

Exchange Rate Management in Developing Asia

Reassessment of the Pre-crisis Soft Dollar Zone

Kenichi Ohno

Abstract

Exchange rate rigidity is often cited as one of the primary causes of Asia's crisis. However, measured by real effective exchange rates (inflation-adjusted and trade-weighted exchange rates) using consumer prices or wholesale prices, no serious overvaluation is detected in the worst-hit economies during the pre-crisis period. Most of the Asian developing economies permitted their currencies to deviate from the strict dollar peg in the medium to long run in order to offset inflation gaps and movements of major currencies. Counterfactual simulations over the pre-crisis period show that, to stabilize competitiveness, proper adjustments for inflation by individual economies are more important than the choice of currency weights. Adoption of a common currency basket in the region does not add much stability. Pragmatic exchange rate policy rules distinguishing normal and crisis periods are suggested. To stabilize competitiveness during the normal period, no radical reform of the existing system is needed in developing Asia.

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I. Introduction

Exchange rate rigidity is considered to be one of the factors that led to the 1997 Asian crisis. It is frequently argued that many Asian countries were priced out of international competition by pegging their currencies to the U.S. dollar which appreciated greatly during 1995-97. There is a call for more flexibility in exchange rate management in post-crisis Asia, reflecting their diverse trade and investment patterns. The purpose of this paper is to evaluate these arguments and make practical suggestions.

It is true that East Asia (excluding Japan) formed a soft dollar zone in the pre-crisis period, but questions remain as to how rigid the dollar peg was in each economy and to what extent their currencies were overvalued prior to the crisis. It is also necessary to assess quantitatively whether alternative currency arrangements would have reduced the risk of overvaluation and currency attacks. Looking ahead, pragmatic goals of exchange rate policy must be identified for developing Asia and ways to achieve them must be explored.

II. Asian Currencies in the Pre-crisis Period

Until July 1997 the U.S. dollar was the key reference currency for virtually all of the developing and transitional economies in East Asia¹, but the peg was not strict for most of them. It is important to distinguish short-term and long-term exchange rate management. Although the nominal values of their currencies remained mostly stable against the dollar on a daily basis, they often deviated from the dollar over time, smoothly or in steps, in an attempt to offset international inflation differentials or to otherwise manage their competitiveness.

Long-term trends

Figure 1 plots the long-term trends in nominal dollar exchange rates of ten

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¹ The following 10 economies are considered: Singapore; Hong Kong, China; Taipei, China; Korea; Malaysia, Thailand; Philippines; Indonesia; China; and Vietnam. Exchange rate and price data are obtained from the IMF's International Financial Statistics unless otherwise noted. Trade data are from the IMF's Direction of Trade Statistics. For Taipei, China, data published by Taiwanese authorities are used.

Asian economies during January 1990-June 1997 (i.e., before the baht crisis). The vertical scale of each graph spans a 40 percent change from bottom to top permitting direct comparison across countries except China and Vietnam (140 percent change each). The number in percentage shows the range of fluctuations.

Pre-crisis Asian exchange rate management can be classified into several types. During the sample period the Hong Kong dollar was fixed to the dollar and the Thai baht was similarly stable against the dollar (although Thailand officially adopted a multiple currency basket system, this did not show in the long-term trend). After overcoming high inflation, Vietnam adopted a virtually fixed exchange rate against the dollar after 1992-93. The Chinese yuan had also been pegged to the dollar but with occasional adjustments. Indonesia was on a crawling peg, offsetting the inflation gap between home and abroad by sliding the rupiah by a predictable few to several percent per year. The remaining economies—Singapore; Taipei, China; Korea; Malaysia; Philippines—targeted their currencies to the dollar more loosely by combining discretion and market pressure with varying weights.

Through these adjustments, developing economies in Asia (except Hong Kong, China; and Thailand) changed their dollar rates over the long run. The range of fluctuations against the dollar was 13-15 percent for Taipei, China; and Malaysia and 30-36 percent for Singapore; Korea; Philippines and Indonesia. The range was much larger for China and Vietnam which experienced inflationary spells in the early 1990s.

Daily management: a regression analysis

Using higher-frequency data the picture looks somewhat different. The short-term stability of the Asian currencies against the dollar is confirmed by the Frankel-Wei type regression which regresses the change in each Asian currency on changes in major currencies (Frankel 1992, Frankel and Wei 1994; also see Kwan 1995, Ikenaga 1996, Okura, Okuda and Suto 1996, Shirono 1997):

$$\Delta \ln(\text{Curr}) = \text{Const.} + \hat{\alpha} \Delta \ln(\text{Dollar}) + \hat{\beta} \Delta \ln(\text{Yen}) + \hat{\gamma} \Delta \ln(\text{Ecu}) + \dots$$

where Curr is the Asian currency in question. This equation estimates the weights of these currencies in short-term exchange rate management of the respective economy. All exchange rates are expressed in Swiss franc². Daily data are used to run monthly regressions.³

The estimated monthly coefficients on dollar ($\hat{\alpha}$) and yen ($\hat{\beta}$) from January 1980 to August 1997 are graphically presented as bold and solid lines respectively in Figure 2. Currencies other than dollar and yen do not systematically explain the value of any Asian currency except very temporarily.⁴ This analysis based on high-frequency data corroborates the existence of the dollar zone in East Asia through mid 1997 with the

² To estimate this equation we need a third currency to express the values of all currencies involved. The Swiss franc is a convenient numeraire used by many researchers because it is an independently floating currency of an advanced country which nonetheless carries little weight in Asia's trade.

