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# What Drives CNH Market Equilibrium?

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## Introduction

The rapid rise of the offshore renminbi (RMB) markets marks an acceleration of a hypothetical timetable for the convertibility of the RMB.<sup>1</sup> From about RMB100 billion a year ago, CNH deposits—that is, RMB-denominated deposits in Hong Kong—more than doubled every six months to reach upward of RMB550 billion by June 2011 (see Figure 1, blue line). In early June, analysts in Hong Kong projected a further doubling by the end of 2011 and yet another in 2012.<sup>2</sup>

In the normal prescription for institutional sequencing, liberalizing the internal financial system should precede a move to currency convertibility and the opening of the capital account. This means freeing up a controlled internal structure of interest rates and the end of credit rationing to favored borrowers. Otherwise, allowing significant RMB flows offshore to an uncontrolled market and back onshore in turn allows domestic depositors and credit-rationed borrowers to find each other at more favorable interest rate spreads and levels than are available onshore. This redirection of internal savings could prematurely threaten to undermine the entire investment/export-based development strategy.

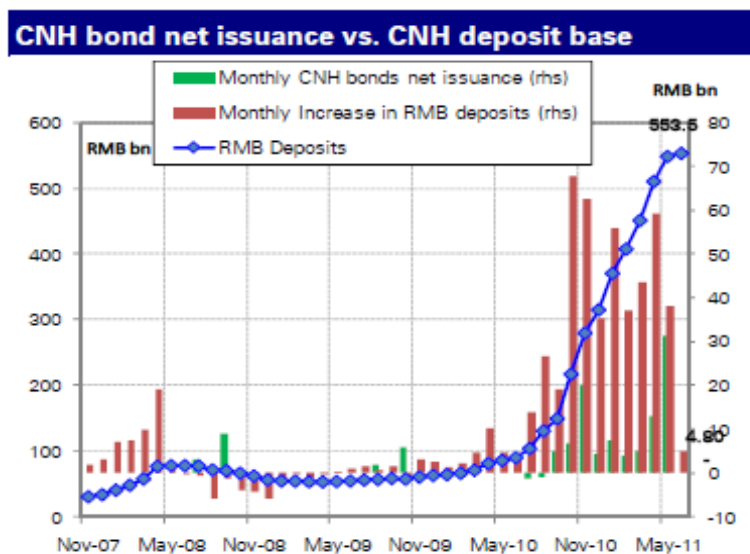
Many analysts in the financial markets have taken this sequencing imperative to mean that the policy to develop rapidly the CNH market is a harbinger or perhaps even a lever for liberalizing the domestic financial system. Other analysts believe that the developments in the CNH market are moving too quickly for the internal markets to catch up even if the policy were intended to liberalize them.

Such issues cut to the core of the politics and economics of China's development program, and are therefore of strategic interest. My goal here is to examine the much more tactical issue of understanding the rapid growth we have already seen in the CNH market and to deduce from it how additional changes now under way may affect the market in the near term. Following this path, we can then determine how important these developments may be in the larger program for internationalizing the RMB.

We can interpret the rapid growth of the CNH market as an experiment, a hothouse for developing products surrounding a liberalized RMB market, or a chrysalis for an internationalized RMB. Although the authorities are pressing further liberalizations, especially via the CNH markets, a sudden stepping on the brakes is likely if the articulations in the system begin to run out of control.

To understand the issues involved, it is useful to examine what currently drives the equilibrium exchange rate and growth of deposits in the CNH market, by far the most important offshore RMB market. In brief, the sequence of forces starts with an exogenous shift in the anticipated rate of appreciation of the onshore RMB deposits (CNY) versus the U.S. dollar (USD). This triggers a wider CNH/CNY spread versus USD as speculative demand for CNH rises. In turn, the wider spread results in a gradual expansion of CNH deposits to meet the increased stock demand. The gradual increase in stock then gradually reduces the CNH/CNY spread. This process can be reversed if anticipations swing to depreciation in the CNY versus USD.

Figure 1. CNH Bond Issuance versus Deposit Base<sup>3</sup>



Sources: Deutsche Bank, HKMA, Bloomberg Finance LP

## Why Develop the Offshore RMB Market Now?

For several years, Chinese authorities have argued for the desirability of an alternative to the U.S. dollar as the key reserve currency. That they are now moving in the direction of reducing their dependence on the U.S. dollar by internationalizing the renminbi stems from several motivations.

