

Exchange Rate Arrangements: Theory and Empirical Applications on Emerging Market Economies

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Abstract

So many literatures have been written for the choice of exchange rate regimes since the financial crisis of 1932. But most of them are focused mainly on the exchange regime of developed countries, but not since recently through the currency crisis of the 1990s that the focused is shifted into the emerging market economies. My primary aim is to clarify issues between the inter-relationship between foreign exchange movements (depreciation/appreciation) and economic performance of the 1990s crisis countries. In general I do not advocate simple solutions to the problems confronted in the recent crises involving emerging market economies, other than to give an analysis based from the available empirical evidence and theoretical insights for the crisis countries of 1990s and to deduct some conclusion base from this analysis.

Introduction

The 1990s witnessed several episodes of currency turmoil, most notably the near-breakdown of the European Exchange Rate Mechanism in 1992–93, the Latin American Tequila Crisis following Mexico's peso devaluation in 1994–95, and the severe crisis that swept through Asia in 1997–98. However, the economic effects of this exchange rate instability have been especially devastating in Asia. Following years of stellar performances, the crisis-hit countries of Asia experienced a plunge in the external value of their currencies and a sudden reversal of private capital flows from June 1997 onward. Recent recommendation from several concerned bodies has pointed toward a need for free floating rates in emerging market economies in general and in East Asia in particular. Mussa (2000), for example, argue that given the current international financial conditions, tight management of exchange rates that lead to limited exchange rate volatility in normal times can foster complacency with regards to exchange rate risk.

In the context of the Asian crisis, McKinnon (2000) argues that the so-called floating exchange regimes of the countries — baring Malaysia, which maintains a fixed peg — are not

really floating. McKinnon argues that the evidence points toward a high-frequency pegging in Indonesia, Korea, the Philippines, and Thailand. However, a critical and close scrutiny of the data is warranted before the characteristic of the exchange rate regimes in the concerned countries are branded as similar to that of pegged exchanged rate, especially the type that existed before the crisis. One topic of attention concerns the revealed desire of governments to resist exchange rate fluctuations despite the susceptibility of pegged exchange regimes to crisis (Calvo and Reinhart (2000)).

The purpose of this paper is not to search for the one, ideal exchange rate regime that will fit all emerging market economies. Rather, the aim is twofold: to analyze the relationship between foreign exchange rates systems and macroeconomic performance of emerging market economies, both in its theoretical as well as empirical settings; and to elucidate the relationship between the circumstances of a country and the exchange regime that is most likely to suit its economic interest.

1. The Elasticities, Absorption and Monetary Approach

The inter-relationship between foreign exchange movements (depreciation /appreciation) and economic performance will be discussed after a brief review of the theoretical frameworks. This includes three approaches: the elasticities approach, the absorption approach and the monetary approach.

In the period immediately before the Asian currency crisis, in most countries under review, short-term elasticities of supply and demand did tend to be smaller (in absolute values) than long-term elasticities. On the demand side, consumers do not often immediately adjust to changes in relative prices. Since it took time to alter consumption plans or product commitments, they were slow to react to changes in exchange rates. In some cases, contracts were already signed to commit importers to certain volumes of imports at the previous exchange rate¹⁾. Under some scenarios, the volume of imports at the previous has even risen if

1) Any possible effects on income, the interest rate, or the expected profit rate are ignored if the Marshall-Lerner condition is sufficient to bring about the desired change in expenditures. Compare, Dornbusch (1987); Krupp (1996), Page (1977), Menon (1995), Ghosh, (1973), Bhagwati (1988). The adjustment to changes in relative prices caused by exchange rates is often referred to as the elastic approach to adjustment in the foreign exchange market, or alternatively, the price adjustment mechanism that occurs in response to changes in exchange rate. See, Marques (1990), Clement and others (1967), Learner (1970), McLeod (1998), Clark (1998), Baldwin (1988), Blattberg and Wisniewski (1989).

importer viewed the initial change in exchange rate as the first of several rises and purchase more to avoid even higher domestic price in the future. It should not be surprising to see the quantity of imports demanded and hence the amount of foreign exchange needed remain relatively constant in the short run even though the domestic currency was depreciating (after 1997). With the passage of time, the demand curve for foreign exchange would approximately move closely to the long-term demand curve as more normal quantity responses would occur²⁾.

On the supply side of foreign exchange, the supply of export may not increase immediately in response to depreciation simply due to the decision-making lags involved. These lags includes: (a) a decision lag with respect to the change in the exchange rate, (b) the decision-making lags, (c) a productivity/inventory replacements lag, and (d) a delivery lag.

The supply of exports may also not rise if producers choose to raise the domestic price in response to the increased foreign demand and to increase short-term profit margins at the expense of increased sales (e.g., the Malaysian auto industry has experienced this trend in 1998). If the quantity of exports does not rise in the short-term with depreciation of the currency, then the short-term supply curve of foreign exchange will be backward sloping as long as domestic prices remain constant or do not increase as fast as the exchange rate. With the passage of time, the supply curve would tend to take on the characteristic of the long-term response.

The elasticities approach is but one of the three central approaches to currency devaluation and the other two, the absorption approach and the monetary approach will be summarized below.

According to the elasticities approach, currency devaluations offer a price incentive to reduce imports and increase exports. But even elasticity conditions are favorable, whether the home country's trade balance will actually improve may depend on how the economy reacts to the devaluation. The absorption approach provides insights into these questions by considering the devaluation on spending behavior of the domestic economy and the influence of domestic spending on the trade balance³⁾.

2) The exploration of the nature of the economy's adjustment to exchange rate and the associated relative price changes is usually compared with the framework of the implications of price changes for the economy the exchange rate is fixed. See Alexander (1952), Tsiang (1961), Krugman (1987), Balaji (1999), Makler (1998).

