

## On the Renminbi

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Fixed and flexible exchange rates each have advantages, and a country has the right to choose the regime suited to its circumstances. Nevertheless, several arguments support the view that China should allow its currency to appreciate. (1) China's economy in 2004 was on the overheating side of internal balance, and appreciation would help ease inflationary pressure. Although this excess demand probably moderated in 2005, the general principle remains: to achieve both internal balance and external balance simultaneously, an economy needs to be able to adjust its real exchange rate as well as its level of spending. (2) Although foreign exchange reserves are a useful shield against currency crises, by now China's current level is fully adequate, and US treasury securities do not pay a high return. (3) It becomes increasingly difficult to sterilize the inflow over time. (4) Although external balance could be achieved by increasing expenditure, this policy applied by itself might send China back into the inflationary zone of excess demand. (5) A large economy like China can achieve adjustment in the real exchange rate via flexibility in the nominal exchange rate more easily than via price flexibility. (6) The experience of other emerging markets points toward exiting from a peg when times are good and the currency is strong, rather than waiting until times are bad and the currency is under attack. (7) From a longer-run perspective, prices of goods and services in China are low -- not just low relative to the United States (.23), but also low by the standards of a Balassa-Samuelson relationship estimated across countries (which predicts .36). In this specific sense, the yuan is undervalued by approximately 35%. Typically across countries, such gaps are corrected halfway, on average, over the subsequent decade. These seven arguments for increased exchange rate flexibility need not imply a free float. China is a good counter-example to the popular "corners hypothesis" prohibition on intermediate exchange rate regimes. The hybrid basket-band-crawl regime that China announced in July 2005 would be suitable, if it were really followed. So far, however, the de facto regime seems to remain a dollar peg, with only a 2.1% revaluation.

### *Qualifications to the endorsement of RMB appreciation*

The author is not endorsing urgings of American politicians. US trade deficits and unemployment are not substantially attributable to China's exchange rate policy.<sup>1</sup> Furthermore, any country is free to choose to peg its currency if it wishes. Thus allegations of "illegal exchange rate manipulation" are probably inappropriate. It is not even true that an appreciation of the renminbi against the dollar would have an immediately noticeable effect on the overall US trade deficit or employment, though the effect on the US trade balance would eventually be moderate if other Asian countries were to respond by letting their currencies appreciate against the dollar as well. But in any case, the first order of business for China should be to determine what policy is in its own interest.

This is not to say that surplus countries have no obligations under the international monetary system<sup>2</sup>, nor that no country can ever be asked to take into account the interests of others, as part of a reciprocal system that has gains for all. But in the author's view it is not appropriate to use the language of WTO violations for the question of balancing the pros and cons of fixed exchange rates, which is inherently much less clear-cut than the question of balancing the pros and cons of free trade.<sup>3</sup>

It should be conceded from the outset that a regime of fixed exchange rates has a number of advantages.<sup>4</sup> Two advantages of fixing the exchange rate in terms of a particular major currency like the dollar are most important. First is the provision of a nominal anchor to prevent inflationary monetary policies and expectations thereof. But there are other possible alternate candidates for nominal anchor, including nominal GDP, and the CPI. Second is the facilitation of trade with those countries that use the dollar, or at least are pegged to the dollar.<sup>5</sup> Other advantages of fixed rates include facilitating financial integration, forestalling competitive appreciation or depreciation, and preventing the sort of speculative bubbles that seem occasionally to afflict floating exchange rates. There is of course a corresponding list of advantages of floating rates.

### ***Target for the overall balance of payments***

China's trade surpluses may in themselves constitute an argument for appreciation. Contrary to some public discussion, it is not necessarily desirable, for any country, that

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<sup>1</sup> The recent US position on the Chinese yuan has a precedent 15 years earlier when US policy urged appreciation and liberalization of the Korean won: Frankel (1993). And before that, the Japanese yen: Frankel (1984).

<sup>2</sup> Goldstein (2004) argues that there is an obligation not to manipulate the currency to frustrate adjustment, and that a fixed exchange rate is not proof against such charges.

<sup>3</sup> Frankel (2004) is a more comprehensive survey of the pros and cons of exchange rate regimes among emerging market countries.

<sup>4</sup> McKinnon has long argued the advantages of dollar links for Asian countries; e.g., McKinnon and Schnabl (2003).

<sup>5</sup> Since Rose (2000), we have come to realize that the empirical effect of a fixed exchange rate on the quantity of trade is stronger than had been previously thought, at least in the case of a common currency. Clark, Tamirisa, and Wei (2004) find little effect of variability versus a regular fixed exchange rate.

its trade balance be close to zero. Let us assume for the sake of argument that the Chinese trade balance is where it should be. There is still the question of the overall balance of payments, the sum of the current account and the private capital account.

