The First Two Years of the EMS: The Exchange-Rate Experience*

I. Introduction

The task I have been assigned is to provide an overview of exchange rate developments in the EMS during its first two years: when I started to write this paper I was confronted with a preliminary choice between: either focussing on the internal mechanics of the system — and specifically on the joint workings of the bilateral margins and the ECU indicator of divergence — or concentrating on the system's evolution in the light of developments vis-à-vis third currencies, and notably the US dollar.

The first option might have been formally more appropriate, but I decided against it, even though I realise the risks of trespassing into territory which will be covered in other papers. My reasons for this are two-fold: to start with, at least two recent excellent papers centered on the first topic already exist.[1] In the second place, I felt that an essay which would have inevitably turned mainly into a mathematical treatment of the present system — and of possibly more meaningful alternatives[2] — would not really set the stage for a frank discussion on actual developments witnessed in the EMS since its inception.

II. An Overview of (nominal) Exchange Rate Developments within the EMS

I shall thus begin my review of the EMS's workings by breaking down the two years into five periods, on the basis of the evolution of the system vis-à-vis the US dollar (see Chart 1). Although it is a commonplace to refer to the EMS and to the ECU, for our present purposes I think

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* The opinions expressed in this paper are those of the author and do not necessarily reflect the views of the *Banca d'Italia*.

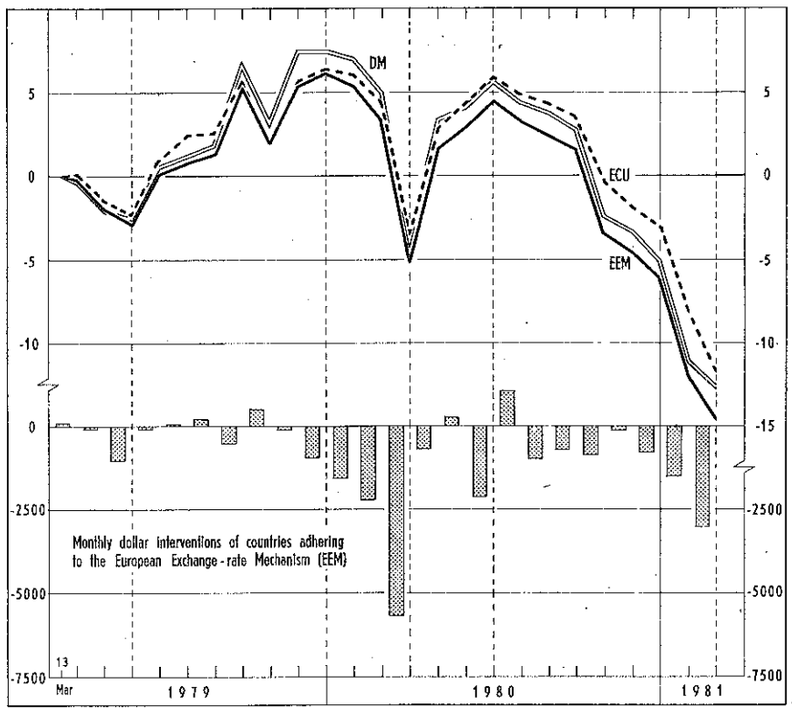
[1] See SPAVENTA (1980) and ROSSI (1980).

[2] An exercise in which I myself indulged when the system was being developed, and later in MASERA (1980). On these points see also BAER (1979).

it desirable to refer explicitly to currencies adhering to the European Exchange-rate Mechanism (EEM) in the EMS. As is known, the UK is a member of the EMS and the pound is present in the ECU, but the British currency does not respect any margin of fluctuation, and, because of this, cannot make use of the facilities provided by the very-short-term financing scheme.

CHART 1

EVOLUTION OF THE ECU, THE DM AND THE EEM VIS-A-VIS THE US DOLLAR
(end of period: % rates of change from 13-3-1979)



1) The first phase of the system covers the period from 13th March to end-May 1979. The period was characterized by a relative strength of the dollar vis-à-vis the EEM currency basket (hereinafter, for brevity, EEM), and in particular the DM, and by bilateral tension within the system, between the Danish Crown (strong) and the Belgian Franc (weak). The pound began its ascent against other EMS currencies.

Three important features of this period are worth specific mention. First of all, the bilateral margin between the Danish Crown and the Belgian Franc was reached one month before the indicator of divergence singled out the Belgian Franc as the diverging currency. This confirmed an anomaly of the "ECU alarm bell" which had been emphasized in the technical discussions which preceded the start of the system.