Economic and political forces are driving the current global monetary system rapidly toward its end game. A view is taking hold among Asian analysts that China is running out of its relatively cheap, excess labor. If so, this would indeed end the material basis for the current global monetary system driven by managed, undervalued currencies and massive foreign exchange accumulation. Therefore, in a benign view of the process, it would be natural to implement a planned shift to a floating currency without capital controls and internally driven development over the next five to fifteen years, thereby making China a center country in the emergent international monetary system.<sup>4</sup> Accelerating the development of the CNH market allows the institutions that support an internationalized currency to grow to be available when the transition occurs.

If we extrapolate current trends, we can anticipate that China's GDP will exceed that of the United States within the next five to ten years. The expected size of the economy and of the trade sector at that time informs China that the renminbi can then be the principal vehicle currency, based on a historical reading of the forces that led to the transition from sterling to U.S. dollar dominance.

The possession of a dominant, internationalized currency is one of the attributes that a principal global power has traditionally had. Internationalizing the currency thus fits in with the possibility of

both establishing a more efficient resource allocation mechanism and obtaining a powerful geopolitical tool.

A more parochial incentive for the development of the CNH market is to support the development of the financial sector in Hong Kong over that of Shanghai, which has had an advantage in the onshore market. Pressure is constant from the Hong Kong authorities, who believe that the rapid rise of the CNH will support a large business expansion for the Hong Kong financial sector.<sup>5</sup>

## The Mechanics of Equilibrium in the CNH Market

Although CNH deposits have existed for some time, the decisive policy shift behind the rapid growth in the CNH market was the program to accelerate the use of the RMB as an invoicing and settlement medium for trade. Although other outlets for CNH deposits are also opening up, the trade dimension has driven the equilibrium so far. We first examine this trade dimension in isolation and then overlay the capital account flows, notably in CNH bond issuance, that are principally subtractions from the stock of CNH deposits.

Invoicing and settling in RMB spares both exporters and importers from the need to take on currency risk. It is also believed that it is natural to invoice in RMB, given the size and importance of China in both import and export markets. The offshore RMB markets would provide a means for foreigners to hold and trade RMB, which they must have if they are to invoice and settle in RMB, yet still insulate the onshore financial system from speculation in the face of an appreciating currency.

If imports into China are invoiced and settled in RMB, importers are then permitted to move their CNY deposits into CNH accounts (or accounts in other centers) held by either Chinese residents or foreigners. Then the payment can be made there. Such deposits can be traded freely offshore, but cannot be freely moved back onshore: capital controls remain. If exports from China are invoiced and settled in RMB, exporters can receive payment in CNH and move the funds back into their CNY accounts onshore. Although trade-based RMB transactions can occur in any offshore markets, Hong Kong has become the predominant center.

## What Drives the Supply of CNH Deposits?

### OFFSHORE SETTLEMENT FOR AN IMPORTER

Suppose that, finding a supplier who is agreeable, an onshore importer “invoices” in RMB for a legitimate trade deal. He is then permitted to transfer onshore CNY funds to an account in his Hong Kong bank, which may be either a Chinese or a foreign bank. The RMB have now been converted

from CNY to CNH. The importer then pays CNH into the Hong Kong bank account of the seller of goods. The seller of goods is probably not a currency speculator, so he will sell the CNH deposit on the freely operating CNH foreign exchange market, perhaps to a speculator.

Once converted into CNH, these RMB may be trapped offshore in Hong Kong, accumulating in deposit accounts as the flow of such settlement for import transactions proceeds. The accumulation could be reversed and the RMB brought back onshore. A legitimate export transaction by a Chinese exporter invoiced in RMB and settled in Hong Kong would permit the return flow, as would a currently limited set of capital account transactions.

Thus, abstracting from permitted capital account flows, the imbalance between the RMB offshored by the Chinese importer and the RMB onshored by the Chinese exporter determines most of the flow supply of new CNH deposits. The prior accumulation of these net flows determines the momentary stock of CNH deposits.

