Exchange Rate Regimes in the Americas: Is Dollarization the Solution?

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The series of crises that have affected emerging markets in recent years have reopened the debate on the most appropriate exchange regime for an emergent economy. In particular, all countries that experienced severe crises in the 1990s had some sort of fixed exchange rate regime, the majority of them falling in the categories that Corden (2002) calls the fixed-but-adjustable exchange rate regime (FBAR) and in-between regimes of the pegged (including flexible and crawling pegs) and target zone types. As a result, in recent years countries have been emigrating to a corner solution: a credible fixed regime or a floating regime with a monetary anchor. Within the latter categories, the increasingly used monetary regime is the inflation targeting one. The paper discusses the advantages and disadvantages of alternative exchange rate regimes and ends with a discussion of the possibility of dollarization in the Americas.

Key words: Exchange rate systems; Inflation targeting; Dollarization

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I am grateful to Jorge Desormeaux, Linda S. Goldberg, and Angel Palerm for helpful comments and to Jose A. Tessada, Alvaro Aguirre, and Oscar Facusse for comments, discussions, and excellent research assistance.

I. Introduction

A series of crises, which have affected emerging markets in recent years, have reopened the debate on the most appropriate exchange rate regime for an emerging economy.[1] This debate has been prompted, in part, by the fact that all countries that experienced severe crises in the 1990s had some sort of fixed exchange rate regime, the majority of them falling in the categories that Corden (2002) calls fixed-but-adjustable exchange rate regime (FBAR) and in-between regimes of the pegged (including flexible and crawling pegs) and target zone types.

This is not surprising, as the structural characteristics of an economy—degree of openness, structure of production, level of financial development, fiscal stance, and degree of wage and price downward rigidity—and its exchange rate regime affect its ability to adjust to negative real shocks, especially persistent ones. In particular, under rigid downward adjustment in nominal prices, a more flexible exchange rate regime facilitates adjustment in the real exchange rate, resulting in a lower cost in terms of unemployment. This acquires special relevance for countries specializing in natural resource-based sectors, as they are frequently exposed to negative real shocks.

Some of these shocks are of an external nature (a drop in terms of trade, a rise in foreign interest rates for a net debtor country, a sudden reduction in capital inflows) and some have a domestic cause (a drought, an earthquake or a political change with a negative impact on expectations and aggregate demand). When the adjustment to these types of shocks requires a depreciation of the real exchange rate, having a flexible exchange rate system can be an important asset in the presence of real downward rigidities. Furthermore, the exchange rate system also has an impact on the effectiveness of monetary policy on aggregate demand, in stabilizing the level of output and controlling the size of the current account deficit. The macroeconomic fundamentals in conjunction with the exchange rate systems also have a bearing on the volatility of the nominal and real exchange rate, with final effects on the level and variability of output and unemployment.

The rest of this paper is organized as follows. Section II briefly compares the cost and benefits of alternative exchange rate systems. Section III takes a look at what we know about hard pegs and compares their particular advantages and disadvantages. Section IV reviews the current situation of exchange rate regimes in the Americas. Section V analyzes the alternative monetary regimes, giving special attention to inflation targeting. Section VI conducts a more detailed analysis on the question of whether the major countries in the Americas are good candidates for dollarization or not, and Section VII presents some concluding remarks.

1. Among recent work on exchange rate regimes, see Obstfeld (1995), Ghosh *et al.* (1997), Edwards and Savastano (2000), Frankel (1999), Mussa *et al.* (2000), and Corden (2002).

II. Alternative Exchange Rate Regimes: Costs and Benefits

Exchange rate regimes can be grouped into three broad categories: hard-peg regimes (dollarization, currency unions, and currency boards), intermediate regimes (fixed-but-adjustable pegs, flexible pegs, crawling pegs, target zones) and floating regimes (managed floats with occasional interventions and free floats).[2] Hard-peg regimes have many benefits. First, they eliminate (and intermediate regimes reduce) the volatility in the nominal and real exchange rate and, when accompanied by supporting macro policies, are less prone to generate misalignments that are unrelated to change in fundamentals.[3] Second, hard pegs as well as FBAR also provide a nominal anchor for the evolution of the price level and allow for more efficient adjustments when shocks are of a nominal nature. The anchor is stronger for hard pegs than for FBARs. Also, a commitment to an exchange rate anchor is easier to understand and monitor than a commitment to a monetary anchor. Third, an additional advantage for countries with a poor track record on the use of monetary policy is that it also reduces the scope for an independent monetary policy.

However, hard-peg regimes (and to a lesser extent, FBARs) also have some important costs. First, in the presence of nominal downward price and wage rigidities, they make a real depreciation difficult to achieve when a change in fundamentals requires one, resulting in important costs in terms of output and unemployment. Thus, it has also been found that adjustment to real shocks under fixed exchange rate regimes (hard pegs and FBARs) are more costly than under more flexible regimes (Broda [2000]).

Second, when agents underestimate the risk of an exchange rate change, they facilitate over-expansion of foreign indebtedness, exposing agents to high costs when an exchange rate adjustment does take place. These costs could be high in economies with weak financial systems. Furthermore, an additional difficulty for hard pegs and especially for FBARs, which has been much stressed in the recent literature (Fischer [2001] and Mussa *et al.* [2000]), is that they are prone to costly speculative attacks in countries that are increasingly integrated into world markets through trade, direct foreign investment, and other types of capital flows.[4] The costs here are multidimensional: the central bank losses associated with the exchange rate intervention, the macroeconomic and financial effects of the high interest rates needed to defend the peg, the balance-sheet and relative price effects of an abrupt change in the exchange rate, and the political and economic costs usually associated with the abandonment of a peg. Balance-sheet effects can emerge when there is a severe currency mismatch between assets and liabilities in the real economy and the financial system. That is, in

2. Corden (2002) distinguishes nine regimes that go all the way from absolutely fixed regime (dollarization and monetary unions) to the pure floating regime.
3. Empirical work on Latin America shows that the variability of the real exchange rate has a detrimental effect on export growth and on investment and output growth (Caballero and Corbo [1989], Corbo and Rojas [1993], and Reinhart and Reinhart [2001]). Furthermore, Baxter and Stockman (1989) compare the variability of a set of real variables across different exchange rate regimes, finding that—controlling for fundamentals—there were no major differences except for the real exchange rate, which was more volatile for flexible regimes. Furthermore, there was a tendency for long-lasting misalignments.
4. The experience of the Hong Kong currency board illustrates this point. Thus, in the heyday of the Asian crises, doubts about the survival of the system resulted in high interest rates and a substantial slowdown of growth.

systems in which the liabilities of private agents are dollarized while their assets or income-generating capacity are in local currency. In this type of situation, a drastic exchange rate adjustment unleashes generalized bankruptcy.

Third, a fixed exchange rate regime—both of the hard-peg and FBAR varieties—also requires giving up on the use of monetary policy to help control demand to stabilize output. This is not a minor cost, as a flexible exchange rate monetary policy is the most effective stabilization tool in the presence of nominal price rigidities. Some of these benefits of having a less rigid system should not be underestimated. Indeed, there is an emerging consensus that the countries which suffered least from the Great Depression were the ones that abandoned the rigid gold standard comparatively early.[5]

Floating regimes reduce most of the costs of the fixed regimes enumerated in the previous paragraphs. However, floating regimes also have their costs. First, they usually deliver higher inflation than fixed-rate regimes. Thus, any flexible exchange rate regime must be complemented by an explicit nominal anchor, most likely in the form of an inflation target regime. Second, flexible exchange rate regimes show more volatility in nominal and real exchange rates and sometimes lasting misalignments in the real exchange rate. This could be an important cost of flexible regimes, as volatility and misalignments have real costs in terms of reduced trade and capital flows and, ultimately, on growth and welfare. How high volatility may rise is well illustrated by the exchange rate between the yen and the dollar, which went from ¥147 per dollar in August 1998 to ¥115 in October of that same year. If these sharp movements occur for the currencies of the two largest countries in the world, with deep markets to cover exchange rate risks, anything could happen for the currencies of smaller countries. The exchange rate volatility costs of a flexible exchange rate system could be important. Calvo (2000) has made this point forcefully while advocating a hard peg (currency board or dollarization). However, a currency mismatch could be ameliorated through appropriate regulation and supervision of the financial system and the aggressive development of instruments and markets to cover these risks as well as the development of deeper capital markets in domestic currency (Caballero [2002] and Goldstein [2002]). Thus, a flexible exchange rate system must be accompanied by appropriate supervision and regulation of banks and by the promotion of instruments to hedge exchange rate risks, including encouraging issuance of local currency-denominated debt.

It is sometimes claimed that countries have a fear of floating and therefore, although they claim to have a flexible exchange rate system, they do not use the flexibility that it entails.[6] Fear of floating could be due to a high pass-through effect of devaluation to inflation or to the commercial risks associated with an exchange rate adjustment in an economy where agents have a mismatch between the currency composition of their assets and liabilities. However, recent analytical and empirical work shows convincingly that pass-through effects—from depreciation to consumer price index (CPI) inflation—are much weaker than initially thought (Obstfeld and

5. See Eichengreen and Sachs (1995), Eichengreen (1992), and Bernanke (1995) for industrial countries and Díaz-Alejandro (1982), Corbo (1988), and Campa (1990) for Latin America.
6. Calvo and Reinhart (2002) present evidence on fear of floating.

