

**STILL SEARCHING FOR THE MIDDLE GROUND?:
ASIAN EXCHANGE RATE REGIMES A DECADE SINCE
THE 1997-98 CRISIS**

by

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1. Introduction

An immediate lesson that many observers appear to have drawn from the financial crises in emerging market economies in the 1990s is that the only viable exchange rate option boils down to one between flexibility on the one hand, and “credible pegging” on the other. According to this view (which was dominant in the late 1990s and early 2000s but still has a number of followers), emerging economies have to gravitate to one of these two extremes. Any currency arrangements that lie in between these polar extremes or corners (i.e., those in the “middle”) are viewed as being inherently unstable and crisis-prone.

It used to be commonly believed that this so-called “bi-polar view” drew analytical support from the “Impossible Trinity” which essentially states that a country with an open capital account cannot simultaneously conduct a completely independent monetary policy and pursue a completely rigid or fixed exchange regime. However, the “Unholy Trinity” does *not* on its own imply that in an increasingly globalized world economy an intermediate regime is unviable, or that countries will be compelled to abandon the middle ground.¹ For instance, a country could choose to maintain an intermediate exchange rate regime while forsaking a degree of monetary policy autonomy. In other words, the analytical basis in support of the bi-polar view is rather weak (particularly since some developing countries still maintain capital controls that are not entirely porous). Indeed, the only analytical support offered against intermediate regimes is their lack of verifiability of transparency; simple regimes are more verifiable by market participants than complicated ones (Frankel, Schmukler and Serven, 2000). The other commonly repeated weakness of intermediate regimes is that they are more crisis-prone (Bubula and Ötoker-Robe, 2003). However, a more careful examination of the links between *de facto* exchange rate regimes and currency crises suggests that there is no evidence that either of the two corners is necessarily less crisis-prone than intermediate regimes in general.²

The remainder of this paper is organized as follows. The next section compiles and discusses

¹ For the most recent and clearest statements on this, see Frankel (1999) and Willett (2002).

² For instance, see Angkinand, Chiu and Willett (2005). However, the authors find that adjustable parities (including conventional adjustable pegs and horizontal bands) appear to be the most crisis prone of all.

the *de jure* or official exchange rate regimes in various Asian economies.³ Recognizing that countries do not always follow their policy pronouncements, Section 3 presents some simple *de facto* exchange rate regime measures for selected Asian countries. Since different measures inevitably capture various dimensions of any regime, it is critical to use a number of methodologies as a robustness exercise. To preview the main conclusions from Sections 2 and 3, it is evident that Asia is home to a wide array of exchange rate regimes, though there are signs of gradual movement towards somewhat greater exchange rate flexibility in many Asian countries. However, the propensity for foreign exchange intervention and exchange rate management among regional central banks remains fairly high in many instances. Section 4 concludes the paper.

2. Official Exchange Rate Regimes in Asia

Until 1998 it was fairly easy to obtain *de jure* exchange rate classifications as this data was compiled from national sources by the IMF. Specifically, between 1975 and 1998 the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* was based on self-reporting of national policies by various governments with revisions in 1977 and 1982. Since 1998 -- and in response to criticisms that there can be significant divergences between *de facto* and *de jure* policies -- the IMF's exchange rate classification methodology has shifted to compiling unofficial policies of countries as determined by Fund staff.⁴ While the change in IMF exchange rate coding is welcome for many reasons (including the fact that the new set of categories is more detailed than the older one), the IMF is no longer compiling the *de jure* regimes. The only way this can be done is by referring to the website of each central bank or other national sources individually and wading through relevant materials. The results of this detective work are summarized in Table 1.⁵

As is apparent, the *de jure* exchange rate regimes in Asia span a wide spectrum. A number of

³ The focus of this paper is on *Asia* defined to include North, South and Southeast Asian economies. We do not consider West Asia, the Pacific island economies or Australia and New Zealand.

⁴ The data has since been applied retroactively to 1990.

⁵ The descriptions in Table 1 are mostly direct quotes from the official sources and not paraphrased by the authors.

smaller Asian economies appear to prefer some form of single currency pegs. This is true of Hong Kong SAR (whose currency board arrangement is pegged to the US dollar or USD), Brunei (pegged to the Singapore dollar) and Bhutan and Nepal (pegged to the Indian rupee). In contrast, Bangladesh, Sri Lanka and the crisis-hit economies of Indonesia, Korea, the Philippines and Thailand officially operate flexible exchange rate regimes. The flexible exchange rates in the four East Asian countries are accompanied by inflation-targeting frameworks (Table 2).

A number of other Asian countries have adopted a variety of intermediate regimes (currency baskets, crawling bands, adjustable pegs and such). For instance, according to the Reserve Bank of India, India “monitors and manages the exchange rates with flexibility without a fixed target or a pre-announced target or a band, coupled with the ability to intervene if and when necessary”.⁶ Vietnam officially maintains a crawling peg and band around the USD. Singapore officially manages its currency against a basket of currencies, with the trade-weighted exchange rate used as an intermediate target to ensure that the inflation target is attained.⁷ While Singapore’s currency basket regime follows a more strategic orientation, both China and Malaysia in July 2005 officially shifted to what may be best referred to as a more mechanical version of a currency basket regime (i.e., keeping the trade-weighted exchange rate within a certain band as a goal in and of itself). The remaining Asian economies, viz., Taiwan, Pakistan and Laos, seem to operate rather ad hoc managed floats or adjustable pegs. Overall therefore, it is readily apparent that “one-size does not necessarily fit all” when it comes to the choice of exchange rate regimes in Asia.

3. *De Facto* Exchange Rate Regimes in Crisis-hit Asia

3.1 Existing Classifications

As noted, the IMF has replaced its compilation of the *de jure* exchange rate regimes with the behavioural classification of exchange rates. The new IMF coding is based on various sources,

⁶ See Cavoli and Rajan (2007a) and Shah and Patnaik (2005) for analyses of India’s exchange rate policy.

⁷ See Cavoli and Rajan (2006b), Khor et al. (2004) and McCallum (2005) for analyses of Singapore’s exchange rate policy.

including information from IMF staff, press reports, other relevant papers, as well as the behaviour of bilateral nominal exchange rates and reserves.⁸

Table 3 summarizes the definitions of various IMF exchange rate classifications. As is apparent, the IMF has eight exchange rate categories. Table 4 categorizes Asian exchange rates based on the new IMF classifications as of July 2006.⁹ A comparison of Tables 1 and 4 reveals no discrepancy between the *de jure* and *de facto* regimes of Bhutan, Brunei, Hong Kong SAR and Nepal, all of which operate fixed exchange rates to a single currency. Similarly, India, Lao PDR and Singapore are categorized as managed floaters, broadly consistent with their official pronouncements. Vietnam, which used to be in this category, has more recently been classified as having a conventional fixed peg regime in contrast to its official pronouncement of maintaining a crawling peg and band around the USD. Bangladesh, Sri Lanka and Thailand have been characterized as managed floaters (with no predetermined exchange rate path) despite their official declarations of being independent floaters. Pakistan is defined as operating conventional fixed peg arrangements (against a single currency) despite proclaiming to be an independent floater. Japan, Korea and the Philippines are characterized as independent floaters, consistent with their official assertions.¹⁰ Contrary to the public pronouncement of the Chinese authorities that the currency is based on a currency basket, recent empirical studies suggest the *de facto* regime appears to be a soft peg to the USD with the IMF classifying China under “other conventional fixed peg arrangements”.¹¹ The Malaysian ringgit since its official depegging is defined as being a managed floater with no predetermined path. This is consistent with empirical analysis which suggests that the ringgit closely tracks a trade-weighted

⁸ Also see Bubula and Ötoker-Robe (2002) which appears to be the intellectual basis for the IMF *de facto* regimes.

⁹ See Rajan (2006) for IMF specifications of Asian exchange rate regimes from 1998 to 2004. Taiwan is not included in Table 4 as it is not a member of the IMF.

¹⁰ We were not able to obtain official pronouncements of Cambodia’s, Myanmar’s and Timor Leste’s exchange rates. However, according to the IMF *de facto* classification, Cambodia and Myanmar both operate a managed float with no predetermined path while Timor Lester has adopted the US dollar as its legal tender.

¹¹ See Shah, Zeileis and Patnaik (2006) and Ogawa and Sakane (2006) for empirical validation. Also see Eichengreen (2006) who provides a broader discussion of issues surrounding the Chinese currency and its exchange rate regime.

basket since its depegging in July 2005, not unlike the Singapore dollar.