### THE BALANCING ROLE OF THE PBOC

Until recently, it has been either unprofitable or difficult to complete this round trip, and large amounts of CNH deposits have accumulated. As these deposits move from onshore to offshore entities, the onshore balancing item has taken the form of excess reserve deposits in the People's Bank of China (PBoC) via the Bank of China, the clearing bank in Hong Kong for this system. Their deposits in the PBoC are the Hong Kong banks' assets that balance their CNH liabilities.

The PBoC pays only seventy-two basis points on these excess reserves, the same as the onshore rate, and the Bank of China takes fees for its clearing services in Hong Kong.<sup>6</sup> Given the spread taken by his own bank, almost no interest is paid to the holder of CNH deposits, against 3.1 percent onshore for a three-month deposit and 0.5 percent for demand deposits, which underscores the difference between the CNH and CNY interest rate structures. Until April 2011, the Bank of China intermediated between the other banks and the PBoC, and thus the market was limited by the Bank of China counterparty risk that other banks could take. Now, however, the Hong Kong banks effectively have deposit accounts with the PBoC as counterparty, and the Bank of China serves as fiduciary agent.

### THE CNH MONEY SUPPLY MULTIPLIER

The discussion in the previous section assumes that the CNH money supply multiplier, the ratio of CNH deposits to RMB reserve deposits at the PBoC, is one. It simplifies the discussion to maintain this assumption, because then any net flow of CNH back onshore is one-to-one a reduction in CNH deposits. However, we see below that the banks that offer CNH deposits also hold some of the CNH bonds that have been recently issued in large amounts. Therefore, the CNH money supply multiplier is in fact greater than one.

### WHAT ARE THE INCENTIVES FOR IMPORTERS TO INVOICE IN RMB AND SETTLE IN HONG KONG ?

CNH has almost always traded stronger against the USD than the CNY has. On average for 2011 through September 16, CNH has traded at 0.16 percent below CNY versus USD, although this

number has fluctuated between zero and 0.67 percent. This spread has converged from a much higher spread last year (see Figure 2). The spread can widen when speculators expect the CNY to accelerate its appreciation against the USD. It can also reverse, if slower appreciation or even depreciation of CNY versus the USD, as happened in September. The spread reversed on September 19 as the CNH became weaker than the CNY, reaching a discount against the CNY of almost 2 percent on October 4.

It is usually a better deal for the onshore importer or foreign seller to China to invoice in RMB and settle in Hong Kong than to invoice in USD: on average, there has been effectively a 0.16 percent import *subsidy* to settle in CNH vs. than to acquire USD in Shanghai to make a payment for imports invoiced in USD. If the CNY/CNH versus USD spread widens, the importer has an increased incentive to settle in Hong Kong with CNH deposits; and more funds will flow into CNH deposits, increasing the stock.

Figure 2.



## DO THEY REALLY INVOICE IN RMB?

In the section above on importer behavior, I have used quotation marks around the word *invoice*. The foreign exporter to China can get a better deal in Hong Kong than in Shanghai by selling the CNH deposit he receives on the foreign exchange market, but this small subsidy may not be enough for him to want to bear the foreign exchange risk from RMB invoicing pending the settlement for delivery of the goods.

However, there is some indication that the invoicing in many contracts supposedly settled with CNH is still done in foreign currency. In support of starting up the CNH market, the authorities in Beijing laid out quotas for how much in imports should be invoiced and settled in RMB. The provincial authorities, anxious to meet the quotas, pressured the local branches of banks to certify

that the import contracts were invoiced in RMB, which then cleared the importer to move his funds into CNH accounts. The importer would then sell the CNH for USD on the exchange market and pay the foreign seller with USD.

Regardless of the extent of such circumventions, the CNH/CNY versus USD spread provides an incentive for either the Chinese importer or the exporter to China to settle in Hong Kong.

#### WHAT ARE THE INCENTIVES FOR EXPORTERS TO SETTLE IN HONG KONG ?

The Chinese onshore exporter has exactly the opposite incentive from the importer. Because the CNH usually has been more appreciated versus the USD than the CNY, the exporter would rather receive USD from its customer and sell the USD for CNY in Shanghai. Therefore, most trade related settlements in CNH are done by importers, even though China runs a large surplus on its trade account.<sup>7</sup> This means that the drive to invoice in RMB and settle in Hong Kong automatically leads to an accumulation of CNH deposits.

