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OPTIMAL CURRENCY BASKETS AND THE THIRD CURRENCY PHENOMENON: EXCHANGE RATE POLICY IN SOUTHEAST ASIA

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Abstract: Recent financial crises seem to have led to the broad consensus that developing countries should steer clear of exchange rate regimes that lie anywhere between the two extremes or 'corner solutions' of credibly fixed or flexible arrangements. But is this a reasonable position to adopt? Would developing countries be well advised to follow this policy recommendation? Should developing countries opt only for the corner solutions? Did the crisis-hit South-east Asian countries (Indonesia, Malaysia, Thialand and Philippines), make a mistake in effectively pegging to the US dollar rather than in pegging *per se*? Did pegging to the US dollar constitute a sub-optimal peg? If it did, what would have been the optimum peg? This paper attempts to provide answers to the preceding questions. The paper also conjectures more broadly about monetary policy in developing countries. Copyright © 2002 John Wiley & Sons, Ltd.

1 INTRODUCTION

Recent financial crises have once again highlighted the question of the choice of exchange rate regime in developing countries. While it is understandable that attention has been focused on recent crises, these may tell us more about the weaknesses of pegging to one specific currency than about the weaknesses of pegging in general. Did the crisis-hit South-east Asian countries (namely, Indonesia, Malaysia, Thailand and Philippines) make a mistake in effectively pegging to the US dollar rather than in pegging *per se*? Did pegging to the US dollar constitute a sub-optimal peg? If it did, what would have been the optimum peg? Attempting to answer these questions provides the principal focus of this paper. However the paper also conjectures more broadly about macroeconomic policy in

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developing countries. Monetary policy normally seems to work better when it is anchored in some way. If developing countries were to abandon the anchor in the form of exchange rate pegging in favour of flexible exchange rates, how would they orchestrate their exit from a pegged exchange rate regime to a flexible one? (Eichengreen *et al.*, 1998, 1999). This may be a difficult manoeuvre which could be destabilising. Would the end game be worth it or might there be a better option, at least in the short run?

The layout of the paper is as follows. Section 2 provides a brief statistical summary of exchange rate choices in developing countries. Drawing on both theoretical and empirical analyses, Section 3 briefly discusses the pros and cons of different exchange rate regimes. Section 4 focuses on the pre- and post-crisis exchange rate arrangements in South-east Asia. Section 5 which forms the meat of the paper, explains the underlying theory of the optimum exchange rate peg and investigates whether the pegs selected by the crisis-hit South-east Asian countries were optimal. This is done with the aid of a simple model that derives optimal pegs. Finally Section 6 discusses the implications of the choice of exchange rate regime for the overall design of macroeconomic policy. It relates the conclusions that emerge from the analysis contained in this paper to the current consensus as represented by the International Financial Institution Advisory Committee and the CFR Task Force.

2 EXCHANGE RATE OPTIONS AND CHOICES

Table 1 provides a brief description of the range of exchange rate regimes from which a choice has to be made, while Table 2 gives an indication of the exchange rate choices made by developing countries as suggested by the IMF data on exchange rate arrangements. The general *de jure* trend seems to have been towards greater exchange rate flexibility (Bird, 1998). Following the adoption of generalized flexible exchange rates

Table 1. Exchange rate regimes ranged along the continuum from most flexible to the strongest fixed-rate commitment

Type	Definition
Flexible corner	
• Free floating	The absence of regular/systematic intervention in the foreign exchange market
• Managed/dirty float	The absence of a specific target for the exchange rate
Intermediate regimes	
• Target zone/band	A margin of fluctuation around some central rate
• Basket peg	Fixing not to a single foreign currency but to a weighted average of other currencies
Fixed corner	
• Fixed peg	Commitment to undertake whatever foreign exchange market intervention needed to maintain prevailing rate, but not necessarily any institutional commitment to back the regime
• Currency board	Three defining characteristics: fixing not just by policy but by law; backing increases in the monetary base one-for-one with international reserves; and allowing balance of payments deficits to tighten monetary policy consequently adjusting spending automatically
• Monetary union	The adoption of a foreign currency as legal tender. Includes the special case of official dollarization

Source: Adapted from Frankel (1999).

Table 2. IMF exchange rate classification (%) per cent of countries in the sample which were classified by the IMF as having:[a]

Year	Peg	Limited flexibility	Managed	Flexible
1970	97.2	0	0	2.8
1975	63.9	11.1	13.9	11.1
1980	38.9	5.6	47.2	8.3
1985	33.3	5.6	36.1	25.0
1990	19.4	13.9	30.6	36.1
1995	13.9	8.3	38.9	38.9
1999	11.1	11.1	33.3	44.5

[a]Sample based 154 exchange rate arrangements.
Source: Calvo and Reinhart (2000a).

getting on for 90 per cent of developing countries initially opted for some type of pegged exchange rate. By 1980 the percentage had fallen to just under 40 per cent and by 1999 it was down to only about 11 per cent. From amongst those that retained a currency peg, by 1998, slightly over 30 per cent pegged against the US dollar while just over 20 per cent pegged to either the French franc or the SDR. The remainder pegged to other currencies, either unilaterally or in the form of a basket.

There seems to be a growing convergence of opinion that the choice of exchange rate regime in the long run boils down to a choice between flexibility on the one hand and credible pegging on the other, while steering clear of 'intermediate' or 'middle-of-the-road' options that are seen as intrinsically unstable.[1] But how can an exchange rate peg be made credible? Only by making it almost unshiftable, i.e. a 'hard peg' or 'super fix'. This might be done by creating a currency board or by effectively abandoning the domestic currency altogether by using domestically the currency of another country (dollarization or eurorization).

The recent report of the International Financial Institution Advisory Commission (IFIAC, 2000) succinctly summarizes this view. 'Pegged exchange rate systems,' it argues, 'have proved costly and usually unsustainable in a crisis... Countries should choose either firmly fixed rates or fluctuating rates... mixed systems typically work poorly... countries should avoid pegged or adjustable rates.' A similar point of view was expressed by an Independent Task Force sponsored by the Council on Foreign Relations (CFR, 1999) which recommended that developing countries and emerging economies should 'just say no to pegged exchange rates'. It is interesting that these two reports disagree about a range of things but agree on exchange rate policy.