The statistics show that the foreign exchange reserves held by the People's Bank of China continue to increase. This says that China is running a surplus on its overall balance of payments. Much of the surplus currently takes the form of capital inflows. Although portfolio capital inflows are still heavily restricted by the government of China, they are nevertheless finding their way in through one route or another; and in any case inward Foreign Direct Investment is large. Which measure of external balance is the right one? One cannot definitively assert that it is correct to have an objective for the current account but not for the overall balance of payments, or vice versa. Both measures are of interest to policymakers.

Why does the balance of payments matter? One disadvantage of a balance of payments deficit, for any country, is that the central bank is running down its reserves. If this process continues indefinitely, it will eventually have to adjust course. Under conditions of open capital markets, if reserves reach a critical level (which need not be as low as zero), a sudden speculative attack could force the adjustment to take place rapidly, and under unpleasant conditions.<sup>6</sup> In the East Asian crisis of 1997-98, for example, the economies that had run down their reserves suffered sharp crises (Thailand, Korea, etc.), while the economies with high levels of reserve holdings were the ones able to ride out the storm (China, Hong Kong SAR, and Taiwan Province of China).

One disadvantage of a balance of payments *surplus*, on the other hand, is that the reserves, which are typically held in the form of US Treasury bills and bonds and other dollar securities, pay a low rate of return. Interest rates on US treasury bills are low because the market is so liquid and because default is assumed to be very unlikely -- and also, during the period 2001-2004, because the Federal Reserve has held short-term interest rates well below normal historical levels. The Chinese authorities have evidently already diversified out of Treasury bills, into agency bonds and other longer term securities, which will probably help the yield somewhat. But it is more likely than not that the dollar will depreciate over the next ten years (not necessarily in the short run), in light of the large US trade deficit, which would reduce even further the return to holding dollar securities. (Diversification into the euro or other currencies has evidently not yet gone far.) Meanwhile, China is presumably paying to foreign investors on their inward investment a higher return than it is earning, which means that the arrangement is a losing deal for the country in the aggregate.

The author's feeling is that China has not been irrational -- in light of the observed volatility of the preceding decade -- to want to accumulate reserves. Thus one can rationalize a balance of payments surplus above and beyond the trade surplus (though I would guess that exports and employment are the more important motivations in the minds of Chinese policy-makers when they intervene to maintain the *de facto* peg<sup>7</sup>). In any case, by now the level of reserves is so high that further accumulation would seem to

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<sup>6</sup> This is predicted by most theories of speculative attacks. Chapter 23 of Caves, Frankel and Jones (2002) is a brief survey of crises in emerging markets.

<sup>7</sup> Dooley, Folkerts-Landau, and Garber (2003) surmise on these grounds that Asian central banks will happily absorb ever-more dollars indefinitely.

accomplish very little by way of increased security. So I will assume in the analysis that the target for the overall balance of payments is now zero.

Another consideration in selecting the desired level of the overall balance of payments is the implications of reserve flows for the monetary base. If reserves are flowing in through a balance of payments surplus, that puts upward pressure on the monetary base. Conversely, if reserves are flowing out through a balance of payments deficit, that puts downward pressure on the monetary base. If the central bank wishes to make its domestic monetary policy decisions unencumbered by changes in foreign exchange reserves, that may be a further argument for a target of zero for the balance of payments.

### ***Sterilization***

We have already mentioned that a balance of payments surplus implies that the reserve component of the monetary base is increasing. Some expansion in the monetary policy may be entirely appropriate, especially in an economy with strong long-term growth. But in an economy that is in danger of overheating, the central bank may wish to sterilize the inflow, so as to prevent expansion in the overall money supply.

Sterilization can be a good response to an inflow, for a period of time. It can help the country maintain its exchange rate target without abandoning a target for the money supply or interest rate. But it can become increasingly difficult over time, especially if traditional barriers to capital flows have been gradually eroded. One problem is that it just prolongs the balance of payments disequilibrium, because it by-passes the automatic mechanism of adjustment that reserve flows provide under the monetary approach to the balance of payments. Another potential problem is the quasi-fiscal deficit: if the central bank has to pay high interest rates to get domestic residents voluntarily to absorb “sterilization bonds,” while receiving low interest rates on its reserves of US treasury securities, then it is running a deficit. Some governments are able to force their bonds down the throats of their banks without paying market interest rates, a form of financial repression; but this just weakens the balance sheets of banks and raises the odds of a banking crisis somewhere down the road.

