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EXCHANGE RATE ARRANGEMENTS FOR EAST ASIA POST-CRISIS: EXAMINING THE CASE FOR OPEN ECONOMY INFLATION TARGETING

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Exchange Rate Arrangements for East Asia Post-Crisis: Examining the Case for Open Economy Inflation Targeting

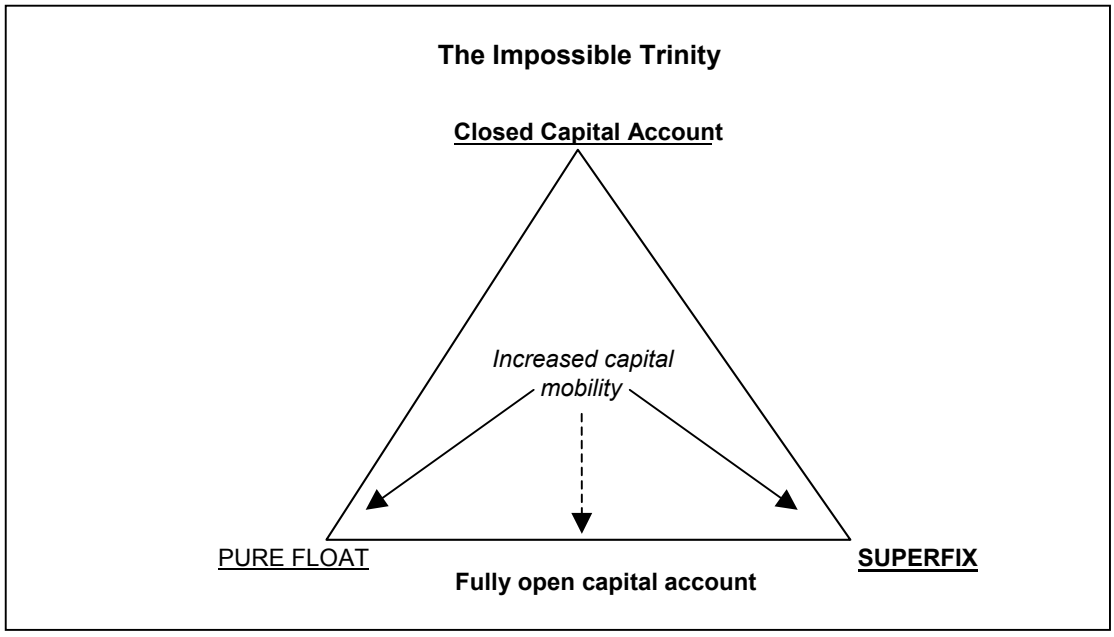
ABSTRACT

The infeasibility of a monetary union for East Asia in the near future, as well as the limitations of other forms of super fixes, appears to leave a flexible regime as the only viable policy option. This paper first deliberates on the case for and against a flexible regime. To anticipate the main conclusion -- while favoring relatively more flexible regimes, emerging economies in East Asia and elsewhere have continued to heavily manage their currencies despite being officially described as “floaters”. The paper goes on to explore the case for and operational mechanics behind an open inflation targeting regime which has increasingly been advocated for small and open economies in East Asia and elsewhere. The importance of incorporating the exchange rate in open economy monetary policy rules is stressed.

1. Introduction[1]

There seems to be a growing convergence of opinion that the need to depolicitise exchange rate movements, along with the frequency with which "soft pegs" have been susceptible to speculative attacks in this era of escalating global capital flows, has increased pressure for developing countries to adopt corner solutions to exchange rates arrangements. In other words, according to many observers, the exchange rate option for developing countries boils down to one between flexibility, on the one hand, and credible pegging, on the other. Countries are, however, advised to steer clear of arrangements that lie anywhere between these polar extremes (i.e. those in the "middle") as they are seen as inherently unstable (Figure 1).

Figure 1



Source: Author based on Frankel (1999)

[1] This paper was completed while Ramkishen Rajan was a Visiting Freeman Foundation Scholar at the Department of Economics, Claremont McKenna College. The author is grateful for the generous support provided by the Freeman Foundation as well as for the excellent research facilities made available to him at the Lowe Institute of Political Economy. Research assistance by Yuan-Feng Ouyang is also gratefully acknowledged. The usual disclaimer applies.

In line with these recommendations, the IMF data on exchange rate arrangements in developing countries reveals a *de jure* trend away from soft peg arrangements. For instance, the share of countries officially classified as having a pegged exchange rate regime dropped from 97 percent in 1970 to just 11 per cent by 1999 (Table 1). This phenomenon has been colorfully described in various places as the “corners hypothesis”, the “hypothesis of the vanishing intermediate regime”, the “missing middle”, the “hollowing of the middle”, and the “law of the excluded middle”.

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 forex 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*
• Crawling peg	*A pre-announced policy of devaluing "a bit" each week*
• Adjustable peg	*Fixing the exchange rate, but without any open-ended commitment to resist devaluation or revaluation in the presence of a large balance of payments deficit or surplus*
• 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 forex 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 forex 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: Adopted from Frankel (1999)

A number of observers have strongly favored the corner - as opposed to an interior - solution of an irrevocably fixed regime. Such hard pegging or straitjacketing of the exchange rate is supposed to signal greater commitment to rule out arbitrary exchange rate adjustments (i.e. “escape clauses” cannot be invoked) and the willingness of the monetary authority to subordinate domestic policy objectives such as output and employment growth to the maintenance of the currency peg.

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 maintaining one’s national currency but creating a rigid commitment to permanently fixed or “hard” rates through institutional arrangements such as a Currency Board Arrangement (CBA), or by effectively abandoning the domestic currency altogether by using domestically the currency of another country (dollarization or eurorization). The political unpalatability of dollarization or euroization along with its significant policy constrictions - which inflict a CBA as well (see Rajan, 2002a and 2003b and Eichengreen, 2001a) - seems effectively to leave only a common regional currency as a practicable alternative. But is it?