Rogoff [2000] and Goldfajn and Werlang [2000]). This is especially so for those countries with a well-established and credible monetary framework of the inflation-targeting type. Under these circumstances, agents trust that the central bank will avoid an acceleration of inflation above the set target, in the process reducing the pass-through from depreciation to inflation.[7] In a formal model where monetary policy follows a Taylor rule, fear of floating could be merely the result of the normal reaction of a monetary authority that is concerned about inflation, especially if it also has a separate target for the real exchange rate (or for the current deficit) as an independent objective of monetary policy. However, a hidden cost of having a separate exchange rate objective—for fear of bankruptcies or for potential effects on trade flows—is that the IT framework would become less transparent, reducing its credibility. In a recent study of monetary policy in Latin America, Corbo (2002) finds that the Central Bank of Chile in the 1990s had a separate current account target objective and the central banks of Colombia in the 1980s and Peru in the 1990s had real exchange rate objectives. However, Corbo and Schmidt-Hebbel (2001) show that countries in Latin America that are listed as floaters were indeed floating.

But one should always keep in mind that, in the ideal case of absence of any market friction, there is no gain from exchange rate flexibility or from having an independent monetary policy. At the same time, in this particular case, not much is gained by giving up the domestic currency, as currency transaction costs are nil and perfect financial markets hedge the currency risk premiums and currency mismatch. The only residual issue would be a minor one, related to the international distribution of seigniorage revenue.

Is it possible to combine a fixed exchange rate regime and a flexible one? In their heyday a decade ago, the intermediate regimes of adjustable pegs and exchange rate bands seemed to provide a perfect combination of credibility (with the nominal anchor provided by the exchange rate peg or band) and flexibility (through the limited and gradual adjustment of the nominal and real exchange rate in response to shocks). However, in a world with large capital movements and high levels of workers' remittances, these exchange rate regimes have become very vulnerable to highly costly speculative attacks (Mexico in 1994, South and East Asia in 1997, Russia in 1998, Brazil in 1999, and Turkey in 2001). As a result, after a decade of growing disappointment with intermediate regimes (including FBARs), the current consensus has shifted in favor of the two pure cases: credible fixed or fully flexible (Eichengreen [1994], Obstfeld [1995], Summers [2000], Mussa *et al.* [2000], and Fischer [2001]). A minority view in favor of the intermediate option is presented in Frankel (1999) and Williamson (2000).

As for countries well integrated into world capital markets, intermediate regimes are prone to crises; there has emerged a strong policy interest in finding less costly options. The main options are to establish a credible hard-peg exchange rate system (dollarization, currency unions, or a currency board) or to employ a more flexible exchange rate system where there is no explicit commitment to a given exchange rate

7. However, the pass-through from depreciation to a rise in import prices could still be high, as shown by Campa and Goldberg (2002).

value, developing, at the same time, instruments to cover exchange rate risks and building in parallel a monetary framework capable of delivering low inflation. An increasingly popular framework of this sort is the inflation targeting one.[8]

III. Hard Pegs: Dollarization, Currency Unions, and Currency Boards

Hard pegs are extreme cases of fixed pegs and, as such, they share the costs and benefits of such systems already discussed in the previous section. A successful hard peg has some prerequisites. First, it must be credible and therefore the central bank must have sufficient foreign reserves to buy back the monetary base or back it up. The fiscal and financial situation must also be strong enough to facilitate the normal development of the private economy. Otherwise, unacceptable economic outcomes (high interest rates, low growth, and high unemployment) would reduce the credibility of the system, making it vulnerable to attack. Second, as they rule out the use of the nominal exchange rate to adjust to negative real shocks that require a rise in the real exchange rate, they must be accompanied by sufficient downward flexibility in nominal prices and wages to reduce adjustment costs to these types of shocks. In the specific case where the hard peg is part of a currency union, adjustment is also facilitated by the possibility of labor and capital mobility within the union. Third, the financial system must be strong enough to survive without a lender of last resort. However, in the event of a financial crisis, provision must be made for emergency loans from foreign commercial banks or from a monetary authority of an industrial country, presumably the Federal Reserve Board or European Central Bank, and/or the fiscal situation must be robust enough to obtain financing in case of a financial emergency. Fourth, any successful hard peg requires a solvent government, in which country-risk-augmented interest rates do not crowd out private demand. Furthermore, the government must have the capacity to carry out countercyclical fiscal policy in situations when the country faces shocks that result in a reduction in aggregate demand. This is the functional fiscal policy of Corden (2002). Nevertheless, the discipline inherent in a hard peg means that a government must be ready to endure, and have the political support to weather, the temporal high real interest rates (and high unemployment) that are an integral part of an adjustment to a drop in foreign reserves. Changing reserve requirements, impeding market-determined increases in the interest rate, or reducing the backing of the monetary base in a currency board scheme may backfire, resulting in reserve losses and/or higher interest rates, as the credibility of the system starts to be questioned.

Hard pegs of the weaker currency board type are not fully protected from the effect of financial contagion. Indeed, financial turmoil and contagion in open

8. A third option, generated in certain cases to avoid exchange rate crises, is to introduce controls on capital flows. However, it must be kept in mind that, given the increasing integration of world trade and direct foreign investment and the lower communication and information costs and advances in information technology, the world is an ever more integrated market, so that capital controls are very difficult to implement and, at best, are only temporarily effective (until the private sector finds ways to avoid them). For a recent review of the effectiveness of capital controls, see Edwards (1999).

economies that have adopted currency boards (e.g., Argentina and Hong Kong), and protracted high exchange rate risk premiums after nine years of Argentina's currency board (reflected both directly and indirectly through large country-risk premiums, as described by Powell and Sturzenegger [2000]) mark some recent disillusion with currency boards. Thus, some believe that, to reduce the cost associated with distrust of the authorities' ability to maintain a currency board, it is necessary to renounce one's domestic currency and adopt that of a larger country with a history of monetary discipline, such as the dollar. Indeed, this option was openly discussed in Argentina at the end of the Menem administration as a way of reducing the growing currency risk despite having a currency board system. However, if fiscal solvency and a sound financial system are not established, the market default risks will still be in place, with high economic costs in terms of unemployment and output losses.

There is a related question of the most appropriate exchange rate regime to provide a nominal anchor to reduce high inflation for a country that is prepared to introduce a fiscal adjustment compatible with low inflation. Here, a hard peg has the advantage in that it provides a clear and transparent signal of the course of policy as well as a direct anchor for the price of imports and exports. However, early on and once inflation has been reduced to low levels, it could become advantageous to move toward a flexible regime—accompanied by inflation targeting with strong institutional backing—to facilitate adjustment to external shocks. The longer it takes to exit the fixed peg, the higher the cost of the transition, as agents will gradually adjust to the fixed peg. Here there is a clear trade-off between credibility and flexibility. Again, this could be a major advantage for countries where there are many prices that are rigid in a downward direction. Otherwise, the high unemployment costs that usually accompany the adjustment to a negative shock could become too costly to endure.

IV. Exchange Rate Systems in the Americas: What Is Said and What Is Actually Done

The Americas encompass a great variety of countries, ranging from large industrialized countries such as the United States, Canada, and Brazil to small island nations in the Caribbean. Also, the variety of exchange rate regimes adopted during the 20th century is quite impressive. The current distribution of exchange rate regimes in the region is very wide, ranging from the long-standing full dollarization of Panama and Puerto Rico to the FBARs and crawling pegs of Bolivia, Peru, and Nicaragua, to the floating with rare intervention of Chile and Canada, and the free floating of the largest country, the United States. A broad view on the exchange rate systems of the region can be obtained by drawing on the results presented in three recent papers: Berg *et al.*'s (2002) study of monetary regimes in Latin America, and the Levy-Yeyati and Sturzenegger (2002) and Reinhart and Rogoff (2002) studies, which provide an overview of the differing exchange rate systems in the world.[9]

9. Two previous comprehensive revisions of monetary policy and exchange rate regimes in Latin America are Corbo *et al.* (1999) and Corbo and Schmidt-Hebbel (2001).

To define a country's type of exchange rate system is not an easy task, as in many cases the announced system differs from the actual one. The first paper mentioned above presents a classification of exchange rate regimes for the Latin American countries that corresponds to the official classification of the International Monetary Fund (IMF) (based on the countries' official announcements, adjusted by the views of the IMF staff). The latter two papers provide independent classifications of exchange rate regimes, over a very long span of time, contrasting the official announcements and the effectively observed trajectories of the exchange rates and other variables related to the exchange rate regime. Reinhart and Rogoff (2002) also take into account the presence of parallel exchange rate markets, using the trajectory of market-determined exchange rates rather than official rates. The focus on what is effectively done provides an opportunity to avoid some of the problems that arise from the "fear of floating" and the "fear of pegging." Both classifications differ significantly from each other and from the traditional one presented by the IMF, based upon what is officially declared by each government.

From the classification of exchange rate regimes presented in Levy-Yeyati and Sturzenegger (2002) and Reinhart and Rogoff (2002), one can derive an overall classification of exchange rate regimes as of December 2001. However, one loose point remains, as the two sources group exchange rate systems into categories that do not coincide and, in particular, one is less detailed than the other. In this paper, we use a classification of exchange rate systems closer to that presented by Berg *et al.*,[10] but we rely mostly on the country information provided by Levy-Yeyati and Sturzenegger (2002) and Reinhart and Rogoff (2002). We use three categories of exchange rate systems: hard pegs (dollarization, currency unions, and currency boards), intermediate regimes (FBARs, crawling pegs, bands, crawling bands) and floaters (managed and free). Table 1 distributes the different countries into these three categories, using the individual classifications of Reinhart and Rogoff (2002). Table 2 does the same thing using the classification of Levy-Yeyati and Sturzenegger (2002), and Table 3, which is used as a benchmark, is the classification of Berg *et al.* (2002) expanded to the whole of the Americas using information from IMF (2002).

