
A Consideration of the Pros and Cons

Advantages

One can identify four major claims made on behalf of currency boards as opposed to central banks:

- that they assure convertibility;
- that they instill macroeconomic discipline;
- that they provide a guaranteed payments adjustment mechanism;
- that because of those three features they create confidence in the monetary system and therefore promote trade, investment, and growth.

In a full analysis, one should also compare currency boards with such possible alternative arrangements as dollarization (i.e., replacement of the domestic currency by the reserve currency, as long ago occurred in Panama); “bimonetarism,” or acceptance of a parallel currency (i.e., allowing a foreign currency to circulate alongside the domestic currency, as the dollar circulates legally alongside the peso in Argentina); and currency unification (i.e., replacement of the existing domestic currency by a currency that will henceforth be accepted as the domestic currency, as happened in the former East Germany when the deutsche mark replaced the ostmark and as is planned in Europe in 1999).

Occasional reference will be made to these alternatives where they seem to imply different benefits or costs than a currency board.

The assurance of *convertibility* stems from the 100 percent reserve cover. Since the currency board always has reserve-currency assets that more than cover its liabilities, it is argued that it will always be able to honor any demand for conversion into foreign exchange. This is in contrast to a central bank, which in the event of a run is unable to convert its claims once the foreign exchange component of its assets has been run down. The historical record of currency boards is good; they have indeed been able to honor requests for conversion. The fact that the North Russian currency board had to be bailed out by the British Treasury is the exception that proves the rule: it had to be bailed out precisely because 25 percent of its assets were in North Russian bonds, so that it was not strictly speaking a currency board.

Currency boards hold reserve-currency assets that cover the monetary base, but that is not necessarily enough to cover the whole of any wider monetary aggregate such as M1, let alone M2. This is of relevance if a financial panic occurs and the public starts to try to convert its demand deposits into the reserve currency. If, as in an orthodox currency board system, the commercial banks do not hold their reserves at the currency board, then the banks themselves are responsible for ensuring convertibility of demand deposits. They will be able to fulfill their obligations if they are holding sufficiently large reserves in the reserve currency and/or if they have adequate lines of credit to enable them to borrow additional reserve currency in case of need. This will be true ipso facto if they are branches of banks based in the reserve center: for this reason, supporters of currency boards have argued that foreign banks, especially those based in the reserve-currency country, should be welcomed and encouraged. If, however, the reserves and lines of credit of the commercial banks are inadequate, then there will be a financial crisis, since the currency board is in no position to help.¹ This lack of a lender of last resort is a potential disadvantage of a currency board system that is discussed in the next section.

Consider now the unorthodox case where the commercial banks are required to hold their reserves at the currency board.² The banks will start running down their reserves at the currency board in order to meet the demand for the reserve currency, and in order to replenish their reserves they will start selling assets and calling in loans. This will raise local-currency interest rates and thus introduce a market force tending

1. Help would require that it acquire domestic assets from the commercial banks in exchange for the M0 it issued, which is prohibited by the definition of a currency board.

2. This is the arrangement in Argentina, where the central bank acts like a currency board but still requires commercial banks to hold their reserves with it rather than abroad.

to stem the drain. If investors are not sufficiently impressed by the rise in interest rates, a financial crisis will threaten. The currency board may at that point reduce reserve requirements, seek to borrow on the international market, and/or get the government to tighten fiscal policy, as Argentina did in March 1995, so as to limit the financial crunch, especially if it is concerned about the fragility of the banking system. Once again, one cannot rule out the possibility of a financial crisis on theoretical grounds simply because the currency board holds 100 percent reserve cover. There is thus an important qualification to the claim that a currency board can always guarantee convertibility: the cost of delivering on the guarantee may turn out to be a financial crisis.

The second great advantage claimed for currency boards is that they instill *macroeconomic discipline*. In the first place, since a currency board is prohibited from buying domestic assets, it cannot finance a fiscal deficit: the government will therefore have to balance its budget if it is unable to borrow, either from the public at home or else abroad. In the Keynesian heyday it was assumed that such a constraint on fiscal policy would be costly. Nowadays economists are sadder and wiser, and even those of us who still think that deficit financing can at times provide a helpful stimulus to demand find it difficult to deny that it has been abused far more often than it has been used constructively, and have therefore come, perhaps reluctantly, to welcome institutional arrangements that promise an effective constraint.