#### WHAT WOULD HAPPEN TO THESE INCENTIVES IF CNH DEPOSITS WERE WEAKER AGAINST USD THAN CNY DEPOSITS ?

The incentives for importers and exporters would be reversed. Exporters would prefer to settle in CNH and importers in CNY. If the invoice were actually in RMB, the buyer of Chinese exports would get more CNH deposits for his USD in Hong Kong and so would agree to the transaction. If the invoicing were still in USD, then the onshore exporter could convert that into more CNH than CNY. Then the imbalance on settlement in CNH would reverse and there would be a net flow out of CNH deposits and a gradual decline in the CNH stock.

A reversal of spread occurred significantly for the first time in the last two weeks of September 2011 (see Figure 2). The sudden depreciation of CNH against the USD, even though CNY versus USD continued to appreciate, is part of a general weakening of Asian currencies that resulted from the flight from risk positions caused by the intensification of the euro crisis.<sup>8</sup> It also suggests that the anticipated rate of appreciation of CNY versus USD has slowed. China maintained effectively a fixed rate after the 2008 financial crisis and did not depreciate along with the rest of the Asian currencies. It is expected that it would do the same in case of another recession.

## What Drives the Demand for CNH Deposits?

The easy answer is that demand is *currently* driven mainly by foreigners who want to profit from anticipated RMB appreciation. Some are potential FDI investors into China waiting to have their applications for onshoring the RMB approved, so their demand then may actually be for a hedge against an implied short RMB position.



But for speculators, the CNH market offers a way to push straight through the tight onshore capital controls to gain from what is regarded as the inevitable appreciation of the RMB. If speculators anticipate a greater rate of appreciation, they can express that view with what is effectively a position against the PBoC. Before the CNH development, they had to register that view through the market in nondeliverable forwards (NDFs), that is, tangential positions settled in other currencies with other nonresidents. Unlike NDFs, registering a position on RMB appreciation via the CNH, albeit indirectly with an onshore entity, generates PBoC interventions and additional foreign exchange reserve accumulations that make this speculation ultimately costly to the PBoC's defense of the system. It is not quite as advantageous as getting short-term speculative funds onshore, however, because the carry is not as good, given the near zero CNH deposit rate.

## What Sequence of Events Drives the Equilibrium?

Until mid-September, the sequence has been as follows:

1. Exogenous events cause market participants to anticipate a greater rate of appreciation of CNY than they had before.
2. In attempting to expand their RMB position, speculators increase their demand for the existing stock of CNH, now a principal spot outlet to express their expectations. Given the momentarily fixed current stock of CNH, this widens the spread of CNH over CNY versus USD. The spread increase is enough to stifle momentarily the increased speculative demand for the fixed stock: the position becomes a two-way bet as the widened spread is subtracted from the greater anticipated appreciation. Speculators can foresee that eventually the spread will contract enough to offset somewhat the actual CNY appreciation.
3. The wider spread now triggers a gradual increase in CNH stock because of a flow increase in RMB invoicing of imports, as importers now have a greater incentive to settle in Hong Kong. This stock expansion gradually contracts the spread as the increased speculative demand for the stock is satisfied.

We can conclude that the flow of RMB invoicing is endogenous to desired foreign speculative positioning in RMB relative to the current stock of CNH. Although such invoicing involves straightforward trade transactions, it locates the settlement in Hong Kong to satisfy speculative demand for CNH.

It is crucial to note that the foreign exchange the importer needs to make payments is now supplied by a diverse group of foreigners purchasing CNH in Hong Kong, not by the PBoC onshore. We will see that this is effectively an inflow of funds to China via the capital account and therefore a penetration of the capital controls.

Again, this process is reversed if speculators anticipate a weaker CNY than previously so that they want less CNH than before. A CNH weaker than the CNY causes exporters to flock to Hong Kong for settlement and importers to settle onshore. More RMB flow out of Hong Kong than in and the stock of CNH deposits falls.

## What is the Source of the Subsidy? The PBoC's Extra Foreign Exchange Intervention

I earlier referred to the CNH/CNY versus USD spread as a subsidy to the importer. From whose pocket does the subsidy come?

