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Choice of Exchange Rate Regimes for Developing Countries

Fahrettin Yagci

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Abstract

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 costs and benefits of various exchange rate regimes? What are the determinants of the choice of an exchange rate 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 inflows. 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. This note provides a review of the main issues in selecting an appropriate regime, examines where the debate now stands, and summarizes the consensus reached and lessons learned from recent experience.

Authors' Affiliation and Sponsorship

Fahrettin Yagci
Lead Economist, AFTM1, The World Bank
E-mail: fyagci@worldbank.org

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CHOICE OF EXCHANGE RATE REGIMES FOR DEVELOPING COUNTRIES

Fahrettin Yagci
Lead Economist, AFTM1, The World Bank
E-mail: fyagci@worldbank.org

April 2001

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A. Introduction

1. An exchange rate, as a price of one country's money in terms of another's, is among the most important prices in an open economy. It influences the flow of goods, services, and capital in a country, and exerts strong pressure on the balance of payments, inflation and other macroeconomic variables. Therefore, the choice and management of an exchange rate regime is a critical aspect of economic management to safeguard competitiveness, macroeconomic stability, and growth[1].

2. 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 costs and benefits of various exchange rate regimes? What are the determinants of the choice of an exchange rate 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 inflows. 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. This note provides a review of the main issues in selecting an appropriate regime, examines where the debate now stands, and summarizes the consensus reached and lessons learned from recent experience[2].

3. 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 economic 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); policymakers' 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 regime appropriate for a country would change over time with changing country circumstances.

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[1] "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" Cooper (1999).

[2] This paper complements three studies sponsored by the National Economic Consultative Forum (NCEF) – a think-tank comprising business, government, and other stakeholders in Zimbabwe – to review the exchange rate management in the 1990s in Zimbabwe and assess the impact of an exchange rate adjustment on exports and inflation. The studies were recently completed by a group of local researchers and presented to the government (Ndlela 2000, Ndlela and others 2000, Sikwila 2000). They will be discussed in a workshop in Harare in April 2001.

(b) The steady increase in magnitude and variability of international capital flows in the past two decades has undermined the viability of soft peg arrangements (fixed, adjustable peg, and narrow band exchange rate regimes). A number of emerging market economies integrated or integrating into international capital markets with soft peg regimes have experienced severe currency crisis and economic disruption in the 1990s. As a result, an increasing number of countries are moving toward the ends of the spectrum – that is, independent floating exchange rates on the one end to dollarization on the other. This "disappearing middle" does not mean that all countries should move to the very ends of the spectrum. Intermediate regimes such as crawling bands could be viable alternatives if they are supported by appropriate macroeconomic policies. It is also widely maintained that some form of soft peg regimes would be more viable and more appropriate for most poorer developing economies because their involvement in international capital markets is limited. However, as they develop over the longer term and want to open their capital accounts, they need to move away from soft pegs and towards either more flexibility or more fixity.

(c) For any exchange rate regime to maintain a stable and competitive real exchange rate requires a supportive policy environment which would include prudent macroeconomic policies, a strong financial sector, and credible institutions. Monetary policy should be consistent with exchange rate objectives. Failure to establish fiscal discipline would lead a country to crisis under any exchange rate regime. Better managed and supervised financial system, adequate accounting standards and disclosure requirements, efficient legal and judicial systems, 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. Selective market-based controls on capital inflows can, in some cases, be a useful complement to macroeconomic policies to reduce the vulnerability of soft pegs to currency attack and contagion. As they lose their effectiveness over time, such controls should be removed gradually as the economy develops, financial sector is strengthened, and prudential guidelines are put in place under a carefully prepared "exit" strategy.

(d) Evidence shows that overvaluation of the real exchange rate is strongly correlated to unsustainable balance of payments deficit, currency crisis, and low economic growth. Hence, a key objective of the exchange rate policy is to maintain a stable and competitive real rate consistent with the economic fundamentals of the country. Empirical evidence on macroeconomic performance under alternative exchange rate regimes is limited, and the methodology used in these studies is not fully satisfactory. However, earlier studies indicate that, compared to the floating regimes, pegged exchange rate regimes are associated with lower inflation and slightly lower output growth. More recent studies found no significant impact of pegged regimes on inflation but they confirmed the negative correlation between the pegged regimes and per capita output growth.

(e) "Nominal devaluation pessimism" (nominal devaluation would not achieve a depreciation of real exchange rate because of high pass-through from devaluation to domestic prices) and "elasticity pessimism" (depreciation of real exchange rate would not improve trade flows because price elasticity of import demand, export demand, and export supply is very low) have been used to rationalize resistance to devaluation in the

past in a number of developing countries leading to significant overvaluation of the national currency. Experience does not support either form of pessimism. In particular, empirical evidence from a large number of developing countries shows that (a) successful devaluations have typically led to a depreciation of the real exchange rate of 30 to 70 percent; (b) the import elasticity with respect to the real exchange rate has been within the range of –0.7 and –0.9; (c) the price elasticity of supply of aggregate exports of non-oil exporting countries would be at least 1; and (d) because the price elasticity of both demand and supply of traditional exports tend to be small, export diversification is necessary for commodity-exporting countries, for which a competitive real exchange rate is essential.

B. Classification of the Exchange Rate Regimes

4. The following classification system (ranked on the basis of the degree of flexibility of the arrangement) has been widely used in the literature: independent floating, managed floating, crawling bands, crawling pegs, pegged within bands, fixed peg arrangements, currency board arrangements, and exchange arrangements with no separate legal tender (Frankel 1999, Edwards and Savastano 1999, IMF 1999). The following review extends 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 interventions in the foreign exchange market to moderate excessive fluctuations. The key difference between a "lightly managed 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 intervenes 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" systems. 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 regimes. The extended classification is presented in Table 1, in a comparative way, with a summary description of the regimes, the broad country circumstances appropriate for each regime, and their main merits and shortcomings.