In their seminal paper, Reinhart and Rogoff (2004) develop a so-called “natural classification” based on market information such as black market or parallel rates (rather than official rate), the statistical behaviour of exchange rate, reserves and interest rates as well as country chronologies using a five-year window (to prevent sporadic exchange rate changes). The authors apply the methodology to 153 countries from 1946 to 2001 and find, among other things, that nearly half of the “official pegs” are better characterized as managed or freely floating arrangements or limited flexibility¹² More generally, once one uses *de facto* classifications, the bipolar view on exchange rate regimes which was based largely on *de jure* exchange rate classification is no longer obvious. This is also borne out in the case of *de facto* IMF coding for Asia. Referring to Figure 1, while there has been a discernible trend towards greater exchange rate flexibility from 1998 to 2003, there was a slight reversion to soft dollar pegs in the last two years.¹³

Unlike the new IMF classification, Reinhart and Rogoff are careful to distinguish between a flexible exchange rate regime and one that is freely falling rate *per se*. They define the latter as episodes in which the 12-month rate of inflation equals or exceeds 40 percent unless there is some type of pre-announced or narrow band. The authors also define the six-month period immediately after a crisis as being freely falling if there is a sudden transition from a fixed or quasi-fixed to more flexible exchange rate regime. Thus, in 1998, while the IMF codes Indonesia, Korea and Thailand as “independently floating”, Reinhart-Rogoff more accurately characterize them as “freely falling”¹⁴. Notwithstanding this difference, by and large, the IMF and Reinhart-Rogoff reach the same

¹² There are two other notable *de facto* exchange rate classifications. One is by Levy-Yeyati Sturzenegger (2003, 2005) who use rather broad exchange rate categories, viz., fixed, floating and intermediate using cluster analysis. The second is by Shambaugh (2004) who closely follows Reinhart-Rogoff, except that he uses a one-year window while the latter uses a five-year window. Also see discussion in Genberg and Swoboda (2005).

¹³ Needless to say, this statement should be interpreted with caution in view of the small sample size (19 economies).

¹⁴ One needs to refer to the earlier NBER working paper version by the authors (2002) for country-specific exchange rate arrangements.

conclusion regarding the Asian currency arrangements. While the more detailed classifications of Reinhart-Rogoff make it preferable to the IMF coding, the latter is far more frequently updated than the former.¹⁵ Somewhat surprisingly, both the IMF and Reinhart-Rogoff coding characterize Japan and Korea as independently floating despite the sharp reserve build-up in both countries (Willett, Kim and Nitithanprapas, 2005).

3.2 Some Simple *De Facto* Measures

Clearly there are a number of different ways of measuring *de facto* exchange rate regime – each offering different perspectives on the regime choices made by central banks but each possessing shortcomings in capturing all the essential characteristics of the regime as adopted by various countries. This section presents the results of two commonly used methods of measuring exchange rate regimes. The first is the Frankel-Wei (FW) method (Frankel and Wei, 1994). Here, we present the time-invariant results to the FW tests and we augment these results by reporting time-varying coefficients through recursive least squares. The second measure is an exchange rate flexibility index based on exchange market pressure (EMP) models.¹⁶

With regard to data, we use a time series of monthly observations from 1985:1 to 2006:12 for most of the regressions except in the case of the euro where the sample is 1999:1 to 2004:12. This sub-period allows us to examine the particular significance of the euro as a major currency since it actually came into existence. Data is from the *IMF International Financial Statistics* (IFS). Exchange rates are taken from line RF (RH for the pound sterling) and the cross rates for the local currency against the yen, pound, deutschmark (DEM), euro and Swiss franc are calculated from the quoted bilateral exchange rates. The DEM/USD and euro/USD rate are taken from the *Pacific Exchange*

¹⁵ However, neither classification is able to capture the most recent changes in exchange rate regimes in China and Malaysia. Hakura (2005) briefly compares the IMF *de facto* classification with the Reinhart-Rogoff one.

¹⁶ There are clearly some weaknesses with the EMP models (which is why we do not use them in isolation). For a critical analysis of the EMP models, see Willett, Kim and Nitithanprapas (2005) who have developed a methodology for classifying exchange rate regimes based on the degree of foreign exchange intervention.

*Rate Service*¹⁷ The countries examined are Bangladesh, Cambodia, mainland China, India, Indonesia, Korea, Laos, Malaysia, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Thailand, and Vietnam.¹⁸

3.3 Frankel-Wei Tests: Static Estimates

This section examines the degree of influence between the target currencies and a vector of major currencies that includes the USD, the Japanese yen, the UK pound and the euro. We do this by employing the well-known Frankel-Wei regressions as shown in Eq. 1 below¹⁹:

$$\Delta e_{it} = \alpha_0 + \alpha_1 \Delta US_t + \alpha_2 \Delta JP_t + \alpha_3 \Delta UK_t + \alpha_4 \Delta EU_t + \alpha_5 \Delta DEM_t + \mu_t \quad (1)$$

where e refers to the local currency i and we estimate the effect of the DEM from 1985 to 1997 and the effect of the euro from 1999 to 2006 (ie $\alpha_4=0$ for 1985-97 and $\alpha_5=0$ for 1999-2006). All currencies are expressed in logs and the numeraire currency used is the Swiss franc²⁰. This method essentially involves conducting an OLS test of the local currency on other currencies that are considered to influence the former.

The higher the values of α coefficient corresponding to each major currency the larger is the degree of influence of that currency on the local currency. As such, a coefficient provides some information about the possible degree of fixity of the local currency to the major currency.²¹ However,

¹⁷ <http://fx.sauder.ubc.ca>. The reason for this is that the Service contains a sample for the eur/USD from 1993. The data are no different from that available from the IFS.

¹⁸ Compared to the list of countries in Table 1 we have left out Hong Kong, Bhutan and Brunei, both of which maintain currency board arrangements vis-à-vis the US dollar and the Singapore dollar, respectively. We also exclude Myanmar which effectively operates a dual currency regime.

¹⁹ Such regressions have recently been used in several subsequent studies such as Kawai (2002), McKinnon (2001) and Cavoli and Rajan (2006, 2007a,b) to name but a few.

²⁰ In constructing the Frankel-Wei equation, we acknowledge the effect cross rates may have in influencing the currency pair we wish to examine. By estimating the equation in first differences and adding a constant we are assuming that the effect of the cross rates are fixed over the estimation period.

a large coefficient value does not automatically imply a pegged exchange rate; it may merely reflect naturally occurring market-driven correlations between two currencies. In this context the standard deviation of the coefficient value may provide additional useful information in the sense that a small standard deviation is more likely to imply an attempt to systematically maintain the correlation between two currencies by way of intervention (Baig, 2001).

The results of the Frankel-Wei tests are presented in Table 5. Two sets of results are presented – the first for the pre-crisis sample, 1985.1 to 1997.3 and presents the DEM as one of the currencies of influence and the second is the post crisis (and indeed post-euro) sample, 1999.1 to 2006.12. It is clear from the results that the USD remains the currency with the most influence over the local currency, though in some cases, the yen, pound or DEM/euro sustain some secondary influence. If one observes the relationship between the pre- and post-crisis results, it is clear that the USD has been the sole influence over the Bangladeshi taka and the Chinese yuan over both time periods under consideration. Also noteworthy is the influence of the USD. In the case of Bangladesh, China, India, Malaysia and Pakistan, the USD coefficient has remained quite stable between samples. There is however, a significant increase in the degree of influence of the USD post-crisis for Cambodia, Nepal and Sri Lanka and a marked decrease in the case of Indonesia, Korea, the Philippines, Thailand (all of which have adopted Inflation targeting frameworks as noted previously), as well as Singapore, Vietnam and Laos.

In the post crisis sample, the euro appears to have some influence over the yuan, Indian rupee, rupiah, Pakistan rupee, Singapore dollar and Thai baht. The results for the Japanese yen are quite mixed but appears to have been moderately influential over the both periods for the Korean won and the Singapore dollar.

The post crisis results for the Korean won, Singapore dollar and Thai Bhat merit special mention. While the USD has remained a major influence over these currencies, it appears as if the other major currencies play a significant role – partially at the expense of the USD, as mentioned

²¹ The term “degree of influence” is used for these tests as an alternative -- more general -- interpretation to the coefficients being seen as “weights” in the currency basket. The basket weights story can only be valid under this method if the right-hand-side (RHS) variables are uncorrelated. Unfortunately, this cannot be assured here.

above.. In the case of the won and the baht, the inclusion of the other major currencies results in significant parameter values but from the adjusted R^2 , the overall fit of the model is weaker.²² The results for Singapore also indicate that several currencies share the degree of influence. While care must be exercised in interpreting these results, it is broadly suggestive of the possibility of a basket peg arrangement in those currencies.

3.4 Frankel-Wei Tests: Dynamic Estimates

While the above results offer some insight, they fail to provide any information as to whether there has been a change in the degree of influence of the USD or other major currencies over time. In view of this we expand the Frankel-Wei analysis by re-estimating Eq. 1 using recursive OLS estimates. Recursive OLS simply involves the equation being estimated repeatedly using subsets of the sample data that are increased by one observation at each iteration.²³ Such recursive estimates allow us to track the evolution of the α coefficients over time. It thus allows us to ascertain whether one of the major currencies is becoming more influential compared to another. As with the standard errors in the time-invariant regressions, the variation of the degree of influence is important in extracting information about the possibility of exchange rate movements being policy driven. For example, if the coefficient value for a particular currency on the local currency is high but relatively stable, this may be suggestive of sustained intervention by the central bank to manage the value of that particular currency pair. If the estimated value is high but variable, the correlation might possibly be market driven rather than conscious central bank intervention.

