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Asian Reserves and the Dollar: Is Gradual Adjustment Possible?

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September, 2005

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Abstract

Large dollar reserves in Asian EMEs accompany large US fiscal and current account deficits. Analysis of strategic sales by Asian EMEs suggests that an attack on the dollar is not certain but is possible. A unique equilibrium where Asian EMEs sell their reserves does not exist but there are multiple Nash equilibria. Therefore action, which includes adjustment, is required to coordinate to the better equilibrium. There is evidence that more flexibility in Asian exchange rates will reduce risk for Asian EMEs, but the flexibility will have to be limited, and it depends on more flexibility in the renminbi. Moreover, limits to adjustment in wages put limits on realignments between US and Asian exchange rates. Therefore while a gradual adjustment strategy is feasible it will require both expenditure switching and expenditure reduction, with the latter moderated by the maintenance of robust global growth.

Key words: multiple equilibria, coordination, collective action, real wages, expenditure switching

JEL Codes: F0, F3

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INTRODUCTION

Imbalances have built up across countries and regions in foreign exchange reserves. The U.S. has a large current account and fiscal deficit and many Asian emerging market economies (EMEs) have a surplus in the current account of their balance of payments (BOP) with continuing capital inflows. They are accumulating substantial reserves to prevent their currencies from appreciating. We ask first, if adjustment is required, second, if it is possible. If so, should it be one-sided or balanced, gradual or sudden?

Dooley et. al (2004) argue the situation is sustainable since the world is back to a de-facto Bretton Woods system of fixed exchange rates, where the development strategy the Asian periphery is following requires it to keep its exchange rates undervalued to access the large U.S. market, while Asian Central Banks (CBs) make cheap funds available to fund U.S. imports. Large reserves invested in U.S. treasuries help to keep U.S. interest rates low. Asian EMEs benefit since they are able to grow more rapidly. Thus the current system can continue until surplus labor in Asia is absorbed.

Many commentators counter this position; most are of the opinion that some adjustment will have to occur. Obstfeld and Rogoff (2004) estimate that a 20-40 percent depreciation of the dollar is required to balance the U.S. current account.¹ Eichengreen (2004) expects Asian CBs to stop holding dollar assets as depreciation reduces returns from doing so, and to allow their currencies and wages to appreciate. He points out the many ways in which U.S. deficits are worse than they were during the Bretton Woods period. He believes, moreover, that coordinated Asian action in support of the dollar, even if desirable, will not occur. Asian EMEs will not be able to act together since they suffer from a collective action problem.

We argue that adjustment is required since imbalances make markets vulnerable. Although our focus is on Asia and the U.S., stress in Europe from appreciation of the Euro, can contribute to instability in global financial markets.² Our analysis of strategic actions and possible coordination among Asian economies suggests that an attack on the dollar is not certain but it is possible. A collective action failure, which would imply a unique outcome where Asian countries sell their reserves, is unlikely. But there are multiple Nash equilibria with attack and hold both as possible equilibria. A coordination failure can lead to

¹ By the end of 2004 the dollar had already fallen 37% against the euro and 24% against the yen compared to early 2002.

² I thank a referee for making this point. He also suggested the potential problems from the large private holdings of dollar-denominated financial claims. All these do add to the vulnerability of markets and underline the necessity of some adjustment. Even so, large reserves give CBs some ability to lead markets.

an attack on the dollar. Therefore action, including adjustment, is required to coordinate to the equilibrium where CBs continue to hold the dollar.

The next question is about the kind of adjustment. Arguments based on the use of asymmetric power imply that adjustment can be one-sided—the U.S. need not adjust. It can, as it has in the past, use its position as the global hegemon to force other countries to share the cost of its current account adjustment. Dollar depreciation is a “weapon” (Hennings, 2004) that was used in earlier adjustment episodes to force Europe to expand domestic demand to stimulate U.S. exports and thus support the dollar. Today Asian EMEs with large dollar holdings are vulnerable, because their reserves will lose value if the dollar depreciates. Since beginning to sell may bring about such a collapse, they may be locked into holding the dollar reserves. Senators were ready with a bill to impose a 27.5 percent tax on Chinese imports unless Beijing revalued by as much, but agreed in June 2005 to delay a vote on the bill after the U.S. administration persuaded them that a change was imminent. On July 21 China did revalue but by 2.1 percent compared to the 10 percent the U.S. government wanted, and the 40 percent overvaluation their trade competitors were alleging.³

As Goyal (2005) points out, *blame* is a psychological trap that prevents resolution of international issues such as the current global imbalances. It is always the others fault, and it is always the other who should take action. Thus the U.S. blames Asian depreciated exchange rates and low wages; Asia emphasizes U.S. deficits. Pushing the other to take action results in *resistance*; China has often said it would like to change its exchange rate regime, but when it is ready. It would not like to be seen as doing this under international pressure. Pushing may work if the advantages are all on one side, but in a more even situation, only results in a stalemate. These distortions arise due to *biased perceptions*. People tend to see their own losses and other peoples gains. Thus the U.S. debate emphasizes competition for industry from Asian exports more than the benefits to consumers from cheap imports or from low interest rates; Asians point to U.S. deficits but neglect the demand these create for Asian goods. *Fear* or tendency to expect the worst worsens the biases and prevents a reasoned approach to an acceptable solution. A shared balanced adjustment can dissolve these traps, and act as a confidence building measure.

Moreover, a balanced adjustment is necessary since it is not possible to adjust either relative exchange rates or U.S. fiscal deficits to the degree required without destabilizing the system. Analysis with the Swan diagram shows there are limits to the appreciation of Asian exchange rates, unless real wages rise. Appreciation of the domestic currency implies lower domestic prices and, if there are lags in the adjustment of nominal wages, real wages rise. But for the latter to

³ The information was obtained from news reports and the press release of the People’s Bank of China, July 2005.

be sustained surplus labor has to be absorbed, and the agricultural sector has to become more productive. Then the reservation wages of the large numbers employed at low productivity jobs would rise; options available to them would improve. Without that they would bid down wages and prices. In addition, too sharp an appreciation of Asian exchange rates would either export inflation to the West or require a large reduction in real wages there, which may result in political resistance. Even if it were feasible, it would worsen already growing inequalities in income distribution. Moreover, U.S. export demand is a large part of world trade. If dollar depreciation results in a sharp fall in this demand, world prices would fall and thus reduce real dollar depreciation despite a nominal depreciation. Too sharp a dollar depreciation would also reduce demand for it as a reserve currency.

We argue that gradual adjustment is possible since there are sufficient common interests to motivate a feasible path with shared costs of adjustment. Such adjustment may calm markets and lower the possibility of coordination failure. It would also use and preserve current higher global growth rates, and therefore be more feasible politically. In the new Chinese exchange regime the renminbi is limited to moving within a 0.3 percent band each day against a basket of foreign currencies. The tight dollar peg has been dropped. But even though China has officially been on a managed float since 1994, the CB intervened to maintain a tight dollar peg. The new regime does not in itself guarantee an end to the earlier type of intervention.