TABLE 1 : EXCHANGE RATE REGIMES

	Main Features	Country Circumstances	Main Advantages	Main Disadvantages
FLOATING REGIMES				
Independent Float	The exchange rate is determined in the market freely by demand and supply. The monetary authority does not intervene in the foreign exchange market. Monetary policy is independent of the exchange rate regime and can be used freely to steer the domestic economy.	Appropriate for medium and large industrialized countries and some emerging market economies that are relatively closed to international trade but fully integrated in the global capital markets, and have diversified production and trade, a deep and broad financial sector, and strong prudential standards.	More easily deflect or absorb adverse shocks. Not prone to currency crisis High international reserves not required.	High short-term volatility (excessive fluctuations may be dampened in the case of lightly managed float) Large medium-term swings only weakly related to economic fundamentals. High possibility of misalignment. Discretion in monetary policy may create inflationary bias.
Lightly Managed Float	The exchange rate is determined essentially in the market freely by demand and supply. Occasional interventions (direct or indirect through monetary policy) aim to moderate excessive fluctuations. Monetary policy is largely free to be used to steer the domestic economy.			
INTERMEDIATE REGIMES				
Managed Float	The monetary authority intervenes actively in the foreign exchange market without specifying or precommitting to a preannounced path for the exchange rate. Intervention may be direct (sterilized and non-sterilized) or indirect through changes in interest rates, etc. It may operate like an unannounced crawling broad band. Monetary policy is relatively free to be used to steer the domestic economy.	Appropriate for emerging market economies and some other developing countries with relatively stronger financial sector and track record for disciplined macroeconomic policy.	Limited flexibility permits partial absorption of adverse shocks Can maintain stability and competitiveness if the regime is credible. Low vulnerability to currency crisis if edges of the band are soft.	Lack of transparency because criterion for intervention is not disclosed in managed float, and broad band regimes are not immediately identifiable. This may lead to uncertainty and lack of credibility. High international reserves are required.
Crawling Broad Band	The exchange rate is maintained within a broad band around a central rate that is adjusted periodically at a fixed preannounced rate to keep the effective exchange rate competitive. A common adjustment rule is forward looking crawl (based on differentials between target inflation and expected inflation in major trading partners). It imposes constraints on monetary policy, with the degree of policy independence being a function of the band width.			

TABLE 1 : EXCHANGE RATE REGIMES (continued)

	Main Features	Country Circumstances	Main Advantages	Main Disadvantages
SOFT PEG REGIMES				
Crawling Narrow Band	The exchange rate is maintained within a narrow band around a central rate that is adjusted periodically at a fixed preannounced rate to keep the effective exchange rate competitive. A common adjustment rule is forward looking crawl (based on differentials between target inflation and expected inflation in major trading partners). There is limited discretion for monetary policy depending on the band width.	Appropriate for developing countries with limited links to global financial markets, less diversified production and export structure, shallow financial markets, and lacking monetary discipline and credibility. Countries stabilizing from very high level of inflation	Can maintain stability and competitiveness if the peg is credible. Lower interest rates Provides a clear and easily monitorable nominal anchor Allows high inflation countries to reduce inflation by moderating inflationary expectations.	Prone to currency crisis if the country is open to international capital markets. Encourages foreign debt. High international reserves are required. Little shock absorptive capacity. Shocks are largely absorbed by changes in the real sector.
Crawling Peg	The exchange rate is adjusted periodically according to a set of indicators. The rate of crawl can be set at a preannounced fixed rate at or below the projected inflation differentials (forward looking). Maintaining a credible crawling peg imposes constraints on monetary policy.			
Pegged Within Bands	The exchange rate is allowed to fluctuate within a narrow band around a formal or de facto central fixed peg. The central rate is fixed in terms of a single currency or of a basket of currencies. This regime may be the result of cooperative arrangements or unilateral. There is some limited degree of monetary policy discretion depending on the bandwith.			
Fixed Peg	The exchange rate is pegged at a fixed rate to a major currency or a basket of currencies (or to SDR). The monetary authority is not committed to the peg indefinitely. The peg is adjusted (devaluation) when misaligment becomes unsustainable. The monetary authority stands ready to defend the peg through direct intervention and monetary policy. Traditional central banking functions are possible but the degree of monetary policy discretion is limited.			

TABLE 1 : EXCHANGE RATE REGIMES (continued)

	Main Features	Country Circumstances	Main Advantages	Main Disadvantages
HARD PEG REGIMES				
Currency Board	Strict exchange rate regime supported by a monetary system based on legislative commitment to exchange domestic currency for a specified foreign currency at a fixed rate. Domestic currency is issued only against foreign exchange. There is almost no scope for independent monetary policy.	Appropriate for countries with a history of monetary disorder, high inflation, and low credibility of policymakers that need a strong anchor for monetary stabilization.	Provides maximum credibility for the economic policy regime. Can facilitate disinflation Not prone to currency crisis. Low transaction costs, low and stable interest rates. Lack of monetary discretion eliminates inflationary bias.	Central bank loses its role as lender of last resort. Higher probability of liquidity crisis. Low seigniorage under currency board, no siegniorage in the case of dollarization. No shock absoptive capacity. Shocks have to be fully absorbed by changes in economic activity. Exit from dollarization is very difficult.
Currency Union Dollarization	Another contry's currency is used as the only legal tender, or the country belongs to a currency union in which the same legal tender is shared by all members of the union. Monetary autonomy is fully surrendered. There is no scope for independent monetary policy.	Appropriate for countries that have already developed extensive trade and other economic ties (EMU). Small countries already integrated in larger neighboring countries (dollarization).		