The second point concerns the recourse to intra-marginal interventions in third currencies. In particular, while the *Banca d'Italia* was buying dollars, to prevent what was regarded as an excessive appreciation of the lira, in the light of "fundamental" trends, the *Bundesbank* was intervening in the opposite sense, with a view to preventing a depreciation of the DM, which would have worsened the problem of domestic inflation posed by what was to become the second oil shock. When sizeable intra-marginal interventions take place, the workings of the ECU indicator of divergence can in principle be distorted. On the other hand, one may question the logic of abstaining completely from interventions before the ECU signal, and of proceeding to substantial diversified interventions and other adjustment measures immediately afterwards.[3] It is thus not by chance that intra-marginal interventions acquired paramount importance in the practice of the system.

The dollar sales by the *Bundesbank* continued also in May, when the DM first crossed the zero line of the divergence indicator, and subsequently (May 23rd) reached the maximum spread vis-à-vis the Belgian Franc, which had then to be supported. The importance of the dollar policy for the system was thus immediately experienced.

2) The second phase covers the period from June to end-1979. These seven months were characterized by a general decline of the dollar, notwithstanding a temporary recovery in October: after having risen by 3% against the EEM in the period March-May, the dollar fell in the seven months under review by some 9%. During this period

[3] On these points see below p. 284.

monetary policy measures were introduced by various central banks in the EEC to combat inflation or defend their own currencies. The escalation in interest rates which took place was led by the *Bundesbank*, which acted promptly to avoid any financing of the inflationary impact of the energy price rise. As a result, the nominal interest rate differentials in favour of the $ vis-à-vis the DM and the EEM as a whole narrowed in the first months of this period. The DM stood permanently at or very near to the 2.25% spread vis-à-vis the Belgian Franc and the Danish Crown, and interventions at the bilateral margins took on significant proportions. Interventions in EC currencies were largely covered by spot settlements, but recourse to very-short-term financing was also made.

The combination of intra-EC tensions and $ weakness led to the first realignment of the system, which took place in Brussels on 23rd September: the DM was revalued by 5% vis-à-vis the Danish Crown, and by 2% vis-à-vis all other currencies. Shortly after the realignment, agreements were reached in Hamburg by the German authorities and Secretary Miller and Chairman Volcker to halt the dollar trend. They were followed by the measures announced by the Fed on 6th October. The dollar gained temporarily against the EEM, but interest rates were again increased this side of the Atlantic — in particular, the *Bundesbank* raised its discount rate from 5% to 6% on 1st November. The nominal interest rate differentials in favour of dollar rates narrowed, and the dollar lost ground again.

The increasing weakness of the Danish Crown in November brought about another realignment of the central rates, with a devaluation of that currency by 4.76% against all other participating currencies. Short-term tensions within the EEM subsided and the French Franc progressively asserted itself as the "strong" currency within the system. The *Bundesbank* supported its currency also by purchases in the foreign exchange market against dollars.

3) The third phase covers the three months from the beginning of 1980 to end-March. During this period, exchange market developments were mainly influenced by the continuous and rapid rise in US interest rates, as a result of the implementation of the new monetary control techniques at the Fed. The differentials vis-à-vis the DM and the EEM rates shot up. Additionally the current account performance and outlook for the United States was showing a sharp improvement relative to countries participating in the EEM. The dollar rose against these currencies by some 10 per cent in the period, in spite of sizeable

interventions. Total net sales of dollars by the EEM amounted to nearly $ 10 billion, with the burden falling mainly on Germany, but also on Belgium and Denmark. During this period the American monetary authorities too intervened heavily to support the European currencies — and notably the DM. Both the DM and the Danish Crown began to slide towards the lower limit of the band, in opposition to the French Franc. The weakening in the position of the DM allowed the divergence indicator of the Belgian Franc to move well away from the lower threshold. During this period the pound sterling, which was not constrained to a common dollar policy, largely followed the upward movement of the American currency, and appreciated by some 9% against the EEM basket.

4) During the fourth phase of the system — which covers the second calendar quarter of 1980 — the main development was the sharp decline of the dollar against the system. The fall in the demand for credit in the US led to a steep decline in interest rates, with the differential turning sharply in favour of EEM countries. This trend of the dollar allowed the system to relax temporarily its former strains; the spread between the currencies observing the 2.25% margin narrowed considerably, and the indicator of divergence moved away from the upper and lower thresholds, except for the Italian lira, which showed a marked weakness, especially in June. However, in view of the 6% margin, the lira did not reach either its divergence threshold, or its bilateral intervention limits: the *Banca d'Italia* intervened heavily, buying lire against dollars. During the period the pound held steady vis-à-vis the EEM.