3) The basic equation for this approach can be written: $Y = C + I + G + (X - M)$. The absorption approach consolidates $(C + I + G)$ into a single term, A , which is referred to as absorption, while ↗

The absorption effects predict that, if currency devaluation is to improve and economy's trade balance, national output must rise relative to absorption. This means that a country must increase its total output, reduce its absorption, or do some combination of the two. If an economy faces unemployment as well as trade deficit and with the economy operating below maximum capacity (e.g., Thailand in 1998), the price incentive of devaluation would tend to direct idle resources into the production of goods for exports, in addition to encouraging spending away from imports to domestically produced substitutes.

The impact of devaluation is to expand domestic outputs as well as to improve the trade balance. It is no wonder that policy makers may view currency devaluation as an effective tool when an economy faces unemployment with a trade deficit (most Asian economies 1997–98). On the other hand, an economy operating at full employment, there are no unutilized resources available for additional production. National output is at fixed level. The only way in which devaluation can improve the trade balance is for the economy to cut domestic absorption, freeing resources needed to produce additional export goods and import substitutes.

The absorption approach goes beyond the elasticity approach, which views the economy's trade balance as distinct from the rest of the economy. Instead, devaluation is viewed in relation to economy's utilization of its resources and level of production. The two approaches are therefore complementary in our analysis of the economic effects of currency regimes before and after Asian currency crisis.

According to the elasticities and absorption approaches, monetary effects are not associated with balance-of-payments adjustment, or to the extent that such effects exist, they can be neutralized by domestic monetary authorities. The elasticities and absorption approaches apply only to the trade account of the balance of payments, neglecting the implications of capital movements. The monetary approach addresses this shortcoming⁴).

According to the monetary approach, currency devaluation may induce a temporary improvement in country's balance of payment position. Assume that equilibrium initially exist in the domestic economy's market. A devaluation of the home currency would increase

letting net exports (X-M) be designated as B. Total domestic output thus equals the sum of absorption plus the level of net exports, or, $Y = A + B$, which in turn can be rewritten as $B = Y - A$. This expression suggests that the balance of trade, B, equals the difference between total domestic outputs Y, and the level of absorption, A. If national output exceeds domestic absorption, the economy's trade balance will be positive. Conversely, a negative balance of trade suggests that an economy is spending beyond its ability to produce. See Junz (1973), Cornes (1973), Einzig (1968), Whitt and others (1986), Alexander (1952).

4) See Kemp (1975), Humphrey (1978), Appleyard and Field (1992), Balaji (1999).

the demand for money, since larger amounts of money are needed for transactions. If that increased demand were not fulfilled by domestic sources, an inflow of money from overseas would occur. This inflow results in balance of payments surplus and a rise in international reserves. But this surplus will not last forever. By adding to the international component of the home country money supply, the devaluation leads to an increase in spending (i.e., absorption) which reduces the surplus. The surplus eventually disappears when equilibrium is restored in the home country's money market. The effects of devaluation on real economic variables are thus temporary only. Over the long term, currency devaluation only raises domestic price levels⁵.

2. Foreign Exchange Regimes Analyses

2.1 *Classifying Regimes*

Beyond the traditional fixed-floating dichotomy lies a spectrum of exchange rate regimes. The de facto behavior of an exchange rate, moreover, may diverge from its de jure classification. While it is customary to speak of fixed and floating exchange rates, regimes actually span a continuum, ranging from pegs to target zones, to floats with heavy, light, or no intervention. The traditional dichotomy can mask important differences among regimes.

Most current analyses use a three-way classification: pegged, intermediate (i.e., floating rates, but within a predetermined range), and floating. Regimes can be classified according to either the publicly stated commitment of the central bank (a de jure classification) or the observed behavior of the exchange rate (a de facto classification). Neither method is entirely satisfactory. A country that claims to have a pegged exchange rate might in fact instigate frequent changes in parity. On the other hand, a country might experience very small exchange rate movements, even though the central bank has no obligation to maintain parity. The approach usually taken is to report results according to the stated intention of the central bank but to supplement these results by categorizing the non-floating regimes according to whether or not changes in parity were frequent. The de jure classification uses the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions, while the de facto classification is based on a survey of IMF desk officers for each country.

The following classification system (ranked on the basis of the degree of flexibility of the

5) See also Junz and Rhomberg (1973), Lindert (1991), Levine and Renelt (1992), Krugman (1987), Kreinin and Sheehy (1987), Smith (1996), Samiee (1987), Murray (1996).

arrangement) has been widely used in the literature: independent floating, managed floating, crawling bands, crawling pegs, pegged within bands, fixed peg arrangements, currency board arrangement, and exchange arrangements with no separate legal tender (Frankel 1999, Edwards and Savastano 1999, IMF 1999). At the one end of the spectrum is independent floating' a regime which provides maximum flexibility, allowing the exchange rate to be determined freely in the market by supply and demand. Currency union/dollarization constitutes the other extreme where the exchange rate does not exist because the monetary autonomy is fully surrendered and a shared currency or another country's currency is used as the only legal tender. The eight regimes between these extremes show a decreasing flexibility as one move from the floating regimes towards currency union/dollarization⁶.

We can extend this classification to clarify the degree of flexibility allowed by some of these regimes, thereby making it easier to compare the alternative regimes proposed by various authors. First, a new "lightly managed float" regime is added, which involves only light intervention in the foreign exchange market to moderate excessive fluctuations. The key difference between a "lightly manage float" and a "managed float" is that in the latter, the government has an idea where the exchange rate should be to maintain competitiveness and intervened to keep the rate close to it. In the former, the rate is essentially determined in the market by demand and supply. Second, the crawling band regime is divided into "crawling broad band" and "crawling narrow band" system. A broad band regime (say, about +/- 15 percent around the central parity) provides more flexibility and is closer to a floating system in terms of its merits and shortcomings. A narrow band system (the Bretton Woods system, and pre-1992 European Monetary System), on the other hand, can be put together with the other fixed exchange rate regimes⁷.

