

# The exchange rate mechanism of the European monetary system

On Monday 8 October sterling joined the exchange rate mechanism of the European monetary system with a central rate of 0.696904 against the ECU and a bilateral central rate against the deutschemark of £1 = DM 2.95; it will initially operate in the wider 6% band. This article<sup>(1)</sup> describes the mechanism and sets out the intervention obligations of the participating central banks. The intervention obligations are summarised in the parity grid—a matrix showing the various bilateral central and intervention rates. The matrix which is effective as from 8 October is shown in Table A.

currency; in the case of the pound and the peseta the scope for movement is 6%.<sup>(2)</sup> If, for example, the Irish punt were to appreciate to £1 = DfI 3.08700 (the rate shown in the grid as the Dutch central bank's selling rate for Irish punts) against the Dutch guilder, the Nederlandsche Bank would be obliged to buy guilders for punts at that rate in unlimited amounts. At the same time, the Central Bank of Ireland would be obliged to sell punts for guilders at a rate of DfI 100 = £ 32.3939 (ie its buying rate for guilders, as shown in the grid), the reciprocal of the rate at which the Nederlandsche Bank would be buying guilders for punts.

All participating currencies, except the peseta and sterling, must be held within margins of 2¼% on either side of their agreed bilateral central rates against each other participating

Narrow band currencies have a maximum possible range of fluctuation against each other of 4½% (= 2 x 2¼%); for

**Table A**  
Bilateral central rates and selling and buying rates in the EMS exchange rate mechanism from 8 October 1990

		B. Fc./L. Fc. 100 =	D. Kr. 100 =	Fr.Fc. 100 =	DM 100 =	£1 =	Lit 1,000 =	Fl 100 =	Pts 100 =	£1 =
<b>Belgium/ Luxembourg:</b>	S	—	553.000	628.970	2109.50	56.5115	28.1930	1872.15	33.6930	64.6050
	C	—	540.723	614.977	2062.55	55.2545	27.5661	1830.54	31.7316	60.8451
B.Fc./L.Fc.	B	—	528.700	601.295	2016.55	54.0250	26.9530	1789.85	29.8850	57.3035
<b>Denmark:</b>	S	18.9143	—	116.320	390.160	10.4511	5.21400	346.240	6.23100	11.9479
	C	18.4938	—	113.732	381.443	10.2186	5.09803	338.537	5.86837	11.2526
D.Kr.	B	18.0831	—	111.200	373.000	9.9913	4.98500	331.020	5.52600	10.5976
<b>France:</b>	S	16.6310	89.9250	—	343.050	9.18900	4.58450	304.440	5.47850	10.50550
	C	16.2608	87.9257	—	335.386	8.98480	4.48247	297.661	5.15981	9.89389
Fr.Fc.	B	15.8990	85.9700	—	327.920	8.78500	4.38300	291.040	4.85950	9.31800
<b>Germany:</b>	S	4.95900	26.8100	30.4950	—	2.74000	1.36700	90.7700	1.63300	3.13200
	C	4.84837	26.2162	29.8164	—	2.67894	1.33651	88.7526	1.53847	2.95000
DM	B	4.74000	25.6300	29.1500	—	2.61900	1.30650	86.7800	1.44900	2.77800
<b>Ireland:</b>	S	1.85100	10.00870	11.3830	38.1825	—	0.510246	33.8868	0.609772	1.16920
	C	1.80981	9.78604	11.1299	37.3281	—	0.498895	33.1293	0.574281	1.10118
£	B	1.76950	9.56830	10.8825	36.4964	—	0.487799	32.3939	0.540858	1.03710
<b>Italy:</b>	S	3710.20	20062.0	22817.0	76540.0	2050.03	—	67912.0	1222.30	2343.62
	C	3627.64	19615.4	22309.1	74821.7	2004.43	—	66405.3	1151.11	2207.25
Lit	B	3546.90	19179.0	21813.0	73157.0	1959.84	—	64928.0	1084.10	2078.79
<b>Netherlands:</b>	S	5.58700	30.2100	34.3600	115.2350	3.08700	1.54000	—	1.84050	3.52950
	C	5.46286	29.5389	33.5953	112.6730	3.01848	1.50590	—	1.73345	3.32389
Fl	B	5.34150	28.8825	32.8475	110.1675	2.95100	1.47250	—	1.63250	3.13050
<b>Spain:</b>	S	334.619	1809.40	2057.80	6901.70	184.892	92.2400	6125.30	—	203.600
	C	315.143	1704.05	1938.06	6500.00	174.131	86.8726	5768.83	—	191.750
Pts	B	296.802	1604.90	1825.30	6121.70	163.997	81.8200	5433.10	—	180.590
<b>United Kingdom:</b>	S	1.74510	9.43610	10.7320	35.9970	0.964240	0.481050	31.9450	0.553740	—
	C	1.64352	8.88687	10.1073	33.8984	0.908116	0.453053	30.0853	0.521514	—
£	B	1.54790	8.36970	9.5190	31.9280	0.855260	0.426690	28.3340	0.491160	—

S = Exchange rate at which the central bank of the country in the left hand column will sell the currency identified in the row at the top of the table.