### ***Avoiding currency crises***

Asian countries are understandably anxious to avoid crises such as those that afflicted much of the continent in 1997-98. Although much ink has been spilled over the question of exchange rate regime, there is no clear verdict. The late-1990s saw the development of a surprisingly wide consensus in favor of the corners hypothesis: hard pegs or pure floats, in preference over intermediate regimes. But the author has been skeptical of this view all along. China, for one, is too large a country to dollarize or adopt a currency board, but is probably not ready for pure floating yet either. That leaves intermediate regimes: either the current adjustable peg, on the one hand, or alternatives such as a target zone, centered either on the dollar or on a basket, on the other hand.<sup>8</sup>

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<sup>8</sup> Williamson (2000) has been a consistent defender of the intermediate regimes, even when the corners were most in fashion (which was just before the collapse of Argentina’s currency board).

Baskets tend to be less transparent and less credible than defining a parity in terms of a single existing currency. Asia currently lacks a currency in use that is a suitable anchor for individual countries. China does not yet have the necessary developed and open financial markets to make the renminbi a regional anchor currency, while Japan's yen fluctuates too much versus the dollar and euro.

Some have argued that for China to minimize the probability of crisis, it would have to avoid appreciation, so as to keep the current account as strong as possible. It is true that overvalued currencies played a role in the East Asia crisis of 1997, even though some westerners had urged appreciation for surplus countries in the past. It is also true that real appreciation is likely to lead to trade deficits and net borrowing from abroad, and that countries that borrow from abroad are more likely to have crises. But there is another respect in which moving to a regime of increased flexibility now might reduce the chance of future crises rather than increase it.

If and when inflow turns to outflow, as part of the cycle that so many developing countries have gone through so many times before, it is important not to cling to a peg for too long. Many countries procrastinate, postponing adjustment either through devaluation or expenditure reduction. The lesson is not to procrastinate. There is an understandable temptation to cling to an exchange rate peg that has worked well for some years, economically and politically. Mexico in 1994 is one of many examples. One lesson from past experience is that of the exit strategy. If an eventual exit from a peg, to a regime with greater flexibility, is likely to occur eventually anyway, it is better to do it at time when the balance of payments is strong and the initial movement is likely to be appreciation. 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.<sup>9</sup> Hence the argument for being safe, and increasing flexibility before any cut-off in capital flows.

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 the prolongation of strong capital inflows (as in standard macro models). Chinese officials may be correct that their case is somewhat different, due to a financial system that is less open and less market-oriented. The capital inflow has consisted largely of Chinese citizens bringing capital flight money back home, speculating on a revaluation, and so far the authorities have not had to pay high interest rates locally to sterilize it. But they may find it increasingly difficult to sterilize further inflows.

## **The Balassa-Samuelson relationship**

Purchasing Power Parity (PPP) is often calculated as a guide for what the equilibrium level of the exchange rate, for China as for other countries. But the overwhelming majority are estimates of *relative* PPP, that is, based on price indices. They do not necessarily show the yuan to be strongly undervalued. But that may be

because they use the past as the benchmark, and the yuan may have been undervalued in the past.

Comparisons of price levels across countries are difficult, because such *absolute* PPP data are much less available than *relative* PPP data (for which one only needs price indices and exchange rates). But some data are available. As of 1990, China's price level was reported as only .119 of the US price level, according to the Penn World Tables, Mark 5.6.<sup>10</sup> That prices are lower in China is not in itself a surprise. Even if we thought that markets in internationally traded goods were perfectly integrated, there is no mechanism to arbitrage disparities in prices of nontraded goods. There is abundant empirical evidence, along both the cross-section and time-series dimensions, that prices of non-traded goods, and thereby of general price levels, rise with levels of productivity, real wages and real income. This robust empirical regularity is called the Balassa-Samuelson effect, and is most often explained by the assumption that productivity growth is more rapid in traded goods than non-traded goods.<sup>11</sup>

### ***Balassa-Samuelson estimation in 2000***

China's absolute price level in 2000 was .23, relative to the U.S.. The news is that China's prices are, not just low, but well below the level that one would predict from the country's per capita income and the cross-country empirical relationship between the real exchange rate and real income.

China's real income per capita was \$3747.3, which was .11 of the US level. We can update the Rogoff (1996) estimation of the Balassa-Samuelson effect to the year 2000, on a cross-section of 118 countries. The regression yields a highly significant coefficient of 0.382 on the log of relative income. In other words, every one percent increase in real per capita income is associated with 0.38 percent in real appreciation. Notwithstanding the relatively good fit of this univariate regression, there are some substantial outliers. China is one of them, though far from the most egregious.

The price level (relative to the United States) that is predicted for China by the equation is 0.362 (derived from -1.015 in logs). The residual of the log was -0.448. In other words the regression suggests that the yuan was undervalued by 44.8 % in logarithmic terms (36.1% undervalued in absolute terms) in 2000.