5) Finally, we come to the fifth phase, which embraces the 8 months from July 1980 to February 1981. The period is marked by the sustained and sizeable (over 20%) rise of the dollar vis-à-vis the EEM.

Interest rates rose in the US, while they were maintained steady in the EEM countries. As a result, the differentials in favour of the dollar climbed to their peaks, which were reached in January 1981. Towards the end of February, the German authorities solved the dilemma by giving more weight to external considerations, which led to a halt in the dollar rise. The increase in DM interest rates also resulted in a marked improvement of the DM within the EMS, and thereby forced the Belgian Franc into a divergence position. Throughout the period net dollar interventions by the EEM — and notably by Germany — were

fairly small. There were however sizeable purchases of DM by the Fed and the US Treasury: in the three months November 1980-January 1981 DM purchases amounted to 4.4 billion dollars.

For most of the period the EEM was characterized by the absence of notable tensions, although the weakness of the DM and the Belgian Franc in October and November led to bilateral limits being reached against the French Franc and the Dutch Guilder: relatively heavy interventions were recorded in EEM currencies, leading to the activation of the very short-term facility. The pound followed to a large extent the upward movement of the dollar, and gained another 14% against the EEM; the appreciation of the pound vis-à-vis its partners since the inception of the EMS thus rose to over 25 per cent.

III. Some Considerations on the Question of Coordination of EEM Exchange Rate Policies with Regard to the Dollar

Taking into account the stylised facts I have just described, I shall now address the question of the coordination of dollar policies.

Let me clarify, at the outset, that the purpose of this section is not a general, abstract discussion of the dollar intervention policies of the EEC countries. The scope is much more narrowly defined in terms of an analysis of past experience, of the present position, and of the existing institutional framework. Ambitious plans based, for instance, on the utilisation of the EMF (FECOM) as an institution which could play an active and significant rôle in the determination of a common external intervention policy will thus not be addressed here.[4]

The history of the attempts to define and put into practice a concerted policy with regard to third currencies, and especially the US dollar, dates back to March 1973. The "snake's" wriggles were no longer constrained by the "tunnel" and it soon emerged that the fluctuations of the dollar were much wider than underlying fundamental forces warranted. Moreover, the intervention policies of the various EC countries adhering to the snake often resulted in simultaneous operations in opposite directions being recorded. On occasion net sales

[4] Let me note in this respect that I fail to see how any development along these lines can take place without: (i) giving the Fecom an institutional, as opposed to a purely accounting content and (ii) giving the ECU a more definitive status.

or purchases of US dollars strengthened existing dollar trends. Dissatisfaction with this state of affairs led to the "1975 arrangements", whereby emphasis was put on: (i) smoothing daily fluctuations of the dollar, without however resisting fundamental trends, (ii) ensuring greater cohesion of the snake, through greater use of EC currencies in intervention operations.

The principles of the 1975 agreements were never fully implemented, and, until the establishment of the EMS, actual EEC interventions were much more a reflection of domestic monetary and exchange rate policies.

With the EMS in operation, and with the possibility of counting, since November 1978, on the active participation of the US authorities in the interventions,[5] the EEC central banks might have developed a more clearly defined approach to external intervention. However, despite renewed efforts by the Governors, no strict guidelines were developed. Rather, the cohesion of the EMS was ensured by flexible and pragmatic implementation of the existing arrangements in the light of actual developments. In particular, while great emphasis had been put on the possible use of the dollar/ECU rate and of the ECU divergence indicator as a means of ensuring greater cohesion in intervention operations vis-à-vis third currencies, this could not be achieved in actual practice, partly because of the movements of the pound sterling, which is not constrained by EC intervention margins. In the main, however, this failure was due to the lack of a unanimous approach to the desired stance of exchange rate and monetary policy among EEC countries when the system was faced with conditions of stress.

Pursuit of independent relationships vis-à-vis the dollar necessarily imposes strains in the EEM bilateral relationships. This consideration follows immediately from the well-known n^{th} currency problem. On the other hand, movements vis-à-vis the dollar have a different objective weight in the external transactions of EEC countries, and desired relationships may also differ according to the relative short-term importance attached to the fight against inflation and to the competitive gains (losses) by the economic authorities.[6]

[5] It is, however, already becoming apparent that the new American Administration takes a much more restrained attitude to foreign exchange intervention.