But is this a reasonable position to adopt? Would developing countries be well advised to follow this policy recommendation? Should developing countries opt only for the corner solutions? More care needs to be exercised in answering this question than the consensus view recognizes. Just because there are difficulties with one sort of exchange rate regime it does not follow that there will be no difficulties with the alternatives. The best choice will be the one that minimizes the difficulties, and this choice may need to change over time. It is illegitimate simply to assume that the best regime will be either flexible exchange rates

[1]Of course, no country has maintained a completely free (or pure) float, the authorities intervening intermittently to smooth sharp market fluctuations. In other words 'dirty floats'—i.e. foreign exchange market interventions without commitment to defend any specific parity—have been the norm. The US dollar probably comes closest to being a free float.

or currency boards/dollarization without evaluating the problems associated with each of these regimes.[2]

3 FIRM FIXITY OR FLEXIBILITY?

An underlying weakness with adjustable peg regimes is in a sense exactly that the peg *can* be adjusted. A problem occurs when foreign exchange markets see the adjustment coming. Speculators face the infamous one-way option and act accordingly. There will be a period of time when governmental commitments to maintaining the peg lack credibility. The answer would appear to be either to instil greater credibility to the commitment to maintain a peg or to adjust more quickly.

Greater commitment to ruling out exchange rate adjustment may be signalled by forming a currency board. The key issue here is whether governments are prepared to relinquish sovereignty in terms of domestic monetary policy and subjugate domestic policy objectives, such as economic growth and employment, to the maintenance of the pegged exchange rate; and moreover whether they can convince foreign exchange markets of their resolve, particularly in the absence of sufficiently flexible labour markets and strong financial systems.

There is something of a Catch 22 here since, while it will be countries with a history of instability that may most need the discipline of a currency board arrangement, it will also be these countries that find it most difficult to persuade markets of the higher priority that is now being attached to stabilisation. The greater is the incidence of balance of payments deficits, the greater will be the sacrifice that has to be made in terms of near-term output, and the less credible will become the commitment to firm fixity. Similar reasoning holds for other credible fixes such as dollarization or the adoption of a common currency, options which invariably involve as many political considerations as they do economic ones.

Where the balance of payments is unstable, either because of domestic macroeconomic mismanagement or because of external shocks, exchange rate flexibility offers a means of insulating either the balance of payments in the case of domestic shocks or the domestic economy in the case of external shocks. The exchange rate becomes a shock absorber. Exchange rate flexibility is an attractive option in this regard. However it is misguided to assume that flexible exchange rates will always guarantee that the market delivers the real equilibrium rate. The reasons that have underpinned developing countries' traditional reluctance to adopt flexible exchange rates are not without some justification. Moreover, given the relative thinness of their financial markets and the intrinsic volatility of capital flows, flexible exchange rates may be potentially very unstable and may be as much associated with currency misalignment as are pegged exchange rates.

Thus flexible exchange rate regimes will not necessarily avoid the costs associated with a misaligned currency (Bird and Rajan, 2001; Rajan, 2002). It is for this reason that some analysts argue that flexibility needs to be managed to try and ensure that excessive flexibility is constrained, at the same time as permitting enough flexibility to allow exchange rates to alter to reflect changed fundamentals. John Williamson (1999), for instance, goes so far as to state that a floating regime

> is not the option I would recommend, because of my doubts as to whether ... (such) ... a regime ... is consistent with the restoration of the sustained high rates of growth that were experienced by East Asia before the crisis (p. 1).

[2]The relative merits of dollarization over a currency board are not discussed here (see Berg and Borensztein, 2000).

4 EXCHANGE RATE POLICY IN SOUTHEAST ASIA

Actions always speak louder than words. Accordingly, it is revealing to observe the post-crisis *de facto* exchange rate policies of the regional crisis-hit South-east Asian countries, i.e. the revealed preferences of the regional monetary authorities.

The Malaysian case is the most straightforward, the government having fixed the Malaysian ringitt (RM) relative to the US dollar on September 1, 1998 at RM 3.80 per US$ (Athukorala, 2001; Kaplan and Rodrik, 2001). More interesting and somewhat more complicated are the exchange rate choices of the other three regional countries.

It is commonly believed that Indonesia, Philippines and Thailand have maintained a float following their respective currency devaluations. In actuality, after a short flirtation with floating following the initial breakdown of currency pegs in mid-1997, the regional monetary authorities have appeared to have reverted to heavy management of their currencies to ensure some degree of stability *vis-à-vis* the US dollar. To be sure, there has certainly been a generalized move towards greater exchange rate flexibility during the post-crisis period. This is discernible from Figure 1 and is empirically confirmed by Hernandez and Montiel (2001). However, while the Malaysian capital controls have allowed for the simultaneous maintenance of monetary autonomy and a fixed exchange rate regime, the other countries have depended on a combination of activist interest rate policy and foreign exchange market intervention to ensure relative exchange rate stability. Consequently, they have experienced sharp gyrations in monetary variables and international reserves (Calvo and Reinhart, 2000a, 2000b; Hernandez and Montiel, 2001; McKinnon, 2000). Consistent with this, it is useful to note the recent response to a question about the current and appropriate exchange rate for Thailand by its finance minister, Pridiyathorn Devakula.

> (W)e are using the stabilised exchange rate as one of the guiding principles. Why do we have to use this? It's simple—there are two extremes: fixed exchange rate and clean float . . . (M)y attitude to fixed exchange rates—don't do it. If you do, you invite trouble and finally lose all your reserves. The other is clean float. If we were strong like the U.S., Japan, Germany we would go clean float. Because a clean float

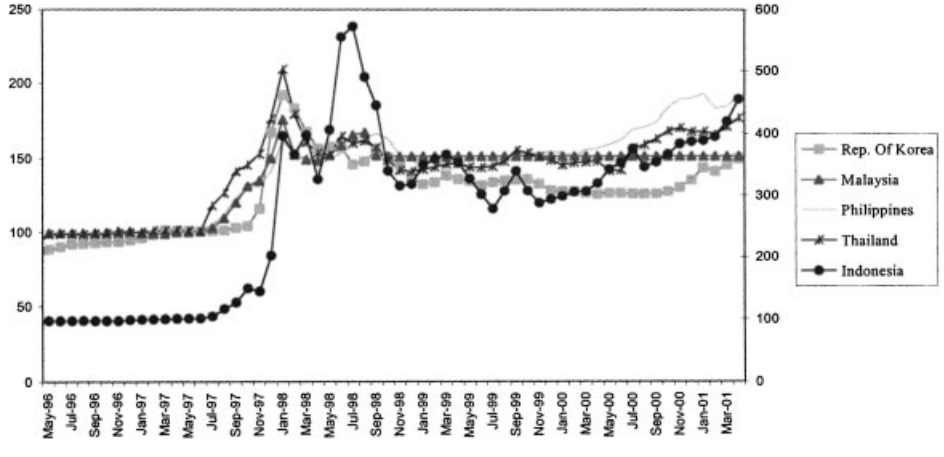

Figure 1. Bilateral exchange rates relative to US Dollar, 1996–2001 (January 1997 = 100). *Source*: ADB-ARIC (www.aric.org)

Table 3. External debt of the east Asian economies, 1995–1999 (percentage of GDP)

Country	1995	1996	1997	1998	1999	2000
Indonesia[a]	56.3	53.4	63.9	149.4	95.5	93.8
Malaysia	37.6	38.4	43.8	58.8	53.4	49.3
Philippines	54.9	55.0	61.6	81.7	75.7	78.9
Thailand	49.1	49.8	62.0	76.9	61.4	51.7
Korea	26.0	31.6	33.4	46.9	33.4	26.5
of which: Short term debt						
Indonesia[a]	8.7	7.5	27.5	76.4	5.9	5.7
Malaysia	7.2	9.9	11.1	11.7	7.6	6.4
Philippines	8.3	12.0	14.0	15.6	11.3	7.5
Thailand	24.5	20.7	13.3	21.0	11.4	6.8
Korea	14.6	17.9	23.1	9.7	9.3	7.7

[a]Data for Indonesia exclude trade credits.
Source: IMF (2000).

