

Pacific Basin Working Paper Series

FIXED OR FLOATING: IS IT STILL POSSIBLE TO MANAGE IN THE MIDDLE?

Reuven Glick

Economic Research Department
Federal Reserve Bank of San Francisco

Working Paper No. PB00-02

**Center for Pacific Basin Monetary and Economic Studies
Economic Research Department
Federal Reserve Bank of San Francisco**

FIXED OR FLOATING : IS IT STILL POSSIBLE TO MANAGE IN THE MIDDLE?

Reuven Glick
Economic Research Department
Federal Reserve Bank of San Francisco

October 2000

Center for Pacific Basin Monetary and Economic Studies
Economic Research Department
Federal Reserve Bank of San Francisco
101 Market Street
San Francisco, CA 94105-1579
Tel: (415) 974-3184
Fax: (415) 974-2168
<http://www.frbsf.org>

Fixed or Floating: Is It Still Possible to Manage in the Middle?

Reuven Glick

Federal Reserve Bank of San Francisco

First draft: August 9, 2000

Revised: October 20, 2000

This paper was prepared for the conference on “Financial Markets and Policies in East Asia” held at the Asia Pacific School of Economics and Management, Australian National University in Canberra, Australia on 4–5 September 2000. The views presented are the author’s alone and do not necessarily reflect those of the Federal Reserve Bank of San Francisco or the Board of Governors of the Federal Reserve System. Correspondence may be addressed to the author at Economic Research Department, Federal Reserve Bank of San Francisco, 101 Market Street MS 1130, San Francisco, CA 94105, Email: reuven.glick@sf.frb.org.

I. Introduction

Renewed interest in the issue of appropriate exchange rate arrangements, particularly for developing countries, has been prompted by the general increase in global capital mobility and the currency and payments crises of the 1990s. Three propositions are currently heard as prescriptions regarding countries' choice of exchange rate regimes.

Those who blame exchange rate targets, specifically adjustable (“soft”) pegs, as contributing factors for the crises in Mexico, East Asia, Russia, and Brazil, advocate greater exchange rate flexibility (e.g., Obstfeld and Rogoff, 1996; Ito, Ogawa, and Sasaki, 1998; Corsetti, Pesenti, and Roubini, 1998). In this view, for example, many Asian countries lost international competitiveness by continuing the de facto pegging of their currencies to the U.S. dollar when the dollar was appreciating during the period 1995-97, particularly against the yen. Increased flexibility would have dampened the appreciation of their currencies, lessened the one-way bets of speculators, and limited the capital flow reversals that contributed to the crisis in Asia.

A second view argues for reduced exchange rate flexibility via rigid commitments to permanently fixed (“hard”) rates, through institutional arrangements such as currency boards, currency unions, or full abandonment of the domestic currency. Advocates of this view (e.g., Hanke, 1999) point out that none of the crisis currencies was formally pegged to the dollar when the crisis hit, while the currency boards of Hong Kong and Argentina successfully weathered the storm.

A third view subsumes the first two and argues that “intermediate” exchange rate regimes, such as adjustable single currency and basket pegs, crawling pegs, target bands, and even managed floats, are crisis prone and increasingly less feasible (e.g., Obstfeld and Rogoff, 1996; Eichengreen, 1999, pp. 104–105; Summers, 1999; Eichengreen, 2000; Edwards, 2000). Consequently, countries must make their choice of exchange rate arrangements between the two extremes of fully-fixed or fully-flexible exchange rate regimes. That is, countries must be totally committed to the goal of fixing their exchange rates, such as Hong Kong and Argentina, or they must inevitably allow greater exchange rate flexibility. However, even among the believers in a “vanishing,” “shrinking,” or “missing” middle range along the spectrum of exchange rate regimes, there is no apparent consensus on which of the two “polar” regimes—fully floating or rigidly pegged—might be more appropriate, i.e. which countries should adopt which polar system.

These issues have implications for exchange rate and monetary policy in Asian economies. The Asian financial crisis of 1997–98 involved a general abandonment of de facto pegs against the

dollar by the emerging economies in the region (with the exception of Hong Kong) that was followed by greater exchange rate flexibility. However, there is still debate about what exchange rate arrangements should be followed in the future. Some advocate continued floating, while others advocate a restoration of de facto pegs to the dollar or to a basket including the yen. Another possibility considered is a regional currency arrangement that would limit fluctuations in intra-Asian bilateral exchange rates but allow flexibility with respect to major world currencies.

The organization of the paper is as follows. Section II reviews the conventional arguments for alternative exchange rate regimes and discusses why countries may have difficulties maintaining intermediate exchange rate regimes in the face of open capital markets.

Section III looks at the empirical basis for the “missing middle” argument and also presents stylized facts concerning the association of exchange rate arrangements and country characteristics. It shows that the middle has indeed shrink, though a substantial number of developing countries are still engaged in intermediate exchange rate arrangements. Nevertheless, it has become increasingly more difficult to sustain intermediate regimes, as evidenced by the successive widening of intervention margins by countries with target band arrangements, by the sizable number of countries that recently abandoned intermediate arrangements altogether, and by the relative frequency of countries remaining in the middle able to do only by restricting capital movements. Moreover, effectively controlling capital flows will only become more difficult as market development proceeds. Thus, in the long run it appears that countries with open capital accounts will sooner or later be compelled to abandon the middle ground and allow more exchange rate flexibility, unless they are prepared to go to the opposite pole of a hard peg.

Section IV discusses the feasibility of alternative exchange rate arrangements for the developing economies of East Asia. The conclusion drawn is similar to that for developing countries generally. As the openness of the region to global trade and finance continues to grow, these countries have little choice but to allow more exchange rate flexibility in the future than they have permitted in the past. This does not preclude an active but discretionary use of intervention and other policy tools to influence the exchange rate. Monetary policy will still need to take into account and react to exchange rate developments. But policymakers should not make explicit or implicit policy commitments to keep the exchange rate within particular ranges for extended periods of time.

II. Alternative Exchange Rate Regimes

A. Benefits and Costs

The traditional literature on the advantages and disadvantages of exchange rate regimes has typically considered two highly simplified and extreme cases: (i) a fully flexible exchange rate, (ii) and an irrevocably fixed exchange rate. The arguments for flexible and fixed exchange rates, both pro and con, are well known.¹

At the macro level, the main argument in favor of a flexible exchange rate regime is that it allows a country to have an independent and **discretionary monetary policy** as a tool for responding to shocks, particularly to aggregate demand.² In addition, flexible exchange rates provide a faster and less costly **adjustment mechanism** to change relative prices in response to shocks necessitating an adjustment in the real exchange rate, particularly when nominal goods prices change slowly.

There are several arguments in favor of a fixed exchange rate. Pegging to a low inflation currency can provide a **credible anchor** for restraining domestic inflation expectations, as long as expectations that the fixed exchange rate will not be abandoned are credible.³ Another argument for a peg is that it fosters fiscal or monetary **policy discipline** by curbing the temptation to follow excessively stimulatory macroeconomic policies that would lead to an exhaustion of foreign

¹ For recent discussions of the relative merits of different exchange rate regimes, see Larrain and Velasco (1999) and Mishkin (1999).

² Of course, money and exchange rate changes work only as short-term policy tool. In the long run, repeated nominal depreciations or domestic credit increases will only cause inflation and have no real effect as they come to be expected by the private sector.

³ By reducing speculation and exchange rate risk, a credible peg may also lower domestic interest rates relative to alternative regimes. This will be reinforced to the extent that lower exchange risk also lowers the country risk premium.

exchange reserves and an end to the peg.⁴ At the micro level, a fixed exchange rate may also **reduce transaction costs** and exchange rate risks which can discourage trade and investment.⁵

Both regimes have their costs, of course. A flexible exchange rate and discretionary monetary policy usually come at the cost of some loss of credibility that can lead to an inflation bias. At the microeconomic level, higher exchange rate variability creates uncertainty and discourages international trade and investment.

The main cost of a fixed exchange rate is the loss of macroeconomic flexibility in the response to shocks, particularly those that affect the equilibrium real exchange rate.⁶ Giving up an (implicit or explicit) escape clause to exercise a devaluation in states of the world deemed severe enough may be undesirable, if the short-term cost of defending the peg exceeds the long-term benefit of maintaining the regime. The loss of the domestic central bank as a lender of last resort can also be costly. Lastly, fixed rates lacking credibility leave countries open to speculative attacks on their currencies. In particular, by serving as a “lightning rod” for concerns about broader debt and banking problems as well as government macroeconomic policies, they may spawn crises that greatly amplify the costs of adjustment.⁷

B. To Fix or Float? That is the Question

The relative advantages of exchange rate fixity and flexibility depend, in large part, on the circumstances and characteristics of the particular country and time. Larrain and Velasco (1999)

⁴ However, Tornell and Velasco (2000) argue that flexible rates may provide more fiscal discipline through the more immediate effects of lax policies on the exchange rate and the price level. They point to the experience of the hard-pegging African CFA countries who have exhibited less fiscal discipline than other developing countries without hard pegs.

⁵ Eichengreen and Hausmann (1999) argue that there is another very important benefit for emerging market economies to giving up the currency altogether for a hard currency such as the dollar. Such countries may suffer from what they refer to as “original sin,” the inability to borrow long-term in local currency either from abroad or domestically, creating a mismatch between assets and liabilities. According to Eichengreen and Hausmann, this problem in part can be overcome by giving up the domestic currency and dollarizing. However, while dollarization may solve the problem of currency mismatches, it does not necessarily eliminate maturity mismatches and country risk considerations.

⁶ In this regard, it has been argued that fixed exchange rate regimes may be particularly prone to real overvaluation. For example, countries using an exchange-rate peg as an anti-inflation mechanism typically experience sustained, sharp appreciations in the real exchange rate, in part because domestic inflation is initially above the world rate and comes down only gradually over several years. Exogenously-motivated capital inflows may also appreciate the real exchange rate, if the inflows help finance an increase in traded-goods consumption and investment, leading to a rise in domestic inflation. See Edwards and Savastano (1999).

⁷ A fixed exchange rate regime also eliminates the ability to collect seigniorage revenue.

provide the following set of necessary conditions for adoption of a credible fixed exchange rate with a particular anchor currency:⁸

1. **Strong trade links with the anchor country**, implying the benefits to reducing the adverse effects of exchange rate variability on international trade competitiveness are great.⁹ A single currency peg will not be a desirable regime for countries without a strong concentration of trade, because of the effects on international competitiveness of cross-rate fluctuations between the anchor currency and other major currencies.
2. **High correlation of shocks with the anchor country**, implying that the costs of giving up macro policy flexibility are low.¹⁰ Thus small open economies and countries sharing common (symmetric) shocks with the potential anchor country have less need for an independent monetary policy and flexible exchange rate than if they had to respond primarily to their own idiosyncratic (asymmetric) shocks. Larger economies that are more likely to experience asymmetric shocks should allow exchange rate flexibility.¹¹
3. **Inflation preferences similar to the anchor country.** A fixed exchange rate can be desirable for countries with a history of hyperinflation or other economic misfortune that has rendered investor confidence scarce and independent monetary policy no longer usable. In this case the benefits of improved credibility and a permanently lower inflation rate are likely to be great. Provided the public is willing to give up monetary sovereignty, even full official dollarization may be attractive for some countries. The benefits are less in countries that have never experienced a full-blown hyperinflation and there is less public support to accept the costs of ensuring more stable prices.
4. **Flexible factor markets**, in order to lessen the need for other policy measures with which to respond to economic shocks.¹² Countries with high factor mobility and high price flexibility may have less need for exchange rate and monetary policy flexibility in adjusting to asymmetric shocks.
5. **Strong, well-capitalized bank sector** in order to lessen the need for a lender of last resort to domestic banks. Countries with poorly regulated, fragile financial systems will find the loss of the domestic central as a lender of last resort costly, unless they can obtain contingent

⁸ In addition to the economic conditions listed below, credibility also requires a legal as well as political commitment to the peg.

