



**Columbia University**

*Department of Economics*  
*Discussion Paper Series*

**Currency Areas, Volatility and Intervention**

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*Discussion Paper #:0102-09*

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February 2002

## Currency Areas, Volatility and Intervention

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On January 1, 1999, the euro was launched with eleven members and it instantly became the second most important currency in the world. It may prove to be the most important event in the history of the international monetary system since the dollar took over from sterling the role of dominant international currency. For the time being the mainstream of the world economy will be characterized by a tripolarism based on the dollar, euro and yen..

The new situation raises some old questions: Is the currency configuration of the world economy optimal? How many currencies does the world need? Which countries belong in a currency area? What is the optimum currency area?

This paper will discuss the currency composition of the world economy today. It will discuss the prospects for expansion of the major currency areas and the problems arising from the volatility of exchange rates between them. It will argue that a restoration of a system of fixed exchange rates would have to begin with stabilization of the exchange rates between the dollar, euro and yen, and that a step in the right direction would be to evolve policies that provide for intervention in the foreign exchange market.

### 1. Systems of Stabilization

The classical economists had an unequivocal answer. were virtually unanimous in their support for a common unit of money. From the standpoint of fulfilling the functions of money as unit of price quotation, unit of contract for current and deferred payments, medium of exchange and store of value, a single world currency would be the first best solution. Economists like John Stuart Mill deplored the nationalism that made it impractical:

“...So much of barbarism, however, still remains in the transactions of most civilised nations, that almost all independent countries choose to assert their nationality by having, to their own inconvenience and that of their neighbours, a peculiar currency of their own.”<sup>1</sup>

For most of history currency arrangements have coincided with political units. The larger the political unit the larger the currency area. The existence of multi-nation empires had the side benefit of reducing the number of currencies. Twenty centuries before the euro, in the age of Caesar Augustus, Roman Europe had a common money. If the world were ruled by a single power or a world government today, a world currency would be all but inevitable. If the currency were managed properly it would be an ideal situation.

On this line of reasoning, the next best thing to a properly-managed world currency might be a well-managed system of state currencies firmly locked by fixed exchange rates. But without a world government, how would the system be managed? What would control the reserves of the system and

the common inflation rate? What would determine the anchor of the system?

In earlier centuries, the solution was the survivor of the fittest. Countries settled on the precious metals for their money, the supply and demand for which determined the inflation rates for currencies based on the two metals. Until the advent of bimetallism, exchange rates between monometallic silver and gold blocs would fluctuate. Bimetallism solved that problem and gave the world a monetary unity for over sixty years in the nineteenth century, a monetary unity that it has not seen since. But, as Sir Roy Harrod once observed, bimetallism was a “high-brow” standard, too complicated for the average person to understand, and mismanagement of it in the 1870s led to its demise.

With the fall of bimetallism, the world economy split into gold and silver blocs, but silver was on its way out and by 1914 all the major countries except China adhered to a common gold standard. Three decades later, at the time of the Bretton Woods meeting, all countries except the United States had de facto demonetized gold. In 1963 the United States demonetized silver and a decade later all but demonetized gold.

In a world of paper currencies (or electronic debits) we go back to the questions asked earlier. What is the optimum number? Should each continent have its own currency? Each nation? Each religious area? Each city? Should two or more nations share the same currency, or should some nations have more than one currency? In my paper<sup>2</sup> on optimum currency areas, I defined a currency area as a zone of fixed exchange rates and asked: “what is the appropriate domain of a currency area?” My answer was the economic region, defined as an area within which factors are mobile, but between which factors are immobile.<sup>3</sup> Flexible exchange rates would only work if the currency area coincided with the region.

The issue is closely tied up with the debate over flexible exchange rates. Much ink has been spilled on the meaningless debate whether “fixed” or “flexible” exchange rates are better “systems.” In the abstract, nothing at all can be said. A fixed exchange rate<sup>4</sup> is a monetary rule, one approach to monetary stability. A flexible exchange rate is the removal of a monetary rule, not a policy in itself. A flexible exchange rate is consistent with either price stability or hyperinflation.<sup>5</sup> Comparing fixed with flexible exchange rates is as absurd as comparing fixed and flexible diets!

Fixed exchange rates have to be compared with other monetary rules not flexible exchange rates. What is the best approach to price stability? Taking into account the lags in the effect of monetary and exchange rate policy, is trying to fix a basket of commodities (e.g., the CPI basket), a basket of money (e.g.,  $M_0$ ,  $M_1$ , or  $M_2$ ) or a basket of currencies (possibly only one) likely to bring about more price stability in the long run?<sup>6</sup> Briefly, is inflation, monetary or exchange rate targeting likely to be the best way to achieve price stability?