Results of the recursive regressions for post-crisis sample are presented in Figure 2²⁴. The

²² This statement is supported by the observation of both Akaike information criteria (AIC) and Schwarz criteria. In fact, this phenomenon occurred for almost all currencies tested.

²³ We estimated the initial regression using the same number of observations as there are coefficients to be estimated in the α vector for each country. (Thus, the first few values are volatile and ignored given the low degrees of freedom – we removed the first 18 months for the pre-crisis period and the first 12 from the post-crisis period) We obtained largely similar results using a Kalman Filter test. Results are broadly unchanged and therefore not reported here.

²⁴ There are a number of rationales for presenting the post-crisis results. First, the pre-crisis period is characterized by a domination of the USD as the currency of influence. Second, due to the change from DEM to euro and also to the fact that the crisis period is removed (owing to high parameter

figure contains the dynamic properties of the coefficients for the USD, the Japanese yen, the pound and the euro. Generally speaking, the results are supportive of the static Frankel-Wei results. A few observations stand out.

First, the USD generally remains the strongest influence over local currencies post-crisis, but the introduction of the euro does substitute for the influence of the USD in some cases. Cases where the USD remains strong throughout the sample include Bangladesh, China, India, Malaysia, Nepal, Pakistan, the Philippines, Sri Lanka and Vietnam. One should note further that the stability of the USD for Bangladesh, Cambodia, India, China, Malaysia and Sri Lanka might be indicative of a desire to peg to the USD.

Second, in the case of Korea, Thailand Laos, Singapore and Thailand, there is evidence of even and stable influences of multiple currencies. This is suggestive of management vis-à-vis a currency basket. (The basket hypothesis will be explored below).

3.4 Exchange Rate Flexibility Index

The second measure of exchange rate behaviour adopted in this paper is the exchange rate flexibility index. There are a variety of indices based on the idea of exchange market pressure (EMP).²⁵ The theoretical foundation for EMP stems from a basic monetary model incorporating the demand for money, its supply and relative PPP (Tanner, 2001 and Pentecost et al., 2001, Cavoli and Rajan, 2006). From these foundations, we can construct a measure of exchange rate flexibility such as the following:

$$Index = \Delta e / (\Delta e + \Delta f) \quad (2)$$

volatility), the time path of the recursive estimates is broken. Pre crisis (1985-87) recursive estimates are available from the authors on request.

²⁵ For instance, see the seminal contribution from Girton and Roper (1977). Also see Li, Rajan and Willett (2006) and Guimãeres and Karacadag (2004).

where Δe is as calculated in the previous section and Δf is change in net foreign assets (IFS line 11 – line 16c) scaled by lagged money base (line 14). We take the 12 monthly mean of Δe and Δf to form non-overlapping annual mean absolute deviations of each series. The index is deliberately constructed in this manner such that it returns a value between zero and one.²⁶ This offers a scaling device for the relative exchange rate volatility; the closer the index is to one ($\Delta f \rightarrow 0$), the more flexible the exchange rate regime and the closer to zero ($\Delta e \rightarrow 0$), the more fixed the regime.

Figure 3 reports the results of the exchange rate flexibility index for the same selection of countries as the Frankel-Wei tests for the same period, 1985 to 2006. The index is calculated for the local currency vs the USD, the yen and the euro. The index for the nominal effective exchange rate (NEER) is also reported.

Two observations warrant highlighting. First, it is clear that for most of the countries examined, the index containing the USD is lower than the other currency pairs and the NEER. This is suggestive that the local currency is more likely to be pegged to the USD than the others. This is most easily seen in the case of China – where the index value for the USD is very near zero for the sample of data collected, and for Malaysia – where the index value is zero for the post-crisis period until mid July 2005. An exception to this is Singapore where all currencies examined had very low index values (< 0.3) but where no single currency appeared to be significantly less flexible than the others. Is this a possible indication of a basket peg?

The second observation relates to the transition of exchange rate flexibility over time. We would expect that the crisis-affected economies of Korea, Indonesia, Thailand and the Philippines would show an increase in flexibility after the crisis following the formal adoption of inflation targeting regimes. Somewhat surprisingly this is not universally the case. We observe an increase in

²⁶ Note that $1 - \Delta e / (\Delta e + \Delta f) = \Delta f / (\Delta e + \Delta f)$ which is defined as a measure of exchange rate intervention. An index such as Index 2 can also be constructed using standard deviations, e.g. $\sigma_{\Delta e} / (\sigma_{\Delta e} + \sigma_{\Delta f})$. Baig (2001) and Calvo and Reinhart (2002) use variances. The index values using standard deviations are broadly similar to those for index 2 and are not reported here but are available on request. The nominal interest rate is often included in EMP measures but is excluded here due to the unavailability of market interest rates for all countries. It should be noted that part of the exchange rate change (and, indeed, interest rates) could be valuation effects rather than adjustment because of foreign exchange intervention. The interest rate was added to the denominator to selection of countries as a robustness exercise and the results were very similar. Also see Cavoli and Rajan (2006) for more on this.

flexibility for Indonesia and Thailand and the degree of flexibility has not altered materially for the Philippines. However it would appear that the index value has diminished since the crisis for Korea (aside from a brief jump in flexibility in the immediate aftermath of the crisis). This is indicative of a possible reversion to a USD (and yen) peg for Korea, though it may also reflect greater use of interest rates as a stabilization instrument.²⁷

Interestingly, if one observes the more recent index values for the crisis-affected countries (Thailand being the exception), there appears to be a trend towards a basket peg as the index values are very low for all currency pairs and they are all very close together. However, even if one concludes that the respective monetary authorities have consciously tried to stabilize the effective exchange rates, does this indicate a movement towards managing the currencies against a basket (i.e., trade-weighted exchange rate management), or is it a consequence of an open economy, inflation-targeting framework in which effective exchange rate fluctuations are taken into account in some manner (given their impact on trade, growth and inflation, among other things)?²⁸ In an early review of the experiences of selected emerging economies, which included the four Asian economies noted above, Ho and McCauley (2003) note:

While inflation targeting may be a framework that is typically free from formal exchange rate commitments, it is nonetheless not free from exchange rate considerations...(W)e find that, in practice, policymakers in inflation targeting countries do react to the exchange rate above and beyond its impact on inflation...Notwithstanding the explicit concern and active response in some countries to exchange rate movements, there is as yet no clear evidence that any of them has acted in contradiction to the announced inflation target. Nonetheless, the line between responding to the exchange rate within the bounds of inflation targeting, and managing the exchange rate as a goal *per se*, can be quite thin at times. The onus is on the policymaker to explain to the public the difference, if any, between the two types of actions and the rationale for the policy decisions actually taken. Effective communication of policy intentions with respect to the role of the exchange rate will be crucial for the credibility of the policy regimes (pp.35-6).²⁹

²⁷ Recall that the EMP we are using does not include interest rates.

²⁸ This issue is explored analytically by Cavoli and Rajan (2007c). Also see Edwards (2006), Eichengreen (2002) and Ho and McCauley (2003). Eichengreen (2004) examines the issue with specific reference to Korea.

²⁹ Effective communication is especially critical going forward with the reemergence of inflation globally and possible persistence of adverse supply shocks (energy prices, for instance).

4. Concluding Thoughts

Overall, there appears to be a general trend towards somewhat greater exchange rate flexibility in Asia, though not complete flexibility. Unease clearly persists about allowing a completely free float. This is further apparent from the massive stockpiling of reserves in many Asian economies (for instance, see Ouyang, Rajan and Willett, 2007b).³⁰ Many observers have pointed out that the export-oriented nature of the Asian economies -- especially those in East Asia -- has given rise to a collective action problem (the so-called “prisoner’s dilemma”) whereby the fear of losing competitiveness leads each of them to heavily manage their respective currencies, particularly in view of the limited flexibility of the Chinese currency. This in turn is contributing partly to large and growing global macroeconomic imbalances and global liquidity (Park, 2006).

The reserve stockpiling has also given rise to concerns about the creation of excessive liquidity build-up within the Asian economies themselves. How justified these concerns are depends heavily on the extent to which the reserve accumulating countries have been able to sterilize the effects on their domestic monetary aggregates. Empirical analyses by Ouyang, Rajan and Willett (2007a,b) reveal that China and other Asian economies have sterilized very aggressively in the last few years. However, as the reserve build-up persists unabated and the fiscal costs of sterilization begin to escalate (Calvo, 1991), it is increasingly questionable as to whether the regional monetary authorities can persist with aggressive sterilization on such a huge scale.³¹ In such a situation domestic macroeconomic stability could be compromised. Eventually pegging the exchange rate always constrains monetary independence.