> rate can swing to extremes, it can savage our current account. When the economy is weakening and confidence of private businessmen is not that high, we must make sure our currency does not swing to the extreme where it creates panic. That's why we have to choose the middle road (Devakula, 2001, pp. 50–1).

More evidence of this obvious disinclination to free float the exchange rate is given by the fact that the regional economies began re-accumulating international reserve holdings following the sharp declines in 1997. This policy of reserve accumulation is clearly one that has been embraced by East Asia; the regional economies have rapidly built up international reserves despite purporting to have adopted flexible regimes (so-called 'floating with a life-jacket') post crisis (Hernandez and Montiel, 2001; and Figure 1). The replenishment and accumulation of international reserves, on the one hand, as well as the lengthening of the average maturity profile of external indebtedness of the regional economies (Table 3), on the other, has significantly reduced the region's vulnerability to the destabilising effects of volatile and easily reversible capital flows. Nonetheless, recent weaknesses in the regional currencies and the desire by the central banks to offset at least part of the currency declines (*vis-à-vis* the US dollar) have led to a slight drain in reserves in some of the regional economies since late 2000 (Figure 2 again).

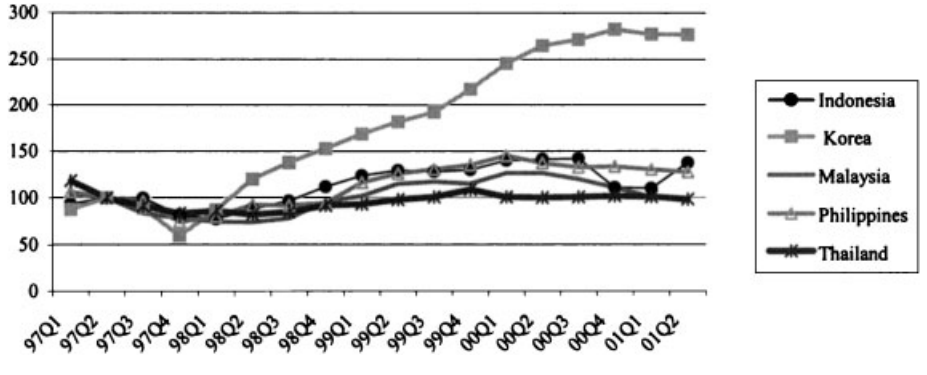

Figure 2. Index of gross-international reserves less gold in Asia-5 Economies, 1997–2001 (June 1997 = 100). *Source*: ADB-ARIC (www.aric.org)

Summing up, Hernandez and Montiel (2001), who analyse the evidence regarding post-crisis exchange rate policies pursued in the Asia-5 economies, conclude as follows:

> (C)ontrary to the views of some observers . . . there has indeed been a change in *de facto* exchange rate regimes in all five of these countries between the pre- and post-crisis periods. While none of them have adopted 'soft pegs' with unfettered capital movements, neither have they moved to the extreme corner solutions of 'hard' pegs or clean floats. In other words, all of them have continued to manage their exchange rates in an active manner . . . and have thus occupied the supposed 'hollow middle' of exchange rate policy (p. 16).

The foregoing analysis allows us to formulate a rather different perspective on the choice of exchange rate regime in developing countries. No exchange rate regime will deliver stability if domestic macroeconomic policy is unsound, with large fiscal deficits, rapid monetary growth and inflation. Pegged exchange rates will become overvalued and reserves will fall, while flexible exchange rates will depreciate and may result in crises just as much as pegged regimes. Exchange rate policy in developing countries may need to have a more limited objective. Rather than focusing on disciplining domestic macroeconomic policy and labour markets, perhaps the exchange rate regime should be designed in the first instance to minimize exposure to the third currency phenomenon, where the problem for developing countries arises from fluctuations in the values of the currencies of their major trading partners against each other.

While it has become legion to emphasize the importance of an inappropriately pegged exchange rate as at least a partial contributory factor in the South-east Asian crisis of 1997–98, the regional crisis was more to do with the precise nature of the peg than with pegging itself?[3] To be specific, in principle, Thailand and the other regional countries were supposed to have adopted basket peg systems, with the US dollar, yen and other currencies receiving weights consistent with their respective significance in economic linkages with the South-east Asian countries. However the US dollar had the overwhelming weight *de facto* (Frankel and Wei, 1994), leading McKinnon (2000) and Ohno (1999) to refer to East Asia's 'dollar standard' and 'soft dollar zone', respectively. In a world of generalized flexible exchange rates amongst the major currencies, and excepting those countries for which a currency board may be suitable, perhaps the most feasible and desirable alternative for many developing countries would be to peg to a basket of currencies. By adopting such a regime, they may be able to cushion themselves against outside exchange rate shocks and neutralize this source of instability. But what should the peg look like?

5 OPTIMAL CURRENCY BASKETS FOR SOUTH-EAST ASIA

The problem of minimizing the effects of the changing values of the major world currencies on the effective exchange rates of developing countries would not arise if any particular developing country undertook all its international transactions using just one foreign currency. In these circumstances, pegging to that currency would constitute the optimum peg. The value of the country's currency *vis-à-vis* other currencies would hardly matter. Nor

[3]To be sure Thailand and Malaysia had very rigid US dollar pegs, Indonesia pursued a crawling band arrangement (to compensate for inflation rate differentials between Indonesia and the US), while the Philippines was somewhere in between (Rajan, 1999).

would the peg matter if world currencies were themselves stable in value. The problem arises when balance of payments transactions involve different currencies amongst which exchange rates change. Thus a developing country pegged against an appreciating US dollar will tend to lose competitiveness relative to the rest of the world.

The basic idea behind optimal pegs is to construct a currency basket that overall minimizes adverse effects in these areas. Can we model optimum pegs? More precisely, what goes into the weighting scheme to determine an optimal peg?