How will some appreciation of the renminbi, and a move to limited exchange rate flexibility affect China? To answer this question we draw on stylized facts developed from an examination of macro and trade data for select Asian EMEs. China is said to be hesitant to allow greater flexibility for a number of reasons. First, it is afraid its Asian trade competitors will not follow an appreciation. But our stylized facts show Asian countries have allowed their currencies to appreciate against the renminbi. It follows they will not start depreciating against the dollar, if the renminbi appreciates somewhat. Therefore trade competition among Asian EMEs will not be affected. For example, when China dropped its tight dollar peg, Malaysia also said it would drop its dollar peg. Moreover, intra-Asian trade is substantial, and does not benefit from a depreciation of Asian currencies against the dollar. A relative appreciation of the renminbi can actually lower the cost of China's raw material imports and foreign asset acquisition. Although explicit monetary cooperation may be far in the future, there may already be an implicit alignment among Asian exchange rates, which may persist even with a more flexible renminbi.

China is also worried about the impact of a change in exchange rates on its weak financial system. But all Asian EMEs including China want deeper and more modern financial markets. More flexible exchange rates help to develop

such markets. There is evidence that more flexibility in Asian exchange rates reduces risk taking, thus benefiting Asian EMEs (Goyal and Agarwal, 2005). But the flexibility will have to be limited, because the forex markets are not deep enough for a full float. India's experience since the mid-nineties shows that limited flexibility of exchange rates is feasible even in the context of massive capital inflows.

Since fixed exchange rates were identified as a cause of the 1997 East Asian currency crisis most Asian EMEs now want more flexibility in their exchange rates.⁴ But there is more uncertainty after the crisis regarding the duration of the inflows. Some of the inflows may be arbitraging response to short-term interest rates that exceed world rates, or speculative anticipations of revaluation, or temporary portfolio adjustments following liberalization in many countries. There are fears of their possible reversal leading to precautionary reserve accumulation. Therefore willingness to allow some exchange rate appreciation and absorb more inflows is linked to reduction in the risk associated with these inflows. While more flexible exchange rates can contribute to it, this reduction also depends on changes in local, regional and global institutions. Better institutions for regional cooperation will reduce the possibility of a coordination failure where one country suddenly switches away from holding dollar reserves because it fears the other is going to, thus precipitating a crisis. Although heterogeneity is too large in Asia for an economic or monetary union to be possible, there is potential for greater coordination on select economic issues. But apart from coordination within Asia, international institutions are also required to facilitate dialogue between Asian and G-8 CBs and governments.

The stylized facts developed further refute the revived Bretton Woods argument of fixed exchange rates, since many Asian exchange rates turn out to be appreciating. Intra-Asian trade is large and growing, so dependency on exports to the U.S. is declining. Many Asian EMEs have reached economic maturity and do not have surplus labor.

But even in countries where exchange rates have appreciated against the dollar, the float is heavily managed, explaining the reserve accumulation. But the latter does not necessarily imply that exchange rates are overvalued, even if there is a trade surplus.⁵ For populous low per capita income Asian EMEs, the most

⁴ East Asian countries were regarded as miracle economies because of robust growth rates in a conservative fiscal environment. Financial weaknesses, such as high short-term foreign currency debt, were not suspected. Large outflows of foreign capital beginning in Thailand spread to Indonesia, Malaysia and South Korea. The currency crises turned into banking crises as the steep depreciation and spikes in interest rates bankrupted indebted businesses. Poor regulation and high interest differentials under fixed exchange rate regimes contributed to the over-borrowing abroad.

⁵ An equilibrium exchange rate should imply a sustainable balancing of the current and the capital account of the BOP, over time. This is compatible with a current account that is in deficit or in surplus for some periods of time.

important criterion on which to judge the adequacy of the exchange rate is probably not inflows or reserves, but robust export growth. The latter will help these countries to raise per capita incomes, remove poverty, and achieve a sustainable long-run balance of payments. Exchange rates cannot bear the entire burden of capital account adjustment since that would adversely affect the current account of the balance of payments. But a high growth of exports can occur without a trade surplus.

More flexible Asian exchange rates and mild relative appreciation, with supporting policies that sustain the global upturn, and lower the U.S. fiscal deficit, would be the most effective adjustment path. Since the U.S. has the largest trade deficit with China, some revaluation of the renminbi will help to correct the deficit. It will also allow more appreciation of other Asian exchange rates. Asian EMEs have benefited from global trade. Preventing the dollar from crashing and preserving U.S. import demand is important for them; robust Asian growth, which expands their export market, is important for the U.S.

Analysis of potential strategic actions between Asian EMEs is presented in section 2. The link between real wages and exchange rates and its implications for adjustment are explored in section 3. After a brief comparison of structure, macroeconomic policy and trade patterns across Asian EMEs, section 4 draws out implications of the analysis for global risk and obstacles to adjustment before section 5 concludes.

POSSIBLE STRATEGIC ACTION

We use prototype models with three agents, countries 1 and 2 and a representative market agent, to analyze the decision to sell or hold dollars in terms of strategic interactions between country pairs with matching reserve levels. This is a useful stylization since Asian countries with substantial foreign exchange reserves can be classified into three groups: Japan, China with high reserves, Korea, Singapore and India with medium reserves and Thailand and Malaysia with low reserves (see Table 5).⁶ Taiwan also has high reserves.

Each country wants to minimize loss in the capital value of reserves. Its strategy is an action $A = \{S,H\}$, with S denoting sale of dollar reserves, and H the decision to continue to hold them. If both countries choose H, the dollar depreciates at the rate d_I determined by U.S. deficits. Therefore the capital loss for each country is d_I multiplied by the level of its dollar reserves r . If both countries choose S, the market agent may also sell, and the dollar may depreciate

⁶ Table 5 reports total foreign exchange reserves. Not all of these are held in dollar assets. For example, the CBs of Japan and China together hold \$900 billion, or 46 percent of foreign holdings of US Treasury securities. The Bank of Korea holds about \$69 billion or 4 percent of the total foreign Treasury holdings.

at a higher rate d_3 . If one country sells and the other does not, the depreciation rate is d_2 . The loss for the country that continues to hold is $d_2 r$ and for the country that sells it is $z d_2 r$, where z , $0 \leq z \leq 1$, is the proportion of its reserves the country is not able to sell prior to the higher rate of depreciation d_2 occurring in the market period. The losses are summarized in Table 1. The parameters d satisfy the following restrictions: $0 \leq d_1 \leq d_2 \leq d_3$. The inequalities follow because of the rising intensity of market reaction. We further assume that in the case of low reserves r_L , $d_1 = d_2 = d_L < d_3 = d_M$. The market absorbs the sales if only one country sells without a higher rate of dollar depreciation, but if both sell, the rate of depreciation rises to equal d_M , the rate of depreciation if one or both the medium reserve countries sell. Thus, in the case of medium reserves r_M , $d_2 = d_3 = d_M$. In the case one or more high reserve countries sell, the extreme market reaction triggered implies $d_2 = d_3 = d_H$, $d_H > d_M$.