Although the policy envisages invoicing and settlement by both importers and exporters in CNH, the incentives have been such that exporters are predominantly still selling USD onshore, effectively to the PBoC. But importers now buy fewer USD onshore, replacing their foreign exchange needs by purchases from foreign speculators in Hong Kong directly or indirectly by delivery of CNH to their suppliers.

Therefore, as is well known, the PBoC has had to intervene with an additional net acquisition of foreign exchange equal to the USD value of the net flow into CNH deposits through this trade channel. As noted, the gain to importers equals the CNY/CNH vs. USD spread. This effectively becomes a subsidy paid by the PBoC. If the CNY appreciates versus USD as expected, the subsidy materializes as a greater subsequent valuation loss on the additional foreign exchange reserves that the PboC has had to acquire because of the CNH institutional arrangement. If CNY does not appreciate as expected, the gain to importers is paid by the speculators who bought the extra CNH at a premium in anticipation of the appreciation.

From an alternative perspective, this subsidy can be treated as an investment cost. It is incurred in building the institutions to underpin the RMB as a vehicle currency. Part of it is also effectively a transfer payment to Hong Kong to develop its financial market. China's twelfth five-year plan supports the Hong Kong's development as a major offshore RMB center.

## Sterilization of the Increased FX Reserve Purchases

Unlike its usual purchases of foreign exchange, the PBoC has less of a problem in sterilizing the money base growth caused by the additional foreign exchange purchases attributable to CNH growth. If the CNH cannot flow back onshore and so stays blocked in Hong Kong, the increase in monetary base automatically remains deposited at the PBoC in the excess reserve accounts of Hong Kong banks to balance their CNH deposits, at a deposit rate of seventy-two basis points.

If the CNH deposits find an outlet to flow back onshore, it then costs the PBoC more than seventy-two basis points to sterilize the excess reserves that are released. This should be added to the cost of subsidizing the development of the offshore RMB infrastructure.

## Backflows Onshore via the Capital Account

### THE CNH BOND MARKET

As noted earlier, the market for RMB-denominated bond issuance in Hong Kong from both onshore and offshore issuers is growing rapidly. In 2011, through Q3, there has been about RMB145 billion of net issuance and RMB158 billion of gross issuance of bonds and CDs. Chinese issuers have mainly been the Ministry of Finance, commercial banks, and SOEs, but less favored borrowers have also appeared. Chinese issuers account for 81 percent of the gross issuance in 2011. The much lower interest rates available in the CNH market are the main attraction as such issuers can bring the funds back onshore. In addition, foreign corporations have issued bonds in the CNH market to acquire funds for their RMB requirements for permitted FDI plans. The bulk of the securities issued have been at maturities of three years or less and have paid a wide range of interest rates, depending on credit risk. The attraction of these bonds to foreign speculators is obvious: in addition to the anticipated currency appreciation they earn a positive carry from interest rates more comparable to onshore deposit rates. The Ministry of Finance has recently started an issuance program with longer maturities to develop a proper yield curve, because the development of the CNH market and a market determined curve are among its objectives.

An issuer borrows using CNH bonds to bring the funds back onshore because there would be a loss in leaving the funds on deposit in Hong Kong. CNH bond issuance then reduces the net increase of the stock of CNH deposits from import invoicing and settlement in CNH.

This inflow alters the steps in the mechanics of equilibrium in the CNH market as follows:

1. As before, import invoicing and settlement in CNH requires the PBoC on net to buy more USD. Thereby, it creates more base money than it would have done without the CNH market.
2. Initially, it borrows this back through the excess reserve deposits of the recipient bank in Hong Kong and pays seventy-two basis points for this while earning near zero yield on its increased USD holdings if they are short term.
3. Now an SOE borrows the CNH in Hong Kong via a bond issue. On receiving the CNH deposit, the SOE sends the funds to its bank account in China. This releases 80 percent of the reserves that backed the CNH deposits and forces the PBoC to pay a higher interest rate to sterilize them or perhaps block them with greater reserve requirements.
4. Prior to the opening of large-scale CNH bond issuance, speculators had to accept a low yield on their deposits, which limited the amount of speculative demand for CNH deposits in the equilibrium described above. Now speculators can get a higher yield by buying the bonds. Suppose that initially they held RMB700 billion in CNH deposits and that they buy the RMB150 billion of bonds and CDs that are issued. This movement of RMB back onshore cancels out RMB150 billion of CNH deposits, After adding their bond and CD holdings to their remaining CNH deposits, this leaves the speculators with

the original RMB700 billion in CNH fixed income products that they held in the earlier equilibrium (see Figure 1 for how bond issuance compares with the absolute growth of CNH deposits). However, the payoff from this position has now increased, so speculators will want to hold even more CNH fixed income product in total.

