



Munich Personal RePEc Archive

The need for international monetary stability: proposals for stabilizing exchange rates

Becker, Fernando and Fernandez, Pascual and Fontela, Emilio

Universidad Rey Juan Carlos

1995

Online at <https://mpra.ub.uni-muenchen.de/44624/>

MPRA Paper No. 44624, posted 27 Feb 2013 13:02 UTC

0016-3287(95)00001–1

THE NEED FOR INTERNATIONAL MONETARY STABILITY

Proposals for stabilizing exchange rates

F Becker, P Fernández and E Fontela

With the end of the Cold War, the international economy is moving rapidly towards a framework of market economics. Parallels have been drawn with the end of World War II and there are growing calls for stabilization of exchange rates to promote economic integration. Stability is needed to allow for better long-term investment decisions by industries. However, flexibility is also needed to avoid permanent disequilibria. Moreover, in a framework of freedom of capital movements, speculative behaviour must be discouraged. This article considers the lessons learned since Bretton Woods and new proposals for managing international exchange rates.

Monetary independence is one of the most precious economic components of national sovereignty. It is generally accepted that in our normal framework of an international economy (an economy in which nations operate as separate economic entities), nations have total freedom to establish and manage their own currency, and to exchange it with others in a normal market process; appropriate national institutions (usually central banks) also have ways and means to act on supply and demand in the foreign exchange markets of their currencies, thus controlling if necessary the process of price formation (the rate of exchange).

The strong relationship, 'a nation, a currency' is sustained by historical experience: eg in Europe, in the 19th century monetary unification in Italy established the path to political national unification; similarly in more recent times,

F Becker and P Fernández may be contacted at the Junta de Castilla y León, Universidad Autónoma de Madrid. E Fontela is Professor of Economics at the University of Geneva, 7 Place de Longmalle, 1204 Geneva, Switzerland (Tel: + 41 22 310 04 66; fax: + 41 22 310 20 04).

the breakdown of the USSR is also promoting new currencies for new nation-states; and in Western Europe, the formulation of a European Economic Union with supranational economic powers is associated with a monetary union with the final aim of a single European currency.

Economics is concerned with the wealth of nations: optimal rules for economic management are oriented towards maximization of national welfare in response to national interest.

Integration of the world economy, if chosen as a higher value, often implies a restriction of national economic freedoms. The main area of potential conflict between national interest and supranational integration probably lies in monetary rules of behaviour, and in particular in exchange-rate behaviour. Free floating is likely to favour independent national monetary policies and can be associated (perhaps with a short-term view) to national interest; fixed exchange rates, if workable, would operate as if a single currency were actually circulating, thus favouring economic international integration in the long run. Free floating is therefore associated with the idea of a world of competing nations, and fixed rates with a world of cooperating nations moving towards global integration.¹

These simple dichotomous ideas were in Keynes's mind, and in those of the promoters of the Bretton Woods agreements 50 years ago. After a long period of violent economic nationalism that ended in World War II, economic integration at the world level appeared as the road to permanent peace, and justified the introduction of constraints on national economic policies through the simple adoption of fixed exchange rates (thus obliging countries to act directly on the exchange markets by changing their reserve positions, and to adopt economic policies arrived at avoiding trade and current account disequilibria).

The ambitious aims of Bretton Woods were successful up to a point; the process of economic integration at world level was stimulated both by institutional development and by the growth of international economic relations; but keeping a permanent system of fixed rates proved to be an impossible task for which the world economy was not yet structurally prepared. During the first 25 years of operation, the fixed-rate system worked *de facto* as an adjustable rate system, with many countries with high inflation rates finally obliged to devalue in difficult circumstances.

In the early 1970s the Bretton Woods commitments to fixed rates were finally abandoned in favour of free floating, or rather, different forms of managed floating (allowing for markets interventions by the national monetary authorities, either to smooth out excessive swings and avoid disorderly markets, or to enforce some target rates related to trade competitiveness).

Floating permitted the different nations to recover the (small) share of monetary freedom that they had lost in Bretton Woods, providing them with increased freedom for domestic monetary and fiscal policies. Sensing that they could adjust exchange rates to any internal price policies, many countries started to concentrate on domestic economic goals. This change towards inward looking policies was felt particularly strongly in the EC, and the potential danger to the ongoing process of European integration was rapidly identified. Initial efforts to peg some European currencies to the DM in a 'snake' formulation (1973–79) and the more formal introduction of the exchange rate mechanism of the European Monetary System (EMS) thereafter have to be associated to the political need for a strengthening of the integration process.

During the period of functioning of the European snake, 18 alignments took place, showing that the system was adjustable, under market pressure; nevertheless,

the snake proved to be a valid instrument for increasing policy coordination, and prepared the way for more ambitious goals of exchange rate stability inside Europe, with the EMS first, and later with the Maastricht convergence policies, in order to obtain fully fixed rates as a step towards monetary union.