Table 1: Loss in capital value of reserves		
Country 1	Country 2	
	H	S
H	$d_1 r_1; d_1 r_2$	$d_2 r_1; z d_2 r_2$
S	$z d_2 r_1; d_2 r_2$	$d_3 r_1; d_3 r_2$

We define a critical value of $z = z^*$, such that if $z < z^*$, the losses to anyone country from deviating and choosing to sell dollars are lower than from continuing to hold dollars: $z^* = d_1 / d_2$.

If parameter $z \in [0, z^*)$ both countries choose strategy S leading to SS as the unique Nash equilibrium. This is the case of collective action failure where strategic action leads the countries inevitably to the outcome where an attack occurs on the dollar and both are worse off. Self-interest leads the countries to act against the common interest. For $z \in (z^*, 1]$ both HH and SS are equilibria, here a coordination failure can lead both countries to sell, but it is also possible that both continue to hold.

The probability of SS being the unique Nash equilibrium is higher if d_1 is higher, d_2 is lower and a slow speed of market reaction makes z low.

Tables 2 to 4 calculate the losses and the equilibria (in bold) for the three groups of countries, under likely parameter values given in the table. The dollar is

assumed to depreciate at 5 percent⁷ under the hold strategy, so that $d_I = 0.05$. The market tolerates sales by one low reserve country but reacts to sales by both low reserve countries and by any other country.

Table 2: Low dollar reserve countries, $r_L = 50$		
Malaysia	Thailand	
	H	S
H	$d_I = 0.05$ 2.5, 2.5	$d_L = 0.05, z = 0, z^* = 1$ 2.5, 0
S	$d_L = 0.05, z = 0, z^* = 1$ 0, 2.5	$d_M = 0.1$ 10, 10

Under the assumption that $z = 0$ so that any one low reserve country can sell all its reserves without any market reaction, SS is the unique Nash Equilibrium for the low reserve countries. In the other cases, both SS and HH are equilibria. But a sale by the low reserve countries will result in a higher rate of depreciation, and may trigger a chain reaction coordinating on SS. On the other hand, since markets are nervous and react quickly to any sale of dollars by a CB or even the announcement of a future portfolio rebalancing, z may exceed z^* even for low reserve countries, so that SS is no longer the unique Nash equilibrium.⁸ For example, in Table 2, if d_L rises to 0.07 and z to 0.8, which is higher than $z^* = 0.71$. SS is no longer the unique equilibrium.

Nervousness of markets has two effects. It raises z , thus lowering any one country's incentive to sell, so that SS is not the unique equilibrium, but it also makes coordination to SS more likely between the multiple equilibria SS and HH, since a small sale can spark a major and instant selling reaction.

If a country with high reserves were to sell its dollar holdings, countries in the other two groups would follow; sales by the medium group would trigger sales by the low group but not necessarily the high group. If a critical mass of

⁷ The highest average annual rate of depreciation of the dollar against Asian currencies has been about 4 percent from Table 5. The rate was 5 percent against the Indian rupee in 2004, and 14 percent against the Euro that year. The dollar has been depreciating since 2001.

⁸ On Monday, the 21st of February 2005, the Korean CB said it planned to diversify more of its reserves into non-dollar assets. Markets reacted strongly. Sales by currency traders led to the worst single-day decline in two months against the yen and the euro for the dollar. Stock markets in New York, London, Paris and Frankfurt dropped, and gold and oil prices, shot up. The Koreans said the next day that they did not intend to sell their dollars, and the markets calmed down.

countries from the other two groups sold, it would become very expensive for the high reserve countries to abstain from doing so. For example, China would have to buy more and more dollars to maintain its dollar peg.

Table 3: Medium dollar reserve countries $r_M = 100$		
Korea	Singapore	
	H	S
H	$d_1 = 0.05$ 5; 5	$d_M = 0.1, z = 0.6, z^* = 0.5$ 10; 6
S	$d_M = 0.1, z = 0.6, z^* = 0.5$ 6; 10	$d_M = 0.1$ 10; 10

Table 4: High dollar reserve countries $r_H = 500$		
China	Japan	
	H	S
H	$d_1 = 0.05$ 25; 25	$d_H = 0.5, z = 0.6, z^* = 0.1$ 250; 40
S	$d_H = 0.05, z = 0.6, z^* = 0.1$ 40; 250	$d_H = 0.5$ 250; 250

If the U.S. reduces its deficits and thus eventually lowers d_1 , it would increase confidence in the dollar. If Asian and G-8 governments and CBs talk to each other a coordination failure may be averted. Of course the analysis is simplified and is based only on economic loss. Countries will be factoring in many other factors such as, diplomatic pressures, the loss to trade following financial fragility, psychological factors such as “one upmanship,” “aggression,” “not wanting to be left behind or pushed.” Some of these can lower the probability of the attack equilibrium, but others make it more likely. Even so, the analysis does establish that on economic grounds, a unique sell equilibrium cannot be assumed. A coordination failure is, however, possible.

EXCHANGE RATE FLEXIBILITY AND RELATIVE WAGES

In the debate two very different cures have been proposed as essential to improve the U.S. balance of payments deficit. The first is to reduce the U.S. fiscal deficit, the second to appreciate Asian EME exchange rates relative to the dollar sufficiently to compensate for their lower wages (Woolfolk 2004).⁹ The first puts the burden of adjustment on reduction in expenditure or absorption, the second relies on expenditure switching. The first implies that the U.S. must bear the brunt of direct adjustment costs; the second that Asian countries must make major moves. But there is a close link between real wages and real exchange rates. Rigidities in real wages over the medium-run may limit the range of movement of real exchange rates, suggesting that a third, balanced approach would be more effective.

Beyond a point, wages in poorer Asian countries cannot rise unless productivity in agriculture rises, raising wage options for the average worker, or surplus labor is absorbed. Over appreciation of Asian currencies will only reduce their nominal wages and prices unless productivity rises in terms of their consumption basket.