5. This increased demand widens the spread of CNH/CNY versus USD. The incentive to invoice imports in RMB and settle in Hong Kong increases and more trade settlement occurs in Hong Kong. The PBoC must therefore intervene still more in the foreign exchange market and accumulate more foreign exchange reserves because of the opening of onshore access to the CNH bond market.
6. Beyond the initial explicit increase in the payoff from a speculative position in CNH, there is also an effect on expectations. The PBoC's additional foreign exchange interventions will put it increasingly at risk, unlike the situation if speculation were still strictly confined to the NDF market. This will increase its pressure to accelerate the rate of appreciation and set off another round of expectation-driven inflows into the CNH.

#### A SMALL ADJUSTMENT: THE CNH MONEY MULTIPLIER REVISITED

The preceding example presumes that CNH deposits are reduced one-to-one with CNH bonds issuance. This occurs only if the CNH money multiplier is one. However, of the RMB210 billion of CNH bonds and CDs currently (September 2011) outstanding, our analysts estimate that Hong Kong banks that offer CNH deposits hold between 15 percent and 20 percent. Assuming the higher amount, that means that about RMB40 billion of CNH securities plus RMB569 billion of reserves are held against the approximately RMB609 billion of deposits on hand at the end of August. The CNH money multiplier is then about 1.07 if CNH bonds are the only asset banks hold other than reserves. Therefore, the issuance of that part of the CNH securities held by the banks did not reduce CNH deposits at all.

Of course, banks offering CNH deposits must be careful about how many CNH securities to take on their balance sheets. The maturity mismatch creates an obvious market risk. There is also a serious liquidity risk, as the recent reversal in the CNH/CNY spread versus the USD indicates.

## OTHER ADDITIONS TO AND SUBTRACTIONS FROM THE CNH DEPOSIT STOCK VIA CAPITAL ACCOUNT LIBERALIZATION

**Outward FDI:** As outward FDI expands, Chinese corporate investors will be permitted to make their payments to their foreign entities in CNH.<sup>9</sup> This will have an effect on the inflow of funds into CNH deposits similar to that of the invoicing of China's imports in RMB and settlement in Hong Kong. A Chinese investor will be able to move deposits from CNY to CNH to make its payments in RMB. It will not have to acquire USD from the PBoC in exchange for CNY deposits in order to make its foreign payments. On net, the PBoC will therefore have to acquire more foreign exchange reserves than before and take on more losses if the CNY appreciates. If the CNH versus USD exchange rate is stronger than the CNY versus USD exchange rate, an incentive exists for the Chinese investor to make such RMB payments from Hong Kong. Again, there is a subsidy equal to the spread to do FDI in RMB from Hong Kong. If the CNH is weaker than the CNY, the outward FDI investor will forego this option; and the PBoC will continue to sell USD for outward FDI activities.

Alternatively, the Chinese investor might borrow CNH through bond sales in Hong Kong for the investment. A relatively low interest rate in Hong Kong temporarily may be sufficient incentive to engage in outward FDI in RMB, regardless of the relative strength or weakness of CNH vs. CNY.

**Inward FDI:** New rules are being established to allow a more systematic use of CNH deposits to be brought back onshore for inward FDI. Until recently, inward FDI could use CNH on approval on a case-by-case basis. Opening this door will spare the investor the need to acquire RMB through the foreign exchange market and thereby avoid a currency imbalance on its balance sheet. It also makes it worthwhile for the investor to finance by CNH loans and bond issuance in Hong Kong at the low interest rates currently available offshore, so the implied subsidy in the spread may not be the decisive factor.

This FDI inflow from CNH deposits relieves the PBoC of the need to buy directly the net increase in USD or other currencies that the FDI investor had to exchange for the RMB requirements of the investment.