To simplify the presentation and better structure the discussion, the ten regimes are arranged under the following four relatively homogeneous groups: (a) Floating regimes (independent floating, lightly managed float); (b) Intermediate regimes (managed float, crawling broad band); (c) Soft peg regimes (crawling narrow band, crawling peg, pegged within bands, fixed peg); and (d) Hard peg regimes (currency board, currency union/dollarization).

6) For more detail analysis of the macroeconomics of currency pegging see, Batten (1983), Westerfield (1977).

7) See Edwards and Savastano (1999), Frankel (1999).

2.2 *Determinants of the Choice of Exchange Rate Regimes*

The experience with implementation of the exchange rate regime allows us to make some generalizations about the condition under which various regimes would function reasonably well — though there are many exceptions. The floating regimes would be an appropriate choice for medium and large industrialized countries and some emerging market economies that have import and export sectors that are relatively small compared to GDP, but are fully integrated in the global markets and have diversified production and trade, a deep and broad financial sector, and strong prudential standards. The hard peg regimes are more appropriate for countries satisfying the optimum currency area criteria (countries in the European Economic and Monetary Union), small countries already integrated in a larger neighboring country (dollarization in Panama), or countries with a history of monetary disorder, high inflation, and low credibility of policymakers to maintain stability that need a strong anchor for monetary stabilization (currency board in Argentina and Bulgaria). The soft peg regimes would be best for countries with limited links to international capital markets, less diversified production and exports, and shallow financial markets, as well as countries stabilizing from high and protracted inflation under an exchange rate-based stabilization program (Turkey). These are largely but not exclusively non-emerging market developing countries. The intermediate regimes, a middle road between floating rates and soft pegs, aim to incorporate the benefits of floating and pegged regimes while avoiding their shortcomings. They are better suited for emerging market economies and some other developing countries with relatively stronger financial sector and track record for disciplined macroeconomic policy.

As it will be indicated in this paper, all exchange rate regimes offers benefits as well as cost (see Table 1). The main advantages of the floating regimes are their invulnerability to currency crisis, and their ability to absorb adverse shocks and pursue an independent monetary

Table 1 Main Trade-Offs in Selecting an Exchange Rate Regime

	Floating	Intermediate	Soft Peg	Hard Peg
Stability	--	+-	++	++
Misalignment	+-	++	+-	++
Crisis	+-	++	—	++
Vulnerability to Shocks	++	+-	--	--
Independence of Monetary Policy	++	+-	--	--

policy. These advantages come with the cost of high short-term exchange rate volatility and large medium-term swing characterized by misalignment. At the other end of the spectrum, the hard peg regimes provide maximum stability and credibility for monetary policy, and low transaction costs and interest rates, but suffer from the loss of lender of last resort role of the central bank and seigniorage revenue. Two big advantages of the soft peg regimes are that they maintain stability and reduce transaction costs and the exchange rate risk while providing a nominal anchor for monetary policy. These advantages have been undermined by substantial increase in global capital mobility in the 1990s. The soft peg regimes, in countries open to international capital flows are inherently vulnerable to currency crisis. By giving up some nominal stability for greater flexibility, the intermediate regimes aim to get the best of both worlds: to provide limited nominal anchor for inflationary expectations, but also avoid volatility and overvaluation, and reduced the risk of currency crisis by restoring two-way bet for speculators with broad soft bands. An important consensus on the choice of exchange rate regimes is that no single exchange rate regime is best for all countries or at all times (Frankel 1999, Mussa and others 2000). The choice would vary depending on the specific country circumstances of the time period in question (the size and openness of the country to trade and financial flows, structure of its production and exports, stage of its financial development, its inflationary history, the nature and source of shocks it faces), and the country's policy objectives, which would involve trade offs. The ultimate choice would be determined by the relative weights given to these factors. Political economy considerations would also affect the choice. In selecting the optimum degree of flexibility politicians usually place higher weights on minimization of short-term political costs.

Monetary Policy

Floating its exchange rate permits a country to use its monetary policy (and other macroeconomic policies) to steer the domestic economy because monetary policy does not have to be subordinated to the needs of defending the exchange rate. Given that cyclical conditions differ significantly among countries, the ability of a country to run an independent monetary policy adapted to local conditions is very important particularly in industrialized countries where monetary policy is the main policy instrument for macroeconomic management. Under floating regimes, a nominal anchor is needed to guide monetary policy. A widely used anchor is a clearly articulated monetary rule such as to achieve a target growth rate for some monetary aggregate (reserve money, M1, M2, etc.).

In floating regimes, the real and nominal exchange rates are endogenous variables deter-

mined in the market by demand and supply. The government and the monetary authority do not determine what the rate should be and do not make any effort to guide the rate towards the desired level or zone. Episodic and ad hoc interventions in lightly managed regime are in the spirit of “leaning against the wind.” They aim to slow the exchange rate movements and dampen excessive fluctuations, and are not intended to depend any particular rate or zone.

In contrast, in all other regimes (with exception of a currency union/dollarization where the national currency is given up all together), the government needs to have an idea where the real exchange rate should be to ensue that the national economy is competitive. Typically, the long-run equilibrium real exchange rate is estimated based on the economic fundamentals of the country, and a variety of policy and institutional arrangements are made to keep the actual rate sufficiently close to it over the medium-term⁸⁾.

The main argument in favor of fixed rates was their ability to induce discipline and make the monetary policy more credible because adoption of lax monetary (and fiscal) policy would eventually lead to an exhaustion of reserves and collapse of the fixed exchange rate system implying a big political cost for the policy makers. The nature of debate has changed significantly with steady increase in international capital flows. Soft peg regimes in a number of emerging market economies open to global financial markets have collapsed in the 1990s. Difficulty in maintaining credibility under soft pegs when the capital account is open is a key factor that brought these pegs down. To achieve credibility quickly, some authors argued that these countries had to move either to hard pegs or floating rates.