C = Bilateral central rate.

B = Exchange rate at which the central bank of the country in the left hand column will buy the currency identified in the row at the top of the table.

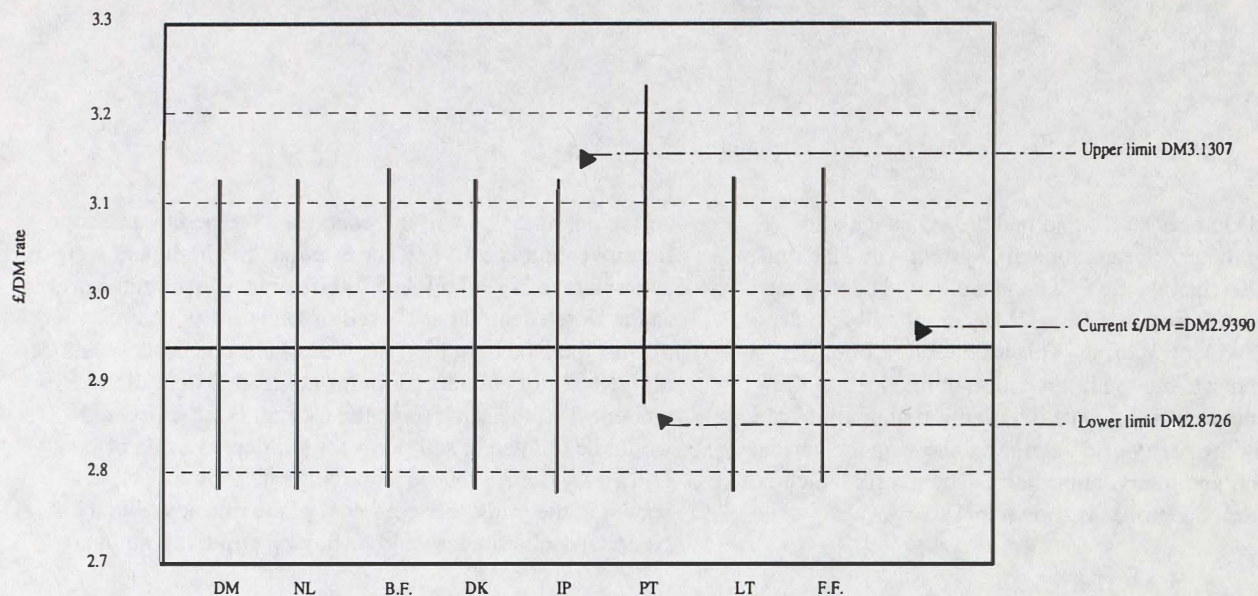
(1) Written by J J Adams in the Bank's Foreign Exchange Division.

(2) The lower and upper bilateral intervention rates (at which central banks are obliged to buy and sell, respectively, the relevant foreign currency in exchange for their own) are derived for the narrow band by multiplying the central rates by factors of 0.977753 for the compulsory buying rates and 1.022753 for the compulsory selling rates. For the wide band currencies, the factors are 0.941798 and 1.061798 respectively. These factors are chosen so as to ensure that central bank A's buying rate for currency B is the same as central bank B's selling rate for currency A. The corresponding margins are -2.2247% and +2.2753% and -5.8202% and +6.1798%. Due to market convention, the intervention rates are normally not exact reciprocals but are rounded to convenient figures. These differences are, however, insignificant in practice.



## Sterling's effective limits in the ERM

(Based on exchange rates on 22 October 1990)



those in the wide band the maximum range of fluctuation against all currencies is 12% (= 2 x 6%). Thus sterling could in principle move up within the band from DM 2.7780 (6% below its central rate against the deutschemark) to DM 3.1320 (6% above its central rate). However, such a movement could take place within the band only if, as sterling appreciated, it did not reach its upper limit against any other currency before it reached its upper limit against the deutschemark; in other words, only if sterling moved from being at the bottom of the band at a time when the deutschemark was at the top, to being at the top of the band at a time when the deutschemark was at the bottom. In general, the scope for appreciation is limited by the weakest currency in the band, while the potential for depreciation is limited by the strongest. The chart demonstrates this point. It shows the effective limits on the £/DM rate (using rates observed during the morning of 22 October) implied by the need for sterling to remain within its bilateral limits against all the other currencies in the ERM simultaneously; in the chart all currencies have been translated into £/DM terms. On that morning the effective lower limit was £1 = DM 2.8726: if sterling had fallen below that level, it would have been below its lower limit against the peseta, which at that time was the strongest currency in the system. The effective upper limit at that time, DM 3.1307, was dictated by the position of the Irish punt, which was the weakest currency in the system. Clearly, the effective limits (unlike the formal limits) will fluctuate continuously, as the positions of currencies within the band change.

