



**Exchange Rates in Emerging Markets:  
Floating Toward the Future**

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## Abstract

In light of the crises that occurred in East Asia, Eastern Europe and South America in recent years, this paper argues that the most realistic option for the majority of emerging and developing countries is to adopt a regime that entails substantial exchange rate flexibility, or a “floating” rate. The paper refutes the reasons for fearing the adoption of flexible regimes and credits a more flexible regime with the ability to respond to shocks from abroad; prevent bank crises; and help restore stability when facing problems resulting from the dollarization of liabilities.

The paper also discusses flexible exchange rates and monetary policy in practice and offers suggestions on how to craft actual policies. It point out that the best policy response to adverse external financial shocks involves a combination of domestic interest rate adjustment and real depreciation (i.e., a dirty float). It also notes that the success of flexible exchange rate regimes requires complementary policies, including prudential regulation of the financial system and a counter-cyclical fiscal policy.

### ملخص

تناقش الدراسة أنه في ضوء الأزمات التي مرت بها مؤخراً دول شرق آسيا وأوروبا الشرقية وأمريكا الجنوبية، أصبح أكثر البدائل واقعية لمعظم الدول النامية وذات الاقتصادات الناشئة هو تطبيق نظام يكفل مرونة كافية لسعر الصرف أو سعر صرف معوم. وتعرض الورقة على أسباب التخوف من تطبيق نظم مرنة وتزكى إستخدام نظام أكثر مرونة له القدرة على الإستجابة للصددمات الخارجية، ومنع الأزمات المصرفية، فضلاً عن المساعدة في استعادة الاستقرار عند مواجهة المشاكل الناجمة من دولرة الإلتزامات. كما ناقشت الورقة سعر الصرف المرن والسياسة النقدية من واقع التطبيق العملي، وقدمت مقترحات حول كيفية صياغة السياسات من الناحية العملية. وتشير الدراسة إلى أن أفضل السياسات التي من الممكن إتباعها لمواجهة الصدمات المالية الخارجية يتضمن مزيج من تعديل سعر العائد محلياً مع تحقيق خفض حقيقي في قيمة العملة (أو ما يطلق عليه Dirty Float). كذلك أوضحت الورقة أن نجاح نظم سعر الصرف المرن يتطلب سياسات مكملة بما في ذلك من إرساء قواعد إحترازية للنظام المالي وكذلك سياسة مالية معوضة.

## I. The Effects of Recent Crises

The 1997-98 Asian crisis, with its offshoots in Eastern Europe and South America, revealed how little we still know about workable exchange rate policies for developing countries. Arrangements that had performed relatively well for years (think of Indonesia and Korea) came crashing down with almost no advance notice; other arrangements that once seemed invulnerable (think of Hong-Kong's currency board), almost tumbled down as well. Mid-course corrections and policy changes proved equally troublesome: in every country that abandoned a peg and floated (Brazil, Russia, Ecuador, Thailand, again Indonesia and Korea), the exchange rate overshot massively and a period of currency turmoil followed. And all of it, of course, with tremendous real costs: both the high interest rates used to defend pegs and the massive depreciations that followed abandonment played havoc with corporate balance sheet and wrecked large chunks of the domestic financial system.

In some countries the reaction is to argue that the pegs that collapsed were *not pegged enough*: lack of credibility and the resulting endemically high interest rates brought these fixed rates down, the logic goes. Then the answer is to ensure credibility at any expense: *hard pegs* such as a currency board —or even full abandonment of the domestic currency— should help convince skeptics. After all, one cannot easily devalue a currency that does not exist, or one whose exchange rate is set by law. This logic helps explain the popularity of currency boards or dollarization, particularly in countries with an inflationary history and/or weak political institutions.

Yet a good deal of the current enthusiasm for currency boards owes to the experience of one country, Argentina, over a fairly brief period of time. All the other experiences, except for Hong Kong's, have been too short-lived to be informative.<sup>1</sup> Early in the recent episode evidence seemed to favor the Argentina/Hong-Kong model: a period of high interest rates seemed like a small price to pay to avoid the turmoil affecting countries that had let the exchange rate go. But both hard-peg countries are today mired in major recessions, while some of the early devaluers (Mexico, Korea) seem to be back on the growth track. The enthusiasm for currency boards has diminished accordingly.

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<sup>1</sup> Other recent experiences with a currency board include Estonia, Lithuania and Bulgaria.

It seems likely that countries like Argentina and Hong-Kong will persevere with their currency boards, and other countries may well imitate them. Nor can one rule out movements toward common currencies, à la European Union; Mercosur is a plausible (though long term) candidate. But it seems clear—as I argue in more detail below—that the political and financial prerequisites to adopt such *hard pegs* are extremely stringent. Currency boards also face serious implementation problems of their own. Start with the choice of what currency to peg to and at what rate. Pegging to the wrong anchor in a world of great volatility in the cross-rates among the three major currencies can be devastating, as the countries of South-East Asia discovered recently. And how to guarantee the stability of the domestic financial system in the absence of a domestic lender of last resort? A foreign alternative presumably has to be found. The consequence of these difficulties, in our view, is that new attempts at establishing *hard pegs* may be the exception rather than the rule.

For most emerging and developing countries, the only realistic option is some kind of regime entailing substantial exchange rate flexibility. As we document below, over the last two decades more and more developing countries have been moving in this direction. By the mid-nineties around half of them had a flexible exchange rate arrangement. The trend toward exchange rate flexibility has intensified as a result of recent crises, which left many economies with no alternative but to float. Others have moved toward floating searching for greater flexibility and insulation from external shocks.

The question for most emerging market economies, then, is no longer *to float or not to float*, but *how* to float. Four issues arise in this regard; I review each of them in some detail below.

The first is whether one can float and have low inflation. Conventional wisdom—and some cross country evidence we review below—suggests that an exchange rate anchor is an effective tool to bring price increases under control. But is it the only tool? Many countries, both developed and developing, have recently managed to reduce inflation while floating. The advent of independent central banks probably deserves some of the credit, as does the use of inflation targeting.

The second is whether floating provides as much insulation as conventional theory predicts. Any economics undergraduate deserving of a B learns this key policy implication of the Mundell-Fleming model: if an economy is predominantly hit by foreign real shocks,

flexible exchange rates dominate fixed rates. This basic policy prescription is still found in textbooks and continues to be taught to undergraduates, but has come under attack recently from both academic economists and policy gurus. The real-world trigger for this shift, of course, was the Asian crisis. Countries like Indonesia that let their exchange rates go early on endured substantial real depreciations. They seemed, at least at first, to be more troubled than those countries that held on. This raises the old question of whether in developing countries devaluations can be contractionary.

Which leads to the third point: the relationship between the stability of the exchange rate and that of the financial system. Under dollarization of liabilities, drastic and unexpected changes in the exchange rate can have nasty consequences. In East Asia, an overshooting exchange rate was blamed for debt-service difficulties and bank and corporate bankruptcies. At the same time, floating may help avoid misalignment, thus making large real depreciations less likely. And the maturity and currency denomination of liabilities may itself depend on the exchange rate regime, with sustained floating conceivably creating the incentives for issuing own-currency denominated debt.

The fourth is how to conduct monetary policy under a float. There are no central banks in the world that completely abstain from intervention in the currency market, whether directly (selling reserves) or indirectly. A key question, therefore, is what kind of dirty float to have. How often to intervene? Should monetary policy react systematically (either via aggregates or interest rates) to movements in nominal or real exchange rates? Should there be a “monitoring band,” as Williamson (1998) has suggested and some countries seem to have in practice? Is an inflation target the best way to endow flexible systems with a nominal anchor?

## **II. Evolution and Performance of Exchange Rate Arrangements**

How have exchange rate arrangements chosen by developing and emerging countries changed over time? Has their macroeconomic performance been correlated with the policy choices made? This section reviews evidence on both of these issues.

### ***The Recent Trends***

The late 1970s marked the beginning of a new trend in exchange rate arrangements for developing countries. The initial predominance of pegged exchange rates gave way to more

flexible exchange rate systems. The trend was started by developed countries following the breakdown of Bretton Woods in the early 70s. Initially, developing countries continued their peg to a single currency or moved from single-currency pegs to pegs defined in terms of a basket of currencies. However, by the end of the decade the popularity of the fixed exchange rate arrangements started to decrease. As Table 1 (taken from the IMF) shows, in the mid-1970s approximately 85 percent of developing countries remained on pegged arrangements. Since then, the situation has changed considerably; in the mid-nineties only 45 percent of developing countries had some kind of peg, while around 50 percent had a flexible exchange rate arrangement.

These trends are confirmed once we control for the relative economic size of countries. In the mid-seventies countries with pegged exchange rates conducted almost 70 percent of the total trade among developing countries. Flexible arrangements accounted for only 8 percent. Since the mid-1970s the latter share has been growing, and the increase became especially marked recently. In 1996 almost 70 percent of total trade was conducted by countries with flexible exchange rate arrangements.

The previous conclusions must be tempered by the fact that the classification of exchange rate arrangements is the official one, as declared by each country. In some cases a country may be declaring its exchange rate system to be a flexible one, although in practice it is managed as a peg. Nonetheless, the results are still suggestive.

**Table 1. Developing Countries: Officially Reported Exchange Rate Arrangements (% of total)**

	1976	1981	1986	1991	1996
<b>Pegged</b>	<b>86</b>	<b>75</b>	<b>67</b>	<b>57</b>	<b>45</b>
U.S. dollar	42	32	25	19	15
French franc	13	12	11	11	11
Other	7	4	4	3	4
SDR	12	13	8	5	2
Composite	12	14	18	20	14
<b>Limited Flexibility</b>	<b>3</b>	<b>10</b>	<b>5</b>	<b>4</b>	<b>3</b>
Single	3	10	5	4	3
Cooperative	-	-	-	-	-
<b>More Flexibility</b>	<b>11</b>	<b>15</b>	<b>28</b>	<b>39</b>	<b>52</b>
Set to indicators	6	3	4	4	2
Managed floating	4	9	13	16	21
Independently floating	1	4	11	19	29
<b>Number of Countries</b>	<b>100</b>	<b>113</b>	<b>119</b>	<b>123</b>	<b>123</b>

Source: IMF

The exception to this general trend toward greater flexibility in the exchange rate system consists of a few countries that have been keeping or moving to currency board arrangements: Argentina, Hong Kong, Estonia, Lithuania and Bulgaria. Hong Kong has had a currency board since 1983, while Argentina introduced its convertibility arrangements in 1991. Estonia, Lithuania and Bulgaria have introduced a currency board in the recent years. Drastic reductions in cross-border interest rate differentials have been cited as proof of credibility in the exchange rate system. Moreover, all these countries have achieved important gains in reducing inflation.

