policy implies changes in government saving, one should first examine whether fiscal policy affects national savings. Against the prevailing case that government dissaving reduces national savings, an influential Ricardian view argues that government deficits are offset by increases in private saving. Suppose that the government cuts taxes without any prospect of reducing spending in the future, households should know that the government will have to raise taxes again in the future to service the increase in its debt. In terms of the present value, the total expected tax liabilities of the private sector will not change at all. The result is that the private sector will not increase its consumption, and all of the tax cuts will be saved. However, Krugman (1987) refers to several theoretical strands that contradict this argument. First, since some of the tax liability resulting from a temporary tax cut will fall on yet unborn generations, those currently consuming will experience some reduction in their lifetime tax burden. Second, some households may be subject to liquidity constraint. Since they are unable to borrow at the same rate at which they can lend, they prefer a marginal consumption to a marginal saving, but are not willing to borrow to spend more than their income. An increase in current income will thus be spent even if the present value of their lifetime income has not changed. Third, the statement that tax cuts will be fully saved requires a high degree of sophistication on the part of all households in terms of understanding the future tax implications of the current budget. If a substantial fraction of households behaves in a less sophisticated way using some rule of thumb rather than a careful calculation of future government fiscal prospects, much of a tax cut will similarly be spent rather than saved. The Ricardian view disregards both macroeconomic observations and any other plausible description of individual behaviours. Therefore, government dissaving tends to reduce national savings, which could affect either domestic investment or the current account.

Does monetary policy affect the current account? The current account imbalance could stem in part from the fiscal side and in part from the monetary side. In the standard Mundell-Fleming model with settings of high capital mobility and sticky
prices, a monetary contraction will lead to a real appreciation and hence a fall in the current account surplus. In this case, the saving-investment identity will hold because a decline in net exports produces a contraction in the national income, corresponding to a fall in both private and government savings. But Krugman (1987) argues that if monetary policy fails to fully accommodate fiscal expansion, fiscal policy plays a significant role in causing external imbalances through a real appreciation instead of monetary policy in this situation.

**Empirical Evidence in China**

Table 1 presents a summary of the relationship between China’s saving-investment behaviour and its current account imbalance. It is interesting to find that the saving-investment identity held in 2000 and 2001 and saving surpluses spilled over fully into external surpluses. But this identity did not hold for the rest of the period, owing to statistical omissions and errors reported in the balance of payments. However, saving surpluses and external surpluses were fairly consistent for most of the period in which both were positive with the exception of 1995-97, and 1999. The gap between saving surplus and current account surplus is mainly attributable to unrecorded (illegal) capital outflows, which explains why the saving surplus was much lower than the current account surplus over the entire period. Between 1995 and 1997 and in 1999, these capital outflows were extraordinarily large, to the extent that national savings became lower than domestic investment and the saving surpluses became negative. If these capital outflows were taken into account, the saving-investment identity should hold for the entire period. Clearly, saving-investment divergences in China contribute to its external imbalances.

