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## Which exchange rate regimes in an era of high capital mobility?☆

Helmut Wagner\*

*University of Hagen, P.O. Box 940, 58084 Hagen, Germany*

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### Abstract

This paper asks what influence increasing capital mobility has on the choice of exchange rate regime. Among exchange rate regimes considered are currency boards and dollarization. It is argued that a key lesson of the recent currency and financial crises in the emerging markets is that corner solutions in exchange rate policy may be preferable to less rigidly fixed exchange rates. The paper concludes that in the end the optimal exchange rate regime depends on the circumstances of a particular country and time, because each exchange rate system requires the fulfillment of certain preconditions. The paper then discusses institutional measures and innovations that may be necessary to enable exchange rate arrangements to avoid financial and currency crises or to dampen their consequences. © 2000 Elsevier Science Inc. All rights reserved.

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### 1. Introduction

The 1990s witnessed a tremendous increase in capital mobility and financial globalization. They also saw serious financial and currency crises. It is now widely believed that a global move toward greater exchange rate flexibility, on the one hand, or toward fixed exchange rates, on the other, would have avoided many of the problems that the international financial

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\* Tel.: +49-2331-987-2640; fax: +49-2331-987-391.

*E-mail address:* helmut.wagner@fernuni-hagen.de (H. Wagner).

system has suffered in recent years. Pure floating and monetary union are the two regimes that cannot by construction be subjected to speculative attack.

However, we know that free floating includes a tendency toward volatility. This exchange rate volatility is not always based on macroeconomic fundamentals and includes occasional speculative bubbles and crashes. This volatility could be avoided by adopting a monetary union. However, we know also that a worldwide monetary union is not implementable for a variety of reasons. Thus, one is forced to fall back on second-best solutions such as regional monetary unions, currency boards and dollarization.

In the next section, I shall briefly discuss the conceptions of currency boards and dollarization. In the subsequent section, I shall deal with the causes of recent financial and currency crises, particularly in Asia, to determine whether corner solutions in exchange rate arrangements are suitable remedies for these types of financial and currency crisis. In the last section, I shall discuss further institutional measures or innovations which appear to be necessary as a supplement or a substitute to corner solutions in exchange rate arrangements in order to avoid financial and currency crises or to dampen their consequences.

## **2. Currency board and dollarization**

### *2.1. Currency board*

There is a growing consensus that countries can enjoy the benefits of fixed exchange rates only by either maintaining extensive capital controls, or by adopting a credible commitment to fixity.<sup>1</sup> Countries which want to avoid the costs of both currency flexibility and capital controls, and therefore seek credibility for their fixed exchange rate, may wish to consider a currency board.

A currency board is a monetary institution that fixes a country's exchange rate and permits high-powered money to be created only if it is fully backed by holdings of foreign exchange. It is characterized by

- an exchange rate that is fixed not just by policy, but by law;
- a reserve requirement ensuring that each dollar's worth of domestic currency is backed by a dollar's worth of foreign reserves; and
- a self-correcting balance-of-payments mechanism, in which a payments deficit automatically reduces the money supply and results in a shrinkage of spending.

The use of currency boards (mainly in British colonies) peaked in the 1940s and declined thereafter. In recent years, there was a resurgence in their use when arrangements similar to currency boards were introduced in Hong Kong (1983), Argentina (1991), Estonia (1992), Lithuania (1994), Bulgaria (1997), and Bosnia (1998).

A currency board is expected to help create a credible policy environment by eliminating the option of financing government deficits through money creation. Even countries which do not fit the traditional "optimum currency area" criteria very well have benefited from the introduction of currency boards. Hence, supporters of currency boards have recently pushed for their wider use, specifically, in Indonesia, Russia, and the Ukraine. Adoption of a

currency board, however, does not automatically guarantee the credibility of the exchange rate peg. This is particularly true in countries in which laws are easily evaded or changed at will.