Would a currency board provide such a constraint? The “unpleasant monetarist arithmetic” of Sargent and Wallace (1981) pointed out that there are ultimately two ways in which fiscal and monetary policy can be made consistent. One involves a monetary authority sufficiently powerful to constrain the fiscal authority to abide by a budget constraint where its seigniorage income would be limited by monetary considerations. The other involves a monetary authority that manages the debt resulting from the fiscal policy chosen by the fiscal authority. The key question is whether legislating a currency board will guarantee that the fiscal authority will accept the subservient role assigned it by the first of those alternatives. Anna Schwartz (1993, 183) remarks: “The notion that [currency boards] can be revived to function as they did in the past . . . neglects . . . the need for precommitment by governments and their constituencies to the discipline these institutions exact.”

There are surely circumstances in which the establishment of a currency board can change the balance of political power between monetary and fiscal authorities in that way. This certainly seems to have happened in Argentina. And, when it decided to establish a currency board, Estonia had a prospective fiscal deficit of 4 percent of GDP, which it proceeded to eliminate (Bennett 1994, 12). The point is that the question of whether the fiscal authority will agree to be disciplined has to be

asked rather than a positive answer being taken for granted, as is typically done by the advocates of currency boards. To establish a currency board without the fiscal authority accepting its subservient role is to risk large debts and high interest rates followed ultimately by national bankruptcy, which might well entail abandonment of the rules of the currency board and a squandering of the foreign reserves that were garnered to back it. The fact that in a tight corner governments with debt denominated in the domestic currency have normally preferred to inflate rather than to repudiate their debts suggests that constraining them to repudiate might be costly.

It is also argued that a currency board will secure discipline over inflation because of the fixed exchange rate to the (presumptively low-inflation) reserve currency. Let us assume for the sake of argument that the reserve center does indeed maintain low inflation: while the past performance of the dollar and the pound in this direction leave something to be desired, they were certainly paragons of stability compared with many developing countries.³ There is of course an element of truth to the claim that a fixed exchange rate will maintain control over inflation: *ceteris paribus*, a fixed rate does create increasingly powerful forces tending to pull the price level back if inflation exceeds that in the reserve center by more than productivity bias allows. But there are also important qualifications. There are those already mentioned in connection with Hong Kong's fairly rapid inflation of the last decade: the fact that a fixed exchange rate will initially pull up internal prices if

3. Hanke and Schuler (1994, chapter 5) suggest that a country with a currency board can safeguard itself against the danger of unacceptably high inflation in its reserve center by changing its reserve currency should that situation arise. They propose that such a change be made if annualized CPI inflation goes outside a range of “-5 percent to +20 percent for more than two years, or -10 percent to +40 percent for more than 6 months. . . . If inflation in the reserve country exceeds the specified range, the currency board should be allowed to devalue or revalue its currency in terms of the reserve currency by no more than the amount of the inflation rate in the reserve currency for the period specified (two years or six months)” (83–84). They go on to deny that this might create destabilizing speculation, on the grounds that “. . . no uncertainty exists about the behavior of the currency board.” There may be no uncertainty about how the currency board will act, but uncertainty about events exogenous to the currency board can create the same problem. For example, if speculators think there is a 50 percent probability of a revaluation occurring because the currency board has promised to revalue if inflation in the reserve center reaches a 20 percent threshold and the latest statistics show it is already nearly there, they will still have an incentive to buy the local currency, and they will still make money at the expense of the authorities when the revaluation occurs.

The fact is that there is no way a currency board can protect a country against inflation in the reserve center: all it can do is pick a currency that it does not expect to inflate in the future. If it changes its mind on whether *future* inflation is likely, it can change the reserve currency without disruption, but there is no nondisruptive way of compensating for past errors in forecasting future inflation performance.

the exchange rate was fixed at an undervalued level; the fact that inflationary pressures relative to the reserve center will be induced if the reserve currency depreciates relative to the currencies of the country's other trading partners; plus, of course, productivity bias itself.

Then there is the fact that only in the smallest and most open of economies does a fixed exchange rate pin down the internal price level at all closely. In larger real-world economies, inflation has a momentum of its own,⁴ which, if the inherited inflation was high when the fixed exchange rate was first established, can leave the real exchange rate dangerously over-valued before arbitrage pressures bring inflation down to the level in the reserve center. For several years after the establishment of its currency board arrangement in 1991, it looked as though this had happened in Argentina: inflation eventually came down to the level in the United States, but price competitiveness (as measured by the CPI, though not the WPI) was severely eroded and the current account moved into a substantial deficit despite high and increasing unemployment. As of July 1995, prospects seem more hopeful: exports are growing at an annual rate of over 40 percent, and the balance of payments is in consequence looking much stronger, although unemployment is increasing fast and remains a major source of concern that still precludes a verdict that the fears of overvaluation were misplaced.