Eichengreen (1994, pp.4-7) appears to think so. He has predicted that, in the future, capital mobility will leave countries with one of two choices -- a super fix involving monetary union or the other extreme of floating. Von Furstenberg (2000, pp.199-200) argues more specifically that monetary unions are “inevitable..the wave of the future”.

HAVING EXPERIENCED THE TURBULENCE OF THE REGIONAL CRISIS AGAINST THE BACKDROP OF THE SUCCESSFUL INTRODUCTION OF A SINGLE EUROPEAN CURRENCY, LEADERS OF THE ASSOCIATION OF SOUTHEAST ASIAN NATIONS (ASEAN) AGREED TO STUDY THE FEASIBILITY

OF A COMMON ASEAN CURRENCY SYSTEM[2]. THERE HAS BEEN MUCH POPULAR DISCUSSION IN THE REGION ABOUT THE ECONOMIC AND POLITICAL POSSIBILITY AND DESIRABILITY OF FORMING A LARGER ASIAN MONETARY UNION (AMU) AKIN TO THE EUROPEAN MONETARY UNION (EMU)[3]. FROM AN ECONOMIC STANDPOINT, EICHENGREEN AND BAYOUMI (1999A,B) HAVE CONCLUDED THAT EAST ASIA MAY BE AS CLOSE TO - OR RATHER, AS FAR AWAY FROM - BEING AN OPTIMUM CURRENCY AREA (OCA) AS WESTERN EUROPE[4]. THIS CONCLUSION IS BASED ON AN OCA INDEX THAT TAKES INTO ACCOUNT THE COSTS ASSOCIATED WITH ASYMMETRIC REGION-WIDE SHOCKS AS WELL AS THE BENEFITS FROM STABILIZING EXCHANGE RATES WITH TRADING PARTNERS[5]. MORE INFORMALLY, BUT IN SIMILAR VEIN, THE IMF'S MANAGING DIRECTOR, HORST KOHLER (2001), HAS NOTED:

TRADING PATTERNS AND GEOGRAPHY DO MAKE IT REASONABLE TO THINK OF THE CREATION OF AN INTERNAL MARKET IN ASIA AS A POSSIBLE, FUTURE STAGE IN REGIONAL COOPERATION. AND WHY SHOULD THIS NOT BE A BASIS FOR GREATER MONETARY INTEGRATION…? (P.4)

There are at least two important differences between ASEAN/East Asia and Western Europe. First, any form of regional monetary union requires that there be compensating fiscal transfers from the richer to less well off states in the absence of sufficiently frictionless intraregional labor mobility. In the case of Europe, the extent of such transfers is quite significant in per capita terms of the poorer states, but fairly low in absolute terms, as the richer states in Europe are much larger than the poorer

[2] Announced as part of the latest ASEAN summit meeting in Hanoi and included in the "Hanoi Plan of Action" (*Business Times*, Singapore, 15 December, 1998).

[3] See for instance, the *Straits Times*, Singapore (11 January, 1999 and 4 October, 1998) and Curtis (1998).

[4] Similarly, Rockoff (2000) has stressed that the US could be said to have been an OCA only around the 1930s. See Kenen (2000) for a recent discussion of the OCA theory.

[5] In any case, it is possible that OCA criteria may be at least partly endogenous, suggesting that some unions may be more justifiable *ex post* rather than *ex ante* (Frankel and Rose, 1998).

ones (Eichengreen and Bayoumi, 1999a,b). This is in contrast to ASEAN where the poorer regional members also happen to be the largest ones (Indonesia versus Singapore).

Second, the European experience has emphasized the need for strong political will and consensus towards such a policy goal[6]. Such a political consensus, while gradually emerging in Southeast and the larger East Asian regions, is still far off from being universal. To be sure, "vision statements" by regional leaders for a currency union, while having become more common since the crisis, has hitherto not been backed up by any serious discussion on the type of institutional structures or formal mechanisms and decision-making bodies needed for such regional economic integration of monetary and exchange rate policies to be a success[7]. Eichengreen and Bayoumi (1999b) have noted:

> there is little sign, comparable to the evidence which has existed in Europe for nearly 50 years, of a willingness to subordinate national prerogatives to some larger regional entity, There is no wider web of interlocking arrangements, as in the EU, which would be put at risk by a failure to follow through on promises of monetary and financial cooperation (p.11)[8].

Thus, Kenen's (2000) general conclusion, viz. that solving the problems of governance and accountability needed to form a currency union may be far too herculean a task for most other groups of countries outside Europe, appears especially pertinent to Southeast Asia and the larger East Asian region in the foreseeable future.

The infeasibility of a monetary union for East Asia in the near future, as well as the limitations of other forms of super fixes, appears to leave a flexible regime as

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[6] Indeed, some like Goodhart (1995) dispute the relevance of economic criteria altogether, claiming that political consideration dominate formation of currency areas.

[7] These include an independent region-wide central bank, a system of inter-regional fiscal transfers, measures to ensure European-type macroeconomic convergence, and the like.

[8] In addition, substantial asymmetries in the sizes and levels and stages of economic development of the countries in East Asia, on the one hand, and the *de facto* policy of strict non-intervention in one another's affairs (economic and particularly political), on the other, makes it extremely difficult to envisage the successful introduction of "tie-in" clauses to create punishment mechanisms to ensure conformity of economic policies as done in Europe.

the only viable policy option. Section 2 deliberates on the case for and against a flexible regime. To anticipate the main conclusion of the Section -- while favoring relatively more flexible regimes, emerging economies in East Asia and elsewhere have continued to heavily manage their currencies despite being officially described as “floaters”. In view of this, Section 3 revisits the corners hypothesis and offers an alternative policy perspective. Section 4 explores the case for and operational mechanics behind an open inflation targeting regime which has increasingly been advocated for small and open economies in East Asia and elsewhere. This section stresses the importance of incorporating the exchange rate in open economy monetary policy rules. The post-crisis East Asian monetary policy arrangements provide a suitable context for analyzing what part the exchange rate might play in the construction of an inflation targeting regime and there is evidence suggesting that East Asian monetary authorities have been attempting to manage the variability of the currency movements. The final section concludes the paper.

