Fiscal Prerequisites for Further Monetary Convergence in the EMS*

Introduction

Although nominal convergence of member countries' econo-mies represents a necessary condition for the success of an Exchange Rate Mechanism such as that of the EMS, the latter cannot be sustainable unless a sufficient degree of real convergence is also ensured.[1] This issue is not new in the literature. Early work on optimal currency areas pointed out the complementary role of fiscal and monetary policy in ensuring the sustainability and promoting adjustment in a fixed exchange rate system.[2] The European Council Resolution of 5 December 1978 establishing the EMS was based on this premise, as the creation of the Exchange Rate Mechanism was *"seen as a fundamental component of a more comprehensive strategy aimed at lasting growth with stability, a progressive return to full employment, the harmonization of living standards and the lessening of regional disparities in the Community"*;[3] a set of measures aimed at strengthening the economies of the less prosperous member states was announced.[4]

However, of the overall program only the Exchange Rate Mecha-nism (ERM) has been fully realized. Consequently, the performance

[1] By real convergence it is meant that of real variables, in particular GNP and domestic demand growth and external trade. On the issue of the viability of a monetary agreement see CESARANO (1985).
[2] See for instance MUNDELL (1968).
[3] Extract from the Conclusions of the Presidency of the European Council, Brussels, 4th and 5th December, 1978.
[4] The emphasis put on the different aspects of the agreement changed considerably in the course of the EMS negotiations. See for instance LUDLOW (1982) and MASERA (1987, chap. III).

of the system has been characterized by a strong dichotomy. On the one hand, the increasing coordination of monetary policies, required to ensure exchange rate stability, has brought about a wide convergence of nominal developments. On the other hand, the divergence of other economic policies, in particular fiscal policies that have been conducted with a high degree of autonomy and directed at different objectives in the various countries, have determined large real imbalances.

The literature on the EMS experience has only marginally examined this dichotomy.[5] This article is set to analyze more specifically the effect of diverging fiscal policies on the sustainability of the ERM. In the first section we examine briefly the influence of fiscal policy in the determination of exchange rates. In the second and third sections we review the recent ERM experience. In the last section we assess the viability of a fiscal adjustment within the EMS, and its consistency with the objective of exchange rate stability.

1. Fiscal convergence and exchange rate stability

It is by now widely agreed that fiscal policy, by affecting the overall demand and supply of financial assets, produces strong repercussions on foreign exchange markets.[6] In the short run the effect of changes in the government financial balance can be partially offset through the action of monetary policy, aimed at counteracting the repercussions on interest rates. In the longer run, however, the room for autonomous monetary policy tends to be reduced in the presence of a dynamically unsustainable public debt accumulation.

The distinction between short and long term is somewhat fictitious. Actually, with highly sophisticated financial markets, market participants' action is largely determined by the expectations of future policy developments. The anticipation that monetary conditions may be affected by growing fiscal imbalances produces

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[5] See for instance BINI SMAGHI and MASERA (1987), BINI SMAGHI and VONA (1988, 1989), CER (1988), DE CECCO (1988).

[6] This issue has been examined analytically, among others, by BUITER (1986) and HELPMAN and RAZIN (1985). For a review of the role of Asset Markets in exchange rate determination see BRANSON and HENDERSON (1985).

immediate effects on interest rate differentials, even in the presence of temporarily converging nominal variables, thus generating speculative tensions on foreign exchange markets.[7]

The main transmission mechanism through which fiscal policy affects the exchange rate is the relationship between a country's saving-investment balance and the change in its net foreign asset position.[8] Given the country's propensity to save, an expansionary fiscal policy tends to determine an excess of aggregate demand over national product that generates a current account deficit. *Ceteris paribus*, the financing of a growing current account deficit requires higher rates of return to compensate foreign agents for the risk incurred in holding larger amounts of the country's financial assets. The rise in the rate of return is brought about through either an increase in the rate of interest or a depreciation of the exchange rate beyond its long run level, so as to generate the expectation of a future appreciation.[9] The dynamics of exchange and interest rate adjustment depends on the interaction between fiscal and monetary policies. In the short run, with non-accommodating monetary policy, the government deficit will be financed by (foreign and domestic) private savings, attracted by the rise in the level of domestic interest rates, that can even induce a temporary exchange rate appreciation. In the longer run, however, the willingness of the private sector to finance the government deficit will diminish, as the size of the public debt rises; the burden of financing will tend to fall more and more on monetary policy.