### Financing intervention

When any two currencies reach their compulsory intervention rates against each other, the two central banks concerned are obliged to meet all bids/offers made to them at the relevant limit rate. This obligation is only binding, however, between the hours of 0800–1500 (GMT). In some

cases, this might necessitate a central bank selling a currency not held in its foreign exchange reserves or in an amount which exceeds its current holdings. Operationally this does not cause a problem, however, as the intervening central bank has the right to draw upon the very short term financing facility (VSTF) which is designed primarily to finance intervention at the margin of the ERM band. At the intervention point access to the facility is automatic and the amount of credit available is unlimited. Since November 1987, however, the VSTF has also been available, in certain circumstances and in limited amounts, to finance intervention before a currency reaches a compulsory intervention point, although such intervention may not be undertaken without the prior consent of the central bank whose currency is being used in the intervention. Drawings under the VSTF have to be repaid within approximately three months, although limited amounts may be carried over for up to a further six months.

### The ECU

The ECU was created by the European Community in December 1978 to serve, *inter alia*, as the basis for determining exchange rate parities. It is a composite currency made up of specified amounts of the national currencies of the European Community. The amounts of the component currencies broadly reflect their country's relative economic weight (such as the importance of each country in Community GDP and intra-Community trade) and are normally revised every five years. The amounts were last changed in September 1989, when, among other changes, the ECU basket was enlarged to include the Spanish peseta and the Portuguese escudo. The ECU's composition on 12 October is shown in Table B.

In addition to having bilateral central rates against each other, each currency in the EMS (that is all ERM currencies



along with the Greek drachma and the Portuguese escudo) has a central rate against the ECU. These rates were also

**Table B**  
Composition of the ECU

Currency	Amount(a)	Weight(b)
Belgian franc	3.431	8.1
French franc	1.332	19.3
Lira	151.8	9.8
Dutch guilder	0.2198	9.4
Deutschemark	0.6242	30.2
Danish krone	0.1976	2.5
Irish punt	0.008552	1.1
Peseta	6.885	5.3
Drachma	1.44	0.7
Sterling	0.08784	12.8
Escudo	1.04741	0.8
		<b>100.0</b>

(a) These amounts have applied since September 1989.

(b) Weights based on exchange rates on 12 October 1990. This date has been chosen at random. The weights in the ECU will of course change as the exchange rates for the component currencies are determined by forces of supply and demand.

**Table C**  
Central rates of EMS currencies against the ECU since 8 October 1990

Units of national currency per ECU

Belgian/Luxembourg franc	42.4032
Danish krone	7.84195
French franc	6.89509
Deutschemark	2.05586
Irish punt	0.767417
Lira	1538.24
Dutch guilder	2.31643
Peseta	133.631
Sterling	0.696904
Drachma	205.311
Escudo	178.735

revised as a consequence of sterling's entry into the mechanism and are shown in Table C.

### The divergence indicator

The divergence indicator was designed to provide an additional means of identifying currencies in the ERM whose exchange rates are diverging from those of the other currencies, and was intended to create a presumption as to which countries should take corrective action. This indicator compares an ERM currency's market rate against the ECU with its ECU central rate, expressing the percentage difference as a proportion of its Maximum Divergence Spread (MDS). This is the maximum percentage by which a currency's market rate against the ECU can change from its ECU central rate before that currency reaches its bilateral limit against any other participating currency.<sup>(1)</sup> The ECU is used in the divergence indicator because, as it is a composite currency, it provides a comparison of a national currency's movement against the average of EMS currencies. When a currency's divergence indicator reaches 75% of its maximum divergence ('the divergence threshold') there is a presumption that 'appropriate' action will be taken to contain or reduce the divergence. In practice, however, it is quite common for currencies to reach their compulsory intervention points before reaching or crossing their divergence threshold.

(1) The MDS for a currency is always less than its percentage range of bilateral fluctuation against any other currency (ie 2 1/4% or 6%). This is because, as a currency moves the maximum of 2 1/4% divergence from all other currencies, its own influence will move the ECU down below the average of other currencies: for example, if a currency held a 1/3 weight in the ECU, the maximum divergence (when it was 2 1/4% away from all other currencies) would be 2/3 x 2 1/4%. This means that currency/ECU movements will be smaller than bilateral movements.