5. Note that the regimes are ranked on the basis of the degree of flexibility of the exchange rate. 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[3] 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 decreasing flexibility as one moves from the floating regimes towards currency union/dollarization.

6. To simplify the presentation and better structure the discussion, the ten regimes are arranged under the following four relatively homogeneous groups (Table 1): (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). The discussion of the main features of the regimes and their merits and shortcomings will be based on these four groups rather than 10 individual regimes.

C. Main Determinants of the Choice of Exchange Rate Regimes

7. The experience with implementation of the exchange rate regime allows us to make some generalizations about the conditions 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 capital 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[4]. 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.

[3] Dollarization is a generic name used to mean the replacement of a national currency by a foreign currency as legal tender, which would refer not only to the use of the dollar, but also for instance to the use of the Rand, Franc, etc.
[4] A notable exception is Denmark which is in the Europe's Exchange Rate Mechanism (ERM) and thus pegging within a band.

8. As will be discussed in more detail in the next section, all exchange rate regimes offer benefits as well as costs (Table 2). 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 policy. These advantages come with the cost of high short-term exchange rate volatility and large medium-term swings 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 reduce the risk of currency crisis by restoring two-way bet for speculators with broad soft bands.

9. 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, and 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.

Table 2: Main Trade-Offs in Selecting an Exchange Rate Regime

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

D. Issues in Selection of an Exchange Rate Regime

Policy Activism

10. In floating regimes, the real and nominal exchange rates are endogenous variables determined 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 a 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 defend any particular rate or zone.

11. In contrast, in all other regimes (with the exception of a currency union/dollarization where the national currency is given up altogether), the government needs to have an idea where the real exchange rate should be to ensure 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-term[5]. 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.

Discipline and Credibility

12. 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 polices are consistent and sustainable and that there is not going to be inflation. It was generally agreed that floating regimes would have an inflationary bias, and that the degree of discipline and credibility would increase with a decline of flexibility. 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.

13. 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 need to move either to hard pegs or floating rates (see para. 51). Institutionally binding monetary arrangements under hard pegs tie government's hands to provide irreversible fixed rates and maximum credibility. In the case of

[5] Long-run equilibrium real exchange rate is the real rate that, for given values of "economic fundamentals" (openness, productivity differentials, terms of trade, public expenditure, direct foreign investment, international interest rates, etc.) is compatible with simultaneous achievement of internal and external equilibrium. For methods to estimate long-run real equilibrium exchange rate, see Hinkle and others 1999.

dollarization, flexibility that cannot be built at home is imported. The other way to solve the credibility problem is to float: that is, not make any promises about the exchange rate at all.

Volatility and Misalignment

14. 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.

15. 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. In a world with high capital mobility, even small adjustments in international portfolio allocations to developing economies can result in large swings in capital flows creating large volatility in exchange rates. Because their financial markets are poorly developed, hedging possibilities are limited in developing countries.

16. High exchange rate volatility creates uncertainty, increases transaction costs and interest rates, discourages international trade and investment, and fuels inflation. The medium-term swings are identified with substantial misalignment. This is a particularly serious concern for developing countries because persistent real exchange rate volatility and misalignment have been associated with unsustainable trade deficits, and lower economic growth over the medium and long run (Ghura and Grennes 1993, Razin and Collins 1997, Elbadawi 1998, World Bank 2000). Persistent overvaluation is identified as a strong early warning for currency crisis (Kaminsky and others 1998). It is also recognized that, with high volatility in exchange rate, it is very hard to develop long-term domestic financial markets.

17. The degree of volatility of the nominal exchange rate decreases as one moves along the exchange rate spectrum towards decreasing flexibility. The hard peg regimes with their strong and credible institutional arrangements guarantee nominal exchange rate stability. Under a currency board arrangement, successfully aligning the exchange rate to a large and stable country minimizes exchange rate risk, and encourages international trade and investment. If country circumstances allow it, going one step further and actually adopting the neighbor's currency as one's own, would eliminate transactions cost as well promoting further trade and investment.

18. The soft peg regimes can maintain stable and competitive exchange rates only if the authorities set the rate at a sustainable level consistent with the economic fundamentals and convince the markets with disciplined macroeconomic policies and credible institutions of their ability to keep it there. However, they can not guarantee an absence of misalignment particularly in countries open to international capital flows. As shown so many times in the past, lack of monetary and fiscal discipline, inappropriate financial policies, and real external and domestic shocks can lead to misalignments and devastating currency crisis under the soft peg regimes.

19. 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 the band and, when need arises, allow the exchange rate to go outside the edges (see para. 26).

20. High volatility of the exchange rate in the floating regimes gives rise to a phenomenon called "fear of floating". According to recent studies, few developing countries that claim to be implementing a floating exchange rate policy, do in fact allow their exchange rate to float (Calvo and Reinhart 2000a and 200b). Compared to the United States and Japan, international reserves, reserve money, and interest rates in these countries have been more volatile, and their exchange rates more stable (see also Mussa and others 2000, Table 3.4) which indicate that they effectively maintain some kind of managed or pegged regime. "Fear of floating" is explained largely by the fact that exchange rate volatility is more damaging to trade, and the pass-through from exchange rate swings to inflation is far higher in developing countries (Calvo and Reinhart 2000b). Fear of appreciating because of short-term capital inflows and losing competitiveness is also a factor for not letting the exchange rate float freely. A key problem of fearful floating is its lack of transparency and verifiability which would heighten uncertainty.

Vulnerability to Currency Crisis

21. 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 1992-3, Mexico in 1994, the East Asia in 1997, Russia and Brazil in 1998, and Argentina and Turkey in 2000).