⁹ The role of trade links and openness in the formation of optimal currency areas was first emphasized by McKinnon (1963).

¹⁰ The commodity composition of trade may affect these costs. When the commodity composition of production and trade differs greatly across countries, sector-specific shocks are likely to affect them differently, and increase the benefits of exchange rate flexibility. See Kenen (1969).

¹¹ However, some empirical analyses (e.g. Frankel and Rose, 1998) suggest that currency arrangements and observed cross-country correlations are endogenous; i.e., when a country adopts the currency of a neighbor, the creation of the monetary union promotes trade between the neighbors over time, which in turn has a positive effect on the correlation in incomes. The implication is that this optimum currency area criterion may be satisfied ex post even if it fails ex ante.

¹² The role of flexible labor markets for optimal currency areas was first pointed out by Mundell (1961).

credit lines from foreign banks, governments, multilateral institutions, or other sources to provide at least limited lender-of-last-resort services.

Countries that fail to satisfy the above conditions have a greater incentive for exchange rate flexibility.

C. Rationale for Intermediate Regimes

In reality, of course, there is a continuum of possible exchange rate arrangements between the two extremes of purely rigid pegs and floating regimes. In this middle range are adjustable pegs, crawling bands, and various forms of exchange rate regimes that are characterized neither by flexibility on a day to day basis, nor by a commitment to a fixed and unchanging peg (termed “fixed rates lite” by Obstfeld and Rogoff, 1996).

If the tradeoff in costs and benefits of exchange rate flexibility vary continuously with the degree of flexibility, ideally each country should pick the degree of flexibility that optimizes with respect to this tradeoff. Therefore, as Frankel (1999) argues, optimization may often, though not always, involve an “interior solution” in between the “corner solutions” of pure floating and rigid fixing.

What factors might create an incentive to adopt an intermediate exchange rate arrangement (i.e., create convexity in the cost-benefit tradeoff)? Calvo and Reinhart (2000b) argue that developing economies are very different from developed countries in key dimensions that give rise to a “fear of floating” in general and of devaluing or depreciating, in particular. This fear, they suggest, is justified on several grounds:

1. **Devaluations in developing economies are generally contractionary**, in contrast to more advanced countries where devaluations are typically associated with export-led booms. The contractionary effects can arise from a reduction in aggregate demand arising from lower real income or wealth, as well as from reductions in aggregate supply due to greater costs of imported inputs or working capital.¹³ Depreciations may also be contractionary by worsening the condition of the financial sector—for example, if lending institutions have unhedged foreign liabilities—and reducing the availability of domestic credit.

¹³ A depreciation can reduce real financial wealth by increasing domestic prices and reducing real money balances; if domestic interest rates are not anchored by world interest rates, the reduction in money balances will tend to create excess demand in the loan market, raising domestic interest rates, thereby reducing investment and aggregate demand. See Agénor and Montiel (1996).

2. **Devaluations in developing countries are typically accompanied by an involuntary loss of access to international capital markets** that is attributable to an erosion of credibility (as revealed by deteriorating credit ratings in the aftermath of devaluations). This interruption in the supply of foreign credit—what Calvo and Reinhart term “the sudden stop problem”—further contributes to economic downturns in developing countries with depreciating currencies.
3. **Trade is more adversely affected by exchange rate volatility** in developing countries. In contrast to the case for industrial countries, much emerging market trade involves primary commodity exports and/or manufacturing exports to the United States and is dollar invoiced, creating exposure to exchange risk if exchange rate movements against the dollar are volatile. In addition, illiquid or non-existent future markets limit the available tools to hedge exchange rate risk.
4. **Currency swings have higher pass-through effects on domestic inflation** in developing economies. If movements in the nominal exchange rate are rapidly reflected in upward adjustment of domestic prices, then the insulation properties provided by flexible exchange rates are reduced considerably. The degree of pass through depends on the extent to which exchange rate changes are perceived as permanent or transitory and the speed of the transmission between exchange rates and prices.¹⁴ Thus in developing countries with historically poor inflation and monetary policy and/or pervasive wage indexation, exchange rate changes will lead to greater and more rapid domestic price increases.
5. **Partial dollarization of liabilities** also creates a fear of depreciating exchange rates because in most developing economies both government and private sector debt are largely denominated in hard foreign currency. Consequently, significant exchange rate movements—and in particular large depreciations—will tend to magnify the burden of liabilities and adversely affect corporate balance sheets.¹⁵

In addition to concerns about depreciation, developing countries may also fear large appreciations because of the effects on international competitiveness. For all of these reasons, Calvo and Reinhart argue that many developing countries who may not find it optimal to adopt a fixed exchange rate will still not find it desirable to adopt an independent float. They will make great efforts, through interest rate manipulations and other policies, to avoid large exchange rate fluctuations. The implication is that for developing countries that do not meet the criteria for a hard peg, there will be a strong preference for some intermediate, “middle” form of exchange rate arrangement.

¹⁴ The degree of pass through also depends on the market structure and the degree of competition in product markets.

¹⁵ An opposing view argues that the dollarization of liabilities in developing countries is itself partly an endogenous result of pegging, magnified by moral hazard problems and the underestimation of currency risk that pegging fosters. This is another example of possible endogeneity between the nature of exchange rate arrangements and the conditions affecting their relative desirability.

D. Are Intermediate Arrangements Still Feasible?

While intermediate exchange rate arrangements have been perceived as a compromise means of retaining some policy independence and also limiting exchange rate volatility, it is precisely this category of regimes whose continued feasibility has been called increasingly into question in recent years.

In the last two decades a number of developing and transition economies have adopted currency board arrangements, including Hong Kong (1983), Argentina (1991), Estonia (1992), Lithuania (1994), Bulgaria (1997), and Bosnia and Herzegovina (1998).¹⁶ In addition, eleven advanced countries in Europe also recently adopted a common currency.

At the other end of the spectrum, many developing countries have moved toward increased exchange rate flexibility in recent years. In December 1994, Mexico adopted a floating exchange rate. In July 1997, Thailand whose official policy was still a basket peg, dropped its de facto link to the dollar and announced a floating rate policy. Korea, Indonesia, and the Philippines also announced more flexible exchange rate policies. Other countries that have abandoned band arrangements of some sort and moved toward greater exchange rate flexibility in recent years include the Czech Republic (May 1997), Russia (August 1998), Brazil (January 1999), Ecuador (March 1999), Chile (September 1999), and Colombia (September 1999).¹⁷ Also in 1999, both Angola, which dropped its crawling peg, and Croatia, which dropped its horizontal band, moved toward increased flexibility. Obstfeld and Rogoff (1996) concluded (even before the most recent series of crises): “A careful examination ... suggests that even broad-band [intermediate exchange rate] systems ... pose difficulties, and that there is little, if any, comfortable middle ground between floating rates and the adoption by countries of a common currency.”

Various arguments have been offered to explain the greater difficulty of maintaining intermediate exchange rate regimes. At first glance the problems of intermediate regimes can be interpreted as a direct implication of the impossible trinity principle that, with greater financial market integration, a country cannot attain simultaneously the goals of exchange rate stability and monetary independence. But as Frankel (1999) has observed, this does not rule out allowing greater

¹⁶ Recently, Ecuador has announced its intention to be the first of what may be several countries in Latin America to adopt the U.S. dollar as its official national tender. Montenegro is said to be considering adoption of a currency board.

¹⁷ The Czech Republic officially adopted a managed float; the other countries became independent floaters.

capital mobility, while partially pursuing the remaining two goals of exchange rate stability and monetary independence. That is, the impossible trinity does not rule out a policy whereby a country pursues a managed float or soft peg in which some proportion of every fluctuation in demand for its currency is accommodated by intervention and the residual proportion is allowed to be reflected in the exchange rate.

However, rising international capital mobility has made intermediate arrangements more vulnerable to shifts in market sentiment and more difficult to operate. Calvo and Mendoza (2000) argue that in a world with capital mobility and asymmetrically informed international investors, countries are subject to herding behavior and possibly self-fulfilling speculative attacks by investors that misinterpret the behavior of other agents in the global market.¹⁸ This situation may be remedied, or at least minimized, only by adopting a very transparent and credible policy stance, as displayed by a rigidly fixed exchange rate or a freely floating exchange rate.

A related argument by Frankel, Schmukler, and Servén (2000), and Frankel, Fajnzlber, Schmukler, and Servén (2000) is that most intermediate regimes are insufficiently “transparent,” or “verifiable” in their parlance, for international investors. That is, they are more difficult to monitor than hard pegs or independent floats. For example, if the announced exchange rate regime is a simple dollar peg, an investor need only check that the current exchange rate is the same as the exchange rate on the previous day, in order to verify that the central bank is indeed following its announced policy. If the announced regime is a pure float, the participant can check whether the central bank intervened in the market by seeing whether its holding of foreign exchange reserves has changed (assuming information on reserves is accurate and timely). Allowing greater variability in exchange rate within a horizontal or crawling band and/or pegging to a basket currency makes verification more difficult by requiring a longer period of observation for the market participant to be able to verify that the central bank is indeed implementing the announced policy. Thus the credibility of intermediate regimes is more easily cast in doubt.¹⁹

¹⁸ In first-generation currency crisis models, speculative attacks occur in response to ongoing balance of payments difficulties and anticipated exhaustion of foreign exchange reserves. In second-generation models of self-fulfilling crises, the speculation can precipitate a devaluation that would not have occurred in the absence of the attack by raising the costs to defending the peg. Herding raises the frequency of attacks that are successful.

¹⁹ Frankel, Schmukler, and Servén (2000) and Frankel, Fajnzlber, Schmukler, and Servén (2000) study the verifiability of exchange rate regimes with Monte Carlo simulations. Their results confirm the intuition that the amount of information necessary to verify the regime increases with the complexity of the regime (as reflected by the number of parameters to be estimated concerning the rate of crawl, band margins, weights in a basket, and so on). In their words, “verifiability is a partial means to the Holy Grail of credibility.”

In addition to problems of verifying their credibility, in the view of some, intermediate regimes may also suffer from providing insufficient incentives for policymakers and private agents to undertake actions that would reduce the vulnerability of the economy to crises in comparison to either hard pegging or floating arrangements (see Eichengreen, 2000). In particular, with an intermediate regime the domestic financial system will be more fragile, foreign borrowing will be greater, and fiscal deficits will be larger. In the words of Eichengreen (2000, p. 13):

“Banks will have limited incentives to raise their capital standards or risk management practices because they think that any exchange-rate-related limits on the capacity of the authorities to act as lenders of last resort are only temporary. Debt managers will not shun short-term debt because they will be aware that the authorities retain the capacity to adjust the exchange rate and monetary policy so as to backstop the market. Fiscal policymakers will have mixed incentives to eliminate excessive deficits, because they will have reason to suspect that the revocation of the inflation tax is only temporary.”

In contrast, with a fluctuating exchange rate, banks and other private borrowers will have a greater incentive to hedge their foreign currency exposure. With a hard peg, they will be more willing to improve their capital positions in response to the more limited lender-of-last-resort capacity of the monetary authorities.²⁰ Thus, the endogenous relationship between economic fundamentals/vulnerabilities and the incentives (or their lack of) associated with intermediate regimes may also play a role in their demise.²¹

III. Is the Middle Vanishing? Empirical Evidence

A. Measurement Issues

The usual starting point for characterizing exchange rate regimes is the official exchange rate arrangements that countries report to the IMF. A potential problem with these IMF classifications is that they generally take at face value that countries actually do what they say they do. While the exchange rates of the Asian crisis countries prior to the 1997 crisis exhibited very little flexibility with respect to the U.S. dollar for extended periods of time—only Thailand was explicitly classified

²⁰ Looking at the European experience, Eichengreen concludes that hard pegs do not necessarily accelerate the pace of financial sector and fiscal policy reform that would reduce these vulnerabilities. Consequently, he argues, emerging markets are more likely to have the incentive to make such reforms with greater exchange rate flexibility. This is supported by the observation that many small countries with hard pegs have experienced fiscal debt problems as well as banking crises.

as a peg—and to a basket; the Philippines was classified as having a freely floating exchange rate, while Indonesia, Malaysia, Singapore, Korea, and (unofficially) Taiwan were all labeled as managed floaters.