2. The Flexible Exchange Rate Option Reconsidered

2.1 Reasons to Favor Flexibility

A priori, there are a number of reasons that underlie a preference for a greater degree of exchange rate flexibility.

First, the more flexible the exchange rate regime, the keener the incentives for agents to undertake appropriate foreign exchange (forex) 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 (referred to as a “fixed exchange rate bubble”). The introduction of these transaction costs and exchange rate risks may also help moderate the extent of capital inflows, consequently dampening the intensity of boom and bust cycles (this is essentially a moral hazard argument).

Second, small and open economies are far more susceptible to large external shocks, such as changes in foreign interest rates, terms of trade, regional contagion effects and the like. Received theory tells us that a greater degree of exchange rate flexibility is called for in the presence of external or domestic real shocks. By acting as a safety valve, flexible exchange regimes provide a less costly adjustment mechanism by which relative prices can be altered in response to such shocks as opposed to fixed rate regimes. The latter relies on gradual reductions in relative costs through deflation and productivity increases vis-à-vis trade partners to restore internal balance. This can prove to be prolonged and costly, as the Argentine example illustrates (Rajan. 2002c)[9]. Hong Kong, the other notable example of an operating CBA, has been faced with similar albeit less intense deflationary pressures since 1998 with ever more frequent calls for it to forsake its US dollar peg (Liu, 2002 and Rajan and Siregar, 2002)[10].

Third, many small economies have diversified trade structures (dependent on the US, Japan, Europe and intra-Asian trade). Optimum Currency Area (OCA) criteria suggest that such economies are good candidates to operate more flexible regimes. Thus, in the case of East Asia, institutionalization of the pre-crisis dollar pegs (via a CBA or dollarization) would not have helped domestic economic performance in 1996-97 (just prior to the crisis) to the extent that the problem was, at least partly, one of loss of competitiveness due to fluctuations in the US dollar and yen cross-rate (Bird and Rajan, 2002). Consistent with this, a recent study of exports by about 100 emerging economies to the US, Japan and Europe over the period 1983-92

[9] Three points should be noted here. One, empirical evidence suggests that pass through of devaluation is partial; indeed, inflationary predictions were dire in many economies following the financial crises in the 1990s but did not materialize. Two, devaluation can have real effects in the short term during non-crisis periods. Devaluation during crisis periods appears to be *contractionary* rather than *expansionary* (Hausmann et al., 2000 and Rajan and Shen, 2001). Three, repeated devaluations will only have price effects without any real effects as they come to be anticipated by the private sector.

[10] The Deputy Chief Executive of the Hong Kong Monetary Authority, Tony Latter (2002), offers a stout defense of the Hong Kong US dollar peg.

concludes that the more flexible the exchange rate regime the better the export performance (Nilsson and Nilsson, 2000). However, countries pegging to a composite group of currencies do not appear to have experienced weaker economic performance than ones with independently floating regimes[11].

Fourth, it is often suggested that a rigid basket peg may operate as a nominal anchor for monetary policy and be a way of introducing some degree of financial discipline domestically and breaking inflationary inertia. Thus, a multicountry study of 136 countries over the period 1960-89 conducted by Ghosh et al. (1995) found that inflation rates generally tend to be greater and more volatile under more flexible regimes, though economic growth is less volatile. An IMF (1997) study of 123 emerging economies covering the period 1975-96 arrives at a broadly similar conclusion, viz. the median inflation rate of "peggers" has been consistently lower and less volatile than those with more flexible arrangements, though the inflation differential between the two sets of countries has decreased through the 1990s.

While these studies are instructive, they are by no means conclusive, as they do not account for the possibility of endogeneity of the choice of exchange rate regimes. Specifically, we cannot be sure as to whether a fixed exchange rate actually leads to lower inflation or whether countries which experience low inflation rates adopt such a regime.

Glick et al. (1999) have argued 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 actually acted as a liability as it prevented the necessary nominal currency adjustments in response to external shocks from taking place. In addition, both theory and lessons of experience with nominal anchors have shown that such

[11] Their data is based on official IMF classification of exchange rate arrangements, i.e. they use *de jure* rather than *de facto* exchange rate regime.

pegging loses credibility over time and induces booms followed by inevitable busts and crises episodes. Pegging the exchange rate also constrains monetary independence; if unrestrained monetary policy has been a facet of the country's past, imposing exchange rate fixity may be an advantage as it constrains the active use of monetary policy. If, however, monetary and fiscal policies have proved effective in the past, governments may be reluctant to constrain their ability to use them in the future by targeting a particular exchange rate[12].

Fifth, there is a widespread belief that a pegged regime induces increased policy discipline as fiscal profligacy will lead to a reserve depletion or burgeoning debt and an eventual currency collapse. However, the effects of unsound macro policies become evident immediately under flexible rates through currency and price level movements (i.e. depreciation-inflation spiral). Thus, flexible rates ought to instill greater fiscal restraint, as the costs of macroeconomic policy transgressions have to be paid upfront. In other words, the key distinction between fixed and floating rates is in the intertemporal distribution of costs and benefits (Tornell and Velasco, 2000). Gavin and Perotti (1997) have provided some empirical validity of this argument. After controlling for a host of other factors, they find that Latin American fiscal policies were more prudent under flexible rates than under floating ones.

2.2 Reasons for a "Fear of Floating"

In view of the anticipated benefits of flexible regimes, many observers have enthusiastically advocated the flexible options.

Despite the preceding reasons favoring a flexible exchange rate regime, countries with flexible regimes have experienced "excessive" volatility over the last few decades[13]. It is admittedly difficult to define what exactly is meant by the term

[12] However, recent empirical evidence casts doubt on the extent to which floating regimes in emerging economies provide insulation from foreign interest rate shocks (see Frankel et al., 2000a and Hausmann et al., 2000).