The crisis of the EMS in August 1993 proved that things were not as easy as initially foreseen and that some fundamental reconsideration of the process towards monetary union was required. But, in recent months pressures on the EMS have slowly decreased and managed floating is taking place within narrow bands. Some observers believe that the intra-European exchange rates are again reaching normal levels, levels that could be maintained up to the moment of complete fixing, when a decision to move to a single European currency will be required.

International monetary attention has now shifted to the dollar and the yen. During summer 1994 many observers believed that the dollar was reaching unduly low levels in the exchange markets and that US interest rates should be raised in order to attract again short-term investors and push the dollar exchange rate upwards.

From this simplified, but long and complex history of exchange rate management in the OECD countries during the 50 years that have elapsed since Bretton Woods, emerge some considerations of potential interest for future stabilization systems:

- The negative impacts of exchange rate volatility on investments and trade decisions are fully recognized and provide the main argument in favour of managed floating v free floating.
- Freedom of movement of both short- and long-term capital, as well as technological and managerial developments associated with it, have introduced financial globalization, a phenomenon unforeseen and even undesired by Keynes and the drafters of the Bretton Woods agreement (fixed rates were essentially aiming at creating a discipline of equilibrium in the trade of goods and services).
- The attention of analysts has shifted to the current account balance and to its internal counterpart, the relationship between domestic savings and investments, thus giving a key role to interest rates as an instrumental variable in the management of the exchange rate, and giving more weight to the role of public deficit spending and monetary policy.
- As a main consequence of the trends mentioned above, interest in defending the more traditional notion of an equilibrium exchange rate based on a purchasing power parity (PPP) has been considerably reduced, and countries may operate over long periods of time with permanent trade deficits and overvalued exchange rates (in PPP terms), or inversely, with trade surpluses and undervalued exchange rates, if their interest rates policies or if their savings—investment ratios allow for it. In this new context, for deficit countries the situation can become very negative in terms of output and employment, as shown below when discussing the Spanish case.

While a PPP level is, in theory, a close approximation to a correct exchange rate level, one in which prices in a country, expressed in its local currency, are identical, for similar types of products, to prices in the rest of the world (expressed again in local currency using the PPP rate), the concrete computation of these PPP rates raises great difficulties (statistical, because of the large amount of price information to be collected, and also conceptual, because of the need for a representative weighted basket of goods and services, or to the obvious differences existing countrywise in

the distinction between traded and not traded activities). The results of wide international computational efforts (OECD, EC) are infrequent and rather unreliable. Furthermore, the updating of these PPP rates to take into consideration changing conditions, calls for the use of price indices of the different countries involved, and this procedure again raises new difficulties (the behaviour of price movements is very different if measured by production or consumption indices, quality changes due to innovations or changes in product mixes severely distort the results, etc).

Thus, notions such as the correct exchange rate, 'undervaluation' or 'overvaluation', are not subject to a fully objective statistical treatment, and still call for some degree of 'expert judgment'. What is clear however is that any correct rate is dependent on factors (like prices of goods and services) that evolve smoothly in time, and that therefore a 'volatile' market rate cannot really reflect the evolution of a correct rate.

New and old proposals for managing international exchange rates

After the end of the Cold War, the international economy is rapidly moving to a framework of market economics. These are new circumstances that, as in 1944, justify concerted international action to promote economic integration. As integration is better stimulated by some reduction of national monetary discretionary powers, there is a growing interest in the stabilization of exchange rates.²

It may be said that, in general, the international monetary system, reflected in exchange rates, requires increasing degrees of:

- stability, to allow for better long-term investment decisions by industries;
- flexibility, to avoid permanent disequilibria and excessive departures from PPP rates;
- and discouragement of speculative behaviour in a framework of completely free capital movements.

A simple return to the fixed (but adjustable) Bretton Woods exchange rate system, is in any case unthinkable in the new context of massive capital flows (clearly speculative or simply looking for optimal portfolio management).

Target zones

An independent Bretton Woods Commission, headed by Paul Volcker, is proposing a system of 'target bands' for exchange rates of the advanced industrial nations, a proposal made several years ago and which has been implemented unofficially at times by the G-7. Target bands could be established by the G-7 and announced openly in advance.

Considerations to be made when determining the target zones could easily accommodate the following objectives:

- to keep as constant as possible the real rates, avoiding excessive departures from PPP rates, or 'correct' rates;
- to introduce changes in the real rates whenever justified by structural trade imbalances (realignments).

The G-7 countries have a sufficient number of economic indicators both about short- and long-term evolution of their economies, and of the rest of the world economy, to be able to choose optimal target zones for maximization of output or world trade,

and in order to promote growth and integration. Nevertheless the task of quantitatively establishing, with sufficient precision, the linkage between these broad objectives and exchange rate target zones remains the weakest point of this proposal, and has reduced its applicability in the past.