Politicians find it difficult to impose discipline on workers, since their votes are important.¹⁰ Thus U.S. workers or their unions may not accept a steep reduction in real wages, or may be unable to do so as world prices fall with U.S. import demand preventing real wages from falling. If Asian exchange rates do appreciate steeply, and export prices do not fall, a rise in the price of hitherto cheap imports from Asia will lower the real wages of low-end workers, raising inequality and social pressures in the U.S.¹¹ But if real wages do not fall, and nominal wages rise to compensate for dollar depreciation, domestic inflation will appreciate the real dollar value over time. This feedback is low in the U.S. as nominal wages are sticky and there is a three-year lag between contractual revisions. As imports become more expensive, and other prices do not fall, inflation may rise, requiring a sharp rise in interest rates. This exporting of inflation is the reason appreciation in a trading partner's currency has been

⁹ Willett (2004) points out that a third, balanced approach, with a combination of different possible types of adjustment is necessary.

¹⁰ See Peterson (2004). I thank an anonymous referee for pointing out that the US was unable to force real wages down except through a serious recession in the 70s. Large voting groups are a basic weakness for democracies.

¹¹ Although imports are not a large share of US output, the dominance of cheap Chinese goods in low end supermarkets suggests that they do form a large share of the consumption basket of the low income worker.

disliked.¹² Possible wage adjustments give a range for the feasible real exchange, thus limiting the exchange rate as a means of adjustment.

The Swan diagram is a useful analytical tool to explore this range and show the working of the real exchange rate and of absorption as the two means of adjustment.¹³ The real exchange rate is defined as the ratio of traded to non-traded (NT) goods prices. NT goods are important for BOP adjustment in small countries, which have to take world prices as given. U.S. imports or exports have a large share in world trade; world prices change with them, and this is another avenue of BOP adjustment available to the U.S. But NT goods also have a large share in the output of the U.S. economy and are a major determinant of real wages, so that this relative price is important in adjustment. The analysis would be unchanged if the terms of trade, or the ratio of imported to home produced goods, replaces the real exchange rate. There is less endogenous adjustment in the terms of trade for a small open economy.

Consider two hypothetical countries, one with a deficit, the other with a surplus in the current account of the BOP. The surplus country represents China or India, and the U.S. is the deficit country. Habits impart persistence to real wages over the medium term. The deficit country has a high per capita income and the wage threshold is high, but productivity is also high. The threshold is consistent with full employment, and wages normally lie above and cannot fall below the threshold. Since the country accounts for a large part of global demand, even before the threshold is reached, world prices begin to fall with nominal wages, so that real wages stay above the threshold. The surplus country has a low per capita income. Productivity is low, the threshold is low, and employment is demand determined, with large numbers available for employment at the threshold and even below it in the short-run. Wages cannot rise above the threshold because workers in large numbers make themselves available for employment. There may also be an efficiency wage below this threshold wage. Productivity falls if wages fall below this point so that employers will not reduce wages to employ more workers at wages below that level.

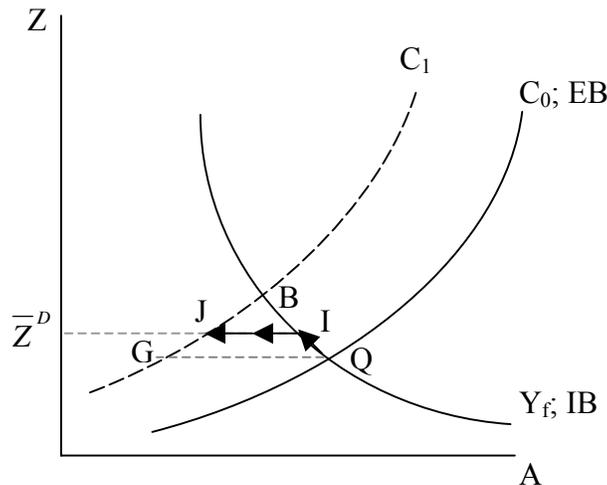
Figures 1 and 2 reproduce the Swan diagram and the underlying labor market equilibrium first for a country with a balance of payment deficit and then for a surplus country. In the part (i) of the figures, the curve depicting internal balance (*IB*) slopes downward. The combination of real exchange (*Z*) and

¹² There are of course degrees of freedom, since our analysis ignores tariffs and is limited to the average worker. But the actual labor market is segmented, and wages can be very flexible in some segments. In the US airlines industry, for example, in the intense competitive shake out of 2004 workers have taken up to a fifty per cent cut in nominal wages. But workers are looking for alternatives, and the fall in prices and wages is accompanied by a steep fall in quality of service--flights are routinely delayed. In some segments migrant workers keep wages low.

¹³ See Corden (2002) for an illuminating recent use of this model.

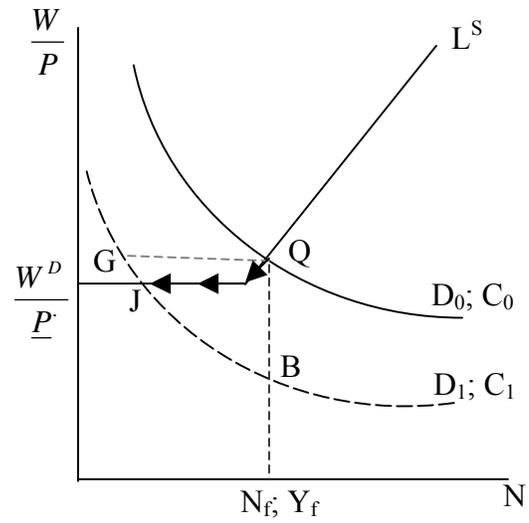
absorption (A) gives domestic demand, which determines the output level. Imports allow higher absorption, but for imports to rise at a given level of income Z must appreciate. The curve Y_f gives the full employment level of income. The C curves depict the external balance (EB) for which the current account (B) must equal net exports ($X-M$). At a given current account output and imports can only rise if exports rise. The latter requires depreciation in Z , so the curves slope upwards. Initial equilibrium is on C_0 as surplus country reserves, invested in the deficit country treasury bonds, fund a current account deficit at an appreciated deficit country exchange rate. But the inflows are expected to shrink so that C_0 shifts up to C_1 , requiring adjustment. The full employment equilibrium point shifts from Q to B along Y_f .