[13] Of course, almost no country has maintained a completely free (or pure) float, the

"excessive". However, a reading of the relevant empirical literature reveals that evidence of excessive exchange rate variability comes in a number of forms (Bird and Rajan, 2001). For instance, a number of surveys of foreign exchange (forex) market participants clearly indicate that short term/high frequency exchange rate movements are caused by "speculative" or "trend-following" elements rather than underlying macroeconomic fundamentals. The problem of destabilizing speculation (as opposed to the Friedmanite speculators) - and consequent excessive or self-aggravating exchange rate volatility - and dominance of fads and bubbles appears to have been aggravated in emerging economies, making a flexible regime especially unviable/unsuitable to them. This is particularly so since thin markets - which exist in emerging economies - imply that a few transactions can lead to extreme currency fluctuations.

Even if it were accepted that flexible exchange rates often appear to exhibit greater volatility in high frequency data than would be warranted by the underlying fundamentals, why might such excessive volatility be of concern? Recent studies have provided evidence of a negative impact of currency volatility/uncertainty on investment (Corbo and Cox, 1995 and Huizinga, 1994). To the extent that investment has a significant positive impact on economic growth, declining investment will have an enduring adverse impact on the quantity of real resources. Even in the absence of a negative effect on the level of investment, currency variability may have an adverse influence over the composition of investment since decisions could be based on disequilibrium prices. In an important study, Bénassy-Quéré (1999) show that exchange rate volatility could have a detrimental impact on FDI, comparable to the distortions created by currency misalignments.

It has often been argued that firms and other agents involved in international transactions can buy cover to hedge themselves against currency movements. However, in addition to the costs involved with such operations, perfect hedges may be very difficult to create technically (given acute revenue-cost uncertainties) (Adler, 1994). Indeed, even if effective hedges could be created, they would entail non-negligible transaction costs, thus diverting scarce resources from «real» economic activity. This is especially true in the case of emerging economies where rudimentary capital markets have necessitated using cross-hedging techniques (rather than direct

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authorities intervening intermittently to smooth market fluctuations. In other words "dirty floats" - i.e. forex interventions without commitment to defend any specific parity - have been the

hedging), which invariably are far costlier.

Wei (1999) provides some important empirical evidence which suggests that exchange rate volatility has had a detrimental effect on trade between pairs of countries to a much larger extent than suggested by previous studies. More generally, in a comprehensive survey of the literature on the impact of exchange rate volatility on trade flows, McKenzie (1999) concludes that the recent empirical studies have had "greater success in deriving a statistically significant relationship between volatility and trade" (p.100). Calvo and Reinhart (2000) review a more limited set of such studies and draw a similar conclusion. Another recent set of empirics by Andrew Rose based on gravity models using both cross-sectional and time series data suggests institutionally fixed exchange regimes (i.e. common currency, currency boards or dollarization) stimulates trade, which in turn boosts income (see Frankel and Rose, 2002, Glick and Rose, 2002 and Rose, 2000). As is common knowledge, proponents of the European Monetary Union (EMU) have used such an argument extensively in support of a single regional currency.

Flexible exchange rates may also be associated with currency misalignments, with accompanying costs in terms of resource misallocation and detrimental effects on economic growth. Cooper (1999) nicely summarizes the preceding discussion as follows:

> The core problem is that for economies with imperfectly developed financial markets the exchange rate is the most important asset price, and it will be jerked around by changes in portfolio sentiments. But for an open economy the exchange rate is also the most important price in the market for goods and services. Jumping asset prices can badly disrupt the markets on which the economic well-being of the majority of residents depends….(I)t is an open question whether a broad, diversified financial market based on the domestic currency can develop under floating exchange rates…The unwelcome conclusion that flows from this discussion is that free movements of capital and floating exchange rates are basically incompatible, except for large and diversified economies with well-developed and sophisticated financial markets (pp.111-2).

Notwithstanding the recent weakness of the Australian dollar, its successful experience with a floating arrangement, particularly in terms of withstanding the East

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norm.

Asian crisis, has often been cited as evidence of the "superiority" of such a regime, and has been prescribed as a panacea for other emerging economies. However, such an advocacy does not pay due consideration to the fact that there are important structural differences between industrial countries such as Australia, on the one hand, and emerging economies, on the other. For instance, industrial countries have well-developed and diversified financial systems that are able to minimize real sector disruptions due to transitory exchange rate variations (abstracting from the resource allocation costs of misalignments noted previously). Most importantly, industrial countries are able to borrow overseas in their domestic currencies. Many emerging economies are unable to do so, leading to an accumulation of foreign currency debt liabilities that are primarily dollar denominated and unhedged (i.e. "liability dollarization")[14]. In such countries, sharp depreciations in their currencies alter the domestic currency value of their external debt and therefore the net worth of the economies, with calamitous real sector effects (so-called "balance sheet" effects). This in turn may be an explanation for the continued priority given to a relatively high degree of exchange rate stability in emerging economies. In other words, many emerging economies are plagued by an acute "fear of floating" (Calvo and Reinhart, 2002).

3. The Impossible Trilogy Revisited

The "hollowing of the middle" hypothesis seems to draw analytical support from the "Impossible Trilogy"[15]. Simply put, this states that a country cannot simultaneously conduct independent monetary policy and pursue a fixed exchange regime if it wants to remain completely open to international capital flows (Figure 1 again). From an analytical perspective, Frankel (1999) has provided us with the

[14] This is commonly referred to as the "original sin" hypothesis, a term attributed to Hausmann (1999) and Hausmann et al. (2000).

[15] Also referred to as "Impossible Trinity".

timely reminder that the Impossible Trilogy 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. In fact, there is a growing body of opinion that recognizes the potential usefulness of restraints on financial flows as a financial safeguard (Rajan, 2003a); there is no longer an ideological belief in the benefits of a completely open capital account[16]. Once this is accepted, the analytical basis in support of the corners hypothesis weakens substantially; neither corner appears to work all that well for emerging economies.