The intermediate regimes impose some constraints on monetary policy with the degree of policy independence being determined by the width of the band. In a crawling band regime, the parity that is pre-announced acts as nominal anchor only in an attenuated way; it compels the correction of excess short-run monetary emission, but the endogeneity of the of the crawl in the longer run may not pin down the price level. Therefore, a stronger nominal anchor is

8) Active management of the exchange rate under these regimes can provide a developing country with an additional strong policy tool to correct misalignment and to influence the balance of payments, trade flows, investment, and production. The earlier debate about exchange rate regimes was largely about their influence on monetary discipline and credibility, and the trade-off between flexibility and credibility. Floating regimes provide maximum discretion for monetary policy, but discretion comes with the problem of time-inconsistency. That is, if a government tends to misuse its discretion and cannot keep its promise of low inflation today, it will be difficult to get people to believe its future policy announcements. Therefore, restraints need to be put on government to ensure that discretion is not misused and economic policies are consistent and sustainable and that there is not going to inflation.

needed to guide the monetary policy in the longer-term.

Stability/Credibility

Institutionally binding monetary arrangements under hard pegs tie government's hands to provide irreversible fixed rates and maximum credibility. Long-run equilibrium real exchange rate is the real rate that for a given values of "economic fundamentals" (openness, productivity differentials, terms of trade, public expenditure, direct foreign investment, international interest rates, etc.) is compatible with simultaneous achievements of internal and external equilibrium.

The other way to solve the credibility problem is to float: that is, not to make any promises about the exchange rate at all. The floating regimes may exhibit high short-term exchange rate volatility and medium-term swings that are only weakly related to economic fundamentals. This is largely explained by the fact that exchange rate is also an asset price influenced strongly by short-term financial flows which are subject to speculation, manias, panics, herding, and contagion. As capital market integration deepens, capital market transactions increasingly dominate changes in exchange rates. Determined in this manner, exchange rates may develop their own short-term and medium-term dynamics that overwhelm the goods and services market transactions. Volatility is substantially higher in developing countries with thin foreign exchange markets usually dominated by a relatively small number of market participants, and may be compounded by lack of political stability and disciplined macroeconomic environment.

The intermediate regimes provide scope for setting an appropriate balance between exchange rate stability and flexibility. If supported by sound macroeconomic policies, they can keep the variations in the exchange rate within reasonable bounds, dampening the degree of uncertainty while permitting enough flexibility to adjust the parity (the center of the band) to economic fundamentals. They are therefore less susceptible to volatility and misalignment than soft peg and floating regimes if the authorities are not committed to defending the edges of band and, when need arises, allow the exchange rate to go outside the edges.

Crisis

A key concern in selecting an exchange rate regime is the vulnerability of the regime to currency attack and contagion. Experience in the 1990s has shown that in countries open to international capital flows; soft peg regimes are particularly vulnerable to currency crisis. The common feature of the currency crises in the 1990s was the variety of soft peg regimes that had been adopted by the countries (The European Monetary System in 1992–93, Mexico in 1994, the East Asia in 1997, Russia and Brazil in 1998, and Turkey in 2000). Doubts about

the credibility of the peg are usually the main cause of the vulnerability. These doubts may arise from real or perceived policy mistakes, terms of trade or productivity shocks, weaknesses in the financial sector, large foreign-denominated debt in the balance sheets of a significant part of the economy, or political instability in the country.

The capital account plays a key role in forming the currency crisis as well as its unfolding. As doubts increase about the ability of the government to defend the peg, capital inflows stop suddenly and a run starts on international reserves. Once this happens, it can be very costly either to defend the peg or to exit under disorderly circumstances. The crisis episode in a country under a soft peg and open to international capital flows can start with good macroeconomic policies. Favorable country prospects invite large capital flows leading to over-borrowing and unsustainable asset price booms particularly when prudential supervision in the financial sector is weak. Old-style crises involve a cycle of overspending and real appreciation that worsens the current account. The politically popular process goes on as long as resources last. Ultimately devaluation comes and the process starts again.

Vulnerability to Shocks

A key merit of floating regimes is that they help deflect or absorb the impact of adverse external and domestic shocks (deterioration in terms of trade, increase in international interest rate, reversal of capital flows, contraction of world demand, natural disaster, etc.), and avoid large cost to real economy. These shocks usually necessitate an adjustment in the real exchange rate. Because domestic prices move slowly, it is both faster and less costly to have the nominal exchange rate respond to a shock. Strong wage indexation may increase the degree of pass-through from exchange rate to prices and limit the shock buffering capacity of the floating regimes.

Theory predicts that. If volatility of real shocks is larger than volatility of nominal shocks, then flexible rates are better than fixed rates. Concerns about fixed rates center around its inability to cushion real shocks. Moreover, a fixed rate regime requires government to sustain the system with enough reserves and contingent loans. If it cannot, a definitely bad outcome occurs when the exchange rate collapses as a result of a currency crisis. Yet, since the outbreak of the Asian crisis, many Latin American economists and policy makers have expressed a preference toward fixed exchange rates set by currency boards or dollarization. This preference partly reflects concern over the possibility that Latin American currencies left to float might overshoot the equilibrium, causing a return of inflation there. It also reflects the belief that fixing the exchange rate serves to increase a country's credibility

and enforce fiscal and monetary discipline⁹⁾.

Empirical evidence has found that exchange rates frequently and persistently depart from uncovered interest parity; bubbles are frequent and long lasting. In fact, rather than conforming with any model based on economic theory, exchange rate movements seem to be largely unpredictable with today's value the best predictor of tomorrow's. The floating regime has also coincided with major world fiscal policy shocks, which tend to be propagated through floating exchange rates. There are two notable examples of this phenomenon. The first one is the US fiscal expansion, which began in 1984 and drove domestic interest rates and the dollar to very high levels. The second one is the post-reunification fiscal expansion in Germany, which put pressure on the target band ERM system and forced those with a weaker commitment (Italy and the UK) out of the system.