According to Calvo and Reinhart (2000a, 2000b), many developing countries that purport to float to some extent, have a “fear of floating” and are in reality “closet peggers,” i.e., they make every effort through interest rate manipulations and foreign reserve intervention to avoid large exchange rate fluctuations. Relative to more committed floaters—such as the United State, Australia, and Japan—the observed exchange rate variability in these countries is quite low.

Nevertheless, even by their metric—the proportion of monthly changes exceeding a band of ± 1 or 2.5 percent—the IMF classifications capture relative differences in flexibility across exchange rate arrangement categories.²² Thus even if most so-called independent floaters intervene more so than the U.S. and Japan, they tend to allow more exchange rate variability than countries with managed floats and other exchange rate arrangements allowing exchange rate flexibility. Moreover, in recent years, the IMF has reclassified several countries that purport to be engaged in managed floating as de facto peggers. With these adjustments, the IMF classifications are a good starting point for measuring relative degrees of exchange rate flexibility.

B. Trends in Exchange Rate Arrangements

Table 1 presents statistics for the frequency of usage of varying exchange rate regimes for 1982, 1990, and 1999, based largely on IMF classifications.²³ The regimes are categorized into six groups: (1) rigid currency pegs (“Hrdpeg”), including countries with currency boards or without legal tender, (2) single-currency adjustable pegs, including de facto pegs (“Peg”),²⁴ (3) basket currency pegs to either the SDR or other composite baskets (“BasketPeg”), (4) horizontal bands,

²² For their sample of observations across 154 exchange rate arrangements for 36 countries during the January 1970 to April 1999 period, monthly exchange rate changes were within a $\pm 1\%$ ($\pm 2\frac{1}{2}\%$) band, 52% (79%) of the time for independent floaters, 60% (88%) for managed floaters, 65% (92%) for limited flexibility peggers, and 83% (96%) for peggers. They find that the difference between independent floaters and peggers is statistically significant, but not between managed floaters and limited flexibility peggers, and between limited flexibility and peggers. A limitation of their measure of exchange rate flexibility is that it only assesses the frequency of short-term monthly changes; it does not compare the extent of longer-term currency changes across different exchange rate arrangements.

²³ 1982 is the first year that the IMF distinguished between managed and independent floating arrangements. In addition, some countries were reclassified by the author as de facto peggers based on text information in the *Annual Report on Exchange Arrangements and Exchange Restrictions* and other IMF studies.

²⁴ In 1999 the IMF classified 14 developing countries as de facto peggers.

crawling pegs, crawling bands, and other regimes with announced targets (“BandCrwl”),²⁵ (5) managed floats (“ManagFlt”), and (6) independent floats (“IndepFlt”). The table reports figures for all countries, industrial countries, developed and transition economies, and a subsample of emerging markets.²⁶ In 1999, the IMF reported regime classifications for 185 economies, including 23 industrial countries, 26 transition countries, and 136 other developing countries. (For the prior years, the totals for the nonindustrial countries are less because of the ensuing creation of new countries.)

Table 1 clearly shows that the proportion of countries with hard pegs and independent floats has increased over time. In 1982, 14 percent of all countries were hard peggers and only 6 percent were independent floaters; in 1999 the figures had risen to 24 percent and 27 percent, respectively. Correspondingly, the proportion of countries with a single currency or basket peg has declined significantly, from a total of (32 + 25 =) 57 percent in 1982 to (17 + 7 =) 23 percent in 1999; the proportion of arrangements involving bands and crawls as well as managed floaters has remained roughly constant.²⁷ Thus, between 1982 and 1999 the frequency of regimes at the “corners” (i.e. hard pegs and independent floaters) has risen, while the frequency of intermediate regime arrangements (i.e. single currency and basket adjustable pegs, bands and crawling pegs, and managed floats) has declined. The same general pattern of a shrinking middle is observable for the different subsamples, with the difference that the frequency of intermediate regimes in 1999 for developing and transition countries (53 percent) and for the emerging market subsample (61 percent) was much greater than that for industrial countries (17 percent).

To control for the effects of the growing number of new countries over time, it is also useful to describe regime change decisions by individual countries over the course of the sample period.²⁸ Table 2 presents the transition matrix of regime decisions between 1982 and 1999. Results are reported for all available countries as well as for the set of developing countries (transition

²⁵ The distinction between a peg and a band is somewhat arbitrary, but a peg is generally defined as a band in which the margins on either side of the central parity are less than or equal to 2¼ percent.

²⁶ The emerging market subsample consists of countries included in the S&P global and frontier emerging market stock indices in 1999, with the omission of Taiwan and Greece and the addition of Hong Kong and Singapore, giving a total of 54 countries.

²⁷ Within the category of countries with band arrangements, these figures do not capture any increases in exchange rate flexibility through widening of band margins.

²⁸ Frankel, Schmukler, and Servén (2000) assert that, as a result of the breakup of the Soviet Union, Czechoslovakia, and Yugoslavia and the creation of the Euro, roughly as many independent currencies have been created in the 1990s as have disappeared. In their words, “One might assert a sort of Markov stasis, in which independent currencies are always being created and disappearing, but the overall pool remains roughly steady.” This is clearly not the case, as many more currencies have been created in the last two decades even taking into account the formation of the European monetary union.

economies are excluded from the latter sample since almost all were established after 1990). To be included in the table a country must have had its exchange rate regime arrangement classified by the IMF for both years of the sample; this reduces the sample to 146 countries in the full sample and 121 in the developing country sample. The diagonal cells of the table capture the number of instances in which the exchange rate regime remained unchanged over the sample. The off-diagonal cells capture the extent to which countries adopted greater exchange rate flexibility (moved rightward) or less exchange rate flexibility (moved downward).

Table 2 provides another illustration of the trend of a shrinking middle. The proportion of hard peggers rose from 14 percent to 24 percent and independent floaters from 6 percent to 27 percent. Moreover, among countries with intermediate regimes in 1982, more (almost twice as many) moved in the direction of greater flexibility (rightward) than towards less flexibility (downward). The lower panel of Table 2 shows similar results for developing countries, but with a trend of even more movement to greater flexibility.

It should also be noted of the 146 countries in the sample, 56 (the sum of entries along the diagonal) did not change their regime classification between 1982 and 1999, including 20 that maintained hard pegs and 28 that maintained adjustable pegs to single currencies or to baskets. However, this does not imply that these countries never exercised exchange rate flexibility. As Obstfeld and Rogoff (1996) have observed, aside from some very small countries, very few have maintained an unchanged parity for more than 5 years. Even the fourteen hard-pegging members of the CFA franc zone devalued in 1994.²⁹

C. Country Characteristics and Exchange Rate Arrangements

The discussion in Section II highlighted the roles of various factors in the choice of exchange rate arrangements. Table 3 presents data on the frequency distribution of exchange rate arrangements in 1999 while slicing the country sample in different ways. The frequency distribution of small countries, defined as countries with nominal GDPs in dollars of less than \$5 billion in 1998, is presented in Panel A of Table 3. Corresponding results for large countries are presented in Panel B, and for large non-industrial countries, in Panel C.

²⁹ The number of member countries increased to 15 with the joining of Guinea Bissau in 1997.

Observe first that the frequency of single currency and basket pegs declined between 1982 and 1999 for small as well as large countries, including large developing and transition countries. Correspondingly, the frequency of countries with independent floats has risen. However, the middle ground of intermediate regimes shrunk less for large countries, particularly for developing and transition economies, as the frequency of band arrangement or managed floats either stayed constant or rose. Thus small countries have moved to the poles more frequently than large countries. As discussed in Section II.B, small countries with strong trade links and correlated shocks with an anchor country are likely to have a strong preference for a hard peg.

However, Table 2 also shows that a very high percentage of small countries evidently have chosen independent floats. Why? One explanation may have to do with the commodity concentration of trade. Developing countries dependent on exports of a few primary commodities are especially vulnerable to terms-of-trade shocks. For these countries exchange rate flexibility may be relatively desirable. Panel D of Table 3 presents regime frequencies for primary commodity exporting countries—both large and small—(as identified by the IMF). As conjectured, the frequency of floating rate regimes—almost 40 percent—is higher than that of all alternative arrangements for this group of countries. To the extent a sizable fraction of these countries are also small (roughly two thirds in fact), a number of small countries evidently have found a floating rate regime preferable to a hard peg.

The discussion in Section II implies that countries with intermediate regimes should be more willing to resort to capital flow restrictions to contain the speculative pressures that would otherwise force them to the “corners.” Table 4 compares the frequency with which countries with different exchange rate regimes in 1999 also employed balance of payments controls, indicated by the presence of export proceed surrender requirements (at the end of the prior year) as reported in the IMF’s *Annual Report on Exchange Arrangements and Exchange Restrictions*.³⁰

Observe that controls were more frequently employed by countries with intermediate regimes than with either hard pegs or independently floating regimes: in 1999 for the full sample, 42 percent of hard peggers and 34 percent of floaters imposed controls, compared to 53 percent of intermediate regimes (for countries with single or basket pegs, 62 percent employed controls). For developing

³⁰ The various binary indicators of balance of payments controls reported by the IMF are problematic in typically capturing neither the breadth nor intensity of controls in place. Export proceed and surrender requirements are narrow enough in their focus to overcome some of these limitations. Nevertheless, better measures of controls on specific forms of capital flows are desirable.

countries alone, the discrepancy exists only with floaters: countries with hard pegs or intermediate regimes employed controls roughly 60 percent of the time, compared with 40 percent for floaters.³¹

Interestingly, for the emerging economy subsample, 60 percent of countries with independent floats employed controls, a frequency higher than for countries with intermediate regimes or hard pegs. One explanation is that a number of countries were forced by recent crises to adopt flexible exchange rates while also maintaining or reimposing controls.³²

Clearly, those countries experiencing greater integration with international capital markets have found the requirements for sustaining intermediate exchange rate regimes more demanding.³³

D. Questioning the Vanishing Middle

Some economists have questioned whether the characterization of a missing middle has been overdone. Calvo and Reinhart (2000a), for example, argue that because countries that are classified as having a managed float mostly resemble noncredible pegs, the so-called “demise of the fixed exchange rate” is a myth. Even those classified as independent floaters, in fact, intervene in foreign exchange market frequently. Thus, they argue that the “middle” is not disappearing. Frankel (1999) and Mussa et al. (2000) argue that though the middle is shrinking, it is still quite large; many countries still choose something in between rigid fixity and free floating.³⁴ Indeed, as Table 1 shows, roughly half of the economies classified in 1999 operated some kind of intermediate regime.

However, this seems to be an issue of whether a glass of water is half full or half empty. Quibbles over the accuracy of IMF classifications of exchange rate arrangements notwithstanding, there is no denying that the numbers of countries adopting hard pegs or exercising greater exchange rate flexibility has increased over time. And even though a sizable number of countries still remain in the middle, it has become more difficult to sustain intermediate regimes. This is evidenced by the

³¹ The frequency figures for intermediate regimes are averages of the frequencies for pegs, basket pegs, bands and crawling arrangements, and managed floating, weighted by the number of countries in each category.

³² The countries with independently floating rates in 1999 and export surrender requirements (in 1998) include Brazil, Chile, Colombia, Ecuador, Ghana, India, South Africa, Russia, and Thailand.

³³ These observations are supported by results of probit regressions. In a multivariate probit containing binary indicators of balance of payments controls and smallness and a measure of trade openness (the average of exports and imports as a share of GDP), the probability of having an intermediate regime is positively associated with the presence of controls and the degree of openness, and negatively associated with being small. These results are significant at better than one percent for the full country sample as well as developing and transition country sample, with the exception that the controls variable is not significant in the latter sample.