[6] These points are shown formally in the Appendix. For an analysis of the issues see also BASEVI (1979) and BAFFI (1979).

These general questions are especially important when account is taken, on the one hand, of the key rôle which the dollar retains as an intervention currency also within the EEC, and, on the other, of the process of diversification of international reserves, which can lead to special strains in the dollar-DM exchange rate.

The experience of the EMS has, in fact, shown instances where the most important European currency, the DM, has been the strongest and the weakest EEC currency in the presence of a marked dollar trend. When either of these extreme situations obtains, the US dollar movement against EC currencies has as its immediate counterpart the DM. It thus follows that the DM/dollar exchange rate may soon become binding for other EC currencies which are at the margin against the DM. A situation of this type developed during the very first phase of the system in May 1979. Notwithstanding the fact that the DM was relatively strong within the EMS, as witnessed by the position of its indicator of divergence vis-à-vis the ECU, the *Bundesbank* sold dollars and adopted a restrictive monetary stance to counteract imported inflationary pressures. Under these circumstances the very logic of the divergence indicator was called into question, on the grounds that, if the reason for deviation was lower inflation and greater domestic financial stability, it was hardly reasonable to give priority to the return to the EC center of gravity: i.e. the ECU exchange rate average. In fact, the German monetary authorities had always questioned the validity of the symmetric principle contained in the ECU during the negotiations which led to the creation of the EMS.

I turn now to the, different, experience during the period July 1980-February 1981. As we have seen, the dollar has been characterized by a sustained rise, which had as a counterpart until January 1981 a relative weakness of the DM in the EMS. In the period end June 1980-end February 1981 the DM lost 18% against the dollar, 12% against the pound, 21% against the yen, but gained 1% vis-à-vis the French Franc.

Since there is ample agreement on the fact that intervention should be of the *smoothing and braking* kind, and should not run against underlying trends, the first question to be addressed is whether a dollar movement of these proportions was seen by the German authorities mainly as an erratic one.

One has the impression that this was *not* the case. In spite of a sharp slowdown in domestic economic activity, the German economy plunged in 1980 into a sizeable current account deficit, which was also

projected for 1981 on the assumption of a stagnation in domestic demand. With mounting unemployment (it reached 1.3 million in January 1981, i.e. +26.2% compared with the corresponding period of the previous year), the German authorities may well have decided that a significant real devaluation was necessary to restore lasting equilibrium in their external accounts. The cure through demand deflation would have been too slow and painful, partly in view of the already low rate of inflation, and thus of the limited degree of adjustment possible by means of containment of domestic prices. Additionally, an investment cycle was under way, and its completion was considered as necessary to permit adaptation of the economic structure.

It was evidently impossible for Germany to depreciate to any substantial extent against other EMS currencies: the only avenue to quick real depreciation was a nominal loss vis-à-vis the dollar and the yen. Since the beginning of 1980 Germany has indeed achieved a real depreciation of the order of 25-30% against the US and Japan.[7]

If this analysis is correct, it would follow that the definition of a common dollar policy was again hampered by conflicting internal and external objectives of the various EEC countries, and not by a lack of technical instruments. In particular, if the interests of, say, France and Italy were to lie in resisting the fall against the dollar, in order to contain imported inflation, they would inherently tend to work at cross-purposes with the *Bundesbank*.

Undoubtedly what should not take place under these circumstances is that reverse dollar interventions occur simultaneously. Specifically, when the *Bundesbank* sells dollars to "smooth and brake" the fall in the DM, central banks in a "strong" position should, as a rule, refrain from buying dollars in order to maintain their currencies' position within the EMS. Rather, direct acquisition of DM balances would be appropriate.

The latter course is indeed the one which, by and large, was followed. In the main this consisted in sales of French Francs against DM: a large part of these sales was settled by spot transfers of ECU balances between the two central banks. Recourse to very-short-term financing was also had. Occasionally some difficulties have arisen for the *Banca d'Italia,* because its interventions in support of the DM were not at the bilateral margin, and could not thus be converted into ECU's.

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[7] In the period from the beginning of 1980 up to end-February 1981 the DM has lost 20% in nominal terms against the $, to this a price improvement of the order of 5% can be added. Against the yen the loss has been 30%, with a similar rate of price and cost inflation.

Limitations were, however, encountered in the direct accumulation of DM balances, although bilateral cooperation between the two central banks was instrumental in overcoming this difficulty.

