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# Economic Implications of the Divergence Indicators in the EMS

by Wolfgang Filc, Hanover\*

**The system of so-called Divergence Indicators in the European Monetary System puts pressure on the monetary authorities to consult before the intervention points are reached in the foreign exchange markets. Under integration aspects this arrangement marks an advance, but it also carries risks and dangers with it.**

The new European Monetary System (EMS) is endowed with an element which was absent from the previous European exchange rate and intervention system and which arouses both great expectations and concern — the system of ECU divergence indicators. Until recently intervention in the foreign exchange markets by the monetary authorities was obligatory only when the intervention points had been reached. Intervention within the fluctuation bands required the consent of all participating monetary authorities, and preventive support purchases were therefore effected in isolated instances only. The creation of divergence thresholds now institutionalizes prophylactic economic measures in case signs of strain show in the monetary system.

If a currency rate deviates substantially from the EMS average, this is taken as a sign of future strains on the parity grid which should be removed by "appropriate" measures. The rate of the European Currency Unit (ECU) in terms of the currencies of the EMS member countries serves as an early warning indicator. It has been arranged that the countries will take action already when a currency deviates from the ECU by 75% of its fluctuation margin. At this point it comes up against the divergence indicator. The warning posts are touched when the foreign-currency component of the ECU — the average weighted rate of the EMS currencies — has deviated from the central rate in the foreign exchange market of a country by 75% of the permitted fluctuation range of 2.25%, i. e. by 1.6875%. The ECU component of the currency of the country concerned is left out of account in this calculation, so that the ECU's fluctuation margin up to the divergence thresholds depends on the share of the national currency component in the ECU currency

basket. The distance of the divergence indicators from the ECU central rate is inversely proportional to the weight of a currency in the ECU basket.

If the maximum deviation margin between two currencies in a foreign exchange market (0.0225) is called "a", the permitted divergence factor (0.75) is "b" and the currency component of the national currency concerned in the ECU parity grid ( $ECU_p$ ) is "CC", the divergence margin "DM" between the ECU and the ECU parity until the divergence indicator is reached is

$$DM = a \cdot b \left(1 - \frac{CC}{ECU_p}\right).$$

The bracketed part of the equation, which indicates the foreign currency share of the ECU parity — and thus also the divergence margin — is the smaller the greater a weight has been allocated to the national currency in the currency basket. The following table shows the ECU divergence margins against the grid currencies at the central rates fixed with effect from the inauguration of the European Monetary System.

**Divergence Margins of EC Currencies against the ECU up to the Divergence Indicators**

Currency	ECU Central Rate	ECU Currency Component	Share of Other Currencies in ECU Basket (in %)	Divergence Margin (in %)
DM	DM 2.51064	DM 0.828	67.02	1.13
FF	FF 5.79831	FF 1.15	80.16	1.35
Lit	Lit 1148.15	Lit 109	90.50	1.53
Hfl	Hfl 2.72077	Hfl 0.286	89.48	1.51
Bfr/	Bfr/	Bfr+		
Lfr	Lfr 39.4582	Lfr 3.80	90.36	1.52
Dkr	Dkr 7.08593	Dkr 0.217	96.93	1.64
£Ir	£Ir 0.662638	£Ir 0.00759	98.85	1.67
£	—	£ 0.0885	—	—

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Source of basic data: Deutsche Bundesbank.

The divergence indicators are determined by the relation

$$DI = ECU_p (1 \pm DM).$$

### **Mode of Operation**

The European Currency Unit will come up against its divergence threshold in relation to a national currency the sooner the greater a weight attaches in the ECU basket to the currencies deviating from the fixed central rates in the foreign exchange market of a country. A decline of the Irish punt rate in the foreign exchange markets of all member countries to a level near the lower intervention point will not have the effect of bringing the value of the ECU in these countries down to the lower divergence indicator but only raise it in Ireland to the level of the upper divergence indicator. If this happens, Ireland alone would have to take action to ease the strain on the foreign exchange market.

As a general rule the weakening of a currency in relation to all other currencies will push up the value of the ECU to the level of the upper divergence indicator in the weak-currency country alone. Conversely, if the exchange rate of a country's currency rises against all other currencies, the value of the ECU will fall to the lower divergence threshold only in the foreign exchange market of the country concerned.

### **Objectives**

The divergence indicators have been designed so as to induce the countries whose currencies deviate most strongly from the EMS average to take economic measures with the aim of easing the situation in the foreign exchange market. It is presumed that the monetary authorities concerned will correct this kind of situation by appropriate measures – internal economic adjustments or preventive intervention in the foreign exchange market. Monetary authorities who fail to take such measures will be liable to justify their conduct in consultations between the central banks and on the level of joint EMS organs.