³⁴ In more recent writings (Frankel, Schmukler, and Servén, 2000; Frankel, Fajnzlber, Schmukler, and Servén, 2000), Frankel appears to have become more sympathetic to the “disappearing middle” view.

successive widening of intervention margins by countries operating crawling band arrangements as well as by the sizable number of countries that have recently abandoned intermediate arrangements altogether.³⁵ In addition, many of the countries remaining in the middle are able to do only by restricting capital movements. Effectively controlling capital flows will only become more difficult as market development proceeds.

Thus in the long run, it appears that all countries with open capital accounts will ultimately experience an episode of capital flow reversal, leaving little alternative but to abandon their pegs, baskets, bands, and crawls and move to a float, unless they are prepared to go to the opposite pole of a hard peg.³⁶

IV. Exchange Rate Arrangements in East Asia

Concerns about the suitability of alternative exchange rate arrangements has been of particular concern to the developing economies of East Asia. The recent crisis in the region has put into question the appropriateness of past policies.

A. Pre-Crisis Behavior

Prior to the 1997-98 crisis, all East Asian economies generally limited the movements of their currencies against the dollar. Most responded very little to changes in other currencies, such as the yen. According to the IMF classifications, however, only Hong Kong explicitly adhered to a dollar peg in the form of a currency board, Thailand officially pegged to a currency composite (though without explicitly disclosing weights). Indonesia maintained a crawling band, while Malaysia, Korea, the Philippines, Singapore, and Taiwan all officially followed managed floats.

Figure 1 plots quarterly movements of nominal dollar exchange rates of selected East Asian countries, including Japan, from 1990 through mid 1997. The currencies of Thailand and to a lesser

³⁵ For example, Indonesia widened the margins of its band to ± 5 percent in June 1996, 8 percent in September 1996, and 12 percent in July 1997, before entirely floating its currency in August 1997. Chile widened its margins from ± 0.5 percent in 1984–85, to 2 percent in 1985–87, 3 percent in 1988–89, 5 percent in 1989–91, 10 percent in 1992–7, and 12.5 percent in February 1997, and abandoned the band altogether in September 1999. Colombia widened its band from 14 percent from early 1994 through mid 1999 to 20 percent in the latter part of 1999, before abandoning the band, also in September 1999. Israel widened its margins from ± 0 in 1986–88 to 3 percent in 1989–90, 5 percent in 1990–95, 7 percent in 1995–97, and to 29 percent in June 1997.

³⁶ The shortcomings of “soft” pegs and bands as a longer-run strategy for monetary policy does not rule out their use as a tool in the initial phases of an anti-inflation stabilization program.

extent Malaysia show very little net change against the dollar over the period.³⁷ Korea and the Philippines showed more flexibility, though both were also relatively stable in the two to three years before the crisis.³⁸ Taiwan allowed steady but modest depreciation, while Indonesia exhibited a larger downward crawl of 4-5 percent per year,³⁹ and Singapore showed a slower upward drift.⁴⁰

Frankel and Wei (1994) estimate the implicit weights of the dollar and the yen in the exchange rate targets of selected Asian countries by regressing daily changes of each currency against the dollar and yen (using the Swiss franc as an arbitrarily chosen numeraire) over the period 1972-92. They find that the weight attached to the U.S. dollar in the currency baskets of most of these countries was .9 or higher. Only Singapore and Malaysia maintained “true” basket systems, with weights on the dollar less than .8, and additional weights on both the yen and DM. Later work by Ohno (1999) and Beng and Yin (1999) confirms these results using data through mid 1997.

Limiting his analysis to periods when the yen fluctuated sharply against the dollar, Tagaki (1996) finds higher weights attached to the yen by Korea and Malaysia when the yen depreciated, suggesting a concern by these countries about losing competitiveness to Japan, while Singapore attached a higher weight when the yen appreciated, suggesting a concern about imported inflation. These asymmetric responses, reflecting different priorities attached to export competitiveness and price stability, imply complications for efforts to establish a regional currency peg.

Why did East Asian policymakers maintain de facto or quasi pegs? One factor was the competitive advantage conferred to these currencies when the dollar was relatively weak in foreign currency markets beginning in the mid 1980s. However, the sharp appreciation of the dollar against the yen after April 1995 led to appreciation of the effective exchange rates of countries de facto

³⁷ Malaysia’s ringitt moved in a 10% range of 2.7 to 2.5 ringitt to the dollar for most of the period between 1990 and the beginning of 1997. The Thai baht was effectively fixed in a narrow range of 25.2 to 25.6 to the dollar from 1990 until 1997.

³⁸ The Korean won depreciated in nominal terms from 1990 until the beginning of 1993 (from 700 to almost 800 won per dollar); then traded in the very narrow range of 800 to 770 won/dollar between the beginning of 1993 and the middle of 1996, and thereafter depreciated by about 10%, reaching a rate of 884 at the end of 1996. The Philippine peso fluctuated in a 15% range of 28 to 24 peso/dollar between 1990 and the beginning of 1995, but was practically fixed at a 26.2 rate to the dollar from the spring of 1995 until the beginning of 1997.

³⁹ Taiwan allowed its currency to fall from a rate of 24 New Taiwan dollars per dollar in 1990 to a rate of 27.8 by the end of 1996. Indonesia’s policy can be described as a policy of explicit real exchange rate targeting with the nominal rate falling from 1900 rupiah to the dollar in 1990 to 2400 by the beginning of 1997.

⁴⁰ In Singapore, the currency appreciated in nominal terms throughout the 1990s, going from a rate of 1.7 in 1990 to a rate of 1.4 by the end of 1996.

pegged to the dollar, upset the relative competitive positions of these countries, and contributed to the crisis that followed.⁴¹

B. Post-Crisis Behavior

Following the major depreciations between the onset of the crisis in mid 1997 and mid 1998, currency values in East Asia rebounded somewhat and stabilized against the dollar for various periods under the flexible exchange rate arrangements that replaced the prior implicit pegs (see Figure 2; Indonesia's exchange rate is not included to avoid skewing the scale). However, aside from Malaysia which established a formal peg to the dollar in September 1998 (and Hong Kong, of course), moderate swings have continued to occur. In the first half of 2000, several currencies in the region—particularly the baht, peso, and rupiah have depreciated, the won has appreciated, and the Singapore dollar has remained relatively constant.⁴²

Are countries in Asia now engaged in pure floating? In principle, the variance of reserves should be zero in a pure float. To assess the extent of policy intervention to smooth out exchange rate fluctuations, Calvo and Reinhart (2000a) report figures on the frequency of monthly foreign reserve changes (in dollars) for selected countries.⁴³ They find that over the period July 1997 to April 1999, the probability of monthly percent change in reserves being less than ± 2.5 percent was less than 41 percent in Thailand, 30 percent in Indonesia, and only 6 percent in Korea. This compares with figures of 62 percent for the United States and 74 percent for Japan (over the period

⁴¹ The cheaper yen had other trade and finance effects as well. It lowered the cost of intermediate products and capital equipment. In addition, by raising the cost of Japanese overseas production, it reduced foreign direct investment from Japan. Estimates of the extent of real overvaluation in the region and its role in the crisis vary. See Sachs, Tornell, and Velasco (1996), Corsetti, Pesenti, and Roubini (1998), Chinn (1999), McKinnon (1999), Edwards (2000).

⁴² After finishing 1999 at a rate of more than 7000 to the dollar, the rupiah was down to around 9,000 as of July 2000, a depreciation of more than 25%. The Thai baht depreciated almost 8% from 36 to 41 to the dollar, and the Philippine peso fell 10% between January and July 2000. The won and Singapore dollar have appreciated 1% and 4%, respectively.

⁴³ There are measurement problems in relying on reserve changes to capture the degree of intervention in the foreign exchange market. It overstates the degree of intervention to the extent it reflects valuation fluctuations and interest earnings. It understates intervention by excluding "hidden" foreign exchange reserves transactions involving lines of credit or the futures market. It also does not take account of other policy measures, such as interest rate changes, utilized to influence the exchange rate.

February 1973 to April 1999).⁴⁴ The implication is that even under the current more flexible exchange rate arrangements, East Asian policy makers are still intervening substantially.⁴⁵

C. Factors Affecting Choice of Exchange Rate Arrangements

As discussed in Section II, the cost-benefit calculation for any particular exchange rate arrangement depends on a wide variety of factors, including the diversity of trade markets, degree of openness and exposure of the economy to disturbances, degree of price flexibility, willingness to employ controls, the fragility of the financial system, and so on.

While many East Asian countries were compelled to adopt more flexible exchange rate arrangements in the midst of the recent crisis, policymakers in the region must still consider what future arrangements are feasible as well as desirable. Of particular concern is the extent to whether in the long term it is feasible and desirable to achieve stable exchange rates vis-à-vis any of the three major global currencies by pegging and/or stable intraregional exchange rates by an independently-floating common currency. In addition, to what extent may countries in Asia have a greater or lesser “fear of floating” in comparison to other developing countries and/or more advanced countries?

C.1 Trade Links

How strong are the trade links of East Asian economies with potential currency anchors and within regional groupings? Table 5 shows the regional distribution of trade for the five East Asian countries (“Asian 5”) most affected by the recent crisis and for the ASEAN countries (for comparison purposes, trade data for Mercosur countries in Latin America and Euro countries are also presented). The data shows that in 1998 the United States was the largest export market for both the Asian 5 and ASEAN countries, receiving roughly 20 percent of each group’s exports. However, exports to Japan and Europe were still substantial at 11–12 percent each.⁴⁶ On the import side, Japan was the most important source in 1998, accounting for 17–18 percent of imports by East Asian economies, as many imported intermediate goods and capital equipment from Japan. The diversified

⁴⁴ The corresponding figure for Australia over the January 1984 to April 1999 period is 50 percent.

⁴⁵ Korea’s apparently substantial intervention, despite its floating status, largely represents the accumulation of foreign exchange reserves. This likely reflects an effort to build up reserves during the currently “good” state of nature, i.e., higher credibility associated with a strong economic recovery and sizable capital inflows.

⁴⁶ Exports to Japan in 1998 and 1995 no doubt were depressed by Japan’s economic stagnation, but exports to the United States were higher even back in 1990.

trade of countries in the region with the United States and Japan imply exposure to cross-rate movements between the dollar and yen.⁴⁷

Observe also that the ASEAN countries trade a great deal among each other, as intraregional trade has increased to almost 25 percent of their total trade. The growing importance of intraregional trade has increased the magnitude of the real effects of fluctuations in intraregional bilateral exchange rates. However, the share of regional trade is still much less than the roughly 50 percent magnitude for the countries of the European Union.⁴⁸

C.2 Correlation of Shocks

The desirability of exchange rate coordination also depends on the extent to which countries are primarily affected by common shocks; if so, having a single currency (or more generally, a rigid exchange rate arrangement) could be an appropriate policy.

Bayoumi and Mauro (1999) analyze the pattern of disturbances for countries in Asia over the 1968-96 period using structural VARs.⁴⁹ They focus on the correlation of aggregate supply shocks, which they regard as more useful for assessing exposure to common shocks since it is less sensitive to the impact of macroeconomic policies. As shown in Table 6, they find evidence of similarities in macroeconomic shocks for two sets of countries—for Korea and Thailand, and for Hong Kong, Indonesia, Malaysia, and Singapore. The Philippines and Taiwan experienced more idiosyncratic shocks. None of the countries had significantly correlated shocks with Japan.⁵⁰ These results are roughly similar to those for Europe, where shocks appear to be more highly correlated between France and Germany and more idiosyncratic in Italy and Spain. However, the core number of countries with correlated shocks is smaller in Asia. Nor does Japan appear able to play the clear role

⁴⁷ Invoice patterns may also matter in determining the effects of exchange rate fluctuations or trade. For U.S. trade, both its exports and imports are largely invoiced in dollars. In contrast, for Japan, relatively little of its trade is invoiced in yen. In fact, 51% of Japan's exports to East Asia and 71% of imports from the region were invoiced in dollars (Ohno, 1999). Hence the trade of East Asian economies with the United States, and to a great extent with Japan, is in dollars. McKinnon (1999) highlights this point to justify placing a low or no weight on the yen in the exchange rate targets of developing countries in East Asia. At the same time, he recognizes the impact of dollar-yen exchange rate fluctuations on trade by emphasizing the need for the rate to be stabilized (by the United States and/or Japan).