5.1 Export Competitiveness

The early literature on the issue (surveyed by Williamson, 1982) focused almost exclusively on the objective of export competitiveness noted above. Thus the aim of these papers was to derive optimal trade baskets (i.e. nominal effective exchange rate or NEER) and appropriate price indices with which to deflate the NEER (i.e. real effective exchange rate or REER).[4] Accordingly the early studies derived their results on the basis of a welfare loss function, where the policy target is one of minimizing the variability of the external balance (trade account specifically).[5] This solitary focus on external imbalances is clearly unsatisfactory, failing to recognise the importance of appropriate domestic macroeconomic policies (i.e. internal balances) in determining external balances and exchange rates. Apart from trade flows, there are at least two other issues/objectives that need to be considered in determining an optimal peg, involving foreign currency debt and imported inflation.

5.2 Foreign Currency Debt

What is the currency composition of external borrowing, and what proportion of this has been accumulated without cover? In their Annual Report (IMF, 1998, p. 79), the IMF Directors:

> drew attention to the choice of the peg currency and whether this should be based on the currency composition of trade flows or external borrowing.[6]

This dilemma is particularly pervasive in Southeast Asia, where, while the US and the rest of Asia (excluding Japan) were the two largest export markets, followed by Japan (Table 4),

[4]Of course foreign trade elasticities will also be important in considering the effects of third currency exchange rate changes. A loss of competitiveness associated with a rise in the value of the US dollar will matter less if the demand for the exports of the developing country pegged to the dollar is price inelastic. Optimal pegs may therefore need to be designed with trade elasticities in mind. In fact the older literature on currency baskets argued that while the use of *trade elasticities* was theoretically more appropriate (though consensus was not definite, see for instance, Black, 1976), the use of *trade weights* was generally agreed to be more practicable.

[5]The question of whether to use the currency denomination of *trade contracts* or the *direction of trade per se* was settled by Black (1976). He noted that if the aim is to minimize short run variance (weekly or monthly changes in domestic tradable goods prices), currency denomination of trade contracts should be used. The appropriate weight for longer run variance minimization should be the origin and destination of trade. This is of significant importance to Southeast Asia (and the larger East Asia), where a large part of the region's trade with Japan has tended to be invoiced in US dollar (Ito, 1994). It would be expected that if the yen were used as a major component of the regional currency baskets there would be greater incentive for traders and central banks to increase its use in their foreign exchange transactions and reserve holdings.

[6]Related to this is the literature on optimal currency composition of external debt (Claessens, 1992), the premise being that the absence of incomplete long-term hedging markets leaves small and open emerging economies particularly vulnerable to external price risks. See also the early literature on currency composition of international reserves (such as Dooley *et al.*, 1989).

Table 4. South-east Asian export and imports, by country and region, 1996 (% share)

	Indonesia	Malaysia	Philippines	Thailand	Total
Exports to					
US	16.0	18.2	34.1	18.0	19.2
Japan	27.8	13.4	18.0	16.8	18.3
Rest of Asia	25.4	46.8	25.9	36.8	36.8
Imports from					
US	10.3	15.5	18.3	12.6	14.0
Japan	23.6	24.5	20.3	27.8	24.8
Rest of Asia	27.7	34.6	27.8	28.2	30.2
Trade balance[a]					
US	5.4	7.9	29.3	4.1	10.1
Japan	−30.7	−29.4	16.2	−37.1	−20.4
Rest of Asia	−28.4	14.9	3.8	−0.0	4.2

[a]Share of imports plus exports; −implies deficit.
Source: Calculated from IMF, *Direction of Trade Statistics*.

Table 5. Nationality of banks providing loans to crisis-hit South-east Asian countries plus Korea, 1997 (% share)

From / *To*	Japan	US	Europe	Others[a]
Indonesia	38	6	44	12
Korea	26	10	39	25
Malaysia	34	5	47	14
Philippines	13	17	60	10
Thailand	56	4	33	7
Total	33	8	38	21

[a]Mainly Asia (Hong Kong in particular).
Source: BIS, *Maturity, Sectoral and Nationality Distribution of International Bank Lending.*

external debt (bank lending) was predominantly based on the yen and the US dollar (Table 5). To be sure, most of the lending by Japanese banks was in yen. While US banks had not been significant creditors to the region right up to the crisis, there had been a sharp escalation in lending by European banks, most of which was US dollar-based. This accounts for the apparent discrepancy between Tables 5 and 6 which show a relatively low share of bank lending to the region by US banks but a high share of US dollar-denominated debt, and the reverse for European banks and the use of European currencies. To be sure, while the European (mainly from Germany, France and UK) banks were responsible for almost two fifths of total bank lending to the region in 1997, only 3.4 per cent of the region's external debt was composed of the Deutsche mark, French franc and British pound.[7]

In addition, given the heavy regional use of the US dollar as the medium of exchange in international transactions, it is not surprising that much intra-Asian lending (such as that by Hong Kong banks) was also conducted in the US dollar. Accordingly, considering that

[7]Further evidence of this phenomenon is available from an examination of international bank lending trends based on BIS (1999) data. While Japanese, US and European banks accounted for 14.7, 13.4 and 59.5 per cent respectively of international bank lending in 1997, the currency composition of the lending was 16.9 per cent in yen, 43.8 per cent in the US dollar and 24.7 per cent in euro-zone currencies (plus another 7.8 per cent in pounds sterling). Presumably the bulk of the intra-European lending by European banks was in European currencies, implying that their lending to other parts of the world (mainly Asia) was primarily in US dollars.

Table 6. Currency composition of long-term debt to east Asian economies, 1997 (% share)

Currency	Share
Deutsche mark	1.8
French franc	1.1
Japanese yen	20.1
Pound sterling	0.5
US dollars	57.8
Multiple currency	13.1
All other currencies	3.1

Source: World Bank (1999a).

Table 7. Currency composition of bank loans to crisis-hit South-east Asian countries plus Korea, 1997 (% share)

From *To*	Japan	US	Others
Indonesia	37.7	49.6	12.3
Korea	22.0	62.4	15.6
Malaysia	31.0	55.2	13.8
Philippines	13.0	69.6	17.4
Thailand	56.0	35.2	8.8
Total	33.0	53.6	13.4

Source: Authors' estimates (see text for discussion).

about 20 per cent of (long-term) debt to the East Asian region in 1997 was neither in yen nor the US dollar, a rough approximation for the share of US dollar-based bank lending may be obtained by assuming roughly four fifth's of the total non-Japanese/yen bank lending to the region was in US dollars. In the absence of any other data, this serves as a 'best guess' of the currency composition of regional bank lending/indebtedness. As can be seen in Table 7, based on these crude estimations, the yen constituted about one third of total lending to the region, while the US dollar made up about one half. The remainder was divided between the other Asian currencies (such as the Hong Kong and Singapore dollar) as well as major European currencies.