However, if the CNH is strong relative to the CNY, the incentive for inward FDI to transact through Hong Kong is reduced. If the investor intends to acquire the RMB necessary for the investment entirely by selling foreign exchange, it will prefer to buy CNY when the CNY is relatively weak.

**Qualified Financial Institutional Investors:** Similarly, qualified financial institutional investors (QFII) are to be allowed to buy a limited amount of onshore shares and bonds using CNH deposits as payment. Again, if the CNH is strong relative to the CNY and if these purchases were also allowed using onshore payments, investors would not buy through Hong Kong, and the PBoC would have to buy in the foreign exchange necessary for the investor to make the purchase. If there are separate and effective quotas for QFII onshore and in Hong Kong, then the investments would be channeled through Hong Kong even if the spread went the wrong way. The PBoC would then not have to buy the foreign exchange, and such QFII would subtract from CNH deposits.

## Conclusion

What principal force has driven the growth of the CNH market so far? It is the strongly held view that the RMB will inevitably and substantially appreciate against the other major currencies. This creates a speculative demand to profit from that appreciation, which has to a significant extent been blocked by the onshore controls. Opening the CNH market to a potentially large flow of RMB deposits from onshore through trade invoicing has permitted those controls to be breached.

The breach is not perfect. CNH are not the same as CNY, and a position in CNH is a two-way bet, as the recent reversal in their exchange rates versus USD has demonstrated. Also, the speculative demand is limited and can be choked off as the spread between CNH and CNY versus USD widens. Nevertheless, increased stock demand for CNH will cause increased flow supply from onshore and force a greater intervention in exchange markets by the PBoC, a sure sign that controls are being penetrated.

Whether the CNH is the chrysalis for the RMB as an international currency turns on the nature of the demand for it. Is it currently being demanded to serve as a transactions medium or perhaps as a longer term store of wealth? Or is the international demand for it simply a temporary speculative ride on the transition away from the export driven growth model that will evaporate when the CNY reaches an equilibrium free of controls? So far, it is the latter. The program to develop the CNH market must then be viewed for now as an investment to develop a market infrastructure. The infrastructure will be ready to support a future demand for the RMB as an international currency, although that kind of demand has not yet materialized.

## Appendix

### CAN A DECISION TO REALLOCATE CHINA'S FOREIGN EXCHANGE RESERVES DRIVE GROWTH IN THE CNH MARKET?

In this hypothetical example, suppose that two-thirds of China's foreign exchange purchases are normally in USD but that a decision is made to limit the share of USD to one-fourth of new purchases. Consistent with this change, assume that in a four-month period the PBoC buys \$200 billion worth of additional foreign exchange reserves, with only \$50 billion of the intervention in new USD purchases. Finally assume that in the same period, the CNH stock doubles from RMB250 billion to RMB500 billion, that is, from about \$40 billion to \$80 billion. From the analysis above, this increase in CNH deposits causes an additional \$40 billion worth of foreign exchange intervention in all currencies by the PBoC.

Now, let us assume the counterfactual that the CNH market does not exist. Then, without the artificial split between importer and exporter settlement locations, the PBoC would need to buy only \$160 billion worth of foreign exchange during this four-month period to implement the reallocation policy. Under the assumed old allocation of two-thirds into USD, this amount would be split into \$106 billion in USD and \$54 billion in other currencies.

With the new assumed allocation of 25 percent in USD, the PBoC would buy only \$40 billion in USD. This would unleash 66 billion more USD into world markets than under the old allocation and subtract a similar value of other currencies. Pressure on all exchange rates to appreciate against the USD would occur as USD holders attempt to exchange them for all other currencies.<sup>10</sup> This also would increase pressure on the CNY to appreciate as holders of the excess supply of USD attempt to push some of them through the capital controls. But with tight controls and in the absence of the CNH market, upward pressure would be deflected mainly onto other currencies.

With the CNH market, there is now effectively an avenue into the previously tightly controlled capital account. Holders of excess USD can exchange them for a close substitute for the CNY, bidding up the CNH along with the other appreciating currencies and setting off the increase in re-invoicing and settlement flows into the CNH to meet this demand.