This is, of course, tantamount to letting a deficit country finance itself by supplying its own currency, which, in general, is not conducive to equilibrium. However, means were sought to sterilise, when appropriate, the effects of such operations on the creation of monetary base in Germany.

The restrictive stance of the monetary policy pursued by the Fed and the disparity of the inflation rates in the US and Germany during the fifth phase of the EMS led to increasing nominal differentials in favour of the dollar. The very fact that real rates of return[8] were instead in favour of Germany throughout 1980 made it hard to expect any significant shift in the posture of monetary policy in Germany. Additionally, current account developments — with the US recording larger surpluses than originally expected — and vice versa for Germany, led to a situation in which holding dollar-denominated short-term assets was a safe bet.[9]

The dollar was thus in the apparently paradoxical situation of having to become stronger and stronger, until expectations could turn against it in the short-term. For the expected holding period yield to be the same in dollars and DM it was necessary that a slight depreciation of the dollar should be anticipated,[10] but under the circumstances there was little reason to foresee any short-term weakness of the dollar.

On the other hand, with a weak DM, and little prospect that in the short run it would become stronger, nominal interest rates become of paramount importance also within the EEM. With little expectation of a realignment, it appeared more profitable to go into high-nominal-yield currencies.

As we have already seen, the situation changed in the second half of February, when the *Bundesbank,* by temporarily replacing its Lombard credit facility with a new "special Lombard", signalled its choice to defend the external value of the DM, albeit at the expense of immediate

[8] The "real" money market rates were estimated by subtracting from the nominal yield the (annual) rate of change in consumer prices recorded in the three preceding months. Tables and charts supporting the empirical statements made in this study are available from the author upon request.

[9] Prospective long-term energy developments and political factors also played a rôle in shaping the expectations.

[10] Let me note here that I am not convinced by the "evidence" which is purported to support the view that portfolio effects arising in the context of imperfect assets substitutability are of paramount importance in the context of very-short-term capital flows.

domestic considerations of unemployment. The new "special" rate can vary from day to day, and the "window" may be altogether closed on some days. The system now in operation appears to be designed to allow a more immediate impact on exchange markets, without making recourse to very large interventions. The German authorities' shift in the conduct of monetary policy was presumably prompted by the consideration that, on the one hand, real exchange rate movements vis-à-vis the US and Japan had already been broadly adequate. A further depreciation might have undermined the internal as well as the external confidence in the currency, leading to an acceleration of domestic inflation both through the mechanical impact of the cost of imports, and the induced change in expectations. A more aggressive intervention policy, by itself and, in particular, without the support of complementary measures of monetary policy, would have been of little help, also because the new American Administration was showing a reluctance to pursue a coordinated intervention approach. The rise in interest rates in Germany was thus unavoidable.

Through the workings of the EEM, other European currencies will be forced to follow: an appropriate question is whether the deflationary biases and the uncertainty that are being imparted to the world economy as a result of the very high, and volatile real rates of interest which are now being experienced may not prove to be exceedingly high.

IV. The Evolution of Effective and Real Exchange Rates

As we have seen, nominal exchange rate relationships within the EMS have been characterized by a large appreciation of the British pound, a sizeable devaluation of the Danish Crown, and a remarkable stability of other exchange rates within the EEM. Differential movements of effective exchange rates have, however, been by no means negligible, even for the currencies adhering to the exchange rate mechanism.

The only appreciation in trade-weighted terms has been in the British pound; in the period under review, the overall gain has amounted to 25%, but the gain vis-à-vis other EEC currencies has come to 32%. As a counterpart of this, and taking into account the considerable weight of trade with the United Kingdom, the largest

cumulative "effective" fall (17%) since the start of the system has been recorded by the Irish pound, and not by the Danish Crown, whose depreciation has nonetheless been close to it (16%). The third largest fall has been recorded by the lira: 10 per cent vis-à-vis all other currencies, and 7% vis-à-vis those of EEC countries. The overall depreciations of the other currencies — Belgian Franc, French Franc, DM and Guilder — have been smaller, but still in the order of 4-5%.

When we come to a comparison of "real" exchange relationships, the diverging trends are even more pronounced,[11] since inflation differentials and exchange rates in many cases have not shown offsetting movements. [12] Let us begin by observing that, after the first oil shock of 1973-74, both the average rate of inflation in the EEC and the dispersion around the mean had been falling steadily up to 1978, when the EMS was created. The two years of operation of the EMS have been marked by the new oil shock, with its attendant simultaneous inflationary and recessionary impulses. The renewed pressures on prices have been accompanied by a marked widening of inflation differentials, largely due to developments in the United Kingdom and Italy.