Figure 1: Adjustment Paths: Deficit Country



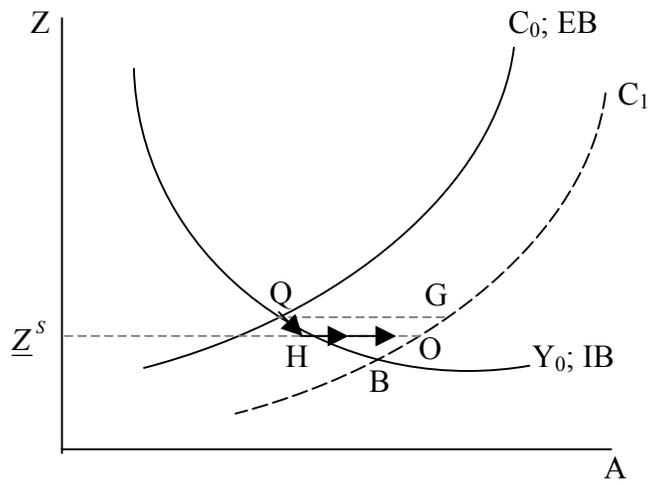
(a) Exchange Rate and Absorption

Part (b) of figure 1 shows the corresponding labor market equilibrium. The labor demand curve D_1 , corresponding to the more depreciated exchange rate along C_1 , shifts down, from D_0 corresponding to C_0 . For the full employment level N_f to be maintained, real wages must fall from Q to B . If real wages are rigid employment will fall to G . If the labor supply curve (L^s) has a kink at some threshold level of real wages they will not fall below this. The real wage threshold sets an upper limit to the real exchange rate—it will not depreciate above that. In that case adjustment must be a mixture of switching and reduction in absorption. At the new equilibrium J on C_1 there is some depreciation and fall in real wages, but also a reduction in output and employment. The latter could come through a fall in the fiscal deficit. A rise in labor productivity can make a further depreciation in the real exchange rate consistent with the wage threshold.

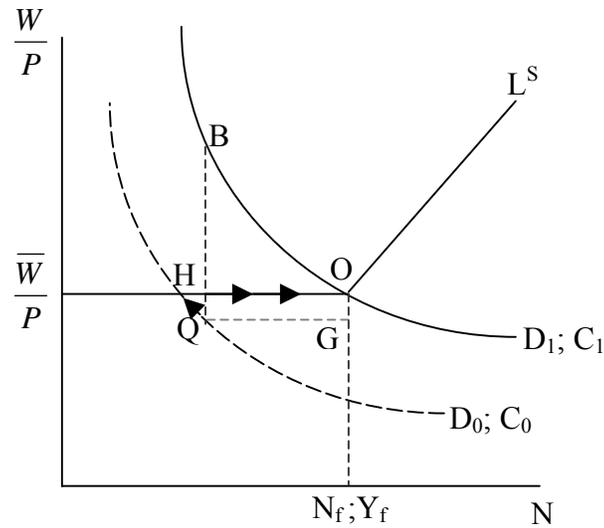


(b) Real Wages and Employment

Figure 2: Adjustment Paths: Surplus Country



(a) Exchange Rate and Absorption



(b) Real Wages and Employment

In the surplus country, the initial equilibrium Q on Y_0 is at less than full potential employment. It is near the horizontal stretch of the labor supply curve, which gives an upper limit to real wages (Figure 2b). Reserve accumulation has limited absorption of foreign inflows along C_0 at the initial equilibrium Q . Some more inflows can be absorbed through an appreciation until H , the lower limit set to the real exchange rate by the upper limit on real wages. But shifting to C_1 requires a rise in employment and output to O . Although O is higher than the initial level Q , it is below the level G which could have been attained without the appreciation and rise in wages. Wages can rise if productivity rises for workers in agriculture so that their exit options improve, or the surplus labor available from the rural sector is absorbed in modern employment. There may be a kink in the labor demand curve below Q at an efficiency wage level—wages would not fall below this.¹⁴

Therefore both countries share adjustment costs. There is some fall in employment in the deficit country but the surplus country also does not reach full employment. Continued high growth in the surplus country can serve as a positive demand shock for the deficit country's exports, so that Y in Figure 1 shifts back to the full employment level Y_f , as export demand rises.

¹⁴ Figure 2 does not apply to the more developed Asian countries such as Japan or South Korea or countries where labor in the traditional subsistence sectors has already shrunk.

Although the model is stylized, it suggests that large changes in the real exchange rate between China and the U.S. must await a change in relative productivity; but gradual adjustment is possible. Feasible adjustment in real wages and exchange rates may be sufficient to allow the 15 % appreciation of the renminbi required to absorb foreign inflows equivalent to the 1 percent current account deficit ratio China has been running (Williamson (2003)). Determination of the exact figure requires an econometric model, but it is clear that price adjustment alone may not be sufficient, expenditure compression will also be required in the U.S. Adjustment has not only to be gradual, but also balanced.

ASIAN INTEGRATION, TRADE AND RISK REDUCTION: STYLIZED FACTS

A picture of similarities and differences in structure and monetary policy across Asia, helps to assess the possibilities of adjustment, coordination of macroeconomic policy, collective action and risk reduction. Table 5 presents indicators of output, growth, openness, fiscal and monetary policy for China, Japan, India, South Korea, Hong Kong, Singapore, Thailand, Indonesia, Malaysia, Philippines, and Sri Lanka. Except for forex reserves, which are for end 2004, the figures are four-year averages over 2000-03 (see footnotes to Table 5).

The table shows a large heterogeneity in levels of development, per capita incomes, degree of openness, and macroeconomic policy across Asian countries. Geographic and population diversity also exists; China and India are large countries, with populations exceeding 1 billion.

Their per capita incomes were lower, but both seem to be catching-up with the other countries since the two have the highest rates of GDP growth. Reserves have historically been high for Japan, they crossed a hundred billion dollars from the mid-nineties for China, but other Asian EMEs started accumulating large reserves after the 1997 crisis, so the reserves may be fulfilling a precautionary role. Although the renminbi is tightly fixed to the dollar, other Asian currencies appreciated somewhat. There were wide ranges in growth rates and ratios for inflation and interest rates, FDI inflows, narrow money and domestic credit created by the banking sector. The two South Asian countries had domestic credit to GDP ratios of around 0.5, while in China and Japan they were almost three times as much. Most Asian EMEs had relatively conservative fiscal policies and ran a surplus on the BOP current account. The diversity suggests that they do not fulfill conditions for a monetary union or explicit coordination of monetary policy.

Table 5: Descriptive statistics and Asian heterogeneity											
	China	Hong Kong	India	Indonesia	Japan	Korea	Malaysia	Philippines	Singapore	Sri Lanka	Thailand
Real Per Capita Income	955.48	24356.68	462.13	667.39	34382.4	10635.5	3897.9	875.39	16316.4	748	1985.6
Output Growth Rates	8.94	0.84	6.01	3.86	-0.90	4.62	3.39	4.60	0.44	3.06	4.81
Reserves (\$ billion)	514.54	121.50	113.81	19.40	819.14	152.00	54.63	15.87	110.10	0.35	45.98
FDI (\$ billion)	44.76	27.23	3.32	-1.99	7.44	4.61	2.52	1.11	12.35	0.19	2.52
Rate of Depreciation	0.00	-0.14	-0.77	-3.65	-1.67	-1.76	0.00	3.59	3.88	5.55	-2.82
Inflation	0.41	-3.58	3.66	8.05	-1.73	2.88	1.41	3.85	-0.53	8.62	1.64
Interest rate	2.97	2.85	6.69	7.76	0.05	4.53	2.73	8.68	1.57	15.14	1.76
Exports to GDP	0.26	1.52	0.09	0.37	0.10	0.10	1.01	0.48	1.47	0.30	0.56
Imports to GDP	0.24	1.32	0.11	0.20	0.08	0.30	0.85	0.49	1.38	0.37	0.52
Current Account Balance on Goods & Services to GDP	0.03	0.06	-0.02	0.08	0.01	0.00	0.19	-0.01	0.09	-0.08	0.07
Fiscal Deficit (-) or Surplus to GDP	-0.03	NA	-0.05	0.00	NA	NA	NA	-0.05	0.04	-0.10	-0.01
Credit Growth Rate	20.84	0.22	12.42	5.30	1.22	13.78	6.90	4.78	2.85	10.54	1.52
Narrow Money Growth	16.62	21.02	12.89	11.16	13.89	11.86	9.49	10.35	5.28	11.06	9.20
Domestic Credit to GDP	1.54	1.44	0.56	0.61	1.52	0.91	1.18	0.58	0.84	0.44	1.02
Narrow Money to GDP	0.67	0.19	0.17	0.12	0.62	0.09	0.25	0.12	0.23	0.09	0.13