The third great advantage of a currency board is that it builds in a *payments adjustment mechanism*. This is none other than what has often been identified as the gold-standard adjustment mechanism, otherwise known as the price-specie-flow mechanism, based on perhaps the oldest model in economics, that of David Hume ([1752] 1969). If a country has a payments deficit, the money supply goes down over time and interest rates rise, tending to attract a capital inflow; the higher interest rates exert deflationary pressure, which will certainly reduce absorption and thus improve the current account of the balance of payments; and, to the extent that internal prices are flexible, the lower pressure of demand will eventually reduce prices and make exports more competitive, thus permitting real output to rise back to full employment without a payments deficit.

The alternative "pure form" of payments adjustment involves a flexible exchange rate. Under this regime, a payments deficit induces a depreciation of the currency, which both makes exports more competitive and tends to push up prices and thereby squeeze the real value of the money supply, thus reaching the same end point as the gold-standard mechanism after it has succeeded in inducing a fall in prices,

4. There is a large literature on this subject (e.g., Bruno et al. 1991).

but with inflation rather than deflation of prices during the adjustment process.

Many countries fail to use either of the pure models of payments adjustment or any systematic combination of them. They peg the exchange rate, hoping that this will serve as a nominal anchor to get inflation down to the world level. But in fact an overvaluation develops, as described above, because inflation does not decelerate promptly to the international norm. The balance of payments goes into deficit, but instead of allowing this to reduce the money supply as happens under a currency board, they use their central bank to sterilize the reserve outflow and hold the money supply constant (i.e., they follow the exogenous monetary base rule rather than the marginal currency board rule or the gold-standard rule). The deficit persists until a crisis occurs, forcing a devaluation and a tightening of macroeconomic policy, often under the tutelage of the International Monetary Fund. It is surely better to have a currency board than to have repeated crises on this pattern.

On the other hand, there are alternatives, and these tend to avoid or reduce the deflationary pressures that are an integral part of adjusting away a deficit under the gold-standard mechanism. One is a floating exchange rate, as already noted. Another is a managed exchange rate with a supporting macroeconomic policy.

In an era of high capital mobility, managing the exchange rate has to be a somewhat rough and ready process, with a wide band within which the rate is allowed to float. But one can still alter the central rate to reflect changes in the fundamentals (to the extent that these can be identified promptly), provided the individual parity changes are small relative to the width of the band (see, e.g., Williamson 1993). Consider again the process of adjusting to a balance of payments deficit. This demands a fiscal tightening coupled with an announced depreciation of the central rate, perhaps with a substantial front-end component, and a higher interest rate to neutralize the incentive to withdraw capital that would otherwise be created by the expectation of future depreciation. Such a package will in principle also get one to the same end point as the gold-standard adjustment mechanism and the (well-behaved) floating exchange rate: the issues arise in deciding which mechanism is less costly and more certain. The currency board/gold-standard solution has the virtue of the greatest certainty.

Moreover, one should note that it is perfectly possible to replicate the gold-standard adjustment mechanism without a currency board if the country so desires. All the central bank need do is to base its monetary policy on either the marginal currency board rule or the gold-standard rule.

The final advantage of the currency board arrangement is that because of the preceding three features—assured convertibility, discipline

over fiscal policy and inflation, and certainty of a payments adjustment mechanism—a currency board has good prospects of maintaining the *confidence* of the public in general and the financial markets in particular. It should be relatively immune to speculative crises induced by fears of devaluation. Experience shows, however, that this immunity is not total: Hong Kong experienced pressures in 1985 and again in January 1995, and Argentina faced pressures in 1992 and was engaged in a real struggle to avoid a peso devaluation in 1995. Nevertheless, it is perhaps unlikely that Argentina would have succeeded in defending the peso up to the time this book went to press (August 1995) with a conventional central bank arrangement.

The above four advantages are extremely important. But policy proposals usually come with costs as well as benefits. It is therefore time to turn to an analysis of the disadvantages of currency boards.