In principle, target zoning could provide the world system with the necessary levels of stability and flexibility and could discourage speculative behaviour (if the target zones are conveniently announced to financial operators) and reduce volatility, but the obvious difficulties encountered in trying to establish these zones in the framework of high-level discussions (eg in the G-7) suggest that other more mechanical processes should be envisaged.

PPP crawling pegs

Several proposals were made in the past for crawling peg systems (implying some form of programmed slow movements of rates, especially in the late 1960s, as a possible alternative to the system of fixed exchange rates).³ In the present context, crawling pegs can be interpreted as a managed floating system in which the interventions of the monetary institutions in the foreign exchange markets take place according to rules that allow for sliding of the central rates, either to take care of required adaptations in the real or nominal rates, or simply to react smoothly to market pressures. If the intervention policy is determined by a discretionary decision of the national authorities, the crawling peg may be a simple technical variant of the target zone proposal (ie a smooth path towards targeted objectives).

The PPP crawling peg refers to a particular smoothing system in which the exchange rates of the countries involved in the system are adjusted essentially in order to neutralize the inflation differentials possibly existing between each one of them and their trading partners; in principle, a simple PPP crawling system aims at keeping fixed real rates (but, should realignments of the real rates be required, it should be possible to incorporate them in a discretionary form in the adjustment formula that, in any case, should include a specific reference to a domestic relative price index).

Several authors have shown in the past that the use of a formula to guide exchange rate changes is liable to upset expectations and thereby destabilize the monetary system. Thus destabilizing results appear in cases in which countries are following totally independent monetary policies; they can be avoided and probably even transformed positively, if the countries involved in the system adequately coordinate their policies.

While PPP crawling pegs could probably still be discarded for current applications at the level of the global international community of nations, it deserves further consideration at the level of the European Union (EU).

The EU is in the process of developing a single internal market; within its boundaries, commodities, services and factors of production are expected to move under exactly the same conditions by which they move today within the boundaries of a single country. For all practical economic purposes, the nations joining the EU will become, in due course, regions of a larger 'supranational' unit (somewhat similar to the states inside the USA); the extent of supranational powers needed to manage this wider single market is debatable, and debated, within the EU, but there is consensus about the notion of a completely free market with demands and supplies operating totally in disregard of national frontiers.

Should the EU reach this ideal stage over the next few years, it is quite evident

that, by simple arbitrage operations, price differentials between nations will only exist up to the extent of transportation costs, and that the frequent practice by many operators of spatial price discrimination will even reduce differentials below this level.

Whatever the degree of perfect functioning of the EU internal market, it is quite obvious that, at the point of final integration, exchange rates between member countries should be fixed and their 'correct' levels should ultimately be, by definition, those of PPP rates. As it is difficult to disagree with this final condition for the functioning of the single internal market, it also becomes obvious that the functioning of the EMS, while accepting large divergences of exchange rates of some member-countries from PPP rates, has been somewhat inconsistent with the final aim of European integration.

Some part of the explanation of the speculative pressures that induced the collapse of the EMS discipline in summer 1993 was to be found in the conviction of many financial operators that a continuation of the divergence between nominal exchange rates and PPP real rates was simply impossible (the peseta, the lira and sterling were 'overvalued') and that interest rate differentials could no longer accommodate the risks of exchange rate realignment.

Considering the existing levels of policy coordination in Europe, and the political commitments in the framework of the Maastricht Treaty to ever increased coordination, any speculative pressure against the intra-European exchange rates could only find support in a clear divergence of the nominal rates from PPP real rates (specially when we realize that PPP rates have to be the final fixed rates before introducing a common currency), and therefore the introduction of a mechanism of periodic adjustments or of a crawling peg now seem to be more necessary than ever before.

At the time of the adoption of the EMS, alternative proposals for crawling pegs were discussed and rejected,⁴ but in the present context, and considering the negative feedbacks of the traumatic adjustments of August 1993, a reconsideration of this early decision is probably justified.

While the introduction of a PPP crawling peg within the EMS mechanisms requires in-depth theoretical and applied studies, it already seems that, further to reducing speculation in and increasing the stability of European exchange markets, the proposal should encourage a decrease in interest rate differentials, and a reduction of internal trade imbalances that should contribute to a greater convergence of the European economies.

It is evident that some countries (eg the Spanish case) have used the overvaluation of their currencies within the EMS as an anti-inflationary device (reducing import prices in the national currency), and the introduction of a PPP rule implies abandoning this instrument and concentrating the bulk of anti-inflationary policies on fiscal instruments and on improvement of market functioning (in particular of markets for primary inputs).