Indeed, the prevailing sentiment in favor of the bipolar or binary view of exchange rates is not without its doubters. For instance, Bergsten et al. (1999) has made the important point that "(m)anaged floats do not have the clean, clear-cut allure of full institutional purity, but, in a world of second-bests, they are worth exploring" (p.9). Stanley Fischer (2001) has acknowledged that there are many instances where intermediate regimes might well be "more appropriate" than corner solutions[17].

Willett (2002) too strongly questions whether countries really face such stark choices in their choice of exchange regimes. As he notes:

> The theory of Optimum Currency Areas (OCA) yields a well-established list of..criteria that affect the costs and benefits of adopting fixed versus flexible exchange artes. The application of a sensible range of parameter values to these criteria suggests that many…countries are not good candidates for either genuinely fixed exchange rates where domestic monetary policy is fully determined by developments in the balance of payments or for completely flexible exchange rates where no weight is given to the exchange rate developments in setting domestic policy…(I)t is not limited exchange rate flexibility per se that gives rise to currency crises, but the inconsistency between exchange rate and monetary policy that so

[16] While empirical evidence regarding the benefits from capital account liberalization is unclear, risks of premature of ill-timed liberalization are unequivocal (Arteta et al., 2001 and Rajan, 2002b).

[17] In fact, Fischer (2001) has noted that the bipolar view of exchange rates ought to be presented as a choice between a hard peg versus a "more flexible regime" rather than a flexible exchange rate regime *per se*. The latter option implies the absence of any explicit exchange rate target, i.e. intervention should not be framed primarily in terms of defending a particular exchange rate target.

> often emerges under intermediate exchange rate regimes" (pp.3 and 6).

The preceding leads to the rather unsatisfying conclusion that when it comes to the choice of appropriate exchange rate regime, all that can really be said is that there exists a broad spectrum of choices. It is not a black-or-white issue; shades of grey abound. The choice of exchange rate regime cannot be done in isolation. It must be seen as part of a coherent macroeconomic strategy. 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 emerging economies may need to have a more limited objective. Rather than focusing on disciplining domestic macroeconomic policy and labor 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 emerging economies arises from fluctuations in the values of the currencies of their major trading partners against one another.

In the absence of strong capital controls, currency intervention ought *not* be framed as a specific target for the exchange rate. Such targets inevitably tempt speculators by offering them the infamous one-way option. Thus, exchange rate and monetary policy strategies must involve a "fairly high" element of flexibility rather than a single-minded defense of a particular rate. This might best be achieved by a variant on sliding parities and wider bands around an appropriately weighted currency basket, the extent of which varying across the countries depending on individual circumstances and policy preferences (a so-termed band-basket-or-crawl or BBC)[18] or a flexible inflation target. The latter involves gradual adjustment to an inflation target along with a positive weight on the exchange rate (in addition to inflation and

[18] The crawl is meant to compensate for inflation differentials. Williamson (1999b, 2001)

output). While the topic of currency basket arrangements for East Asia have been extensively explored elsewhere (for instance, see Bird and Rajan, 2002, Rajan, 2000a, Rajan, 2003b and references cited within), the remainder of this paper explores key aspects of open inflation targeting in general and particularly as they relate to East Asia.

4. Open Economy Inflation Targeting: Role of the Exchange Rate

4.1 Monetary Policy Rules in Open Economies

Buoyed by the apparent success of inflation targeting in industrial countries in the early 1990s, it has been strongly advocated by the IMF and other as a viable policy option for emerging economies in East Asian and elsewhere. What exactly is inflation targeting? While definitions vary in the literature, Eichengreen (2001b) defines inflation targeting as follows:

> (A) monetary policy operating strategy with four elements: an institutionalized commitment to price stability as the primary goal of monetary policy; mechanisms rendering the central bank accountable for attaining its monetary policy goals; the public announcement of targets for inflation; and a policy of communicating to the public and the markets the rationale for the decisions taken by the central bank (p.4).

For the most part, inflation targeting is conducted in conjunction with a monetary policy rule (MPR). In general terms, a MPR is one element of a strategy employed by the monetary authority as part of its overall monetary policy. More specifically, the MPR should specify how the instrument of monetary policy is to be changed given the characteristics of the macroeconomy and the policy objectives of the monetary authority. The instrument of monetary policy is most commonly an interest rate, usually a short-term cash rate or repo rate. However, other policy instruments could also be used[19].

In an IT regime, MPRs implicitly assume that the instrument of monetary policy will always react strongly to inflation (or some forecast of future inflation). It is

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discusses the BBC policy in some detail.

[19] For instance, McCallum (1999) has suggested the use of the growth rate of a money. As will be discussed later, in some cases, a weighted average for the interest rate and exchange

important to stress the differences between MPRs and inflation targeting. The two are different elements of a general monetary policy strategy. The MPR provides a guide to the policymaker for how to manipulate the instrument of monetary policy; the inflation target simply makes a statement of what the instrument is being ultimately *used for*. According to Taylor (2000b):

> There is an interesting symbiotic relationship between inflation targeting and monetary policy rules..A monetary policy rule is nothing more than a contingency plan that describes as precisely as possible the circumstances in which a central bank changes the *instruments* of monetary policy (p.2)[20].

For much of this last decade, the literature on MPRs has developed in a closed economy context (Ball, 1997 and Svensson, 1997). It is only recently, when inflation targeting has been suggested as a serious policy option for small and open emerging economies that research has begun to focus on rules in open economy models and, consequently, the role of the exchange rate. For instance, Fischer (2001) notes that "in most countries, even those with floating exchange rate regimes, monetary policy is likely to respond to some extent to movements in the exchange rate" (p.13).

a) Stylized Macro Model

In order to examine how the exchange rate enters an MPR, let us consider a stylized dynamic model of a small open economy which can be represented with a usual output function or an open economy IS curve (eq. 1), an open economy, accerleationist Phillips curve equation (eq. 2), and an uncovered interest parity condition (in general form) with the expected depreciation of the exchange rate

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rate (so-called Monetary Conditions Index) might be used.