5.3 Imported Inflation

What is the inflationary impact of exchange rate variations in small open economies in which tradables (importables) constitute a significant proportion of the overall consumption basket? Exchange rate weights need to distinguish between exports and imports when constructing a basket peg for such countries. This is particularly true in the case of the South-east Asian countries (Malaysia and Thailand specifically) which have generally relied relatively more heavily on Japan as a capital goods supplier and the US as an export market (see Kwan, 1994; and Table 4). As such, the countries have on average run persistent bilateral trade deficits with the former, and surpluses with the latter.

Why is this important? If Japan is relatively more important as an import source than export destination, and if price stability is an important target for the authorities, then an appreciation of the yen (relative to the US dollar) must be matched by an appreciation of

the domestic currency to mitigate the effects on domestic prices. This appreciation must however be balanced by the need to remain competitive *vis-à-vis* the US. Only the Singapore dollar seemed to follow a sharply appreciating yen (Takagi, 1996), further confirming the point mentioned in the introduction, namely, that Singapore was the only regional economy that pursued a genuine basket peg.[8]

One would ideally want to incorporate all these three targets: minimizing imported inflation, maintaining trade competitiveness, and constraining the size of foreign currency debt denominated in domestic currency and related debt servicing in the determination of an optimal basket peg.[9] There will inevitably be trade-offs between these goals. For instance being pegged to a depreciating US dollar will tend to enhance a country's export competitiveness with respect to Japan, Europe and other trading partners, but it will also result in an increase in the domestic currency price of imports from sources outside the US and will increase the costs of servicing dollar denominated external debt in terms of other currencies. Aghveli *et al.* (1991, p. 5) make the important observation that such policy trade-offs can 'be made only by using an explicit welfare function, but no such comprehensive analysis has as yet been undertaken'.[10]

While one could argue for or against the inclusion of the preceding and other goals, the challenge is to be able to formally incorporate these factors to obtain estimates of optimal currency basket weights. With this in mind, the remainder of this section represents a preliminary attempt at deriving optimal currency baskets for Southeast Asian currencies.

5.4 The Model

We assume each country faces the conventional quadratic loss function incorporating the trade-off between output and price stability (Barro and Gordon, 1983 and others):[11]

$$L_i = \frac{1}{2}(y_i - y^e)^2 + \frac{1}{2}\lambda(p_i - p^e)^2 \qquad \lambda > 0 \tag{1}$$

where: $y =$ current output; $y^e =$ equilibrium output (permanent income); $p =$ current price; $p^e =$ target price level; $\lambda =$ parameter denoting relative weight placed on price stability; and all variables are in log form. We assume that the target price *level* is normalized to

[8]Of course the interesting related question here is why this issue of currency denomination of external debt should be of concern to a net creditor economy like Singapore. More likely, Singapore's policy might be aimed at maintaining its attractiveness as a base for Japanese foreign direct investment (FDI). The wealth effect of a change in the real value of the yen has been shown to be a significant factor determining Japanese regional FDI. Thus there was a surge in Japanese FDI following yen appreciation between 1986–89 and again in 1992–95, with there being a sharp drop off between 1989–91 when the yen depreciated (Kawai, 1997). However this is only a second-order effect in determining a country's attractiveness as an investment base, becoming important only if there are large/sharp changes in the exchange rate, and is not considered in the analysis that follows.

[9]Of course if it so happens that a country's economic transactions (trade, debt obligations, etc.) are overwhelmingly with one foreign country/currency (e.g. US), the optimal peg will correspondingly be largely US dollar-based. In such a case there may be merit in considering a policy of outright dollarization, which seems to be a more effective strategy of fixing the US dollar value of the currency. This strategy is most suited to small Latin American economies. A similar argument may hold in the case of the European transition economies which hold a large part of their debt in euros and trade largely with the EU (eurorization).

[10]We have attempted to minimize overlaps between some of the goals. For instance, competitiveness has been defined as export competitiveness rather than trade (i.e. import plus exports). Thus it does not overlap with the imported inflation goal.

[11]See Prachowny (1994, Ch. 1) for an extended discussion of the pareto optimality of these macroeconomic policy goals. We drop the subscript (i) henceforth, given the assumption of identical partner countries.

one ($p^e = 0$). Given the static, single-period policy function, Equation (1) could easily be interpreted as an output and inflation target.

Following Krugman (1996) and Lane *et al.* (1999, pp. 65–6), we further assume the typical Mundell–Fleming model with perfect international capital mobility (and thus the Marshall–Lerner condition holds):

$$y_i = \alpha + \beta(e_i + p^* - p_i) - \phi i_i, \qquad \alpha, \beta, \phi > 0 \tag{2}$$

where: e_i = nominal exchange rate that is appropriate for trade (defined per unit of foreign currency); p^* = foreign price level; $(e_i + p^* - p_i)$ = real exchange rate (RER); and i_i = nominal interest rate. In other words, output is negatively related to interest rates (due to the effects of interest rate hikes on investment, for instance) and positively related to a real exchange rate depreciation (thus boosting net exports). For simplicity, we assume away expected inflation, thus the real interest rate equals the nominal interest rate. We do not need to be explicit about the money market, given the subordination of monetary policy to maintaining the pegged exchange rate (i.e. 'impossible trilogy principle'). Since our focus is not on monetary policy or optimal stabilization policies in the light of various demand and supply shocks (for instance, money in the case of the former, wages in the case of the latter), we also abstract from specifying a supply function.

Assuming *risk adjusted* interest arbitrage holds:

$$i_i = i^* + \varepsilon_i, \tag{3}$$

where: i^* = foreign interest rates; and ε_i = expected exchange rate depreciation adjusted for foreign currency risk premium. Substituting Equations (2) and (3) into Equation (1) obtains:

$$y_i = \beta(e_i + p^* - p_i) - \phi(i^* + \varepsilon_i). \tag{4}$$

From Equation (9),

$$y^e = \beta(e^e + p^{*e}) - \phi(i^{*e} + \varepsilon^e), \tag{4^I}$$

where the subscript e denotes equilibrium values of the variable under consideration. Assuming that the foreign price and interest rates are constant and exogenous and the equilibrium value of the exchange rate is normalised to one, from Equations (4) and (4^I):

$$(y_i - y^e) = \beta c_i - \phi(\varepsilon_i - \varepsilon^e) \tag{4^{II}}$$

where: c_i = real price of exports (RER). Substituting Equation (4^{II}) into Equation (1), obtains:

$$L_i = \frac{1}{2}[\beta c_i - \phi(\varepsilon_i - \varepsilon^e)]^2 + \frac{1}{2}\lambda p_i^2. \tag{5}$$