The anticipation by market participants that the monetary instrument may eventually be utilized for fiscal policy purposes raises inflationary expectation, with immediate impact on interest rates.[10] In an open economy this determines the anticipation of a future depreciation and generates speculative pressures that jeopardize exchange rate stability.[11]

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[7] There is a wide literature on speculative attacks in fixed (adjustable) exchange rate systems. For the case of the EMS see in particular OBSTFELD (1988) and GRILLI and ALESINA (1988).

[8] See for instance BRANSON and BUITER (1983) and PENATI (1983).

[9] For a survey of the literature on the dynamic adjustment of exchange rates see OBSTFELD and STOCKMAN (1985).

[10] Following SARGENT and WALLACE (1981), this situation may occur even in a period of downward convergence of inflation rates. Notwithstanding the temporary slowdown of inflation, the increase in the government deficit generates the expectations of future monetization of the debt and the subsequent reignition of inflation.

[11] See BUITER (1986), DORNBUSCH (1988), GALLI and MASERA (1988).

The willingness and ability to use monetary policy instruments for the purpose of fiscal policy adjustment depends also on the country's tax system. If the latter is not efficiently developed, the reduction of the budget deficit requires in this case an increase in the income raised with the inflation tax, to be brought about through a higher rate of money base expansion. The complementarity between the fiscal and monetary instruments depends here on welfare considerations; in certain circumstances the use of only one instrument may introduce strong distortions to the allocation of resources.[12] Pushing the argument to the extreme, the need to adjust fiscal imbalances could in certain cases be incompatible with monetary stability, and some countries may be "condemned" to have a high inflation rate, thereby rendering exchange rate stability unsustainable.[13]

The above mentioned mechanisms define certain channels through which fiscal policy affects monetary conditions, and therefore exchange rates. The working of these mechanisms depends in part on the institutional setting underlying the relationship between fiscal and monetary policy decision centres. These mechanisms would fully operate in a system characterized at the international level by flexible exchange rates, and at the national level by a relative prominence of the fiscal authority over the monetary authority. The ability of the former to alter the value of the debt held by residents through an unanticipated change in the domestic purchasing power of the country's currency, and the value of the debt owned by non residents through a change in the exchange rate, limits the degree of autonomy of monetary policy, even in the short run, and makes the exchange rate highly dependent on the fiscal policy stance.[14]

The above mechanisms might, on the other hand, not operate in a fully integrated monetary area, with a single currency and decen-

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[12] The complementarity between the different fiscal instruments, in particular between usual taxes and the inflation tax, has been examined by MANKIW (1987), on the basis of a model of optimal resourse allocation, following an earlier argument by PHELPS (1973).

[13] DORNBUSCH (1988), after examining the different "propensities to inflate" of European countries, concludes that the Mediterranean ones, where the tax system is less advanced, can hardly reduce their government deficit only through the fiscal instrument, and need to use extensively the inflation tax. The same thesis is held by GIAVAZZI (1988). GRILLI (1988), GROS (1988) and COHEN and WYPLOSZ (1988) dismiss it.

[14] The ability to follow this strategy is in any case limited by the well known problem of time consistency; see KYDLAND and PRESCOTT (1977). There is a growing literature on the effects of the interaction between country's policy centres; see ROGOFF (1985).

tralized fiscal authorities. The latter would actually be prevented from using monetary instruments to finance their deficits or to modify the real value of their debt. They might, on the contrary, have to compete on financial markets with other market agents to attract funds, and therefore be induced to adopt adequate policy measures to obtain good rating and thereby minimize the cost of their indebtedness.[15] Also, in a monetary union the payments imbalances among the various regions would be financed through capital flows denominated in the same currency. Contrarily to what occurs in a multiple currency system, these flows would not even be accounted for in balance of payments statistics. In fact, debts and credits of all market agents would be denominated in the same currency and would therefore incorporate no exchange rate risk but only individual solvency risks.