³⁰ We do not broach the much-debated issue of the reasons behind the reserve build-up (i.e., insurance versus export-stimulus), except to note the following -- quite reasonable observation -- by the World Bank (2005):

Intervention was initially motivated by a desire to build up a buffer stock after the Asian crisis had depleted levels of reserves...(H)owever (r)apid reserve accumulation continued through late 2004, as countries sought to limit the impact of heavy capital inflows on external competitiveness, at a time when domestic demand generally remained subdued (p.29).

³¹ The World Bank (2005) and Mohanty and Turner (2005) discuss the latter two costs and Rodrik (2006) discusses the issue of opportunity costs. These costs need to be balanced against the likelihood that higher reserve holdings reduce a country’s perceived international credit standing, hence lowering the country’s risk premium.

To be sure, it is often noted that some recent empirical evidence casts doubt on the extent to which floating regimes in emerging economies provide insulation from foreign interest rate shocks (for instance, see Frankel, Schmukler and Serven, 2004 and Hausman, Panizza and Stein, 2001). However, a more recent study using *de facto* exchange rates for 100 developing and industrial countries between 1973 and 2000 finds that the interest rates of the countries that operated pegged regimes followed the base country far more closely than non-pegs (Shambaugh, 2004). A closely related paper finds that small countries with fixed exchange rates are most directly affected by interest rate changes in large countries (Di Giovanni and Shambaugh, 2005). All this suggests that the loss of monetary-policy autonomy can have significant costs.³² This monetary dilemma has been very apparent in many emerging Asian economies including China, India, Korea and Thailand.

³² There may even be a degree of endogeneity in the sense that as countries “learn to float” they gain a greater degree of monetary policy autonomy (see Hakura, 2005). Of course, if unrestrained monetary policy has been a facet of a country’s past, imposing exchange rate fixity may be an advantage as it constrains the active use of monetary policy.

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**Table 1: *De jure* Exchange Rate Regimes in Asia
(As per Country Central Bank Websites unless otherwise stated)**

Country	Official Policy Pronouncements (direct quotes)
Bangladesh	The exchange rates of the taka for inter-bank and customer transactions are set by the dealer banks themselves, based on demand-supply interaction. The Bangladesh Bank is not present in the market on a day-to-day basis and undertakes purchase or sale transactions with the dealer banks only as needed to maintain orderly market conditions.
Bhutan	<p>Except for the Indian rupee to which the ngultrum is pegged at parity, and which circulates freely in Bhutan, paying or receiving payments in any other foreign currency for transactions in Bhutan is illegal.</p> <p>The Government may, by order, at any time, on the recommendation of the Board, declare an external value for the ngultrum, having due regard for the obligations which Bhutan has assumed in accordance with the provisions of any international monetary agreement to which it is a party, or to which it has adhered.</p>
Brunei-Darussalam¹	A currency interchangeability agreement was established between Singapore and Brunei Darussalam, which remains in effect till today and continues to play a central role in relations between the two countries. This agreement allows both countries to interchange their currencies at par without either country running the risk of currency exchange rate fluctuations which thus further facilitates trade and commerce between the two countries. The individual currencies are acceptable as customary tender when circulating in the country in which they are not legal tender.
Cambodia	N.A.
China, PRC	The PRC announced on July 21, 2005 the adoption of a managed floating exchange rate regime based on market supply and demand with reference to a basket of currencies. Since then, the new exchange rate system has operated stably, and the RMB exchange rate has been kept basically stable at an adaptive and equilibrium level. The exchange rate of the RMB against the US dollar has been moving both upward and downward with greater flexibility.
Hong Kong SAR	Since 1983 the Hong Kong dollar has been linked to the US dollar at the rate of HK\$7.8 to USD1. The link is maintained through the operation of a strict and robust Currency Board system which requires both the stock and the flow of the Monetary Base to be fully backed by foreign reserves. Any change in the size of the Monetary Base has to be fully matched by a corresponding change in the foreign reserves.
India	The exchange rate policy in recent years has been guided by the broad principles of careful monitoring and management of exchange rates with flexibility, without a fixed target or a pre-announced target or a band, coupled with the ability to intervene if and when necessary.
Indonesia	In July 2005, Bank Indonesia launched a new monetary policy framework known as the Inflation Targeting Framework, which has four basic elements as follows: (1) use of the BI rate as a reference rate in monetary control in replacement of the base money operational target, (2) forward looking monetary policymaking process, (3) more transparent communications strategy, and (4) strengthening of policy coordination with the Government.

Country	Official Policy Pronouncements (direct quotes)
	The rupiah exchange rate is determined wholly by market supply and demand. However, Bank Indonesia is able to take some actions to keep the rupiah from undergoing excessive fluctuation.
Korea	<p>Inflation targeting is an operating framework of monetary policy in which the central bank announces an explicit inflation target and achieves its target directly. This is based on the recognition that to achieve sustainable economic growth, it is important above all else that inflation expectations, which have a great effect on wage and price decisions, should be stabilized. In this regard, inflation targeting places great emphasis on inducing inflation expectations to converge on the central bank's inflation target level by the prior public announcement and successful attainment of that target level.</p> <p>The exchange rate is, in principle, decided by the interplay of supply and demand in the foreign exchange markets. However, the Bank of Korea implements smoothing operations to deal with abrupt swings in the exchange rate caused by temporary imbalances between supply and demand, or radical changes in market sentiment.</p>
Lao, PDR	The Bank of the Lao PDR announces the exchange rate derived from the market and officially adjusted, based on the daily average trading rate of the inter-bank market to the commercial banks and the foreign exchange bureaus as a reference to determine their own daily trading rates. In case of necessity the Bank of the Lao PDR determines the exchange rate on its own for the commercial banks and foreign exchange bureaus for implementation.
Malaysia	On 21 July 2005, Malaysia shifted from a fixed exchange rate regime of USD1 = RM3.80 to a managed float against a basket of currencies. Under the managed float system, the ringgit exchange rate is largely determined by ringgit demand and supply in the foreign exchange market. The Central Bank does not actively manage or maintain the exchange rate at any particular level – economic fundamentals and market conditions are the primary determinants of the level of the ringgit exchange rate. In this regard, the Central Bank intervenes only to minimize volatility, and to ensure that the exchange rate does not become fundamentally misaligned.
Myanmar	N.A.
Nepal	In the review year, the exchange rate of the Nepalese rupee vis-à-vis the Indian rupee remained constant, and NRB intervened 44 times in the foreign exchange market. Currently, Nepal is adopting a dual exchange rate arrangement. It is dual because the Nepali currency is pegged to the Indian currency (IC), whereas it floats with the convertible currencies. This system of exchange rate was introduced on February 12, 1993.
Pakistan²	Pakistan has adopted the floating inter-bank exchange rate as the preferred option since 2001. State Bank of Pakistan has attempted to maintain real effective exchange rate at a level that keeps the competitiveness of Pakistani exports intact. But, like other Central Banks, it does intervene from time to time to keep stability in the market and smooth excessive fluctuations. The current framework of monetary-cum-exchange rate policies and the underlying economic analysis in Pakistan can, thus, be broadly characterized as judgment- and discretion-based rather than model- or rule-based.

Country	Official Policy Pronouncements (direct quotes)
Philippines	<p>The primary objective of Bangko Sentral ng Pilipinas' monetary policy is to promote a low and stable inflation conducive to a balanced and sustainable economic growth. The adoption of inflation targeting framework for monetary policy in January 2002 is aimed at achieving this objective.</p> <p>The Monetary Board determines the exchange rate policy of the country, determines the rates at which the Bangko Sentral buys and sells spot exchange, and establishes deviation limits from the effective exchange rate or rates as it deems proper.</p>
Singapore	<p>Since 1981, monetary policy in Singapore has been centred on the management of the exchange rate. (1) The Singapore dollar is managed against a basket of currencies of its major trading partners and competitors. (2) The Monetary Authority of Singapore operates a managed float regime for the Singapore dollar. The trade-weighted exchange rate is allowed to fluctuate within an undisclosed policy band, rather than kept to a fixed value. (3) The exchange rate policy band is periodically reviewed to ensure that it remains consistent with the underlying fundamentals of the economy. (4) The choice of the exchange rate as the intermediate target of monetary policy implies that MAS gives up control over domestic interest rates (and money supply).</p>
Sri Lanka	<p>The Central Bank continues to conduct its monetary policy under an independently floating exchange rate regime within a framework of targeting monetary aggregates with reserve money (i.e., high powered money) as the operating target and broad money (M2b) as the intermediate target.</p>
Taiwan	<p>Prior to February 1979, management of foreign exchange in Taiwan was characterized by a central clearing and settlement system. Following the establishment of the Taipei Foreign Exchange Market in February 1979, a flexible exchange rate system was formally implemented. Since then, the NT dollar exchange rate has been determined by the market. However, when the market is disrupted by seasonal or irregular factors, the Bank will step in.</p>
Thailand	<p>Since July 2, 1997, Thailand has adopted the managed-float exchange rate regime, in which the value of the baht is determined by market forces, namely demand and supply in both on-shore and off-shore foreign exchange market, to let the currency move in line with economic fundamentals. The Bank of Thailand will intervene in the market only when necessary, in order to prevent excessive volatilities and achieve economic policy targets.</p> <p>Under the inflation targeting framework, the Bank of Thailand implements its monetary policy by influencing short-term money market rates via the selected key policy rate, currently set at the 14-day repurchase rate.</p>
Vietnam	<p>Vietnam has adopted a crawling peg with the US dollar for its exchange rate. The State Bank of Vietnam sets the official exchange rate daily, and commercial banks set their dealing rate within a trading band of plus or minus 0.25 percent. The State Bank of Vietnam tends to keep the dong depreciated against the US dollar by keeping the exchange rate on an upward trend.</p>

1) Based on information available from Brunei Ministry of Finance.

http://www.finance.gov.bn/bcb/bcb_index.htm.