## 2. Currency Configurations

The answer to this question depends on the situation of a country in relation to the size configuration of countries in the world economy. In a world of two hundred countries each of which were about

the same size, the absence of an international money would be so costly that politically-independent countries would probably settle on one or a few common units of account and media of exchange. A few currency areas anchored to different commodities would probably evolve and the most stable commodity anchor would probably drive out the others. This is how ox, silver, gold and bimetallic standards evolved in the past.

Suppose, however, that there is Gulliver, a large country in a world of Lilliputs using the gold standard. The Gulliver currency area might be so important that its currency was just as good as and perhaps for some purposes better than gold. Interest-bearing balances with Gulliver would begin to replace gold in the other countries' transactions. It is easy to see how the Gulliver currency could eventually command much of the gold and for all practical purposes produce a world currency that could, if kept stable,<sup>7</sup> become independent of gold.<sup>8</sup> At any rate it would be easy for Gulliver to destabilize gold and make it useless as money for the Lilliputs. Gulliver's currency would become the world currency. It goes without saying that Gulliver would have to engage in monetary or inflation targeting, there being no exchange rates to fix.

A world that was composed of a single country or empire would almost by definition have fixed exchange rates or a single currency. If the world had a single currency, it is difficult to find any reason to fragment it into several currencies, for the same reason it is difficult to find any reason for the United States to split its huge dollar domain into regional or state currencies. When the thirteen colonies formed a common currency in 1792, they saw the obvious advantages and did not linger over the costs.

The real world of 2000 is not quite as extreme as the Gulliver model. It is divided into economies and currency areas of greatly different sizes. The United States (A) represents (in round numbers) somewhat less than 25 per cent of the world economy, Euroland (E), 20, and Japan (J), 15. Together this AJE "core" represents 60 per cent of world output. Outside this core are a few large and middle-sized countries and a great many small and tiny economies. But the character of the international monetary system—if there is one—would necessarily be dominated by the activities in the core.

Most of the small countries would be greatly benefitted by the existence of a stable world currency if one existed. In the absence of such a multilateral solution, countries can get the inflation rate of one of the three large currency areas either by using, or fixing its own currency to, that currency area. In both cases (in the absence of domestic credit operations) the balance of payments is kept in equilibrium automatically by change in the money supply in proportion to changes in reserves.

There are economies of scale associated with currency areas. The size of a monetary area determines its ability to absorb shocks. What made gold historically stable as money in the short run was its accumulation over the centuries and its widespread distribution such that even large shocks to production would be a small proportion of the outstanding stocks held. In a freely floating world of paper currencies, the currency area with the largest transactions domain is, for a given inflation rate, the most stable.<sup>9</sup> The best way for the small countries to protect their currencies from speculative attacks<sup>10</sup> is to fix their currencies to one of the AJE currencies, making sure that the money supply is

allowed to—and is perceived to be allowed to—move with the balance of payments without sterilization. *Fixed exchange rates always work and only work when intervention in the foreign exchange market determines monetary policy.*

### 3. Competing Currency Areas

Currency areas and monetary unions are like alliances. If there is no hegemon, they will work only if there are important shared goals and a sense of permanence. The shared goals have to include agreement on the common inflation rate and the way to achieve it, as well as willingness to let the interregional monetary mechanism of adjustment work.

The creation of the euro area will eventually, but inevitably, lead to competition with the dollar area, both from the standpoint of excellence in monetary policy, and in the enlistment of other currencies. Other things equal, the bigger the currency area, the stronger and more efficient it is. The most efficient currency area is the entire world economy just as the most efficient alliance is the entire world.

A large state cannot achieve stability by fixing its currency to the currency of a smaller state. Adjustment is in inverse proportion to the size of country.<sup>11</sup> By fixing to a smaller currency area, a large currency area would force its inflation rate on the smaller area. The United States cannot achieve stability by fixing to the Canadian dollar or the Mexican peso. Nor could the euro area achieve stability by fixing its currency to the pound sterling. Under present institutional arrangements the United States has no option but targeting inflation rates. The same holds for the euro and yen areas. But it should be borne in mind that sweeping changes in the dollar-euro and yen-dollar rates could have devastating effects on the domestic goals of these areas.