Disadvantages

This section discusses seven actual or potential disadvantages of currency boards, which will be termed the seigniorage problem, the start-up problem, the transition problem, the adjustment problem, the management problem, the crisis problem, and the political problem. Many of the issues have already been raised in earlier sections; the intention of this section is to bring these potential economic difficulties together in a systematic and comprehensive way. An additional political issue—sovereignty—is postponed until the end of the book.

The *seigniorage problem* refers to the fact that there is a cost to the country in using a foreign currency rather than domestic assets to back the domestic money supply.⁵ Advocates of currency boards point out

5. Many years ago (Williamson 1973, 723), I explained the issue of seigniorage in the following terms, which still seem to me as good as any other description I can recall:

The production of commodity money is costly, and the substitution of fiat money therefore produces a social saving of the resources that would otherwise have been absorbed in the production of money. In so far as the money supply industry is a competitive one, this social saving will be distributed to the holders of money—e.g., through the payment of interest. In so far as the issuer of money enjoys monopoly power, it is able to extract the difference between the value of produced money and the cost of producing it as “seigniorage.” (Historically, seigniorage meant the mint charge for turning metal into money, but in the modern context it refers to the net value of the resources accruing to the issuer of money.)

The only modification that needs to be noted in the present context is that the alternative to (domestic) fiat money that is under consideration is foreign money, which has to be bought, rather than commodity money.

correctly that, because the currency board earns interest on its (foreign) assets, this cost is only the shortfall of that interest rate below the yield on the additional investment that could be made at home if domestic assets were to replace foreign assets in the portfolio of the monetary authority. If that additional investment is poorly chosen, then its yield may actually be lower than that on foreign assets (and certainly the monetary yield on the domestic assets that the central bank is required to buy may be less than that on foreign assets), which implies that a currency board may yield *more* seigniorage than a central bank. Similarly, if a currency board increases confidence that the domestic currency will maintain its value and so encourages substitution of domestic for foreign currency, seigniorage will actually be higher under a currency board.

Currency unification allows a country to share in the seigniorage generated by the joint currency. Dollarization, in contrast, implies abandoning any attempt to collect seigniorage. For a country with a typical ratio of M0 to GDP of, say, 12 percent, and with a rate of interest on reserve assets of 4 percent, the loss of seigniorage in going from a currency board to dollarization would be 0.48 percent of GDP. It is true that seigniorage would be greater in a country that inflated rapidly, where the revenue from the inflation tax has to be added to the seigniorage that can be expected with fairly stable prices, but one has to wonder whether too much was not made of the seigniorage issue in the arguments in favor of replacing currency boards by central banks in the literature of the 1950s. Of course, that still means that there may be a cost.

The *start-up problem* refers to the difficulty of gathering sufficient hard-currency reserves to back the entire monetary base, as is required to establish a currency board.⁶ Presumably this was not an issue for colonial currency boards, since most of the money that was circulating within the country took the form of sterling and there was no money backed by domestic assets to call in. But it is very much of an issue in proposals to create new currency boards. Finance Minister Domingo Cavallo was able to implement a currency board arrangement in Argentina because there had been so much capital flight that the domestic money supply was derisory in dollar terms while there were lots of dollars to come

6. In practice, it is possible to launch a currency board with somewhat less than full foreign cover, as happened in both Argentina (for net reserves) and Estonia. In both those cases, cover rose very quickly to more than 100 percent as a result of exogenous events: a Brady Plan settlement in the case of Argentina and gold restitution in the case of Estonia. A somewhat riskier strategy would be to start with a fiduciary issue that was limited in size and worked down over time as the currency board earned profits on its foreign assets.

back and permit a rapid buildup of the monetary base once confidence was restored. Estonia was able to adopt a currency board because the Bank of England and the Swedish Riksbank restituted the gold that Estonia had deposited at the outbreak of World War II. The financial feasibility of a currency board is an issue that has to be examined case by case.

The *transition problem* refers to the danger that the fixed exchange rate that has traditionally provided the base for a currency board will quickly become overvalued if a currency board is introduced in a country with a high inflation rate. This again was not a problem when colonial currency boards were introduced because the colonies had previously been using very stable currencies such as the pound sterling. But matters are different today. Of course, a main objective of adopting a currency board is very often to bring and keep inflation under control. Economic theory leaves little room to doubt that a fixed exchange rate that is adhered to long enough and backed by the gold-standard monetary policy will eventually bring inflation under control and even lower the price level to a point that allows the economy to regain full employment. But the key questions are how large the overvaluation will be and how long the transitional period will last.