Moreover, a currency board is unlikely to be successful without solid institutional foundations. These include a developed, well-supervised, and regulated financial system;<sup>2</sup> a sufficient level of reserves; the rule of law; and fiscal discipline. This list may be supplemented by some factors which though not necessary, may be helpful for ensuring the success of a currency board. They include wide use of the foreign currency in the economy,<sup>3</sup> and a desire for closer integration with the currency partner country.<sup>4</sup> This suggests that credibility cannot simply be imported by means of a currency board; rather the currency board needs complementary reforms in order to establish its credibility. Stabilization with a currency board is a high-risk strategy,<sup>5</sup> which is only optimal if the potential return is high as well, that is, if monetary stabilization has top priority and a high potential for reforms is given. Furthermore, a currency board may not remain the country's optimal exchange rate regime in the longer run. Maintaining support for the currency board becomes increasingly difficult after successful stabilization, because it prevents activist monetary policy. Then the policy maker's problem is to maintain credibility while switching away from the currency board system.

## 2.2. Dollarization

Their rigor and apparent discipline notwithstanding, currency boards can nevertheless be regarded as an insufficiently firm commitment to stability. The reason is that the laws by which the board is established, or at least the ironclad rules under which it is supposed to operate, can be changed. Therefore even a currency board may not achieve full credibility. This realization has generated considerable interest in countries such as Argentina, Mexico and Ecuador in adopting the dollar as their national currency.<sup>6</sup>

In Argentina, there was a plan of January 1999 to replace the peso with the dollar as the legal currency. The timing of this initiative, however, suggests that short-term objectives, such as the need to impress contagion-prone international capital markets and stability-craving voters, may have triggered this plan. Many Latin Americans are nevertheless suddenly considering dollarization as a serious alternative. Full currency substitution has also been discussed for Eastern European countries who would adopt the euro as their national currency. "Euroization" is a synonym for dollarization there.

Dollarization makes sense for essentially the same types of countries as currency boards. These are countries which are small and very dependent on the world economy, as well as those with a history or recent experience of hyperinflation. Moreover, countries choosing dollarization should have close links to the country whose currency they adopt. Dollarization is total surrender of monetary independence, and thus surrender of an emblem of national political sovereignty, a demonstrably important symbol to most people. A currency board, in contrast, allows the country to preserve a small degree of monetary independence and to keep alive the national currency as a symbol of pride. However, one can argue that many developing countries have been unable to profit from whatever monetary independence they possess.

Dollarization may, however, create difficulties in another dimension. Even more than a currency board, it introduces a potential conflict between the fixity of one bilateral exchange rate and undesired variations in bilateral rates with other trading partners. These undesired variations are caused by autonomous policy actions of the country whose currency has been adopted. This may create economic and political problems for a dollarized country.

In practice, partial and informal dollarization already exists in a number of Latin American economies. It is the result of voluntary decisions by individuals. When this happens under floating or pegged rates, individuals with foreign exchange-denominated debts that are not matched by foreign exchange-denominated assets can be forced into bankruptcy by depreciation or devaluation of the domestic currency against the dollar. This may be a strong argument for formal and full dollarization, because it eliminates the problem. It also rules out sudden capital outflows motivated by fears of devaluation.

Dollarization is a more credible and hence longer-term strategy than a currency board. It gives greater credibility to a country's commitment to forever renounce the devaluation option.<sup>7</sup> However, one can argue that credibility cannot automatically be imported by means of dollarization since dollarization in the same way as a currency board needs complementary reforms to establish its credibility. Among the most important of these are steps toward fiscal consolidation, a stronger financial sector and more flexible labor markets.

Dollarization also affects the equilibrium relationship between domestic and foreign interest rates. Under pegged rates, an increase in interest rates in the United States often causes interest rates in emerging countries to rise more than one for one. The size of the differential is sensitive not only to changes in U.S. interest rates, but to external disturbances such as contagion from crises in other emerging markets. The interest-rate differential consists primarily of a country-specific premium, but a currency premium also plays a minor role. The country premium is compensation for the perceived risk of default, whereas the currency premium is compensation for the perceived risk of a change in exchange rate policy.

The currency premium would disappear if a country were to dollarize, whereas the country premium would not vanish, but might diminish or become less sensitive to foreign shocks when devaluation is no longer a concern. These benefits may be enough to lead a country like Argentina to dollarize unilaterally though it would lose seigniorage and its central bank would lose its function as a lender of last resort. This, however, presupposes that the loss of sovereignty is politically acceptable.

For the United States, the economic benefits of dollarization by Argentina would be the following: dollarization would raise seigniorage, ease transactions in Argentina for U.S. businesses and travelers, and increase trade. There would also be some costs for the United States, in particular the danger of implicit bailout liabilities. However, these costs are probably outweighed by the benefits.