Most smaller countries, however, have the option of fixing exchange rates as an alternative to inflation or monetary targeting. But a country should only want to fix its currency to another if that currency were both large and stable. Canada has the option of fixing its currency to the US dollar, and has done so frequently in the past. After a dozen years of floating, Canada went back to fixed exchange rates in the 1960s, getting the US inflation rate. In the 1970s it went back to floating, with dismal results and a depreciated dollar. Mexico fixed its currency to the dollar for more than two decades, getting the U.S. inflation rate, but when it went off on its own—despite the vast reserves of oil it could exploit—it lost its monetary stability and the Mexican price level rose more than twenty-fold in one decade! A comparable story could be told with dozens of other countries in Latin America and elsewhere. The discipline argument for fixing exchange rates—provided there is a large and stable currency to fix to—is a powerful one.

Experience has shown that many medium-sized or small countries can fix exchange rates successfully. Austria, Holland and Belgium-Luxembourg, for example, achieved inflation rates comparable with the best in the world by fixing their currencies to the mark. It is extremely unlikely that these countries would have had such success in containing inflation on their own. What holds for those countries will soon hold for all the countries in Euroland. As long as the monetary policy of the euro zone itself is stable, its members will have achieved price stability by fixing intra-union

rates and, when the time comes, scrapping their currencies for the euro.

The formation of the euro area will itself present an attractive new option for countries in Central and Eastern Europe and elsewhere. The size and long run promise of stability will make it an attractive anchor for neighboring countries, none of whom are likely to achieve comparable stability on their own. The members of the EU now outside Euroland may see that joining the euro area offers more benefits than costs. Most of the countries of Central and Eastern Europe that are candidates or potential candidates for joining the European Union will see it in their interest to fix their exchange rates--perhaps through some variant of a currency board--as a prelude to euroization. A currency board mechanism provides a country with the same monetary policy it would have in a monetary union. If a country can't do a currency board, it can't do a monetary union!

It should not be thought that a change as momentous as the introduction of the euro will leave the dollar area unchanged.<sup>12</sup> The only constant in economic life is the law of change, governed by competition, self-interest, duty and altruism. The euro area, measured by transactions domain, will soon exceed the existing dollar, but the expansion of the euro area will itself provoke a countervailing expansion of the dollar area.<sup>13</sup> Within the coming decade we will see both the European Central Bank and the Federal Reserve Bank (or the US Treasury) setting up departments of external affairs to deal with the wider dollar area.

#### 4. Volatile Exchange Rates

Expansion of the dollar area is likely in Latin America and parts of Asia and Africa. After decades of monetary instability, a growing number of countries in Latin America are perceiving the benefits of stable prices and exchange rates. Flexible exchange rates--the absence of a policy--have not of course been associated with stability in Latin America. On the other hand, the attempt to square the circle by combining pegged exchange rates with an independent monetary policy has created intolerable confusion. At the Economic Forum in Davos in January 2000 I heard a central banker insist that the lesson from the Mexican crisis was that countries have to have flexible exchange rates!

Pegged or pseudo-fixed exchange rates with an independent monetary policy is no doubt the worst of all exchange rate systems. Because there is no mechanism of adjustment it is doomed to destruct from the start. There is no point to a pegged exchange rate managed with no recognition of the iron law that an independent monetary policy is incompatible with fixed exchange rates.

By contrast, fixed exchange rates have built in mechanisms of adjustment that work automatically. A fixed exchange rates system provides the same mechanism of adjustment--as economists have known since the days of David Hume and even earlier writers--as that which applies between regions employing the same currency. A currency board arrangement is one extreme example of a properly-working fixed exchange rate mechanism.

Fortunately, the euro has produced a "demonstration effect" elsewhere and its lesson has not been lost in Latin America. The question: why, if it is good for eleven European economies to have fixed exchange rates and indeed a single currency, do international monetary officials keep insisting that

the “peripheral countries” stick to flexible rates? Or why, if it is good for fifty American states, several of which have economies far larger than those elsewhere, to have fixed rates and a common currency, why should the rest of the world be deprived of the advantages of a common international currency?

Among the larger developing countries, Argentina has taken the lead with its Convertibility Law, a modification of the currency board idea. Chile has achieved some success with inflation targeting but has found it necessary to resort to capital controls. The experiences of these two countries will be closely watched. It is likely that the two biggest economies in Latin America, Brazil and Mexico will see a solution along the same lines as either Argentina or Chile, although either a “Latin dollar” linked to the US dollar or narrower regional groupings such as Mercosur countries remain a distinct possibility.