Shock absorption capacity of the pegged regimes, particularly the hard peg regimes, is very limited. Given the nominal exchange rate is fixed, the shocks are largely absorbed by changes in economic activity and employment which may be a painful and protracted process. Wage and price flexibility, and factor mobility are therefore essential in these regimes to moderate the impact of adverse shocks. Because monetary policy subordinates the needs of maintaining the peg in these regimes, the fiscal policy must be flexible enough to mitigate the impact of the shocks. The intermediate regimes provide some exchange rate flexibility to help deflect or absorbed an important part of the shocks. The shock absorption capacity of the regime would depend on the width of the band.

Degree of Economic Integration among Countries

The degree of economic integration among countries has important implication for the exchange rate regime they choose. Countries that are highly integrated with each other with respect to trade and other economic and political relations and have high labor mobility, symmetric shocks, and high-income correlations are likely to constitute an optimum currency area (OCA). It is beneficial for these countries to established regional cooperation on exchange rate policy. Because integration substantially reduces the benefits of their own monetary policy, small countries are better off pegging their currencies to a large neighbor's or adopt a neighbor's currency as their own. These arrangements would reduce transaction cost and interest rates, eliminate exchange risks, and encourage further integration and growth. In countries satisfying OCA conditions, but where a regional common currency is not politically

9) See, Krugman (1989), Obstfeld and Rogoff (1995).

feasible, for example in East Asia, McKinnon (1999) advises establishing efficient common monetary rules to stabilize their exchange rates to avoid competitive devaluation under a common dollar peg¹⁰⁾.

There are three main approaches to regional exchange rate cooperation. One approach is mutual exchange rate pegging arrangement. In this arrangement, members of the group agree to limit fluctuations of their exchange rates to within agreed bands around prescribed central parities. They also agreed to coordinate economic policies to react collectively when the exchange rates near the edges of the bands. The Exchange Rate Mechanism (ERM) of the European Monetary System (EMS) is a good example¹¹⁾.

The second approach is to create regional currency union. This is a more ambitious approach because it may involve giving up national currencies and building regional monetary institutions and macroeconomic coordination. The largest currency union is EMU. Other examples include CFA franc zone, the East Caribbean dollar area, and the Common Monetary Area. The CFA franc zone consists of two separate monetary unions of Sub-Saharan African countries and the Comoros¹²⁾.

A third approach is common links to an outside currency or a basket of currencies as the monetary standard for the regional group. This approach avoids the need to create complex intra-regional institutions such as a central bank, but requires very close policy coordination among the members of the group. This may be an option in the longer term for ASEAN countries. For these groups a currency union does not seem to be feasible at this time because

10) See McKinnon (1999).

11) The ERM was established in 1979 by 11 of the 12 member countries to eliminate intra-European exchange rate volatility along the lines of the Breton Woods System. As the effective capital market integration increased in Europe, the ERM became increasingly vulnerable to speculative attack in 1992–93, after which the bands were widened. In 1999, the system evolved into Europe's Economic and Monetary Union (EMU) with its current single currency Euro.

12) The first union includes eight members and the second group consists of six members. Both groups have their own central banks to conduct the common monetary policy for the groups. Each group maintains a separate currency, but these currencies (Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo. Cameroon, the Central African Republic, Chad, the Congo, Equatorial Guinea, and Gabon) are pegged at the same fixed rate against the French franc (and the euro) with financial support from the French Treasury. The East Caribbean dollar area includes eight members. The East Caribbean Central Bank conducts the common monetary policy. The common currency, the Eastern Caribbean dollar, has been pegged to the US dollar since 1976. The Common Monetary Area includes four southern African Countries: South Africa, Lesotho, Namibia, and Swaziland. The South African rand circulates freely in Lesotho, Namibia, and Swaziland along with their own currencies.

intra-regional trade links, while important, are significantly less than in Europe, and countries in these groups seem to be subject to much greater asymmetry of shocks.

3. Macroeconomic Performance Under Alternative Regimes

The exchange rate is but one of the macroeconomic policy instruments available to the government to help maintain external and internal balances simultaneously. It could be an effective instrument only if it is used in coordination with other instruments and supported by requisite institutional and regulatory structures. Monetary policy is an integral part of the exchange rate system. As noted earlier, constraints on monetary policy are particularly stringent under a pegged regime: with substantial openness to international capital markets, maintenance of exchange rate pegs requires full commitment of monetary policy. Failure to establish fiscal discipline will lead a country to crisis under any exchange rate regime. Sounder, better managed, and better supervised financial system and prudent foreign exchange exposure of the banking sector and domestic businesses are also important requirements for an exchange rate regime to successfully maintain competitiveness and avoid a currency crisis. Under some circumstances, capital controls can be a useful complement to macroeconomic policies to limit short-term speculative flows, reduce the vulnerability of soft pegs to currency crisis and contagion, and help insulate the real economy from excessive movements in the exchange rate¹³⁾.

Fixed exchange rate system or pegging is generally done by small economies whose trade and financial relationship are mainly with a single trading partner. This was particularly the case with Hong-Kong, which trades primarily with the US and Japan, pegged its currency to the US dollar. Macroeconomic significance of pegging is rather simple — a country using this system can reduce changes in the prices of imports and exports that result from changes in the value of its currency relative to that of the trading partner. The result could be a greater stability of output and employment in exporting and importing sectors, which could have favorable effects on the country's economic development¹⁴⁾.

13) China, India, and Chile, avoided contagion in 1990s in part because of selective use of controls on capital inflows. It was argued that the East Asian crisis is explained partly by over-rapid liberalization of capital account — liberalization before upgrading risk management capacity in banks and businesses, and strengthening prudential supervision and regulation and reinforcing transparency and market discipline in the financial sector.

14) For more detail analysis of the macroeconomics of currency pegging see, Batten (1983), Westerfield (1977).

Countries with more than one major trading partner often peg the value of their currency to a group or a basket of currencies. The basket is composed of prescribed quantities of foreign currencies in proportion to the amount of trade done with the country pegging its currency. Once the basket is selected, the currency value of the country is computed using exchange rates of the foreign currencies in the basket.