[20] Closely related to the distinction between MPRs and IT is the need to distinguish between two types of policy rules, viz. an instrument rule and a target rule (Svensson, 1997, 2000). The former is a rule for the monetary policy instrument that is imposed into a model but has no explicit reference to a policy target or objective. The latter is one that is derived as an endogenous optimal function from a model that has been solved explicitly for a particular target or a monetary authority welfare function. A target rule focuses policymaker's attention on the stated target and is very model-dependent. The instrument rule need not be directly related to a specific objective and offers the flexibility to be applied across models (Batini and Haldane 1999). There are many examples of instrument rules - the most widely cited being

normalized to zero (eq. 3):

$$y_t = f\,[r_{t-1}, y_{t-1}, e_{t-1}, \varepsilon_t] \quad (1)$$

$$\pi_t = g\,[\pi_{t-1}, y_{t-1}, e_{t-1}, \eta_t] \quad (2)^{21}$$

$$e_t = h\,[r_t, r^*_t, rp_t] \quad (3)$$

where r^*_t and rp_t is the foreign interest rate and a risk premium, respectively, Δ refers to changes and f (.), g (.) and h (.) and general functional forms – although they appear as linear in almost all models presented in this literature. Assume ε_t and η_t are random shocks not known to the policy maker. Eqs. 1 to 3 above are written in general functional forms but could just as easily be written in linear terms as they usually are.

Thus, a key result of the model is that monetary policy affects inflation directly through the price effects of currency movements, as well as indirectly via output (which in turn is impacted by both interest and exchange rate changes). The direct effect takes place contemporaneously, while the lag structure of the stylized economy implies that indirect effects on inflation via output occur after two periods. The more open the economy the stronger the effects of import prices on domestic inflation, i.e. a larger coefficient on the e_{t-1} in eq.2 and an increased effect of the exchange rate on goods demand in eq.3.

b) Interest Rate Rule

Assuming the existence of a quadratic loss function, it can be shown that optimal monetary policy rule is give by a sort of Taylor Rule (*a la* Taylor, 1993, 2000a,b):

$$r_t = ay_t + b\pi_t + c_1 e_t + c_2 e_{t-1} \quad (4)$$

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the Taylor Rule (Taylor, 1993).

[21] Eq. 4 is sometimes specified as: $\pi_t = g\,[\pi_{t-1}, y_{t-1}, (e_{t-1} - e_{t-2}), \eta_t]$.

where e_t and e_{t-1} refer to the foreign currency price of domestic currency in time period t and t-1, respectively; π_t is the inflation rate; y_t is real GDP in time t; and r_t is the real interest rate at time t. π_t is expressed as deviation from the policy target while the other variables are expressed as deviations from their respective steady state/equilibrium mean values[22].

The relevant question is what value should the *c* parameters take. The original Taylor rule for a large and relatively closed economy like the US is one where *a,b* >0 and $c_1 = c_2 = 0$. For a small, open economy, it is generally agreed that the exchange rate should enter the MPR with a non-zero coefficient. In particular, c_1 must be less than zero and c_2 must be greater than or equal to zero. This is so as an appreciation (increase) of the domestic currency necessitates a relaxation of monetary policy, i.e. currency appreciation tends to be deflationary. A positive c_2 represents a partial adjustment of the instrument to currency movements. Recent work using model simulations find values for c_1 range between –0.45 and –0.25, while those for c_2 range between 0.15 and 0.45 (Taylor, 2000a).

In summary, inflation targeting in an open economy implies that the monetary authority stabilizes the exchange rate as a means to reduce inflation volatility and not as a goal in itself[23]. There have been some recent contributions examining the effect of the exchange rate on interest rate rules. Clarida et al. (1998) estimated a set of MPRs for two sets of countries. The first set is Germany, Japan and the US while the UK, France and Italy form the second set. The latter set constitutes relatively smaller and more open economies. It turns out that the policy rules for the second set reacted significantly more strongly to the exchange rate (in this case, the DM) and to

[22] The MPR is sometimes modified to include an interest rate smoothing process which describes the gradual adjustment of the interest rate to its target by the monetary authority. Also see fn 25.

[23] There is an outstanding issue of what type of exchange rate to use. Strictly speaking, eq. 1 requires the inclusion of export-weighted real exchange rate while eq. 2 requires the use of import weighted nominal exchange rates. This apart, an alternative to an inflation target would be a price target, i.e. specifying the price level, as opposed to the inflation rate.

German monetary policy than did the first set. This is an indication that more open economies may feel the need to smooth the volatility of their exchange rates. There have been few studies to date that have looked at policy rules for East Asian countries. This is an area of ongoing research by the authors.

c) Monetary Conditions Index (MCI)

Another way in which the exchange rate might be included in a rule is via a Monetary Conditions Index (MCI) (Ball, 1999 and Svensson, 2000). The MCI takes the following form:

$$wr_t + (1-w)e_t = ay_t + b\pi_t \qquad (5)$$

In other words, the MCI is merely a weighted combination of movements in the interest rate and the exchange rate.

The central idea behind a MCI is that the ratio between the exchange rate and the interest rate remains constant. This ensures, for example, that tight monetary policy is reflected in both the money and foreign exchange markets. This is done either by manipulating both of the instruments separately or by changing one instrument - usually the interest rate - which in turn will induce changes in the other. For instance, Ball (1999) suggests that the underlying instrument of the MCI is the interest rate. As such, the constant ratio between the interest rate and the exchange rate is maintained by shifting the interest rate which will then affect a change in the exchange rate. For this to work effectively there must exist a stable relationship between the two policy instruments[24]. This in turn requires the satisfaction of arbitrage price conditions (such as the UIP – eq. 3 above).