The optimistic view is that a credible announcement of the government's determination to maintain a fixed exchange rate will cause wage setters and price setters to moderate their behavior so as to avoid pricing themselves out of the market, thus bringing inflation to a halt without overvaluation and recession. To the extent that a currency board can help build credibility quickly, it is just what is needed to avoid or minimize the transition problem.

The pessimistic view is that the inflation process contains its own momentum—perhaps as a result of backward-looking indexation or expectations, overlapping contracts, or a combination of those factors—that will be slowed only as excess capacity emerges. Even large excess capacity may not have much effect in restraining inflation if wage and price setters come to doubt the government's resolve or ability to hold to the fixed rate and therefore begin to build in a premium on wages and prices to protect themselves against a possible devaluation. One need not question the theory that a fixed exchange rate and a gold-standard monetary policy would eventually stop and reverse inflation, but one may well doubt whether the policy would be followed long enough to achieve that result, given that the transition is apt to be painful (i.e., to involve a recession). And such doubts are not just entertained by economists; they also influence those responsible for determining whether and how fast inflation slows.

The evidence does not suggest that fixing the exchange rate has typically brought inflation screeching to a halt. An interesting question is

whether the form of fixing makes a difference. If the problem is not inflationary inertia but solely expectations, so that establishing credibility suffices to stop inflation, then one would expect some forms of exchange rate fixing—those that are difficult to reverse—to be more effective than others. A currency union (like that in which eastern Germany adopted the deutsche mark) should be more effective than dollarization, which would in turn carry more credibility than a currency board arrangement, which should in turn be more effective than a simple fix by a central bank. I am not aware of any empirical evidence as to how much difference the form of fixing makes—it was certainly not obvious that wage pressures abated rapidly in eastern Germany—and in the absence of such information it seems rash to take it for granted that inertia is not a part of the problem.

In some situations an initial overshoot of the price level will in time be resolved automatically through the operation of productivity bias: a rapidly growing country may be able to grow into competitiveness. However, this is possible only where the initial overshoot is not too great.

Two possible solutions have been suggested to cope with more difficult situations. The first is to undertake an initial maxi-devaluation before pegging the exchange rate at an undervalued level, with the intention of allowing headroom for substantial inflation during the transition without the exchange rate becoming uncompetitive. The problem with this solution is that an undervalued exchange rate means that arbitrage pressures from abroad tend to pull prices up rather than to hold them down, so that the fixed exchange rate initially acts as a nominal crane rather than a nominal anchor. Poland in 1990 and Czechoslovakia in 1991 provide examples of cases where the initial devaluation appears to have been excessive, resulting in inflation higher than it otherwise would have been, or need have been. If inflation slows only when the exchange rate has become overvalued, an initial undervaluation does not necessarily help.

The second approach has been suggested by Osband and Villanueva (1992), who urge modifying the standard currency board arrangement by allowing a limited degree of exchange rate flexibility. Specifically, they suggest the possibility of preannouncing a decelerating, crawling depreciation for a limited period, as under the *tablitas* used by Argentina, Chile, and Uruguay in the late 1970s. Israel has recently embarked on a similar though less rigid policy, in which the rate of devaluation of the parity is decided for only a year ahead, but with a general intention of reducing the rate of devaluation over time. Osband and Villanueva point out that there is no inherent contradiction between a currency board arrangement and such a depreciation, which would *ceteris paribus* tend to release some of the foreign reserves being used to back the

money supply, reserves that could then be handed over to the government just like any other profits of the currency board. The complement to such an exchange rate policy would have to be austere anti-inflation policies designed to reduce the inflation rate in parallel to the deceleration of the crawl. (Such a complement was notably absent in the Southern Cone experiments of the late 1970s, where misplaced faith was put in the effectiveness of the exchange rate as a nominal anchor.)

The *adjustment problem* refers to the increased cost of securing balance of payments adjustment when the exchange rate cannot be changed in order to facilitate adjustment. Currency boards preclude using the exchange rate to help correct an overvaluation. The possibility of real shocks that require an improvement of the balance of payments (such as an oil price increase to an oil-importing nation) means that this problem can arise at any time, not just during an initial transitional period as a result of inherited inflationary inertia. The need is less where labor markets are extremely flexible (as in Hong Kong). But in more inflexible environments it is possible that excessive adjustment costs as a result of an inability to engineer a needed change in the real exchange rate through a change in the nominal rate could call into question the credibility of the commitment to a fixed rate.