### ***Macroeconomic Performance and the Exchange Rate Regime***

What is the empirical evidence inflation and output growth performance with the exchange rate regime? Quite limited. But some suggestive stylized facts are beginning to emerge.

Edwards (1993) investigates whether, *ex ante*, the exchange rate regime affects inflationary performance by introducing financial discipline. He uses a sample from 52 developing countries for the period 1980-89. The classification of the exchange rate regime for each country is based on the system prevailing in 1980. The dependent variable is the average rate of inflation. To assess the effect of the exchange rate regime on inflation performance he controls for a set of variables, including political instability, geographical location, and tax system characteristics. The results indicate that countries with fixed exchange rate experienced lower inflation rates during the eighties compared to countries with flexible arrangements. The introduction of an interactive term between exchange regime and inflation in the period 1965-80 suggest that the disciplinary effect of the exchange rate peg is higher in countries with a history of price stability. Alternatively, the author reports a more direct way of testing the discipline effect of the exchange rate system by using as a dependent variable the rate of growth of money. The results obtained are consistent with the previous ones: fixed exchange rate regimes apparently promote monetary discipline and, through it, lower inflation.

In a later study, Gosh et al (1995) investigate the effect of the exchange rate regime on inflation and output growth performance using data from 136 countries for the period 1960-89. They compute unconditional and conditional means for inflation and growth rates for the set of countries grouped according the degree of flexibility in the exchange rate. The results obtained from the unconditional means analysis indicate that countries with fixed

exchange rates experience lower rates of inflation while in terms of output growth there are no significant differences. The conditional means are computed from OLS estimates with inflation and growth rates as dependent variables and the exchange rate arrangement, among other factors, as an explanatory variable. These results also show that even after controlling for the growth rates for money, pegged exchange regimes exhibit lower and less volatile rates of inflation than do more flexible arrangements. However, the exchange rate regime effect is reduced notably when a money growth variable is introduced.

Gosh and co-authors also find that output growth does not differ significantly among different exchange rate regimes; however, there do seem to be differences in the sources of growth. Pegged exchange rate regimes tend to show higher investment rates but lower growth of residual productivity compared to more flexible arrangements. One important result is that the positive relation between inflation and the degree of flexibility in the exchange rate does not hold for high and upper middle-income countries. For these countries this relation is non linear: pegged and pure floaters exhibit lower rates of inflation while intermediate floaters exhibit higher inflation.

More recently, an IMF study evaluated the macroeconomic performance in terms of inflation and output growth for a group of 123 developing countries, covering the period 1975-96. The results obtained from the unconditional median analysis are similar to those contained in Gosh et al's study. The median rate of inflation in countries with pegged exchange rates has been consistently lower and less volatile than in countries with more flexible exchange arrangements. However, the inflation rate difference between flexible and pegged exchange rate has decreased throughout the 90s. In 1990, this difference in annual terms was approximately 17 percent, decreasing to near 7 percent in 1996. Meanwhile, the performance in terms of the median rate of output growth over the last two decades has not significantly differed between the two kinds of regimes (IMF, 1997). In the 1990s, the difference between these two arrangements in terms of rate of output growth has been consistently positive in favor of the more flexible system by nearly 1 percent in annual terms.



### **III. Hard Pegs: Advantages, Prerequisites and Pitfalls**

After a skeptical review of some of the theoretical arguments for hard pegs, I ask two sets of questions. What kind of country is best served by adopting a hard peg? And what pitfalls should the adopting country strive to avoid?

#### ***The Credibility Argument***

The main argument in favor of “hard” pegs rests on the need to make monetary policy credible. If you cannot build credibility for monetary policy at home, then you can presumably import it by fixing the value of your currency to a hard-money country. This is what Club-Med countries attempted by pegging to the DM, and what Argentina has tried with the US dollar. Many theoretical and practical objections to the argument are well known. Where the political costs of abandoning a peg come from and whether they are large enough to prevent unpleasant surprises is less than clear. Many an “irreversible” peg has come undone; the EMS troubles in the early 1990s are but one example. Yet it also seems clear that if the political will is sufficient, and the institutions designed to express that will are robust enough, interest rate spreads and other indicators of the public’s skepticism can come down sharply and stay there. Europe in the run-up to EMU is a good example.

The strength (and also the potential weakness) of “hard” pegs lies in the absence of escape clauses. Flood and Masson (1990) were the first to argue that a fixed exchange rate is an implicit contract in which the Central Bank commits to retaining the peg unless one or more of several unspecified but painful factors kick in. If they do, devaluation need not be punished by a loss of credibility, for in devaluing the authorities have adhered to the implicit contract. When the short-term pain of defending the peg is large enough that it outweighs the long-term benefits of retaining the fixed rates regime, the country could exercise an “escape clause,” or engage in “excusable devaluation.”

Whether this is a plausible view of the world hinges on difficult implementation problems. It is not clear there are “excusable devaluations” in developing countries, just as there may be no “orderly devaluations” either. This is probably because the exogenous shocks that could render them so are not fully observable –or perhaps not even fully exogenous, in the sense that governments could try to manipulate economic variables to

justify an abandonment of the peg. When in doubt, a weary public may justifiably choose to be skeptical.<sup>2</sup>

Obstfeld (1997) has raised an additional and crucial argument against escape clauses in fixed exchange rates: they can open the door to multiple equilibria. The government is allowed if the situation gets too nasty. But the expectation that the government could devalue could lead the private sector to take actions (demand large wage increases and high nominal interest rates) that make the situation nasty to begin with. If the government does not devalue, it has to live with costly high real wages and real interest rates. But if it gives in, we have a self-fulfilling prophecy setting in: devaluation takes place exclusively because agents expected it. This means that governments should think long and hard before hinting that it views devaluation in some circumstances as “excusable.” Equivalently, they should adopt “hard” pegs that make devaluation unthinkable.

There are well known objections to this line of argument. One is that no peg, however hard, is irreversible. Even instances of currency union have been undone. Understanding that, investors are likely to demand a premium for exchange rate risk that, even though smaller than the comparable premium for less fixed regimes, need not be trivial. The spread between peso and dollar Argentine bonds over the last few years precisely suggests this.

A good reason for the less-than-perfect credibility of hard pegs is that they require the central bank to back the monetary base with hard currency, but no more. But is backing the base sufficient to ensure sustainability? In a technical narrow sense, yes. But in a broader sense, not necessarily. Calvo (1995) has pointed out that a broad measure of reserves adequacy must be considered in order to evaluate the sustainability of the peg. If the central bank is not willing to let the exchange rate depreciate in times of a capital inflow reversal, it should be prepared to cover all its potential liquid liabilities with reserves. Such liabilities include not only the monetary base, but also the total amount of liquid monetary assets in the economy. Consider a situation in which expectations of devaluation generate a sharp

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<sup>2</sup> One can think of exceptions. There may be shocks that are so clearly observable and exogenous that they pass the test. For instance, Sachs, Tornell and Velasco (1996) argue that the assassination of presidential candidate Luis Donaldo Colosio in Mexico in March 1995 could have plausibly have justified the abandonment of the exchange rate band.

fall in bank deposits. Banks lend long and borrow short. Thus, they will not have enough money in their vaults to cover their liabilities.

The monetary authority then faces an unpleasant choice. If it acts as lender of last resort, it will provide enough liquidity to commercial banks to match their liabilities. These funds will in turn be used by the agents to buy foreign currency, deteriorating the reserve position of the central bank. But if the central bank decides not to extend credit to commercial banks (or, in the case of a hard peg, it *cannot*), a wave of bankruptcies can occur.

Following Calvo's logic, Sachs, Tornell, and Velasco (1996) and Chang and Velasco (2000c) use the ratio of M2 to foreign exchange reserves as the indicator of reserve adequacy. Table 2 shows the ratio of M2 to foreign exchange reserves for a selected sample including Asian and Latin American countries. As can be noticed, this ratio was clearly higher for Asian economies than Latin American countries in the onset of the Asian crises indicating a more fragile position in presence of an incipient speculative attack.

**Table 2. Foreign Exchange Reserves and M2**

	M2/Nongold reserves			
	1996	1997	1998	1999
Hong Kong	4.3	3.2	3.7	3.7
Indonesia	6.4	4.5	3.1	3.4
Korea	6.2	5.9	4.1	3.9
Malaysia	3.4	3.4	2.8	2.6
Philippines	4.5	5.1	4.5	3.4
Singapore*	1.0	1.0	1.3	1.3
Thailand	3.9	3.5	4.5	4.2
Argentina	3.4	3.5	3.5	3.7
Brazil	3.6	4.5	5.4	4.1
Chile	1.9	1.8	2.1	2.2
Colombia	2.1	2.3	2.7	2.9
Mexico	4.4	3.9	3.4	3.7
Peru	1.2	1.5	1.7	1.8
Venezuela	1.0	1.3	1.5	1.4

(\*):Reserves includes gold and government foreign exchange holdings.

Source: IFS

Finally, it is important to stress that a currency board, even if fully credible, can do away with currency risk, but not necessarily with default risk. Debtors, whether private or public, can doubtlessly default on their obligations regardless of the exchange rate regime. Yet it is sometimes argued that in the presence of dollarization of liabilities, hard pegs can also reduce default risk, since local borrowers are presumably more insulated against large and unexpected changes in relative prices.

But international investors do not seem to regard countries with flexible rate arrangements as systematically riskier. Consider, for instance, the sovereign bond spreads with respect to U.S. Treasury bonds for Argentina and Mexico. Of course, such spreads depend on a host of factors, for which one would have to control, and doing that is beyond the scope of this paper. But the contrast between the two countries is nonetheless suggestive. Figure 1 in the Appendix shows the spread differential between the two countries between January 1995 and December 1999. The result is striking. Argentina's bonds have not only been an average 47 basis points higher than Mexico's over the whole period, but they have been higher every year, with the exception of 1998 (19 bps in favor of Argentina). Moreover, Mexico's spreads have been lower than Argentina's 70 percent of the time and every single year, as shown in Table 2. Mexico's advantage is especially striking in 1995, the year of the Mexican crisis!

Goldfajn and Olivares (2000a) have compared the behavior of sovereign bond spreads between Argentina and Panama in 1997-99. If harder pegs result in lower spreads, then Panama should have an advantage over Argentina on this count. Yet, there was no significant difference in spreads for the 2 countries, in spite of the fact that risk classifications from both Moody's and Standard & Poor favor Panama. The authors also point out that Panama has paid substantially higher spreads than Costa Rica (a flexible rate country) in the aftermath of the Asian crisis.