### *2.3. Evaluating the options*

Under certain circumstances, currency boards and dollarization may be suitable exchange rate regimes for a country. One has to consider, however, that, in most countries, sacrificing monetary sovereignty in the name of fighting inflation is politically accepted only when hyperinflation memories are relatively fresh in the minds of the population. In some countries

(as in Germany and Argentina), such memories are still fresh after many decades. In others, hyperinflation memories appear to fade away after a few years of single-digit inflation. Then, an exit strategy might be needed. Moreover, circumstances change over time, particularly in developing and transition countries, and hence the optimal regime may also vary.

For certain high-inflation developing and transition countries, where a currency board is not possible because the necessary institutional preconditions described above are not present, the following sequence of policies may work best (Wagner 1998). While the banking and financial system is not developed and capital mobility is limited, peg to a stable currency to break the inflationary psychology.<sup>8</sup> As banking and financial markets develop and capital mobility rises, shift to a crawl designed to eliminate overvaluation. Finally, when an advanced development stage has been reached, use floating and some elaborate nominal anchor strategy such as inflation targeting.<sup>9,10</sup> For countries moving to greater exchange rate flexibility, an alternative to the exchange rate as a nominal anchor needs to be developed, along with the institutions to sustain that alternative anchor. However, it is unlikely that a perfectly free float will be suitable for developing or transition countries, since sustainable free-floating regimes require deep foreign exchange markets, and developing/transition countries typically lack this feature.

### **3. On the causes of recent financial and currency crises**

It may be true that no exchange-rate regime would have prevented the recent crises in the emerging market economies (cf., Frankel 1999). This appears to be the case in particular for contagion-driven currency crises such as those in Asia in 1997. Whereas macroeconomic variables that play a prominent role in typical currency crisis models gave no hint of the spectacular developments in Asia, other variables indicated certain vulnerabilities among the affected countries. In particular, the high amount of private nonhedged foreign short-term debt that was not matched by foreign assets made the countries vulnerable to an abrupt capital outflow. The long record of stable exchange rates led the private sector to underestimate the exchange rate risk and thus contributed to accumulation of massive foreign indebtedness. Moreover, banking systems were under-regulated and poorly supervised, but enjoyed ready access to the international capital market. Foreign borrowing helped fuel a credit boom and made the banking sectors extremely fragile.

An important element of the Asian crises is the abrupt reversal of capital flows. The reversal of net private capital flows from Indonesia, Malaysia, Korea, Thailand and the Philippines amounted to \$105 billion within one year, which is equal to about 10% of the precrises GNP of the five countries. This dramatic development was made possible by the huge amount of foreign short term debt. The ratio of short term debt to overall external debt ranged between 50% and 67% in the five countries (Corsetti, Pesenti & Roubini, 1998).

In studying the recent crises, analysts have focused on the concept of international illiquidity involving banking and financial sectors. A country's financial system is illiquid if its short-term debt in foreign currency exceeds its liquid short-term assets in foreign currency. In a fixed exchange rate system, the amount of short-term deposits denominated in national currency also represents a potential threat because they can easily be exchanged into

foreign exchange. The ratio of short-term external debt to the amount of foreign exchange reserves reveals the liquidity position of the Asian countries. This ratio was very high in all the affected countries and even exceeded 1 in Thailand, Korea and Indonesia in mid-1997. The ratio was 1.5 in Thailand, 2.1 in Korea and 1.8 in Indonesia. Thus, short term foreign liabilities were much higher than the foreign exchange reserves in these countries. Although the ratio for the less affected countries, Malaysia and the Philippines, was below one, it was quite high and amounted to 0.6 and 0.9, respectively (BIS 1998).

The spread of the Asian crisis among countries is widely believed to have had little to do with misalignments in the fundamentals (cf., e.g., IMF, 1998). Rather, it is believed that international investors became convinced that if one country is in trouble others might follow for the same reasons (e.g., fragile financial sector) and reduced their exposure, thereby precipitating the crises (panic equilibrium). Empirical studies find evidence for this type of (pure) contagion, that is, contagion not driven by problems in the standard macroeconomic fundamentals.<sup>11</sup>