Source: International Financial Statistics, International Monetary Fund Online, <http://ifs.apdi.net/imf/>

Notes: 1. Reserves for all countries are from October 2004, except for Sri Lanka (2002) and Indonesia (2002).
2. Except for reserves all other variables are four-year average figures (2000 to 2003) for all countries.
3. For India FDI and current account balance on goods and services to GDP are averaged over 2000 to 2003, and deficit to GDP is the average of 2000-2001.
4. For Indonesia deficit to GDP is only the 1992 index.
5. For Malaysia FDI and current account balance on goods and services to GDP are averaged over 2000 to 2003.
6. For Sri Lanka deficit to GDP is averaged for two years, 2000-2001.
7. Bank rate is used as the interest rate for China, and India. For the rest money market rate is used as the interest rate.
8. Narrow money is the stock of narrow money comprising transferable deposits and currency outside deposit banks (line "34...ZF" in the IFS data set).
9. Domestic credit, from the banking survey, of the IFS measures the claims of the banking sector on the public and the private sector (line "32...ZF" in the IFS data set).

But are there possibilities of coordination on select economic issues? There are as yet no formal institutions for economic coordination, but the Asian currency crisis and the success of the EU, are pushing Asian EMEs to make initiatives towards that goal. A number of common shocks ranging from SARS to bird flu to the tidal waves have underlined the importance of regular communication and coordination. The ADB serves as an informal secretariat for discussions; China, Japan and Korea have set up a task force to explore issues in more cooperation; there is the Chiangmai initiative for reserve sharing and swaps, although the more difficult matter of surveillance has yet to be tackled; there are also attempts to set up an Asian Bond Fund to enhance financial integration. Although there are 49 Asian countries, ten Southeast Asian countries¹⁵ have long had a fora for dialogue in ASEAN. This has been expanded to include other major Asian countries. ASEAN aims to establish an economic community by 2020. A free trade area between China and ASEAN is targeted for 2010. Milestones include a non-aggression accord, and an accord on mechanisms to settle trade disputes. Similar accords with other countries are on the anvil. Thus although there is a history of discord and distrust in the region more systematic dialogue has been started. To that extent a coordination failure resulting in an exit from the dollar is less likely.

Are Asian EMEs ready to move to more flexible exchange rate regimes? Table 6 calculates average exchange and interest rate volatility for 24 countries over the period 1995-2002. The countries are divided into a set of four East Asian EMEs, a set of other EMEs with mixed exchange rate regimes, and a set of mature small open economies with independent floats to serve as benchmarks¹⁶. Most EMEs have moved to more flexible exchange rates after the 1997 crisis, realizing the high risk associated with fixed exchange rate regimes. The post crisis exchange rate volatility is higher. Partly the volatility has risen as countries have attempted to reduce and smoothen interest rates. Interest volatility also fell for most countries and it is lower than exchange rate volatility although the latter is

¹⁵ Six core ASEAN members are Singapore, Malaysia, Indonesia, Thailand, Philippines, and Brunei. Poorer nations that have joined the group are Vietnam, Cambodia, Laos and Myanmar. China, Japan, South Korea and India send representatives to the annual meeting, making it ASEAN + 4 or JACIK. Australia and New Zealand were invited to join the summit meeting for the first time in 2004. The US sends a representative. (News reports and a presentation by Ramkishan Rajan sponsored by the Freeman Foundation, Claremont Graduate University.)

¹⁶ Exchange rate volatility is calculated as the standard deviation of monthly movements (percentage changes) of domestic nominal exchange rates against the US dollar, and interest rate volatility as the standard deviation of monthly money market interest rate differences. For some EMEs where this is not available the nearest short-term substitute interest rate is used. The calculations for the individual countries are available from the author on request. The countries are listed in the footnote to the table.

also bounded. The move to more flexibility implies that Asian EMEs are more ready to allow limited floating against the dollar.

Year	East Asia 4		9 EMEs with mixed exchange rate regimes		10 Mature Small Open Economies with Independent Floats	
	Exchange Rate Volatility	Interest Rate Volatility	Exchange Rate Volatility	Interest Rate Volatility	Exchange Rate Volatility	Interest Rate Volatility
1995	0.76	1.61	1.97	3.52	2.94	1.20
1996	0.50	1.15	1.23	1.83	1.86	0.67
1997	9.00	6.24	1.80	1.88	2.37	0.43
1998	16.01	5.36	2.55	2.45	3.39	0.89
1999	4.42	1.17	3.97	1.37	2.17	0.42
2000	3.15	0.73	2.43	1.09	3.00	0.36
2001	3.75	1.36	3.39	1.61	3.07	0.34
2002	0.49	0.11	2.53	1.30	1.43	0.29

Source: Calculated from International Financial Statistics, yearbooks 1995-2001, (IMF, 2002) May.

Notes: 1.Data for 2002 is till May 2002.
2.The four East Asian EMEs are Indonesia, Korea, the Philippines and Thailand; 9 EMEs are Brazil, Chile, Czech Republic, Hungary, India, Israel, Poland, Singapore, and Turkey; 10 Mature Small Open Economies are Australia, Canada, Germany, Japan, Mexico, New Zealand, South Africa, Sweden, Switzerland, and UK.

What impact will changes in relative exchange rates have on trade? Historically Asian trade and financial integration has been deeper with the West than within Asia. Therefore Asian EMEs are considered to be trade competitors for the same western markets.¹⁷ But the structure of trade is changing rapidly. The matrix tables 7 and 8 give exports and imports respectively between 11 Asian countries and the U.S. The figures are ratios since they are divided by each countries total export or import and then averaged over the four years 2000-03. Comparing the last row of these tables shows that the discrepancy between the US exports to and imports from China is very wide, and is much larger than that for any other Asian EME. While 10.36 percent of U.S. imports come from China, only 3 percent of its total exports go to China. Therefore depreciation of the dollar against the renminbi will make more of a contribution towards resolving the U.S. current account deficit than will the dollar's depreciation against other Asian countries. Moreover, U.S. exports tend to be higher to those Asian EMEs with

¹⁷ Trade is growing rapidly between China and the ten ASEAN countries and by 2004 almost equaled that between ASEAN and the US.

high per capita incomes. Therefore more than an appreciation of their currencies, high Asian growth may contribute more to raising U.S. exports to Asia.