2) Based on speech by former Pakistan central bank Governor (Husain, 2005).

Source: Compiled by author with assistance of Nicola Virgill from websites from various central banks and other official sources with minor modifications. Central Bank websites available here:

<http://www.bis.org/cbanks.htm>.

Table 2: Highlights of Inflation Targeting Regimes in the Five Crisis-Hit Countries

Country	Date	Target Price Index	Inflation Target	Target Horizon	Escape Clauses	Accountability	Target Set By	Publication and Accountability
Indonesia	May 1999	Core CPI (excluding food and energy)	5 – 7 percent 3 percent	1-2 years long-term	None	None, but parliament can request reports at any time	Central Bank	Quarterly Inflation report, Annual report to public
Philippines	Dec 2001	Core CPI (excluding food and energy)	4 – 5 percent	2 years	Yes, in the event of oil price shocks, food supply shocks	Public explanation of the nature of the breach and steps to address it	Central Bank	Quarterly inflation report, publication of monetary policy meetings
Thailand	Apr 2000	Core CPI (excluding food and energy)	0 – 3.5 percent	Indefinite	None	Public explanation of breach and steps taken to address it	Central Bank in consultation with Government	Inflation Report, inflation forecasts and publication of models used
Korea	Jan 1998	Core CPI (excluding non-cereal agricultural products and petroleum products)	2.5 – 3.5 percent 2.5 – 3.5 percent	1-2 years Indefinite	Changes caused by major force	None	Central Bank in consultation with Government	Inflation report and submission to parliament, publication of monetary policy meetings

Source: Compiled by authors from websites from various central banks and other official sources.

Table 3: IMF Descriptions of Exchange Rate Regimes

Type	Description
Exchange Arrangements with No Separate Legal Tender	The currency of another country circulates as the sole legal tender (formal dollarization), or the member belongs to a monetary or currency union in which the same legal tender is shared by members of the union. Adopting such regimes implies the complete surrender of the monetary authorities' independent control over domestic monetary policy.
Currency Board Arrangements	A monetary regime based on an explicit legislative commitment to exchange domestic currency for a specified foreign currency at a fixed exchange rate, combined with restrictions on the issuing authority to ensure the fulfilment of its legal obligation. This implies that the domestic currency will be issued only against foreign exchange and that it remains fully backed by foreign assets, eliminating traditional central bank functions, such as monetary control and lender-of-last-resort, and leaving little scope for discretionary monetary policy. Some flexibility may still be afforded, depending on how strict the banking rules of the currency board arrangement are.
Other Conventional Fixed Peg Arrangements	The country (formally or de facto) pegs its currency at a fixed rate to another currency or a basket of currencies, where the basket is formed from the currencies of major trading or financial partners and weights reflect the geographical distribution of trade, services, or capital flows. The currency composites can also be standardized, as in the case of the SDR. There is no commitment to keep the parity irrevocably. The exchange rate may fluctuate within narrow margins of less than ± 1 percent around a central rate, or the maximum and minimum value of the exchange rate may remain within a narrow margin of 2 percent for at least three months. The monetary authority stands ready to maintain the fixed parity through direct intervention (i.e., via sale/purchase of foreign exchange in the market) or indirect intervention (e.g., via aggressive use of interest rate policy, imposition of foreign exchange regulations, exercise of moral suasion that constrains foreign exchange activity, or through intervention by other public institutions). Flexibility of monetary policy, though limited, is greater than in the case of exchange arrangements with no separate legal tender and currency boards because traditional central banking functions are still possible, and the monetary authority can adjust the level of the exchange rate, although relatively infrequently.
Pegged Exchange Rates within Horizontal Bands	The value of the currency is maintained within certain margins of fluctuation of at least ± 1 percent around a fixed central rate or the margin between the maximum and minimum

	value of the exchange rate exceeds 2 percent. It also includes arrangements of countries in the exchange rate mechanism (ERM) of the European Monetary System (EMS) that was replaced with the ERM II on January 1, 1999. There is a limited degree of monetary policy discretion, depending on the bandwidth.
Crawling Pegs	The currency is adjusted periodically in small amounts at a fixed rate or in response to changes in selective quantitative indicators, such as past inflation differentials vis-à-vis major trading partners, differentials between the inflation target and expected inflation in major trading partners, and so forth. The rate of crawl can be set to generate inflation-adjusted changes in the exchange rate (backward looking), or set at a pre-announced fixed rate and/or below the projected inflation differentials (forward looking). Maintaining a crawling peg imposes constraints on monetary policy in a manner similar to a fixed peg system.
Exchange Rates within Crawling Bands	The currency is maintained within certain fluctuation margins of at least ± 1 percent around a central rate -- or the margin between the maximum and minimum value of the exchange rate exceeds 2 percent -- and the central rate or margins are adjusted periodically at a fixed rate or in response to changes in selective quantitative indicators. The degree of exchange rate flexibility is a function of the bandwidth. Bands are either symmetric around a crawling central parity or widen gradually with an asymmetric choice of the crawl of upper and lower bands (in the latter case, there may be no pre-announced central rate). The commitment to maintain the exchange rate within the band imposes constraints on monetary policy, with the degree of policy independence being a function of the bandwidth.
Managed Floating with No Predetermined Path for the Exchange Rate	The monetary authority attempts to influence the exchange rate without having a specific exchange rate path or target. Indicators for managing the rate are broadly judgmental (e.g., balance of payments position, international reserves, parallel market developments), and adjustments may not be automatic. Intervention may be direct or indirect.
Independently Floating	The exchange rate is market-determined, with any official foreign exchange market intervention aimed at moderating the rate of change and preventing undue fluctuations in the exchange rate, rather than at establishing a level for it.

Source: Taken directly from IMF website on *Classification of Exchange Rate Arrangements and Monetary Frameworks*
<http://www.imf.org/external/np/mfd/er/2006/eng/0706.htm>

Table 4: *De facto* IMF Exchange Rate Classifications as of July 2006

Country	As of July 2006
Bangladesh	Managed floating with no predetermined path.
Bhutan	Other conventional fixed peg arrangement (against a single currency).
Brunei Darussalam	Currency board arrangement.
Cambodia	Managed floating with no predetermined path.
China PRC	Other conventional fixed peg arrangements.
Hong Kong SAR	Currency board arrangement.
India	Managed floating with no predetermined path.
Indonesia	Independently floating.
Japan	Independently floating.
Korea	Independently floating.
Lao, P.D.R.	Managed floating with no predetermined path.
Malaysia	Managed floating with no predetermined path.
Myanmar	Managed floating with no predetermined path.

Nepal	Conventional pegged arrangement (against a single currency).
Pakistan	Other conventional fixed peg arrangements (against a single currency).
Philippines	Independently floating.
Singapore	Managed floating with no predetermined path.
Sri Lanka	Managed floating with no pre-determined path.
Thailand	Managed floating with no predetermined path.
Vietnam	Other conventional fixed peg arrangements (against a single currency).