#### 4. Interim assessment

The question that now arises concerns the role of the exchange rate regime in this context. We know that the combination of fixed exchange rates and a central bank standing ready to act as lender of last resort is predictably dangerous if the financial system is weak. That is because bank runs can be prevented only at the cost of causing currency runs.<sup>12</sup> Under fixed exchange rates, a bank run is accompanied by a reduction of foreign reserves: domestic currency is withdrawn and used to buy hard currency at the central bank. If a currency run is widely expected, everyone has an incentive to run first before others exhaust the available resources. Pessimistic expectations become self-fulfilling.<sup>13</sup>

Under a flexible-rate regime with a lender of last resort, the situation is different. The central bank is no longer forced to sell reserves. Those who run help bring about a depreciation, while those who do not and rely on the lender of last resort function of the central bank, know that banks will have enough domestic currency when they want to withdraw it at a later date. Hence, running to the bank is no longer a best response; pessimistic expectations are not self-fulfilling; and a depreciation need not happen in equilibrium.

Hence, one could argue that flexible exchange rates would in principle be the better regime. However, there are caveats, too. One caveat is that flexible exchange rates cannot protect banks against panic by external creditors who hold short-term claims denominated in foreign currency.<sup>14</sup> This was the case in Asia to a significant extent. Therefore, a flexible exchange rate system would have provided only limited protection.<sup>15</sup> Furthermore, emerging economies set policy in a world in which their own financial markets are underdeveloped, many structural rigidities exist, and corporate sectors have very limited opportunities to hedge. In these emerging market economies, stock markets are relatively recent phenomena and bank lending is the dominant form of financing. Exchange rate movements are costly in this environment, and hence “the fixed option might look very attractive.”<sup>16</sup>

It is thus possible or even likely that no exchange rate regime would have prevented the

recent crises in the emerging market economies, and that the optimal exchange-rate regime depends on the circumstances of a particular country and time. Frankel's assessment runs as follows (Frankel 1999, 29–30):

“For some countries, corner solutions are, indeed, good options. Floating will continue to be desirable for large economies. Fixity may be desirable for very small open economies or for those in which a history of hyperinflation or the dominance of finicky global investors has rendered confidence scarce and independent monetary policy no longer usable. For some countries in Latin America, where interest rates currently react more than one for one to the U.S. funds rate, even full dollarization may be attractive, providing the public is willing politically to give up monetary sovereignty.”

Intermediate solutions are likely to be more appropriate for many countries than corner solutions. This is the case for some developing and transition countries for whom large-scale capital flows are not an issue. “For many intermediate emerging-market countries with open capital markets, there is no single regime that is the obvious choice.” (ibid.30) The optimal or desirable regime in these countries may vary over time, depending mainly upon their stage of development.<sup>17</sup>

## 5. Institutional reforms

The focus in this section is on what can be done to prevent or mitigate currency or financial crises in a world of high capital mobility. It is important in this context to differentiate between measures which countries can take at unilateral or bilateral levels, at plurilateral or regional levels, and at the multilateral or global level. That is, countries can either act on their own to shield themselves against currency and financial crises (unilateral level); they can coordinate actions with a specific trading partner (bilateral); they can join other countries in building institutional structures, including monetary union (plurilateral level); or they can commit themselves to international policy coordination at a multilateral level.

### 5.1. Measures on a unilateral or bilateral level

It is useful to differentiate between measures by highly developed industrial countries and measures by emerging market countries. The industrialized countries can best protect themselves against financial crisis by ensuring that they *maintain* healthy banking and financial systems, and by pursuing policies that achieve growth with low inflation. It is more difficult for emerging countries to shield themselves against currency and financial crises in a world of high capital mobility. The tasks of greatest importance are:

- (1) strengthening domestic banking and financial systems;
- (2) providing better information and policy transparency;
- (3) strengthening corporate finance, including bankruptcy laws and their implementation;
- (4) taking precautions against potential capital flow reversals; and, last but not least,
- (5) building packages of sound macroeconomic and exchange rate policies.<sup>18</sup>

We have already discussed the problem of choosing the right exchange rate system for emerging or transition countries. Two alternatives examined above are currency boards and dollarization. We have, however, argued that implementing a specific exchange-rate system like a currency board or dollarization is not enough to protect a country against currency and financial crises. The country must also implement proper macropolitical behavior (fiscal soundness, in particular) and set in place the requisite microeconomic preconditions (a developed, well-supervised and regulated financial system, in particular). As long as these requirements are not fulfilled, a flexible exchange rate system might be more appropriate. Alternatively, countries may need to delay liberalization of the financial system until the implementation of the institutional reforms is complete.<sup>19</sup> This approach would avoid excessive exchange rate fluctuations, but is likely to be accompanied by microeconomic distortions and loss of growth (because of state interference and limited access to the international capital market).