A look at real lending rates in Table 3 allows one to make several observations. First, Singapore has systematically lower rates than Hong Kong in the aftermath of the Asian crisis. Second, Singapore has much more stable rates than its Asian neighbor. (Note the sharp increase in rates in Hong Kong during 1997-99). Third, both Australia and New Zealand have lower rates than Hong Kong in 1998-99. Fourth, both Chile and Mexico have—on average—lower lending rates than Argentina over the 5-year period 1995-99. Again,

these stylized facts do not show that floating rate countries have lower interest rates than hard pegs, but they are suggestive.

**Table 3. Real Lending Rates (%)**

	1995	1996	1997	1998	1999
Argentina	16.2	10.5	8.9	10.0	12.9
Australia	6.5	8.4	9.1	7.2	6.0
Chile	10.0	10.7	9.6	15.5	10.3
Hong King	1.8	1.9	4.3	10.6	12.5
Mexico	6.6	9.2	8.8	10.1	13.6
New Zealand	8.4	10.0	10.2	9.9	8.6
Singapore	5.5	4.3	4.3	9.0	4.4

*Source:* International Financial Statistics (IMF), 2000.

### ***The Discipline Argument***

The other important reason that leads many to advocate *hard* pegs is their alleged ability to induce discipline—whether fiscal or monetary. This argument is a close cousin of the credibility story. Presumably, fixed rates induce more discipline because adopting lax fiscal policies must eventually lead to an exhaustion of reserves and an end to the peg. Presumably, the eventual collapse of the fixed exchange rate would imply a big political cost for the policymaker—that is to say, bad behavior today would lead to a punishment tomorrow. Fear of suffering this punishment leads the policymaker to be disciplined. If the deterrent is strong enough, then unsustainable fiscal policies do not occur in equilibrium.

But, as Tornell and Velasco (1998, 1999) have argued, the conventional wisdom fails to understand that under flexible rates, imprudent behavior—especially fiscal laxity—has costs as well. The difference with fixed rates is in the intertemporal distribution of these costs. Under fixed rates unsound policies manifest themselves in falling reserves or exploding debts. Only when the situation becomes unsustainable do the costs begin to bite. Flexible rates, by contrast, allow the effects of unsound fiscal policies to manifest themselves immediately through movements in the exchange rate and the price level. All of this means (as Tornell and Velasco 1998 and 1999 show formally) that if inflation is costly for the fiscal authorities, and these discount the future heavily, then flexible rates—by forcing the costs of misbehavior to be paid up-front—can provide more fiscal discipline.

Some empirical evidence supports this revisionist view. Tornell and Velasco (1998) and Gavin and Perotti (1997) show that in Latin America fiscal policies have been more prudent—after controlling for a host of factors—under flexible than under fixed rates. Those were mostly “soft” pegs. Would “hard” pegs perform any differently? The evidence in this regard is limited. Tornell and Velasco (1999) study the case of Sub-Saharan Africa, comparing the experience of francophone countries that have pegged to the French franc versus the rest. Since pegs in the CFA zone are an artifact of colonial rule, and thus are supported by a French commitment to intervene, and since currency rates have been changed only once since 1948, they could conceivably be thought of as “hard.” The bad news is that francophone African countries operating under that regime seem to have exhibited less fiscal discipline—defined as average deficits—after controlling for a host of factors, than their Anglophone counterparts.

The recent experience in Latin America is also ambiguous. The fiscal performance of Argentina and Panama has not been stellar, but in the case of Argentina it represents a vast improvement from the hyper inflation-producing deficits of the 1980s. Would free-spending Brazilian congressmen have behaved more prudently in 1997-98 had their country been on a currency board? Some skepticism is surely in order.

### ***Prerequisites for Adoption***

Hard pegs, then, seem to have some important (though not unambiguous) advantages. But currency boards or full dollarization are not for everyone. A short and reasonably non-controversial list of conditions is likely to include:<sup>3</sup>

- Optimal currency areas criteria must be satisfied. This means, among other things, that large countries are worse candidates than small countries, and that pegging to a country subject to very asymmetric real shocks is likely to prove problematic.
- Also along Mundell-McKinnon lines, the bulk of the adopting country’s trade takes place with the country or countries to whose currencies it plans to peg. This means that, *ceteris paribus*, Mexico or Central America are much better candidates for dollarization than Argentina, Brazil or Chile. More on this below.

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<sup>3</sup> Some coincide with the conditions put forth by Williamson (1998).

- The adopting country must have preferences about inflation that are broadly similar to those of the country to which it plans to peg. This may be easily achieved in countries with a history of high inflation, which now want price stability at all costs (e.g. Argentina). It may prove trickier in countries which have never experienced a full-blown hyperinflation, and where the *polis* is less unanimous in its willingness to take pain to ensure stable prices (e.g. Ecuador, Brazil, Venezuela).
- Flexible labor markets become essential: with the exchange rate fixed, nominal wages and prices must adjust, however slowly, in response to an adverse shock. Countries considering a hard peg are well advised to undertake labor reforms first. The argument is sometimes made (especially in Europe), that the very presence of a hard peg will create the political impetus for labor market deregulation. That may well be so, but it seems like a very risky gamble to take, especially for countries with political systems more unwieldy than Europe's.
- Strong, well-capitalized and well-regulated banks are also essential, since a hard peg prevents the local central bank from serving as a lender of last resort to domestic banks. More on this below.
- Hard pegs are most necessary for countries with weak central banks and chaotic fiscal institutions. But making hard pegs work requires high-quality institutions and the rule of law, which matter in ways that are seldom discussed. A currency board for instance, is a commitment to adhere to a set of very strict rules governing monetary policy. It may also involve putting the exchange rate into the law, as Argentina has done. These arrangements only make sense in countries where governments adhere to their own rules and where laws cannot be changed by fiat.

### ***Pegging to the Right Currency***

A key implementation problem is that, in a world of floating rates, pegging to one currency means floating vis-à-vis most others. This is not a problem for countries whose trade is geographically very concentrated, and which peg to the currency of that large trading partner. But otherwise cross-rate fluctuations can do serious damage, as East Asian economies whose currencies were pegged to the dollar discovered in 1997. The sharp appreciation of the dollar vis-à-vis the yen caused substantial appreciation in the real effective exchange rate of several East Asian countries, helping pave the way for the crisis that followed.<sup>4</sup> Of course, part of the problem followed from the fact that these countries pegged, *de facto* or *de jure*, to the dollar, while their trade was quite diversified.

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<sup>4</sup> See Corsetti, Pesenti and Roubini (1998).

One way out is to peg not to a single currency, but to a basket. In principle, at least, this could help insulate countries from cross-rate instability. But the implementation problems are many, and difficult. Under a currency board the weights used to calculate the basket would have to be public information; this is not the way in which banks have traditionally preferred to manage such baskets. There is also the need to change the weights in response to structural change. Who is to do that and according to what criteria? Discretionary manipulation of weights can easily become arbitrary even when done by independent and respected central banks, as the recent experience of Chile suggests.

Indeed, if simplicity, transparency and observability are the main virtues of a currency board,<sup>5</sup> moving toward a complex and ever-changing basket system may undermine the very foundations of the policy. And, of course, pegging to a basket means that pair wise exchange rates fluctuate as much as international cross rates do, and this adds risk to certain kinds of transactions. Much of the appeal of current Argentine policy comes from the constant and one-for-one exchange rate, which all Buenos Aires taxi drivers know and can brag about. A complex arrangement in which the price of the U.S. dollar fluctuated unpredictably every day might not command the same kind of support—and would almost certainly not impose the same degree of transparency upon monetary policy.

#### **IV. Credibility and Inflation**

In the 1980s and until recently, debates about exchange rate regimes were largely about their influence on policy credibility. The main case in favor of “hard” pegs rested on the discipline they presumably imposed on monetary and fiscal policy, as the result of the alleged political and other costs of renegeing on exchange rate commitments. If you cannot build credibility for monetary policy at home, the logic went, then you can import it by fixing the value of your currency to a hard-money country.

Empirically, the argument that fixed rates help bring monetary policy under control seems to find some support. As we saw in Section 3 above, countries under fixed exchange rates have experienced, on average, lower rates of inflation. But that empirical work is not without problems. As was mentioned previously, differences between declared and effective exchange rate arrangements can be an important source of error. Moreover, there

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<sup>5</sup> This case is made formally by Herrendorf (1997 and 1999).



is also a causality problem. It is not clear whether a fixed exchange rate causes lower inflation or whether countries with low rates of inflation choose this kind of arrangement. This problem is intimately related to the ultimate source of inflation: a fiscal deficit. Inflation is a monetary problem generated by excessive rates of growth of money supply. This excessive growth in money supply is caused by the need to finance a fiscal deficit. In this scenario, countries that need to finance a fiscal deficit using seigniorage (and therefore, countries with higher equilibrium inflation rates) will choose an exchange rate system consistent with this target, i.e. a flexible exchange rate.

While clearly relevant in some situations, credibility considerations seems to be less compelling than it once was for many emerging markets, especially those in Latin America. The key observation is that, in the developing world, a transition to floating has taken place at the same time as average inflation rates have fallen sharply.<sup>6</sup> Table 4 shows this has been the case in Africa, the Middle East and Southern Europe, and the Western Hemisphere. The same is true in Asia, with the exception of a mild and, in all probability, short-lived upturn in 1998 as a result of the crisis. The fall in inflation is most pronounced in Latin America and the Caribbean, where average inflation rates were nearly 500 percent per annum at the beginning of the decade, and had fallen to less than 8 percent by 1998.

Starting in the early 1990s, a number of small open economies have had successful experiences with exchange rate flexibility, often coupled with inflation targeting. Australia, New Zealand, Sweden, Israel, Colombia and Chile were among them. In these countries, moderate or low inflation has coexisted with growing degrees of flexibility. In reviewing the experience of these and other countries experimenting with more flexible arrangements in the early and mid-1990s, Leiderman and Bufman (1996) conclude: “Despite fears that flexibility and enhanced monetary policy autonomy would lead to uncontrolled high inflation, there has been a substantial decrease in the rate of inflation in most countries.”

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<sup>6</sup> See Leiderman and Buffman (1996).

**Table 4. Inflation in Developing Countries**

	<b>Africa</b>	<b>Asia</b>	<b>Middle East And Europe</b>	<b>Western Hemisphere</b>
1985	18.0	13.6	10.7	408.5
1986	17.0	30.9	15.4	51.7
1987	20.9	21.5	44.5	56.7
1988	18.0	28.2	22.0	501.7
1989	19.5	12.7	15.6	397.6
1990	16.5	13.5	16.6	495.3
1991	18.1	13.9	15.5	298.4
1992	20.0	10.0	17.3	35.5
1993	17.9	9.0	12.8	81.3
1994	26.5	8.9	13.6	87.9
1995	29.5	9.9	13.4	21.7
1996	15.8	7.5	10.2	12.8
1997	10.5	6.6	9.5	9.1
1998	8.6	12.9	8.9	7.8

Source: IMF.