In the case of the U.K., the cumulative effect of the sharp nominal appreciation and the poorer price performance has led to very significant changes in real exchange rates: it may be estimated that the "competitive" position vis-à-vis the rest of the world has deteriorated by some 35% during the two years of operation of the EMS; the shift vis-à-vis European partners may have amounted to over 40%. Italy is the only other country within the EMS to have shown an "improvement" in its real exchange rate, in spite of the "effective" depreciation recorded. The loss in competitiveness may have amounted to some 10% against all major trading partners, but to nearly 13% vis-à-vis EEC member countries; clearly the loss is especially high vis-à-vis Germany.

At the other extreme, the largest competitive gains have been recorded by Denmark and Ireland, with "real" depreciations of the order of 15%. Belgium, too, has achieved a significant (over 11%)

[11] I do not take up here the question of the appropriate measure of real exchange rates. The figures given here are based on wholesale prices of manufactured products. The choice was made purely for simplicity's sake; other measures should, of course, also be taken into account. I may, however, add that the situation would not be altered; if anything, other meaningful indices point to even larger divergences in "real" exchange rates.

[12] The experience of the two years provides, in my opinion, some support to the Vaubel thesis in the Vaubel-Thygesen controversy as to the need for real exchange-rate adjustment within the Community. See VAUBEL (1978) and THYGESEN (1979).

improvement in its competitive position, as result of a good price performance. I have already mentioned the very sizeable competitive gain which Germany has achieved since the beginning of 1980 vis-à-vis the US and Japan — i.e. her main competitors in world markets. Indeed, whereas in 1979 the German real rate had remained approximately stable, in the past 14 months the overall competitive gain may have come to some 10% while that vis-à-vis EC partners has come to some 7%, largely owing to the sizeable bilateral shift recorded against the United Kingdom. Finally, France and the Netherlands, too, have achieved competitive gains in the order of 5-10%.

The experience of these two years supports the approach according to which PPP cannot be taken as a short-term guide to exchange rate developments. A relatively good inflationary performance need not lead to a strong currency; cyclical factors, structural shifts and interest rates can induce very significant movements away from purchasing parity. On the other hand, it has been confirmed that nominal exchange rate stability does not bring about equalisation of inflation rates over a short time horizon. The two points just made are, of course, the two faces of the same coin, but I find this second aspect consistent with the view that domestic cost push factors of inflation and domestic mechanisms of perpetuation and amplification of external price shocks are of paramount importance.

It is to be noted in this respect that in the period under review in Denmark and the Netherlands changes have been made in the indexation mechanisms [13] and in Belgium resort has been made to a relatively strict form of incomes policy. At the other extreme, it is hard to deny that the short-term real costs of the tight monetary policy pursued in the United Kingdom have been enhanced by a significant wage-push which may have originated in the wage concessions made to public employees; in Italy, the country in the EEC with the largest energy dependence, the response to the second oil shock has been to tighten monetary policy, but also.....to reinforce indexation clauses.

[13] These "institutional" changes are no doubt one of the main reasons why a small open economy such as the Danish one could fully maintain the competitive edge gained by the effective depreciation.

V. Conclusions

A first conclusion I draw from my brief analysis of the first two years of exchange rate developments in the EEM is that its relatively satisfactory performance may hinge on two main elements. The largely unexpected weakness of the DM vis-à-vis the dollar has heightened the importance of nominal interest rates in the financing of payments imbalances within the Community and strengthened the resolve of economic authorities in countries with a poorer price performance than Germany not to resort to any devaluation against the DM, for fear of the domestic repercussions on inflation. On these grounds, it is not unreasonable to believe that a test for the system may come if the current account of Germany shows signs of a return to a more balanced position and the rise in the dollar price of oil abates.[14]

It must also be recognized that the determination of the British authorities to pursue an independent, restrictive monetary policy would have been hardly compatible with the pound's adherence to the *narrow* margin agreements. But I will not elaborate here on my conviction that, in the transitional phase to a greater convergence of fundamentals, a system which (i) allowed the four major currencies to move within a larger bilateral band than that provided for at present by the narrow margins and (ii) put greater weight on the early warning provided by the ECU indicator of divergence might have represented a more satisfactory solution.[15]

It cannot be denied, however, that the complete freedom of the pound represented a weakness both for the workings of the exchange rate mechanism, insofar as the ECU is concerned,[16] and for the use of ECUs as a reserve asset and a means of settlement.