What about Asia? It is tempting to think that Asia might go the way of Europe, with its own currency area or common currency. A single currency for Asia seems remote if it were to contain such large powers with such diverse interests and prospects as Japan and China. A problem with the use of the yen as a reference or pivot currency has been the volatility of the yen-dollar exchange rate. The dollar has gone down from 250 yen in 1985 to 79 yen in 1995, up to 148 yen in 1998, and down to 105 yen in early 2000, swings that would make a currency area built around the yen intolerable.

No doubt the appreciation of the dollar against the yen between 1995 and 1998 had its hand in the so-called Asian crisis in knocking stabilized currencies off their dollar pegs. Because of the volatility of the yen-dollar rate, it seems much more likely that the dollar rather than the yen will be the main default international currency in Asia. A stabilization of the yen-dollar rate would be a great benefit for the rest of Asia, just as a stabilization of the dollar-euro rate would be a great benefit to Europe and Africa.

Whatever currency areas are formed, the dollar-euro yen rates will become a matter of great concern to Europe, the United States and the rest of the world. Diversification from the dollar into the euro would create the threat of a soaring euro and play havoc with the sensitive issues of competitiveness and unemployment in Europe. The alternative of a falling euro on the other hand would raise the specter of an outbreak of inflation that would necessitate corrective policies that would be more deflationary policies than if the rate had been kept stable. It would be a grave mistake to believe that the closed nature of the three big blocs, would make exchange rates less important or that the dollar-euro rate can be treated with “benign neglect.”

Before the creation of the euro, the mark-dollar rate was the most important exchange rate in Europe. Between 1971 and 1980 the mark doubled against the dollar, to \$1 = DM1.7; between 1980 and 1985, it halved, to \$1 = DM 3.4; between 1985 and the crisis of 1992, it more than doubled, to \$1 = 1.39; and it has since fallen to \$1 = DM 1.9. Comparable movements of the dollar-euro rate would crack Euroland apart. Especially in the early stages of Europe’s monetary union, it will be desirable to minimize changes in the dollar-euro rate.<sup>14</sup>

## 5. Fixed Exchange Rates in the Core

It is easy to see the advantages of fixed exchange rates or a single currency for the world economy. If the dollar-euro and yen-dollar rates were fixed and a common price index for the combined area was kept stable, the rest of the world would have the attractive option of joining a currency area comprising more than 60 per cent of world output. The world economy would be back to the Bretton Woods arrangements (but without gold). There are, however, two problems in getting to that solution: a convergence problem and a management problem. The convergence problem is getting price levels, interest rates and exchange rates in line with one another throughout the currency area. The management problem is setting up the institutional structure for managing the monetary policy of the currency area.

To fix ideas, let us start with the end game. Skipping the convergence problem, suppose that these “AJE” economies have a single-currency monetary union. The three central banks merge and control the high-powered money supply of the three economies according to the need for price stability in the union as a whole defined in terms of a common index of prices.<sup>15</sup> There will now be small changes in the local inflation rates due to differences between the local and AJE indexes. Except for trade impediments prices will be the same everywhere in AJE as will interest rates on default-free fixed-income securities. Different growth experiences will be accommodated by differentials in money-supply growth: fast-growing regions will attract more money than slow-growing regions.

This setup is a situation where the conditions are ripe for smaller countries<sup>16</sup> outside AJE to fix their currencies to the AJE currency. World monetary union would follow if all countries outside AJE took this path and AJE itself was successful in keeping its price level stable.<sup>17</sup>

In this monetary union, there is of course no role for exchange rate changes inside AJE; in a single-currency monetary union all exchange rates are unity. But no exchange rate changes are necessary. The typical sources of instability are absent. Governments are forced to keep debt levels sustainable and therefore budgets in balance in the long run. There would be no destabilizing capital movements; in a common currency area capital moves to where its yield is highest, which, provided tax systems were efficient, would be where capital is most productive. Of course “asymmetric shocks” can occur as changes in demand and supply affect one area differently from the others, but exchange rate changes are almost never the right way to deal with them. Terms of trade shocks, for example, cannot be overturned by exchange rate changes.<sup>18</sup> While real income is lowered by an adverse terms of trade shock, devaluation only compounds the misery by adding inflation to it. Once convergence has taken place in a monetary union, it is hard to find any *economic* reason for breaking it up.<sup>19</sup>

What holds for AJE also holds for Non-AJE but with a difference. The existence of different currencies introduces the possibility of exchange rate changes, the emergence of speculation and different interest rates. A country could achieve complete safety by adopting the currency of AJE. The next most secure regime is a currency board with completely automatic adjustment and 100 per cent backing behind central bank money.<sup>20</sup> For larger countries reserves may be somewhat less than 100 per cent provided that the commitment to both the exchange rate and the automatic adjustment mechanism is not left in doubt.<sup>21</sup> The commitment to monetary stability is much easier if there is an



international monetary authority that is supportive of fixed exchange rate systems and proportionately more difficult if it instead is critical of fixed exchange rate regimes with automatic adjustment.