The more recent experiences of Mexico and Chile are also encouraging. In the years since the 1994 crisis, Mexico has been running a money-based policy with a *de facto* dirty float. The same is true of Chile, where an explicit exchange rate band was widened significantly, then eliminated. In both countries the Central Bank is legally independent. Several econometric studies show that in both Chile and Mexico policy has tightened systematically in response to expected inflation, and since the mid 1990s inflation has been trending downward.<sup>7</sup>

Their reaction to the Asian and then the Russian debacle is instructive. In the course of 1998 both countries suffered large terms of trade shocks, and their currencies came under pressure. Mexico allowed the peso to depreciate, which resulted in some real depreciation as well. Chile's Central Bank resisted depreciation initially with a highly contractionary monetary policy. In September 1999 the band was eliminated and the currency was allowed to float. Inflation did not get out of hand in either country: it continued to fall in Chile, while it temporarily rose and then has been falling again in Mexico.<sup>8</sup>

<sup>7</sup> On Chile, see Landerretche, Morandé and Schmidt-Hebbel (1998); on Mexico, see Aguilar and Juan-Ramón (1997) and Edwards and Savastano (1998).

<sup>8</sup> If the real depreciation was not larger, it was not because of domestic inflation, but external deflation.

**Table 5. Hard Pegs and Flexible Rates: A Few Stylized Facts for Selected Countries**

Country	Real GDP Growth (%)						Inflation (%)						Terms of Trade (% change)					
	1995	1996	1997	1998	1999	2000f	1995	1996	1997	1998	1999	2000f	1995	1996	1997	1998	1999	
<b>Currency Bound Countries (G1)</b>																		
Argentina	-2.8	5.5	8.1	3.9	-3.0	1.8	1.6	0.1	0.3	0.7	-1.8	-1.1	-5.7	1.9	2.2	-5.3	0.7	
Hong Kong	3.9	4.5	5.0	-5.1	2.9	8.5	7.0	6.6	5.2	-1.6	-4.0	-3.4	-1.6	1.0	0.7	1.2	-0.8	
<b>Flexible Rate Countries</b>																		
<b>Developed (G2)</b>																		
Australia	3.8	4.4	4.1	4.8	4.4	4.8	4.6	2.6	0.3	0.9	1.5	4.5	-3.5	-1.3	-1.9	3.4	5.3	
New Zealand	2.9	2.5	3.1	-0.8	3.4	5.0	3.7	2.3	1.2	1.3	-0.1	2.3	-0.3	-1.5	-1.0	-0.5	-2.3	
Singapore	8.1	7.6	8.9	0.3	5.4	6.1	0.9	2.0	2.0	-1.5	1.4	1.2	1.7	-0.2	0.0	0.0	0.3	
<b>Emerging (G3)</b>																		
Chile	10.6	7.4	7.4	3.4	-1.1	7.0	8.2	6.6	6.0	4.7	2.3	4.0	14.8	-16.6	3.8	-13.6	-4.5	
Mexico	-6.2	5.2	6.7	4.8	3.7	6.5	52.0	27.7	15.7	18.6	12.3	9.5	-2.8	2.8	-0.8	-2.5	4.0	

Sources: International Financial Statistics (IMF, 2000); JP Morgan (several issues); and national sources.  
For 2000 forecasts: JP Morgan "Global Data Watch" (June 23, 2000).

Mexico and Chile are not atypical. On the contrary, their behavior is beginning to approach that of other, more developed, open economies that also rely on flexible exchange rates. Table 5 presents a summary of some stylized facts from three groups of countries: Group 1 (G1) includes the currency boards, Argentina and Hong Kong; Group 2 (G2) comprises 3 small developed economies with flexible rates, Australia, New Zealand, and Singapore; Group 3 (G3) shows Chile and Mexico.

Note that currency board countries have an advantage on inflation over Chile and Mexico, but not so over Australia, New Zealand and Singapore. G2 central banks enjoy political independence and high professional standards, and monetary policy is oriented towards domestic price stability. In recent years, these countries have suffered significant declines in world export prices. Their currencies have depreciated, and thereby helped offset the shock to domestic output, by spurring production in the tradeable sector. Inflation has remained modest even as the currencies have depreciated. And perhaps most importantly, all of these countries have avoided panics or runs, since the exchange rate depreciation has been gradual and without drama.<sup>9</sup>

<sup>9</sup> Larrain (1999a) makes these arguments for Australia and New Zealand.

This is all suggestive, but the evidence is still limited. For one, there are still relatively few developing countries with dirty floats, and most of those have relatively short track records. And in many of them, that record is still contaminated by the abrupt adoption of floating, often in response to a crisis. But since in response to the most recent round of crashes a number of so-called emerging markets (Brazil, Korea and Russia among them) have moved to floating, much evidence will be produced in the near future. Researchers should start sharpening their pencils and readying their computers. But thus far it seems that fixed exchange rates have not been a necessary condition for controlling inflation. Factors other than the exchange rate regime played a role. In particular, independent central banks, present today in most countries in Latin America, plausibly deserve much of the credit.

## **V. Shocks, Insulation, and Flexible Exchange Rates**

Any undergraduate student of international economics knows the classical argument by Milton Friedman (1953) in favor of flexibility: if prices move slowly, it is both faster and less costly to move the nominal exchange rate in response to a shock that requires an adjustment in the real exchange rate. The alternative is to wait until excess demand in the goods and labor market pushes nominal goods prices down. One need not be an unreconstructed Keynesian to suspect that the process is likely to be painful and protracted. The analogy that Friedman used is suggestive: every summer it is easier to move to daylight savings time than to coordinate large numbers of people to move all activities by an hour.

The case for exchange rate flexibility is especially strong if the country in question is often buffeted by large real shocks from abroad. The logic here is due to Mundell (1963). If shocks to the goods markets are more prevalent than shocks to the money market, then a flexible exchange rate is preferable to a fixed rate. And, of course, foreign real variability is likely to be particularly large for exporters of primary products and/or countries highly indebted abroad — that is, a profile that fits many emerging market countries. Indeed, the 1990s so far have produced large fluctuations in the terms of trade and international interest rates relevant for these countries. Note also that the preference for flexible exchange rates

among countries with a heavy natural resource base extends into the OECD: Australia, Canada, New Zealand, and some of the Scandinavian countries are good examples.

This old set of arguments in favor of exchange rate flexibility for developing countries has recently come under attack from a number of fronts. One claim is that depreciations, like increases in the money supply, only work if they surprise the public. And, of course, no government can surprise all of the public all of the time: repeated depreciations only cause inflation, without real effects. This claim is correct, but also perfectly irrelevant. The Friedman case for flexibility certainly does not advocate attempting to use the nominal exchange rate to keep real activity away from its natural equilibrium level. On the contrary, it advocates letting the nominal exchange rate move to adjust relative prices to the *new* equilibrium level, after a shock has rendered the old constellation of relative prices obsolete.

A more relevant and important objection was initially by Hausmann et al (1999), who argue that the classic case may be right in theory, but wrong in practice for developing countries. One problem, in their view, lies in the prevalence of wage indexation. And understanding that nominal depreciation is unlikely to lead to real depreciation, central banks are reluctant to use it for countercyclical purposes. Another difficulty lies with the classic *peso* problem: in countries with a skeptical public rendered so by decades of currency debauchery, movements in the nominal exchange rate tend to be anticipated by changes in nominal interest rates, so that real rates do not fall (and may in fact rise) in response to adverse shocks. Hausmann et al (1999) test these two claims with Latin American data, and find some qualified support. Their influential conclusion: exchange rate flexibility does not deliver much insulation or monetary policy autonomy, while lacking the credibility value of a hard peg.

The point has been expanded and emphasized by Calvo and Reinhart (2000a and 2000b) and Hausmann, Panizza and Stein (2000), who document the reluctance of countries with seemingly floating regimes to allow the exchange rate to float — a phenomenon labeled *fear of floating*. As a result, they argue, interest volatility is not lower in flexible rates countries, as conventional theory would predict.

The recent wave of skepticism on the insulating properties of flexible exchange rates in developing countries has been influential. But there are both theoretical and empirical reasons to treat the skeptics with some skepticism.

***Indexation, Pass-Through, and the Effectiveness of Nominal Depreciations***

Start with the issue of wage-price indexation and pass-through. Indexation is almost never perfect, or instantaneous, or formal. With partial or lagged nominal adjustments, devaluation can have effects, albeit temporary. Informal indexation can be abandoned if circumstances change, and even formal contracts can be abrogated or altered. Much depends, of course, on the state of aggregate demand and the tightness of labor markets. If devaluation is adopted in a recessionary environment, or if fiscal and monetary contraction is undertaken alongside the end of the peg, real effects are likely.

Initial conditions also ought to matter. The Friedman case for flexibility certainly does not advocate attempting to use the nominal exchange rate to keep real activity away from its natural equilibrium level. On the contrary, it advocates letting the nominal exchange rate move to adjust relative prices to the *new* equilibrium level, after a shock has rendered the old constellation of relative prices obsolete. It follows that a nominal depreciation that takes place in a situation of initial overvaluation (however defined) will have different real consequences than if it happens starting from an equilibrium constellation of relative prices.

And credibility, yet again, may matter for the real effects of a nominal depreciation. As Calvo and Reinhart (2000b) argue, depreciation caused by a temporary (say, one-period) increase in the money supply, under temporarily sticky prices, will cause a real depreciation and typically be expansionary. But a nominal depreciation caused by a permanent increase in the money supply also raises nominal and possibly real interest rates, and can be contractionary. Much hinges, then, on the reputation and past track record of the central bank engineering the depreciation. Ongoing depreciations that follow from imprudent or opportunistic monetary behavior will surely come to be expected by agents, and hence will have no real effect; occasional depreciations that respond exclusively to unforecastable shocks will, almost by definition, have real effects.