The PPP rule implies a decreasing role for monetary policy at the national level that is broadly coherent with the overall process of creation European economic and monetary union (EMU). Introducing a PPP rule as a second best to the present system of fixed (but adjusted under pressure) rates would probably be a misconception: insofar as PPP rates are the only possible long-term rates for a single European market, a PPP-driven crawling peg will simply add the required flexibility to move in the desired direction, and may well prove to be the optimal solution in order to obtain this final objective.

A moving average crawling system (MAX)

While, with normal difficulties, the EU is in a process of convergence of the rates of price changes and of interest rates, setting the ultimate conditions for the permanent stability of intra-European exchange rates, the rest of the world is further away from this global integration objective. The valuable efforts of the G-7 or of the IMF have not been sufficient to avoid situations of great instability in the exchange markets, and there are few reasons to assume a possible change in this evolution when considering the well known fact that the national impacts of exchange rate instability are very different and, in particular, seem to be much smaller in the USA than in the rest of the world.

Referring to the proposal of target zones above, if this principle (the only one likely to be acceptable by the major partners at the present moment) implies the acceptance of managed floating and intervention bands, then, some formula based on (partly) following market trends may reduce the cost of management of the float, and at the same time may introduce some further stability into the market.

The basic idea of this formula could be the use as daily central rates (with an intervention band around them) of a moving average of prior rates.⁵ In this way, during prolonged periods of upward and downward pressures on some exchange rates, their central basis gradually changes, thus reducing the cost of the stabilization scheme.

While the PPP crawling peg requires adequate and continuously updated information on prices in the different countries (and not only prices for traded goods and services), raising considerable problems for concrete applications, MAX relies fully on market data, and the monetary authorities only have to decide on the length of the moving average and the size of the intervention band.

Some of the characteristics and possibilities offered by a MAX are the following:

- If the length of the moving average and the size of the band are announced by national or international monetary authorities, economic agents should be able to forecast easily the limits of fluctuations.⁶ Choosing appropriated values (ie the authorities could take into consideration in making their policy on the length of the moving average the reserve situation, or the relationship between nominal and real exchange rate values) is likely to provide a stabilizing anchor and to guide the behaviour of forward rates. It can easily be seen (and transmitted to the market) that increasing the length of the moving average or reducing the size of the band will enhance the possibility of moving practically towards a fixed rate, while the reverse will show a predisposition to broader changes, eg those necessary to accommodate a growing divergence between the real and the nominal rate.
- The adoption of MAX is compatible with target zoning; clearly the target zones should appear as an 'objective' within the possible limits established by the time projections of MAX.⁷
- While it is possible to imagine a MAX including all world currencies (pegging each currency to a basket of main currencies like the ECU, dollar and yen), in the present conditions it is clear that the system will work better within an EMS with national currencies valued in terms of ECUs. Because there is already in the EMS a system of bands (with the possibility of having different bands in different countries), the required decision is to move the central rate from fixed to the proposed moving average. With reference to the EMS case, introduction of a MAX will require a change in the current daily foreign exchange practices of many

European central banks in order to eliminate current intraband interventions, as these interventions will mislead the market and will conceal the deep trends that the moving average is attempting to accommodate.⁷

From an economic point of view, MAX is a less attractive proposal than a PPP crawling peg, but is certainly easier to implement and perhaps more likely to receive political acceptance.

The Spanish experience in the 1990s

After a long and difficult restructuring period, lasting for over a decade following the death of General Franco, Spain entered a period of rapid economic growth in the second half of the 1980s; the annual rate of change of GDP in real terms has evolved as follows:

1985: 2.3%	1990: 3.6%
1986: 3.2%	1991: 2.4%
1987: 5.6%	1992: 0.8%
1988: 5.2%	1993: -1.0%
1989: 4.9%	1994: 1.2%

The end of the boom coincided with some fears of inflation (the rate of consumer price change reached 7.0% by 1989) and justified a restrictive monetary policy; interest rates remained, in the early 90's above 12%] (see *Figure 2*). The situation deteriorated rapidly; the rate of GDP growth decreased, to become negative in 1993; the budget deficit (that was coming under control in 1987–89) started to increase again, reaching 8% of GDP in 1993; the unemployment rate went from 16.9% at the end of 1989, to 23.0% early in 1993.