A managed exchange rate system, such as the ERM, is in an intermediate situation between the two previous ones. The commitment to stabilize exchange rates around the central parities is in the short run incompatible with the use of monetary policy instruments for the purpose of fiscal policy.[16] In the EMS exchange rate variations beyond the preestablished margins (realignments) require the agreement of all partners. In fact, contrarily to the Bretton Woods system, there have not been unilaterally decided realignments. Further, the modifications of central rates have not fully compensated inflation differentials, and the recourse to monetary financing of fiscal deficits has thereby been penalized. However, the diverging evolution of public finances produces growing imbalances that generates exchange rate tensions, with the risk of forcing certain countries to drastic policy choices that may not be entirely compatible with the participation to the ERM. Therefore, as long as monetary unification is not fully realized in the Community and

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[15] This argument, which is also put forward in PADOA-SCHIOPPA (1988) and THYGESEN and GROS (1988), is presented here in a very schematic way. It is often contended that this argument cannot be applied to the present European situation, in which the size of national government budgets is much larger than the Community budget. However, the US experience suggests that this should not represent a major obstacle; in fact, the State budgets were originally much larger in size than the Federal budget, whose role increased markedly only after 1933. This has not represented a major problem for the stability of the US monetary system. At present the various States' debt paper is quoted on the US financial market, with different ratings depending on the States.

[16] The case of fiscal adjustment in France in March 1983 is an example of this incompatibility.

exchange rates can still be modified, even with smaller frequency, fiscal convergence will represent an important prerequisite for exchange rates and price level stability.

2. Fiscal convergence in the EMS

During the EMS period member countries' fiscal policies have not converged. This judgment is now widely shared, as confirmed for instance by Russo: "*In the experience with cooperation so far, a major unresolved issue concerns the role of fiscal policy in coordination and convergence*" (1986, p. 6).

The standard deviation of member countries' ratio of fiscal balances to GNP rose from 4% in 1979 to 5.4% in 1987 (Fig. 1). On the one hand, France and Italy conducted relatively more expansion-

FIGURE 1

INFLATION AND FISCAL POLICY CONVERGENCE IN THE ERM

(standard deviation-percentage points)
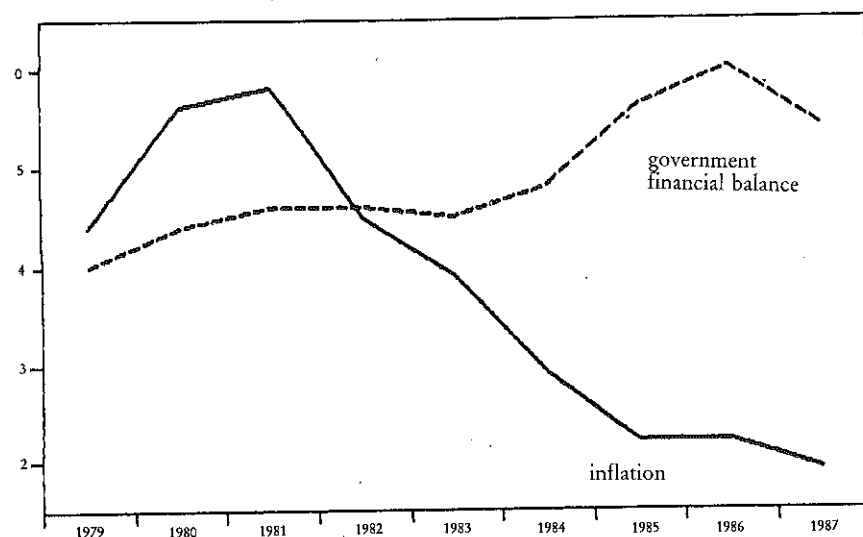
Inflation is measured on the basis of consumer prices; government financial balance (deficit) is measured on the basis of GNP.