It is not the specific task of this paper to review the workings of the ECU creation mechanism[17] and of the functioning of the credit facilities

[14] This test for the EMS would of course be of the type which many anticipated would come right after the system's inception. In these conditions, in particular, the questions raised by the "involuntary debtor" problem may acquire importance.

[15] For an analysis of the reasons why an approach to the EMS of this type could not find acceptance see the monumental work by LUDLOW (1981). On this question see also THYGESEN (1979).

[16] As I have already indicated, the actual method of "correction" for movements of the pound implies distortions in the signals of the ECU alarm system. See MASERA (1980), SPAVENTA (1980) and ROSSI (1980).

[17] To recall, ECUs are created as a result of three-month revolving swaps against gold and dollars.

available to support the exchange rate agreements. I think, however, that it is appropriate here to stress that, although intervention in Community currencies has acquired considerable importance, the amounts involved have still been relatively small compared to dollar interventions. Interventions in currencies of the EEM made at bilateral margins can either be settled in ECUs, if the two central banks so agree, or in external reserves (dollars), or again can lead to the activation of the very-short-term financing mechanism. In this latter case the debtor has a right to use ECUs up to 50% of the debt incurred.

In practice, total net ECU positions rose to nearly ECU 2 billion in the first months of 1980. These amounts declined in the central part of the year. In January 1981 they had again risen to nearly ECU 2 billion. The active use of ECUs has thus been fairly limited, especially taking into account that the (temporary) ECUs created according to the swap mechanism have risen from some ECU 25 billion[18] at the start of the system to ECU 49 billion in January 1981.[19]

In a recent paper, Triffin (1981) has stressed the need for (i) a "permanent" creation of ECUs and (ii) a mechanism which ensures a more balanced growth in their total stock. I cannot but endorse his arguments and note that the lack of a satisfactory definition of the ECU creation mechanism may become a serious drawback for the workings of the EEM in conditions of stress. Indeed, the time may be ripe for considering again what the desirable characteristics of the ECU should be, with reference to the second phase of the EMS. The strength of the dollar, the new definition of the SDR, the fact that the weight of the lira should be considerably increased, the uncertainty about exchange rate movements of the pound are all factors which make the ECU less attractive now than two years ago.

Finally, my understanding of the forces leading to inflation and of the rôle that exchange rates can play in the real adjustment process make me believe that more serious efforts should be devoted at Community level to harmonisation and coordination of "fundamentals", if the ultimate goal of the EMS is still European Monetary

[18] Including the deposits of the Bank of England, which were made only in July 1979.

[19] I would, in particular, suggest that present mechanisms should be modified so as to allow for a greater use of ECUs, even when original interventions are not made at the margin (on this point see above pp. 279-280), if the interventions are conducive to greater cohesion of the system. For instance, the mechanism which is now activated at the bilateral limits might be also available for intramarginal interventions after the trespassing of the divergence threshold.

Unification.[20] The first question in this respect relates to the problems directly connected with the convergence of monetary policies — which will be dealt with by Professor Thygesen.[21] I would suggest that upstream from exchange rate and monetary policies, income formation processes[22] and public sector deficits — especially on current account — in the EEC should be subject to a close *ex ante* scrutiny at Community level. The gradual surrender of monetary sovereignty should be supported by concrete actions aimed at harmonising fiscal and wage trends in the member countries.

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[20] This fact was forcefully stressed by VAN YPERSELE (1981), who suggested the utilisation of a "divergence indicator for inflation rates" to draw explicit attention to the need for convergence of inflation, towards a low common average.

[21] I should like to recall here the emphasis he rightly put at the start of the system on the desirability for EMS countries to formulate intermediate monetary objectives by reference to domestic components of money creation (THYGESEN 1979). Unfortunately, this important question has not so far received the attention it deserves.

[22] I have already alluded, in this respect, to the fact that, for instance, indexation clauses covering oil price increases and indirect taxes are hardly consistent with a smooth working of the EMS; they are *not* present in the majority of countries.

APPENDIX

In this Appendix I shall examine, albeit briefly, the main lines of the problem regarding a simultaneous analysis of the divergence with respect to the ECU and in terms of effective and real exchange rates.[1]

The ECU divergence indicator in absolute (not relative) terms can be expressed as:

$$(A.1)\quad I_j = \sum_{i \neq j} \pi_i \dot{x}_{ij} \Big/ \sum_{i \neq j} \pi_i = \sum_{i \neq j} \frac{\pi_i}{(1-\pi_j)} \dot{x}_{ij}$$

where x_{ij} denotes the price of the reference currency j in terms of the i^{th} currency (number of units of i for one unit of j), π_i is the weight of each currency in the ECU basket, the summation (Σ) extends to all EC currencies, and the superscript (.) indicates the rate of change of a variable with respect to a "central" value.