22. Doubts about the credibility of the peg is 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[6]. 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.

23. 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. Failure to sterilize the inflows increases pressure on

[6] Dornbush (2001) provides a useful distinction between old-style slow motion balance of payments crises, and new-style fast moving currency crises. 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.

prices and eventually changes market sentiment leading to a reversal of capital inflows and collapse of the peg. Misguided macroeconomic policies also lead to a change in market sentiment. The need for sound financial and economic policies to defend the soft pegs is particularly demanding; monetary policy needs to be subordinated to and other macroeconomic policies need to be fundamentally consistent with maintenance of the exchange rate. These conditions are usually not met. Openness to capital flows amplifies the impact of policy mistakes. The official exchange rate may move away from the equilibrium rate as a result of policy mistakes or external and domestic economic shocks. If the official rate is overvalued, the defense typically requires higher interest rates and fiscal contraction to reduce the current account deficit. Policy response is usually delayed or insufficient because adjustment would be politically costly. This increases the level of uncertainty and the degree of country risk leading to large capital outflows, a sharp fall in international reserves, and eventually collapse of the peg with extensive damage to the economy especially if the banking and corporate sectors are exposed to foreign exchange risk. In an increasingly integrated global economy, a currency crisis can be easily transmitted to the international system and can initiate similar crises in other countries with soft peg regimes, even in countries with otherwise strong fundamentals.

24. Speculative attack under self-fulfilling expectations can also lead to currency crisis even if the economic fundamentals are strong. Soft peg regimes provide speculators a one-way bet against international reserves. In thin foreign exchange markets, a large player selling the domestic currency short, or a portfolio reallocation in the developed countries can initiate a run on local currency. Many will join the bandwagon under the expectations that the currency will depreciate. The government may not be willing to bear the cost of raising interest rates or other austerity measures. The central bank will be forced to abandon the defense as it runs out of reserves. Currency collapse fuels inflation. If the central bank accommodates the price increase for macroeconomic reasons, the depreciation will have been justified ex post[7].

25. The risk of currency attack and contagion is lower under the exchange rate regimes at both ends of the spectrum. A currency board arrangement has a credible built-in policy rule that a reserve loss leads to a monetary contraction and higher interest rates and thus guarantees a feedback that is stabilizing. In floating regimes, flexibility and the lack of commitment by the authorities to defend any particular rate or zone, provides two-way bets for speculators and minimizes the possibility of speculative attack and contagion. However, floating regimes can also be subject to self-fulfilling crisis when the country has large foreign currency denominated debt. The fear that the currency might depreciate to the point where companies, banks, and the government are no longer able to honor their obligations can cause capital flight and a massive depreciation in anticipation of that event. In addition, a liquidity crisis would lead to a currency crisis under both floating systems and the currency board arrangements. Under the floating systems, if the market anticipates that the supply of last resort lending to the banking system would put pressure on prices and the exchange rate, a run on the currency and capital flight can start. Lender of last resort role of the central bank is very limited in the currency board arrangements. Therefore, the credit crunch that may follow a liquidity crisis may have a large,

[7] This situation is called multiple equilibria in foreign exchange markets (Obstfeld 1986): if the attack occurs the peg collapses, but if it does not the peg continues. Therefore, there are two equilibria, one in which the peg collapses and one in which it does not.

adverse affect on output and employment putting pressure on the government to abandon the currency board regime[8].

26. Properly managed intermediate regimes can significantly reduce the risk of currency attack and contagion. In a conventional band system, it is the obligation of the authorities to intervene at the edges of a band to prevent the market rate moving outside the band, which can trigger a crisis. At the edges of the band, it creates the possibility of one-way bet for speculators if the market believes that the band is not credible and defensible. Therefore, to reduce the risk of currency attack, commitment to defending the edges in an intermediate regime should be relatively weak; the exchange rate should be allowed to move temporarily outside the band to avoid one-way bets for speculators. In the case of managed floating, the central rate and the band are not announced, and the authorities have no obligation to defend any band, which provides flexibility for the authorities, and reduces the risk of currency crisis. A key weakness of the intermediate regimes is that they are complex, not transparent, and not immediately verifiable (Frankel and others 2000).

Independence of Monetary Policy and Nominal Anchor

27. 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.). An alternative anchor, increasingly adopted in recent years, is a publicly announced medium-term target for inflation (Debelle and others 1998, Schaechter and others 2000)[9]. Under both arrangements, the anchor becomes the intermediate target for monetary policy to which the monetary authority commits itself to achieve. Independence of the monetary authority and strong institutional commitment are critical requirements for both options to be effectively implemented. However, these conditions hardly exist in most developing countries.

28. The degree of monetary policy discretion is very limited in the soft peg regimes because monetary policy is reserved almost exclusively to defend the peg to ensure credibility. The monetary authority stands ready to buy and sell foreign exchange to maintain the pre-announced rate or band. This commitment provides a clear and easily monitored nominal anchor for monetary policy particularly in countries trying to stabilize after a period of high inflation. Experience has shown that reducing a high inflation with a traditional money-based stabilization

[8] The lender of last resort role of the central bank exists in a soft peg regime, but it could be inconsistent with the nominal peg in a country open to international capital flows. The loss of confidence following a liquidity crisis could start a currency crisis, and the new liquidity created by the central bank would support the run on international reserves; the central bank would effectively finance the run on the banks by pumping in credit only to repurchase the liquidity in selling foreign exchange (The Turkish crisis in mid-November 2000).