Source: IMF data on *Classification of Exchange Rate Arrangements and Monetary Frameworks*
<http://www.imf.org/external/np/mfd/er/2006/eng/0706.htm>

Table 5: Frankel Wei Regression Results

Dep Variable	Bangladesh – Pre-crisis	Bangladesh – Post-crisis	Cambodia – Pre-crisis	Cambodia – Post-crisis	China – pre-crisis	China – Post-crisis
Constant	0.002 (3.69)**	0.004 (2.94)**	0.03 (2.53)	0.001 (1.83)	0.01 (1.71)	-0.0003 (-2.60)
USD	1.02 (18.91)**	1.02 (22.41)**	0.54 (0.52)	0.98 (35.35)	1.09 (3.55)	0.99 (109.67)
JPY	0.04 (1.18)	-0.08 (-1.91)	0.23 (0.47)	0.02 (0.46)	0.07 (0.67)	-0.002 (-0.66)
DEM	0.04 (0.79)	-	-0.61 (-0.55)	-	0.11 (0.27)	-
EUR	-	-0.03 (-0.22)	-	-0.04 (-0.50)	-	0.04 (1.88)
Other	-	-	-	-	-	-
Adj R ²	0.96	0.83	0.08	0.96	0.43	0.99
DW	2.20	1.67	1.60	1.75	1.95	2.03
Obs	145	95	86	90	145	95

Dep Variable	India – Pre-crisis	India – Post-crisis	Indonesia – Pre-crisis	Indonesia – Post-crisis	Korea – Pre-crisis	Korea – Post-crisis
Constant	0.01 (3.41)	0.003 (0.36)	0.003 (1.94)	0.002 (0.42)	0.001 (1.24)	-0.002 (-1.02)
USD	0.89 (6.03)	0.88 (20.48)	0.88 (6.06)	0.55 (2.25)	0.93 (21.69)	0.56 (6.84)
JPY	-0.09 (-0.78)	0.09 (1.86)	0.06 (1.05)	0.06 (0.28)	0.07 (3.04)	0.52 (6.27)
DEM	-0.04 (-0.24)	-	-0.05 (-0.46)	-	0.02 (0.36)	-
EUR	-	0.22 (1.72)	-	1.84 (3.78)	-	0.13 (0.56)
Other	-	-	-	-	-	-
Adj R ²	0.55	0.89	0.70	0.28	0.97	0.73
DW	2.03	2.07	1.86	1.96	2.13	1.90
Obs	145	95	145	95	145	95

Dep Variable	Laos – Pre-crisis	Laos – Post-crisis	Malaysia – Pre-crisis	Malaysia – Post-crisis	Myanmar – Pre-crisis	Myanmar – Post-crisis
Constant	0.02 (2.11)	0.01 (1.68)	0.0004 (0.54)	-0.001 (-0.99)	0.0002 (1.46)	-0.0004 (-0.64)
USD	0.94 (2.79)	0.60 (3.33)	1.04 (12.38)	0.95 (31.87)	0.71 (37.05)	0.49 (24.02)
JPY	-0.14 (-0.46)	0.33 (1.04)	0.08 (1.77)	0.02 (1.30)	0.19 (20.71)	0.21 (7.52)
DEM	-0.04 (-0.06)	-	0.21 (2.06)	-	0.31 (16.80)	-
EUR	-	-0.59 (-1.42)	-	-0.04 (-0.64)	-	0.16 (0.97)
Other	-	-	-	-	0.11 (11.24)	-
Adj R ²	0.02	0.33	0.90	0.95	0.99	0.83
DW	2.03	2.09	1.96	2.15	1.51	2.18
Obs	146	86	145	95	145	94

Table 5 (cont'd): Frankel Wei Regression Results

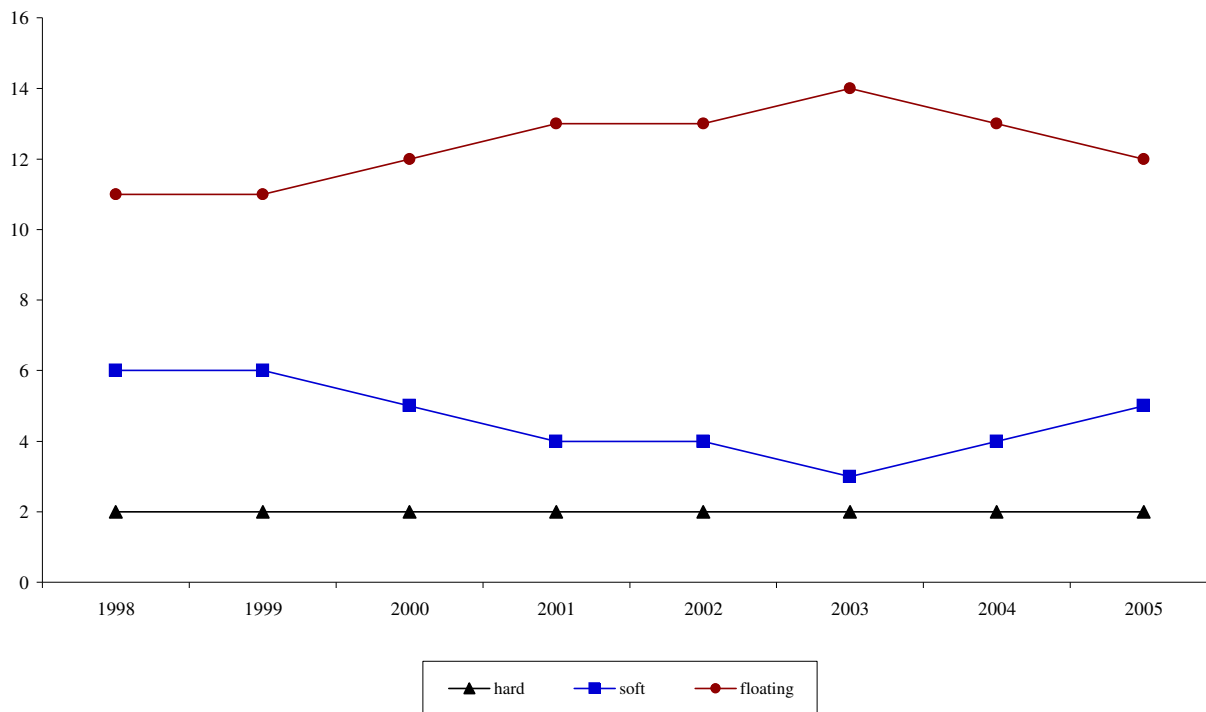
Dep Variable	Nepal – Pre-crisis	Nepal – Post-crisis	Pakistan – Pre-crisis	Pakistan – Post-crisis	Philippines – Pre-crisis	Philippines – Post-crisis
Constant	0.01 (4.21)	0.0003 (0.41)	0.004 (4.73)	0.002 (1.45)	0.001 (1.47)	0.002 (1.44)
USD	0.43 (1.37)	1.02 (21.76)	0.95 (10.74)	0.91 (20.74)	1.16 (9.78)	0.91 (10.52)
JPY	-0.06 (-0.82)	0.01 (0.21)	-0.01 (-0.30)	0.03 (0.42)	-0.06 (-0.98)	0.09 (1.14)
DEM	-0.52 (-1.50)	-	0.05 (0.49)	-	0.07 (0.65)	-
EUR	-	0.05 (0.46)	-	0.48 (1.76)	-	0.41 (1.50)
Other	0.22 (2.07)	-	-	-	-	-
Adj R ²	0.63	0.91	0.89	0.76	0.87	0.75
DW	2.05	1.95	1.93	1.87	1.95	1.93
Obs	145	94	145	94	145	94

Dep Variable	Singapore – Pre-crisis	Singapore – Post-crisis	Sri Lanka – Pre-crisis	Sri Lanka – Post-crisis	Thailand – Pre-crisis	Thailand – Post-crisis
Constant	-0.001 (-1.90)	-0.0004 (-0.58)	0.01 (4.88)	0.004 (3.29)	0.001 (2.21)	0.00 (0.07)
USD	0.84 (14.04)	0.61 (13.67)	0.88 (8.38)	1.07 (13.48)	0.81 (19.46)	0.59 (7.39)
JPY	0.12 (4.19)	0.18 (3.58)	0.11 (2.05)	0.02 (0.30)	0.11 (11.06)	0.15 (1.43)
DEM	0.13 (2.04)	-	-0.06 (-0.49)	-	0.01 (0.22)	-
EUR	-	0.37 (3.03)	-	-0.02 (-0.11)	-	0.59 (3.29)
Other	0.04 (1.86)	-	-0.10 (-2.25)	-	0.05 (2.73)	-
Adj R ²	0.94	0.85	0.83	0.84	0.99	0.68
DW	1.99	1.96	2.00	2.04	1.89	1.82
Obs	145	95	145	94	146	95

Dep Variable	Vietnam – Pre-crisis ^d	Vietnam – Post-crisis
Constant	0.01 (2.37)	0.002 (2.27)
USD	1.55 (4.57)	0.98 (29.40)
JPY	-0.30 (-1.22)	0.04 (1.34)
DEM	0.42 (1.27)	-
EUR	-	-0.22 (-0.66)
Other	-0.21 (-1.74)	-
Adj R ²	0.51	0.88
DW	1.94	2.37
Obs	87	79

Notes: (*) represents significance at 5%. The terms in parenthesis are t statistics. The analysis involved OLS estimation of each as an Autogressive Distributed Lag (ARDL) model. The rationale behind this is to ensure that there is no omitted variable bias due to serial correlation that often results from the exclusion of lagged dependent variables and regressors. Details of the lagged variables that were included in each specification are available upon request.