But now let us move closer to the real world with a three-currency AJE. To facilitate the exposition assume an asymmetrical setup. One of the currencies—say the dollar—is designated the pivot currency. Exchange rates are fixed such that the Bank of Japan buys and sells yen at  $\$1 = \text{¥}100$ ; the ECB buys and sells euros at  $\$1 = \text{€}1$ . They engage in no other financial operations so in effect they operate as currency boards. The Federal Reserve Board, managed by a triumvirate of the three central bankers, now targets an agreed inflation index that is common to the three countries at some level, say 0-2 per cent, buying Japanese, Euroland and U.S. government assets more or less in proportion to the relative sizes of the three areas. Seigniorage would similarly be distributed among the central banks in proportion to size. As long as the monetary union exists, the three currencies are simply different denominations of the same currency (just as under the gold standard currencies were names for different weights of gold). The new name for the cent or centime would be the yen!

Not much would have been changed over the preceding example except for the complication of three currencies in which prices can be expressed, at some cost to transparency and convenience. The AJE central bank will still control inflation by judicious use of its management of AJE's high-powered money supply. Under what circumstances might a monetary union of this type break up?

One reason is disagreement over the common inflation rate. The Bretton Woods arrangements broke down because, as we have seen, the United States opted for a monetary policy that was too loose for the countries in Continental Europe; similarly the ERM mechanism almost broke up because the Bundesbank felt compelled to follow a monetary policy that was too tight for the other ERM countries. These examples, however, arise in from dominated systems, and are much less likely to occur when all members are involved in setting the inflation targets.

Another source of distress could be fiscal problems. One of the areas might want to go its own way so that it can bail itself out of fiscal troubles by using the inflation or seigniorage tax. This situation is typically a wartime expedient. Thus the United States broke up its monetary union with England in 1776 and used its freedom to inflate to finance its revolution; similarly, the South set up its own currency area to finance its side of the US Civil War. Europe left the gold standard in World War I to engage in inflationary finance. Monetary unions have frequently not been war-proof. Monetary unions work best when they are part of a security area, a grouping of countries not likely to make war on one another.

Under what circumstances would such a quasi-union find it desirable to change exchange rates? As long as the union is successful in maintaining price stability it is hard to conceive of any. All the arguments made above for staying in the monetary union still apply. Of course differential labor markets, and tax and regulatory systems might create differences in unemployment rates, just as there are such differences within single economies. Asymmetric shocks could affect countries differently. One or more of the areas may get itself in fiscal difficulties. Systematic growth rate differences might also create differences in national measures of inflation rates. Disturbances are

inevitable, but exchange rate changes are almost never the solution. They cannot alter the terms of trade, they do not promote fiscal balance, and they are not the right instrument for dealing with problems of unemployment or growth.<sup>22</sup>

I have now argued that once convergence is achieved, it would not be in any members economic interest to break up either a single-currency or the three-currency monetary union. Given the gains and its superiority over flexible rates, would it be worth seeking such a change or would the convergence problem be insuperable?

The most important dimension of convergence is a common inflation rate. If countries have a common inflation rate there need be no problem in convergence. If inflation rates are more or less the same why should convergence toward fixed exchange rates be difficult?

Recent inflation rates for the three zones in the period 1995-1999, taking Germany as proxy for the Euro area before 1999, were as follows:

	1995	1996	1997	1998	1999		
					I	II	III
United States	2.8	2.9	2.3	1.6	1.7	2.1	2.3
Japan	-0.1	0.1	1.7	0.6	-0.1	-0.3	0.0
“Euro Area”*	1.8	1.5	1.8	1.0	0.8	1.0	1.1

Source: IMF *International Financial Statistics*, January 2000, 57.

\*Germany cost-of-living index for 1995-98, the MUICP for 1999.