³ Daily exchange rate data are taken from the IMF's International Financial Statistics when available. The rest is obtained by courtesy of the BOT Research International, Ltd. This regression analysis is an updated version of Shirono (1997). I would like to thank her for the permission to reproduce the results.

⁴ The reported coefficients are those in a regression equation with dollar and yen only as explanatory variables. Due to the lack of daily data, analysis on the Vietnamese dong is not performed. Since around 1993 the Vietnamese dong has been effectively pegged to the dollar with several discrete realignments in 1997-98.

weight on the dollar close to one and that on the yen around zero for all economies considered here. This is true even for currencies which deviated significantly from the dollar in the long run.

In addition, there are a few notable features. For all currencies there were particular months in which the dollar peg was temporary suspended (the coefficient greatly deviates from one), but the timing of such deviations were uncorrelated across economies. Some currencies were more strictly tied to the dollar with its weight very close to one while others (Singapore; Malaysia; and Thailand in particular) also attached small but positive weights on the yen in their daily exchange rate management. Moreover, policy shifts—from a strict dollar peg to a looser one or vice versa—are clearly visible in Hong Kong, China around 1983, Thailand and China in 1985, and Taipei, China in 1989.

Real effective exchange rates

The real effective exchange rate (REER), or the inflation-adjusted and trade-weighted exchange rate, is a country's most popular overall index of international price competitiveness. Figure 3 presents the REERs of the Asian economies during the 1990s, with an upward movement representing a real appreciation of the currency in question. Thirty trading partners⁵ are considered with weights proportional to total trade (exports plus imports) with the home country in 1996. Consumer price indices (CPIs) are used as the deflator (see below for wholesale price-based indices). In addition to the overall REER, real exchange rates against major trading groups (Japan; United States; EU; and East Asia excluding Japan) are also separately calculated.

A word of caution is in order for Chinese data. During the sample period China had a large devaluation in January 1994. This devaluation was achieved by unifying the official rate with a more depreciated market rate. As Kwan (1998a) points out, since about 80 percent of China's exports had already been conducted at the market rate, the effective (i.e., weighted average) rate of devaluation was much smaller than the change in the official rate indicates (as in Figure 1)—around 7 percent instead of the apparent 35 percent. In calculating REERs we will use this effective yuan rate throughout this paper.

From Figure 3, the following observations can be made for the pre-crisis period.

First, some economies kept their overall REERs (bold line) within a relatively narrow margin in the pre-crisis period (Taipei, China; Korea; Malaysia; Thailand; Indonesia) while others exhibited significant appreciating trends (Vietnam; Hong Kong, China; Philippines; China; Singapore).⁶ It is interesting to note that countries that subsequently suffered severe speculative attacks belong to the first group. Thailand had a real appreciation in 1996-97 but its magnitude was as small as 8 percent relative to

⁵ The thirty trading partners are common to all Asian economies considered here, although their respective weights are different from economy to economy. These are countries with which at least one East Asian developing economy has significant trade (1 percent or more) and for which data are available: G7; NIEs4; ASEAN4; China; Vietnam; Laos; India; Belgium; Denmark; Netherlands; Sweden; Switzerland; Spain; Austria; Ireland; Australia; Brazil; Panama; Saudi Arabia (minus the home country). The coverage of the thirty trading partners in total trade ranges from 85 percent (Korea) to 95 percent (Hong Kong, China).

⁶ Between January 1990 and June 1997 cumulative real appreciation was as follows: Singapore (+16.1 percent); Hong Kong, China (+34.9 percent); Taipei, China (-6.4 percent); Korea (-9.1 percent); Malaysia (+5.6 percent); Thailand (+8.0 percent); Philippines (+28.2 percent); Indonesia (+2.6 percent); China (+16.3 percent); Vietnam (+66.1 percent).

the base period of January 1990 (any base period up to 1994 yields virtually the same result). By the same measure, Indonesia experienced a 3 percent cumulative real appreciation. In contrast, Korea was on a depreciating trend in 1996-97.

Second, intra-regional real effective rates (finest lines) show that the Thai baht and the Indonesian rupiah were very stable against the currencies of neighboring Asian economies during 1995-mid 97. Korea's intra-regional real rate was on a long-term declining trend.

Third, even though average competitiveness may be stabilized, real rates against Japan, US and EU cannot be stabilized simultaneously as long as exchange rates among them continue to fluctuate greatly. East Asia's competitiveness vis-a-vis Japan is particularly unstable, but closely shadowing the yen's movement would in turn seriously destabilize their economic relations with other major trading and investment partners. These three industrial blocs carry large and roughly equal weights in the trade of East Asia's typical developing economy (see Figures 6 and 7 below).

The Balassa-Samuelson effect

Calculation of REERs based on consumer prices may contain measurement errors if CPI is not the right index to measure competitiveness.

In a rapidly developing country, productivity in the tradable sector (consisting largely of modern manufacturing industries) often grows at a higher speed than that in the nontradable sector. If wages are equalized across sectors and prices are determined by productivity-adjusted labor costs, there will be a tendency for prices in the tradable sector to fall relative to those in the nontradable sector (see chapter 4, McKinnon and Ohno, 1997). Chai defines the Balassa-Samuelson effect as increases in the price of nontradables relative to tradables due to greater productivity growth in the second sector than the first. Thus, "given the law of one tradable price, such increases lead to real appreciation in broadly defined real exchange rate" (Chai 1998a).