The empirical evidence for developing countries is far from suggesting that most depreciations are purely inflationary, with negligible real effects. Kiguel and Guei (1993) study a large sample of devaluations in economies with reasonably low inflation, and show that —if

supported by adequate demand policies— a 50 percent devaluation typically depreciates the real exchange rate by 30 percent, without leading to a permanent increase in inflation.<sup>10</sup>

A related way of approaching the same issue is to focus on the degree of pass through from exchange rates to prices. If every movement in the nominal exchange rate is soon reflected in an upward adjustment in domestic prices, then the insulation provided by flexible exchange rates is nil, or close to nil. Both theory and evidence suggest that market structure, the degree of competition in goods markets, and the size and openness of the economy matter crucially for the degree of pass-through. But just as important is whether exchange rate changes are perceived as permanent or transitory and this, in turn, depends crucially on the average performance of inflation and monetary policy. Leiderman and Bufman (1996) investigated the issue empirically for a number of countries (both developed and developing), and concluded:

A different pattern arises in the Latin American countries and Israel, where there is a much weaker link between nominal and real exchange rates, thus indicating a stronger pass through than in the foregoing countries. These facts seem to be consistent with the notion that, other things being equal, the degree of pass through is likely to be stronger in a high-inflation environment...

More recently, Goldfajn and Werlang (2000) have investigated the determinants of pass-through in a panel of 71 countries in the period 1980-1998. The main determinants of the extent of inflationary pass-through of the depreciations (appreciations) are the cyclical component of output, the extent of initial overvaluation of the real exchange rate (RER), the initial rate of inflation, and the degree of openness of the economy—all of which confirms the conjectures voiced above. The paper also finds that RER misalignment is the most important determinant of inflation for emerging markets while the initial inflation is the most important variable for developed countries. In short: a depreciation that occurs in a situation of overvaluation and average low inflation (and hence high central bank credibility) is likely to show little pass-through, and hence will probably have the desired real effects.

Recent experience also suggests that inflationary pass-through can vary widely across economies. The Mexican devaluation of 1994 led to an inflationary outburst, as shown in

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<sup>10</sup> See also Edwards (1993).

Figure 2 in the Appendix, which was gradually reversed through tight money policies. But inflation did not take off in the case of a number of the recent emerging markets that devalued in crisis conditions: Korea and Brazil are key examples.

When Brazil finally floated the real in January 1999, inflationary predictions were dire. The depreciation was large: the exchange rate started the year quoted at 1.20 *reais* per dollar, averaged 1.52 *reais* per dollar in January and 1.91 *reais* per dollar in February, with a peak at 2.25 *reais* per dollar in this latter month. From the start of the year to the peak, the real saw an 87.5 percent devaluation. That, plus the country's long and distinguished inflationary history, gave ground for extreme pessimism, as Goldfajn and Olivares (2000a) discuss in some detail. According to Fraga (1999), inflation expectations ranged from 30 percent to 80 percent for 1999 as a whole.

But the predicted inflation never materialized. The CPI rose by only 9 percent, and the commonly expected figure for 2000 is 6 percent. Why was the inflationary pass-through so low in Brazil? A number of the factors identified by Goldfajn and Werlang (2000) would seem to have mattered: Brazil is large and not very open, the exchange rate was initially quite overvalued, and output growth initially was low, as Figure 3 indicates. Perhaps most importantly, Brazilian authorities seem to have managed to convince markets that this time they were serious about inflation. As Fraga (1999) and Goldfajn and Olivares (2000b) argue, the adoption of an inflation target regime —albeit after a couple of months of dithering— arguably deserves much of the credit, as does the consolidation of Brazil's endemically weak public finances.

### ***Interest Rate Volatility and Monetary Independence***

One implication of the *fear of floating* hypothesis is that countries that float, prone to intervene and to move local interest rates to prevent the exchange rate from moving too sharply in response to shocks, do not enjoy the monetary independence they are supposed to have. Calvo and Reinhart (2000a), analyze the behavior of exchange rates, reserves, monetary aggregates, interest rates, and commodity prices across 154 exchange rate arrangements, and find that nominal exchange rate volatility is lower and nominal interest rate volatility is higher in countries with floating regimes.

The matter has been examined further by Frankel, Schmukler, and Servén (2000), who use a panel data set including both industrial and developing countries from 1970 to late



1990. The paper contains estimates of a simple reduced-form specification having the domestic interest rate as the dependent variable and the following list of explanatory variables: the international interest rate (the US interest rate), a set of dummies (controlling for crisis periods, transition times, and hyperinflation periods), the differential between domestic and foreign inflation rates, and a country-specific factor. The authors estimate this equation separately for each one of the three currency regimes considered (fixed, intermediate, and flexible, according to the IMF classification), with an eye to the coefficient of the foreign interest rate (the measure of sensitivity) and the average of the country-specific factors (the average level of the local interest rate after controlling for the other factors). The result contradicts Calvo and Reinhart (2000): domestic interest rates are more sensitive to international rates under fixed regimes than under flexible ones. However, in an additional result very much in the spirit of Calvo and Reinhart (2000) and Hausmann, Panizza and Stein (2000) find that nominal rates are lower on average in pegged countries. These findings turn up after controlling for the effects of other factors.

If one divides the sample across income groups (developing and industrialized countries), the sensitivity of domestic interest rates to foreign rates seems to be higher in industrial than in developing countries, which may be an indication that developing countries are less financially integrated to world markets. Building on that intuition, Goldfajn and Olivares (2000b) extend the work by Frankel, Schmukler, and Servén (2000) by explicitly adding a capital control dummy to the regressions, and find that such controls reduce the sensitivity of domestic interest rates to world rates.

Borensztein and Zettelmeyer (2000) also study the degree of monetary independence under different exchange rate regimes. Their paper uses VAR models to study the effect on domestic interest rates of changes in US monetary policy (changes in the US 3-month T-bill rate and constructed US monetary shocks). In those estimations, domestic interest rates are less sensitive to US interest rate shocks in countries under floating regimes than in countries under fixed regimes.

In short: the empirical evidence is mixed, but it does not suggest that conventional theory is wrong: a number of estimations show that floating can reduce the need to adjust domestic rates in response to shocks from abroad, even if it is at the cost of raising average local interest rates.

### *Is Devaluation Contractionary?*

The new wave of critics of floating exchange rates has also unearthed an old argument: that under certain circumstances devaluations can be contractionary in developing countries. That view has distinguished theoretical ancestors, including at the very least Díaz-Alejandro (1964) and Krugman and Taylor (1978). And a casual look at recent crises does suggest that sudden devaluation can be contractionary. Countries like Indonesia that let their exchange rates go early on endured substantial real depreciations. They seemed, at least at first, to be more troubled than those countries that held on. An overshooting exchange rate was blamed for debt-service difficulties, bank and corporate bankruptcies and falling output.

Calvo and Reinhart (2000b) attempt to confirm this informal evidence. They analyze the effect of devaluations during currency crises in both emerging and developed countries. They show that in the short run the evidence for expansionary effects is weak even in developed economies, and that the cut in growth is larger in developing countries.

But, of course, focusing on crisis episodes says little about the more general properties of floating exchange rates. Many things tend to go wrong during crises, including some (like pessimistic expectations) that may be hard to control for; that output losses follow crises is not that surprising, regardless of the exchange rate regime. And suddenly letting the exchange rate go after a period of fixing —during which the government vowed it would never devalue, and a result gullible local firms took on lots of dollar debt—is likely to have very different consequences than a depreciation that is a well understood feature of a floating *regime*.<sup>11</sup>

The post-crisis experience of several emerging countries does not suggest that floating may be costly from a growth point of view. Turn again to Table 5, and notice that G1 (hard peg) economies have experienced sharp recessions, whereas G3 economies have suffered a mild deceleration of their annual growth rates (Mexico) or milder recessions (Chile). This is also the case of Australia and, to a lesser extent, of New Zealand, which suffered a mild downturn in 1998. The contrast is starker if we control for terms of trade changes. Chile has been the hardest hit economy of the 7 on this front, with a collapse of almost 14 percent in its terms of trade in 1998, followed at a distance by Argentina, Mexico, Australia and New

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<sup>11</sup> I focus on the connection between exchange rate changes and financial distress in the next section.

Zealand. Interestingly, terms of trade actually improved for Hong Kong in 1997 and again in 1998, thereby placing more of the blame for this country's sharp 1998 recession on the adjustment mechanism of its currency board.

A comparison of Hong Kong and Singapore is particularly interesting, as these economies are extremely similar in location, size, income per-capita and structure. One of their main differences, however, is that Hong Kong has a currency board while Singapore has a flexible exchange rate scheme. Table 5 shows that Singapore, which let its currency depreciate soon after the start of the Asian crisis in 1997, has performed much better. While Hong Kong's GDP collapsed by over 5 percent in 1998, Singapore managed modest growth on that year and sharply recovered in 1999-2000. And not at the cost of higher inflation: price increases have, in fact, been larger in Hong Kong.

Finally, Brazil again provides an interesting counterexample. Even though the transition to floating was carried out in the midst of a crisis, output consequences were minimal. The bulk of the recession took place before the devaluation, as the consequence of the high interest rates used to defend the peg. Shortly after floating, Brazil resumed moderate growth. As Figure 3 in the Appendix shows, during the last quarter of 1999 and the first half of 2000 the economy has been growing at 4 percent annual rates. Goldfajn and Olivares (2000a) conclude: "...the experiences of Mexico and Brazil seem not to support the evidence that the effect of devaluation is contractionary, and least in the medium and long run."

## **VI. Financial Fragility and Exchange Rate Policy**

In designing exchange rate regimes, issues related to financial fragility have taken center stage. The crises of Mexico in 1994 and Asia in 1997 strongly indicated that the abandonment of exchange rate pegs was closely associated with financial weakness. More formally, the econometric work of Graciela Kaminsky and Carmen Reinhart (1998) established that the connection between banking crises and exchange rate crises is for real.

Focusing seriously on this connection implies a profound rethinking of the foundations of exchange rate theory. For it requires a theory in which financial structure matters, in contrast to the Mundell-Fleming model and others that only emphasize an aggregate

demand for money. Research has only begun to come to grips with the implications of this topic. The following questions have attracted a good deal of interest.

***Bank Runs and the Fixed-Flex Choice***

The essence of a hard peg is that it severely limits the ability of the authorities to extend domestic credit. This may be good for preventing inflation, but it can be bad for bank stability: under a currency board or the gold standard, the domestic banking is left without a lender of last resort, and in a world of fractional banking and imperfect deposit insurance this amounts to an invitation to self-fulfilling bank runs. A conclusion, couched in modern language, that economists have known at least since Bagehot: systems that tie the central bank's hands and prevent it from printing money, also prevent it from coming to the rescue of banks at times of trouble. As Chang and Velasco (2000a) show formally in a model of the Diamond and Dybvig (1983) type, a currency board makes balance of payments crises less likely only at the price of making bank crises more likely. The price of low inflation may be endemic financial instability.