Few economists would seriously recommend a revaluation over a short period of time of the yuan on the order of magnitude suggested by this interpretation of the Balassa-Samuelson equation. In the first place, a sudden revaluation of the currency of this magnitude would be disruptive. In the second place, other considerations matter in addition to the Balassa-Samuelson regression, including current monetary conditions. In the third place, one would first have to investigate the reliability of the Chinese price data.

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<sup>10</sup> China's prices showed up as the lowest of 31 countries; the next lowest was Bangladesh at .154. Summers and Heston (1991) describe the data. See Rogoff (1996, p. 659-660).

<sup>11</sup> Useful references include Balassa (1964), De Gregorio, Giovannini, and Wolf (1994) and Kravis and Lipsey (1988).

It is possible that the numbers in the Penn World Table have been extrapolated extensively from a slender base.<sup>12</sup>

Nevertheless, the numbers are suggestive of a disequilibrium that in the very long run may have to be corrected one way or another. Even if the adjustment is drawn out over a long period of time, to correct the disparity with no change in the nominal exchange rate would imply substantial inflation, not desirable as a long-term trend. Thus the Balassa-Samuelson calculation seems another reason to plan on a transition to a more flexible exchange rate regime.

### ***Regression toward the mean***

To characterize the empirical literature on the Balassa-Samuelson effect, the relationship between the real exchange rate and real income is fairly robust on a cross-section basis, but is more uncertain on a time series basis, even when changes are observed over intervals as long as ten years. This raises the question of the predictive power of the relationship for a given country over time. But a plausible interpretation is readily at hand. Most economists believe that real exchange rates are influenced not solely by the long-term trend of the Balassa-Samuelson effect nor solely by the short-term fluctuations of monetary policy and nominal exchange rate changes, but rather are influenced by both.<sup>13</sup> A reasonable characterization is that in the long run Balassa-Samuelson factors dominate, but in the short run monetary factors can pull the real exchange rate away from the Balassa-Samuelson equation. This framework contains the powerful prediction that if a country lies substantially off the Balassa-Samuelson regression line in one year, it can be expected to return part way – not necessarily all the way – to the regression line over the subsequent decade. This claim has important implications for our ability to make predictions, and furthermore is testable with data from the last decade.

We have tested whether residuals from the 1990 regression have explanatory power for the year 2000. On a cross-section (of countries with data available for both years), we regressed the 2000 real exchange rate against the fitted values from the 2000 regression (which is also equivalent to regressing them against 2000 income levels, as before) *together with the residuals from the 1990 regression*. The results confirm the theory, and also provide the useful prediction that, in expected value terms, approximately half of any deviation from the Balassa-Samuelson regression line is corrected over the subsequent decade. For the case of China, it says that even if the big differential in productivity growth between China and its trading partners were to disappear tomorrow, Balassa-Samuelson factors nonetheless would predict that by 2010 the yuan would undergo an expected real appreciation of about half of the year-2000 gap, which is half of 44 percent, or 22%.

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<sup>12</sup> As a rough check MacPPP suggests that Chinese prices are about .56 of US prices. Parsley and Wei (2004).

<sup>13</sup> One does not necessarily need prices of non-traded goods to be sticky – let alone prices of traded goods – to get the result that devaluations or changes in monetary policy can have transitory effects on the real exchange rate in the short run. Dornbusch (1973).

A real appreciation toward long-run equilibrium could be accomplished with no change in exchange rate regime, by an inflation rate of 2.2% per year in excess of the US level, which is not especially large compared to recent swings in China's inflation rate. Nevertheless, the theory predicts that more movement in the same direction would have to continue over the subsequent decade, and, more importantly for present purposes, that an allowance for Chinese growth to continue on the order of 6 % greater than US growth would require adding another 2.3 % of real appreciation per year (.38 times the relative growth rate). Adding together the correction of the past undervaluation and the continued trend gives a real appreciation in excess of 4% per year. A 4% differential above the US inflation rate seems too high to be desirable as a long-term inflationary bias. Again, the implication is that the yuan would have to appreciate in coming years.

This idea of gradual "regression toward the regression line" bridges the gap between the first half of this paper and the second half. The Balassa-Samuelson calculation suggests real appreciation on the order of 4% a year averaged over the next decade or more, better achieved through nominal appreciation than through inflation. The targets and instruments framework of the first half of the paper suggests that appreciation is needed to curtail excessive build-up of reserves through the current balance of payments, and the dangers of excessive monetary expansion, overheating, and inflation. Perhaps past devaluations (or deflation, as recently as 2002) help explain how the yuan got so far off the equilibrium line in the first place. At least as important is that China's rapid productivity growth and increased trade integration mean that levels of the nominal exchange rate that might have been consistent with long-run equilibrium in the past have now become undervalued. Either way, if this gap is real, better to address it through appreciation than inflation.

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