If the presumption that WPI contains largely tradable goods while CPI is more heavily weighted towards nontradable goods is correct, this phenomenon translates into a long-term rise of CPI relative to WPI. Since competitiveness is more properly defined in terms of tradable goods, REER based on CPI underestimates an economy's competitiveness to the extent that this internal price movement is significant (relative to its trading partners). Does this bias exist in developing Asia?

Figure 4 shows the ratio of CPI to WPI in the NIEs, ASEAN4 and G5 countries. Compared with developed countries (especially the US; Japan; and Germany), the internal price ratio moved persistently higher in Singapore and the Philippines. This may suggest that the appreciating trends observed in Figures 3(a) and 3(g) are spurious and that these economies did not really suffer from a loss of competitiveness during the pre-crisis period. For the rest of the economies the bias due to the Balassa-Samuelson effect does not seem large, as their internal price movements are similar to those of the developed countries.

More directly, REER indices using WPI (rather than CPI) are calculated for NIEs (except Hong Kong, China for which WPI is unavailable) and ASEAN4. Figure 5 shows the results. These WPI-based REERs are calculated with the same weights as the CPI-based ones in Figure 3. In economies where WPI is unavailable (China; Vietnam; Hong Kong, China; Laos) CPI is used instead as partner country inflation. There is no evidence of long-term appreciation in Singapore; Taipei, China; and Korea. The

significant real appreciation of the Hong Kong dollar in CPI may also disappear if measured in WPI, but this suspicion cannot be verified at this point⁷. By contrast, Malaysia, Thailand, Philippines and Indonesia were losing competitiveness in WPI during 1995-97 to the tune of 20 percent. However, Indonesia began the appreciation from a lower base. Whether ASEAN4's WPI-based real appreciation contributed to the subsequent crisis is a question that must be investigated separately.

For further investigation, the validity of the presumption that WPI is more representative of tradable prices than CPI (which is certainly true in Japan) should be examined for each economy. International comparability of price indices must also be checked.

Overall, there seems to be no positive cross-country correlation between pre-crisis overvaluation and the severity of speculative attacks. Even if overvaluation existed in some economies, its magnitude was unlikely to be large enough to become a primary cause of the subsequent crisis.

Other issues

While REER is the most popular competitiveness index, it may differ from true competitiveness for a variety of technical reasons other than the Balassa-Samuelson effect. The users of the REER indices must keep the following limitations in mind.

First, trade-based weights may not accurately represent the country's competitors. The problem is less serious among industrial economies with significant intra-industry trade. By contrast, developing countries with a vertical structure of trade do not really compete with their largest trading partners (usually rich countries) which provide them with parts, machinery and markets. True competition is among low-income countries which trade little with each other due to the similarity of economic structure. One way to correct for this bias is to use global trade weights for exports of homogeneous commodities while retaining bilateral weights for more differentiated manufactured exports (Williamson 1982)⁸. If attracting FDI by offering low costs is an important policy goal, weights can be adjusted further to reflect potential competition in this area as well.⁹

Second, macro and micro stability should be distinguished. In an actual economy each firm or industry faces different terms of trade and input-output linkages. If different components of REER diverge significantly (see Figure 3), stability of average competitiveness may not contribute much to the reduction of business uncertainty at a more disaggregated level. For example, a Thai firm buying Japanese inputs and marketing products in the US benefits little by average stability of the baht unless it is stable against both the dollar and the yen.

Finally, endogenous responses of the economy must be taken into account when alternative exchange rate systems are evaluated. One such response is exchange rate pass-through. Since domestic prices adjust to the exchange rate, the assumed path

⁷ Chai (1998b) looks at the problem of detecting the Balassa-Samuelson effect in Hong Kong, China.

⁸ The IMF's multilateral exchange rate model (MERM) was supposed to provide more sophisticated weights based on the responsiveness of the home country's trade balance with respect to its bilateral exchange rate with a foreign country. Due to data limitations, however, the actual implementation of MERM was far from satisfactory.

⁹ For instance, weights can be constructed to represent FDI recipients in Asia in proportion to received amounts (either flow or stock). The resulting index can be compared or combined with those based on trade weights.

of inflation must be consistent with the proposed exchange rate change. Furthermore, economic structure (direction of trade, FDI flows, use of the yen, etc.) may shift as relative stability in bilateral economic relations change. Numerical assessment of these effects may be difficult, however.

III. Simulations

In what follows we perform counterfactual REER simulations over the pre-crisis period of January 1990-June 1997 and compare the results with the actual outcome. Despite the discussion in the preceding paragraph, these simulations assume no endogenous responses of prices or trade structure; that is, while alternative currency baskets and exchange rate paths are specified, we will use historical prices and trade weights to evaluate the results.¹⁰

Figure 6 shows developing Asia's trade by major partner groups. Intra-regional trade has grown significantly from 25 percent in 1980 to as much as 40 percent in 1996. At the same time, trade with industrial countries (Japan, US, EU) remain very important even though their combined share declined from 65 percent in 1980 to 53 percent in 1996. Intra-regional trade and trade with industrial countries explain more than 90 percent of total trade.

We will construct multiple currency baskets containing the currencies of three industrial blocs: yen, dollar and ecu (euro after January 1999). Figure 7 presents the relative importance of trade with Japan; US and EU for individual Asian economies (these are the weights used in our currency simulations). Overall, the three major industrial blocs are about equally important for developing Asia. NIEs trade relatively more with the US, and ASEAN4 with Japan.¹¹ For a typical Asian developing economy, Japan is the key supplier of capital goods and machinery parts while the US is more important as a destination of final products. As a result, trade with Japan tends to be in deficit while surplus is often recorded in bilateral trade with the US.