An alternative is to argue for a fixed rate system, but one in which the central bank is willing to lend as a lender of last resort. But this change may not help. In the model of Chang and Velasco (2000a) the only difference is that *banking* crises become instead *balance of payments* crises. In contrast, flexible rates may help restoring financial stability: when bank deposits are denominated in domestic currency, the central bank stands ready to act as a lender of last resort, and exchange rates are flexible, self fulfilling crises cannot be equilibria and a social optimum can be uniquely implemented.

The intuition is as follows. A crisis may be consistent with equilibrium only if each bank depositor correctly expects others will run and exhaust the country's foreign exchange reserves. In a crisis, depositors withdraw domestic currency from commercial banks to buy foreign exchange at the central bank, while simultaneously the central bank is printing domestic currency to aid the commercial banks. With fixed exchange rates, this sequence of actions causes the central bank to run out of dollars or yen, which makes the panic self-fulfilling. In contrast, with flexible rates the central bank is no longer compelled to sell all of its available reserves to fend off a speculative attack. Instead, those who run are punished by a devaluation, while those who do not run know that there will still be dollars

available for withdrawal at a later date. Hence, speculative withdrawals do not occur and a devaluation cannot happen in equilibrium.

The useful role of flexible rates in dealing with bank problems is not limited to self-fulfilling runs. Allen and Gale (1999) have shown that, even if bank runs are caused by shocks to fundamentals, flexibility can prevent costly liquidation of long-term investments. In a Diamond-Dybvig model, adverse shocks to the future return of a long-term investment may cause all bank depositors to choose to exercise their short-term claims on the bank. This leads to a liquidity squeeze and to the actual liquidation of the long-term investment, as the bank scrambles for resources to meet withdrawals. If bank deposits are denominated in local currency and the exchange rate float, the possibility of a depreciation may eliminate this “rush to withdraw” for reasons analogous to those operative in the case of self-fulfilling runs.

There are some caveats to this line of argument. One is that the mechanism just described can protect banks against pessimism on the part of domestic depositors (whose claims are in local currency), not against panic by external creditors who hold short-term claims denominated in dollars. To the extent that this was the case in Asia, a flexible exchange rate system would have provided only limited protection.<sup>12</sup> And proper implementation is subtle. If they are to be stabilizing, flexible rates must be part of a regime, whose operation agents take into account when forming expectations. Suddenly adopting a float because reserves are dwindling, as Mexico did in 1994 and several Asian countries have done recently, may have the opposite effect by further frightening concerned investors. Nevertheless, these recent findings amount to a new and empirically relevant case in favor of flexible exchange rates.

### ***Dollarization of Liabilities***

The emphasis on financial imperfections may cut both ways. Paul Krugman and others observed that, if domestic producers face imperfect credit markets, a fall in the real

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<sup>12</sup> Floating is not totally useless in this case, for panic by foreign creditors could perfectly well be triggered by a run by domestic depositors, with the outcome being self-fulfilling. For details on this line of argument, see Chang and Velasco (2000b).

exchange rate might exacerbate these imperfections and fail to stimulate the economy. This issue became a main concern in the aftermath of the Asian countries, but it is clearly relevant in general.

Indeed, as Calvo (1999) and Calvo and Reinhart (2000a) show, a case against flexible rates can also be built upon the prevalence of dollar debt. This case applies if domestic firms or the government borrow in dollars and, in addition, they sell non-traded goods and have earnings in local currency. Then a nominal devaluation, if successful in changing relative prices, may increase drastically the carrying costs of the dollar debt, and can generate a wave of corporate bankruptcies along with a fiscal crisis.<sup>13</sup>

Again, a number of caveats arise. Perhaps the most important is that, if a real depreciation is called for because of an external shock, it will take place regardless of the exchange rate system. Policy will only determine the manner of adjustment. Under flexible rates the change in relative prices occurs suddenly and sharply. Under fixed rates or a currency board the real depreciation will take place slowly, as nominal prices fall. Throughout the adjustment period markets will anticipate the real depreciation and hence domestic real rates will rise above world rates. And if there are doubts about the sustainability of the peg, interest rates will be even higher. At the end of the day, the real value of debt service will have risen relative to the price of haircuts. This process can conceivably wreck corporate and bank balance sheets just as surely as devaluation.

The other crucial theoretical point is that observing that debt is in dollars is not sufficient to conclude that a nominal and real depreciation will worsen the balance sheet of domestic firms. Céspedes, Chang and Velasco (2000) study the point formally, using a model of a small open economy in which real exchange rates play a central role in the adjustment process, wages are sticky, liabilities are dollarized, and the country risk premium is endogenously determined by the net worth of domestic entrepreneurs as in Bernanke and Gertler (1989) and Bernanke, Gertler and Gilchrist (1998). Hence all the basic building blocks are there for unexpected real exchange rate movements to be financially dangerous, and for flexible exchange rates to be destabilizing. Nonetheless, the Mundell-Fleming logic survives pretty much unscathed: flexible exchange rates do play an insulating role in the

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<sup>13</sup> This danger has been stressed in some interpretations of the Asian crisis—particularly that of Corsetti, Pesenti and Roubini (1998).

presence of real external shocks, and for some parameter values fluctuations in home output and investment are larger and more persistent under fixed than under flexible exchange rates. Such conclusions hold in spite of balance sheet effects.

The intuition is as follows: after an external shock, the initial devaluation of the exchange rate tends to reduce net worth since debt is denominated in dollars. This could suggest that net worth is lower in the case of floating, and therefore the country risk premium and domestic interest rates are higher and future investment lower. But that conclusion would be wrong, because this is not the whole story. Net worth also depends on the level of current output, which flexible rates help stabilize through standard Mundell-Fleming channels. The net result is that following an adverse shock net worth may well be higher under flexible than under fixed rates.

Gertler, Gilchrist and Natalucci (2000) arrive at a similar conclusion, also using a financial accelerator model à la Bernanke-Gertler. Their financial accelerator effects are much stronger under fixed rates than under flexible rates (with a suitably managed monetary policy). This is because an exchange rate peg forces the central bank to adjust the interest rate in a manner that enhances the financial distress. Such an effect occurs regardless of whether debt is denominated in units of foreign currency.

The discussion so far takes dollarization of liabilities as given: simply the result as “original sin”, in the phrase coined by Eichengreen and Hausmann (1999). But not only is dollarization endogenous, and therefore potentially reversible; sometimes it is the result of deliberate policy design. One common culprit is financial liberalization. Radelet and Sachs (1998) and Chang and Velasco (2000c) have argued, for instance, that changes in financial and tax policies in Thailand and elsewhere created incentives for taking on dollar debt. Similarly, an insistence on fixing, accompanied by frequent official assurances that exchange rates would never be devalued, may have discouraged prudent hedging by private firms. Indeed, observers such as Radelet and Sachs (1998) have claimed that the Asian pegs may have fostered a moral hazard problem among borrowers, who felt protected by the official guarantees on the exchange rate.

Finally, consider the (admittedly preliminary) evidence. If dollarization of liabilities is a problem, then countries with “hard pegs” should, other things equal, display lower country risk, for they run little or no risk of a sudden change in relative prices that could wreck

balance sheets. Recall that Figure 1 (in the Appendix) shows the spreads on sovereign bonds as one proxy for country risk. As we saw above, this preliminary evidence suggests that the Argentine currency board has not guaranteed much lower country risk for that nation; in contrast, country risk diminished for Brazil after the advent of floating.

***Is Expansionary Monetary Policy Really Expansionary?***

A closely related but broader question is whether easier money is expansionary in situations of financial fragility. Indeed, the conduct of monetary policy was perhaps the most contentious aspect of the policy response to the Asian crisis and other recent crises in emerging markets. Many analysts, led by the IMF's Stanley Fischer, have contended that stopping the exchange rate depreciation was priority number one. Confidence, a reversal of capital flows and growth would follow. Enthusiasts of this policy pointed to the 1995 example of Mexico.<sup>14</sup> Not everyone agreed. The Global Economic Prospects published by the World Bank (1998) worried that high interest rates had little success in reducing pressure on currencies or stabilizing investor confidence, while at the same time imposing large output costs. In the words of Krugman (1999):

But when financial disaster struck Asia, the policies those countries followed in response were almost exactly the reverse of what the United States does in response to a slump. Fiscal austerity was the order of the day; interest rates were increased, often to punitive levels.... Why did these extremely clever men [in the IMF and the US Treasury] advocate policies for emerging market economies that would have been regarded as completely perverse if applied at home?

We discussed already the possible links among monetary policy, liability dollarization and output. The recent literature has stressed, in addition, that loose monetary policies can be contractionary through their effect on collateral. Foreign lenders often require collateral, such as land or capital stock, to limit total loan exposure. Unanticipated real depreciations due, for example, to an interest rate shock, may lower the dollar value of that collateral,

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<sup>14</sup> Dornbusch (1998) wrote: "Mexico fully implemented a stark US-IMF program of tight money to stabilize the currency and restore confidence. Starting in a near-meltdown situation, confidence returned and within a year the country was on the second leg of a V-shaped recovery. The IMF is unqualifiedly right in its insistence on high rates as the front end of stabilization."



causing a credit squeeze and aggravating the effects of the shock.<sup>15</sup> This is the main conclusion of the basic model by Aghion, Bachetta, and Banerjee (2000), which studies a simple model with collateral constraints.

But even if it has an adverse effect on collateral, in a model with sticky prices a real devaluation need not have a negative effect on contemporary output. This is because there are at least two other, more conventional expansionary effects: it lowers domestic interest rates and it causes expenditures to switch toward domestic goods. Chang and Velasco (2000d) and the last part of Aghion, Bachetta, and Banerjee (2000), recognize this, and show that the overall effect on output is ambiguous and generally depends on the economy's characteristics and initial conditions.

Christiano, Gust and Roldós (2000) arrive at similar conclusions using a very different model. Instead of sticky prices, they rely on a limited participation model to give monetary policy a potentially expansionary effect. But they also consider collateral constraints, which can be suddenly imposed by foreign lenders in what the paper terms a *financial crisis*. Loose money can potentially exacerbate this collateral constraints for the reasons discussed above. The key policy question is: should the home economy respond with an interest rate cut or a hike? The answer is *it all depends*. If there are substantial substitution possibilities among factors of production, and diminishing returns are not too great, then an interest rate cut will produce an expansion; otherwise, it will produce a contraction.

## **VII. Flexible Exchange Rates and Monetary Policy in Practice**

Giving up a peg, whether of the hard or soft variety, means that the economy gives up one nominal anchor. Finding and implementing an alternative anchor is the first task of advocates of exchange rate flexibility. Other issues include the optimal degree of intervention in the foreign exchange market (if any), and the choice of instrument and rules for conducting monetary policy. I deal with them in turn.