The performance of macroeconomic policy under the floating exchange rate system is reversed compared with pegged currency system. The objectives of macroeconomic policies remain the same — (1) domestic balance, i.e., full employment with a reasonable amount of inflation and (2) external balance, i.e., equilibrium in the current account of the balance of payments, whereby a nation's exports of goods and services pay for the economy's import of goods and services. A country achieves overall balance when it is able to operate at internal and external balance¹⁵).

Under managed floating exchange rate system, a country varies the extent to which it intervenes in the foreign exchange market. Less intervention moves the economy nearer the floating exchange-rate situation, while heavier intervention moves the economy nearer the fixed-rate situation. This point has several implications for domestic stabilization policies. If a country wishes to initiate monetary policy (changes in money supply) in an open economy with high international capital mobility, it can increase the effectiveness of this policy by lessening exchange-market intervention, thus permitting the exchange rate to float more freely.

On the other hand, if a country initiates fiscal policy (change in government spending or taxes), it will lessen the effectiveness of this policy if it allows its exchange rate to flow freely¹⁶).

The reason for the above is that (all other being equal), expansionary monetary policy

15) In the classical model, the vertical axis is denoting the extent of current account surpluses, and the horizontal axis denoting the state of the domestic economy in terms of recession or inflation are compared. Ideally, the economy would operate at the point of overall balance. Here the economy sustains non-inflationary full employment and imports and exports are of equal value. In comparison, domestic recession coupled with current account surplus would be represented by the point in the northwest quadrant of the graphical representation of the model. Domestic inflation coupled with current account deficit would result in the economy being located at the point in the southeast quadrant of the graphic model. Based on the experience of most industrial countries, one may assume that the internal objective of non-inflationary full employment is considered more important than external equilibrium. This implies that the priority is given to the impact of domestic stabilization policies on current account balance and not the vice versa. See, Artur and Young (1979).

16) See, Crocket (1981), Brittain (1977).

promotes falling interest rates, while expansionary fiscal policy induces higher interest rates (Japan may be exception in the period of prolonged deflation of 1997–2001). An expansionary monetary policy increases the supply of money relative to the demand for money, thus reducing interest rates. But an expansionary fiscal policy brings about rising aggregate expenditures, which increases the demand for money. Given the supply of money, interest rates would increase¹⁷⁾. When exchange rates are allowed to float freely, the different effects of these policies upon interest rates result in differing impacts on the exchange rate, the current account, and the strength of the stabilization policy¹⁸⁾.

The conflict of policy objectives under managed floating exchange rate system has been apparent in all countries affected by the currency crisis of 1997. During the early stages of the crisis, most Asian economies pursued a restrictive monetary policy, coupled with persistent inflationary expectation, led to increase in interest rates even before the crisis began. This attracted foreign investment, adding to the demand for domestic currencies and causing appreciation of their values. Only in the mid-1997 — central bank of Thailand, Malaysia, Korea and other countries showed concern over the strong currency's harmful effects on domestic manufacturers and farmers. Soon in the aftermath of the crisis, domestic currencies went through several waves of drastic depreciations.

This even more complicated the governments' objectives of pursuing domestic and international objectives. To further support depreciations, the government would have to adopt an expansionary monetary policy that would force domestic interest down and contribute to

17) See, Humpage (1987), Bell (1977).

18) Assume that a country faces a domestic recession and current account deficit. Suppose that fiscal authorities increase government spending so as to stimulate domestic output and employment. The expansionary fiscal policy increases total spending and therefore the demand for money. Given the supply of money, interest rates would increase which would encourage foreigners to increase their investment in domestic economy. Increased foreign investment adds to the demand for domestic currency, which leads to its appreciation. But this appreciation promotes an increase in country's imports and decrease in country's exports, making the current account deficit larger. The resulting drain in spending out of the economy tends to offset the initial increase in government spending. Efforts to increase domestic output via expansionary fiscal policy are thus weakened in an economy with floating exchange rates. Expansionary monetary policy leads to different outcomes. By increasing the supply of money relative to the money demand, the monetary policy promotes lower interest rates, which stimulate domestic investment and total spending. But lower interest rates discourage foreign investors from investing in domestic economy. As foreign investments decline, the demand for domestic currency also falls and the currency depreciates in value. This in turn promotes country's exports and reduces imports contributing to the current account surplus. This has stimulative effect on domestic economy which would move toward an overall balance. See, Dornbush (1998).

investment outflows, a lower demand for local currencies, and further depreciation of their values. There was however a widespread concerns that this policy would lead to higher domestic inflation. They would then have to decide whether to give priority to fighting inflation, which would call for restrictive monetary policy, or promote currency's depreciation, which would call for an expansionary monetary policy¹⁹).

3.1 Does the Exchange Rate Regime Matter for Inflation and Growth?

The choice of an appropriate exchange rate regime for developing countries has been at the center of the debate in international finance for a long time. What are the cost and benefits of various exchange rate regimes? What are the determinants of the choice of an exchange regime and how would country circumstances affect the choice? Does macroeconomic performance differ under alternative regimes? How would an exchange rate adjustment affect trade flows? The steady increase in magnitude and variability of international capital flows has intensified the debate in the past few years as each of the major currency crises in the 1990s has in some way involved a fixed exchange rate and sudden reversal of capital flows. New questions include: Are pegged regimes inherently crisis-prone? Which regimes would be better suited to deal with increasingly global and unstable capital markets? While the debate continues, there are areas where some consensus is emerging, and there are valuable lessons from earlier experience for developing countries.