What would have happened if developing Asia was using currency baskets consisting of yen, dollar and ecu during the pre-crisis period? Exchange rate stability is measured by the standard deviation of the level of the CPI-based REER. Unlike many existing studies, we do not focus on the change in REER because short-term volatility is of lesser importance compared with medium- to long-term movements. Minimizing the standard deviation of monthly change does not penalize exchange rate misalignments which occur smoothly over time.¹²

Different baskets or joint float?

We begin with nominal baskets—currency baskets without inflation slide.

¹⁰ However, our preliminary regression analysis detects no systematic pass-through from the exchange rate to CPI in the Asian economies examined here prior to the crisis. Thus the problem of endogenous price responses may not be serious in our simulations. Of course, once the crisis erupted, collapsed currencies led to higher domestic prices—but less than proportionately.

¹¹ Vietnam's unusually small trade with the US is due to the fact that the two countries normalized diplomatic relations only in 1995.

¹² For each simulation, the maximum range of REER level as well as the standard deviation of monthly change are also computed (not reported here). The former yields virtually identical conclusions as in the text while the latter produces somewhat different results. This shows the risk of using high-frequency criteria for evaluating exchange rate performance.

The basket may be chosen by each economy or it can be a common one representing the region's aggregated trade pattern. The latter case may be called "joint float." Given the increasing importance of intra-regional trade, should developing Asia adopt a common basket in order to stabilize exchange rates among themselves? Williamson (1996) suggests such a system. The results of the relevant simulations are reported in Figure 8 (Japan is included for reference purposes only—the actual yen/dollar exchange rate is assumed in all simulations).

Differences between common and individually chosen pegs are slim. As long as all the ten economies adopt baskets reflecting their already similar trade patterns (Figure 7), a further move to a common basket would yield practically no additional gain in exchange rate stability. Since such a move would entail enormous political and administrative difficulties at present, the case for joint float in the near future is not strong.

More surprisingly, only four economies would have improved exchange rate stability by adopting the three-currency baskets (whether separately or jointly): Singapore; Hong Kong, China; Taipei, China; and Malaysia. Other economies would have suffered greater instability. The reasons for this are that (i) in most economies pre-crisis currency management was already sufficiently flexible; and (ii) for high-inflation economies like China; Vietnam and the Philippines the precise content of the basket is less important than the fact that they devalued when necessary to offset the inflation gap between home and abroad.

Nominal or real baskets?

This immediately raises the question about the feasibility of nominal baskets when regional inflation rates are diverse. Inflation differed greatly during the pre-crisis period (Figure 9). Even if the two transitional economies (China and Vietnam) are excluded from consideration, inflation rates were not similar even within NIEs or within ASEAN4 (Figure 10). If this diversity is to persist, a common nominal basket would have to contain a mechanism for permitting deviations among participants through continuous or discrete changes, but such an arrangement may diminish the attractiveness of a common currency area. However, it could be argued alternatively that a common basket would force inflation convergence as seen in the EU during the 80s. Indeed something like a mini convergence was occurring prior to the crisis (1996-mid 97). Whether that was accidental or not, and whether such convergence is sustainable in today's diverse developing Asia, remains an open question.

Assuming that diversity in inflation will persist, we now let each economy separately (i) choose its own currency weights (consisting of dollar, yen and ecu); and (ii) at the same time adopt an inflation slide (or "indexation") against the same set of partner countries. Note that inflation slide does not have to be institutionalized; it could be explicit or implicit. Even if no indexing formula is announced, the government can still adjust the nominal peg regularly to avoid overvaluation with an almost identical result. Thus managed float, dollar peg and other systems can be consistent with inflation slide.

We try two types of inflation slide: the one that fully offsets the price gap between home and abroad and the other that offsets only half. For each economy, foreign inflation is defined to be an average of Japanese; US and German CPI inflation with the same relative weights as before. Figure 11 reports what happens when all Asian developing economies simultaneously do this.

Not surprisingly, full inflation slide almost completely eliminates the fluctuations of REER; exchange rate stability is greatly improved in comparison with Figure 8. The only remaining disturbances can come from neighboring economies not included in the weights, but their REERs are by assumption indirectly stabilized against each other. This demonstrates that coping with the inflation gap adequately is more important than fine-tuning the currency weights. Even if inflation slide is only 50 percent, most economies will experience increased stability over the actual (the exceptions are Indonesia and Vietnam).

But there is an important caveat: this exercise does not take the pass-through effect into consideration (as noted above). If domestic prices are sensitive to the exchange rate, devaluation will ignite inflation. In the worst case, full or even partial inflation slide may lead to the loss of confidence and monetary policy discipline by accommodating inflation too easily. This is the reason to be cautious against the installation of automatic inflation offsets. However, the pre-crisis period which we are examining did not have extremely high inflation (except possibly China and Vietnam in the early 1990s) nor would our alternative baskets impose radically different exchange rate paths from the actual. Thus it can be argued that the pass-through problem may not be very serious in this particular case.

Transition problem: who goes first?

Given the political difficulty in introducing the new system collectively and simultaneously, would a single economy have incentive to initiate the change? The first mover may temporarily destabilize its relations with the neighbors which are still (loosely) pegged to the dollar. How realistic is this risk?