[24] A second criterion for the working of an MCI is the absence of sterilization of the monetary effects of policy as this will undo the working of the MCI.

Thus, speaking about Thailand which has an MCI target, Hataiseree (1998) notes:

> The MCI can be used to compare the degree of importance between interest rate and the exchange rate in influencing the future inflation rate. Empirically, it was found that the MCI ratio for Thailand takes the value of 3.3 : 1. This ratio implies that when the baht is expected to depreciate at an average rate of 3.3% in any particular time, ceteris paribus, the interest rate needs to be raised by an average of 1% in order to prevent the expectation of the bath depreciation from effecting the forecasting of the future inflation rate.

While an important virtue of the MCI is its transparency and verifiability *a la* Frankel et al. (2000b), a major drawback with its use as an operational target is that it straitjackets monetary policy in some instances to the detriment of output and employment (Cavoli and Rajan, 2003). Considerable care therefore needs to be taken in the implementation of the MCI as an operational target. There is a growing consensus that, at best, the MCI offers a useful composite indicator of overall financial conditions in a small and open economy (HKMA, 2000 and Hataiseree, 1998).

4.2 Exploring the Loss Function of the Monetary Authority in an Open Economy

Consider a generalized, multi-period loss function of the monetary authority:

$$E_t \sum_{s=t}^{\infty} \delta^{s-t} \left[\alpha \pi_s^2 + \lambda y_s^2 + \nu (i_s - i_{s-1})^2 + \mu (\pi_s + \Delta y_s)^2 + \kappa e_s \right] \qquad (6)$$

where δ is a discount factor representing the central bank's rate of time preference, α, λ, ν, μ, κ are policy weights for inflation, output, interest rate smoothing, nominal income and the exchange rate respectively and the objectives of the monetary authority are principally inflation and output and also include interest rate smoothing[25].

[25] We include the interest smoothing term in the loss function as in practice central banks tend

On the basis of eq. 6 above, we can identify a number of possible targeting scenarios. These are summarized in Table 2[26].

Table 2
Types of Inflation Targeting (Based on Eq. 6)

	α	λ	ν	μ	κ
Strict inflation targeting	>0	0	0	0	0
FLEXIBLE INFLATION TARGETING	>0	>0	0	0	0
Interest rate smoothing	>0	>0	>0	0	0
Nominal income Targeting	>0	>0	0	>0	0
Exchange rate smoothing (fear of floating)	>0	>0	0	0	>0

Source: Authors

Assume the simplest case where all coefficients in eq. 6 are set to zero other than α. This implies that the specified monetary authority focuses solely on the inflation objective (ignoring the interest smoothing objective)[27]. However, even with strict inflation targeting there is still a positive coefficient on the output gap in the MPR (eq. 4) in view of the importance of the output gap in impacting future inflation. The inclusion of the output variable effectively implies that the monetary authority pursues a "soft" or "flexible" inflation target, whereby the aim is not to hit the target inflation as soon as possible, but rather do so over time, thus avoiding the possibility

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are keen on prevent sharp fluctuations in the instrument. Indeed, the same argument would probably hold in the case of the inclusion of the exchange rate, especially if the instrument is the MCI. Nonetheless, in the literature (as well as policy), while the exchange rate issue is viewed as being controversial, the interest smoothing one is not. It bears noting that even those who strongly advocate that the inflation targeting monetary authority should react to asset prices in the course of policy making are clear that asset prices ought not to be included in the objective function. See Cecchetti et al. (2002) for a clear statement on this.

[26] Also see Debelle (2001) and Leitemo et al. (2002).

of inducing greater output volatility (Debelle, 2001 and Mishkin, 2002). We elaborate on this point in Section 5.

The discussion thus far has focused on the use of the exchange rate as part of the instrument rule or in some cases as the instrument itself. But what happens if the monetary authority is also concerned about exchange rate volatility as a policy objective in and of itself? "Fear of floating" implies that a monetary authority uses monetary policy to *react* to exchange rate movements for its own sake. As noted, this may arise because of the concerns about the impact of "excessive volatility" on the exchange rate on trade, investment and growth.

If the exchange rate policy parameter (κ) is positive, this represents an attempt by the monetary authority to manage the movements in its exchange rate (as well as output). When the loss function is minimized subject to a macro model as the constraints (eqs. 1 - 3), the resulting monetary policy rule (eq. 4) will include an exchange rate policy parameter in the same way as α is for inflation or λ is for output. However, even if the exchange rate is not in the loss function, the exchange rate will enter the MPR with a positive coefficient in view of its information content about current and future inflation (and output). For the exchange rate to directly enter the monetary authority's loss function it must either: (a) be valued for its own sake over and above its impact on inflation and output; or (b) if valued because of its impact on inflation and output, for some reason, cannot be adequately captured in the specified macro model (eqs. 1 and 2).

But can a monetary authority use monetary policy rules with some form of inflation stabilization objective to also manage movements in its currency? As discussed in Section 3, moving away from the corners would imply that if there is some scope for managing currency movements to some extent there is also some latitude for autonomous monetary policy in the form of MPRs (also see Debelle, 2001).

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[27] Mervyn King (1996) terms such a monetary authority an "inflation nutter".

5. Concluding Remarks

Since the East Asian financial debacle of 1997-98, a handful of countries in the region -- Korea, Indonesia, Thailand and the Philippines -- have instituted monetary policy arrangements fashioned around an inflation objective. Each of these countries has passed legal and institutional legislations supporting their respective IT arrangements[28]. These legislations so passed provide for many facets of the new monetary policy regime including the appointment of key personnel and their tenure (five year terms in Korea and four years each in Indonesia and Thailand), the independence and autonomy of the monetary authority, the stated objectives of monetary policy and the responsibilities and accountability with respect to the achievement of those objectives. For example, Article 3 of the Bank of Korea Act states that "monetary and credit policies of the Bank of Korea shall be formulated neutrally and implemented autonomously and [it's] independence …shall be respected". Article 6 provides for the annual setting of the price stability target (www.bok.or.kr).