Figure 1: Trends in Exchange Rate Regimes among Asian Countries using IMF Classifications, 1998-2005

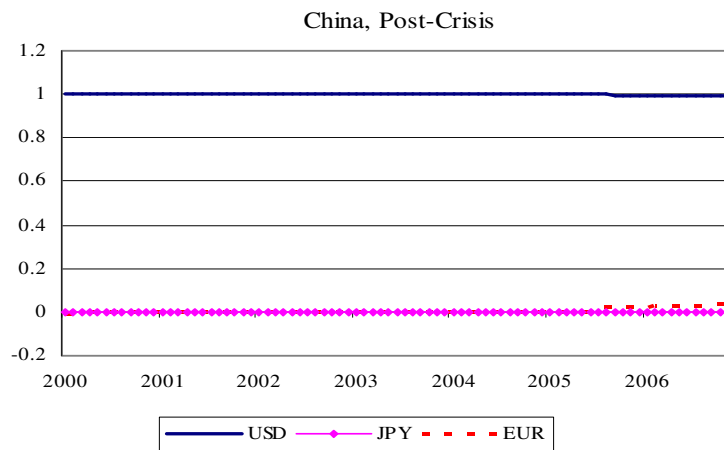
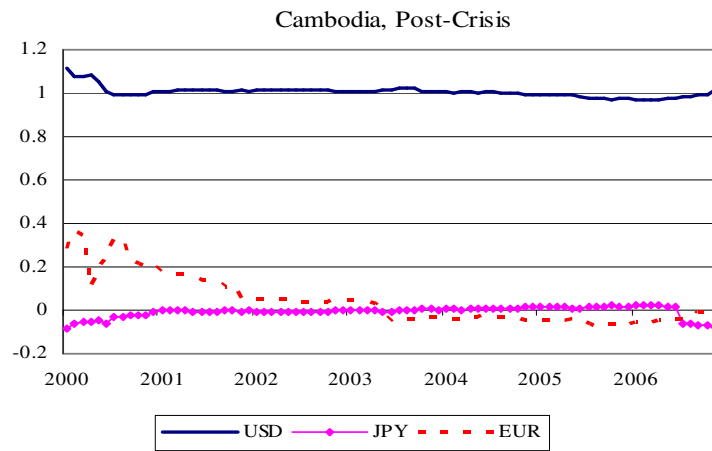
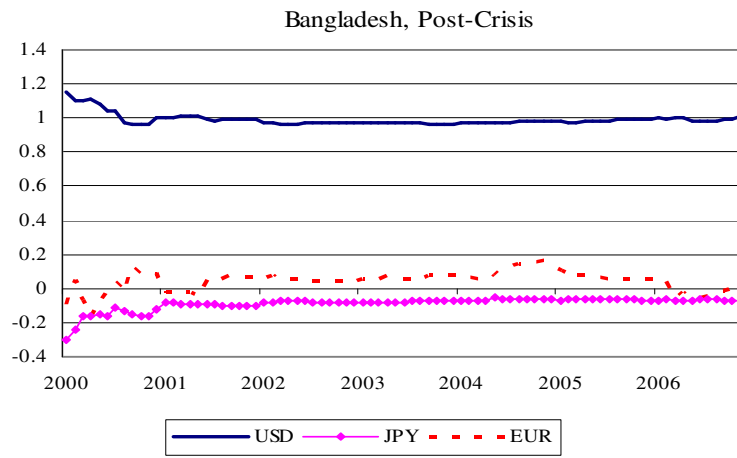


Notes: Hard peg refer to Exchange arrangements with no separate legal tender (includes dollarization, currency unions) and currency boards. Soft pegs refer to conventional fixed pegs, horizontal band, crawling peg and crawling band. Floating regimes refer to independent floats and managed floats. These definitions are based on Using IMF *de facto* classifications (see Table 3a) recategorized based on Bleaney and Francisco (2005). Data based on 19 Asian countries.

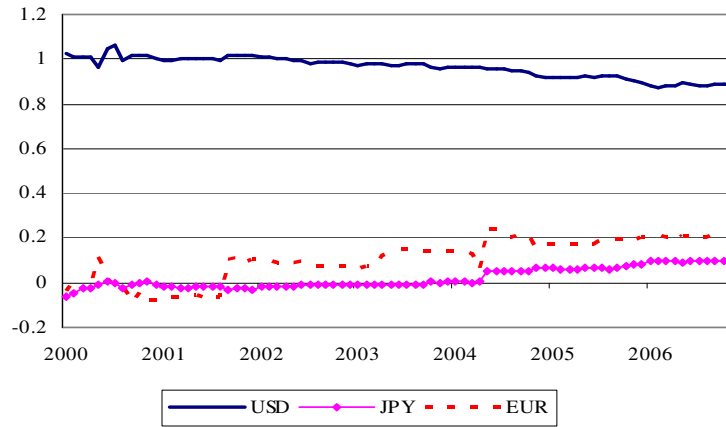
Since the exchange rate categories are from the IMF, no distinction is made between freely falling and freely floating *a la* Reinhart-Rogoff as discussed in the text.

Source: Compiled based on IMF data on *Classification of Exchange Rate Arrangements and Monetary Frameworks* with the assistance of Jeff Kim.

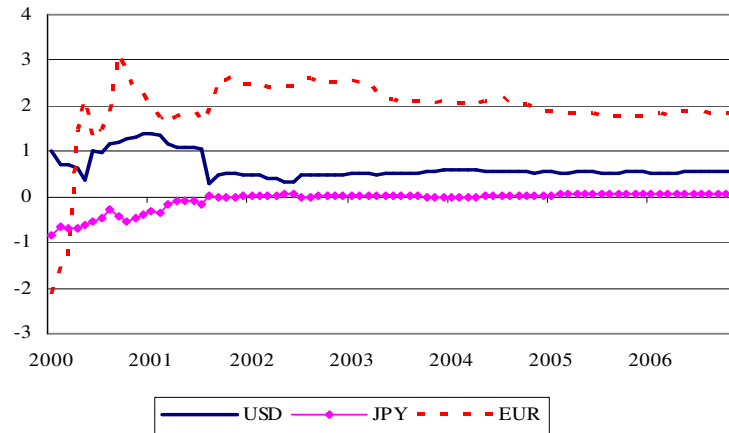
Figure 2: Recursive Least Squares Estimates, Post-Crisis



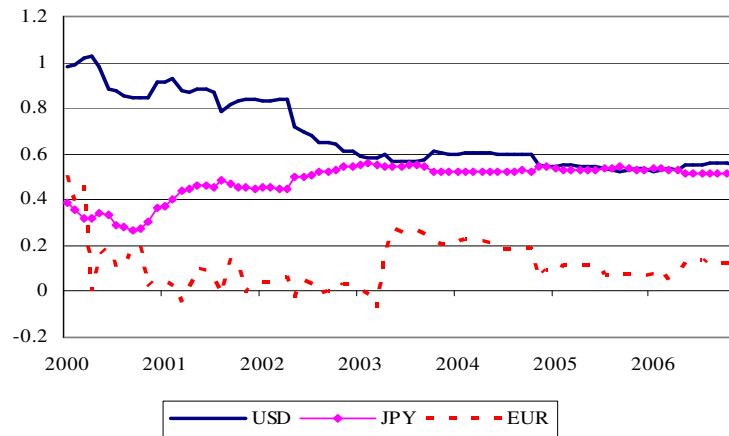
India, Post-Crisis

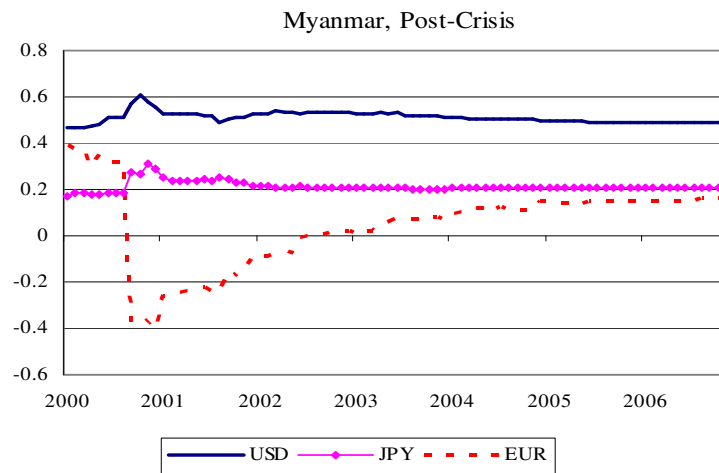
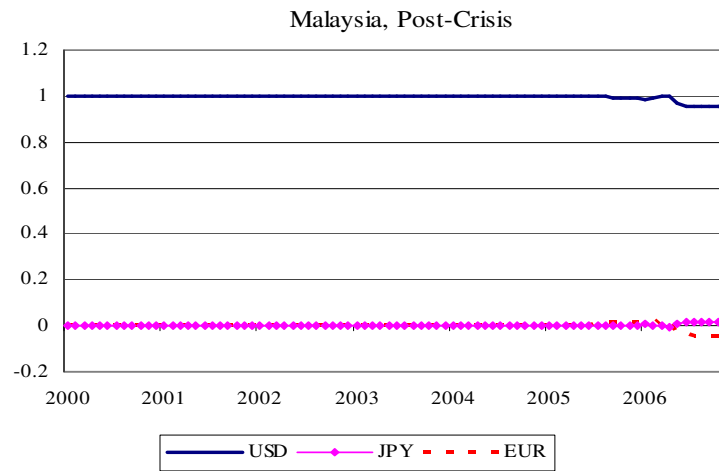
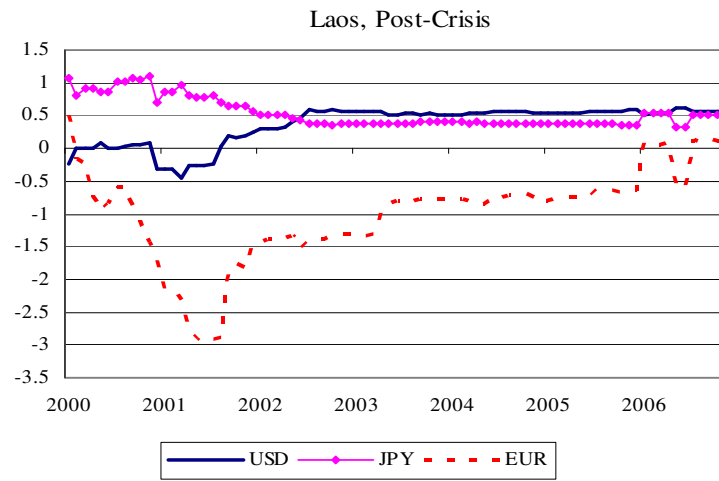