Export To Exporter	China	Hong Kong	India	Indonesia	Japan	Korea	Malaysia	Philippines	Singapore	Sri Lanka	Thailand	USA
China	0	17.68	0.73	1.09	15.51	4.65	1.29	0.63	2.16	0.14	0.89	21.01
Hong Kong	38.44	0	0.74	0.45	5.57	2.10	0.93	1.04	2.13	0.18	1.03	21.40
India	3.32	5.74	0	1.46	3.67	1.21	1.59	0.65	2.74	1.79	1.41	21.20
Indonesia	4.89	2.22	2.20	0	22.31	6.95	3.42	1.41	9.53	0.28	1.98	13.13
Japan	8.88	6.00	0.49	1.56	0	6.76	2.70	2.05	3.69	0.08	3.10	28.93
Korea	13.88	6.58	1.01	1.97	10.27	0	1.94	1.75	2.75	0.19	1.28	20.20
Malaysia	4.98	5.41	2.05	1.89	12.22	3.27	0	1.53	17.26	0.25	4.08	20.59
Philippines	3.52	6.36	0.23	0.58	15.58	3.48	4.70	0	7.41	0.02	3.52	26.13
Singapore	7.05	12.11	2.86	Na	9.75	5.31	23.05	3.24	0	0.44	5.86	20.87
Sri Lanka	0.18	1.18	2.61	0.15	3.52	0.66	0.17	0.11	1.39	0	0.55	39.79
Thailand	5.19	5.21	0.79	2.29	14.91	1.92	4.39	1.80	8.15	0.23	0	19.84
USA	2.95	1.87	0.57	0.35	7.71	3.30	1.42	1.08	2.33	0.02	0.79	0

Source: Calculated from the United Nations Commodity Trade Statistics Database, UN 2004.
<http://unstats.un.org/unsd/comtrade/>

Comparing the last columns of the two matrices demonstrates that exports to the U.S. are a large percentage of each country's exports, but imports from the U.S. are not as large a share of each country's imports. The summary table 9 shows this again. It is calculated from tables 7 and 8 by adding up first the export shares for each Asian country to every other Asian country and dividing the total by its export share going to the U.S. The second column of the table does the same exercise for imports.

Import from Importer	China	Hong Kong	India	Indonesia	Japan	Korea	Malaysia	Philippines	Singapore	Sri Lanka	Thailand	USA
China	0	3.60	0.77	1.62	18.02	10.01	2.88	1.04	2.32	0.01	1.98	9.54
Hong Kong	43.62	0	1.24	0.73	11.63	4.88	2.43	1.28	4.73	0.03	1.78	6.17
India	4.41	1.74	0	2.32	3.75	2.67	2.52	0.18	2.75	0.16	0.76	6.81
Indonesia	7.20	0.83	1.80	0	14.57	5.82	3.35	0.39	11.82	0.02	3.88	9.30
Japan	17.31	0.41	0.64	4.31	0	4.95	3.57	1.89	1.55	0.06	3.01	17.84
Korea	10.27	1.07	0.73	3.12	19.66	0	2.75	1.19	2.25	0.03	1.08	15.82
Malaysia	6.43	2.74	0.89	3.14	18.87	4.82	0	3.00	12.71	0.01	4.11	16.18
Philippines	3.53	4.17	0.84	2.31	19.82	6.92	3.47	0	6.47	0.01	3.10	18.14
Singapore	9.40	3.31	1.31	na	18.62	4.86	23.30	3.04	0	0.05	5.95	20.09
Sri Lanka	4.07	8.45	12.17	2.47	5.89	5.45	3.51	0.13	7.18	0	2.50	4.13
Thailand	6.49	1.40	1.09	2.22	23.95	3.61	5.49	1.81	4.87	0.07	0	11.08
USA	10.36	0.83	0.96	0.87	10.65	3.10	2.03	0.98	1.32	0.16	1.31	0

Source: Calculated from the United Nations Commodity Trade Statistics Database, UN (2004)
<http://unstats.un.org/unsd/comtrade/>

The table shows that intra Asian trade among the 11 countries is already large compared to their trade with the U.S. Except for Sri Lanka, intra Asian exports exceed exports to the U.S.; the ratios are above 1. The import ratios are far larger, implying that intra-Asian imports far exceed those from the U.S. The average export ratio is 2.1 and import ratio is 5.1; on average, these economies are exporting twice as much to each other, as they do to the U.S. It must be noted that the data in the tables covers only commodity trade, which is all that is available in the UN database. The boom in software exports is also not captured since services are not included in the database. Moreover, a large part of Asian trade is from trade in inputs, which is not captured in final trade data (Jones et. al. 2004). Such trade is complementary rather than competitive. Therefore intra Asian trade is even larger than the tables show. As Asian EMEs grow, find their comparative advantage and form markets for each other, intra-Asian trade will further increase, much as intra-industry trade dominates in developed country trade.

China has a current account deficit with Asian EMEs but a surplus with the U.S., although the deficits are partly due to large raw materials imports. Thus even if China appreciates against the dollar, and other Asian EMEs do not follow fully, it will gain a major supply-side advantage due to cheaper imports from these countries. By the same logic, these Asian EMEs may not want their currencies to depreciate against China and other Asian EMEs since their imports would become more expensive. Although inflation remains low, China's rapid

output growth has raised fears of overheating, and in 2004 China raised its one-year lending interest rate from 5.31% to 5.58%, for the first time in nine years. Some appreciation of its exchange rate could contribute towards lowering costs and alleviating supply-side bottlenecks.