⁴⁸ Bayoumi and Mauro (1999) show ASEAN's intraregional trade *as a share of regional GDP* is similar to that of the Euro area, and higher than that of Mercosur members.

⁴⁹ They apply the structural VAR methodology of Blanchard and Quah (1989) to identify temporary disturbances to output as aggregate demand shocks and permanent disturbances as aggregate supply shocks.

⁵⁰ Bayoumi and Eichengreen (1999) using data only through 1993 find high correlations for Japan with Taiwan (0.61) and Korea (0.46); clearly the inclusion of more recent data has reduced the correlation of shocks with Japan.

of an anchor country in a union as does Germany in Europe, at least by the measure of correlated shocks.

Bayoumi and Mauro also find evidence of relatively quick adjustments to shocks in Asia; almost half of changes in output and prices in response to shocks took place within two years, suggesting relatively flexible labor markets. However, the size of the disturbances experienced by Asian economies is considerably higher than those in Europe. On balance, they conclude that East Asian countries currently are less well suited to a regional currency arrangement than Europe was in 1989 prior to the Maastricht Treaty, though they do not dismiss the prospects of an Asian currency union totally out of hand.⁵¹

More supportive results for an Asian currency area are provided by Loayza, Lopez, and Ubide (1999) who present evidence from an error components model on the importance of country-specific, sector-specific, and common shocks for groups of East Asian, Latin American, and European countries over the period 1970–94.⁵² They find significant short-run and also long-run comovements within East Asia, comparable to those found within Europe. In particular, roughly half of the short-run fluctuations in East Asia have a common origin.⁵³ They interpret this finding as evidence of a high degree symmetry of shocks in the region, and that the East Asian countries are at least as good candidates as the European economies for the establishment of a currency area.

C.3 Pass Through

Another reason why developing countries may fear floating, in general, and devaluations or depreciations, in particular, may be traced to concerns about the effects of large currency swings on domestic inflation. Calvo and Reinhart (2000b) explore this issue empirically by estimating bivariate VAR models for inflation and exchange rate changes. They find that the average pass through effect of lagged exchange rate changes on inflation is about four times as large for developing countries (.228) as for Australia and New Zealand (.065), the industrial countries in the sample. Taken

⁵¹ This contrasts with the conclusion of Bayoumi and Eichengreen (1999) who viewed the prospects of an Asian currency area on economic grounds more favorably based on an analysis written prior to the 1997–98 crisis. However, they more strongly question such an arrangement on political grounds.

⁵² The East Asian countries in the sample are Indonesia, Korea, Malaysia, Singapore, Thailand, Taiwan, and Japan.

⁵³ In contrast, they find that the variability of output growth in Latin America is mainly explained by country-specific components. The latter finding is supported by the work of Ahmed (1999) which finds no evidence that the business cycles of Argentina, Brazil, and Mexico (over the period 1981–98) are driven by output shocks in export markets, including the United States.

together, these results may help understand developing countries intolerance to large exchange rate fluctuations—especially devaluations.

However, the reported pass through estimates for Indonesia, Malaysia, and Korea tend to be much lower than for other emerging markets, and in fact were on the same order of magnitude as for New Zealand and Australia.⁵⁴ Thus the pass through concern may be much less relevant for Asian countries. This may reflect the historically low inflation environment in these countries. It is also noteworthy that in the aftermath of the Asian crisis inflation did not rise significantly despite severe currency depreciations.

C.4 Role of Controls

Table 7 presents IMF rate regime classifications of exchange rate regimes for the Asian 5 countries, members of ASEAN, and Japan for the years 1982, 1990, and 1999. It shows an increase in the number of countries exercising greater exchange rate flexibility. It also shows that the bulk of these countries were still engaged in various intermediate regimes in 1999. However, consistent with the finding for the sample of countries analyzed in Section III.C, it is also the case that virtually all of the countries with intermediate regimes also employed balance of payments controls (the exception is Singapore). In contrast, none of the countries with hard pegs or independent floats employed controls (with the exception of Thailand). The conclusion is that, as with developing countries in general, controls on balance of payments flows are critical to limiting the currency pressures that otherwise would compel Asian countries to adopt more flexible arrangements.

D. Exchange Rate Policy Prescriptions for Asia

What exchange rate arrangements are desirable and feasible in East Asia? A number of suggestions have been offered. The following section concludes the paper with an evaluation of these proposals based on the general observations about exchange rate arrangements in Sections II and III and the particular characteristics of countries in East Asia discussed in the preceding section.

⁵⁴ Ito et al. (1998) also estimate pass through equations that consider the response of export prices to changes in the bilateral (real) exchange rate with respect to the yen as well as the dollar. They found pass through coefficients to the dollar of less than .15 in Thailand, Indonesia, and Korea, but .49 in Taiwan.

D.1 Pegs and Bands

Given the predominance of East Asian trade with the United States, McKinnon (2000) and others have advocated a restored dollar-based exchange rate regime in East Asia in which countries individually (or collectively) adopt “soft” dollar pegs.⁵⁵ However, a prerequisite for any possible success of a return to dollar pegging appears to be greater stability of the yen/dollar rate.⁵⁶ Such a “tethering” is unlikely. Moreover, any such exchange rate arrangements will always be susceptible to speculative attacks. A return to an announced peg is an open invitation for future speculative attacks with significant adverse effects. The loss of credibility generated by the recent crisis and uncertainty about the correct level of the exchange rate suggest that defending an exchange rate peg has not become any easier. Pegging to the yen exclusively makes even less sense, given the pattern of trade and evident asymmetry of shocks between Japan and the rest of the region (see Section IV.C).

Alternatively, some have suggested pegging to a basket (e.g. Ito et al, 1998; Kwan, 1998) involving the region’s major trading partners, including Japan as well as the United States, to offset the effects of cross-rate movements, particularly between the dollar and yen.⁵⁷ In theory, this arrangement reduces the volatility of the nominal real effective exchange rate. But the neat theoretical formulas one obtains for basket pegs are not always easy to implement in practice. In particular, the virtues of simplicity, transparency, and observability are lost to the extent the weights used to calculate the basket are not public information and/or need to be adjusted over time in response to structural changes. Discretionary manipulation of weights can be perceived as arbitrary, undermine the credibility of the exchange rate regime, and reduce the microeconomic and informational benefits of maintaining bilateral exchange rates constant.

Some advocate wide bands in the belief that they will help cushion the effects of speculative movements and offer monetary authorities some measure of monetary independence that would be impossible with the very narrow bands of adjustable pegs. For example, in papers written prior to the Asia crisis, Dornbusch and Park (1999) and Williamson (1999) advocated a hybrid basket-crawl-

⁵⁵ McKinnon (1999) also emphasized the accompanying need for greater prudential regulation of the banking system and short-term capital flows.

⁵⁶ McKinnon has referred to the fluctuations in the dollar/yen rate as a “loose cannon.”

⁵⁷ Ito, Ogawa, and Sasaki (1998) calculate the optimal currency basket weight of the yen for several East Asian countries, based on the criterion of minimizing the variance of the trade balance of these countries. Their estimates of the optimal weight for the yen are much greater than the implicit weights estimated by Frankel and Wei (1994) and others.

band regime that would take account of the region's diversified trade destinations, allow bilateral exchange rates to adjust to intraregional inflation differentials, and permit some room for domestic monetary policy independence. Ohno (1999) also recommends that developing countries in East Asia should adopt inflation-adjusted crawling basket rates with bands, but not necessarily with a common currency basket in the region.

However, band arrangements, including crawling bands, are not immune to speculative attacks. When the exchange rate is pushed to the limits of the band, they face the same type of problems as a standard exchange rate peg. The monetary authorities can, of course, realign the bands before the exchange rate reaches any kind of region where an attack might be likely. But if agents come to expect that the bands will always be changed or the bands are too broad, the stabilizing effect of the bands is negligible and there is little practical difference between such a soft zone arrangement and an independent exchange rate.

In response to this problem with band regimes, Ohno (1999) has suggested "pragmatic exchange rate policy rules" to be applied differentially in normal and crisis periods. In "normal" times, the exchange rate would be managed to stabilize the real effective exchange rate and allowed to adjust in response to some real shocks. In crisis times, the "normal" arrangement could be suspended. McKinnon (1999) advocates a similar approach, with a "restoration rule" about the long run exchange rate target in place to guide market expectations back to the "normal" exchange rate target after a speculative crisis episode has ended. However, it is precisely the inability to predict crises and know how much effort to make to defend any particular exchange rate target that renders such a system crisis prone. At the same time, once the exchange rate has moved away from the target following a crisis it is unclear when intervention should resume to move ("restore") the economy back to the target. Thus the credibility of a restoration rule seems no easier to sustain than the initial exchange rate target.

In this regard, it should be recalled that the currencies of Mexico before December 1994, Indonesia before August 1997, and Russia before August 1998 were all engaged in crawling band arrangements. In Indonesia's case, after the Thai baht devalued and capital flows to Indonesia reversed direction, in August 1997 the rupiah went from the upper edge of the band (which had been widened to 6 percent in July 1997) to the lower edge in one day (August 13). As outflows continued and further interest rate increases to defend the currency proved too costly, the band was abandoned altogether.

Are the prospects for some form of pegging regime enhanced by adopting a collective approach? Of course, if a number of countries repegged their currencies to the dollar or a basket at the same time, concerns might be reduced about the intraregional competitiveness effects of bilateral exchange rate changes among East Asian currencies. However, if the peg is to the dollar, it would not eliminate the problem of cross-rate movements between the dollar and other major currencies. If the collective peg was to a basket, agreement would be difficult to achieve on the composition of a basket without a degree of political consensus that does not presently exist. Because different Asian economies were affected differently by the recent crisis, have recovered at different speeds, and remain subject to different domestic and external shocks, market pressures on their exchange rates are unlikely to be uniform over time. Moreover, as the work of Takagi (1996) suggests, countries in the region have traditionally displayed different priorities to the goals of export competitiveness and price stability. Without a firm political commitment, any regional pegged currency arrangement likely would be viewed as another fixed exchange rate regime, open to speculative crises.

Thus, it does not seem likely that any system with a soft (adjustable) single currency or basket peg with or without exchange rate bands will provide a durable exchange rate arrangement without the widespread maintenance of exchange controls. The implication is that those East Asian countries who wish to continue their growing involvement with international financial markets must accept the increasing infeasibility of intermediate exchange rate arrangements. The recent crises have forcefully illustrated the same lessons learned by industrial countries in the ERM crisis of 1992–93—that the policy requirements for maintaining pegged and band exchange rate arrangements are very demanding in circumstances of high international capital mobility.

What are the prospects for adoption of a hard peg? At present, none of the crisis countries at present appears to satisfy the criteria making adoption of a currency board to a single foreign currency suitable. Almost all are relatively large economies (by developing country standards) with diversified trade partners and exposure to a variety of shocks which such an arrangement is ill-equipped to counter. A basket-based currency board is conceivable, but has the same transparency and credibility problems of a “soft” basket peg.

Even more problematic is the ongoing financial fragility in the region. Cleaning up the existing bad loan problems and raising prudential standards in the region’s financial systems is a prerequisite for the success of a hard peg, since the function of lender of last resort is constrained from creating money to lend to domestic banks during a financial crisis by the availability of excess

reserves, while deposit insurance is limited by the availability of fiscal saving.⁵⁸ While problems at individual financial institutions could still be handled if the central bank or other government agency had resources beyond the backing required for the currency or could draw on established lines of credit with foreign banks or international organizations, any general bank run in the future involving a shift from bank deposits to foreign currency would be no less difficult to deal with than during the most recent crisis.