Indonesia, Post-Crisis

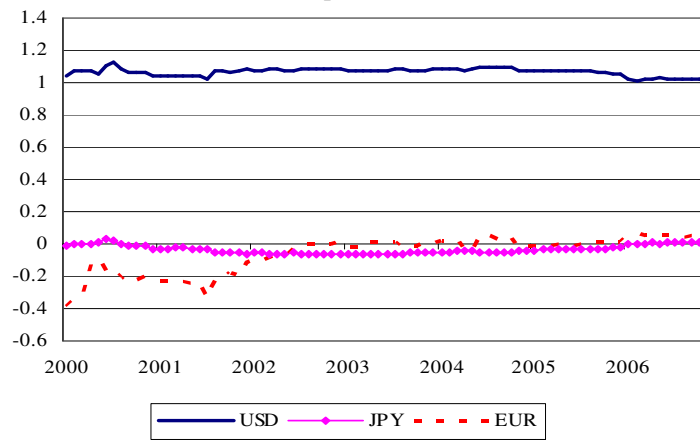


Korea, Post-Crisis

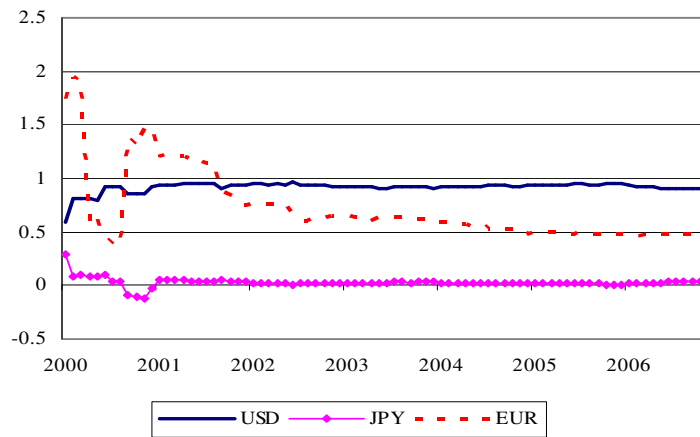




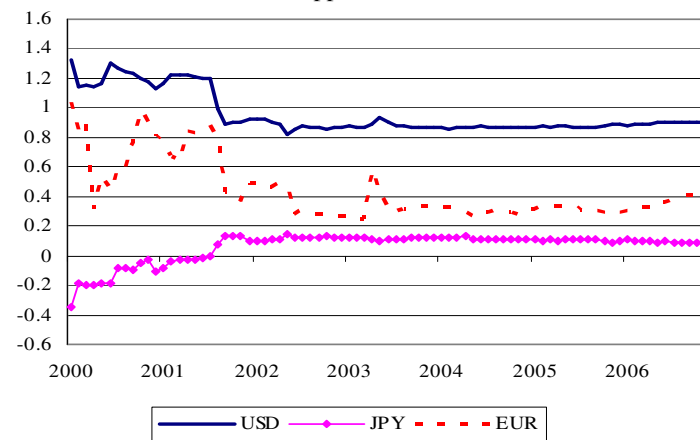
Nepal, Post-Crisis



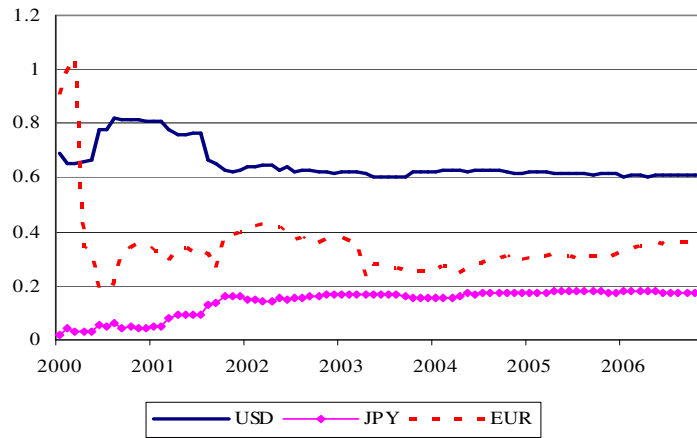
Pakistan, Post-Crisis



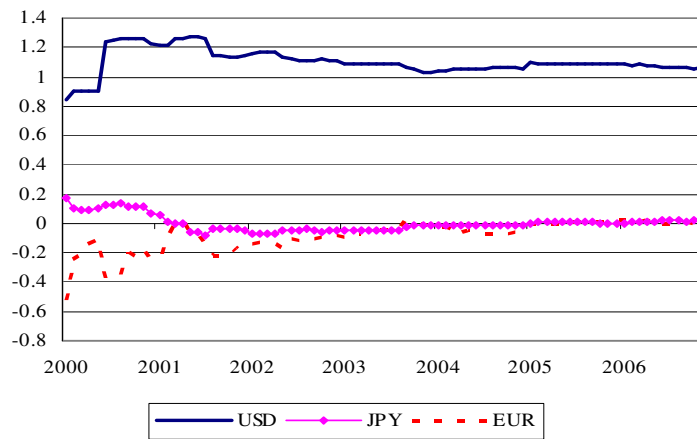
Philippines, Post-Crisis



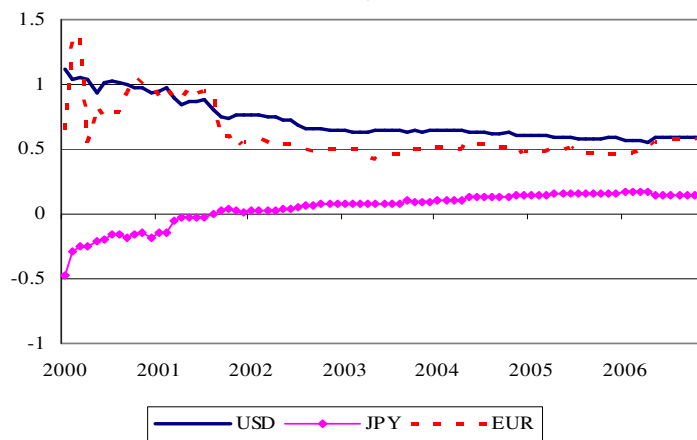
Singapore, Post-Crisis



Sri Lanka, Post-Crisis



Thailand, Post-Crisis



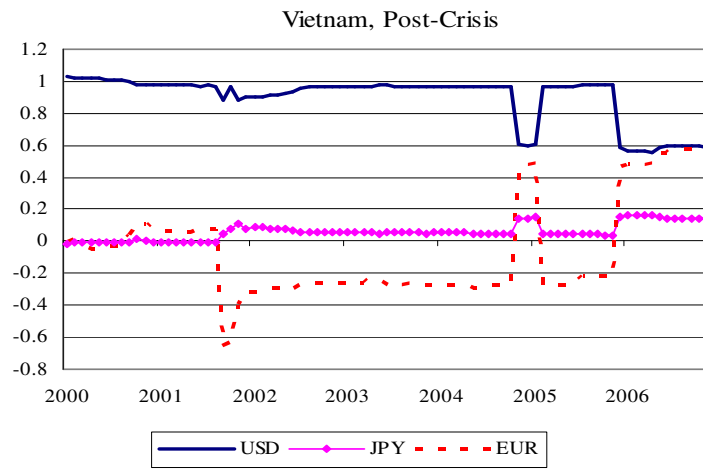


Figure 3: Exchange Rate Flexibility Indices, 1985-2006