This raises the issues dealt with in the literature on optimal currency areas.⁷ If the economy is open—that is, traded goods constitute a large proportion of the economy—then exchange rate uncertainty will impose greater costs, while fixing the exchange rate will go further toward fixing the price level. Furthermore, a change in the nominal exchange rate will be less effective in altering the real exchange rate. Conversely, the high marginal propensity to import will facilitate adjustment with a fixed exchange rate. Other factors have emerged as also relevant in making an optimal choice between a fixed and floating exchange rate, such as whether shocks are symmetrical in the country considering pegging and the country to which it is considering pegging, and how substantial labor mobility is between the two areas.

Subject to override by those other considerations, the broad conclusion of the optimal currency area literature is that open economies are well-advised to fix or at least peg their exchange rates to the currency of their major trading partner, while less open economies have more to gain by allowing some form of exchange rate flexibility. Since small economies tend to be open, this translates into the common-sense advice that tiny geographical areas (states, counties, cities, villages) should not attempt to run their own currencies, while it is reasonable for large countries to adopt a national currency and gain the advantages

7. See Tower and Willett (1976), with an updating in Willett and Al-Marhubi (1994), or a textbook treatment such as Caves, Frankel, and Jones (1996, chapter 25).

offered by exchange rate flexibility in terms of more efficient adjustment.

The attractiveness of fixing or pegging the exchange rate, rather than adopting a more flexible policy, also depends on whether there is a natural candidate for the currency to peg to. Thus it is natural for, say, El Salvador to peg to the dollar because the US dollar dominates its trade and other external transactions and because the dollar is reasonably stable (low-inflation). A country with a more diversified trade pattern will find a peg less compelling. It can peg to a basket of the currencies of its major trading partners, but that will have drawbacks if capital movements are predominantly into and out of the dollar and if its neighbors and competitors peg to the dollar. At the margin, at least, one should therefore expect the lack of a natural peg to count against a decision to peg rather than to adopt a more flexible exchange rate policy.

Of course, if a country does decide to peg and also decides that a basket would offer a better peg than a single currency, that does not preclude adoption of a currency board. As Osband and Villanueva (1992) argue, this could perfectly well operate by trading either in a basket of currencies or, more simply, at a rate against a single currency that varies with the value of that basket in terms of the intervention currency.

Despite the apparent advantages of basket pegs, the majority of countries that peg their exchange rates still peg to a single currency. This includes some, such as Estonia and Hong Kong, whose trade is sufficiently diversified to make this appear on the face of it an irrational policy. The defense that they offer is transparency: that a basket peg is less obvious to the public and may therefore be expected to carry less credibility.

The *management problem* refers to the inability of currency boards to run an active monetary policy. Some would argue that this is a virtue and not a vice of the system, since monetary policy has so often been abused, and one can legitimately debate whether the benefits of monetary activism do not outweigh the costs. What one cannot deny is that a currency board system tends to be procyclical: when times are good, money flows in, interest rates fall, and the economy booms. But capital flows are volatile, and when trouble looms, money flows out, interest rates rise, and the government may even find it necessary to tighten fiscal policy. This is very much what has happened in Argentina in recent years, with the boom of 1992–94 giving way to a threatened recession in 1995, when policy had to be tightened in the wake of the Mexican panic. Similarly, interest rates were linked together internationally under the gold standard, which was a major factor in propagating the Great Depression in the early 1930s.

Another clear example of the costs of being unable to run a monetary policy tailored to local needs is to be found in the recent experience of Hong Kong. During the US recession of the early 1990s, Hong Kong imported low interest rates from the United States because of its link to the US dollar at a time when its own domestic situation cried out for monetary restraint in order to try to break an asset price boom before it led to the sort of disaster experienced by Japan. Hence the Hong Kong authorities were relieved when US interest rates rose in 1994. Yet it would have been much better if they had been able to act to raise their own interest rates ahead of the US decision.

The *crisis problem* was already outlined above. A currency board cannot act as lender of last resort in a domestic financial crisis because that would violate its basic precept of issuing domestic currency only in exchange for foreign currency rather than against domestic assets. The conventional wisdom is that it is desirable to have a lender of last resort to provide emergency lending to a solvent but illiquid financial institution but that one should avoid propping up insolvent institutions. Hence the lack of a lender of last resort is a mixed curse: it just might help avoid unfortunate bailouts of insolvent institutions.