Figure 12 shows the relevant statistics. The upshot is that the majority (seven economies) would refuse to go it alone with nominal baskets, but all would be happy to adopt a real basket (i.e., a basket with full inflation slide) independently. Even in the case of a 50-percent inflation slide, seven economies still gain over the actual. This suggests that no coordinated action is necessary to improve the region's exchange rate management. Any economy which feels ready can shift to a new system without waiting for others.

ASEAN4 only

What if a common currency basket is started on a more modest scale? Figure 13 shows the standard deviation of REER assuming that only ASEAN4 countries initiate a common basket based on their collective trade shares with Japan, US and EU. For other economies actual exchange rate management is assumed. If the common basket is nominal, only Malaysia will gain marginally while the other three will face increased instability. If a common real basket is chosen all will enjoy more stability—but note that stability gains are similar to the case when all economies adopted real baskets individually (see Figure 11). For economies outside this arrangement (NIEs; China; Vietnam; Japan), stability of competitiveness is little affected.

More diverse baskets

Kwan (1995, 1998a) recommends that currency baskets should be tailored to individual economies depending on the stage of development and trade patterns. Specifically, he proposes that the currencies of the NIEs should follow the yen's movement closely while ASEAN4 should increase the weight of the Chinese yuan in their currency management. This would mean that intra-regional stability is sacrificed

to achieve "optimality" for each economy. Let us experiment with the following weighting scheme:

NIEs: 0.5—yen; remaining 0.5—dollar and ecu in proportion to trade shares

ASEAN4: 0.5—yuan; remaining 0.5—yen, dollar and ecu in proportion to trade shares

The results are shown in Figure 14. Gains in REER stability are much smaller or even nonexistent compared with Figure 11—but this is expectable since we are deliberately deviating from trade-based weights. Kwan's point is that REER is not the correct index to measure stability in competitiveness, and his argument cannot be properly evaluated by our method.

Regional currencies in the basket

Finally, a few words must be said about including local currencies. Should the basket—whether common or individually set—consist of only the currencies of developed countries, or should it also contain regional ones? As long as the hard currency components are similar across economies and each economy retains control of its currency, these two options should produce almost identical results in normal times. However, if a currency crisis hits in the neighborhood the first type of basket will remain intact while the second will depreciate after the neighbor's attacked currency—but only partially as the weight of that currency should be rather small.¹³ Even without a currency crisis, deliberate attempts by others to devalue ("competitive devaluation") will trigger automatic (but again partial) reaction in the first case but not in the second.

Thus, only in emergency does the choice to include regional currencies in the basket matter much. It determines to what extent the home economy (which by assumption still retains control over its currency) automatically participates in the regional depreciation race. But in a situation like this exchange rate policy cannot follow a pre-set formula exactly; a significant degree of discretion is needed to ride out the storm anyway and the policy must shift to the "crisis mode" until normalcy returns. In practice, then, inclusion of regional currencies in the basket is not too important; it will be immaterial during normal times and overruled in crisis.

IV. Objectives of Exchange Rate Policy

In the remainder of the paper, ways to improve exchange rate management in developing Asia are suggested based on the results of the preceding sections. Discussions are intended to be exploratory and stimulative rather than systematic and final.

What is the proper objective of exchange rate policy for developing and transitional economies? The issue has been discussed variously on the theoretical, empirical, and policy levels, but no clear consensus seems to have emerged. In addition to technical problems, main difficulties stem from (i) the existence of many channels through which the exchange rate impacts the economy; and (ii) the fact that optimality is a collective problem which depends on the characteristics of the existing international monetary system and the exchange rate policies of other countries.

¹³ If the home currency itself is successfully attacked, discussion of weights will become meaningless as the government is no longer able to control the exchange rate. Then the policy should shift to the "crisis mode" as defined below.

Limitations of the theoretical approach

The existing theoretical literature on the optimal currency basket for developing countries aims to stabilize certain target variables. Depending on the author, these targets vary: output, prices, competitiveness (REER), trade balance, or the relative price of tradable (or traded) goods.¹⁴ Optimal currency weights are chosen so as to minimize the variance of one of these variables. Oftentimes stability in rate of change rather than level is preferred. While these contributions are insightful and valuable, they do not collectively illuminate how in practice developing and transitional economies should conduct their exchange rate policies. The gap between theory and practice arises from the following reasons.

First, the choice of a target variable is arbitrary. Even if the importance of some variable (say, output) is acknowledged, whether the exchange rate should be assigned to that particular variable is another matter.¹⁵ Second, optimal currency weights calculated in these studies lack robustness against different model and data specifications; furthermore, it is not unusual to see individual weights less than zero or much greater than one.¹⁶ Third, a simplified model structure (e.g., a 2-country, 2-good model) on which these studies are based leaves out many crucial policy considerations which are raised in this paper (see also the appendix to chapter 4, McKinnon and Ohno, 1997).

As a result, proposed currency weights based on the minimization of variance tend to be too diverse and unstable to be practical. Operational details for implementation are also lacking. Under these circumstances, a more pragmatic approach is warranted. Instead of relying on just one model, actual experiences and concerns of policy makers should be consulted. Exchange rate policy can pursue many goals which may conflict with one another. These goals must be identified and prioritized, and tradeoffs must be acknowledged. The level as well as the system of the exchange rate must then be chosen so as to fit the particular conditions of each economy and external environment.