[9] Among emerging market economies five countries have adopted inflation targeting: Brazil, Czech Republic, Israel, Poland, and South Africa.

program is a long drawn out and costly process. By dampening and guiding price expectations, a fixed exchange rate allows a quicker control on inflation without excessive contraction of aggregate demand. In fact, there are few instances in which a successful disinflation from triple digit inflation has taken place without the use of an exchange rate anchor. The main disadvantage of a fixed exchange rate regime as a nominal anchor is that the link between the parity and the fundamentals may be broken, which would lead to overvaluation, currency crisis, and eventually abandonment of the stabilization program. An exchange rate based disinflation program should include a smooth exit strategy from its pegged arrangement once prices are adequately stabilized. Introducing and gradually widening a band when stabilization gains credibility and the currency is strong would be an appropriate exit strategy (Debelle and others 1998, Eichengreen and others 1998).

29. In hard peg regimes monetary autonomy is either fully surrendered to another country (currency union or dollarization), or monetary policy is tied to rigid rules under legislation (currency board). The ability of the monetary authority to act as lender of last resort in the face of system-wide liquidity crunches is very limited. Therefore, the hard peg regimes are more prone to bank runs and financial panics than countries with full-fledged central banks. This inability can be compensated for by creation of a banking sector stabilization fund as has been done in Bulgaria or contingent international credit line such as Argentina's repo facility to help buffering potential financial sector problems. Another weakness of the hard peg regimes, particularly dollarization, is the loss of seigniorage which may amount to 2-3 percent of GDP in developing countries. This may be offset by political arrangement for transferring seigniorage from the anchor country to the dollarizing country. Such arrangements are in place in the Rand area.

30. 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 a nominal anchor only in an attenuated way; it compels the correction of excess short-run monetary emission, but the endogeneity of the crawl in the longer run may not pin down the price level. Therefore, a stronger nominal anchor is needed to guide the monetary policy in the longer-term.

Vulnerability to Shocks

31. 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 in world demand, natural disasters, etc), and avoid large costs to the 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.

32. 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.

33. The intermediate regimes provide some exchange rate flexibility to help deflect or absorb an important part of the shocks. The shock absorption capacity of the regime would depend on the width of the band.

Regional Exchange Rate Arrangements

34. The degree of economic integration among countries has important implications 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 correlation are likely to constitute an optimum currency area (OCA). It is beneficial for these countries to establish 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 costs 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 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 peg.

35. 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 agree 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 example. 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.

36. The second approach is to create a 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 Comoros. The first union includes eight members[10] and the second group consists of six members[11]. 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

[10] Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo.

[11] 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[12]. 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.

37. 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 and Mercosur[13]. For these groups a currency union does not seem to be feasible at this time because 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.

Time Horizon and Exit

38. Considerations affecting the choice of an exchange rate regime may change over time. As country circumstances and international environment change, so does the exchange rate regime appropriate for the country. When a country has a long history of high inflation, for example, a pegged exchange rate may be the best option for the country to guide expectations and reduce inflation quickly and without excessive cost to the economy. As inflation is brought under control, confidence is built, and the country gradually integrates into international capital markets, more flexibility would be needed in the exchange rate regime to reduce vulnerability to currency crisis and free the monetary policy to steer the domestic economy.

39. Moving from one regime to another requires careful preparation to avoid economic disruption. In general, countries can make a successful transition if they make the shift during a period of calm in the foreign exchange market or when there is a tendency for the exchange rate to appreciate (Eichengreen and others 1998). Moving from soft pegs towards more flexibility requires an alternative anchor for monetary policy and inflation expectations to ensure a credible commitment to low inflation. Improvement in institutional arrangements for a successful implementation of the new anchor such as granting operational independence to the monetary authority should be completed before the transition starts. Moving to a hard peg regime requires a different set of preparations. The need for flexible wages, prices, and fiscal policy is greater under a hard peg regime because the exchange rate is not available for adjusting to an adverse shock. Therefore, it is important to put these policy pre-conditions in place before the switch is made.

[12] Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, Anguilla, and Montserrat.

[13] ASEAN countries: Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, THailand, and Vietnam. Members of Mercosur: Argentina, Brazil, Paraguay, Uruguay, Bolivia (associate members), and Chile (associate member).

40. Sometimes countries need to exit from a regime in a currency crisis. During the East Asian crisis, the affected countries let their currencies to float when they could no longer defend their pegs. Substantial loss of policy credibility and economic disruption are unavoidable in such circumstances. Nevertheless, the disruption can be minimized if the exit is combined with a firming of monetary and fiscal policies, and improving prudential supervision and transparency in the financial sector to restore confidence and credibility. International financial assistance to replenish foreign reserves can play a critical role to stabilize the foreign exchange market during transition.

The Impossible Trinity

41. According to the theorem of the impossible trinity a country cannot have simultaneously a fixed exchange rate, free capital mobility, and an independent monetary policy dedicated to domestic goals. Only two of these three objectives can be achieved at a time. Which one should be given up depends on the country circumstances. For example, countries satisfying optimum currency area criterion would give up monetary discretion, while countries strongly integrated in the global capital markets would likely give up fixed exchange rate.

42. Some authors argue that the impossible trinity poses a false dilemma because there is no reason why developing economies have to permit free mobility of capital (Bhagwati 1998a and 1998b, Rodrik 1998). The fact that currency crises are almost invariably the result of private capital flow reversals, has led these authors to argue that some restrictions on capital mobility, especially when the banking sector is inadequately regulated or supervised, can reduce the risk of a currency crisis or strongly moderate its impact. Selective capital inflows would discourage highly volatile "hot money" but facilitate the longer-term capital inflows. Therefore, with capital controls, it may be possible to give up a little bit of all three objectives and achieve in part all three simultaneously (more on capital controls, see paras. 44-48).

E. Complementary Macroeconomic Policies

43. 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.

44. 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 rate[14]. 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 overly-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.