Table 1: China: Savings, Investment, and the External Imbalance 1995-2005

<table>
<thead>
<tr>
<th>Year</th>
<th>National Savings %</th>
<th>Domestic Investment %</th>
<th>Saving Surplus %</th>
<th>Current Account %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>38.6</td>
<td>42.6</td>
<td>-4</td>
<td>0.2</td>
</tr>
<tr>
<td>1996</td>
<td>37.4</td>
<td>41.0</td>
<td>-3.6</td>
<td>0.9</td>
</tr>
<tr>
<td>1997</td>
<td>38.0</td>
<td>38.6</td>
<td>-0.6</td>
<td>3.9</td>
</tr>
<tr>
<td>1998</td>
<td>37.9</td>
<td>37.7</td>
<td>0.2</td>
<td>3.1</td>
</tr>
<tr>
<td>1999</td>
<td>36.9</td>
<td>37.4</td>
<td>-0.5</td>
<td>2.0</td>
</tr>
<tr>
<td>2000</td>
<td>37.2</td>
<td>35.5</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>2001</td>
<td>38.1</td>
<td>36.8</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>2002</td>
<td>39.8</td>
<td>38.3</td>
<td>1.5</td>
<td>2.5</td>
</tr>
<tr>
<td>2003</td>
<td>42.7</td>
<td>41.4</td>
<td>1.3</td>
<td>2.8</td>
</tr>
<tr>
<td>2004</td>
<td>45.5</td>
<td>43.3</td>
<td>2.2</td>
<td>3.6</td>
</tr>
<tr>
<td>2005</td>
<td>47.3</td>
<td>43.2</td>
<td>4.1</td>
<td>7.2</td>
</tr>
</tbody>
</table>
With reference to Table 1, the period was characterized by high rates of savings and investment, amounting to 39.95% and 39.62% of China’s gross national income (GNI) on average respectively. However, between 1995 and 1997, insufficient confidence in the domestic capital markets and weak economic expectations prompted individuals and companies in China to transfer their money illegally to international capital markets or overseas banks in order to make profits or avoid potential financial risks despite China’s maintenance of a capital control regime. These large capital outflows led to a reduction in national savings between 1995 and 1997, resulting in saving deficits while domestic investment remained at a constantly high level. In 1999, large unrecorded capital outflows occurred, substantially reducing national savings and suggesting concerns over policy oscillations and a RMB devaluation. Wu and Tang (2000) find that there was capital flight (illegal capital outflow) from 1990 to 1999, which is consistent with this study. However, capital flight declined greatly after 2000 because of restored confidence in the Chinese economy and its markets, which had implications for saving surpluses during the rest of the period. If capital flight was taken into account, China’s savings would have been consistently higher than investment over the entire period. This could be a significant source of China’s external imbalances.

To correct China’s external imbalances requires a reversal of the saving-investment divergence. This means China has to not only promote domestic consumption and investment but also encourage consumption abroad and outward foreign investment. Prudent monetary and fiscal policy packages, a gradual liberalization of the capital account or some combinations of these measures could help the government achieve its target, while taking into account other factors such as potential inflation in the Chinese macroeconomy and risks in its banking system.
4. Real Exchange Rate Adjustment in Response to China’s External Imbalance

In accordance with the standard view, the saving-investment behaviour operates via the real exchange rate: a saving surplus leads to a real depreciation, which improves a country’s international competitiveness and thus leads to an external surplus. Contrary to this view, some argue that saving-investment imbalances are directly translated into external imbalances, rather than through real exchange rate changes and that a shift in saving rates can alter the external balance at constant relative prices (Krugman, 1987). The question thus becomes whether correcting external imbalances requires real exchange rate changes. This can be understood alternatively by examining the relative-price effects of an international transfer of resources (expenditure redistribution) with reference to the income-expenditure identity in which a saving surplus over investment corresponds to an income surplus over expenditure. Correcting external surpluses imply a reduction in income surplus over expenditure (corresponding to a decline in saving surplus relative to investment), so the question arises as to whether this shift (a relative increase) in expenditure necessitates real exchange rate changes.

To see the associated real exchange rate effect, we look at China in terms of Krugman’s basic model of redistributing expenditure between countries. There are three assumptions. Firstly, based on a model of two countries -- China and ROW (the rest of the world) -- China is assumed initially to have a current account surplus. Secondly, we initially suppose that each country produces only a single good, so that the real exchange rate may be defined as the price of the ROW good relative to the China good, implying that a rise in the real exchange rate represents a real depreciation. Finally, suppose for the sake of argument that both countries are initially in full employment so that a balance-of-payments adjustment does not lead to an expansion in either country’s output. This implies that the adjustment can occur with no changes in the countries’ output.

Let us try to reduce China’s current account surplus by considering the balance-of-payments identity in its alternative form:

\[ X - M + rF = Y - E \]  \[3\]

The identity states that the current account balance is the difference between national income and expenditure. Reducing China’s external surplus requires an increase in China’s expenditure and a decline in ROW’s expenditure. The issue
becomes whether it is possible to redistribute ROW’s expenditure to China, while keeping the relative price of the goods of China and the ROW constant.