Table 9: Intra-Asian trade (2000-2003) compared to each country's trade with the US		
	Export ratios	Import ratios
	Ratio of average share of total country exports going to 10 Asian countries divided by average share of total country exports going to US	Ratio of average share of total country imports coming from 10 Asian countries divided by average share of imports coming from US
China	2.13	4.43
Hong Kong	2.46	11.72
India	1.11	3.12
Indonesia	4.20	5.34
Japan	1.22	2.11
Korea	2.06	2.66
Malaysia	2.57	3.51
Philippines	1.74	2.79
Singapore	3.34	3.48
Sri Lanka	0.26	12.54
Thailand	2.26	4.60

Source: Calculated from Tables 7 and 8

What impact will more flexible exchange rates have on risk? Reducing risk of crises and making the financial system more robust is the other chief concern of Asian EMEs. Reducing risk is necessary for reducing the precautionary holding of reserves. Limited exchange rate flexibility can help achieve this aim. In regressions for eleven Asian EMEs, the growth of banking sector net foreign assets on the mean deviations and on the squared mean deviation, of each country's exchange rate, including macroeconomic control variables, growth of the net foreign assets falls with the distance of the exchange rate from its mean value but rises with flexibility in the exchange rates (Goyal and Agarwal, 2005). The results imply that limited exchange rate flexibility increases banks net foreign assets thus providing more cover and hedging the risk

associated with foreign borrowing. The risk is higher with pegged exchange rates, and also rises with the distance of other Asian EMEs exchange rates from the renminbi. Thus flexibility has to be limited, and unless China leaves its tight link to the dollar a major change in the level of other Asian exchange rates will raise risk in the region. The regressions suggest that an implicit alignment of Asian exchange rates exists.

Country initiatives, improvements in global financial architecture, and regional arrangements can all reduce risk. Strengthening of regional and global initiatives will make countries more willing to appreciate and absorb capital inflows, thus allowing c_0 to shift towards c_1 (Figure 1), instead of accumulating reserves. Regional arrangements can also minimize the possibility of an exit from the dollar where one country stops holding dollar reserves because it believes the other is going to do so, but dialogue between high reserve Asian EMEs and the major developed countries is also required.

Chinese concerns are that without full capital account convertibility it is difficult to know the real demand for the currency or the equilibrium value of the renminbi; a large part of the inflows may be speculative due to expected appreciation and may reverse after the appreciation; it does not want to expose its weak banks to potential financial instability; the stability of the renminbi contributed to the de-escalation of the Asian crises and large movements in it could destabilize Asian currencies again; export growth is necessary to absorb their still large reserves of labor. China is running a deficit with many Asian countries, and its commitments under WTO may reduce existing surpluses.¹⁸

China wants to wait for its financial markets to deepen before moving to floating exchange rates, but limited exchange rate flexibility will contribute to deepening financial markets. Since China set up its first interbank currency market (the Foreign Exchange Trade System) in 1994, there has been sufficient forex market development to move forward. India is an example of a country that has successfully moved to a managed float even without full capital account convertibility.¹⁹ Integrating more fully with world markets has to be done in stages to lower risk. Limited exchange rate flexibility can come before fuller convertibility on the capital account, which can follow after financial markets deepen and mature.

¹⁸ The Chinese premier Wen Jiabao reiterated this position at a news conference on the 14th March 2005. He said China is making progress in foreign exchange reforms and more changes might come unexpectedly. But immediate changes might cause financial turmoil, damage the country's frail banking and financial industries, derail the growth process and hurt the poor. These points are based on newspaper reports and discussions with Chinese and other economists.

¹⁹ Barry Eichengreen remarked that China can learn from India how to have a flexible exchange rate without full capital account convertibility at a 2005 conference at Berkeley. I thank Dr. Willett for this information. The latter also pointed out China will not make a capital loss on its reserves if it devalues since the foreign purchasing power of its reserves will not change.

CONCLUSION

Analysis of the strategic incentives of high reserve countries suggests that there is a possibility of a coordination failure, but a collective action failure is unlikely. The latter requires the existence of a unique outcome where everyone sells dollar reserves. The probability of such an outcome rises if the rate of dollar depreciation is higher, any one country selling reserves does not affect the rate much, and the speed of market reaction to a sale is low. We find that although a unique sell equilibrium is unlikely, multiple equilibria do exist so that an attack on the dollar remains a possibility. Therefore it is necessary both to initiate efforts at explicit coordination and to begin gradual adjustment of global imbalances.

The adjustment has to be gradual since a large one-sided adjustment is not feasible. Adjustment in real wages and relative prices of deficit or surplus countries (expenditure switching) or a reduction in incomes and absorption in deficit countries and a rise in surplus countries, can both contribute to reducing global imbalances. For U.S. current account deficits to fall either its exchange rate must fall relative to others, or its absorption must fall. A real depreciation, however, cannot occur unless real wages fall in the U.S. and rise elsewhere.

Nominal wage rigidity in the U.S. implies that depreciation can reduce real wages. Changes in relative price make expenditure switching to NT goods possible. But there are limits to real depreciation, since a large depreciation will eventually provoke a rise in nominal wages and inflation. Over time the depreciation is less effective. Moreover, a large U.S. dollar depreciation will lower world export demand and reduce world prices, thus preventing equivalent real depreciation. A sharp depreciation will also reduce the dollar's attraction as a reserve currency and may trigger a cumulative exit from the dollar. Therefore a mixture of strategies is required--some depreciation, fiscal correction which would reduce absorption, but with incentives kept in place to encourage innovations and productivity improvements which have been a major source of U.S. growth.

Unless the productivity of labor rises in Asian traditional sectors with surplus labor so that the flat segment of the labor supply curve shifts up, or low productivity labor is absorbed, so that equilibrium is now on the upward sloping segment of the labor supply curve, a steep appreciation will not raise real wages but only lower prices. Therefore appreciation alone is not an effective tool to correct the wage differential that is giving Asian EMEs a trade advantage.

Since the chief deficit and surplus countries constitute the engine that is driving current global growth, an adjustment path that maintains and uses this growth would be most effective. The surplus countries need to raise their per capita incomes and absorb more labor in productive modern employment. Their

currencies should appreciate somewhat, in tandem, but more emphasis should be on maintaining demand and growth. This would raise demand for U.S. exports, which go more to high per capita income countries and those with a modern service sector.

Dollar depreciation will be more effective in reducing U.S. deficits if the Chinese currency appreciates somewhat against the dollar. Although many Asian currencies have been appreciating, the appreciation would be less risky if the Chinese currency also appreciates, so that Asian currencies are able to retain risk-minimizing alignments with the renminbi. Limited flexibility of the renminbi from a change to a multiple-currency basket peg would actually reduce risk and instability in Asia and enhance the degree of flexibility of Asian currencies. This would encourage the development of forex and financial markets, which is a major objective for China and other countries in the region.

The logic of minimizing financial risk implies that the currencies would appreciate along with the renminbi to maintain optimal alignments so that China would not lose competitive advantage in Asia. To the extent Asian EMEs are trade competitors this should make adjustment of the renminbi easier. But other non-competitive types of intra-Asian trade are large and growing, so that effects on competition should not be the major consideration.

Stimulating trade requires a competitive exchange rate, but lowering financial risk requires some exchange rate flexibility. The latter makes some limited adjustment in relative exchange rates feasible, but removing global imbalances will also require continued impetus to global demand.

China's 2 percent revaluation in July 2005 is a vote for gradual adjustment; supporting adjustment from the U.S. will encourage it to continue in the same direction. Without that it may decide to freeze again at the new level.

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