As can be observed from the three tables, the distribution of countries among categories is very different in each work. In fact, the results of Reinhart and Rogoff (2002) show a high concentration of countries in intermediate regimes. So, after a first examination there is no explicit evidence of the "bipolar view" or the "hollowing-out hypothesis" in the Americas.[11] But the results from Berg *et al.* (2002) show a different distribution, with more than half of the countries located in the corners of the distribution. A completely different result is obtained using Levy-Yeyati and Sturzenegger's (2002) classification of countries. However, their results could be contaminated, as they do not provide enough information to separate hard pegs from conventional pegs.

An important result that arises from the comparison of the classifications is that, apart from the differences originating in the statistical procedures used, a large number of countries show fear of "something," that is, they have in practice a

10. See table 1 of their paper.
11. See Fischer (2001) and Eichengreen (1994), respectively, for a presentation of these hypotheses.

different regime than the one reported to the IMF and described in IMF (2002).[12] Thus, it appears that some countries which declare themselves to be floaters are in fact afraid of letting the exchange rate adjust freely (fear of floating), and other countries that declare themselves to be pegging to something are not actually pegging to what they were supposed to (fear of pegging).

Another result, not reported here, is that the distribution today is quite different from that existing during the previous decade or in the second half of the previous century. By reviewing the recent history of various countries, one observes that a significant portion of them have officially moved to the corners. Unfortunately, this very rough classification hides the fact that an important number of these intermediate regimes really are *de facto* crawling bands or *de facto* pegs, arrangements

Table 1 Exchange Rate Regimes in the Americas (1): Reinhart and Rogoff's (2002) Classification as of December 2001

Hard pegs[1]	Intermediate[4]	Float[6]
• Argentina[2] • East Caribbean Central Bank countries[3] • Ecuador (dollarization) • El Salvador (en route to dollarization) • Panama (dollarization)	• Bolivia (*de facto* crawling peg) • Canada (*de facto* crawling band) • Costa Rica (*de facto* crawling band) • Dominican Republic (*de facto* crawling band) • Guatemala (*de facto* crawling peg) • Guyana (*de facto* crawling peg) • Honduras (*de facto* crawling peg) • Jamaica (*de facto* crawling peg) • Nicaragua (crawling peg) • Paraguay (*de facto* crawling band) • Peru (*de facto* peg) • Suriname (peg) • Uruguay (*de facto* crawling band)[5] • Venezuela (preannounced crawling band)[3]	• Brazil[7] • Chile[7] • Colombia[7] • Haiti • Mexico[7] • United States

Notes: 1. Entails dollarization, currency unions, and currency board arrangements.
2. In 2002, moved to float.
3. Includes Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines. In practical terms, these countries are members of a currency union, whose currency is pegged to the dollar.
4. Entails pegged horizontal bands, conventional fixed peg arrangements, crawling pegs, and crawling bands.
5. There is also an official crawling band, but Reinhart and Rogoff found that in fact the central bank followed a narrower crawling band. In 2002, the band was widened and the central parity was adjusted to allow a faster pace of depreciation.
6. Includes managed floats and free floats.
7. Managed floating.

12. The number of countries would be even higher if we had compared what the countries say with what they do instead of using the classifications appearing in IMF (2002).

Table 2 Exchange Rate Regimes in the Americas (2): Levy-Yeyati and Sturzenegger's (2002) Classification as of 2000

Fixed	Intermediate[2]	Float
• Argentina • Bahamas • Barbados • Belize • Bolivia • Brazil • East Caribbean Central Bank countries[1] • El Salvador • Guyana • Netherlands Antilles • Nicaragua • Panama • Trinidad and Tobago	• Costa Rica • Dominican Republic • Ecuador • Guatemala • Peru • Uruguay	• Canada • Colombia • Chile • Haiti • Honduras (1999) • Jamaica • Mexico • Paraguay • São Tome and Principe • Suriname (dirty float) • United States • Venezuela (dirty float)

Notes: 1. Includes Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines. In practical terms, these countries are members of a currency union, whose currency is pegged to the dollar.
2. Corresponds only to the intermediate/crawling peg category presented in appendix 2 of Levy-Yeyati and Sturzenegger (2002).

Table 3 Exchange Rate Regimes in the Americas (3): Berg *et al*.'s (2002) Classification as of 2001[1]

Hard pegs[2]	Intermediate[4]	Float[5]
• Argentina • East Caribbean Central Bank countries[3] • Ecuador • El Salvador • Panama	• Aruba • Bahamas • Barbados • Belize • Bolivia • Costa Rica • Honduras • Netherlands Antilles • Nicaragua • Uruguay • Venezuela	• Brazil • Canada • Chile • Colombia • Dominican Republic • Guatemala • Guyana • Haiti • Jamaica • Mexico • Paraguay • Peru • Trinidad and Tobago • United States

Notes: 1. The author, using the IMF classification presented in the IMF's *International Financial Statistics* (May 2002), added additional countries to the original classification.
2. Entails currency unions and currency board arrangements.
3. Includes Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines. In practical terms, these countries are members of a currency union, whose currency is pegged to the dollar.
4. Entails pegged horizontal bands, conventional fixed peg arrangements, crawling pegs, and crawling bands.
5. Includes managed floats and free floats.

that are more flexible than an officially announced peg or band. Table 4 presents a finer classification of the countries, based on the information provided by Reinhart and Rogoff (2002) and incorporating additional information, where it can be observed that the mentioned bipolar concentration is due to *de facto* behavior more than to formal commitments to rigid schemes. The absence of a formally

Table 4 Exchange Rate Regimes: A Finer Classification as of December 2001

Hard pegs			Intermediate regimes				Floaters
Dollarization	Currency union	Currency board	Peg and crawling peg	*De facto* peg and crawling peg	Band	*De facto* band	
• Ecuador • El Salvador • Panama • Puerto Rico	• East Caribbean Central Bank countries[1]	• Argentina[2]	• Nicaragua • Suriname	• Bolivia • Guatemala • Honduras • Jamaica • Peru	• Venezuela[2]	• Costa Rica (crawling band) • Dominican Republic • Paraguay • Uruguay	• Brazil[3] • Canada[4] • Chile[3] • Colombia[3] • Haiti • Mexico[3] • United States

Notes: 1. Includes Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines. In practical terms, these countries are members of a currency union, whose currency is pegged to the dollar.
2. In 2002, moved to float.
3. Managed floating.
4. Reinhart and Rogoff (2002) classified the country as a *de facto* band, but according to the author's view, confirmed by the IMF classification, it was reclassified as a floater.

Source: Author's preparation based on the results presented in Reinhart and Rogoff (2002).

announced commitment allows countries to "abandon" the rigid *de facto* schemes. However, as we will see below, the countries of the Americas that are more fully integrated into the world economy, especially to world capital markets, tend to be in those corners.[13]

As a summary, we conclude from Table 4 that, as of the end of December 2001, in the Americas Panama, Puerto Rico, and Ecuador are dollarized, while El Salvador is *en route* toward dollarization. Ecuador, a country that dollarized in 1999, still has many pending problems and weaknesses (a weak financial system, rigid nominal wages in the formal sector, severe structural fiscal problems, etc.) that could reduce the credibility of its dollarization experiment and lead to its abandonment. However, the dollarization could also force the flexibility and fiscal discipline that are required for its success. A group of small countries in the East Caribbean have a currency union (the East Caribbean currency union), and Argentina had up to December 2001 a currency board (which was established in April 1991). Argentina ended up abandoning its currency board in early 2002.[14] Leaving aside the East Caribbean countries that have a currency union and are pegged to the dollar, 12 countries have intermediate regimes. These countries, except Uruguay, are not well integrated into world capital markets, which makes them less prone to speculative attacks.[15] In some countries that are classified as floaters, the exchange rate could have low volatility due to fundamentals or movements in the interest rate. This result could be due more to a monetary policy that reacts not only to inflation but also to movements of the

13. Levy-Yeyati and Sturzenegger (2002) found the same result for a larger set of countries.
14. The abandonment took place during a profound crisis related to many factors: the increasing insolvency of the public sector, and a series of severe and persistent negative real external shocks in the presence of downward inflexibility in public-sector nominal wages. Interestingly enough, private-sector nominal wages became downwardly flexible when the economy had to adjust to a higher-equilibrium real exchange rate.
15. Levy-Yeyati and Sturzenegger (2002) indeed find that, using their classification of exchange rate regimes, the countries that are not well integrated into capital markets do not have corner regimes.

exchange rate. Seven countries (Brazil, Canada, Chile, Colombia, Haiti, Mexico, and the United States) have a floating exchange rate regime. All these countries, except Haiti, are well integrated into world capital markets.

V. A Monetary Policy Framework for the Floaters: The Case for Inflation Targeting[16]

The free floaters by definition have dispensed with the use of the exchange rate as a nominal anchor and thus must select a monetary regime capable of delivering low inflation. Two fundamental options can be considered: a monetary anchor and an inflation target anchor.[17] A monetary anchor relies on a pre-committed path for the money supply to anchor inflation. In the case of inflation targeting, the anchor for inflation is the publicly announced inflation target itself. The credibility of this policy relies on the power given to the central bank to orient monetary policy chiefly toward achieving the target and its willingness to use its power for this purpose.