45. For capital controls to be effective a number of general principles need to be observed. First, price-related controls are preferable to prohibitions and quantitative controls because they allow agents in the market to freely determine whether or not a particular transaction is worth undertaking. Between 1991 and 1999, Chile imposed an unremunerated reserve requirement on bank deposits designed to discourage the short-term inflows, as well as a minimum holding period of one year for equity investment. Taxing inflows would also be an effective alternative. Second, it is useful to distinguish between controls on capital outflows that are imposed to resist downward pressures on the exchange rate and controls on capital inflows that are intended to discourage particular forms of inflows (short-term speculative inflows, or hot money). Experience shows that inward controls would be more effective. Third, restrictions should be imposed on short-term portfolio inflows of speculative nature which pose particular risks of currency crisis rather than longer-term inflows and direct investment.

46. Evidence on effectiveness of capital controls is limited. One recent study indicates that Chile with its selective controls has managed to lengthen the maturity of capital inflows and its foreign debt significantly thereby reducing the country's vulnerability to contagion (Edwards 2000).

47. Controls on capital inflows are not free from costs. They reduce a country's access to foreign savings and create incentives for corruption and evasion. But the short-term benefits may outweigh these longer-term costs. They may be helpful if used as an addition to rather than a substitute for sound macroeconomic policies. However, such controls lose their effectiveness over time. The main danger is that they may tempt governments into excessive reliance on them. Therefore, controls should be removed gradually in an orderly way as the economy develops, financial sector is strengthened, and prudential guidelines are put in place. To facilitate a smooth exit from the controls, it is desirable to begin easing the controls when the exchange rate is not under pressure, financial markets and regulatory framework are strengthened, and the necessary institutional arrangements are made to switch to a new anchor for monetary policy which is needed as monetary policy gains independence with increased flexibility in the exchange rate system (Eichengreen and others 1998).

48. The relationship between capital mobility and economic performance is a subject of considerable debate. Some authors argue that a parallelism between free trade and free capital mobility cannot be made: extensive evidence that free trade would result in faster growth cannot be extended to capital mobility (Bhagwati 1998a and 1998b) [15]. Others maintain that large

[14] This issue is discussed at length in Edwards (2000), Mussa and others (2000), Krugman (1998), Williamson (2000), and Ariyoshi and others (2000), Eichengreen (1999).

[15] Noting that China and Japan have registered remarkable growth rates without capital account convertibility, and that capital convertibility did not gain strength until the late 1980s in Europe, Bhagwati pointed out that gains from free capital mobility may be negligible (Bhagwati 1998b, p. 10).

impact of capital mobility on economic growth are realized through two channels: supplementing savings, and increasing productivity (Rogoff 1999). Empirical work to test these views is limited. The work by Rodrik (1998) showed no evidence supporting the view that a higher degree of capital mobility has a positive impact on economic growth in developing countries. A recent work by Edwards (2001) -- based on a substantially improved indicator of openness of capital account -- suggests a strong positive relationship between capital account openness and productivity and growth, but this manifests itself only after a country has reached a certain level of economic development. This finding provides support to the view that there is an optimal sequencing for capital account liberalization. That is, countries can only take advantage of a greater mobility of capital once they have developed a somewhat advanced domestic capital market. Edwards' work also indicates that at low levels of local financial development, a more open capital account may have negative effect on performance.

F. Changing Pattern of Exchange Rate Regimes

49. Since the early 1970s countries' choices of exchange rate regime have significantly changed. Immediately after the breakdown of the Bretton Woods system of fixed exchange rates in 1973 when the world's major currencies began to float, most developed countries continued to peg their exchange rates to a single currency or a basket of currencies. However, since the late 1970s, there has been a steady fall in the number of developing countries that maintain some type of formal pegged exchange rate, and a concomitant rise in the number of countries with more flexible regimes (IMF 1997). Explanations to account for this trend include: large exchange rate fluctuations among the major currencies that followed the breakdown of the Bretton Woods system, acceleration of inflation following oil shocks of the 1970s and 1980s, increases in capital mobility, and a series of external shocks including a steep rise in international interest rates, a slowdown of growth in the industrial countries, and the debt crisis.

50. The steady fall in the number of countries with soft pegs continued in the 1990s, but the shift was towards both floating rates and hard pegs. Table 3 summarizes the changes in a group of 22 developed market economies (DME), 33 emerging market economies (EME), and other developing countries (O)[16]. In 1991, 59 percent of developing countries had some kind of soft peg regime. By 1999, this proportion had fallen to 34 percent while the share of floating regimes increased from 25 to 42 percent, and the share of hard pegs from 16 to 24 percent. The shift away from soft pegs and towards both corners is observed in all three country groups but a large part of the expansion on the hard peg side results from the creation of the EMU which reduced the number of DMEs with a soft peg regime from 11 to one. The EMEs with a soft peg regime fell from 21 to 14. Five of these (Indonesia, Thailand, Russia, Brazil, and Mexico) moved to floating regimes, and two (Argentina and Bulgaria) instituted currency board arrangements. Among other developing countries, a larger shift has been towards flexibility; only six small countries moved to hard peg regimes.

51. This polarization has led some authors to conclude that soft peg regimes in countries open to international capital flows are not sustainable for extended periods, and that these countries

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[16] For detailed results, see Fisher (2001).

should move away from the middle towards both extremes of the exchange rate spectrum where the risk is minimal (disappearing middle, two-corner solution)[17]. Hence they must either float freely or fix truly and thus credibly under a hard peg regime[18]. In recent years, the "two-corner solution" has become a new orthodoxy in the choice of an exchange rate regime for developing countries.