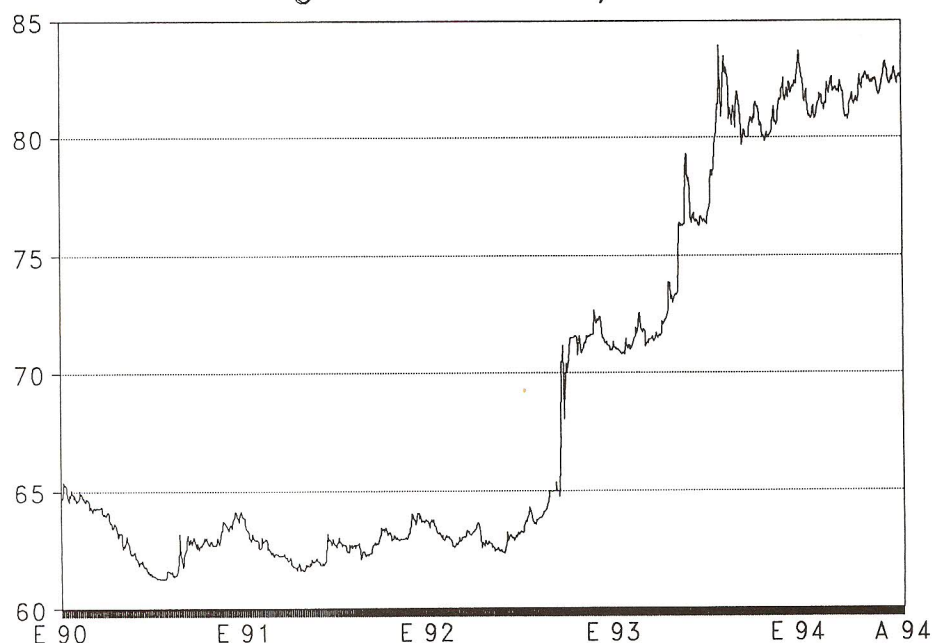
Restrictive monetary policies achieved a modest success in fighting inflation; the rate of change in consumer prices went down from 7% (early 1990) to 5.5% (mid-1993).

The Spanish economic recession passed unnoticed to the foreign exchange markets during nearly three years. In the EMS framework, the peseta even fluctuated on the strong side of the intervention band.

While no reliable estimates of the PPP of the peseta are available, it is clear that during this period the overvaluation in relation to a 'correct' rate increased. Recent computations show that between 1986 and 1992 the Spanish effective real exchange rate in relation to OECD countries lost up to 25% of its competitive power.⁹ The consequences of this overvaluation on trade and economic activity are easy to establish:¹⁰ while the extended trade balance (for goods and services, including tourism) was in equilibrium in 1985 (with a slight surplus of 0.6% of GDP), it progressively deteriorated, reaching -4.1% of GDP in 1990, -4.3% in 1991, and -4.3% in 1992 (considering the current accounts balance, for the three-year period 1990–92, Spain needed foreign savings representing 10% of annual GDP).

The peseta was first devalued in the last quarter of 1992, and again twice in 1993, moving from around 63 pta/DM in the early 1990s to around 82 pta/DM in 1994, thus completing a devaluation roughly sufficient to reestablish competitiveness to its pre-1986 level (*Figure 1*). While it is impossible at present to establish statistically whether current rates correspond to a 'correct' PPP level, it may be said that it is general 'expert opinion' that they are close to it (some analysts consider that the peseta is still somewhat overvalued and that in order to prepare for

Exchange Rates Pta / DMark



monetary union in Europe, it should further move downwards by as much as another 10%).

As a result of this correction of the exchange-rate level, Wharton-UAM most probable central projections forecast deficits of the extended trade balance (goods and services) of -1.0% and -0.8% of GDP for 1994 and 1995, and current account deficits of -0.6% and -0.3% of GDP for the same years.

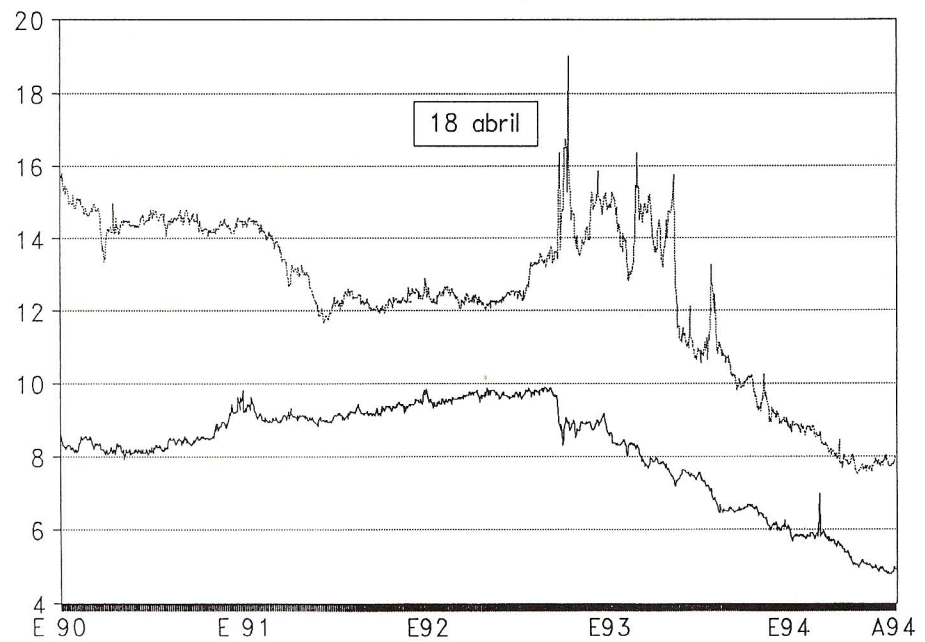
Due to the economic slowdown and contrary to many expectations, the devaluations have had little impact on inflation (moving now to around 5% per annum), and the better than expected performance of exports is one of the main elements of the 1994 recovery.