Convergence of inflation rates in Euroland and the United States is well within 2 per cent whereas and with Japan it is within three per cent. These differences are too small to indicate any need for significant exchange rate changes but, as already noted, the yen-dollar rate has undergone enormous fluctuations over the past five years. What economic function did the exchange rate changes fulfil?<sup>23</sup> Except for stuffing the socks of hedge funds, the answer is none.

## 6. First Steps to More Stable Rates

We are of course a long way from re-creating an international monetary system. If one can be created, however, it will have to deal with exchange rate relations among the Big Three. The foundations of the architecture have to be built on the core. One step in the right direction would be for the three central banks to reassess their habit of benign neglect of the exchange rate. It is only legitimate for a country to neglect exchange rate fluctuations if they arise from foreign inflationary (or deflationary) developments. Central banks should recognize that maintenance in the long run of the goal of price stability will be furthered rather than harmed by taking explicit account of the

exchange rate to mitigate wild gyrations.

A central bank can tighten or loosen its monetary policy by changing either its domestic assets (typically government bonds) or its foreign assets (typically foreign exchange but also gold and SDRs). These are different instruments of policy. For while a dollar increase in foreign assets has the same effect on liquidity as a dollar increase in domestic assets, the former affect the exchange rate while the latter affects the interest rate. It is currently the conventional wisdom that a large and independent central bank should restrict itself to altering its domestic assets, to the exclusion of changing its foreign assets. Why, under such a situation would the European System of Central Banks want to hold half a trillion dollars of foreign exchange and gold reserves?

The rule that only domestic assets should be changed is correct only for a closed economy. The only closed economy is the world economy where there are no foreign assets.

Depreciation of a currency (at a time when there is no deflation in the rest of the world) is likely to be an early warning sign of future inflation. Why not tighten by selling foreign assets instead of domestic assets, killing two birds with the same stone. Why rely solely on changes in interest rates? This, by the way, is very much in line with Keynes' recommendations in the 1920s. After the severe price fluctuations in the United States, Keynes thought that Britain should abandon its intention to go back to the sterling/dollar parity and concentrate instead on stabilizing sterling prices, but not to the neglect of the exchange rate.

“At any rate my scheme would require that they [the Treasury and the Bank of England] should adopt the stability of sterling prices as their *primary* objective--though this would not prevent their aiming at exchange stability also as a secondary objective by co-operating with the Federal Reserve in a common policy. So long as the Federal Reserve Board was successful in keeping dollar prices steady the objective of keeping sterling prices steady would be identical with the objective of keeping the dollar-sterling exchange steady. My recommendation does not involve more than a determination that, in the event of the Federal Reserve Board failing to keep dollar prices steady, sterling prices should not, if it could be helped, plunge with them merely for the sake of maintaining a fixed parity of exchange.”<sup>24</sup>

A central banker who restricts himself to domestic assets opts for a corner solution that implies that it is a matter of indifference what happens to the exchange rate, one of the most important prices for its economy.

It is a common myth that daily turnover in foreign exchange markets overwhelms central bank actions with respect to intervention, leading to the conclusion that the speculators always win and that therefore intervention is futile. The assumption is not factually true. It was widely heard in January 1988 but nevertheless Japan was able to put a stop to the soaring yen. Intervention always works when monetary policies are supportive of it.

The myth of the futility of intervention does, however, serve as a warning that a great deal of intervention has been useless, particularly the use of sporadic, as compared to systematic

intervention. Successful intervention requires adherence to three basic principles:

(1). The monetary effect of intervention should not be sterilized. For example, if the ECB were to intervene to support the euro by selling dollars, it would simultaneously tighten liquidity and, furthermore, the market would know that liquidity was being tightened. It would be self-defeating for the ECB to imitate the atrocious practices of the Bank of England and Federal Reserve System in automatically matching a sale of foreign exchange with a purchase of government assets.

(2). Intervention should take place in both the spot and forward exchange markets. Intervention is much less effective if the forward market is ignored. Support of the spot euro alone would put downward pressure on the forward euro, encourage outward interest arbitrage and raise interest rates in Europe by more than would be justified by the liquidity-tightening alone.

(3) Intervention should be concerted with monetary partners. An exchange rate has two sides to it and while big countries can ignore the intervention in their markets of small countries, they cannot so easily when countries or areas are of comparable size. Concerted intervention is more credible than unilateral intervention.