52. The new orthodoxy has been challenged by a number of authors (Frankel 1999, Cooper 1999, Edwards 2000, Williamson 2000). In particular, these authors have argued that: "corner solutions" are not free from problems; "corner solutions" may be appropriate under specific circumstances for a limited number of developing countries; moving away from soft pegs towards more flexibility does not mean free floating; and intermediate regimes are more likely to be appropriate for more countries than the corner solutions[19]. A recent challenge came from the French and Japanese finance ministries. In a discussion paper jointly prepared for the Asia and European Finance Ministers' meeting in January 2001, they pointed out the main shortcomings of the two extreme solutions and stated that an intermediate regime whereby the exchange rate moves within a given implicit or explicit band with its center pegged to a basket of currencies would be appropriate for many emerging market economies (ASEM 2001). Such a regime should be backed by consistent and sustainable macroeconomic and structural policies and may be accompanied, for a certain period and under specific conditions, by market-based regulatory measures to curb excessive capital inflows.

[17] Crockett 1994, Eichengreen 1994, Obstfeld and Rogoft (1995), Summers 2000, Eichengreen 2000.

[18] Fisher argued that the disappearing middle is due to the logic of the impossible trinity (Fisher 2001). Frankel and others (2000) stressed that the relative difficulty to verify the intermediate regimes, particularly the broad band regimes pegged to a basket of currencies, is also a critical factor to explain why intermediate regimes are less viable than the corner solutions.

[19] Edwards (2000) noted: "From a historical perspective the current support for the two-corner approach is largely based on the shortcomings of the soft pegs ... , and not the historical merits of the two corner systems. Frankel (1999) observed: "Neither pure floating nor currency boards sweep away all the problems that come with modern globalized financial markets. Central to the economists' creed is that life always involves trade offs. Countries have to trade off the advantages of more exchange rate stability against the advantages of more flexibility. Ideally, they would pick the degree of flexibility that optimizes with respect to this trade off. Optimization often, though not always, involves an interior solution".

Table 3: NUMBER OF COUNTRIES UNDER VARIOUS EXCHANGE RATE REGIMES

	1991					1999				
	DME	EME	O	Total	Percent	DME	EME	O	Total	Percent
Floating	10	10	20	40	25.1	10	16	52	78	41.9
Indep. Floating	8	2	11	21	13.2	8	13	29	50	26.9
Lightly Managed	2	8	9	19	11.9	2	3	23	28	15.0
Soft Pegs	11	21	62	94	59.1	1	14	48	63	33.9
Hard Pegs	1	2	22	25	15.8	11	3	31	45	24.2
Currency Board	1	1	0	2	1.3	1	1	8	10	5.4
Cur. Union/Dollar.	0	1	22	23	14.5	10	2	23	35	18.8
Total	22	33	104	159	100.0	22	33	131	186	100.0

DME : developed market economies
EME : emerging market economies
O : other countries

Note: The assignment of countries to particular categories is based on the IMF staff's view of the de facto arrangement in place on the relevant date.

Source: Fisher (2001)

53. Williamson (2000) proposed alternative crawling band regimes satisfying the BBC rules: Basket, Band, and Crawl. The proposed regimes are all publicly announced, and have a wide band (up to +/- 15 percent) around a crawling central parity consistent with economic fundamentals and tied to a basket of currencies. They would allow adequately flexible exchange rates managed transparently so as to focus expectations on a range of rates that are consistent with economic fundamentals and conducive to sustain competitiveness. The main difference between the proposed regimes and a traditional band regime is that under the new regimes, if necessary, the exchange rate is allowed to move temporarily outside the band, so that they do not provide speculators with one-way bets. Therefore, the intermediate regimes with soft edges would not be vulnerable to speculative attack and contagion. Williamson argued that a well managed BBC regime would have avoided the East Asian crisis.

54. In a recent paper, Fisher (2001) noted that proponents of the "two-corner solution" probably exaggerated their points for dramatic effect and states, "To put the point graphically, if exchange rate arrangements lie along a line connecting free floating on the left with currency boards, dollarization or currency union on the right, the intent was not to remove everything but the corners, but rather to pronounce as unsustainable a segment of that line representing a variety of soft pegging exchange rate arrangements". This new formulation implies a variety of crawling bands with wide ranges as viable options for countries open to international capital flows. He also acknowledges that some form of peg or band or highly managed float would be

more appropriate for non-emerging market developing economies because of their limited integration into the international capital markets. However, as they develop and want to open their capital accounts gradually, they need to move away from the soft pegs and towards either more flexibility or more fixity depending on country circumstances.

G. Exchange Rate Regimes for the Three Major Currencies

55. The high instability among the three major currencies (dollar, euro, and yen) which adversely affects the American, European, and Japanese economies as well as others including the developing countries, has been a serious concern. Strong dollar was a factor in the outbreak of the East Asian crisis and the financial difficulties experienced in Argentina and Turkey in 2000. Whether and how to stabilize these currencies has always been on the agenda of reforming the international monetary system. Since the introduction of the euro there has been renewed attention to proposals for the possible adoption of exchange rate target zones.

56. A large number of proposals have been made how to stabilize the three major exchange rates; a pure float (Feldstein 1988), target zones (Williamson 1994), a quasi-fixed exchange rate regime to be achieved by monetary policy rules (McKinnon 1999), and various other schemes of policy coordination. Germany, France, and Japan are more akin to stabilization along the lines of a target zone type arrangement. The US seems to prefer a floating regime. Given the absence of political commitment to higher stability, the exchange rates among the dollar, the euro, and the yen are likely to continue to float with significant volatility and medium-term swings entailing important costs to the periphery.