The effectiveness of the use of a monetary aggregate as a nominal anchor for inflation depends, first of all, just as in the case with an inflation target, on the authority and capacity of the central bank to carry out an independent monetary policy aimed at achieving and maintaining low inflation (including that induced by exchange rate depreciations). But in this case, the effectiveness of the policy depends also on the stability of the demand for the monetary aggregate that is used as the anchor. That stability provides a link between the monetary anchor and the inflation rate. The stability of the demand for money presents a problem in cases where there is considerable financial innovation or a sudden change in the level of inflation.

In particular, in an economy that has experienced a period of high and variable inflation, the demand for money becomes very unstable, as economic agents develop ways to economize in the use of domestic money balances. Therefore, when the rate of inflation is reduced, hysteresis effects emerge, generating a breakdown in the former relationship governing the demand for money. That is, when the inflation rate returns to previously observed lower values, the quantity of money demanded is lower than what was expected before the outburst of inflation. In cases like these, predicting the quantity of money demanded becomes very difficult, and the use of a money target could be very ineffective in achieving a given inflation objective. Thus, it is not surprising that as countries have moved toward more flexible exchange rate arrangements, they have searched for a new monetary anchor.[18] In recent years, the anchor that has become increasingly popular is inflation targeting. An additional advantage of the inflation target over a monetary aggregate is that as the credibility of the policy increases, the central bank can engage in short-term stabilization policy.

16. This section draws, in part, on Corbo and Schmidt-Hebbel (2001).
17. On monetary anchors, see Calvo and Végh (1999), Bernanke and Mishkin (1997), and Bernanke *et al.* (1999).
18. One should be careful not to oversell this argument. As my discussant Linda Goldberg argued, inflation targeting also benefits from a stable demand for money although all that is required is a stable relation between inflation and its determinants, including among the latter the policy interest rate. However, for this relation to be stable, the money demand must also exhibit some stability.

In the case of the Americas, five of the seven floaters (Brazil, Canada, Chile, Colombia, and Mexico) have gradually established an inflation-targeting framework (ITF). Meanwhile another floater, the United States, uses the high credibility of its central bank, the Federal Reserve Board, as a monetary anchor, but recently there have been suggestions to move toward an explicit ITF (Meyer [2001]).

An ITF was initially introduced in Canada (February 1991) and Chile (1991), and was later extended to Colombia (1999), Brazil (June 1999), and Mexico (1999). Under the ITF, the target rate of inflation provides a monetary anchor and monetary and fiscal policies are geared toward achieving the inflation target. The advantages of this framework are that it does not rely on a stable relationship between a monetary aggregate and inflation for its effectiveness, and at the same time, it avoids the problems associated with pegging the exchange rate. An additional advantage for emerging countries is that the trajectory of the market exchange rate provides important information on the market evaluation of present and future monetary policy, such as the information provided by nominal and real yields on long-term government bonds in industrial countries (Bernanke *et al.* [1999]).

A well-defined ITF must satisfy a set of conditions (Svensson [2000] and King [2000]). First, it must include a public announcement of the strategy of medium-term price stability, and an intermediate target level for inflation for the relevant period in the future in which monetary policy affects inflation. Second, an institutional commitment to price stability must be in place, in the form of rules of operation for the monetary authority. Third, operational procedures must be transparent and there must be a clear strategy concerning how monetary policy will operate to bring inflation close to the announced target. The strategy, in practice, usually starts from a conditional forecast of inflation for the period for which the target is set. It also establishes specific operational procedures for the central bank to adopt when the inflation forecast differs from the target. The procedures should be transparent and the monetary authority should be accountable for attaining the objective that has been established. Central bank autonomy is an important institutional development that reinforces the credibility of an ITF.

Given the lags in the operation of monetary policy, the inflation target must be set for a period far enough into the future to ensure that monetary policy can have a role in determining future inflation. In practice, central banks announce a target for the next 18 to 24 months. They develop a conditional forecast of inflation for this timeframe—based on the existing monetary policy stance and a forecast of the relevant exogenous variables—and provide a strategy and communicate to the public the policy actions they will adopt in response to deviations of inflation from target levels. When the conditional inflation forecast is above the inflation target, the level of the intervention interest rate is raised to bring inflation closer to the target. One advantage of the ITF is that inflation itself is made the target, committing monetary policy to achieve an explicit inflation objective and thus helping to shape inflation expectations. However, herein also resides its main disadvantage. As inflation is not directly under the control of the central bank, it becomes difficult to evaluate the monetary stance on the basis of the observed path of inflation. Furthermore, as monetary policy operates with substantial lags, it could be costly to pre-commit to

an unconditional inflation target—independently of changes in external factors that affect inflation—and change monetary policy to bring inflation back to the target. Aiming at the inflation target when a shock causes a temporary rise in inflation could be very costly in terms of a severe growth slowdown and increased output volatility (Cecchetti [1998]).

To address some of these problems, several options have been proposed. First, the inflation target can be set in terms of a range rather than a point. Second, a target can be set for core inflation rather than observed inflation. Third, changes in indirect taxes, interest payments, and energy prices can be excluded from the targeted inflation measure. Fourth, the target can be set for sufficiently long periods so that short-term shocks to inflation do not require a monetary response.[19]

Emerging markets that adopted an inflation target at a time when inflation levels were well above their long-run objectives have had to deal with the problem of inflation convergence. Usually, these countries have started reducing inflation without a full-fledged ITF in place. Once they had made sufficient progress in reducing inflation, they announced annual targets and gradually put in place the components of a full-fledged ITF, as they moved toward low and stationary inflation (Australia, Canada, Chile, Israel, New Zealand, and the United Kingdom are good examples here).

VI. Is Dollarization an Option for the Americas?

Dollarization can be unilateral or part of a currency union in which all or some countries of the Americas adopt the dollar. Let us first discuss the case for unilateral dollarization. Both types of dollarization are the strongest cases of a hard peg (the third and weakest one is a currency board). Abandoning the domestic currency eliminates the risk of devaluation, but a country that eliminates its currency and adopts that of a low-inflation country, such as the dollar, must incur the cost of buying back the monetary base (the stock cost) as well as the flow losses of seigniorage. For the case of the larger economies in the Americas—Argentina, Brazil, Chile, and Mexico—Morandé and Schmidt-Hebbel (2000) estimate these losses to be between 2.2 percent and 4.4 percent of GDP in 1999 for the first component, and between 0.12 percent of GDP and 0.25 percent of GDP for the second. Nevertheless, in the case of countries with a record of poor monetary management and price stability, the cost could be worthwhile. In the special case of forming a currency union, as is the case of the European Monetary Union (EMU), the member countries could negotiate the distribution of the revenues from seigniorage.

One should now ask which are the natural candidates for unilateral dollarization in the Americas. In the first place, they are countries that have not managed to set an independent monetary policy able to deliver low inflation. For these countries, the main benefit of dollarization stems from importing a better way of running monetary policy. Countries that could fit into this category are Argentina, Nicaragua, and

19. For a review of the costs and benefits of these alternative options, see Bernanke *et al.* (1999), chapter 3.

Venezuela. The benefits of dollarization could also outweigh the costs in the case of the smaller countries of Central America and the Caribbean, as well as the group of small countries that are part of the East Caribbean monetary union, all of which are characterized by highly dollarized economies and concentrate a substantial part of their trade in goods and services and capital flows with the United States (including in some cases worker remittances). On labor market flexibility, the exceptions are some countries in Central America, particularly Costa Rica. The benefits of dollarization for these countries are derived from lower interest rates resulting from the elimination of currency risk and its associated premium, elimination of currency transaction costs, lower variability in relative prices of tradable goods, and the elimination of currency mismatches in foreign assets and liabilities. The reduction of all these microeconomic costs and market frictions should result in an improved integration into the world economy.

In the case of El Salvador, it was the disillusion with the performance of the late 1980s and early 1990s and with the high domestic interest rates of the second half of the 1990s—when it had a *de facto* fixed peg to the dollar but lacked strong institutional backing—that prompted the government to start a process of dollarization. But in this case, as well as that of other small countries of Central America and the Caribbean mentioned above, dollarization can also be justified using the standard arguments of an optimal currency area, given that its small economy is very open and has a high share of its trade, worker remittances, and capital flows concentrated in the United States. Since El Salvador initiated its movement toward full dollarization, Guatemala and Nicaragua are considering the possibility of following the same route. The case of Nicaragua (already identified as a dollarization candidate), given its poor record on macro management, is not surprising, since the financial and economic crises of the 1980s resulted in a high degree of dollarization substantially reducing the demand for the local currency, and severely curtailing the room for an independent monetary policy. However, in the Central American countries the adoption of the dollar cannot resolve the problem of the fragile condition of their fiscal and financial systems. On the fiscal side, dollarization could help to generate a dynamic process in favor of stronger fiscal discipline. A robust fiscal situation is also required to restore country solvency and to enable fiscal policy to respond to real shocks associated with commodity shocks. The building of a robust financial system would require putting in place and enforcing adequate supervision and regulation of banks.

For some of the largest countries in the region, which have a high country diversification of their trade, pervasive nominal rigidities, and a well-run monetary policy that delivers low inflation, the advantages of dollarization are not as large. Furthermore, these countries are usually exposed to real external shocks—mostly in terms of trade shocks—that are not highly correlated with the ones in the United States. This is the case in Canada, Chile, Brazil, Mexico, and Colombia.