If b denotes the margin of fluctuation fixed for the EC currencies by the exchange rate agreements (we shall assume here that this margin is the same for all the currencies: $|\dot{x}_{ij}| \leq b$), then from (A.1) we get:

$$(A.2)\quad |I_j| \leq b$$

In general, the divergence indicator with regard to the effective exchange rate can be written as:

$$(A.3)\quad IE_i = \sum_{i=1}^{\bar{n}} \dot{x}_{ij} w_{ij}$$

where the index i covers, in principle, all the currencies and w_{ij} is the weight to be attributed to the change $\dot{x}_{ij}$.[2]

For the sake of simplicity, we shall also assume here that there is only one important currency external to the EEC: the dollar, which is the $n+1^{th}$ currency. The relative weights of the dollar for the various EC countries are defined as $w_{n+1,j}$ for $j = 1...n$.

[1] For a more detailed treatment of these points see MASERA (1980) and ROSSI (1980).

[2] The weights w_{ij} must have the following properties $w_{ii}=0$; $w_{ij} \neq w_{ji}$; $\sum_{i=1}^{\bar{n}} w_{ij}=1$. The weight w_{ij} may be defined, for instance, as the ratio of the trade between the countries i and j and the total trade of the country j.

The following expressions may be demonstrated:

$$(A.4) \quad |IE_j| \leq b(1-w_{n+1,j}) + |\dot{x}_{n+1,j}|\, w_{n+1,j}$$

$$(A.5) \quad |IE_j| \leq b+w_{n+1,j}\, |\dot{x}_{n+1,k}| \quad , \quad k \neq j$$

The (A.4) shows that, on the basis of the assumption made, the indicator of "effective divergence" for a currency j is able to fluctuate only within margins which are a weighted average of the EMS bilateral margin and of the change of j vis-à-vis the dollar since the date when the EMS central rates were fixed.

Moreover, (A.5) shows that a link also exists between the effective divergence of j and the change of j vis-à-vis each other currency of the basket. Coupling these two inequalities we get:

$$(A.6) \quad |IE_j| \leq \min \{ b(1-w_{n+1,j}) + |\dot{x}_{n+1,j}|\, w_{n+1,j} \;,\; b+w_{n+1,j} \min_k |\dot{x}_{n+1,k}| \} = m$$

Now, it is clear that a movement of the same size in the Community currencies vis-à-vis the dollar will have different effects on the various effective exchange rates, depending on the relative weight of the dollar, which varies from country to country.

Moreover, if for a currency h it turned out: $\dot{x}_{h,n+1} = 0$, then it should follow:

$$(A.7) \quad |\dot{x}_{j,n+1}| \leq b \quad , \quad |IE_j| \leq b$$

Hence, if one of the Community countries determines autonomously its own policy with respect to the dollar, then all the other countries participating to the system will have to adapt, in accordance with this policy, their objectives in terms of nominal exchange rate vis-à-vis the dollar and in terms of effective exchange rate: otherwise they would generate tensions within the system.

The considerations above may be enlarged by reasoning upon real exchange rates. If P_j denotes the relevant price-index in the country j, the bilateral real exchange rate between the currencies i and j may be written as:

$$(A.8) \quad r_{ij} = x_{ij} \frac{P_i}{P_j}$$

The divergence indicator with regard to the real exchange rate can be defined as follows:

$$(A.9) \quad IR_j = \sum_{i=1}^{n+1} w_{ij}\, \dot{r}_{ij}$$

However, if D_j denotes the weighted average of the inflation differentials between the country j and all the other countries:

$$(A.10) \quad D_j = \dot{P}_j - \sum_{i=1}^{n+1} w_{ij}\, \dot{P}_i$$

then we may also write

$$(A.11) \quad IR_j = IE_j + D_j$$

Now, if for the country j with high inflation (i) the weight of the dollar is relatively large, moreover, (ii) there is another EMS country which wants to keep stable its exchange rate vis-à-vis the dollar, then it could likely turn out: $m < D_j$, and hence: $IR_j > 0$; in other words, the country j would have to accept undesired losses of competitiveness.

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