### ***Nominal Anchors and Inflation Targets***

The choices for nominal anchor under floating boil down to two: monetary aggregates or inflation targets. Among emerging market countries the latter is by far the most popular,

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<sup>15</sup> Caballero and Krishnamurty (1998), Krugman (1999) and Izquierdo (1999) have also studied the role of collateral in open economies.

and increasingly so. To my knowledge, only Mexico has followed a policy of quantitative targets.

The popularity of inflation targets should not be surprising. Given the instability of money demand in most economies, targeting aggregates is neither theoretically optimal nor easy to do in practice. Inflation targets may also prevent the time inconsistency problem that leads to an inflation bias, while avoiding the pitfalls of fixed exchange rates. And inflation targets may also have some of the attributes of hard pegs, in particular transparency and observability. The inflation rate may be published with a lag, but it is just as accessible and comprehensible to the proverbial taxi driver as is the nominal exchange rate.

As mentioned above, a number of developed countries, including Canada, Finland, New Zealand, Spain, Sweden and the UK, have experimented with inflation target policies of slightly different sorts. Performance has been reasonably good, according to most published academic evaluations.<sup>16</sup> Inflation targets are less common among emerging market economies. According to Masson, Savastano and Sharma (1997), “Chile is the country that seems to come the closest to conducting its monetary policy in a manner consistent with an inflation target.” Colombia, Indonesia (before the crash), Mexico, the Philippines and more recently Brazil have regimes that come close to an inflation target.<sup>17</sup>

What is the scope for more widespread and successful use of inflation targets among developing countries? That is a difficult empirical question, on which much more research is needed. Masson, Savastano and Sharma (1997) identify two requirements for successful inflation targeting in such countries: freedom from commitment to another nominal anchor like the exchange rate or wages, and the ability to carry out a substantially independent monetary policy, especially one not constrained by fiscal considerations. The former is obviously less to the extent that many countries are moving toward exchange rate flexibility. There are also grounds to be optimistic on the second count: legally independent central banks are increasingly common, and the reliance on seigniorage to finance

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<sup>16</sup> See Leiderman and Bufman (1996) and the references contained therein.

<sup>17</sup> Mexico relies mostly on quantitative targets, but also announces an inflation forecast that is meant as a loose guide to expectations. See Aguilar and Juan-Ramón (1997) and Edwards and Savastano (1998). Brazil and Chile have moved pretty much all the way to a targeting regime, even publishing *Inflation Reports* modeled after the Bank of England's.

government spending has lessened, even in traditionally inflationary regions like Latin America.

### ***Dealing with Short-Term Exchange Rate Fluctuations***

The conclusion that a clean float is the only alternative to a hard peg is largely academic. In the real world clean floats do not exist. Major industrialized countries such as the Canada and the UK, smaller OECD countries such as Australia and New Zealand, and middle-income countries such as Peru and Mexico, all practice floating with varying degrees of “dirt.” Even the US, usually regarded as the cleanest of the floaters, intervenes occasionally in the foreign exchange market.

The main reason for this is clear. Clean floating means high volatility of nominal exchange rates – much higher than early advocates such as Friedman (1953) and Johnson (1969) anticipated.<sup>18</sup> And, as Mussa (1986) was the first to point out and many have documented since, that almost always means greater volatility of the real exchange rate, for prices move sluggishly. To the extent that this volatility in relative prices is costly, either directly or because of it causes volatility in output or in the health of the financial system, policymakers typically want to mitigate it.

Under inflation targeting there are additional reasons for managing the exchange rate to some degree. The exchange rate affects inflation through two channels, as Svensson (1998) has pointed out:

- In an open economy, the real exchange rate affects the relative price between domestic and foreign goods, which in turn affects both domestic and foreign demand for domestically produced goods, and hence affects aggregate demand and inflation
- There is also a direct channel, in that the exchange rate affects domestic currency prices of imported foreign goods, which enter the consumer price index

Hence, any scheme to control the rate of inflation at a short horizon must control, to some extent, the behavior of the nominal exchange rate. That helps explain the prevalence of managed or dirty floats in the real world.

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<sup>18</sup> See the insightful historical discussion in Obstfeld (1995).

### ***Dealing with Long Swings in the Exchange Rate***

A harder question is whether authorities should attempt to mitigate not just short-term volatility, but longer swings in the nominal and real exchange rate. The question has much practical and empirical justification. Most observers agree that under floating the exchange rate can be subject to persistent movements that are only weakly related to fundamentals. One often-mentioned example is the behavior of the dollar in the Reagan years. Obstfeld (1995) writes: “Exhibit A in the case for irrational exchange rate misalignment has long been the dollar’s massive appreciation between 1980 and 1985, which amounted to somewhere between 40 and 60 percent, depending on the measure used.”

Something similar could be said of the sharp real appreciation suffered by most Latin American currencies in the first half of the 1990s. Part of it could be plausibly justified by the productivity gains that liberalizing reforms presumably brought; but a good part of it followed from very large capital inflows, which kept coming because of the expectation currencies would appreciate even further. When expectations reversed and so did the capital flows, currencies crashed: Mexico 1994, and Brazil 1999.

Such concerns have led to policies that limit exchange rate movements via flotation bands. And if such bands crawl, so that their center remains close to an estimate of the “equilibrium” exchange rate, then medium term misalignment can be avoided. Avoided, that is, to the extent that the edges of the band are defensible. And, in the aftermath of the Mexican, Asian, Russian and Brazilian crises, the consensus in the profession seems to be that they cannot. Bands with “hard edges” eventually fall prey to the pressures of the marketplace.

Williamson (1998) has recently proposed “monitoring bands” as a possible compromise solution. This is a band that attempts to target the real exchange rate, but with a twist. As he puts it:

The key difference between a crawling band and a monitoring band is that the latter does not involve an obligation to defend the edge of the band. The obligation is instead to avoid intervening within the band (except in a tactical way, to prevent unwanted volatility). There is a presumption that the authorities will normally intervene to discourage the rate from straying far from the band, but they have a whole extra degree of flexibility in deciding the tactics they will employ to achieve this.

At one level, Williamson's proposal seems unexceptionable. In practice most central banks use bands of this sort in deciding their intervention policy, although the degree to which they do it explicitly varies widely. In any managed float the authorities will likely intervene if the exchange rate "strays too far" from its perceived medium-term equilibrium value.

But two issues immediately arise. One is how a central bank can avoid drawing a "line in the sand," however fuzzy, if the exchange rate diverges systematically, and in the same direction, from its estimated equilibrium level. Consider again the case of several Latin currencies in the early part of the 1990s. The central banks of several countries, including Brazil, Colombia and Chile, were concerned about real appreciation. At the same time they used fairly broad bands, and were not shy about widening the bands from time to time when market pressures demanded it. This avoided some of the problems of hard-edged bands, but not all. At several instances markets believed they identified thresholds for central bank intervention, and occasionally mounted speculative attacks against these perceived thresholds. When the monetary authorities retreated, as they often did, some credibility was lost.

The other key question, as Williamson himself points out, is how much difference such a band would make to the day-to-day movements in the exchange rate. The main result of literature on target zones pioneered by Krugman (1991) was that the presence of the band might be stabilizing (in the sense of making the exchange rate less responsive to movements in fundamentals) even when the currency price was well within the edges of the band. But the less credible or the less clearly defined the boundaries of the band, the weaker presumably is this stabilizing effect. Does a band with very fuzzy edges approach, in the limit, the workings of a clearly floating exchange rate? It seems likely the answer is yes, but the issue clearly merits further research.

### ***Crafting Monetary Policy***

How should monetary policy be implemented and designed in this context? The Taylor rule often used by central banks provides a natural focus for the discussion. In such a rule the nominal interest rate typically depends on the output gap and the deviation of measured or expected inflation with respect to the target. In the open economy, several interesting issues arise in the design of this rule.

Mitigating short-term volatility in the exchange rate (and thereby in the rate of CPI inflation) requires that the nominal parity itself be included in the rule, either in rate of change form or in deviations with respect to a target. The larger the coefficient on this argument, the more “managed” the exchange rate. As Svensson (1998) shows, putting the exchange rate in the Taylor rule is likely to be optimal for most specifications of social welfare function, and especially when shocks are predominantly nominal.

Aside from the “financial distress” issues discussed in the previous section, why should a benevolent policymaker worry about the volatility of relative prices, including the real exchange rate? Parrado and Velasco (2000) show that if domestic agents consume both home and foreign-produced goods (or, equivalently, both traded and non-traded goods), volatility in relative prices means volatility in the purchasing power of national output in terms of the consumption basket. Such volatility may reduce welfare. Parrado and Velasco (2000) study a simple open economy sticky-price model in the tradition initiated by Obstfeld and Rogoff (1995). The model is specified so that, in a fully stochastic environment, a closed-form solution can be calculated, and optimal government policy rules computed using the expected utility of the representative agent as the welfare objective. Optimal policy involves adjusting to adverse world financial shocks by a combination of domestic interest rate adjustment and real depreciation: in other words, a dirty float.

The definition of inflation to be included in the target is also important. Targeting quarterly or annual CPI inflation need not be optimal. This is because in open economies, as we saw above, the exchange rate has a direct impact on the CPI via import prices. And to the extent that the nominal exchange rate fluctuates in response to shocks, stabilizing the short-term CPI inflation could introduce excessive volatility in interest rates and output. An alternative is to target inflation in the non-tradable sector, which is less influenced by exchange rate movements. Or, as Ball (1998) suggests, to target a modified inflation index that filters out the transitory effects of exchange-rate movements, or to use an average of CPI inflation over a longer period.<sup>19</sup>

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<sup>19</sup> Of course, this issue only arises to the extent that the float is reasonably clean. With active exchange rate management, targeting CPI and non-tradeables' inflation should have practically identical effects.

Should the monetary policy rule include an output stabilization objective? Recent research suggests that pure inflation targeting, in which only nominal variables are included in the right-hand side of the Taylor rule, may well be inferior to a flexible targeting approach in which output or real exchange rate deviations are also considered. This is true in closed economies but even more so in open economies — again, because nominal exchange rate volatility may cause excessive real volatility. If pure inflation targeting is to be pursued, it is better to target “long run” or average inflation, as Ball (1998) shows.

These are preliminary results using very general models. Conclusions are quite sensitive to model specification, the social utility function chosen, and the relative variance of different shocks. Clearly, more research is warranted.

### **VIII. Complementary Policies: Financial Regulation, Capital Controls, and Fiscal Institutions**

Any exchange regime, and especially a flexible one, requires complementary policies to increase its chances of success. Some have suggested the use of controls on capital flows. Less controversial is the need for prudential regulation of the financial system and for counter-cyclical fiscal policy. I review each of these briefly in this concluding section.