The structural characteristics of the largest countries in the Americas—with respect to macroeconomic characteristics, the degree of openness and direction of their trade, terms of trade variability, and cross-country correlation—are presented in Tables 5 through 7. With regard to macroeconomic indicators, Chile has the lowest government deficit and the second-lowest inflation after Argentina within emerging

markets. However, on the fiscal side the situation is weak in Brazil, Colombia, and Argentina. Inflation has come down, but there are still important differences among countries. Recently, Argentina has experienced a crisis and its inflation has returned to the high double-digit annual level. Thus, on the macro side many countries in the region are far from satisfying Maastricht-type criteria. Table 6 shows that for three countries (Canada, Chile, and Mexico), total trade is 50 percent of GDP or more. In contrast, Colombia, Brazil, Argentina, and the United States have the lowest trade-openness indicators, in that order. In the direction of trade, more than 70 percent of

Table 5 Debt and Macro Indicators: Selected American Countries

	Government debt (percentage of GDP)	Government deficit (percentage of GDP)	Inflation		Interest rates	
			1990–2000	2001	Nominal	Real
Argentina	44.9	4.0	46.3	–1.1	24.9	26.0
Brazil	49.4	5.2	237.9	6.8	17.47	10.67
Canada	103.2	–2.8	2.2	2.5	2.24	–0.26
Chile	39.7	0.3	10.2	3.6	6.81	3.21
Colombia	34.9	5.8	19.7	8.0	10.43	2.43
Mexico	28.3	0.7	18.0	6.4	12.89	6.49
United States	59.4	–0.6	3.0	2.8	3.89	1.09

Sources: Government debt: Deutsche Bank and the Organisation for Economic Co-operation and Development (OECD), except for Chile, whose figures were calculated by the author using data from the IMF and the Central Bank of Chile. Figures correspond to 2000, except those for Mexico, which correspond to 1998.
Government deficit: OECD, Chilean Ministry of Finance, and Deutsche Bank. Data correspond to 2001 values.
Inflation: IMF, *World Economic Outlook Database*.
Interest rates: IMF. Figures correspond to the money rate of the *International Financial Statistics*. Real rates were computed as *ex post* real rates. Figures correspond to 2001.

Table 6 Openness and Trade Flows: Selected American Countries

	Average tariff, percent (1)	Trade openness (2)	Trade flows with (3)				
			United States	Rest of America	European Union	Asia	Others
Argentina	11.0	0.20	0.14	0.45	0.19	0.11	0.10
Brazil	13.6	0.26	0.24	0.24	0.17	0.17	0.17
Canada	4.4	0.72	0.76	0.03	0.08	0.06	0.07
Chile	10.0	0.53	0.18	0.32	0.23	0.13	0.14
Colombia	11.8	0.31	0.39	0.32	0.17	0.05	0.08
Mexico	10.1	0.50	0.78	0.07	0.07	0.04	0.04
United States	4.3	0.19	—	0.39	0.18	0.24	0.19

Note: Trade openness was calculated as the ratio of the sum of imports and exports and the GDP. Trade flows are the proportion of the total trade flows that are directed to the country or region identified in the columns. For example, the value of Chile under the column of United States corresponds to the ratio of the sum of the exports from Chile to the United States and Chilean imports from the United States and the sum of the total imports and exports of Chile. Rest of America corresponds to the Western Hemisphere plus Canada (except for Canada, which in this case includes only the Western Hemisphere).

Sources: (1): World Bank, *World Development Indicators 2001*. Figures correspond to 1999.
(2) and (3): IMF, *Direction of Trade—2001* (May 2002), and IMF, *World Economic Outlook* (April 2002). Data are for 2001.

Table 7 Correlation and Variability of Terms of Trade Shocks: Selected American Countries

	Argentina	Brazil	Canada	Chile	Colombia	Mexico	United States
Coefficient of variation	0.096	0.132	0.019	0.092	0.072	0.215	0.056
Correlation:							
Argentina	1.00	–0.05	0.07	0.41	0.12	0.57	–0.55
Brazil	–0.05	1.00	–0.02	–0.09	0.54	0.32	–0.20
Canada	0.07	–0.02	1.00	0.51	–0.48	0.05	–0.23
Chile	0.41	–0.09	0.51	1.00	–0.11	0.09	–0.55
Colombia	0.12	0.54	–0.48	–0.11	1.00	0.06	–0.04
Mexico	0.57	0.32	0.05	0.09	0.06	1.00	–0.78
United States	–0.55	–0.20	–0.23	–0.55	–0.04	–0.78	1.00

Note: Computed for the terms of trade in levels using annual data from 1980 to 1999. The coefficient of variation corresponds to the ratio between the standard deviation and the average.

Source: Author's calculations are based on the World Bank's *Economic Growth Database*, which is available online at econ.worldbank.org.

Mexico's and Canada's trade is concentrated in the United States. In contrast, less than 25 percent of the total trade of Brazil, Argentina, and Chile is directed toward the United States. Furthermore, for Brazil and Chile, 50 percent or more of their trade is with countries outside the Americas. Thus, from a trade perspective, unilateral dollarization (or a common currency of the MERCOSUR and associated member countries) does not appear to be much of a benefit in the case of Brazil and Chile. However, from a capital flow perspective, a substantial part of the transactions is denominated in dollars.

Another consideration when evaluating the adoption of a common currency is the degree of correlation of terms of trade. Table 7 presents the coefficient of variation of terms of trade and the correlation matrix of terms of trade for the same group of countries. The highest coefficients of variation of terms of trade belong to Mexico, Brazil, Argentina, and Chile, in that order. For these countries, the coefficient of variation of terms of trade is more than 50 percent higher than those of the United States. Surprisingly enough, Canada's coefficient of variation is one-third that of the United States. From the results presented in Tables 5, 6, and 7, it appears that Canada is the most suitable candidate to adopt the dollar. Interestingly enough, Canada has decided that the benefits of keeping its own currency—to adjust to other real shocks and set an independent monetary policy to accommodate real shocks that require a depreciation of the real exchange rate—outweigh the costs. One should also note that Canada has been able to achieve and maintain low inflation—using an ITF—and has developed a strong public finance position (Table 5).

In the cases of Brazil, Chile, and Mexico, as these countries complete the implementation of a full-fledged ITF, it will be difficult to give up the use of a flexible exchange rate—used to facilitate real exchange rate adjustments—and monetary policy as a stabilization tool. In the case of Chile, where inflation has already converged to its medium-term target level, supported by solid fiscal circumstances, and the

exchange rate and monetary policy have been used actively to stabilize the economy, the country is in the process of signing a broad trade agreement with the European Union, and unilateral dollarization is not even on the agenda for discussion.[20] Mexico, which has done much to recover the credibility of its central bank and monetary policy, and reduced inflation to an annual rate below 6 percent, does not need to tie itself to the rigid structure inherent in the dollarization of its economy. This is especially so given its high dependence on oil.[21] Indeed, the coefficient of variation of its terms of trade is the highest among the seven countries included in Table 7. However, one must also consider the high share of its trade, capital flows, and workers' remittances from the United States.

In Brazil, the flexible exchange rate system has played a key role—together with a responsible fiscal and monetary policy—in the surprising recovery from the crisis of early 1999. Furthermore, given the country diversification of its trade and capital flows and the size of its economy, optimal currency area arguments are much less relevant.

In the case of MERCOSUR, there have been at times open discussions on the most appropriate exchange rate arrangement to promote integration. It is well understood that any currency union type of arrangement will have to wait until sufficient progress is made at the country level on the macroeconomic stability front. Furthermore, given that no country within the union can play the role of the anchor country, it has been argued that any currency union will have to use the currency of a third country or group of countries (the dollar or the euro). Moreover, there is still much to be done to reduce barriers to trade in goods and services within the area, and this should precede any attempt at creating a currency union.[22]

However, if a Free Trade Zone of the Americas becomes a reality and the trade integration of the Americas increases, then the question of dollarization will have to be reexamined. Here, the experience of the euro will be very important.

VII. Concluding Remarks

For countries with a poor record on macroeconomic stability—that is, countries which have not succeeded in setting an independent monetary policy to deliver low inflation—it could be beneficial to become dollarized. Countries that might fit this category are Argentina, Nicaragua, and Venezuela. Also, for the smaller countries in Central America and the Caribbean, as well as for the small countries that are part of the East Caribbean monetary union—characterized as being highly dollarized economies, with a substantial part of their trade in goods and services and capital flows with the United States (including in some cases worker remittances)—it could

20. In the case of Chile, in a recent paper Morandé and Schmidt-Hebbel (2000) conclude that, among various Southern Hemisphere countries, Chile would gain the least (or lose the most) if it gave up its currency. Subject to large idiosyncratic shocks and significant temporary wage and price rigidity, and a conservative monetary policy, it is argued that Chile has the most to gain from a floating exchange rate and an independent monetary policy. A negative view on the advantages of dollarization in Chile is presented in Fontaine and Vergara (2000).
21. Carstens and Werner (2000) arrive at the same general conclusion for Mexico.
22. On exchange rate mechanisms within MERCOSUR and an evaluation of the feasibility of a currency union, see Carrera and Sturzenegger (2000) and Levy-Yeyati and Sturzenegger (2000).

also be beneficial to dollarize. The benefits of dollarization for these countries are derived from lower interest rates resulting from the elimination of currency risk and its associated premium, elimination of currency transaction costs, lower variability in relative prices of tradable goods, and elimination of currency mismatches in foreign assets and liabilities. The reduction of all these microeconomic costs and market friction should result in improved integration into the world economy, a higher income level, and higher growth rates. For both types of countries, the benefits of dollarization would be higher still if labor markets were flexible and they developed appropriate institutions to support the financial system in case of a sudden crisis. In contrast, for open economies with a good record of financial stability and a large tradable sector, in which exports are highly diversified by country of destination and downward nominal rigidities are widespread, dollarization could be a major hindrance to the adjustment to a negative real shock that requires a real depreciation. For this type of country, a more flexible exchange rate regime would be preferable. Indeed, the combination of prudent monetary policy and exchange rate flexibility has facilitated adjustment in most countries in the region. With capital mobility, exchange rate flexibility also leaves the door open for the use of discretionary monetary policy in response to unexpected domestic and external shocks.