This is an advance on the previous joint float of European currencies with fixed rates amongst themselves. It is an advantage that the new European Monetary System provides for preventive economic measures to be taken before the intervention points are reached. This will further the harmonization of economic policies between the states of the European Community, contribute to a stabilization of the expectations about the development of exchange rates and create a possibility of narrowing the fluctuation bands of the exchange rates further in the long term.

### **Risks**

The existence of divergence indicators involves risks to monetary policy if signs of future strains are removed chiefly by intramarginal intervention<sup>1</sup> when the indicator levels have been reached. Such risks are met on two levels. First, it is not always possible to determine beyond doubt in which currencies the intervention is to take place when the divergence indicators are reached. If the ECU is quoted in a country at its lower divergence threshold and support purchases are effected in currencies which show no definite tendency to weaken, switching of currency reserves between member countries will take place in the course of the net balance settlements. If there are no clear provisions about the composition of the intervention currencies, this may provoke opposition in countries which are losing currency reserves. Secondly, it may be assumed that intramarginal intervention will take place mainly in currencies with a high weight in the ECU basket. The liquidity effects of such intervention will be concentrated in a few countries, and one or a few currencies will be prone to become intervention currencies, a result which goes against the system of multi-currency intervention.

In contrast with the symmetrical obligation to intervene at the intervention points which always involves at least two central banks, it is not clear, when in a country the ECU rate reaches the divergence threshold but not the intervention points, which currency is to be used for intervention by the central bank of the country concerned. It would be possible to use the currency of the country where the ECU rate shows the largest deviation from the central rate in the opposite direction. Intervention in one currency alone however would probably not always be sufficient to retract from the divergence indicator because the extent to which exchange rate movements are translated into ECU rate changes is determined by the weight of the currencies in the ECU basket.

If for example the ECU rate in Germany falls to the level of the lower divergence indicator and the Irish punt represents, in terms of the ECU rate, the relatively weakest EMS currency, a rise of the Irish punt rate as a result of support purchases will lead only to a minute rise of the ECU rate in the German foreign exchange market. This is due to the low weight of the Irish punt in the ECU basket. If, on the other hand, the ECU rate in Ireland rises to the level of the upper divergence indicator, relatively small sales of D-Mark, the currency with the largest

<sup>1</sup> The view that intervention takes place primarily before the intervention points are reached was expressed by Karl Otto Pöhl, the Vice President of the German Bundesbank. Cf. K. O. Pöhl, *Neuer Anlauf in Europa (New start in Europe)*, in: *Die Weltwoche*, Zürich, Dec. 6, 1978, reprinted in: *Deutsche Bundesbank, Auszüge aus Presseartikeln*, No. 92/1978, p. 2.

weight, might be sufficient to push the ECU rate down from the upper divergence indicator. If, in the former case, it is not possible to hoist the ECU in Germany from the lower divergence threshold, additional intervention will be needed in other currencies.

### **Countertendencies**

However, if the ECU rate in Germany is forced up by purchases of EMS currencies, these countries (debtors against their will) will lose currency reserves to Germany in the net balance settlements. It cannot be ruled out that such switching of currency reserves between EMS countries when the currencies of the countries surrendering currency reserves are not under obvious pressure in the foreign exchange markets will provoke opposition. The strong-currency country will in this case pull in currency reserves from the other countries, the switch being determined solely by the strong-currency country's preferences in regard to intervention currencies.

These problems could be avoided if the intramarginal intervention in EMS currencies were executed without settlement of balances or if the intervention within the fluctuation bands were carried out in non-EMS currencies once the divergence indicators have been reached. The first of these two arrangements could induce countries with a latently weak currency to bring pressure to bear to forgo a settlement of balances in principle. This would be tantamount to an amalgamation of currency reserves which seems premature at the present stage of integration in view of the considerable economic differences still existing between the countries of the EC and especially the widely different inflation rates. Intervention in currencies of countries outside the fixed-rate system, especially in US dollars, would prevent one EMS country gaining currency reserves at the expense of its partner countries; yet this form of intervention in third-country currencies, and not in EMS currencies, would be quite contrary to the objective of integrating economic policies which the European Monetary System was created to forward.

### **Monetary Intervention Burdens**

It may be assumed that currencies with a high weight in the ECU basket will be preferred for intervention with the fluctuation bands, for intervention in low-weight currencies, e.g. Irish punt (with a weight of about 1.1%) or Danish kroner (3.1% of the ECU basket), would only bring about a minute change of the ECU rate whereas a change in the rate of the D-Mark, which with 33% of the ECU basket carries most weight, would be capable of the strongest effect on the value of the ECU in relation to all the other EMS currencies.

There is therefore a probability that if monetary authorities intervene in the foreign exchange market before the intervention points are reached, the intervention will take place primarily in currencies with a high weight in the ECU basket, and the liquidity effects of support measures would show up chiefly in the countries with such currencies. If these countries have achieved an above-average measure of price stability, there is reason to fear that the imposition of the burden devolving on a principal intervention currency may have the result of forcing them to depart from the path of stability and fall in line with the medium rate of price increases in the EMS countries if the ECU rate does not touch the lower divergence indicator against their currencies but the upper indicator in other countries.