A growing consensus seems to be emerging on the following: (a) Selection of an exchange rate regime that is most likely to suit a country's interest would depend on a variety of factors including: specific country circumstances (the size and openness of the country to trade and financial flows, structure of its production and exports, stage of its financial development, its inflationary history, and the nature and source of shocks it faces); policy makers' preferences for the trade offs among the main policy objectives; political conditions in the country; and the credibility of its policy makers and institutions. Therefore, there is no single ideal exchange rate regime that is appropriate for all countries. The actual choice from an array of regimes depends on the relative weight given to each of these factors. In addition, an exchange rate

19) Compare with Friedman (1988), McConnel (1966), Whitt (1990). Interesting remarks on the policy dilemma under crisis are in Fisher (1998). For the analysis of the macroeconomic performance with emphasis on future economic outlook, see Dornbusch (MIT electronic papers, MIT homepage), for some long-term perspectives on macro policy dilemma see the discussion between Paul Krugman and Jay Kaplan. For econometric analysis of the post-crisis policies and Asian competitive devaluations see Liu, Noland, Robinson, Wang (1998).

regime appropriate for a country would change over time with changing country circumstances. “For most countries... the choice of exchange rate policy is probably their single most important macroeconomic policy decision, strongly influencing their freedom of action and effectiveness of other macroeconomic policies, the evolution of their financial system, and even the evolution of their economies.”²⁰⁾

Inflation

Impact of an exchange rate adjustment on inflation has also been subject to considerable debate. A significant strand of economic literature has been pessimistic about the effectiveness of devaluation in improving the macroeconomic situation in developing countries. In particular, it is maintained that: (a) nominal devaluation would not achieve a depreciation of real exchange rate because of high pass-through from devaluation to domestic prices (nominal devaluation pessimism); and (b) depreciation of real exchange rate would not improve trade flows and resource balance because price elasticity of import demand, export demand, and export supply is very low (elasticity pessimism). These views helped rationalize resistance to devaluation leading to significant overvaluation of the national currency in a large number of countries particularly in 1970s and 1980s. While experience does not support either form of pessimism, these beliefs are still echoed in policy discussions in some countries.

Empirical evidence and country case studies indicate that devaluation can move the real exchange rate in the direction of its long-term equilibrium value without permanently increasing the rate of inflation when macroeconomic discipline is maintained and indexation is avoided after the devaluation. In simulations of devaluations, Chibber (1991) found that with post-devaluation fiscal and monetary discipline, only one-third of a nominal devaluation would be offset by inflation and a real depreciation of 50 percent would be achieved²¹⁾.

In general, successful devaluations (those accompanied by appropriate monetary policies) in open developing economies have typically led to a depreciation of the real exchange rate of 30 to 70 percent of the nominal devaluation in domestic currency terms, with the real exchange rate depreciating on impact by the full amount of the devaluation and then gradually appreciating at 20 percent²²⁾.

20) See, Sachs and Radelet (1998), also Frankel, Jeffrey (2000).

21) See also Edwards (2001).

22) For a detailed discussion, see Hinkle and Montiel. Zimbabwe is a case to the point. In the past two years, the authorities have strongly resisted an exchange rate adjustment despite substantial overvaluation of the Zimbabwe dollar (Ndlela and others 2000). At the technical level, this resistance is based largely on the authorities belief that (a) the Zimbabwean exports are not price ↗

A substantial amount of empirical work has been done to estimate the trade elasticities in developing countries, which suggests that the response of trade flows to a real exchange rate adjustment has been positive and large. Main findings of these studies can be summarized as follows: (a) unless trade is liberalized at the time of a devaluation, low income countries should expect an elasticity of imports with respect to real exchange rate of roughly -0.7 to -0.9 with the full adjustment occurring over two to four years; (b) even for traditional products with low world demand elasticity, individual countries can increase their market share by lowering their costs because of their small shares of the markets; (c) if the effects of exchange rate changes are passed through to domestic producer prices, the price elasticity of supply of aggregate exports from non-oil exporting countries is at least 1.0 and may be as high as 2.0 in some cases; and (d) because price elasticity of both demand and supply of traditional exports tends to be small in the near and longer term, export diversification is essential for commodity-exporting countries for which a competitive real exchange rate and other non-price supporting policies such as provision of adequate transport, marketing, and credit facilities, are essential²³⁾.

Pegging the exchange rate can lower inflation by inducing greater policy discipline and instilling greater confidence in the currency. Empirically, both effects are important. Policy makers have long maintained that a pegged exchange rate can be an anti-inflationary tool. Two reasons are typically cited. A pegged exchange rate provides a highly visible commitment and thus raises the political costs of loose monetary and fiscal policies. To the extent

responsive; and (b) the pass-through from an exchange rate adjustment to domestic prices is close to one in Zimbabwe, which means that a devaluation is fully passed on to domestic prices. These beliefs seem to come largely from Zimbabwe's experience from mid-1997 to end-1998 during which Zimbabwe dollar depreciated significantly in nominal terms but exports did not respond. Empirical evidence does not support the authorities beliefs. On the contrary, the recent studies conducted for the period 1990–2000 show that (a) the Zimbabwean exports respond positively to price incentives, although price elasticity of traditional exports is low (Ndlela 2000); and (b) the pass-through coefficient is 0.5, which means that only half of an exchange rate adjustment would pass on to domestic inflation (Sikwila 2000). A closer review of the period indicates that there are two main reasons why exports did not respond to substantial depreciation of the nominal exchange rate from mid-1997 to end-1998. First, lax fiscal and monetary policy continued after devaluation fuelling inflation. As a result, the real exchange rate remained competitive for only a short period of time. Second, for companies to reorient their production for the export market, adequate time is needed during which profitability of the export sector is ensured on a consistent basis with a competitive real exchange rate and other supportive institutional arrangements for the expansion and diversification of exports. Hinkle and Montiel (1999).

23) For a review of literature, see Hinkle and Montiel (1999), *ibidem*.

that the peg is credible, there is a stronger readiness to hold domestic currency, which reduces the inflationary consequences of a given expansion in the money supply.

Do pegged rates lead to greater confidence? Countries with pegged exchange rates had inflation 2 percentage points lower than those with intermediate regimes, and 4 percentage points lower than those with floating regimes. This differential in favor of pegged rates is as large as 6 percentage points in the lower-income countries, but only 3 percentage points for countries without capital controls perhaps because abjuring capital controls itself inspires confidence in the domestic currency. Not only do countries with pegged exchange rates have lower inflation on average, they are also associated with lower inflation variability.