5.4.1 Foreign currency debt

Assume that expected exchange rate depreciation is some function of external indebtedness. This is a reasonable assumption given that short-term 'over indebtedness' was

clearly a major contributory factor in the East Asian crisis. This has more generally been consistently shown to be an important indicator of potential vulnerability to a debt crisis (Cohen, 1997) which eventually translates into a currency crisis (Frankel and Rose, 1996). To be specific, we assume external indebtedness to be proxied by the debt volume-to-exports ratio (dx). Without much loss of generality, we linearalise the relationship between expected exchange rate depreciation and dx:

$$\varepsilon_i = X_i + \xi(f_i + dx_i) \qquad \xi > 0 \tag{6}$$

where: f_i = real price of external debt (RER for external debt) and X_i is meant generically to capture all other factors affecting ε_i.[12] For simplicity we assume X_i to be constant. We also assume that export destinations and debt sources minimally overlap, such that any change in f will have negligible impact on exports and thus dx.[13] Alternatively, if country i did export and borrow from the same country, not only would that imply that $e_i = f_i$, but, to the extent that a depreciation would lead both to a boost in exports and an increase in external debt liabilities, it also acts as a 'natural hedge'. However, for many debtor countries this 'natural hedge' does not exist since there is a currency mismatch between the composition of debt service obligations and that of export earnings. As a consequence, exchange rate fluctuations may have implications for debt servicing capacity as compared to obligations.

Substituting Equation (6) into Equation (5) and normalizing the equilibrium debt-to-export ratio and real price of debt to one implies:

$$L_i = \frac{1}{2}\{\beta c_i - \Phi(f_i + dx_i)\}^2 + \frac{1}{2}\lambda p_i^2. \tag{7}$$

where: $\Phi = \phi\xi$.

5.4.2 Imported inflation

We are left to define the price term. In an open economy, prices are some weighted average of tradables and non-tradables:

$$p_i = \theta p_i^{\mathrm{T}} + (1 - \theta p_i^{\mathrm{NT}}) \qquad \theta\varepsilon[0, 1] \tag{8}$$

where: p_i^{T} = domestic price of tradable; p_i^{NT} = domestic real price on non-tradables; and θ = weight of tradables in total price basket. A simple formulation would be to assume that the domestic price level is entirely given by the price of imports. In other words:

$$p_i = \tau(m_i + \gamma_i) \qquad \tau > 0 \tag{9}$$

[12]More specifically the ratio of the domestic value of external debt to exports is as follows (dropping the country i subscript):

$$FD/(PX) = f + dx$$

where: D = volume of domestic debt; P = price level; X = real exports; and dx = debt-to-export ratio. More realistically, it could be expected that the relationship between the stock of debt and exchange rate expectations are non-linear, being positive for only high values of debt to exports.

[13]Alternatively we might use the debt-to-international reserves ratio. We avoid doing so, so as not to introduce yet another term (namely reserves) into the model. We justify this by appealing to the fact that most developing countries are net debtors, with external liabilities far exceeding their international reserves and external assets.

where m_i = real price of imports and γ_i is the imports-to-GDP ratio. Substituting Equations (9) and (8) into (7) implies:

$$L_i = \frac{1}{2}\{\beta c_i - \Phi(f_i + dx_i)]^2 + \frac{1}{2}\lambda[\tau(m_i + \gamma_i)]^2. \tag{10}$$

Equation (10) explicitly includes the multi-dimensional role of the basket peg, i.e. the balance of payments and output stabilizing roles through the export competitiveness channel; the balance of payments and exchange rate stability role through changes in the real value of external debt; and the price stability role of exchange rates. This is consistent with Aghveli *et al.* (1991, p. 7) who emphasize the policy objectives and trade-offs between 'output stability, inflation, and the balance of payments'.

5.4.3 Model solution

For simplicity, ignoring own and cross product terms involving dx_i and γ, Equation (10) may be rewritten as the following approximation:

$$L_i = \frac{1}{2}(c_i^2 + \Lambda f_i^2 + \eta m_i^2). \tag{10$^{\mathrm{I}}$}$$

where: $\Lambda = (\Phi/\beta)^2$ and $\eta = \lambda(\tau/\beta)^2$. The aim of the authorities is to minimize Equation (10$^{\mathrm{I}}$) with respect to $r_{i\$}$ subject to the following three constraints:

$$c_i = r_{i\$} - w_{iy}r_{y\$} - (1 - w_{i\$} - w_{iy})r_{j\$} \tag{11}$$

$$f_i = r_{i\$} - v_{iy}r_{y\$} - (1 - v_{i\$} - v_{iy})r_{j\$}, \qquad i,j = a,b \text{ and } i \neq j \tag{12}$$

$$m_i = r_{i\$} - u_{iy}r_{y\$} - (1 - u_{i\$} - u_{iy})r_{j\$} \tag{13}$$

where: all lower cases imply log form; L_i = loss function; c_i = real price of exports (external competitiveness); f_i = real price of foreign currency debt; Ψ = relative weight on the external debt term; y = yen/Japan; \$ = dollars/US; w_{iy} = share of country i's total exports to Japan; $w_{i\$}$ = share of country i's total exports to the US; $w_{i\$}$ = share of country i's total exports to Japan; v_{iy} = share of country i's foreign currency debt denominated in yen; $v_{i\$}$ = share of country i's foreign currency debt denominated in US dollar; $r_{i\$}$ = real exchange rate (RER) of country/currency i against the US dollar; $r_{j\$}$ = real exchange rate (RER) of country/currency j against \$; and $r_{y\$}$ = real exchange rate (RER) of yen against the US\$. r = real exchange rate (RER) of yen against the US dollar; $u_{i\$}$ = share of country i's total imports from the US; u_{iy} = share of country i's total imports from Japan; and u_{ij} = share of country i's total imports from country j.