Global currency instability

Moreover, it is important to recognize that today's developing and transitional economies have to manage their currencies in highly volatile global financial markets. Exchange rate fluctuations among key currencies (dollar, euro and yen) as well as the ebb and flow of international capital emanating from major industrial countries are very serious yet largely exogenous shocks to them. In a world where a leader country provides price and financial stability (as the United States did during the 1950s and the

¹⁴ See Bhandari 1985, Black 1976, Branson and Katseli-Papaefstratiou 1980, Connolly 1982, Crocket and Nsouli 1977, Flanders and Helpman 1979, Flanders and Tishler 1981, Ito, Ogawa and Sasaki 1998, Kwan 1995, 1998a, Lipschitz 1979, Lipschitz and Sundarajan 1980, and Williamson 1982, 1996.

¹⁵ Using the exchange rate to fine-tune real GDP seems rather far-fetched as a general policy advice. Targeting the trade balance is often considered to be a more legitimate goal of exchange rate policy, but its practical application is also problematic. First, the desirable trade balance may not be constant or even knowable. Second, for financially open economies the trade balance is basically determined by the saving-investment balance which cannot be altered by exchange rate policy except temporarily, if at all (McKinnon and Ohno, 1997).

¹⁶ This may result partly from the wrong time horizon over which the variance is minimized. For example, in minimizing the variance of REER a typical model uses monthly data or even its change. This may achieve short-term stability but does not penalize long-term deviations. This is not ideal since short-term volatility of REER is quite innocuous while a smooth but persistent loss in competitiveness certainly hurts real activity.

early 60s), a country in the periphery can import stability by pegging its currency to the center while avoiding homemade inflation. But when the outside world is unstable, an additional task of minimizing the impact of external disturbances becomes essential.

Global stability of major currencies and capital flows would probably do much more to improve the exchange rate management of developing economies than anything that these economies can do individually. For developing Asia, the stability of the yen/dollar exchange rate is particularly beneficial. Such stability would largely dissolve the problem of choosing the proper anchor or currency basket. How to achieve global financial stability is an important issue which is beyond the scope of this paper.¹⁷ The following discussions assume that significant global instability continues to plague developing Asia.

Multiple channels

Kwan (1998a) lists the following four channels through which exchange rate instability is transmitted to Asia's developing economies. His observations are based on the pre-crisis period when the regional currencies were (loosely) tracking the movement of the dollar (section II). This led to a peculiar asymmetry in which instability of the yen/dollar exchange rate seriously upset economic relations with Japan but not with the US. Even if the close linkage with the dollar is weakened in the future, these same effects would continue to be important (perhaps with more symmetry with respect to Japan and the US).

(i) Competitiveness effect: As the yen rises against the dollar, Asian economies gain competitiveness against Japanese products in domestic and overseas markets. This stimulates their exports, output, and investment. This effect is stronger in the more industrialized NIEs whose exports of automobiles, steel, chemicals, shipbuilding, etc. compete directly with Japan's. Kwan notes that exports of Korea's heavy chemical industries are boosted significantly when the yen appreciates, and vice versa.

(ii) Foreign direct investment (FDI) effect: As the yen appreciates greatly, Japan's manufacturers shift their production base to developing Asia. The associated FDI boom accelerates growth, technology transfer and structural change in the recipient countries. Conversely, a yen depreciation slows Japanese FDI in the region. Since the late 1980s this FDI effect has been more strongly felt in ASEAN and China. In comparison, the NIEs are no longer favorite destinations of Japan's FDI due to their high costs.

(iii) Pass-through (inflation) effect: In 1996, Japan supplied 24.2 percent of total imports by developing Asia. A large part of imports from Japan consists of machinery and intermediate inputs. Thus a yen appreciation tends to push up production costs and squeeze profits. This effect can be ameliorated to the extent that Japanese products can be substituted by similar products from the US, EU, or NIEs.

(iv) External debt burden effect: yen appreciation increases the domestic currency burden of yen-denominated debt, and vice versa. While private enterprises of developing Asia do not hold much yen-denominated debt, official and officially guaranteed debt associated with Japanese ODA is impacted directly. The relatively poor countries—Philippines; Indonesia; Thailand; Malaysia—are more severely affected than

¹⁷ See McKinnon and Ohno (1997) for analysis of the persistent "syndrome of the ever-higher yen" and concrete proposals for stabilizing the yen/dollar exchange rate.

the richer NIEs because of their greater reliance on Japanese ODA relative to GDP. The outstanding stocks of their yen-denominated official debt ranged from 10 to 20 percent of GDP prior to the current crisis.

Stability versus flexibility

In the actual exchange rate policy formulation of developing economies, two goals receive great attention: competitiveness and price stability (through the "nominal anchor" use of the exchange rate¹⁸). Both aim to bring the exchange rate and prices into proper alignment (purchasing power parity in tradable goods) although assumed causality is quite the opposite.¹⁹

The first policy of maintaining competitiveness requires adjusting the nominal exchange rate to offset the inflation differential between home and abroad. The IMF's traditional prescription for a country with an external deficit is to combine currency devaluation with tight money and budget. This is an attempt to restore competitiveness lost through high inflation in the past as well as to shift productive resources from the nontradable to the tradable sector. The required size of devaluation depends on the cumulative inflation differential between now and a base period in which the economy was judged to be competitive.

By contrast, the second policy of an exchange-rate nominal anchor aims to lower domestic inflation by pegging to a currency (or currencies) with a better record of price stability. Use of exchange rate stability to import confidence and policy discipline is not uncommon. The currency board systems of Hong Kong, China; Argentina; Estonia, etc. are typical examples. West Africa's CFA zone (pegging to the French franc) and the Gulf states' virtual dollar zone are arrangements that attain regional exchange rate stability. Some use a fixed exchange rate as a temporary measure to re-establish policy credibility. Countries that adopted such a strategy in the 1990s include Poland; Mexico; China; Russia and Vietnam.