While it is clear that the exchange rate was not the main cause of the slowdown, nor that its correction is the main cause of the current recovery, the overvaluation of the peseta in 1990–91–92 undoubtedly carried heavy costs for the Spanish production sector and for employment, and these costs were higher than the benefits measured in terms of lower inflation or more foreign short-term finance. Most probably, a crawling peg would have permitted a more accommodatory monetary policy and lower interest rates, more output and more employment, with inflation moving only slightly above the observed level (in the worst case).

The overvaluation of the peseta transmitted continuously wrong signals to Spanish economic agents, discouraged productive investments and encouraged delocation investments (in Morocco, in South America), stimulated tourist expenditures abroad, put Spain in the list of expensive tourist countries, and forced many SMEs to close down their activities or to move to the underground sector, being incapable of competing with foreign imports that were enjoying a 30% price advantage bonanza.

Keeping fixed exchange rates in Europe is a strong factor towards coordination of macroeconomic policies and forces an acceleration of the integration process;

Interest Rates Pta & DMark



while these advantages have to be fully recognized, it is necessary to recognize also that these exchange rates can only be fixed at 'correct' levels, that is at levels close to PPP levels. If, for any reason, it becomes clear that the exchange rates have departed (or are departing) from this 'correct' level, attempting to keep them fixed 'at any cost', has more costs than benefits. The Spanish case clearly confirms this view.

Furthermore, it is clear that when a slowdown of the economy starts and a less developed country with structurally high unemployment (like Spain, but also like several other European countries) urgently needs a more expansive anti-cyclical policy, the exchange rate constraint (even with the cushion of accumulated overvaluation) may force the country to follow restrictive policies in order to keep the interest rate differential that it is required for fixing the exchange rate (*Figure 2*, portraying interest rates in Spain and Germany, shows the accommodatory behaviour of the Bank of Spain, as well as the 1992–93 interest rate peaks in attempts to defend the peseta against devaluations).

All these arguments point to the need to introduce at the EMS level either a PPP process, or, in a simpler way, a MAX system leading smoothly to the equilibrium PPP rates needed for monetary unification.

Final remarks

Fifty years after Bretton Woods, several economists gave their views about the future to the *Financial Times*; some are quoted here:

The lesson, underlined by the breakdown of the hard ERM during the summer of 1993, is that adjustable-peg exchange rate regimes are inherently unstable without extensive exchange

controls.

Yet floating exchange rates have been far from an unalloyed success. Real exchange rate variability has been far greater than many had hoped. For this reason, the attractions of fixed exchange rates and target-zones regimes are substantial. But this is a point at which the objectives of states clash with international economic aspirations. Maybe a decade or two of sustained low inflation and fiscal discipline in important economies (neither of which is to be taken for granted) will allow the formation of a common monetary policy in the leading economies. At present, this is a fantasy. So too is the hope for an agreement on equilibrium real exchanges rates and a willingness to back them up with policy changes.

Floating exchange rates may not be ideal, but they have proved workable.¹¹

Bretton Woods rules cannot be resurrected, primarily because capital mobility has made it very difficult to manage exchange rates with narrow bands and occasional jumps in central rates. But that is no reason for failing to design rules that would be equally appropriate to our age.

Such rules should provide for a system of 'target zones' for exchange rates, with central rates set for consistency with satisfactory medium-run macroeconomic outcomes and regularly revised to prevent them becoming outdated. Concerted intervention, backed up, when necessary, by changes in interest rates, could prevent rates leaving the zones even under the current situation of high capital mobility, provided intervention did not occur until it was virtually certain that the market had overshot.¹²

The most controversial question is whether, now that inflation has converged at low levels, greater exchange rate stability can also be achieved.

It is easy to accept that floating rates have not behaved as well as people once hoped. It is more difficult to agree that this has been one of the main reasons for the slowdown in growth since the 1960s. Nor, particularly after the ERM's melt-down last summer, is it obvious that there exists a workable alternative.