After the revision of the current exchange rate regimes adopted in the Americas, we can conclude that we have today a broad spectrum of exchange rate arrangements. The first group consists of countries that have hard-peg systems. There is also a group of small countries that are not well integrated into world capital markets which have intermediate regimes. And at the other end of the distribution, there is a group of six large countries (Brazil, Chile, Colombia, Mexico, the United States, and Canada) that are floaters and have succeeded in achieving and maintaining low inflation using an explicit ITF, with the exception of the United States, that uses an implicit ITF.

While few countries are willing to follow the path of dollarization, a larger number is moving toward more flexible systems. However, more flexible systems must be accompanied by the development of forward and future exchange rate markets, to enable market participants to hedge against exchange rate volatility. Otherwise, the costs of real exchange rate variability could be high. As countries move toward the use of more flexible exchange rate arrangements, they will need to make the selection of the monetary anchor more explicit. Here, much progress has been made in the region in implementing quite successful full-fledged ITFs. Thus, for a country that has built strong macro fundamentals and has a safe and sound financial system, the alternative of keeping its own currency, combining a floating exchange rate system with inflation targeting, may be a better choice.

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Comment

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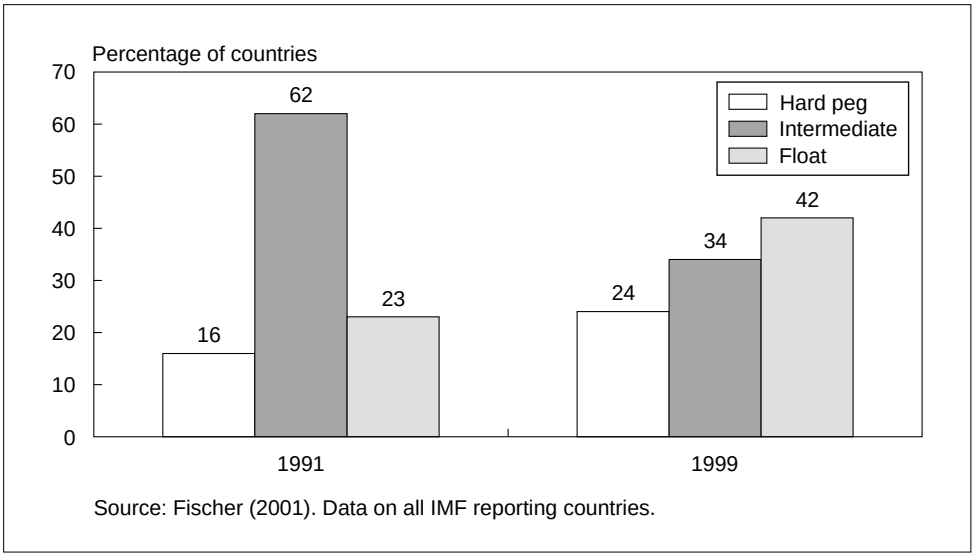
Vittorio Corbo has provided a very thoughtful and well-done paper. I highly recommend reading his contribution, as it provides a very nice overview of the trade-offs associated with hard pegs, intermediate regimes, and floats. Within the paper, he applies the insights from this overview to the case of countries within the Americas, addressing the issue of dollarization as a choice of exchange rate regime. To set all of this in context, he provides a very nice review of the incidence of alternative regimes in the Americas, noting some shift toward "poles"—that is, toward hard pegs or floats.

A shift toward the poles is evident in a comparison of 1991 and 1999 exchange rate regime choices by International Monetary Fund (IMF) reporting countries. For example, consider the basic divisions that were presented by Fischer (2001), wherein IMF reporting countries were divided into three broadly defined groups: those adhering to a hard peg, those with intermediate regimes, and those with floating exchange rate regimes. While different researchers have used alternative classification systems regarding what constitutes hard pegs, intermediate regimes, or floats,[23] the picture arising from Fischer's work is compelling. As shown in Figure 1, in 1991 16 percent of the IMF reporting countries had some form of hard peg, 23 percent had some form of float, and all of the remaining countries (62 percent) had an intermediate exchange rate regime. By 1999, the intermediate regime was much less popular, with countries gravitating toward the poles in their choice of exchange rate systems.

Figure 1 The Incidence of Exchange Rate Regimes



Source: Fischer (2001). Data on all IMF reporting countries.

23. Other recent contributions to the exchange rate regime classification debate include Levy-Yeyati and Sturzenegger (2002), Calvo and Reinhart (2002), and Reinhart and Rogoff (2002).

Among the insightful observations by Corbo on the differences between exchange rate regimes is the view that floating rate regimes usually deliver higher inflation than fixed rates, and the conclusion that floats should therefore be accompanied by explicit nominal anchors capable of delivering low inflation. Examples of such explicit anchors are monetary targets and inflation targets. Corbo also argues that another disadvantage of floats is that they generally deliver costly volatility. As a consequence, he further argues that governments should develop means of hedging against exchange rate volatility. The importance of reducing the costs of volatility is clearly important, especially when the costs are measured in terms of real (as opposed to nominal) volatility of exchange rates.

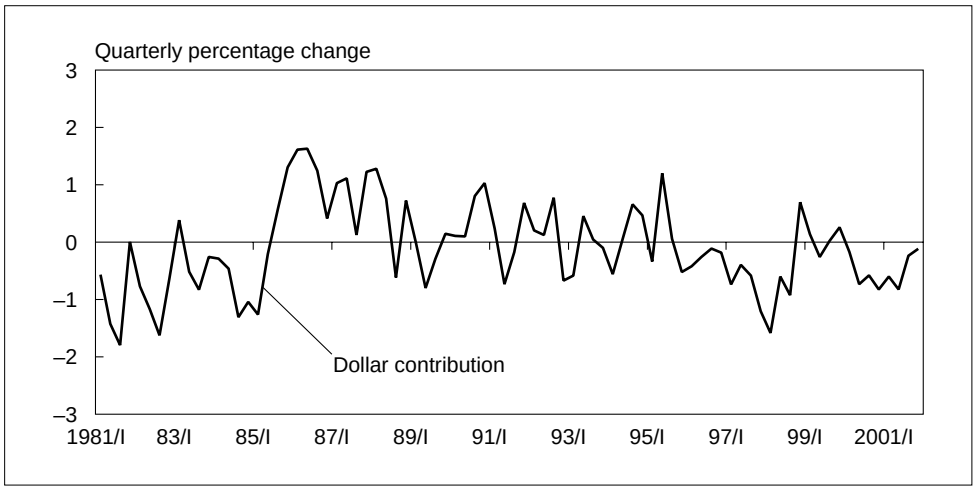
One point in the paper that requires further discussion is the inflationary consequences of currency movements. An argument against floating rates—and provided as a motive for "fear of floating"—is grounded in the view that governments want to avoid the inflation caused by local currency depreciations that are perhaps unrelated to market fundamentals within their control. The logic of this argument is that when countries have high rates of exchange rate pass-through, currency depreciations lead to substantial imported inflation. If large exchange rate movements are avoided (and free floats rejected), inflation is lower and steadier. Corbo, however, discounts this reason for "fear of floating" on the grounds that exchange rate pass-through is much weaker than originally thought.

My view is that we must be very careful and precise in the statement that exchange rate pass-through is much weaker than originally thought. In my view, exchange rate pass-through remains strong, so this particular reason for fear of floating remains valid in very open economies. But the pass-through that remains strong is the definition of exchange rate pass-through as the percentage change in local import prices from a 1 percentage point change in the exchange rate. To the extent that import price changes directly enter the consumer price index (CPI), the degree of pass-through into the import prices will have bearing on the aggregate price index. We can return later to the issue of whether there are other less direct channels through which exchange rate movements also can influence the CPI. Indeed, in some countries the indirect channels may be more important than the direct channels. The present paper could be more precise about the specific pass-through channels at work.

Consider the recent history of the United States. My research with José Campa[24] estimates that pass-through into U.S. import prices is about 25 percent over one quarter after an exchange rate movement, and at about 40 percent over the longer run, at one year. The implication is that a 10 percent dollar depreciation today would raise U.S. import prices by 4 percent in one year. Using these pass-through rates and the observed path of the trade-weighted dollar since the early 1980s, I compute the effects of dollar movements on import prices. The results are shown in Figure 2, where the vertical axis is the quarterly percentage change in U.S. import prices from the dollar, constructed using the Campa and Goldberg (2002) import price pass-through elasticities over the full sample period.

24. See Campa and Goldberg (2002).

Figure 2 The Imputed Dollar Effect on U.S. Import Prices



The induced import price movements for the United States are shown alongside the actual path of import prices in Figure 3. It is clear that dollar movements have explained a sizeable fraction of non-oil import prices for the United States in recent decades. Indeed, if we further assume—and this is a rough simplification mainly for discussion purposes—that the import share in the CPI of the United States is a constant 15 percent (and that the exchange rate movements are exogenous in a specific year), we can roughly approximate the direct contribution of dollar movements to CPI inflation over recent decades (Figure 4). Observe that, in the United States, the implied annual contribution of dollar movements to the CPI has potentially been ±0.7 percentage point. If the CPI is thought to be insensitive to dollar movements for the United States (as one example),[25] there must be other forces at work that are offsetting the pressures transmitted to the CPI through border prices.