D.2 The Floating Rate Alternative

Thus, for most emerging market economies in East Asia, exchange rate floating appears to be the most plausible policy option.⁵⁹ Such a policy does not imply nor require “benign neglect” of the exchange rate and no intervention in the foreign exchange market. That is, it does not exclude an active but discretionary use of intervention and other policy tools to influence the exchange rate. Monetary policy may still take into account and react to exchange rate developments. Nor does a flexible exchange rate policy imply there is no need to accumulate and hold foreign exchange reserves. Responding to contagion effects during an unwarranted crisis necessitates efforts to increase international liquidity either by building up reserves through current account surpluses or by establishing credit lines. Nor does it matter whether the exchange rate policy is referred to as a managed float or an independent float. What matters is that policymakers not make any explicit or implicit policy commitments to keep the exchange rate within some range or crawling band for any extended periods of time.

For a floating exchange rate to function effectively and avoid the problems that tend to develop over time with exchange rate pegs, it is important that its particular level not become a lightning rod for speculators and that it actually moves—in both directions—in response to market forces. Only such movements can cause economic agents to recognize and properly manage the foreign exchange risks that arise with open capital markets. Excessively tight management of the exchange rate that limits exchange rate volatility may foster complacency about foreign exchange risks and the buildup of foreign liabilities. Of course, there will be concerns about the effects of any further depreciations on the burden of foreign currency denominated foreign debts in the region. But

⁵⁸ Certainly, any exchange rate arrangement benefits from establishing high prudential standards for banks.

⁵⁹ The following discussion presumes that imposing greater controls on international capital flows—Malaysia style—is not an option.

since the crisis began, most of the hardest hit economies have steadily reduced their stocks of foreign borrowing.⁶⁰

More ambitious efforts at floating on a regional basis through formation of a common currency union, however, do not seem feasible at the moment, as much for political as for economic reasons. At the moment, the region lacks a natural focal country for the convergence of policies. In addition, a monetary union requires commitment to political integration to build a region-wide central bank to formulate a common monetary policy and region-wide political institutions to hold it accountable. But given the diversity of levels of development and the historical tensions among various countries in Asia, it is difficult to see the region moving towards significantly stronger political integration in the near future.

In the short run, less formal forms of coordinating exchange rate policies may be feasible, along the lines of the recent system of currency swaps announced by the ASEAN+3 countries. It is even possible that an Asian monetary fund might evolve to identify and respond to crises on a regional basis. Such cooperation may be useful, but not if it increases pressure for adoption of common pegs.

Of course, if the exchange rate is not used to provide a nominal anchor, on either an individual country or regional basis, monetary credibility must be established through other means, such as an inflation target objective.⁶¹ This requires the ability to implement sometimes complicated feedback rule typically required for an effective inflation targeting system. This may prove difficult, given the uncertain transmission mechanisms through which monetary policy affects the economy and the price level in these economies, particularly as financial system liberalization and structural change is ongoing. Nevertheless, the historical record of relatively low inflation and strong fiscal responsibility in most Asian countries implies that stabilizing inflation expectations and maintaining an inflation target system may be more easily achieved than in other emerging markets.

⁶⁰ As of the end of 1999, the Asian 5 countries have reduced their outstanding debt to international banks by over 40 percent (from \$329 to \$190 billion) since the onset of the crisis, as investment fell and banks and firms restructured their balance sheets. The outstanding foreign debt of domestic Asian banks has fallen even more (Bank for International Settlements, *70th Annual Report*, 2000).

⁶¹ For discussions of the advantages and disadvantages of inflation targeting in developing countries, see Mishkin (1999) and Mishkin and Savastano (2000).

References

- Ahmed, Shaghil (1999). "Sources Of Economic Fluctuations In Latin America and Implications For Choice of Exchange Rate Regimes." Board of Governors of the Federal Reserve System, International Finance Discussion Paper No. 656, December.
- Bayoumi, Tamim and Barry Eichengreen (1999). "Is Asia an Optimum Currency Area? Can it Become One? In Stefan Collingnon, Jean Pisani-Ferry, and Yung Chul Park, eds., *Exchange Rate Policies in Emerging Asian Countries*. London: Routledge Press, pp. 347–366.
- Bayoumi, Tamim and Paolo Mauro (1999). "The Suitability of ASEAN for a Regional Currency Arrangement," IMF Working Paper No. 99/162, December.
- Beng, Gan Wee and SoonLee Yin (1999). "Exchange Rate Policy in East Asia After the Fall: How Much Have Things Changed?" Occasional Paper No. 19, Monetary Authority of Singapore.
- Blanchard, Olivier and Danny Quah (1989). "The Dynamic Effects of Aggregate Demand and Supply Disturbances," *American Economic Review*, 79, pp. 655-73.
- Calvo, Guillermo and Enrique Mendoza (2000). "Rational Contagion and the Globalization of Securities Markets," *Journal of International Economics*, 51 (June), pp. 74–114.
- Calvo, Guillermo and Carmen Reinhart (2000a). "Fixing for Your Life." Paper prepared for the Brookings Trade Forum 2000, Policy Challenges in the Next Millenium, April 27-28, 2000, Washington, D.C.
- Calvo, Guillermo and Carmen Reinhart (2000b). "Fear of Floating," mimeo. University of Maryland.
- Chinn, Menzie (1999). "Measuring Misalignment: Purchasing Power Parity and East Asian Economies in the 1990s." IMF Working Paper No. 99/120, September.
- Corsetti, Giancarlo, Paolo Pesenti, and Nouriel Roubini (1998). "What the Asian Currency and Financial Crisis?" NBER Working Paper No. 6833, December.
- Dornbusch, Rudiger and Yung Chul Park (1999). "Flexibility or Nominal Anchors?" In Stefan Collignon, Jean Pisani-Ferry, and Yung Chul Park, eds., *Exchange Rate Policies in Emerging Asian Countries*. London: Routledge Press, pp. 3–34.
- Edwards, Sebastian (2000). "Exchange Rate Systems In Emerging Economies," mimeo, University of California, Los Angeles.
- Edwards, Sebastian and Miguel Savastano (1999). "Exchange Rates in Emerging Economies: What Do We Know? What Do We Need to Know?" NBER Working Paper No. 7228, July.
- Eichengreen, Barry (2000). "Solving The Currency Conundrum," Paper prepared for Council on Foreign Relations, March.

Eichengreen, Barry (1999). *Toward a New Financial Architecture: A Practical Post-Asia Agenda*, Washington, DC: Institute for International Economics.

Eichengreen, Barry, and Ricardo Hausmann (1999). "Exchange Rates and Financial Fragility," Paper presented at Federal Reserve Bank of Kansas City's Conference on Issues in Monetary Policy, Jackson Hole, Wyoming, August 27–29.

Frankel, Jeffrey (1999). "No Single Exchange Rate Regime is Right for All Countries or at All Times," NBER Working Paper No. 7338. *Essays in International Finance* No. 215, Princeton University Press: Princeton, August.

Frankel, Jeffrey and Andrew Rose (1998). "The Endogeneity of the Optimum Currency Area Criteria," *Economic Journal*, 108 (July), pp. 1009–1025.

Frankel, Jeffrey, Eduardo Fajnzylber, Sergio Schmukler, and Luis Servén (2000). "Verifying Exchange Rate Regimes," World Bank Working Paper No. 2397, May.

Frankel, Jeffrey, Sergio Schmukler, and Luis Servén (2000), "Verifiability and the Vanishing Exchange Rate Regime." Paper prepared for the Brookings Trade Forum 2000, Policy Challenges in the Next Millennium, April 27–28, 2000, Washington, D.C.

Frankel, Jeffrey and Shang Jin Wei (1994). "Yen Bloc or Dollar Bloc? Exchange Rate Policies in the East Asian Countries." In T. Ito and Anne Krueger, eds., *Macroeconomic Linkages: Saving, Exchange Rates, and Capital Flows*, Chicago: University of Chicago Press.

Hanke, Steve (1999). "Reflections on Exchange Rate Regimes," *CATO Journal*, 18, pp. 335-44.

Hoffmaister, Alexander W. and Jorge E. Roldos. (1997). "Are Business Cycles Different in Asia and Latin America?" IMF Working Paper No. 97/9, January.

Ito, Takatoshi, Eiji Ogawa, and Yuri Sasaki (1998). "How Did The Dollar Peg Fail in Asia?" NBER Working Paper No. 6729, September.

Kenen, Peter B. (1969). "The Theory of Optimum Currency Areas: An Eclectic View." In R.A. Mundell and A.K. Swoboda, eds., *Monetary Problems of the International Economy*, University of Chicago Press, pp. 41-60.

Kwan, C.H. (1998). "Yen for an Anchor: Asia in Search of a New Exchange Rate Regime" In Ramon Moreno and Gloria Pasadilla, eds., *Asia: Responding to Crisis*. Tokyo: Asian Development Bank Institute, Ch. 4.

Larrain, Felipe and Andres Velasco (1999). "Exchange Rate Arrangements for Emerging Market Economies," Occasional Paper No. 60. Washington, D.C.: Group of 30.

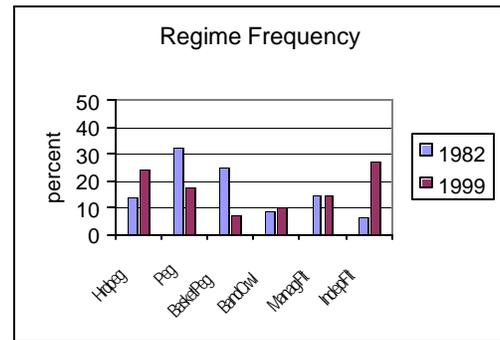
Loayza, Norman, Humberto Lopez, and Angel Ubide (1999). "Sectoral Macroeconomic Interdependencies: Evidence for Latin America, East Asia, and Europe," IMF Working Paper No. 99/11, January.

- McKinnon, Ronald (1963). "Optimum Currency Areas," *American Economic Review*, 53 (September), pp. 717–724.
- McKinnon, Ronald (1999). "The East Asian Dollar Standard, Life after Death? Paper prepared for the World Bank Seminar on "Rethinking the East Asian Miracle," July. *Economic Notes*, Banca di Paschi di Siena, 29 (No. 1), pp. 31-82
- Mishkin, Frederic (1999). "International Experiences with Different Monetary Policy Regimes," NBER Working Paper No. 7044, March.
- Mishkin, Frederic and Miguel Savastano (2000). "Monetary Policy Strategies for Latin America," NBER Working Paper No. 7618, March.
- Mundell, Robert (1961). "A Theory of Optimum Currency Areas," *American Economic Review*, 51 (September), pp. 651–64.
- Mussa, Michael, Paul Masson, Alexander Swoboda, Esteban Jadresic, Paolo Mauro, and Andy Berg (2000). "Exchange Rate Regimes in an Increasingly Integrated World Economy" IMF Occasional Paper No. 193, April.
- Obstfeld, Maurice and Kenneth Rogoff (1996). "The Mirage of Fixed Exchange Rates," *Journal of Economics Perspectives*, 9 (Fall), pp. 73–96.
- Ohno, Kenichi (1999). "Exchange Rate Management in Developing Asia: A Reassessment of the Pre-crisis Soft Dollar Zone," Asian Development Bank Institute Working Paper No. 1, January.
- Sachs, Jeffrey, Aaron Tornell, and Andres Velasco (1996). "Financial Crises in Emerging Markets: The Lessons from 1995," *Brookings Paper on Economic Activity*, No. 1, pp. 147–215.
- Summers, Lawrence (2000). Testimony before the Senate Foreign Relations Subcommittee on International Economic Policy and Export/Trade Promotion, January 27.
- Takagi, Shinji (1996). "The Yen and Its East Asian Neighbors, 1980–95: Cooperation or Competition?" NBER Working Paper No. 5720.
- Tornell, Aaron and Andres Velasco (2000). Fixed versus Flexible Exchange Rates: Which Provides More Fiscal Discipline? *Journal of Monetary Economics*, 45 (April), pp. 399–436.
- Williamson, John (1999). "The Case for a Common Basket Peg for East Asian Currencies." In Stefan Collingnon, Jean Pisani-Ferry, and Yung Chul Park, eds., *Exchange Rate Policies in Emerging Asian Countries*. London: Routledge Press, pp. 327–343.