### 5.2. Measures on a plurilateral or regional level

Instead of doing it alone, countries can join others in a coordinated effort to deal with crises. Monetary union is an important option. We mentioned in the beginning that a *worldwide* monetary union would do away with currency crises. It is, however, not feasible<sup>20</sup> and not implementable for a number of economic, cultural and political reasons.<sup>21</sup> An alternative would be *regional* monetary union. There actually have been proposals in recent years to install regional monetary unions in Asia and Latin America,<sup>22</sup> and thus to follow the European example.

The European Monetary Union, however, cannot really serve as a model for the regions mentioned. A regional monetary union can only be successful if the participating countries are their own main trading partners *and* there is one country with a stable currency which has functioned as the core of the system preceding a monetary union. The typical system preceding a monetary union may be characterized as a bundle of currency boards around a stable core currency. In Europe it was Germany with the deutsche mark which took up this function of core currency within the European Monetary System (EMS). There are not many stable currencies which could take up a similar role in monetary unions elsewhere. In principle, the United States with the dollar and Japan with the yen could serve as the core currencies of systems preceding monetary unions in America and in Asia, respectively.

As the case of Germany shows, such a country will not be among the beneficiaries of monetary union, at least not in the short to medium term. And, it was political and not economic reasoning which led Germany to take up this role (much like it did in the West-East-German monetary union or unification). It arose out of Germany's position as loser of a war against its neighbors and the widely held belief that Germany needed to be more fully integrated into Europe. This is not the situation in the U.S.A., or in Japan, and thus the political impetus toward monetary union in Asia or the Americas is weak or absent. In addition, the potential partners for Japan and the U.S.A are poorer countries<sup>23</sup> than Germany's main partners in Europe and thus impose different demands on such a project.

In sum, if Japan and the U.S.A. are not willing to push monetary union with their respective neighbors, and if emerging countries in Asia and Latin America cannot implement



a viable monetary union on their own because they lack a stable core currency, then they may try instead to implement currency boards or dollarization. However, many countries do not appear to possess the necessary institutional preconditions (see above) or are unable or unwilling to accept the high economic and political costs of such arrangements. That leaves these countries with few options: they can either restrict transborder capital mobility or move to flexible or semiflexible exchange rates. They may simultaneously try to persuade the other (developing and developed) nations to support reforms of the international financial architecture in an effort to reduce the volatility of international capital flows and to fight contagion in the system. The next section considers some possible approaches.

### *5.3. Measures on a multilateral or global level*

Measures on a multilateral or global level require countries to commit themselves to specific policy rules and policy coordination. The goal is to minimize the danger and costs of currency and financial crises. All emerging and industrial countries would have to commit themselves to the tasks highlighted above. These are similar to the reform proposals pushed by the IMF in response to the Asian crisis<sup>24</sup> These measures, taken together, aim to modify the existing system and to make it perform more efficiently by influencing the behavior of borrowers and lenders in the international system and helping to reduce the frequency and extent of financial crises.<sup>25</sup> They require action by several key players in the international system: by governments and the private sector in emerging market countries as well as in the leading industrialized nations, and by international institutions.

Some concrete reforms at the national level are discussed in an earlier section. But this is probably not enough. Rules for policy coordination need to be determined and multilateral organizations organized to survey and harmonize the coordination process. An important role falls to the international financial institutions in helping the emerging market countries implement the measures described above. This includes

- the design and adoption of banking and other relevant standards in order to strengthen financial systems and economic policies at the national level;
- the provision of better information to markets and the public in general;
- improved surveillance of economic and financial developments and policies;
- improved lending practices by global institutions; and
- “bailing in” the private sector, that is, the private banks which lend to the emerging countries. Both moral hazard and the insufficiency of public funding for bail-out purposes make this essential.