### Conclusion

Durable reform of the financial architecture should be a goal of future policy. The volatility problem could be addressed best by restoring fixed exchange rates among the Big Three. A fixed exchange rate system could probably work best around the dollar, but there would be political difficulties in establishing its international management. For the time being, it would help to ameliorate the situation if the Big Three could be brought to realize that exchange volatility is counterproductive in areas that have achieved local price stability and that exchange rate intervention can serve a useful purpose. If the primary goal is price stability, a secondary goal should nevertheless be exchange rate stability. Large gyrations of exchange rates can never be justified between countries that have achieved price stability.

A single-currency monetary union among the Big Three would probably not be politically feasible: national egos would get in the way in the case of the United States and Japan, and Europe would not be willing to scrap a new currency that it worked so long to prepare. But fixed exchange rates around a international currency could be made to work.

The world currency problem could be solved by creating a world central bank producing an international asset backed by reserves of dollars, yen, euros, and gold. Some such arrangement was proposed at Bretton Woods but fell afoul of political difficulties. A pattern recurrent in the history of money is that the dominant country rejects meaningful monetary reform, probably because it involves power-sharing and a weakening of its monopolistic currency position. But it is not a healthy sign that the only option for smaller countries is to fix their currencies to one of the Big Three, a situation reminiscent of the monetary colonialism of the 19<sup>th</sup> century. A multilateral solution based on a world central bank and a world currency would involve some power-sharing as well as a fairer distribution of international seigniorage. The advantages of such a system would be so great that all

countries could gain from it.

Not much can be done if the leaders of the major currency blocs insist upon policies that lead to volatile exchange rates. But if agreement could be achieved on the desirability of fixed exchange rates among currency blocs each of which have subdued inflation, it would not be a difficult step to go the extra mile and build around the G-3 currencies a world central bank and an international currency that would be the property of all nations.

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### ENDNOTES

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1. Mill (1848, 1909: 615).

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2. Mundell (1961a).

3. I have discussed this issue at length very recently in Mundell (1997b).

4. It goes almost without saying that by a fixed exchange rate, I mean a policy in which the central bank buys and sells a foreign currency (or gold) at a fixed price and lets those operations determine monetary policy. There might be room for narrow margins and for some discretionary credit operations but not sufficient to interrupt the adjustment mechanism. I reserve the term “pegged” exchange rates for those policies in which the central bank tries to square the circle by buying and selling foreign exchange and at the same time pursue an independent monetary policy.

5. A fixed exchange rate is also consistent with hyperinflation if the rest of the currency area goes along with it.

6. Fixed rates would also arise if two or more countries fixed the price of gold and gold was mobile. The gold standard worked fairly well when most countries stabilized the price of gold provided that gold was sufficiently stable in terms of commodities. Whether it would be a good anchor today would depend on whether a means could be found to increase gold’s stability in terms of commodities. I have discussed the long run issues associated with gold recently in Mundell (1997c).

7. In particular, it would have to moderate the extent to which it imposed the money or “inflation” tax. I have developed this theme in Mundell (1971b).

8. In our solar system, let us suppose that one of our planets, say Jupiter (the dollar area), increased in size so that its mass began to exceed that of the sun (gold) itself. It would not be hard to see Jupiter displacing the sun as the center of the “solar” system. The attractiveness of currency areas likewise increases with their size.

9. A shock like the increased spending from German unification would have destabilized the U.S. economy to the extent of only about 2/7 of the extent to which it destabilized the German economy, assuming the German economy is 2/7 of the U.S. economy. Similarly, a sale of US \$10 billion worth of Canadian currency would destabilize the Canadian monetary system by eleven times the extent to which the same sum would destabilize the U.S. economy, assuming the Canadian economy is 1/11 the size of the U.S. economy.

10. The theory that speculation under floating is stabilizing if speculators make profits is correct only if no single speculator is large enough to influence directly--or lead others to influence--the exchange rate.

11. On this proposition see Mundell (1965).

12. I have discussed the advent of the euro at considerable length in Mundell (2000).

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13. For the theory of countervailing power, see Galbraith (1951).

14. The economic basis for stabilizing the rate is not far to seek. If two monetary areas each have price stability, defined as, say 0-2 per cent inflation, what need is there for volatile exchange rates? Consider the following thought experiment. Suppose the United States and Euroland agree to adopt a common basket of goods as the index for their inflation targeting. Then assign one of the countries the task of stabilizing that (common) inflation rate, and the other country the task of keeping exchange rates fixed. Would that not be an optimal solution? If so, how can volatile exchange rates also be optimal? Against this one might quibble that national baskets in reality differ. This is true but is it not remarkable how closely inflation rates converged between long periods during bimetallism, the gold standard, and the Bretton Woods eras when exchange rates were fixed?