A currency board arrangement can still make provision for helping financial institutions that run into a liquidity crisis. In Estonia, the banking department of the Bank of Estonia is authorized to provide help up to the limits allowed by its holdings of foreign exchange. In Singapore, the Monetary Authority of Singapore has similar power. The central point is that the size of such a facility has to be limited to the foreign exchange that it can command. Where that cushion is large, as in Singapore, the bailout possibilities will be adequate for all legitimate purposes, but then the question arises as to whether one is still dealing with a genuine currency board. With a smaller cushion, elimination of the convertibility risk that is characteristic of a currency board may be bought at the cost of a heightened risk of a domestic financial crisis. Indeed, an incipient convertibility crisis might be converted into a domestic financial crisis as wealth owners with claims denominated in local currency but not backed by foreign exchange sought to convert into money that could in turn be converted into foreign exchange. A currency board is not fail-safe once domestic residents start to flee from the national currency. The risks are particularly great where the domestic financial system is fragile and has recently expanded on the basis of a capital inflow that was not sterilized (Rojas-Suarez and Weisbrod 1994).

In addition to any formal bailout facility, the government may be able to offer help, or it may help to arrange foreign loans. But in each case there is a limit to how much help can be provided, at least in the short run, and that means that it cannot act as a lender of last resort. Therefore, there is a possibility of a financial crisis that cannot be stemmed

even if the authorities are convinced that the problem is one of illiquidity, which is appropriately addressed by relieving the liquidity constraint. Domingo Cavallo put it aptly in March 1995 when he said that the Argentine authorities were providing “a lender of next to last resort.”

Advocates of currency boards have replied by conceding that this is a theoretical danger, but they have argued that the record of currency boards is in practice good. For example, Hanke and Schuler (1994, 86–87) write:

Lack of a central bank as lender of last resort does not seem to have harmed currency board systems. Failures by commercial banks have been minor in such systems. No large commercial bank has ever failed in a currency board system, and losses to depositors from the few small commercial banks that have failed have been tiny. . . . (The largest commercial bank to fail in any currency board system is the Bank of Credit and Commerce International. When it failed in July 1992, its Hong Kong arm had about US\$1 billion in deposits, or about 0.6 percent of total deposits in Hong Kong.) Since the founding of the first currency board in 1849, there have apparently been no cases in which commercial banks in currency board systems have relied on central banks as lenders of last resort. For example, British overseas commercial banks in currency board systems apparently have never relied on the Bank of England as a lender of last resort. Currency board systems have performed well without lenders of last resort. Therefore, it seems likely that (perhaps after an initial restructuring) commercial banks in the currency board system can become strong, stable, and capable of preserving their liquidity without a government-sponsored lender of last resort.

Hanke and Schuler go on to argue that interbank markets can and do develop in currency board systems, enabling banks to relieve their regular illiquidity problems, and that commercial banks can also borrow abroad and in the Eurocurrency markets. Furthermore, the absence of exchange rate risk vis-à-vis the reserve currency encourages the establishment of branches of foreign banks based in the reserve center, which are able to draw on the resources of their parent banks in order to ride out local shocks and relieve illiquidity problems. They also argue that the existence of a central bank able and willing to act as lender of last resort raises the problem of moral hazard: it may tempt commercial banks into making riskier loans than they otherwise would do.

Many of these points are well-taken. The availability of a central bank may cause a moral hazard problem, implying that banks without that backstop will observe more care in their lending decisions. It would be possible to encourage international branch banking and hence gain the reassurance of local banks being able to draw on their head offices, by standardizing licensing procedures, reporting requirements, and tax rules with those in the reserve-currency country.

But Hanke and Schuler mislead when they assert that no large commercial bank has ever failed in a currency board system. There have in

fact been two major bank crises in Estonia under its currency board, the first of which (in late 1992) involved three banks with combined balance sheets equivalent to 40 percent of the money supply (Bennett 1994). These banks were not large by international standards, but they were large relative to the Estonian economy, and their failure under normal circumstances would have provoked intense concern. In the chaos of the transition and following virtual expropriation of bank deposits by inflation, it seems to have been accepted as another act of an unfriendly god. But one cannot count on similar resigned acceptance by the public if comparable bankruptcies were to occur in a country in less traumatic circumstances.