#### *5.3.1. Do we need an international lender of last resort?*

As a protection against contagion-driven currency crises, a measure has been proposed which would extend the role of international financial institutions to include that of international lender of last resort. In the national context central banks act as lender of last resort. In the event of crises involving individual banks, or of a crisis of the whole banking or financial system, they provide liquidity to solvent but illiquid banks. The analogue for international liquidity crises would require an international lender of last resort. The current

discussion circles around the question of whether the role of the IMF should be extended in this direction.<sup>26</sup> Given volatile international capital flows and the possibility of self-fulfilling crises, is this type of institution necessary to prevent financial panics in countries with fixed exchange rates and to erect a cordon sanitaire to deal with the threat of “contagion”? Theoretically, if there were an international lender of last resort, there would be no need for borrowers and lenders to be affected by the panic of others and to join the flight of capital, because the international liquidity of the country in crisis would be guaranteed (even if this were at a “penalty rate”). A financial panic resulting from a sudden loss of confidence in the affected country would be prevented, or the consequences of a liquidity crisis would be alleviated.

However, the problem is that the knowledge that a lender of last resort would bail lenders out in the event of a liquidity crisis creates a moral hazard problem. As a consequence, banks protected from collapse in this way would have an incentive to provide loans for extremely risky investments. (To reduce this risk, the aforementioned requirement to bail in the private sector/banks becomes important.) The consequences of a distorted incentive structure could be intensified by laxity in national bank supervision, occasioned by knowledge that the costs of a liquidity crisis would not have to be born solely by national governments. In extreme cases, the establishment of a lender of last resort could actually cause a financial market and currency crisis, and therefore have an effect opposite to that intended. Moral hazard caused by bail-out schemes distorts both the investment decision of banks and the lending decision of international creditors and thereby leads to excessive risk accumulation in the banking sector. Should the financial bubble burst, a financial and possibly a currency crisis will result.

## 6. Conclusion

The increase in capital mobility and financial globalization and the correlated recent financial and currency crises in emerging market economies have induced countries to rethink the question of optimal exchange rate regimes. It is nowadays widely believed that a global move toward corner solutions (free floating or a fixed peg in the form of a currency board or dollarization) could mitigate or even protect against the financial crises, which increasing capital mobility and financial globalization are thought to facilitate in emerging markets. It appears to be the case, however, that no exchange rate regime would have prevented the recent crises in the emerging market economies. Even corner solutions—which are not necessarily the best solution for all emerging market economies—would have to be supplemented by institutional reforms and innovations. In this paper, a broad range of measures has been considered; some of these are measures which countries can take at unilateral or bilateral levels; some operate at plurilateral or regional levels; and some require cooperation at the multilateral or global level.

## Notes

1. This can be taken to mean that sound domestic macro policies or sound fundamentals in the traditional sense are necessary but not sufficient under high capital mobility.

2. This includes not only well-supervised and regulated banks, but also equity and bond markets to raise venture capital and to reduce the problem of interdependencies between banks and firms.
3. The reason is that in a country that is already partly dollarized, devaluation is of little use.
4. This has the advantage of increasing the political credibility of the commitment.
5. In other words, “Currency boards are a poison pill: failure to stick to the commitment amounts to a catastrophic outcome. And because it is a poison pill, if other essential prerequisites are met, it achieves credibility, which translates into low interest rates and long economic horizons” (Dornbusch & Giavazzi, 1999, p. 27).
6. Ecuador actually adopted the U.S. dollar as the country’s legal tender in 2000.
7. Moreover, by definitely rejecting the possibility of inflationary finance, dollarization might strengthen institutions and boost investment.
8. Of course, there may be circumstances which are not favorable for pegging: first, because real shocks could occur during the transition period and, second, because the peg could not be maintained for long since initial credibility is low (because of a lack of foreign exchange reserves to back a peg). These were the reasons for adopting a flexible regime in some countries of the former Soviet Union at the start of the transition process. However, although these countries announced their regimes as flexible, the exchange rate was generally pegged de-facto to the deutsche mark or the dollar soon after initiation of the transition process or the stabilization programs (Fischer & Sahay, 2000).
9. A very small country may also consider adoption of a currency board.
10. One may ask, however, whether this advice can work in a model in which people are forward-looking. If market participants know that depreciation is coming in the future, will the stabilization be credible in the present? One may doubt, however, whether such a model or assumption is appropriate for transition countries, at least in the early stages of transition.
11. Cf., Baig and Goldfajn (1998).
12. Cf. Chang and Velasco (1998).
13. A currency board is likely to be able to prevent bank crises from widening to currency crises. However, by preventing the central bank from acting as lender of last resort, a currency board may render fractional reserve banks endemically unstable. An alternative would be to create a “fiscal war chest.” However, the question arises of where the foreign reserves required would come from. In any case, this alternative has efficiency costs.
14. They can only protect banks against the self-fulfilling pessimism of *domestic* depositors, that is, of depositors whose claims are in local currency.
15. Floating rates, however, would have altered behavior on the part of private lenders and borrowers but without presumably being able to prevent the crises.
16. G. Calvo, cited in IMF Survey, May 22, 2000, p. 165.
17. The choice of exchange rate regime depends, among other things, on the degree of diversification of trade. Single-currency pegs, for example, are more desirable re-