#### ***Financial Liberalization and Fragility***

We saw above that weak banks can be a main constraint for monetary and exchange rate policy. Only when the banks are reasonably healthy can policy be used freely, without the fear that interest or exchange rate fluctuations will bring the banking system tumbling down. Hence, identifying and tackling the sources of financial fragility is key for macro policymakers in developing countries.

In their (1996) paper on the “twin crises,” Kaminsky and Reinhart found that: a) Of the 26 banking crises they study, 18 are preceded by financial sector liberalization within a five year interval and b) Financial liberalizations accurately signal 71 percent of all balance of payments crises and 67 percent of all banking crises. The experiences of Chile, Mexico, and now East Asia, strongly confirm this general tendency. Freeing interest rates, lowering reserve requirements, and enhancing competition in the banking sector are sound policies on many grounds — and indeed, countries in which they are applied often experience an expansion in financial intermediation. But they can also sharply reduce the liquidity of the

financial sector, and hence set the stage for a potential crisis. This is the main finding in Demigurc-Kunt and Degiatriache (1998).

Beyond the effects of liberalization on liquidity, a host of other potential ills have been mentioned in the literature. In particular, deregulation coupled with explicit or implicit guarantees on banks and inadequate oversight can generate a serious moral hazard problem. Overlending and excessive risk taking are likely results, as argued by Velasco (1990) for the case of Chile and by Krugman (1998) for the recent Asian episode. A lending boom and growing share of risky or bad loans often result. As Hausmann and Gavin (1995) persuasively argue, the empirical link between lending booms and financial crises is very strong. Rapid growth in the ratio of bank credit to GDP preceded financial troubles not just in Chile and Mexico, but also in Argentina (1981), Colombia (1982-83), Uruguay (1982), Norway (1987), Finland (1991-92), Japan (1992-93), and Sweden (1991).<sup>20</sup>

The moral of the story is the same in both cases. Financial liberalization should be undertaken cautiously. Reserve requirements can be a useful tool in stabilizing a banking system, as the experience of Argentina in 1995 showed. Lowering them to zero, as Mexico did in the run up to the 1994 crash, smacks of imprudence.

### ***Capital Inflows and Short-Term Debt***

Short-term government debt proved to be dangerous in the case of Mexico; short-term external debt has proven to be risky in the case of Asia. In both cases, runs against this debt ultimately brought the exchange rate down. What can be done about it?

Restraining short-term borrowing involves no free lunch, for both governments and banks have perfectly sound reasons for wanting to make at least some of their liabilities short-term. At the same time, it is not clear that decentralized decision-making delivers the optimal debt-maturity structure: governments may rely too much on short-term debt if they suffer from time inconsistency or high discounting; foreign creditors may only be willing to lend short because of imperfect information or monitoring, or because of coordination failure with other creditors (if each creditor expects the others will only lend short, thus

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<sup>20</sup> In Mexico and Chile, as in the case of some Asian countries more recently, the perception of government guarantees may have created a moral hazard problem and led banks to take on excessive risk. Velasco (1991) discusses evidence for this in the case of Chile. Krugman (1998) stresses the role of moral hazard and over-investment in Asia.



making a crisis possible, his best response is also to lend short in order to have a chance to get out if the crisis comes).

In addition, a preponderance of short-term debt, especially if denominated in dollars, may complicate monetary management and the effectiveness of floating exchange rates. Goldfajn and Olivares (2000a), for instance, find that the sensitivity of domestic rates to changes in world rates is less in flexible rate countries whose current account is financed predominantly by FDI instead of debt. All of these arguments suggest that there may be a case for a policy discouraging short-term debt.<sup>21</sup>

What policy, exactly, is a tricky matter. High required reserves on liquid bank liabilities (whether in domestic or foreign currency, and whether owed to locals or foreigners) is an obvious choice. It may be sound policy even if it has some efficiency costs or if causes some disintermediation. An obvious caveat is that if banks are constrained firms will do their own short-term borrowing, as it happened massively in Indonesia. Taxes on capital inflows where the tax rate in inverse proportion to the maturity of the inflow (and where long term flows such as FDI go untaxed at the border) have been used by Colombia and Chile in the 1990s. They are often justified in terms of findings such as those of Sachs, Tornell and Velasco (1996c), who found that a shorter maturity of capital inflows was a helpful predictor of vulnerability to the Tequila effect in 1995, while the size of those inflows was not. Valdés-Prieto and Soto (1996), Larrain, Labán and Chumacero (1997), Budnevich and Lefort (1997), and Montiel and Reinhart (1997) all find that the restrictions have affected the maturity composition of flows, though not their overall volume or the course of the real exchange rate.

### ***Improving Fiscal Institutions***

We saw above that excessively procyclical fiscal policies are the inevitable consequence of weak and deficit-prone fiscal institutions. Lenders do not lend when times are bad because they do not think they will be repaid when times are good. This informal view is corroborated by the formal evidence suggestive of fiscal borrowing constraints provided by Gavin and Perotti (1997). And the weaker the country's budgetary institutions the greater the problem, as shown by Gavin, Hausmann et al (1996).<sup>22</sup> The consequence: fiscal policy

<sup>21</sup> See Rodrik and Velasco (1999) for more details on the argument.

<sup>22</sup> The quality of fiscal institutions is measured by the index developed in Alesina et al (1996).

is not much use as a counter-cyclical tool. If monetary policy is not available either, perhaps because of an exchange rate peg, then countries can be left bereft of stabilization policy.

A simple and first step forward is to reduce public indebtedness levels. With less initial debt there is more room to expand in bad times without running into borrowing constraints. The ratio of public debt to GDP of East Asian and Latin American countries is low by OECD standards; but so are probably their credit ceilings, for obvious political and institutional reasons.

A second step is to reform fiscal institutions to make spending less cyclical and repayment more likely. One possibility is the National Fiscal Council proposed by Eichengreen et al (1996), which would give responsibility for the broad trends in fiscal policy to an autonomous body modeled after independent central banks. National congresses would still set spending levels and composition, but the size of the deficit (or the allowable debt issuance) would be set by the autonomous Council. If this gave fiscal policy greater credibility, in the sense of ensuring that deficits today need not mean deficits tomorrow and into the indefinite future, then fiscal policy would be more useful as a stabilization tool.

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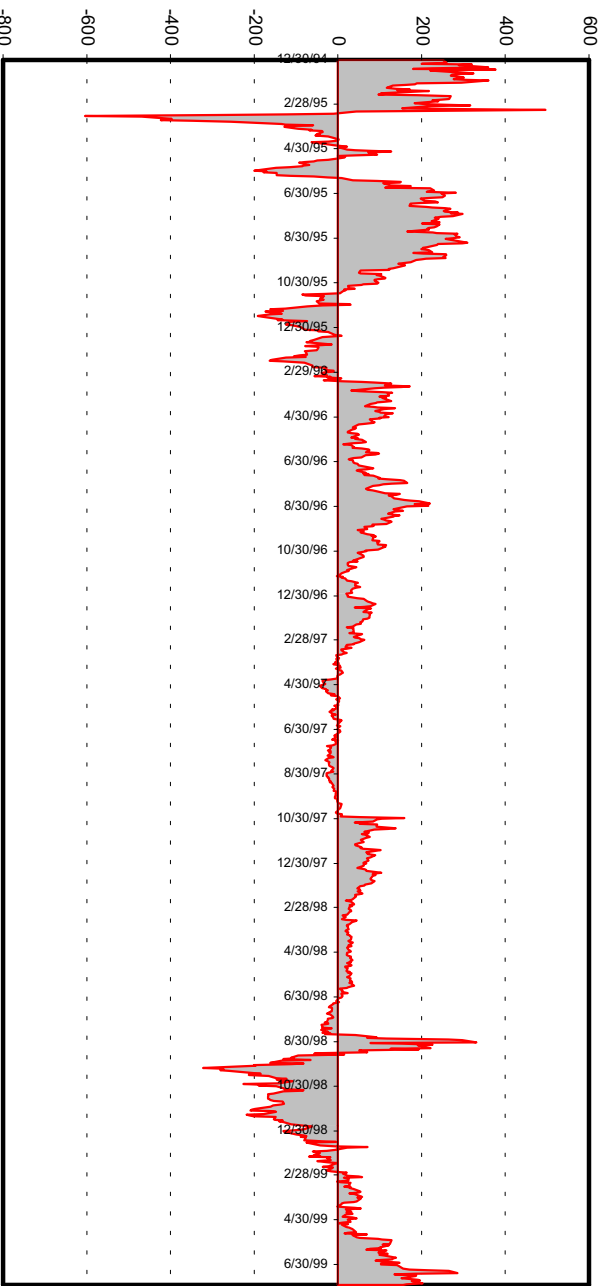
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Appendix

**Figure 1. Sovereign Spreads Differential: Argentina-Mexico, 1995-99**  
(basis points)



Source: Larrain and Velasco (1999).

Figure 2 - Mexico: GDP Growth and Inflation

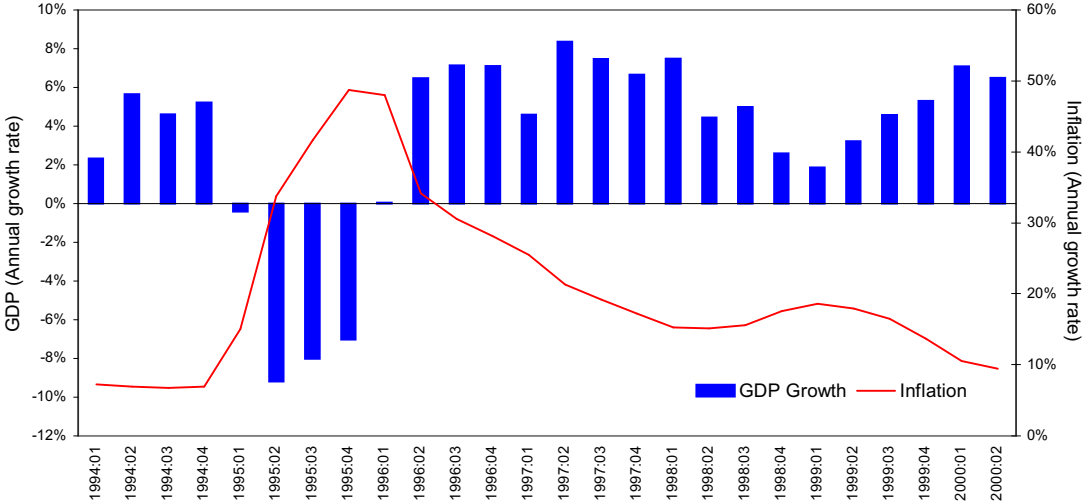


Figure 3 - Brazil: GDP Growth and Inflation