In the absence of arrangements about which currencies are to be used for intervention when the divergence indicators are reached and in which proportions they are to be used there arises thus a danger that the main burden of interventionist action by all EMS countries will fall on a few countries. The agreed multi-currency intervention system could in this case change into a de facto key currency system.

### **Required Amendments**

No arrangements have as yet been made about a spreading of intervention over various currencies when the divergence indicators are reached. Such arrangements are however needed in order to avoid the emergence of a key currency system and to enable the new European Monetary System to offer to the countries of the EC the possibility of adjusting their inflation rates to that in the country with the relatively greatest price stability.

Whether the divergence indicators can assume the function of an early warning indicator of future strains between EMS currency rates is doubtful. Spot quotations reflect the supply-demand situation in foreign exchange market at the time. Expectations in regard to future exchange rate movements play only a minor role in the spot market. Differentials between the economic data of the individual countries, e.g. different price trends and interest rates but also movements of the foreign exchange rates of third countries, may have the effect that the ECU touches the lower divergence indicator in the foreign exchange market of one country and yet no single currency need later fall as far as the lower intervention point.

It is thus seen that the ECU rate does not provide sufficiently precise information about the future trend of exchange rates of the EMS currencies. This information has to be derived from forward rates of the currencies. Exchange rates in the for-

ward markets can be used to ascertain whether foreign exchange rates will tend to move further in the direction of the intervention points when the divergence indicators have been reached. They are at the same time a gauge for the apportionment of intervention operations between the EMS countries<sup>2</sup>.

### Intervention Indicator

In a fixed-rate system expected changes of central rates normally show up early by forward prices moving outside the fluctuation band for the spot quotations. The spot rates drop or rise to the intervention points only later. If it is expected that a currency will be devalued, its forward rate in the foreign exchange markets of the other countries will fall below the lower intervention point in the spot market. Conversely, expectation of an upward revaluation is indicated if the forward rates of all the partner currencies fall below their lower limit in the spot market of the country which is expected to revalue its currency.

This indicator quality of forward rates can be used to decide whether preventive intervention in foreign exchange markets is called for when the divergence indicators are touched and which currencies should be used for this purpose. Let us assume for example that the ECU is quoted at the lower divergence threshold in terms of D-Mark and that no partner country's currency is at the lower intervention point in the German spot market. Three different cases have to be distinguished in this situation, giving rise to three different rules for intervention.

☐ No EMS currency is quoted in the forward foreign exchange market in Germany at a rate below the lower intervention point in the spot market. In this case there are no signs of a worsening of the strains on the EMS grid. Preventive intervention in the foreign exchange market should not be resorted to. Other suitable economic measures should be taken in Germany and/or the partner countries.

<sup>2</sup> Cf. W. F i l c, Liquiditätsneutrale Devisenmarktinterventionen in einem erweiterten europäischen Festkurssystem, Devisenmarktanalyse für das zweite Vierteljahr 1978 (Foreign exchange market intervention with neutral effect on liquidity in an enlarged European fixed-rate system — Foreign exchange market analysis for the second quarter of 1978), Institut für Empirische Wirtschaftsforschung, Berlin, July 1978, p. 10 ff.

☐ One or more currencies are quoted in the German forward market below the lower intervention point in the spot market. Such a situation is indicative of expectations of a devaluation of the weak currency (or currencies) but not of an upward revaluation of the D-Mark in relation to all currencies. In this case preventive intervention should take place in the foreign exchange market in the form of support for the weak currencies through support purchases by all central banks of countries whose currencies are not subject to speculation in anticipation of central rate changes and through sales of foreign currencies by weak-currency countries. To what extent individual countries take part in such intervention could be determined by reference to their European Monetary Fund quotas or the weight of their currencies in the ECU basket.

☐ All currencies are quoted in the German forward market at rates below the lower intervention point in the spot market. This suggests that the D-Mark is expected to be revalued. In this — hypothetical rather than realistic — case the central bank of the country whose currency is expected to be revalued should alone be given the task of intervention. It would however be a more adequate way of dealing with this kind of situation to revalue the currency before the intervention points are reached in the foreign exchange markets.

### Summary

The system of divergence indicators in the new European Monetary System obliges monetary authorities to consult before the intervention points are reached in the foreign exchange markets. This is an advance from the point of view of integration policy. Risks and dangers arise on the other hand because of the absence of arrangements on intra-marginal intervention once the divergence indicators are reached. These arrangements can be based on the forward rates in foreign exchange markets. They are capable of ensuring that a country does not permanently attract foreign currency reserves of other countries and this assumes the function of a key currency country in a joint fixed-rate scheme based on the concept of a multi-currency intervention system.

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