gimes for countries with a strong concentration of trade with a major country or with one of the major blocs.

18. For more on these requirements see, for example, Fischer (1999a).
19. The IMF (1998), after the Asian crisis, concluded: “*It is. . . apparent from the recent crises that the combination of a weak banking system and an open capital account is ‘an accident waiting to happen’.*” There is the danger that by liberalizing financial markets too early or rapidly, the fragility and hence the vulnerability of the banking and financial sector is increased. See also Furman and Stiglitz (1998), Demirgüç-Kunt and Detragiache (1999) and Kaminsky and Reinhart (1999).
20. That is, the “world” is far from being an optimal currency area. Hence, this alternative is likely to be not desirable.
21. A monetary union requires concertation and agreements among players with some affinities or common interests.
22. There are also proposals for a Canada-US Monetary Union, for example, Grubel (2000).
23. I disregard the proposal of a Canada-US Monetary Union (see the foregoing footnote).
24. Cf. Fisher (1999a), Rogoff (1999), Eichengreen (1999).
25. These measures mainly aim at preventing crises. Moreover, one also needs to consider reforms to lending practices and steps to improve crisis management.
26. Cf., Fischer (1999b) and, for example, Sachs (1995).

## References

- Baig, T., & Goldfajn, I. (1998). Financial market contagion in the Asian crisis, *IMF Working Paper 98/155*, Washington, DC.
- BIS. (1998). 68th Annual Report, Basel.
- Chang, R., & Velasco, A. (1998). Financial fragility and the exchange rate regime, *NBER Working Paper 6469*, Cambridge, MA.
- Corsetti, G., Pesenti, P., & Roubini, N. (1998). What caused the Asian currency and financial crisis? Part I: A Macroeconomic Overview, *NBER Working Paper, 6833*, Cambridge, MA.
- Demirgüç-Kunt, A., & Detragiache, E. (1999). Financial liberalization and financial fragility, in: B. Pleskovic and J. Stiglitz (eds), *Annual World Bank Conference on Development Economics, 1998*, Washington, DC, 303–331.
- Dornbusch, R., & Giavazzi, F. (1999). Hard currency and sound credit: A financial agenda for Central Europe. *EIB Papers*, vol 4, No. 2., 24–32.
- Eichengreen, B. (1999). Toward a new international financial architecture: A practical post-Asia agenda, Washington, DC.
- Fischer, S. (1999a). Reforming the international financial system. *Economic Journal*, 109, 557–576.
- Fischer, S. (1999b). On the need for an international lender of last resort. *Journal of Economic Perspectives*, 13, 85–104.
- Fischer, S., & Sahay, R. (2000). The transition economies after ten years, *IMF Working Paper 00/30*, Washington, DC.
- Frankel, J. A. (1999). No single currency regime is right for all countries or at all times, *Essays in International Finance No. 215*, Princeton University International Finance Section.

- Furman, J., & Stiglitz, J. E. (1998). Economic crisis: evidence and insights from East Asia. *Brookings Papers on Economic Activity*, 2, 1–133.
- Grubel, H. G. (2000). The merit of a Canada-US monetary union. *North American Journal of Economics and Finance*, 11, January, 19–40.
- IMF. (1998). *International Capital Markets*, Washington, DC.
- Kaminsky, G., & Reinhart, C. (1999). The twin crises: the causes of banking and balance-of-payments problems. *American Economic Review*, 89, 473–500.
- Rogoff, K. (1999). International institutions for reducing global financial instability. *Journal of Economic Perspectives*, 13, 21–42.
- Sachs, J. (1995). Do we need an international lender of last resort?, Princeton University, Frank Graham Memorial Lecture.
- Wagner, H. (1998). Central banking in transition countries, *IMF Working Paper 98/126*, Washington, DC.