Solving Equation (10$^{\mathrm{I}}$) subject to Equations (11) to (13), the (non-cooperative) Nash equilibrium (*nc*) with $r_{i\$}$ as the choice variable, is as follows:

$$(r_{i\$})^{\mathrm{nc}*} = \frac{(w_{iy} + \Lambda v_{iy} + \eta u_{iy})r_{y\$}}{(w_{i\$} + w_{iy}) + \Lambda(v_{i\$} + v_{iy}) + \eta(u_{i\$} + u_{iy})}. \tag{14}$$

The loss function corresponding to this Nash equilibrium may be denoted L^{nc}. The cooperative solution derives the following optimal exchange weights:

$$(r_{a\$})^{\mathrm{c}*} = \frac{(w_{i\$} + w_{iy})w_{iy}r_{y\$} + \Lambda(v_{i\$} + v_{iy})v_{iy}r_{y\$} + \eta(u_{i\$} + u_{iy})u_{iy}r_{y\$}}{(w_{i\$} + w_{iy})^2 + \Lambda(v_{i\$} + v_{iy})^2 + \eta(u_{i\$} + u_{iy})^2}. \tag{15}$$

Focusing initially on the South-east Asian region as a whole, based on data in Tables 4 and 7, we can estimate the Nash and co-operative solutions only as functions of the parameters of the model, as follows:

$$(r_{i\$})^{\mathrm{nc}*} = \frac{(0.183 + 0.33\Lambda + 0.248\eta)r_{y\$}}{(0.375 + 0.866\Lambda + 0.388\eta)} \tag{14$^{\mathrm{I}}$}$$

$$(r_{a\$})^{\mathrm{c}*} = \frac{(0.07 + 0.286\Lambda + 0.10\eta)r_{y\$}}{(0.141 + 0.750\Lambda + 0.151\eta)} \tag{15$^{\mathrm{I}}$}$$

where: $\Lambda = (\phi\xi/\beta)^2$ and $\eta = \tau\lambda/\beta^2$. Recall that $\lambda =$ relative weight placed by the authorities on price stability; $\beta =$ exchange rate elasticity of exports; $\tau =$ responsiveness of domestic inflation to per cent changes in import prices; $\phi =$ interest elasticity of investment; and $\xi =$ responsiveness of exchange rate expectations to a change in foreign currency debt. While accurate parameterisation is an area for future research, for now, we can determine the limiting cases of $(r_{i\$})^*$. Specifically, the three limiting cases are given below:

$$(r_{i\$})^{\mathrm{w}*} = \frac{w_{iy}r_{y\$}}{(w_{i\$} + w_{iy})} \tag{16}$$

$$(r_{i\$})^{\mathrm{v}*} = \frac{v_{iy}r_{y\$}}{(v_{i\$} + v_{iy})} \tag{16$^{\mathrm{I}}$}$$

$$(r_{i\$})^{\mathrm{u}*} = \frac{u_{iy}r_{y\$}}{(u_{i\$} + u_{iy})}. \tag{16$^{\mathrm{II}}$}$$

Equation (16) implies that the optimal peg is based exclusively on export competitiveness. Equation (16$^{\mathrm{I}}$) has it based on the burden of foreign currency debt as the sole factor determining the optimal peg, and Equation (16$^{\mathrm{II}}$) on price stability (imported inflation).[14]

5.5 Model Estimates

Estimates of optimal basket pegs for the regional economies using the above formulae are provided in Table 8.

Focusing on a region-wide (common) basket, results suggest that for a 1 per cent appreciation of the yen *vis-à-vis* the US dollar, the optimal basket peg would dictate a 0.49 per cent appreciation of the regional currencies against the US dollar if export weights are used; 0.38 per cent if the foreign currency debt weights are used; and 0.64 per cent if

[14]It should be noted that this model shares similarities to the Benassy–Quere (B–Q) (1999) optimization model which incorporates only trade and external debt flows in a game. B–Q considers the two-country case (a, b) with both countries assumed identical. The policy objective of the monetary authorities is to stabilize the summation of the trade account (i.e. external competitiveness) and external debt, with the bilateral exchange rate against the dollar being the choice variable. Two immediate drawbacks of the B–Q model are apparent. First, the inflationary impact of exchange rate variations has not been considered. Second, as in the earlier studies, the policy loss function to be minimized—broadly, the variability of the current account (see next subsection)—is rather *ad hoc*. Our model above has tried to tackle these limitations of the B–Q model.

Table 8. Derived weights of yen in optimal currency baskets for crisis-hit South-east Asia

	Indonesian repiah	Malaysian ringitt	Philippines peso	Thai baht	Region-wide average
Export weights	0.63	0.42	0.35	0.48	0.49
External debt weights	0.43	0.36	0.16	0.61	0.38
Import weights	0.70	0.61	0.53	0.69	0.64
Simple average	0.59	0.46	0.35	0.59	0.50

Source: Authors' estimates based on 1996–97 data (see text for discussion).

import weights are used. A simple average of the three suggests that for a 1 per cent appreciation of the yen *vis-à-vis* the US dollar, the optimal basket peg would dictate a 0.50 per cent appreciation of the regional currencies against the US dollar. This is much higher than the *de facto* pre-crisis weights of less than 0.1.

If regional countries had given greater weight to the yen in their baskets pre-crisis, there would have been lower degrees of regional real exchange rate overvaluation following the nearly 50 per cent nominal appreciation of the US dollar relative to the yen between June 1995 to April 1997 (which in turn led to a rise in the value of the regional currencies relative to the yen).[15] For instance in the case of Thailand, which was the 'crisis trigger country', studies have suggested that the Thai baht's pre-crisis real effective exchange rate (REER) was misaligned ('overvalued') by anywhere between 11 and 30 per cent relative to some measure of 'equilibrium' real exchange rate (Montiel, 1999).

There undoubtedly remains much work to be done on refining the methodologies and assumptions used in the determination of optimal currency baskets (for instance, see Williamson, 1999).[16] However in the remainder of this paper we focus instead on the operation of such a basket regime.

6 OPERATION OF THE BASKET REGIME

As explained above, designing an optimum peg relates essentially to minimizing the effects of third currency exchange rate instability. It deals with the currency composition of a currency basket. A question remains as to whether the peg should itself be completely fixed or involve an element of flexibility. Just as events may occur to change the equilibrium exchange rate between a developing country's currency and a single currency peg, so an optimum peg may become over or undervalued.

For these reasons, developing countries may need to alter the value of a composite currency peg in order to help maintain or restore balance of payments equilibrium in the light of changed fundamentals or excessive domestic inflation. Irrevocably fixing a composite peg may lead to problems in just the same way as would fixing a single currency peg. However given the vulnerability of flexible exchange rates to excessive instability discussed earlier, there may be a case for managing exchange rate changes against a composite bundle of currencies by allowing the rate to slide more gradually towards an equilibrium level or constrain flexibility within bands. Such a system may be a way of trading off the disciplinary and credibility benefits of a pegged regime with the

[15]McKinnon (2000) refers to the yen/US dollar exchange rate as the 'loose cannon' in East Asia pre-crisis.
[16]Rajan (2002) summarizes the estimates of optimal currency pegs derived by other studies.

flexibility of a floating one. Admittedly the distinction between a peg and a band is somewhat arbitrary. However a peg is generally considered to be a band in which the maximum movements permissible on either sides of the central parity are not more than 2.25 per cent (Frankel, 1999; Mussa *et al.*, 2000).

There are a number of other reasons that underlie a preference for a greater degree of exchange rate flexibility (though not a flexible regime *per se* for reasons already highlighted) (Rajan, 2002).