So the PBoC can certainly reallocate to a 25 percent share of USD in its foreign exchange intervention, at the cost of taking on an additional \$40 billion worth of overall foreign exchange risk (the USD value of the amount by which CNH deposits in Hong Kong expand). In this example, the PBoC's desired reserve reallocation is a driving force of CNH deposit expansion because it increases speculative pressure to acquire RMB in anticipation of greater RMB appreciation. The desired reallocation puts additional upward pressure in the exchange rates of the CNH versus USD and the CNY versus USD, as well as on all other currencies versus USD.

In the presence of the CNH market, a policy to buy only 25 percent in USD of \$160 billion in foreign exchange interventions, that is, \$40 billion, actually requires the purchase of \$50 billion in USD out of \$200 billion worth of intervention.

## About the Author

**Peter Garber** has been global strategist in global markets research at Deutsche Bank since 1998. He has been professor of economics at Brown University, the University of Rochester, and the University of Virginia. This paper was written while he was a Houblon-Norman/George senior fellow at the Bank of England, on leave from Deutsche Bank.



## Endnotes

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1. In the nomenclature used here, RMB will indicate a general reference to renminbi. CNY will refer to a renminbi deposit onshore, for my purposes in Shanghai; and CNH will refer to a renminbi deposit offshore or bond in Hong Kong.
  2. The growth of CNH deposits actually slowed during the summer, reaching RMB572 billion at the end of July and RMB609 billion at the end of August.
  3. I have taken all charts from Linan Liu and Dennis Tan, *CNH Monitor*, Deutsche Bank, August 26, 2011, September 22, 2011, and September 27, 2011.
  4. We argued in 2003 that such an end-game for the then current international monetary system would occur in ten or more years. See Michael Dooley, David Folkerts-Landau, and Peter Garber, "An Essay on the Revived Bretton Woods System," NBER Working Paper No. 9971 (Cambridge, MA: National Bureau of Economic Research, September 2003); "Direct Investment, Rising Real Wages, and the Absorption of Excess Labor in the Periphery," NBER Working Paper No. 10626 (Cambridge, MA: National Bureau of Economic Research, July 2004).
  5. See Peter Pang, "Hong Kong: The Premier Offshore Renminbi Business Center," Hong Kong Monetary Authority, September 27, 2011. China's new five-year plan supports the development of Hong Kong as the offshore RMB center.
  6. Interest rates on September 30, 2011.
  7. This disincentive was not enough to preclude RMB settlement for exporters in Hong Kong. The total RMB settlement for cross-border trade was RMB957 billion in the first half of 2011, 8.6 percent of China's total trade volume, and 64 percent of total cross-border RMB settlement for 2010 and H1 2011. This is the sum of RMB settlement for both imports and exports globally. There is as yet no breakdown of import and export settlement for the period H1 2011. However, in Q1 2011, RMB cross-border settlement for exports was RMB20 billion and for imports was RMB320 billion, a ratio of 16 to 1. For the first three quarters of 2010, the breakdown was RMB18 billion for exports and RMB157 billion for imports, a ratio of 9 to 1. Figures for Hong Kong indicate about RMB755 billion of cross-border settlement in H1 2011. It is clear that RMB settlement in Hong Kong has been dominated by imports because of the increase in CNH deposits by about RMB250 billion in the same period. This is the net increase in deposits after subtracting about RMB145 billion in net CNH bond and bank CD issuance that flowed back onshore. See Hong Kong Monetary Authority, *Half-Yearly Monetary and Financial Stability Report*, September 2011, p. 71. That leaves about RMB360 billion that must be split approximately equally between import and export invoicing to cancel each other out, although this seems to be too much in export invoicing, given the low overall amount for Q1 2011.
  8. See Liu and Tan, *CNH Monitor*, September 27, 2011, for this argument.
  9. See Peter Pang, "Hong Kong's Expanding Role as an Offshore RMB Centre," February 22, 2011, for an example of how outward FDI denominated in RMB would proceed.
  10. This is the same point made in Dooley, Folkerts-Landau, and Garber, "The Revived Bretton Woods System: The Effects of Periphery Intervention and Reserve Management on Interest Rates and Exchange Rates in Center Countries," NBER Working Paper No. 10332, March 2004, about the effect of Asian authorities' attempts at currency diversification while trying to maintain pegged exchange rates.