Moreover, one should not draw that much reassurance from the relatively good historical record to date. Most past currency boards have operated in financially underdeveloped economies in which foreign banks played a dominant role. Hong Kong and Argentina in recent years provide the great exceptions. Hong Kong suffered a short but intense run on 11 and 12 January 1995 at the height of the Mexican panic and used its central bank-like powers to magnify rather than attenuate the impact of the reserve outflow on the monetary base. This decisive action succeeded in restoring confidence. Argentina came under enormous and sustained pressure in the wake of the Mexican crisis. The central bank tried to avoid the currency board's automatic interest rate stabilizer in December 1994 through February 1995 by halving reserve requirements (in contrast to November 1992, when it let rates go up to 85 percent and the crisis reversed quickly). Eventually it was forced to arrange absorption of several of the smaller banks by larger ones with stronger balance sheets, and the government announced a severe tightening of fiscal policy and a large drawing on the IMF. We will never be sure whether allowing the currency board mechanism to work as planned might have stopped the crisis much earlier or whether on the contrary the pressure was intensified rather than mitigated by the fact that the Argentine Central Bank now operates as a currency board and is therefore unable to provide lender-of-last-resort assurances. One needs to compare how much more worried depositors were because of the increased prospect of their bank failing with how much less worried they were because of a lesser danger that the peso might be devalued.

Should one expect a bimonetary regime like that in Argentina to reduce the impact on the domestic economy of a flight from the local currency? If wealth holders' fears focus on the possibility of a devaluation, then they will be content to redeposit their funds in the local banks, in dollar-denominated accounts. Provided that the banks can persuade their borrowers to make a parallel redenomination of bank loans—which will presumably be subject to some delay, how much depending on the term of the average bank loan, and which will in the interim leave the

banks in a vulnerable position—the process may involve minimal disruption of the real economy. On the other hand, if wealth holders fear bank insolvency, then they will want to place their money in different banks or abroad rather than in dollar-denominated accounts in the same banks. Because a currency board system intensifies the danger of bank insolvency by eliminating the availability of a lender of last resort, it is not certain that bimonetarism will ease the pressures caused by a run on a currency board's currency.

What I call the *political problem* is whether fiscal policy will in fact be disciplined by the establishment of a currency board. Once again, advocates of currency boards point to the historical record, which does not show cases of blatant appropriation of the assets of currency boards by governments that were unable to balance their budgets. But there *were* about 70 cases of currency boards being replaced by central banks, which provided a more respectable way of accomplishing the same objective. Moreover, most currency boards operated under a colonial system, in which the colonial power had the motivation and ability to police the maintenance of fiscal discipline.

Argentina and Estonia provide by far the most relevant cases for assessing whether a currency board arrangement can make an important contribution to enforcing fiscal discipline. So far, both countries have indeed played by the rules of the game, and it seems (as noted above) that the existence of those rules has played a helpful role in establishing and maintaining fiscal probity. But both of them are countries that had resolved to make fundamental changes in their economic policies: Argentina finally decided this after years of ruining its economy by running deficits, and Estonia decided it as it freed itself from the Soviet embrace and sought to make as sharp a break as possible from the practices of its former oppressor. These cases suggest that a currency board can help to lock in a commitment to fiscal discipline.

What is still not clear is whether legislating a currency board arrangement can ensure fiscal discipline in a country that has not already achieved the political will to balance its budget. The first resort may be to borrow rather than to balance the books, if not abroad then at home. The government might have to pay ruinously high interest rates to borrow and ultimately be forced into defaulting on its debts in one way or another. Perhaps an outright debt repudiation would be healthier than the insidious process of meeting the public-sector budget constraint by the inflation tax, as is permitted by a central bank. Or perhaps not; it is not immediately obvious.

And when the possibility of foreign and domestic borrowing to finance a budget deficit is exhausted, there is the danger that the government would raid the currency board. If that were impossible because Hanke and Schuler's advice on how to make it raid-proof had been

accepted (notably by registering it in Switzerland and holding its assets there), the government could still demonetize the currency board's currency and create a new central bank to issue a replacement currency. It is unlikely that the public would willingly accept the new currency; it might well continue to hold the currency board's currency as a parallel currency even after it ceased to be legal tender. Fear of this would presumably do something to deter a government from trying to demonetize the currency board's currency. But it seems rash to take it as axiomatic that a government that was sufficiently pressed—for example, by war or by the sort of state collapse witnessed in several former Soviet economies—would be disciplined into fiscal virtue by the existence of a currency board.

In sum, a currency board would seem a good device to reinforce a commitment to fiscal discipline, but it is not clear that it could create such a commitment where it does not already exist.