First, the greater the degree of flexibility of the exchange rate regime, the keener the incentives for agents to undertake appropriate foreign currency risk management techniques in response to the higher element of exchange rate risk, while simultaneously reducing the extent of moral hazard which could lead to 'excessive' unhedged external borrowing (McKinnon and Pill, 1999; World Bank, 1999a,b). Second, the introduction of these transactions costs and exchange rate risks may also help moderate the extent of capital inflows, consequently dampening the intensity of boom and bust cycles. Third, small and open economies are much more susceptible to large external shocks, such as changes in foreign interest rates, terms of trade and regional contagion effects. Received theory tells us that a greater degree of exchange rate flexibility is called for in the presence of foreign or domestic real shocks. Fourth, banks tend to dominate the financial systems in the region and the credit transmission channel plays an important role in these countries (Rajan *et al.*, 2001). Calvo (1999) has shown that, *ceteris paribus*, the operation of this credit channel (which affects the IS curve directly and acts as a real shock)[17] could tilt the balance in favour of greater exchange rate flexibility.

As noted, it is sometimes suggested that a rigid basket peg may operate as a nominal anchor for monetary policy and be a way of introducing some financial discipline domestically and breaking inflationary inertia. In apparent support of this position, a multicountry study of 136 countries over the period 1960–89 conducted by Ghosh *et al.* (1996) found that inflation rates generally tend to be more volatile under more flexible regimes though economic growth is less volatile; and an IMF (1997) study of developing countries in the mid-1990s reaches a broadly similar conclusion. However apart from the previously noted problem of using official IMF statistics on exchange rate arrangements, the above conclusion is contested by Glick *et al.* (1999). They argue that policies of pegging exchange rates in East Asia were of little benefit in terms of acting as a counter-inflationary device, this goal having been attained primarily due to other factors such as relative autonomy of the monetary authorities. In their view, the use of exchange rates as nominal anchors may have acted as a liability as it prevented the necessary adjustments in response to external shocks. In addition, both theory and lessons of experience with nominal anchors have shown that such pegging loses credibility over time and induces booms followed by inevitable busts and crisis episodes.

There of course remain a number of other important questions such as to the band width (Williamson suggests a ± 5 to 10 per cent range); whether the bands should have 'soft margins' or 'soft buffers' such that the government may or may not intervene if the currency threatens to fall outside the pre-determined band (i.e. no absolute commitment); and whether the government should make explicit the values of the bands or whether this should be left more ambiguous. Williamson (1998) provides a comprehensive discussion

[17]With the inclusion of the credit transmission channel in the textbook IS-LM framework, Bernanke and Blinder (1988) have renamed the IS curve the CC curve ('commodities and credit'). Spiegel (1995) considers an open economy extension of the Bernanke–Blinder framework (i.e. CC-LM-BP). Rajan *et al.* (2001) apply the framework to South-east Asia.

of these issues. As such, rather than revisit the debate here, we conclude by noting that while single-mindedly defending a particular rate *vis-à-vis* a basket of other currencies may be doomed to failure in circumstances where it is no longer an equilibrium one, a policy of benign neglect of the exchange rate may be equally misguided for developing countries.

7 CONCLUDING REMARKS

The South-east Asian financial crisis demonstrated the deficiencies of developing countries and emerging economies pegging the values of their currencies to a single currency such as the US dollar. But what is the lesson to learn from this experience? Two recent high profile reports have concluded that developing countries should avoid regimes other than firm fixity at one end of the spectrum or flexible rates at the other. However the analysis in this paper suggests that this is too simplistic. Any one exchange rate regime when used in inappropriate circumstances is as likely as any other to lead to problems. The consensus view leans too heavily towards one particular interpretation of what went wrong in South-east Asia and therefore draws conclusions that are excessively proscriptive.

While there may certainly be circumstances where currency boards or unimpeded flexibility may be appropriate, the regional crisis in South-east Asia in part reflected the deficiencies of the particular peg chosen rather than pegging more generally. Pegging against the US dollar was sub-optimal, whereas pegging against a more diversified composite basket of currencies would have enabled the South-east Asian countries to better deal with the third currency phenomenon which contributed to the crisis.

This is not to say that a peg to a composite basket of currencies should never be altered. The composition of the basket of currencies and the weights attached to individual currencies will need to change as circumstances change and as the significance of major world currencies to a developing country's balance of payments changes. Moreover the level of the peg itself will need to change to avoid currency disequilibrium and to maintain a real exchange rate target. Given the problems associated with complete exchange rate flexibility in developing countries, this may be best achieved by a variant on sliding parties and wider bands.

To be sure, there is no suggestion that such a band is a panacea against each and every speculative attack. Certainly it is not. As noted by the IMF report on exchange rate regimes:

> (e)specially in the case of emerging market countries with substantial involvement on global capital markets, exchange rate bands are vulnerable to speculative attacks just as currency pegs are . . . Bands typically function best as regimes of policy compromise when there is the readiness to adjust the central parity (or rate of crawl) in a timely manner in response to changing economic fundamentals (Mussa *et al.*, 2000, p. 49).

Accordingly it is important that exchange rate policy be seen in the context of macroeconomic policy overall. Abandoning a currency peg as a basis for policy makes more sense where there is another policy anchor that can take on a similar role. While there are certainly problems with currency pegging, there are also problems with the alternatives of targeting monetary aggregates or inflation. Just to say no to currency pegging may

therefore be excessively proscriptive. For many developing countries, a superior option may be to redefine their pegs to come closer to the optimum. To the extent that this eliminated part of the instability coming from gyrations in the value of major world currencies, it might enable developing countries to alter the level of the peg in a more gradual fashion in order to maintain it at something close to its real equilibrium.

If we start from the assumption that monetary policy needs some form of anchor then opting for flexible exchange rates forces us to consider where this anchor may alternatively be found. Is it to be found in the form of a monetary rule? This will be difficult if the demand for money is unstable and developing countries find it hard to control monetary aggregates in spite of the fact that flexibility in the exchange rate neutralises the monetary repercussions of balance of payments disequilibria. Is it to be found in inflation targeting (Eichengreen, 2001)? This will be difficult in countries that often have a history of rapid inflation, where predicting inflation is hard, where central banks may lack independence, and where monetary policy is fiscally dominated, with governments reluctant to relinquish seigniorage (Masson *et al.*, 1997; Mishkin, 2000).

Moreover abandoning a pegged exchange rate may itself be interpreted by some financial markets as signalling a less strong counter-inflationary commitment by the government. Thus while targeting a disequilibrium nominal exchange rate is likely to provide an insecure foundation for macroeconomic policy, pursuing and defending an equilibrium real target may still remain an attractive option. Optimum currency pegs need therefore to be seen in this context, rather than as a return to a nominal anchor approach to exchange rate policy.

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