The tighter any exchange rate bands, the more demanding the system in terms not just of knowledge about where limits should be set, but also of the willingness of the members to subordinate domestic goals to international obligations.¹³

The Spanish case, briefly described in this article, has also shown the problems created in a stability area when rates are kept at unreasonable levels over a long period of time.

While target zones and PPP considerations may be offering solutions for future managed floating between dollar–yen–ECU, and while it is clear that, at a point in time, the ECU is going to move to a single currency from a situation of fixed exchange rates between member-countries, a mechanical procedure, like the one offered by a moving average (MAX), may offer interesting opportunities for both systems (as a permanent stabilization scheme for dollar–yen–ECU, and as a transition scheme for the EMS). Obviously, exploring its practical application requires further study, in particular to compute optimal lengths for the moving averages and size of bands (eg as a function of reserves and capacity for market intervention), and to stimulate short-term capital flow behaviour under alternative interest rate trajectories (in principle, it should be possible to compute intervention parameters likely to eliminate purely speculative movements).

At present two schools of thought are rather clearly opposed in the international scene. The EU is institutionally bound to a system of fixed rates, but has been unable, so far, to establish the 'correct' levels; it is likely that further 'adjustments' will be necessary before monetary unification. The USA and Japan are more clearly committed to floating but do accept 'management' of their rates either directly, or indirectly (interest rates). To both areas, MAX could probably provide a (transition) mechanism towards an international more stable system, with the European using long periods for their moving average and the USA and Japan shorter ones.

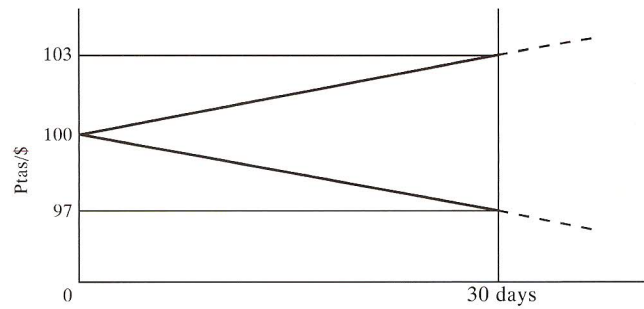
Notes and references

1. The urgent need to avoid destructive competition between nation-states is fully discussed in the report by The Group of Lisbon, *Limits of Competition* (Cambridge, MA, MIT Press, forthcoming 1995).
2. Clearly the situation was already broadly the same ten years ago: thus, James Meade wrote in 'A new Keynesian Bretton Woods', *Three Banks Review*, June 1984: 'It is now forty years on since Bretton Woods . . . Experience has made clear the disadvantage, on the other hand, of fixed exchange rates subject only to occasional cataclysmic adjustments when a fundamental disequilibrium has grown to an intolerable level and, on the other hand, of totally uncontrolled freely floating exchange rates. The present article seeks a regime between these two extremes'. (Meade was advocating 'a steady crawling peg offsetting the inflationary divergence of national policies' to which we will later refer as a PPP crawling peg).
3. In J Williamson (editor), *Exchange Rate Rules* (London, Macmillan, 1981), there is an exhaustive description of crawling peg proposals, summarized by J Williamson, as well as a number of papers and comments by S Black, H Genberg, R Dornbusch, R McKinnon, A Swovoda, N Thygesen, T Willet, M Mussa and others, discussing the advantages and inconveniences of crawling peg systems for industrialized countries (other authors were mainly concentrating on cases of high-inflation developing countries). Among conclusions, it may be worth quoting the following: M Mussa, page 396: 'Suppose that the inflation rate in the US were brought down to 2 or 3 per cent per year, a rate that is probably consistent with the policy preferences of West German and Japanese Governments. In this situation, a crawling peg system would stand a better chance of survival than it would under the present situation of disparate and uncertain inflation rates. However, in this situation, floating exchange rates would probably be more stable than they have been during the 1970s, and N Thygesen, page 399: 'I have three main reasons for reaching a favourable verdict on the feasibility and desirability of the crawling peg strategy, in preference to the alternative strategies of managed floating and adjustable peg. Adoption of a crawling peg has the advantage of:
 - pointing to a gradualist approach towards more and more transparent, management of exchange rates;
 - depoliticising exchange rate changes; and
 - creating minimal ground rules for international surveillance'.
4. In February 1977, the EC OPTICA Report developed, for the future EMS, a proposal for a crawling peg system with a PPP type formula based on weighted indices of wholesale prices, and an intervention band.
5. Williamson, *op cit*, reference 3, quotes Murphy as suggesting in 1965 the use of a form of crawling peg based on the mean of daily market rates, in terms of gold, of the previous year (a 365 day-length moving average). F Modigliani and H Askari, 'The reform of the international payment systems', *Princeton. Essay in International Finance*, 89, 1971, also proposed for all currencies, except the dollar, taking the mean of daily market rates in terms of the dollar over some period.
6. In 1972 E Fontela and D Beightold prepared another proposal for a moving-average international exchange system, starting with results of research conducted on a moving-average-based buffer stock for copper (the MBBS) by D Beightold for CIPEC (Battelle Memorial Institute, Geneva, 1971). The system was described using daily information on dollar exchange rates and a fixed bound around the average. It was then shown that prolonged market pressure on the bounds mechanically forces the central rate to rise (or decline) daily by the following increments:

$$\phi = \frac{2 * (\text{upper or lower bound})}{\text{length of moving average} + 1}$$