Table 1. Exchange Rate Regime Frequencies: 1982, 1990, 1999 (in percent)

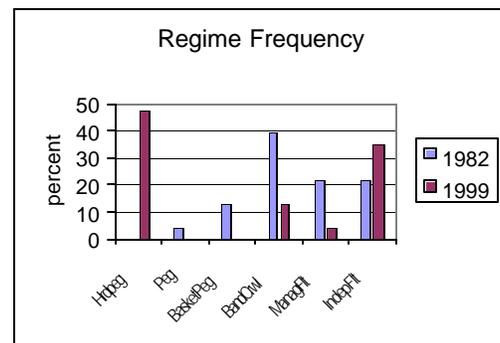
A. All Countries

	1982	1990	1999
Hard Peg	14	15	24
Peg	32	19	17
Basket Peg	25	26	7
Band or Crawling Peg	9	10	10
Managed Float	14	13	15
Independent Float	6	17	27
Total	100	100	100
No. of countries	148	155	185



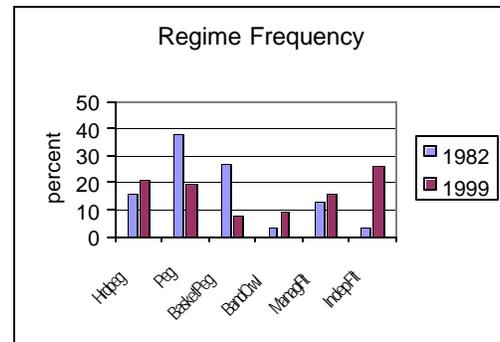
B. Industrial Countries

	1982	1990	1999
Hard Peg	0	0	48
Peg	4	4	0
Basket Peg	13	17	0
Band or Crawling Peg	39	43	13
Managed Float	22	9	4
Independent Float	22	26	35
Total	100	100	100
No. of countries	23	23	23



C. Developing and Transition Countries

	1982	1990	1999
Hard Peg	16	18	21
Peg	38	22	20
Basket Peg	27	27	8
Band or Crawling Peg	3	4	9
Managed Float	13	14	16
Independent Float	3	15	26
Total	100	100	100
No. of countries	125	132	162



D. S&P Emerging Market Countries

	1982	1990	1999
Hard Peg	2	4	11
Peg	29	11	22
Basket Peg	26	33	7
Band or Crawling Peg	10	4	13
Managed Float	26	24	19
Independent Float	7	24	28
Total	100	100	100
No. of countries	42	46	54

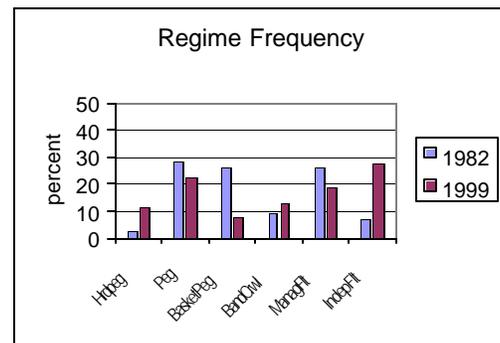


Table 2. Exchange Rate Regime Transition Matrix, 1982 to 1999

A. All Countries

		Regime in 1999						1982 totals (freq. in %)	
		Hard peg	Peg	Basket Peg	Bands and Crawls	Managed Float	Independent Float		
Regime in 1982	Hard peg	20	0	0	0	0	0	20	(14%)
	Peg	2	19	0	5	9	12	47	(32%)
	Basket Peg	2	6	9	4	6	10	37	(25%)
	Bands and Crawls	8	0	0	1	0	4	13	(9%)
	Managed Float	3	1	2	5	1	8	20	(14%)
	Independent Float	0	1	0	2	0	6	9	(6%)
1999 totals (freq. in %)		35 (24%)	27 (18%)	11 (8%)	17 (12%)	16 (11%)	40 (27%)	146	

B. Developing Countries

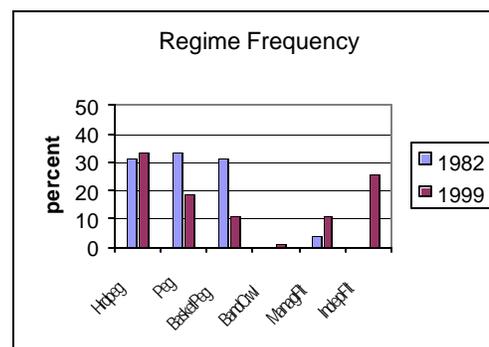
		Regime in 1999						1982 totals (freq. in %)	
		Hard Peg	Peg	Basket Peg	Bands and Crawls	Managed Float	Independent Float		
Regime in 1982	Hard Peg	20	0	0	0	0	0	20	(17%)
	Peg	1	19	0	5	8	12	45	(37%)
	Basket peg	1	6	9	3	5	9	33	(27%)
	Bands and Crawls	0	0	0	0	0	4	4	(3%)
	Managed Float	2	1	2	3	1	6	15	(12%)
	Independent Float	0	1	0	2	0	1	4	(3%)
1999 totals (freq. in %)		24 (20%)	27 (22%)	11 (9%)	13 (11%)	14 (12%)	32 (26%)	121	

Note: The entry for cell (x, y) indicates the number of countries with regime x in 1982 and regime y in 1999; e.g. cell (2,6) = 12 indicates that 12 countries had a peg in 1982 and an independent float in 1999.

Table 3. Exchange Rate Regime Frequencies by Country Characteristics: 1982, 1990, 1999 (in percent)

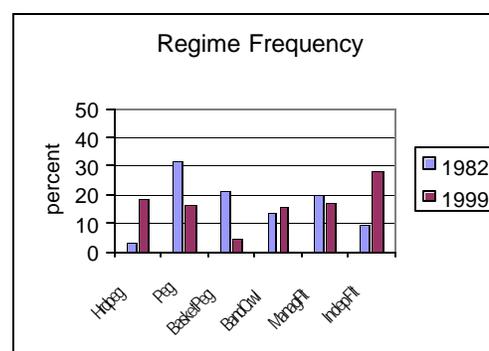
A. Small Countries

	1982	1990	1999
Hard Peg	31	34	33
Peg	33	21	19
Basket Peg	31	24	11
Band or Crawling Peg	0	5	1
Managed Float	4	9	11
Independent Float	0	7	25
Total	100	100	100
No. of countries.	54	58	75



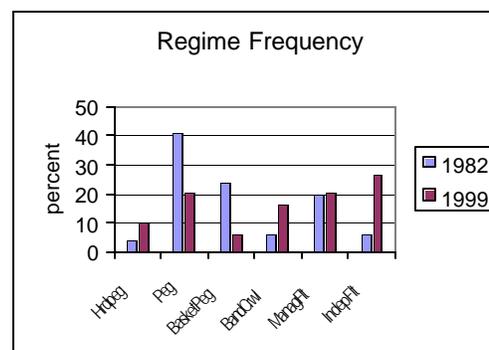
B. Large Countries

	1982	1990	1999
Hard Peg	3	4	18
Peg	32	19	16
Basket Peg	21	27	5
Band or Crawling Peg	14	12	15
Managed Float	20	15	17
Independent Float	10	23	28
Total	100	100	100
No. of countries.	94	97	110



C. Large Developing and Transition Economies

	1982	1990	1999
Hard Peg	4	5	10
Peg	41	23	21
Basket Peg	24	30	6
Band or Crawling Peg	6	3	16
Managed Float	20	18	21
Independent Float	6	22	26
Total	100	100	100
No. of countries.	71	74	87



D. Commodity Exporters

	1982	1990	1999
Hard Peg	20	23	25
Peg	27	13	9
Basket Peg	50	35	9
Band or Crawling Peg	0	6	3
Managed Float	3	13	16
Independent Float	0	10	38
Total	100	100	100
No. of countries.	30	31	32

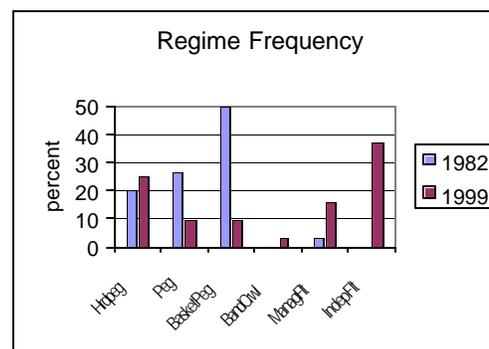
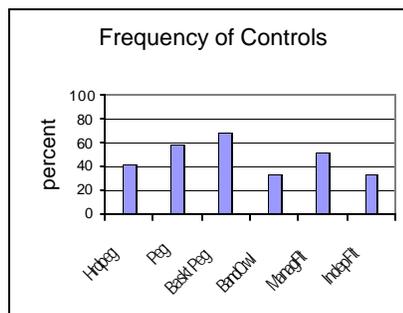


Table 4. Frequency of Controls by Exchange Rate Regime: 1999 (in percent)

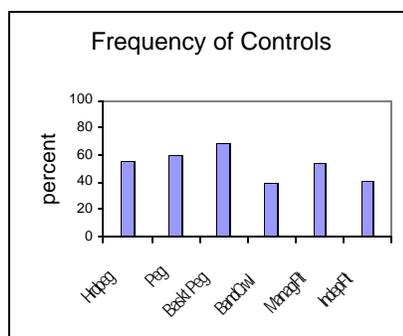
A. All Countries

	No. of countries	% w/controls
Hard Peg	45	42
Peg	32	59
Basket Peg	13	69
Band or Crawling Peg	18	33
Managed Float	27	52
Independent Float	50	34
Total	185	45



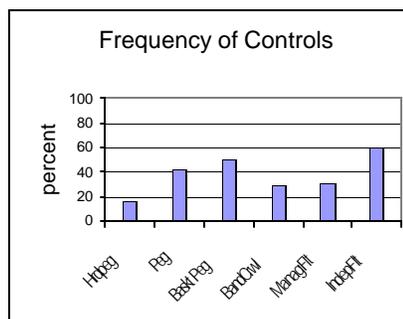
B. Developing and Transition Countries

	No. of countries	% w/controls
Hard Peg	34	56
Peg	32	59
Basket Peg	13	69
Band or Crawling Peg	15	40
Managed Float	26	54
Independent Float	42	40
Total	162	52



C. S&P Emerging Market Countries

	No. of countries	% w/controls
Hard Peg	6	17
Peg	12	42
Basket Peg	4	50
Band or Crawling Peg	7	29
Managed Float	10	30
Independent Float	15	60
Total	54	41



Note: Controls defined as surrender requirements for export receipts in 1998

Table 5. Regional Trade Patterns (in percent of total regional trade)

	1990		1995		1998	
	Exports	Imports	Exports	Imports	Exports	Imports
Asian 5^a						
Within Asian 5	6.7	6.6	8.4	8.1	10.2	12.5
With Japan	22.2	26.1	15.9	25.8	11.6	17.8
With the U.S.	23.9	18.2	19.5	17.3	20.2	14.4
With Euro area	11.8	11.3	10.4	11.6	10.7	8.6
With other industrial countries	8.3	10.6	6.6	9.4	8.1	7.4
With other developing countries	25.0	24.1	36.9	26.1	36.5	36.6
ASEAN^b						
Within ASEAN	19.0	15.2	24.6	18.0	22.1	24.1
With Japan	18.9	23.1	14.2	23.8	11.1	16.9
With the U.S.	19.4	14.4	18.6	13.8	20.6	13.8
With Euro area	11.7	11.2	10.8	11.1	11.9	8.9
With other industrial countries	7.6	9.8	6.9	8.1	8.6	6.7
With other developing countries	23.1	25.2	24.3	24.3	25.2	28.5
Mercosur^c						
Within Mercosur	11.6	17.5	22.6	20.2	26.8	22.7
With the U.S.	20.4	19.3	15.0	20.6	15.1	21.6
With Euro area	28.8	20.1	21.3	22.3	21.3	22.0
With other industrial countries	14.6	15.4	14.3	13.7	10.6	13.3
With other developing countries	23.2	26.6	26.0	22.1	25.0	19.5
Euro area^d						
Within Euro area	54.1	52.8	51.2	50.7	48.7	48.5
With Japan	2.0	4.1	2.0	3.8	1.6	3.8
With the U.S.	6.1	6.7	5.9	6.8	7.6	7.8
With other industrial countries	19.5	16.7	18.3	16.8	18.9	16.6
With other developing countries	17.2	19.1	21.3	21.0	22.0	22.4

^a Asian 5: Indonesia, Korea, Malaysia, Philippines, and Thailand.