All components in the identity are considered in real terms. Suppose that China raises its expenditure by an amount $\rho$ through fiscal expansion, while ROW reduces its expenditure by the same amount. The rise in China’s expenditure will directly increase spending on the China good by an amount $\rho \times (1 - m)$, where $m$ is the fraction of China’s marginal spending on imports. On the other hand, the fall in ROW’s spending will reduce spending on the China good by an amount $\rho \times m^*$, where $m^*$ is the fraction of ROW’s marginal spending on imports. The net change on the China good is therefore $\rho \times [1 - (m + m^*)]$. If $m + m^* < 1$ which implies that each country spends more on its own good than on the foreign good, then the redistribution of world expenditure will raise demand for the China good and reduce that for the ROW good. To correct excess demand for the China good and excess supply of the ROW good, the relative price of the China good has to rise, implying a real appreciation. Therefore, a correction of the current account surplus is effected by a real appreciation if the condition $m + m^* < 1$ holds.

Krugman (1987) argues that the justification for $m + m^* < 1$ lies in the highly imperfect integration of markets for goods and services. Much of the expenditure of even very open economies falls on goods and services that are non-tradable due to prohibitive transaction and transport costs. He also argues that there are probably significant Linder effects, in which countries tend to produce goods most suitable for domestic tastes even within a basket of traded goods.

Krugman also points out several caveats with respect to the condition for real exchange rate changes in response to external imbalances. Even with $m + m^* < 1$, little real exchange rate change would be required if goods produced in different countries were close or perfect substitutes. Since countries do not in fact produce only a single good, the relative price changes may take place among goods produced by a country in terms of not only the relative price of imports to exports, but also the relative price of tradables to non-tradables. In addition, in the process of adjustment, there is no doubt that a country that reduces its external surplus must increase its wages relative to those of trading partners since many competitiveness indicators focus on unit labor costs rather than export prices. Finally, the necessity for real
appreciation to reduce imbalances may be avoided if the surplus countries start from a position of excess capacity. This could allow for a reduction in external surpluses without any real appreciation.

**Empirical Evidence in China**

Figure 1 shows real exchange rate dynamic adjustments in response to external imbalances in China over the 1995-2005 period. The real exchange rate movements are measured in terms of percentage changes of the real effective exchange rate in comparison with the previous period and can be interpreted as real appreciation if they are positive and real depreciation if negative. Between 1995 and 1997, real appreciation rates declined though they were positive while the current account surplus was increasing. This implies that limiting real appreciation improves the current account. From 2000 to 2001, real appreciation (positive rates) led to the reduction of current account surpluses. From 2002 to 2005, real depreciation (negative rates) increased current account surpluses. These experiences are consistent with the theoretical prediction, with the exception of 1998 and 1999 during which China’s exports were affected heavily by the 1997 Asian Financial Crisis when its current account was almost balanced. Clearly, real exchange rates have to change in response to external imbalances and real exchange rate adjustments are required in the transfer of saving surpluses to external surpluses. This linkage between the real exchange rate and the current account suggests that correcting China’s external imbalances requires a real appreciation to some extent.
Figure 1: Real Exchange Rate Movements and External Imbalances in China 1995-2005

a. The real exchange rate line is measured in percentage changes of the real effective exchange rate compared to the previous period and it can be interpreted as real appreciation if positive and real depreciation if negative.
b. Current account is expressed as a percentage of GNI.