Thus supposing we were dealing at a point in time with a central rate of 100 pta/\$, with bounds or \pm 5 pta/\$, and the Spanish Central Bank was using a length of 99 days for the moving average: the maximum daily change would have been $\phi = (2 * 5) / (99 + 1) = 0.1$. Should the peseta be depreciating against the dollar, the following day the central rate will be somewhere between 100.0 and 100.1, and a month later it will be again somewhere between 100.0 and the maximum possible depreciation of 103.0 (in the case that market rates would have been forcing continuous official interventions for buying pesetas or selling dollars during the previous 100 days). When knowing the size of the bounds and the length of the moving-average, any operator can easily compute the maximum and the minimum for future central rates (Figure 3).

7. In the example developed in reference 5 above, a monthly target zone could, for instance, be an exchange rate between 100 and 103 pta/\$, that is an area within the forecast limits of 97–103 pta/\$.
8. Intraday interventions refer to cases in which the national authorities, in order to limit speculative movements, buy their own currency as soon as it begins to depreciate, without waiting for it to reach the agreed band limit (thus in the case of the peseta it remained for long periods in 1991 and 1992 in the upper part of the EMS band, thanks to appropriate Central Bank management, in order to convey to the market a message of solid determination to defend a fixed rate). This practice obviously



invalidates the existing data series of European rates as true indicators of market pressures, and it is therefore impossible to make a realistic simulation of MAX using these data.

9. Reports by the L R Klein Institute, of the Universidad Autónoma de Madrid, and by CEPREDE presenting twice yearly the results of simulations and projections made with the Spanish Wharton—UAM model, frequently comment on the evolution of the real effective exchange rate of the peseta. In the latest report (*Perspectivas*, June 1994), A Pulido concludes that 'the depreciation of the Peseta in 1993 has allowed for the recuperation of the cost-competitiveness lost in previous years and even to move to a situation of relative advantage'. Esther Gordo and Pilar L'Hotellerie (Bank of Spain), 'La competitividad de las manufacturas españolas frente a las de las CE y de la OCDE', *Papeles de Economía*, 56, 1993, have analysed the evolution 1980–86–92 of the trade competitiveness of Spain using different price indicators. While the exchange rates of 1980 or of 1986 cannot be assumed to be PPP rates, at least it can be said that with the 1986 rates the extended trade balance (for goods and services) was in equilibrium; furthermore, as the first devaluations of the peseta had already occurred in the last quarter of 1992, some overvaluation effects had already been corrected by the end of 1992. The results of the Gordo–L'Hotellerie computations show from 1986 to 1992 the following accumulated loss of competitiveness in terms of:

● industrial prices:	9.2%
● export prices:	8.9%
● unit labour cost (manufacturing):	38.1%
● consumer prices:	23.7%
unit labour costs:	25.3%

The loss of competitiveness is slightly less in relation to the EC (eg 18.4% in terms of consumer prices) but confirms the divergence of the pta/ECU fixed rate from a PPP rate during the period. The measures in terms of industrial prices and export prices are less representative, as the first is influenced directly by low import prices (a result of the overvaluation) and the second by the fact that most Spanish exports are price takers (export of surplus production).

10. Ana Buisán and Esther Gordo, 'Recuperación económica, competitividad y saldo exterior', *Papeles de Economía*, 56, 1993, show how the trade balance (for goods, but excluding energy), after reaching a surplus of +2% of GDP in 1984, deteriorates rapidly up to a deficit of –8% of GDP in 1992, a result of the weak competitive position of Spain within the EC market. Spanish imports are extremely price-elastic (Buisán and Gordo have estimated import functions for the 1966–92 period showing a long-term price elasticity of –1.44, using a variable for import prices over internal production prices), while Spanish exports show a more complex behaviour (price elasticities are also relatively high, as Buisán and Gordo have estimated it at –1.14 for the long term, but there are a number of exports of basic materials that are only exported as surpluses when the internal market cannot absorb them, leading to an acyclical behaviour, as shown by J J Dolado, M Sebastián and J Vallés in studies reported in the Buisán and Gordo paper). Should these elasticities remain valid in the future, the dynamic long-term impact of the devaluations will have a highly favourable influence on Spanish economic growth.