How do these two policies interact? Exchange rate flexibility is needed to correct for past inflation and regain competitiveness, but this tends to accommodate price shocks too easily. On the other hand, exchange rate stability is desirable in order to prevent future inflation, but this strategy often leads to cumulative overvaluation. Neither strategy is without problems, nor can they be pursued simultaneously. Which of these goals is more important depends on each circumstance. In developing and transitional economies, conflict between exchange rate stability and flexibility manifests itself in two distinct ways.

First, the dilemma may arise as a country proceeds through different phases of inflation stabilization. When inflation is extremely high (say, triple digits or more), there is not much scope for active exchange rate policy but let the currency float and depreciate. But when the government is ready to tighten macroeconomic policies to stop the runaway inflation, the exchange rate is often used as a supplementary nominal anchor. As inflation subsides to a more manageable level (say, 10 to 20 percent per year), the fixed exchange rate becomes a symbol of monetary and fiscal prudence and its abandonment becomes politically too costly. But since domestic inflation is still

¹⁸ A nominal anchor is an institutional device to help stabilize nominal variables (typically the general price level). In fighting inflation, exchange rate stability and wage restraints ("incomes policy") are often adopted to support orthodox fiscal and monetary restraints.

¹⁹ In the first case, prices move first and the exchange rate is adjusted passively. In the second case, the exchange rate is a forcing variable that exerts downward pressure on domestic prices.

higher than those abroad, the home currency becomes gradually overvalued. This, if left unattended, will invite speculative attacks.

Second, even when domestic prices are relatively stable, a country may fall into a similar predicament due to external exchange rate shocks. Suppose neighbors devalue their currencies or are forced to depreciate them in crisis, eroding the home country's competitive position. The government is faced with an unenviable choice between letting domestic industries languish and following the other currencies (i.e., taking part in the regional currency crisis). Again, depreciation is likely to be construed as a signal of weakness that insulation from external shocks has failed.

In either case, an economy in transition from a stable to a more flexible exchange rate faces the "exit policy" problem—the problem of restoring exchange rate flexibility without losing confidence or inviting currency crisis. There is no perfect answer to this problem as there are costs to both non-adjustment and devaluation.²⁰ If the current exchange rate is maintained, the country will continue to suffer from lost competitiveness, industrial difficulties, mounting current-account deficit, etc. Expectations in the foreign exchange market will also remain unsettled. On the other hand, devaluation may further undermine confidence in the domestic currency, economy and policies, encouraging flight to foreign and real assets. It may also ignite inflation and seriously damage the balance sheets of enterprises and financial institutions holding foreign currency-denominated debt.

Avoiding currency attacks

As an economy is integrated with global financial markets, exchange rate management must also take external financial shocks into consideration. The risk of currency and financial crises is too great to be ignored. However, the ways to avoid them are not easy to pinpoint.

Financial markets operate through expectations whose dynamics is not well understood. They are prone to herding, overborrowing, bubbles, reversals and contagion. Since a perception of economic ills precipitates a withdrawal of foreign capital, it can be argued that the best defense against such a crisis is to keep fundamentals right. For this purpose the entire macroeconomic and institutional measures should be mobilized. Exchange rate policy is an important tool in this policy mix. In particular, avoiding overvaluation is a primary concern as it is the most accurate predictor of an impending currency attack in the past (Kaminsky, Lizondo and Reinhart 1997). This leads to the conclusion that avoiding a financial crisis requires the same precautions as avoiding a real one.

However, doing the right thing does not necessarily protect one from currency attacks. When reality and perception deviate, even economies with good records are subject to crisis contagion. Moreover, situations may arise in which real and financial goals require opposite policy responses. As an example, consider an economy which suffers from an excessive capital inflow and domestic overheating. Such an economy is often advised to let the currency appreciate gradually in order to generate an expectation of a future depreciation which dampens the inflow. But this strategy militates against the need to keep the economy internationally competitive. In fact, domestic producers will be doubly hurt by higher inflation and an appreciating currency. From the viewpoint of competitiveness, what is needed is depreciation, not

²⁰ From the viewpoint of curbing overborrowing, even an appreciation of the home currency is advised—see below.

appreciation!

Another problem is related to the role of interest rate policy in currency crisis. The IMF's initial responses to Asia's crisis countries included raising domestic interest rates significantly to attract back scared investors. It is argued that this is the only effective way to stop currency runs. Indeed, intervention and interest rate hikes are two common tools to defend the currency against attacks (before the peg breaks down). However, in a crisis situation when the currency is already depreciating sharply, this favorable interest-rate effect may be overwhelmed by (i) increased interest burdens of enterprises and financial institutions; and (ii) further collapse of confidence due to the adverse signal effect of rising interest rates that the economy is so desperate. When real and financial needs conflict, exchange rate management becomes an extremely difficult task.

V. Post-crisis Exchange Rate Management

Generally speaking, there is no simple formula for exchange rate management suitable for all developing and transitional economies at all times. A pursuit of perfect exchange rate policy is hardly possible when global financial markets are highly changeable and the exchange rate impacts a developing economy through multiple channels. Moreover, exchange rate management is a collective problem in which optimality depends on global and regional interactions. As circumstances evolve, each developing economy should be prepared to revise the level of the exchange rate as well as the system of its management.