**5. The Role of the Renminbi Exchange Rate in Correcting External Imbalances**

After a discussion of the role of the real exchange rate in the international adjustment mechanism, an immediate policy concern is with the function of nominal exchange rates. Promoting exchange rate movements in pursuit of external balance contradicts advocates of fixed exchange rates. To clarify the point, Krugman (1987) raises two interesting questions to be considered:

“First, the question of whether nominal exchange rate movements are intended to produce real exchange rate changes that would not have happened otherwise, or to facilitate real exchange rate changes driven by other forces. Second, the question of whether it is indeed easier to adjust relative prices via exchange rate changes than via inflation and deflation.” (Krugman, 1987, p. 28)
Suppose that the world economy starts from a position of equilibrium and that a sudden appreciation of the domestic currency is somehow engineered. The long-run effect of this appreciation would be a combination of deflation in this country and inflation in the rest of the world, and the eventual restoration of the original real exchange rate without any long-term effect on external balances. To the extent that prices and wages adjust slowly, the country would experience a temporary period of lower output and smaller external surpluses.

Suppose that adjusting the country’s external surplus to restore balance requires a real appreciation against the rest of the world, the situation will then change. If the domestic currency does not appreciate, there will have to be some combination of inflation in this country and deflation in the rest of the world. To the extent that prices are slow to adjust, the need to change internal price levels (a shift in the relative price of tradables to non-tradables in this country) will lead both to a delay in the adjustment of external imbalances and a period of internal overheating in this country. An adjustment in the nominal exchange rate can facilitate the process of adjustment by eliminating this need for changes in internal price levels. Thus an appreciation of the domestic currency of the surplus country and a depreciation of the currencies of deficit countries appear to be much more favorable for the reason that it is seen as a more rapid and less costly attempt to achieve a relative-price change that would have happened anyway. The nominal exchange rate does play a significant role in facilitating a real exchange rate adjustment to its new equilibrium level in the setting of price stickiness where prices are slow to adjust.

Even if prices were perfectly flexible, there is a good case for preferring nominal exchange rate changes to general inflation in surplus countries and deflation in deficit countries. It is easier to change one price -- the exchange rate -- than to change the prices of every item that an economy produces. It is also hard to expect that prices and wages are so flexible that real exchange rate changes needed to eliminate current external imbalances can be accomplished quickly through inflation and deflation. There exists an essential problem of coordination across sectors within an economy. A currency appreciation solves the coordination problem by increasing all domestic wages relative to foreign wages simultaneously. This would be very difficult to achieve with a fixed exchange rate.
Empirical Evidence in China

Figure 2 shows the Chinese RMB real exchange rate movements along with the nominal exchange rate movements in terms of the effective exchange rate index (the base year 2000=100) over the 1994-2006 period. A rise in these rates represents a real (solid-line) or nominal (dot-line) appreciation and vice versa. It is interesting to find that both series move in a similar pattern throughout the time period and that the RMB nominal exchange rate responds to real exchange rate changes according to China’s current account adjustment. The nominal exchange rate adjusted to real changes so well that China’s inflation rate moved very steadily over the entire period, falling within a narrow range of -2% and +2%, as shown in Figure 3. Following an official large devaluation of the RMB in 1994, the nominal and real exchange rates experienced a constant appreciation until 1998, thereafter remaining stable between 1999 and 2002. From 2003 until 2005 when the new managed floating exchange rate regime was launched along with an initial 2.1% appreciation of the RMB against the US dollar, the RMB depreciated in both nominal and real terms. Since July 2005 when the new regime commenced, the RMB has experienced a moderate appreciation in both nominal and real terms. In China, the RMB nominal exchange rate does facilitate real exchange rate changes that are required for its external adjustments. The RMB plays a significant role in China’s external adjustments and correcting its external surpluses may require a nominal appreciation to some degree as well.
Figure 2: Real and Nominal Exchange Rate Movements 1994-2006

a. REER is the real effective exchange rate and NEER is the nominal effective exchange rate.
b. The base year is 2000.

Figure 3: China’s CPI-based Inflation 1994-2005

To conclude, China’s saving-investment imbalances have contributed to its external imbalances. Correcting China’s external imbalances requires both the reversal of national saving-investment imbalances and a combination of a real appreciation in the RMB and a real depreciation in the currencies of deficit countries. The only exception in which a real appreciation can be avoided is a situation of large excess capacity in China. The RMB nominal exchange rate plays a crucial role in facilitating the real exchange rate adjustments necessary for China to achieve an external balance.

References