^b ASEAN (Association of Southeast Asian Nations): Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam (Brunei data are not available).

^c Mercosur: Argentina, Brazil, Paraguay, Uruguay, and associate members Bolivia and Chile.

^d Euro area: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain.

Source: Bayoumi and Mauro (1999).

Table 6. Correlations of Aggregate Supply Shocks

East Asia (1968–96)

	Malaysia	Indonesia	Singapore	Philippines	Thailand	Hong Kong	Japan	Taiwan	Korea	Australia	New Zealand
Malaysia	1.00										
Indonesia	0.49*	1.00									
Singapore	0.40*	0.32	1.00								
Philippines	0.05	0.16	0.01	1.00							
Thailand	0.02	0.16	0.33	0.14	1.00						
Hong Kong	0.12	0.40*	0.42*	0.00	0.33	1.00					
Japan	-0.02	0.03	0.02	0.03	0.32	-0.23	1.00				
Taiwan	0.00	0.32	0.42*	0.15	0.54*	0.40*	0.23	1.00			
Korea	0.17	0.11	0.21	0.07	0.21	0.18	0.17	0.01	1.00		
Australia	0.00	0.14	0.08	-0.16	0.25	0.13	0.36*	0.27	0.04	1.00	
New Zealand	0.04	0.22	0.19	-0.01	0.21	0.00	0.22	0.07	0.01	0.07	1.00

Europe (1969–89)

	Germany	France	Netherlands	Belgium	Denmark	Austria	Italy	United Kingdom	Spain	Portugal	Ireland
Germany	1.00										
France	0.52*	1.00									
Netherlands	0.54*	0.36	1.00								
Belgium	0.62*	0.40*	0.56*	1.00							
Denmark	0.68*	0.54*	0.56*	0.37*	1.00						
Austria	0.41*	0.28	0.38*	0.47*	0.49*	1.00					
Italy	0.21	0.28	0.39*	0.00	0.15	0.06	1.00				
United Kingdom	0.12	0.12	0.13	0.12	-0.05	-0.25	0.28	1.00			
Spain	0.33	0.21	0.17	0.23	0.22	0.25	0.20	0.01	1.00		
Portugal	0.21	0.33	0.11	0.40	-0.04	-0.03	0.22	0.27	0.51*	1.00	
Ireland	0.00	-0.21	0.11	-0.02	-0.32	0.08	0.14	0.05	-0.15	0.01	1.00

Source: Bayoumi and Mauro (1999). Figures with asterisk indicate significant at 5 percent.

Table 7. Exchange Rate Regimes and Controls in East Asia: 1982, 1990, 1999

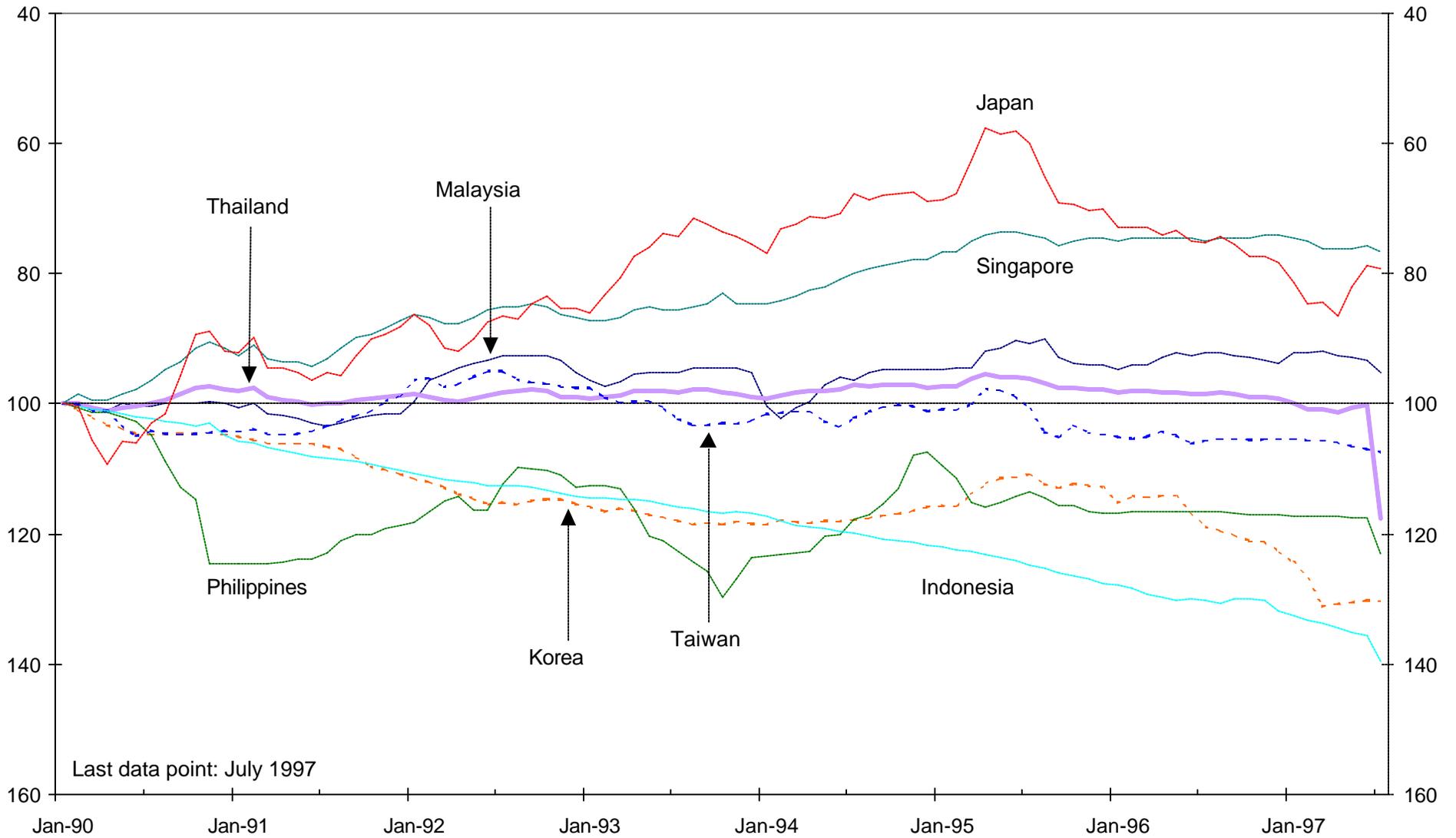
Asia	1982	1990	1999
Hard peg		Hong Kong Brunei	Hong Kong Brunei
Peg	Indonesia Laos Thailand		China Malaysia
Basket Peg	China Malaysia Myanmar Singapore Viet Nam	China Malaysia Myanmar Thailand	Myanmar
Bands and Crawls			Viet Nam
Managed Float	Philippines	Indonesia Laos Korea Singapore Viet Nam	Cambodia Laos Singapore
Independent Float	Hong Kong Japan	Japan Philippines	Indonesia Japan Korea Philippines Thailand
Total	11	13	14

Note: China classification for 1990 and 1999 are de facto. Bolding indicates presence of export proceed surrender requirements at end of prior year.

Figure 1. East Asia Exchange Rates, 1990:1–1997:7

NC/US\$, INDEX
(Reverse Scale)

Jan. '90= 100

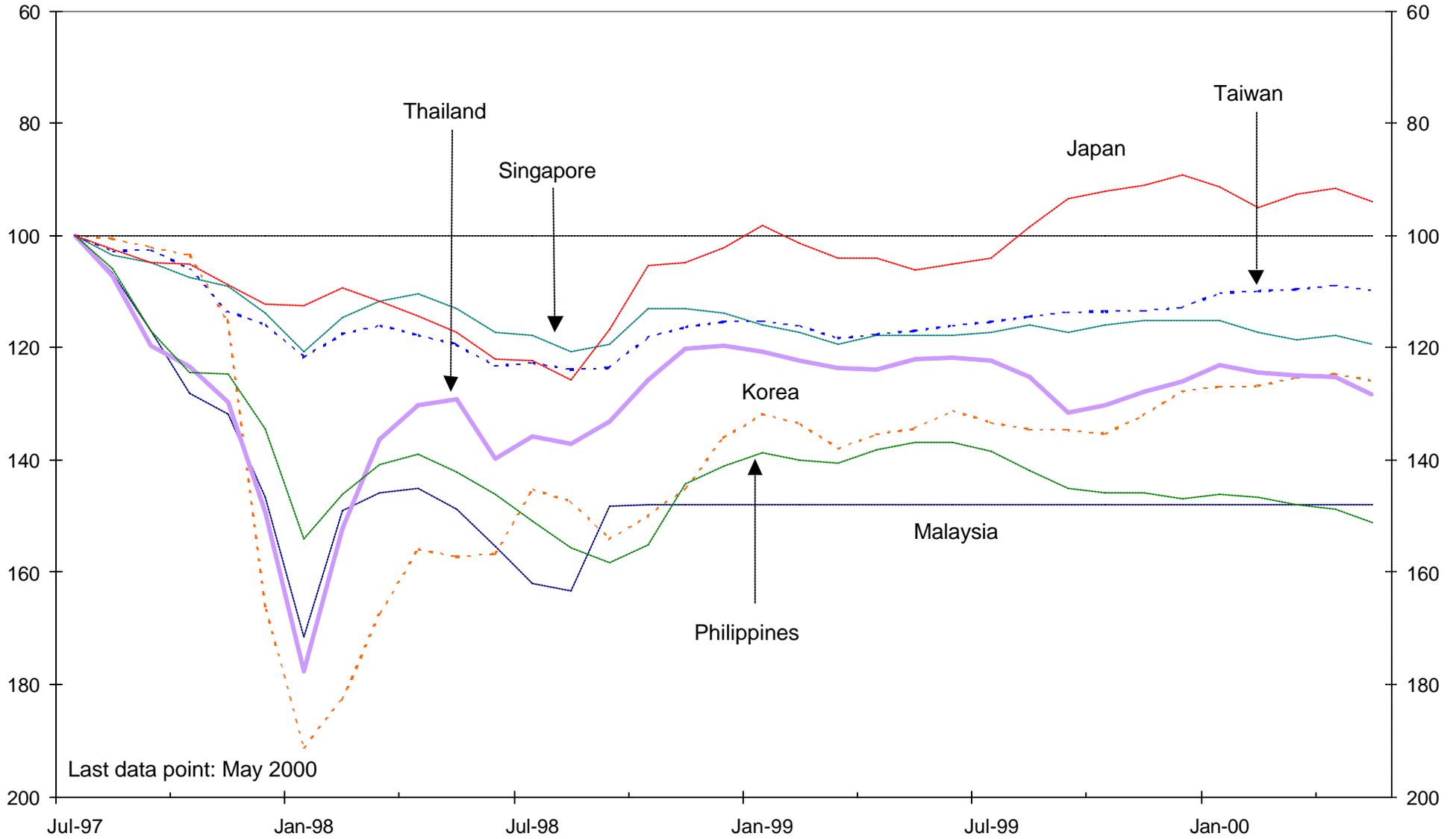


Source: IMF Monthly Data, monthly averages

Figure 2. East Asia Exchange Rates, 1997:7–1999:5

NC/US\$, INDEX
(Reverse Scale)

July '97 = 100



Last data point: May 2000

Source: IMF Monthly Data, monthly averages