Pragmatic REER stability

In the absence of a solid consensus on the proper target of exchange rate management (section IV), we propose to adopt the following pragmatic rules:

Rule 1—Stabilization of REER: In normal times the exchange rate should be managed so as to stabilize overall competitiveness. For this purpose the REER index, properly constructed to measure the average competitiveness of the tradable sector, should be constantly monitored. To stabilize REER, adjustments must be made against movements of other currencies as well as for inflation differentials. This can be accomplished either by a prescribed formula or more informally through timely corrections. Thus a multiple currency basket with inflation slide is not the only way to stabilize REER; managed float, adjustable peg and other arrangements can produce the same results if properly managed—see below.

Rule 2—Trigger mechanism for additional adjustments: The exchange rate may be adjusted in the event of a real shock which cannot be absorbed by gradual adjustments in domestic prices and wages.²¹ Such shocks may include sudden shifts in FDI, export demand or the terms of trade, large business swings, significant resource discovery (or loss), major natural disasters, and wars and civil strifes.

Rule 3—Crisis management: If a currency attack or other severe financial turmoil occurs in the region or in the global economy affecting the home economy, Rule

²¹ Not all real shocks need to be accompanied by adjustment in REER. If the shock is gradual, adjustment can be made more smoothly by internal wage and nontradable price movements while keeping the REER (defined in terms of tradable prices) constant. A persistent gap in sectoral productivity growth (the Balassa-Samuelson effect—see section II) is such an example.

1 may be temporarily suspended to minimize contagion, credit crunch, reversal of capital flows, damage to real activity, and to satisfy other needs as the government sees fit.²²

The stability proposed here is not a perfect one as the targeted REER is permitted to change under certain conditions. Distinction between normal and crisis times is essentially discretionary and must be made by each government.

Choosing among systems

What specific exchange rate system can best achieve Rule 1, the maintenance of REER in normal circumstances? Surprisingly, a pragmatic answer is that the choice of exchange rate system does not matter too much as long as the two extremes of permanent rigidity and free float are ruled out.²³ There are more than one system that can support Rule 1. The crucial question is how you manage the system rather than what system you choose.

To achieve stability in REER, adjustments of the nominal exchange rate should be small and frequent rather than large and rare. Beyond that, there is a large degree of freedom. If properly managed, the following systems (and more) are all consistent with the long-term stability of REER:

1. Managed float with close monitoring of REER
2. Dollar peg with proper rate adjustments
3. Dollar peg with inflation slide (whether announced or informal)
4. Nominal multiple currency basket with additional adjustments
5. Real multiple currency basket—i.e., with (full or partial) inflation slide

The choice among these systems depends essentially on how much policy discretion the government wishes to retain and how much to leave to an auto-pilot. To stabilize REER exchange rate shocks caused by the movements of other currencies and price shocks arising from inflation differential between home and abroad must be offset. The first two systems do both adjustments through discretion. The third adjusts to price shocks automatically while the fourth does so to exchange rate shocks. The fifth puts both shocks on the automatic. But even in the last case, some degree of policy discretion cannot be avoided because of Rules 2 and 3.

As far as the systems go, these five options do not differ much from the ones adopted by Asian developing economies in the pre-crisis period. To improve currency management of developing Asia in the post-crisis period, existing parameters of reaction must be re-calibrated for further stability in REER in normal times and better

²² The maintained dollar pegs of China and Hong Kong, China can be interpreted as an emergency measure to contain contagion at the cost of overvaluation. This rigidity, which is very helpful while the crisis lasts, should be replaced by more flexible systems as normalcy is restored (see below for systems that can be adopted). The pegging of Malaysian ringgit in September 1998 can also be considered as a temporary measure to regain controllability in a crisis situation.

²³ There is a view that only free float (unfettered flexibility) or currency union (irreversible rigidity) is sustainable in the age of globally integrated financial markets. This argument is supported partly by the second-generation model of currency crisis which points to the possibility of self-fulfilling currency attacks even when fundamentals are basically sound. However, for practical purposes these extreme systems are exactly the ones to be avoided by developing and transitional economies. In an unstable world economy, they must retain the ability to combine stability and flexibility as circumstances change. For the same reason, currency boards and permanently fixed exchange rates (with no escape clause) are not to be recommended. However, a temporary fixed exchange rate is acceptable under certain conditions.

responses must be devised to cope with large and unexpected real and financial shocks. But these improvements can be made without radical changes in the existing systems.

Moreover, as demonstrated in Section III, collective actions such as introducing a common currency basket is not necessary at present; independent improvements by individual economies are sufficient. However, this does not rule out the possibility of regional monetary cooperation in the fairly distant future when political wills and favorable economic conditions emerge—but that would be a topic of another research project.

VI. Concluding Remarks

Exchange rate overvaluation was not the primary cause of Asia's financial crisis and contagion. CPI- or WPI-based REER detects no serious pre-crisis exchange rate misalignments in the worst-hit economies. Counterfactual simulations over the pre-crisis period indicate that a shift to multiple currency baskets does not improve stability of competitiveness unless it is accompanied by additional inflation adjustments. Exchange rate management can be improved operationally without a radical reform of the existing system. The case for a common basket in developing Asia is weak in the foreseeable future.

In this paper, exchange rate performance is measured narrowly by the stability of REER in normal times. Discussions must be broadened if other criteria are considered to be important. In particular, simulations over the tranquil pre-crisis period do not address the question of how to deal with currency crisis or large real shocks when they occur. This is a topic that must be covered by another study.

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