57. There are two main objections to achieve substantial fixity of the three currencies. First, the three regions do not form an optimum currency area: shocks are asymmetric and business cycles are not synchronized. Given the lack of flexibility in wages particularly in Europe, all three economies would be vulnerable to shocks under a fixed rate system. Second, monetary policy in at least two regions should be devoted to maintaining the stability of the exchange rates which may be in conflict with the requirements of the domestic economy. The cost of such a shift in the role of monetary policy may be costly for all three currency areas; achieving higher stability in exchange rates may imply greater instability in domestic economies[20].

58. Floating among the major currencies does not preclude the use of official intervention and adjustment of monetary policy to influence the exchange rates. Occasionally, when the three major currencies get out of line with fundamentals, two or three may agree to intervene in coordination in the currency markets. This happened twice in the past five years; in 1995 when the yen was significantly appreciated against the dollar and relative to its estimated equilibrium value, and in 2000 when the euro was significantly depreciated against the dollar. It is important to note that this informal system differs from a formal target zone system in important ways (Fisher 2001): there are no pre-announced target zones, and so no commitment to intervene at any particular level of exchange rate; the informal system works through coordinated

[20] Krugman and Miller (1993) argued that, if the commitment to defend the target zone is credible, the trade-off between domestic and international objectives may disappear because of stabilizing speculation (honeymoon effect). Under such circumstances, speculation would tend to drive the exchange rate back towards the center of the band because the possibility of market intervention or policy adjustment increases to defend the zone as the exchange rates approache to the edges.

exchange market interventions rather than coordinated monetary policy actions; and the system is very informal and loose.

H. Macroeconomic Performance Under Alternative Regimes

59. Macroeconomic performance under alternative exchange rate regimes have been a subject of continuing research and controversy. Using a three-way classification (pegged, intermediate, and floating rates), an earlier study (Ghosh and others, 1996) which included 136 countries for the period 1960-89, analyzed the link between exchange rate regimes, inflation and growth. A strong result of the study is that pegged exchange rates are associated with lower inflation and less variability. The authors argued that this was due to a discipline effect – the political costs of failure of defending the peg induce disciplined monetary and fiscal policy – and a confidence effect – to the extent that the peg is credible, there is a stronger readiness to hold domestic currency, which reduces the inflationary consequences of a given expansion in money supply. The study also found that pegged rates are associated with higher investment but correlated with slower productivity growth. On net, output growth is slightly lower under pegged exchange rates compared to floating and intermediate regimes. In addition, variability of growth and employment is greater under the pegged regimes. A more recent IMF study that extends the period of analysis to mid-1990s reports similar findings (IMF 1997). However, in an analysis of the recent experience with increasing capital market integration and the replacement of fixed exchange rates in the 1990s, Caramaza and Aziz (1998) found that the differences in inflation and output growth between fixed and flexible regimes are no longer significant.

60. A number of methodological weakness of these studies have been pointed out (Edwards and Savastano, 1998; Mussa and others 2000). First, they do not control for the country circumstances (degree of capital mobility, size, degree of integration, macroeconomic policies). For instance, in some countries, the correlation between inflation and exchange rate was due to fiscal indiscipline rather than to an exogenous decision to adopt a flexible exchange rate. Second, classification of the exchange rate regimes used in these studies is the official one reported by the countries (de jure) rather than the actual (de facto) regime. As noted earlier, discrepancies between the two are often substantial. Third, these studies implicitly assume that all exchange rate regimes in their sample were sustainable (that is, consistent with macroeconomic policies) and that all changes in regimes were voluntary. The fourth weakness is related to "reverse causality". These studies do not address the issue whether fixed exchange rates deliver low inflation by adding discipline and credibility to the conduct of macroeconomic policies, or is it that countries with low inflation choose pegged exchange rates to indicate their intention to maintain their anti-inflationary stance.

61. Using data from 159 countries for the 1974-99 period, Levy-Yeyati and Sturzenegger (2000) reclassified the exchange rates into three groups (float, intermediate, fixed) and estimated the correlation between the actual (de facto) exchange rate regimes and macroeconomic performance. The main findings include: (a) fixed exchange rate regimes seem to have no significant impact on the inflation level when compared with pure floats, while intermediate regimes are the clear under-performers; (b) pegs are significantly and negatively correlated with per capita output growth in non-industrial countries; (c) output volatility declines monotonically with the degree of regime flexibility; and (d) real interest rates appear to be lower under fixed rates than under floating rates because of lower uncertainty associated with fixed rates.

I. Impact of an Exchange Rate Adjustment on Inflation, Growth, and Trade Flows

62. The impact of an exchange rate adjustment on the macroeconomy has also been subject to considerable debate. A significant strand of economic literature has been pessimistic about the effectiveness of a 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)[21]. 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[22].

63. Empirical evidence and country case studies indicate that a 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[23]. 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 achieved[24]. 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 as

[21] For a detailed discussion, see Hinkle and Montiel 1999.

[22] 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 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.

[23] For a review of literature, see Hinkle and Montiel 1999.

[24] Sikwila (2000) estimated a long term elasticity of inflation of 0.51 with respect to nominal devaluation for Zimbabwe.

the domestic price level shifts upward. The aggregate price level has typically shifted upward by 20 to 55 percent of the amount of the nominal devaluation – two to three times the share of imports in GDP. Most of the upward shift in the price level has occurred in the first year, with the inflation rate dropping back to its trend level over the course of the second year. No increase in the long-term inflation rate has typically resulted from successful devaluations (Hinkle and Montiel 1999: p.552).

64. 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[25]. 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 essential[26].

[25] For a review of literature, see Hinkle and Montiel 1999.

[26] A recent study for Zimbabwe (Ndlela 2000) found positive but low price elasticity for supply of a number of traditional exports and stressed the need for competitive real rates and supportive institutional arrangements for export expansion and diversification.

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