15. With the project of monetary union in mind, the European Union has been working to perfect a harmonized index of consumer prices (HICP) for both the EU itself and the monetary union (MU). The problem is complicated by different purposes of national indexes, different statistical practices, and different consumption baskets in the different countries. Since March 1997 Eurostat has published a European Union Index of Consumer Prices (EUICP), and since May 1998, when the first wave of countries joining EMU was announced, a European Monetary Union Index of Consumer Prices (EMUICP).

16. I am assuming here of course that the other countries want price stability and are willing to accept the inflation rate implied by the fixed exchange rate.

17. Price stability in the monetary union would be maintained by the common central bank according to a "global" basket of commodities common to the three areas. Stability of this "harmonized" basket would not necessarily conform to the stability of the national baskets. If one of the three areas is growing at a more rapid pace than the others, its national price index would tend to rise. Zero inflation according to the harmonized index of prices does not imply zero inflation for each of the national baskets.

18. A country's terms of trade reflects the prices of its exports relative to the prices of its imports. This is completely different from the exchange rate which is the relative price of a country's currency. An exchange rate change in a small open economy raises the prices of both import and export goods leaving the terms of trade unaltered. Some terms of trade effects can result from exchange rate changes in large countries with some monopolistic power but they are typically short-run effects. The argument that a country that is faced with soaring import prices should devalue and thus increase imports prices even more has never, as far as I know, been made by an economist.

19. A special type of asymmetrical shock arises from differential productivity growth. How adjustment takes place depends partly on the source and distribution of the increased growth. Faster-growing regions will attract more money at the expense of other regions to satisfy greater

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demands for money growth. If the extra productivity growth is evenly distributed between domestic and traded-goods sectors, no change in the real exchange rate or price level will take place. Changes in the real exchange rate will be required if the increased productivity growth is biased between the two sectors: depreciation is needed if the growth is concentrated in the domestic-goods industries; appreciation if it is in the traded-goods industries. In the former case the regional price level will tend to decline, in the latter to increase. It is true that nominal exchange rate changes—depreciation in the first case, appreciation in the second case--would be of some help in effecting these adjustments, but it is extremely doubtful that the fine tuning would produce a benefit large enough to cancel out the gains from the monetary union. In a situation where economic convergence is complete, there is no case for changes in exchange rates.

20. Size plays a role. Reserve needs tend to increase with the square root of the size of country rather than proportionately. Strict currencies boards are advisable for very small countries. Larger countries can save in loss of seigniorage by keeping part of their foreign reserves in interest-bearing liquid assets and indeed in keeping only a fractional backing for the currency. The stronger the commitment to parity and the automaticity of adjustment, the less reserves are needed. The level of reserves needed also depends on the availability (and conditionality) of drawing rights or loans from international institutions. As long as these arguments have influence, some countries will be unstable.

21. In the real world, of course, countries get into situations in which they often want to resort to devaluation/inflation as a solution to their difficulties. Terms of trade shocks can undermine budgets, build up debts and create an incentive to devalue and inflate them away. Rising prices of staple exports can undermine the competitiveness of other exports (Dutch disease). Factions come to power that use off-budget inflation/devaluation seigniorage for corrupt purposes or factional gain. Economists sometimes advise devaluation to mitigate unemployment. Extreme poverty opens the door to the devaluation/inflation arguments as a means of igniting a growth process.

22. It is possible of course to imagine horror stories. Imagine that wage rates in one of the areas are suddenly doubled. This would be an “asymmetric shock” of the first magnitude. The immediate impact of such a change would be mass unemployment. No doubt there would be advocates in the disturbed economy of an AJE monetary policy that would “ratify” the wage increases, fundamentally altering the commitment to monetary stability. No doubt the AJE monetary authorities would resist a change to a policy of inflation and suggest instead that the solution to the problem would be to reverse the wage explosion. Failing that the erring country could devalue and in effect leave (or be evicted from) the monetary union. Such a scenario appears to be extremely remote.

23. Although the wild swings in the mark-dollar rate over the past twenty-five years have been due mainly to shifts in portfolio preferences rather than reflecting inflation differentials, the former are, of course, not unaffected by the latter. Even small increases in inflation differentials lead to shifts of capital out of one currency into another that swamps, in its effect on exchange



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rates, inflation differentials.

24.Keynes (1923: 186).