How have these new inflation targeters performed since implementing an IT system? The inflation performances of these new regimes against their stated targets are provided in Table 3[29]. Thus far the performances have been reasonably good, with Thailand, Korea and the Philippines for the most part being within target. Indonesia has struggled to keep its inflation within its target range while Korea also exceeded its target for 2001 and 2002. In contrast to the *de jure* exchange rate

[28] The revised Bank of Korea Act in December 1997 (and revised in April 1998), the new bank of Indonesia Act in May 1999 and the Bank of Thailand Act of May 2000, respectively.

[29] It is worth noting that each of these monetary authorities defines inflation a little differently to each other. Indonesia excludes the effect of government prices and incomes policy. Korea uses CPI excluding petrol and some farm products. Thailand excludes raw food and energy

classifications, observations of the *de facto* regimes – the exchange rate arrangements that countries are actually implementing – seem to reveal to suggest a reversion to US dollar pegs, albeit ones not as tightly as before the crisis (Figure 2). Several studies have shown this to be the case (for instance, see Baig, 2001, Calvo and Reinhart, 2002 and McKinnon, 2000).

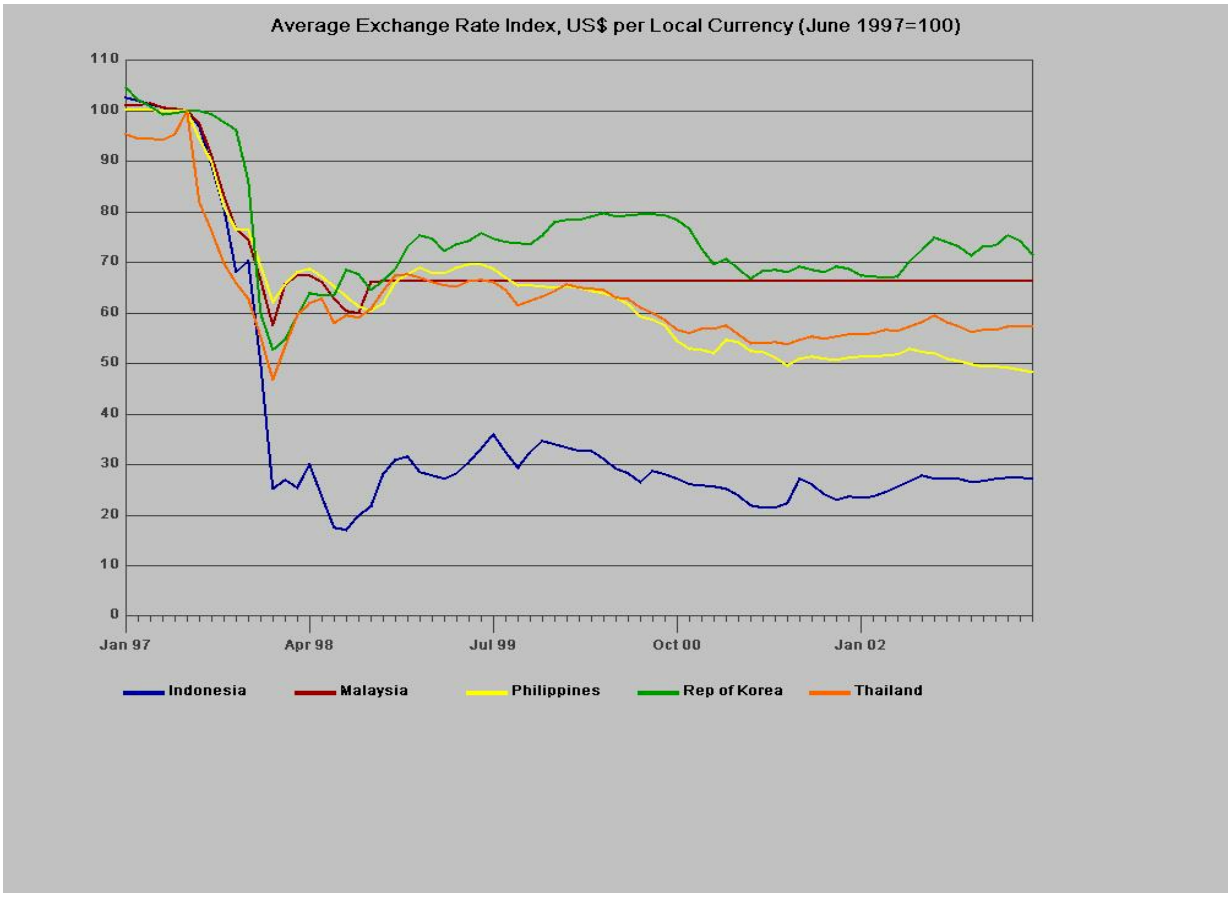
TABLE 3
ACTUAL VERSUS TARGETED INFLATION RATES (IN PERCENT): KOREA, INDONESIA, THAILAND, THE PHILIPPINES

	1999		2000		2001		2002		2003
	Target	**Actual**	**Target**	**Actual**	**Target**	**Actual**	**Target**	**Actual**	**Target**
Korea	3.0	0.8	2.5	1.8	2.5	3.2	2.5	3.7	2.5
Indonesia			3-5	5.9	3-5	12.5	3-5	10.3	9.0
Thailand			<3.5	0.7	<3.5	1.2	<3.5	1.6	<3.5
Philippines					6-7	6.1	5.0*	3.1	5.0*

Notes: * plus/minus half percentage point
Sources: McCauley (2001), Bank of Korea, Bank Indonesia, Bank of Thailand, Bangko Sentral ng Phillipines

prices. See McCauley (2001).

Figure 2



Source: CEIC database

Is the relative fixity of regional currencies really a reversion to ad hoc managed floating regimes as many have argued, or is it a consequence of "flexible" or "soft" inflation. This is an area requiring more detailed examination in the future.

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