The inflationary consequences of a depreciation are smaller for the United States than for most other countries. For example, consider a sample of countries drawn from within the Organisation for Economic Co-operation and Development (OECD). The estimated import price pass-through elasticities of all of the countries shown in Table 1 exceed the elasticities of the United States (Campa and Goldberg [2002]). If we further roughly speculate on the share of imports in consumer prices for each of these countries, we can estimate the direct CPI response to a 10 percent local currency depreciation via imported goods. Observe that there are large differences across countries in import price responses to exchange rates. One conclusion is that, for example, some of the price consequences of the much higher pass-through rates in Japan are mitigated by lower import shares.

For some countries outside the United States, pass-through rates may be higher because of dollar invoicing of some goods, especially commodities, and less pricing power by smaller producers. Across countries, large differences may arise in the product composition of imports resulting in different pass-through elasticities

25. See Obstfeld and Rogoff (2000).

Figure 3 Dollar-Imputed and Actual U.S. Import Price Movements

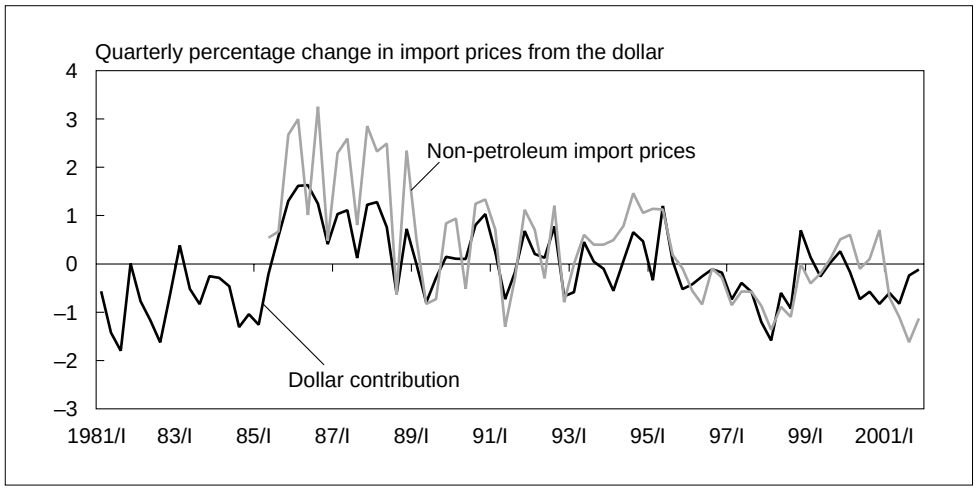


Figure 4 Annual Dollar Contribution to U.S. CPI Inflation

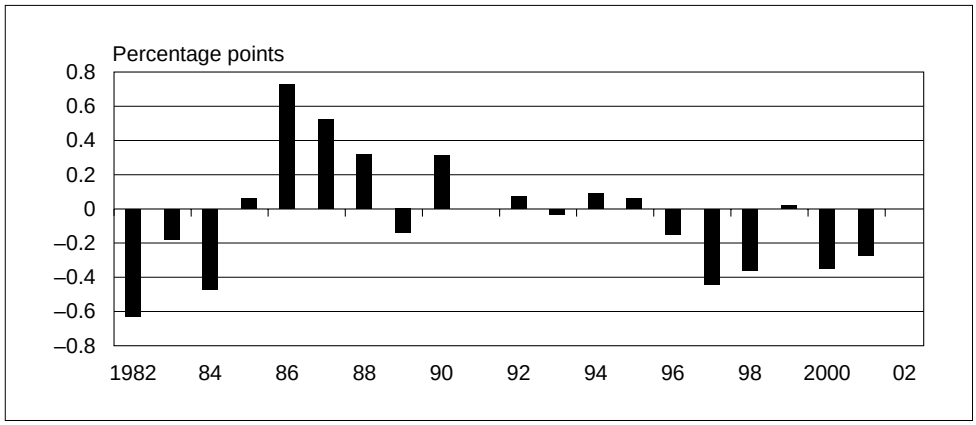


Table 1 Pass-Through Estimates and Imputed CPI Effects

	Long-run import price pass-through	Import share in CPI (rough estimate)	Imputed direct CPI response to a 10 percent local currency depreciation
United States	0.40	0.15	0.6
United Kingdom	0.47	0.20	0.9
Canada	0.70	0.25	1.8
Euro area	0.80	0.12	1.0
Japan	1.00	0.08	0.8

Note: Estimates for long-run import price pass-through are taken from Campa and Goldberg (2002).

over their respective bundles of imports. Overall, a challenge is raised for scholars examining the inflationary consequences of depreciations and for those arguing about lower pass-through into the overall CPI. There is a need for elucidation and quantification of those channels—outside of the direct effect that I have discussed—that are sometimes important in less developed economies or high-inflation countries.

Let us turn now to another theme that Corbo emphasizes, specifically the point that under floating rates monetary anchors or inflation targets often are used to restrain inflation. Despite the benefits of having explicit anchors, Corbo correctly points out that each option has drawbacks when it comes to implementation. Monetary anchors need central banks to carry out independent monetary policy to offset inflation stimuli (including those induced by exchange rates). However, this task is complicated by the fact the money demand may not be very stable. Corbo argues that, as a consequence, inflation targeting is preferable since its "effectiveness does not rely on a stable relationship between a monetary aggregate and inflation."

While I concur with the fundamental arguments made by Corbo, I also want to emphasize the point that inflation targets also are difficult to achieve if the relationship between monetary aggregates and inflation is not stable. All of these regimes, shocks, instability, and long and variable lags in policy add to difficulties in meeting any specific targets—although these difficulties do not vitiate the merits of such targets. Really, the bottom line in all of this analysis of exchange rate regimes is that strong institutions are needed for flexible rates and low inflation to coexist over the long term.

Let us now turn to the important question of whether dollarization would keep inflation low (and output stable) in the Americas. Paraphrasing, I read Corbo's view as stating that if flexible exchange rates with an anchor are untenable, then a country should go to a hard peg. Corbo provides a very thoughtful discussion that concludes that only some of the countries in the Americas satisfy the fiscal and optimal currency area criteria which qualify them as being within a dollar-based zone.

I fully agree with the idea of defining criteria or guidelines for countries considering dollarization. Indeed, I would like to see further refinement of these criteria. In particular, more specific benchmarks could be made available for a country evaluating the levels of correlations of shocks, trade openness, or fiscal performance that would qualify it for dollarization. Additionally, it would be useful to know if there is some way of ranking the range of criteria in terms of their importance. Decision-makers may benefit from knowing the extent to which they can prioritize each of the specific optimal currency area criteria.

In conclusion, the paper provided by Corbo gives a very insightful and very well-reasoned discussion of alternative exchange rate regimes for the Americas. In my view, the paper understates some of the inflationary consequences of floats (through currency depreciations) and one rationale for why fear of floating continues to exist. Many other real consequences of exchange rate variability (both costs and benefits) also are not addressed. But this does not eliminate the important point that floating rates remain viable for many countries. Nevertheless, I concur with Corbo that, regardless of the exchange rate system, the challenge for all countries is in building strong institutions and establishing independent monetary authorities that can provide the groundwork for macro stability.

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Comment

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The experience of the past decade has brought about a renewed interest in policy circles regarding the implications of alternative exchange rate arrangements, and recent academic contributions offer new insights to this decades-old debate. Vittorio Corbo's paper puts forth the pros and cons of alternative exchange rate regimes and succinctly brings together the many strains in this new literature. As he points out, there is no "one-size-fits-all" optimal solution; the paper concludes with an overview of the characteristics of Latin American countries and how these affect the balance of costs and benefits of alternative arrangements in particular countries.

Hard pegs, Corbo tells us, offer several benefits in terms of macroeconomic performance. They lower volatility in real and nominal exchange rates, reduce the risk of misalignments, and provide a firm anchor for prices and, therefore, are associated with lower real interest rates. In addition, hard pegs may also have advantages in terms of operational procedures by simplifying the task of setting and communicating policy targets. In the Latin American experience, this last argument in favor of hard pegs has been the most compelling, while some of the former arguments are debatable. Indeed, the greater nominal stability under hard pegs may be associated with substantial costs.

Consider the argument regarding volatility in real exchange rates. An artificially low volatility may induce excessive risk-taking on the part of the private sector, as a hard peg may hide the risks rather than eliminate them. In contrast, in a floating rate regime, the risk implied by shocks in currency markets becomes apparent to market participants, which will therefore face incentives to cover those risks.

26. The opinions expressed by the author may not correspond to those of the Banco de México.

Corbo states that misalignment problems are also reduced under a hard peg. It would be valuable to have more empirical evidence on this issue. Certainly the scope for misalignment is larger under floating rates, given the fact that, under a hard peg, inflation rate differentials will only allow for a moderate and gradual change in real exchange rates. What is less clear-cut is the duration and cost of misalignments. In particular, misalignment is more likely to persist under a hard peg and can be more costly to correct.

Hard pegs may provide a quick boost to credibility and thus deliver fast disinflation. However, experience shows that the use of currency pegs to disinflate requires a clearly defined exit strategy to ensure a soft landing. Otherwise, the currency peg will only shift inflation over time and will not succeed in bringing about enduring price stability.