Does pegging the exchange rate cause lower inflation? Or is it merely that countries with low inflation are better able to maintain a pegged exchange rate regime? Quite obviously, country with reckless monetary policy will not be able to keep its exchange rate fixed for long. Part of the argument for pegged rates is precisely that they result in greater monetary discipline. But that still leaves the question of whether other variables such as the degree of central bank independence determine both a country's disposition toward low inflation and its ability to adopt a pegged exchange rate.

Econometric studies of this simultaneity between the choices of the exchange rate regime and inflation suggest that countries with low inflation do indeed have a greater proclivity toward pegged exchange rates. But they also show that, even allowing for this, pegged exchange rates lead to lower inflation, simpler, if less compelling, evidence comes from a comparison of countries that switched to a pegged exchange rate (from a floating regime) or vice versa. Relative to the year preceding the regime change, inflation was 0.6 percentage points lower one year after a switch to a fixed exchange rate regime, 0.5 percentage points lower after two years, and 0.5 percentage points lower after three years. Conversely, inflation was higher by 3 percentage points one year after a switch to a floating regime, 1.8 percentage points higher after two years, and 2.3 percentage points higher after three years.

A second piece of evidence comes from a comparison of countries with similar volatility in nominal effective exchange rates but different exchange rate regimes. Countries with pegged exchanges rates, of course, tend to exhibit lower effective exchange rate variability. But if the exchange rate regime matters for inflation, there should still be a difference between countries with pegged and floating exchange rates even after controlling for nominal exchange rate variability. It turns out that this is indeed the case. Controlling for nominal exchange rate variability, there remain significant differences in inflation in the various regimes. In

other words, pegging the nominal exchange rate, which may instill greater confidence, has an effect on inflation beyond simply lowering nominal exchange rate variability.

Finally, it is worth checking that the results are not driven by contamination across regimes. For instance, it is possible for inflationary pressure to build up but be held in check during a period of pegged exchange rates and then explode into open inflation when a float is adopted. In such a case, the high inflation would be blamed on the floating regime, though it should more properly be attributed to the fixed exchange rate period. This suggests dropping the first year or two following a regime change from the data. Conversely, if a regime is not sustained, then it is debatable whether the macroeconomic performance under that regime should be attributed to it. The last couple of years prior to a regime change ought also to be omitted. Neither modification alters the results. Dropping the first two years following a regime change lowers the differential in favor of pegged rates from 6.0 percentage points to 5.7 percentage points. Dropping the last two years of each regime lowers it to 5.8 percentage points²⁴⁾.

Growth

The exchange rate regime can influence economic growth through investment or increased productivity. Pegged regimes have higher investment; floating regimes have faster productivity growth. On net, per capita GDP growth was slightly faster under floating regimes.

Economic theory has relatively little to say about the effects of the nominal exchange rate regime on the growth of output. Typically, arguments focus on the impact on investment and international trade. Advocates argue that pegged exchange rates foster investment by reducing policy uncertainties and lowering real interest rates. But equally, by eliminating an

24) The data used in econometric models of pegged exchange rates consists of the general macroeconomic indicators, price and output, for each of the countries under analysis. The output and prices are indexed with 1929 levels, and for the European countries are listed together for in the variables YF and PF. Then there are eight dummy variables DS, DNE, DB, DI, DP, DD, and DF corresponding to order of countries listed in YF and YP. The US indices, YUS and PUS contain the indexed output and prices in series repeated eight times. There is also a dummy variable indicating the years 1931–1932 to take into account the switch of exchange rate regime for Denmark, Finland and Norway. The basic equation $X = a + b(XUS)$ is a simple one where X is the macroeconomic indicator for one of the eight countries, and XUS is the corresponding US indicator. A simple linear regression and a test of the statistical significance of b will determine if there is correlation between the economic indicators of the US and the selected European country and thus, if there was a transmission of the depression occurring in the US economy to the European countries. See also, “Designing a Middle Way between Fixed and Flexible Exchange Rates,” by John Williamson, Senior Fellow, Institute for International Economics.

important adjustment mechanism, fixed exchange rates can increase protectionist pressure, distort price signals in the economy, and prevent the efficient allocation of resources across sectors.

Concluding Remarks

The emerging market crisis now seems to be contained in many places and modest positive reversals of economic performance have been achieved. But hard lessons have been learned and many of the affected economies are left to deal with the adverse impacts of the crisis and the painful recovery programs. The optimistic scenario of economic boom years has been replaced by the grim realization that a combination of asymmetry, volatility, and opportunism operating in an open and unregulated global free market can lead to a sudden and spectacular collapse of economies and hurt the whole national societies.

Neither the East Asian crisis nor other currency crises in the 1990s have established the superiority of fixed or flexible rates. Although, for small economies with limited involvement with modern global financial markets, some form of exchange rate peg or band or highly managed float is generally more viable and more appropriate. However, with increased capital mobility, as countries approach emerging market status, the requirement for sustaining peg exchange rate become more demanding and may need to consider an exit strategy from pegged rates. Emerging market economies with substantial involvement in modern global financial markets, floating exchange rate regimes should be an increasingly relevant, albeit not universal, choice.

The choice of exchange rate regime also has implications for economic growth. Pegged rates are associated with higher investment. But they are also correlated with slower productivity growth. On net, output growth is slightly lower under pegged exchange rates. The inability to use the nominal exchange rate as an adjustment mechanism, moreover, results in greater variability of growth and employment. The strongest result concern inflation performance (lower inflation and less variability), and there is at least some evidence of a casual relationship. There is, however, important caveat, countries that have frequently change parity while notionally maintaining a peg are unlikely to reap the full anti-inflationary benefits of a fixed exchange rate regime.

Ultimately, the exchange rate regime is but one facet of a country's overall macroeconomic policy. No regime is likely to serve all countries at all times. Countries facing

disinflation may find pegging the exchange an important tool. But where growth has been sluggish, and real exchange rate misalignments common, a more flexible regime might be called for. The choice, like the trade-off, is the country's own.

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