To ensure good performance under a hard peg, several preconditions must be met. In addition to flexible labor markets, fiscal solvency and budgetary control must be assured and the financial system must be resilient. The policy becomes more attractive in the context of a broader process of integration, such as that observed among European Union (EU) countries. Indeed, the option of dollarization may only become politically acceptable when this latter condition is met, as otherwise sovereign states are unlikely to willingly relinquish the right to define what constitutes legal tender in the territory under their control.

However, the ideal conditions for a hard peg listed above are a far cry from the conditions prevailing in most Latin American countries that have resorted to hard pegs. Indeed, one may ask: would hard pegs have been considered at all in Latin American countries if the ideal conditions listed above were met?

It is doubtful whether countries listed by Corbo as potential candidates for dollarization (Argentina, Venezuela, and some of the Central American and Caribbean countries) fit these conditions,[27] given prevalent outstanding fiscal and financial-sector issues and/or their exposure to changes in terms of trade. Given a lack of credibility, the system would not enjoy some of the benefits of a hard peg, such as lower real interest rates.

As Corbo rightly states, hard pegs are unattractive when nominal rigidities are present. However, in a cost-benefit calculation, the costs of reduced flexibility in real wages under a hard peg may be overwhelmed by the costs of monetary instability in countries that have lost the capacity to run discretionary policies in a sensible manner. Thus, hard pegs become an option when no other options are left. Borrowing credibility may seem attractive when attempts to build credibility have failed.

The claim has been made that a hard peg straitjacket can serve as a prod to stimulate needed structural reforms. However, as Branson (2001) points out, "This is not likely to succeed if fiscal policy is truly out of control, and is not necessary if it is not." At best, the hard peg may offer a window of opportunity to implement needed reforms. The recent Argentinean experience should serve to show that even though a

27. Admittedly, in the case of some very small, very open economies, the volatility of tradable goods prices under floating may undermine the stability of demand for the domestic currency. In these cases, a hard peg may be the only available option.

country can use a hard peg to import *monetary* discipline, it cannot import *fiscal* discipline. Even under the strongest form of a hard peg, other currencies may arise, as happened with the *patacones* issued by Buenos Aires Province. Dollarization in response to an inability to conduct a coherent monetary policy is the wrong solution to an institutional problem.

Floating exchange rate regimes face challenges of their own, as Corbo's paper explains. A firm anchor for monetary policy must be set and an inflation targeting system emerges as the most reasonable alternative. Indeed, many Latin American floaters have moved toward such a system. For the system to work, central bank credibility must be enhanced by consistently meeting targets, and transparency of operational procedures must be increased. Central bank autonomy is an additional requirement that should be added to Corbo's list.

The institutional framework will evolve over time and adapt to the existing regime. Under floating, the development of futures markets will reduce the cost of exchange rate volatility and credibility gained by meeting inflation targets will lower the costs of disinflation. Thus, the balance of costs and benefits may shift over time, and the optimal choice of regime is likely to be path-dependent.

Corbo asks whether there is scope for an intermediate system between the hard peg and pure floating. It may be tempting to seek the benefits of both systems: the reduced volatility of a hard peg and the capacity for adjustment to shocks of a flexible regime. However, the experience of the last decade has led many authors to favor a corner solution rather than an intermediate regime. Intermediate regimes seem to be crisis-prone, an experience that has reinforced a bipolar view.

If fear of floating is indeed prevalent, then formally announced floating regimes are most likely to become intermediate regimes in practice. Two types of issues may arise. First, moral hazard may develop as the private sector borrows in foreign currency under the expectation that authorities will smooth movements in the exchange rate. If the bipolar view is correct, in the sense that intermediate regimes are crisis-prone, then there would seem to be a case for hard pegs. Secondly, inflation targeting schemes will become less transparent, as policymakers attempt to meet multiple objectives.

Corbo makes an important distinction between true fear of floating and what may be more appropriately named fear of inflation. Under inflation targeting, a central bank is expected to respond to the inflation risks that arise from exchange rate depreciation. This type of response should be distinguished from policy actions aimed at stabilizing the exchange rate due to fears of corporate bankruptcies or other side effects of exchange rate changes.

Corbo strikes an important note by stressing the need to address the issue of financial system and corporate-sector resilience to exchange rate shocks. The market's own volatility will provide a strong incentive for the private sector to develop these instruments. One thing that authorities can do to temper fear of floating is to improve debt management strategies by reducing public-sector exposure to exchange rate risk and foster the development of deeper capital markets in domestic currency.

While the bipolar view has gained wide acceptance, the evidence is mixed regarding the hollowing-out hypothesis; it is unclear whether there has been a move

to the corners of hard pegs or free floating. Evidence points to the prevalence of intermediate regimes and of smoothing of the real exchange rate in response to concerns regarding the current account. Corbo finds a move to the corners among those Latin American countries that have higher integration into international markets. However, several of these countries have recently introduced or continue to use auctions of foreign exchange reserves. In most cases, these auctions are designed to avoid signaling of a desired level for the exchange rate, a possible symptom of what Corbo calls fear of fixing. These experiences will provide valuable evidence regarding the feasibility of pursuing an inflation targeting scheme while simultaneously attempting to smooth exchange rate movements.

The Mexican peso's forced transition to floating in December 1994 was followed by an initial year of high volatility. Since then, efficient futures markets have developed and corporations have learned to manage their exchange rate risk. These have been key factors in diminishing the peso's volatility. Initially, a combination of options for the purchase of foreign exchange and of auctions of foreign reserves was used to reduce the peso's volatility. These instruments were designed to avoid influencing the average level of the exchange rate. They were eliminated in 2001, and the peso has continued to exhibit periods of remarkable stability. The adoption of an inflation targeting system and a floating exchange rate regime has reduced speculative pressures in financial markets. Interest rates have been lower and less volatile than during the late 1980s and early 1990s. Furthermore, while portfolio flows were the primary source of funding during the peg, the current account is now financed primarily by long-term foreign direct investment flows.

During the recent period of floating, a rapid disinflation has taken place under inflation targeting. A coherent framework for monetary policy has been put in place, and credibility has been gained as targets have been met. The development of markets and institutions, in particular enhanced credibility in the inflation targeting system, has strengthened the conditions for a smoothly functioning floating rate regime.

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General Discussion

Responding to the comments of the discussants, Vittorio Corbo stated that, regardless of whether a floating rate or hard peg was chosen, what really mattered was the fiscal discipline and flexibility in monetary policy needed to achieve strong fundamentals. He argued that with strong fundamentals, the choice of exchange rate regime would be determined by the degree of nominal rigidities. Next, Corbo

responded as follows to Linda S. Goldberg's contention that the risks of exchange rate fluctuations should not be underestimated. After Chile and Brazil adopted inflation targeting, pass-through to the consumer price index (CPI) declined. Moreover, expectations have a more important role than import prices in transmitting the impact of exchange rate fluctuations on domestic prices. Finally, Corbo argued that money demand is not the sole determinant of the rate of inflation, and that therefore stability in money demand is not a prerequisite for inflation targeting.

Following this exchange of views between the discussants and the presenter, Maurice Obstfeld noted that the difference in opinion concerning pass-through could be attributed to the fact that Goldberg's research focused on import prices while that of Corbo focused on consumer prices. Obstfeld went on to note that the latter type of pass-through, when high, undermines the case for floating exchange rates, whereas when pass-through to import prices but not to the general CPI is high, the case for floating is enhanced. Roger W. Ferguson, Jr. agreed with Goldberg's position that an order of priority should be determined for the three conditions pertaining to countries for which floating exchange rate regimes are desirable. Regarding the bipolar view, Obstfeld and Reuven Glick noted that due attention should be paid to the fact that the exchange rate regimes adopted by various countries cannot be perfectly categorized.

Next, regarding the sustainability of a hard peg, Kazuo Ueda (Bank of Japan) noted that the relation between the adoption of a hard peg and fiscal discipline and monetary stability should be clarified. Jorge A. Braga de Macedo argued that, while credibility can be temporarily gained through the introduction of a hard peg, this credibility cannot be maintained without the support of the political process and the judiciary. Allan H. Meltzer commented that, given the changing role of government since the 20th century, the adjustment costs of maintaining fixed exchange rates over a prolonged period of time are now politically unacceptable for most countries. I. Igal Magendzo (Central Bank of Chile) referred to the case of Liberia, which abandoned dollarization to return to a national currency. Regarding the proper timing of exit from a hard peg, Ferguson noted that the cost of maintaining a hard peg changes from time to time, and that proper timing of entry as well as exit is important. Hiroshi Fujiki wondered if countries might err in timing their exit because of certain practical obstacles, such as an awareness lag to real-time information.

Regarding floating exchange rate regimes, Gabriele Galati (Bank for International Settlements) identified the following dilemma: even when inflation targeting is used as a nominal anchor, because of the importance of the exchange rate in emerging economies, it continues to play a key role for policy. Braga de Macedo stated that the development of mutual surveillance and monitoring frameworks in which a number of countries (either for a given region or the entire world) monitor economic fundamentals through a set of shared data can effectively reduce foreign exchange risks by raising the level of long-term confidence in individual currencies. Angel Palerm pointed out that in comparing exchange rate regimes it is not enough to look at the average performance of countries under hard pegs and floating. In fact, as research done by Obstfeld, Sebastian Edwards, and others has shown, the average behavior is not radically different. However, the tails of the distribution may be quite different.

Hard pegs may yield very bad results when the economy is hit by severe shocks and/or the preconditions for a well-working hard peg are not in place. Thus, while the average behavior under both regimes may be similar, the risks for policymakers are not symmetrical.