ary fiscal policies, increasing their budget deficits from an average, respectively, of 1.4 and 10.3% of GNP in the period 1979-82, to 2.9 and 11.7% in 1983-86. On the other hand, Germany, Belgium and Denmark undertook a fiscal contraction that reduced their budget deficits from an average level of, respectively, 3.1, 10.3 and 5.3% of GNP in the first period, to 1.7, 9.8 and 2.4 in the second period. The Netherlands slightly increased their deficit (from 5 to 5.7%). After adjusting for the cyclical and inflation induced components of budget deficits, fiscal policy has been expansionary in Italy, France and the Netherlands, while restrictive in Germany, Belgium and Denmark (Tab. 1).

TABLE 1

CHANGE IN GENERAL GOVERNMENT FINANCIAL BALANCES
(percentage change with respect to GNP)

Countries		1980	1981	1982	1983	1984	1985	1986	1987	1988	1981-88
Germany	a)	−0.5	−0.7	0.4	0.8	0.6	0.8	−0.1	−0.5	−0.2	1.1
	b)	−0.4	0.1	1.4	0.9	−0.1	0.5	−0.7	−0.2	−0.8	1.1
France	a)	1.0	−2.0	−0.9	−0.3	0.2	0	−0.1	0.4	0.8	− 1.9
	b)	1.4	−1.0	−0.6	−0.1	0.6	0.5	−0.6	0.5	0.3	− 0.4
Italy	a)	0.9	−3.9	−0.7	0.9	−1.2	−1.0	1.0	0.9	0.3	− 3.7
	b)	0.9	−5.0	−0.6	−0.3	−2.1	−1.7	−1.3	0.1	0.1	−10.8
Belgium	a)		−3.9	1.5	0.2	2.3	0.5	−0.2	2.0	0.2	2.6
	b)		−0.8	3.1	1.6	1.5	0	−4.2	3.0	−1.8	2.4
Denmark	a)		−3.4	−2.4	1.9	3.1	2.1	5.4	−1.4	−1.4	3.9
	b)		−0.4	−2.5	1.9	1.8	0.8	4.2	0	−0.3	5.5
Netherlands	a)		−1.3	−1.6	0.6	0.1	1.5	−1.1	−0.2	0.7	− 1.3
	b)		0.1	−0.1	0.1	−0.3	1.1	−2.3	−0.4	0.8	− 1.0

a) Change in actual balance.
b) Change in cyclically and inflation adjusted balance.
Source: OECD.

The different budget policies followed in member countries have produced relevant effects on their internal and external financial balances. It can be noticed that the ratio of the public debt to GNP increased in all countries, even in those that conducted relatively

more restrictive fiscal policies (Tab. 2). In Belgium public debt rose above 100% of GNP since 1983. In Italy this threshold is in the process of being reached. These figures need however to be interpreted with caution, as suggested by Drazen and Helpman (1986), and can hardly be compared across countries without taking into account differences in national public finance situations.

TABLE 2

PUBLIC DEBT TO GNP RATIOS
(percentage values)

Countries	1980	1981	1982	1983	1984	1985	1986	1987	1988
Germany	33	36	40	41	41	42	42	44	45
France	37	36	40	41	44	46	47	44	44
Italy	58	61	66	72	77	84	88	92	95
Netherlands	46	50	56	62	66	69	71	77	80
Belgium	77	89	97	107	112	119	122	125	126
Denmark	34	44	53	63	67	66	60	57	56

Source: OECD; end of period data.

Member countries' domestic demand growth has largely reflected the diverging path of fiscal policies in the area. France and Italy, where fiscal policies have been relatively more expansionary, registered the fastest rates of growth of domestic demand, 2 and 3% yearly averages, respectively. On the contrary, in Germany, Belgium and Denmark domestic demand increased at lower rates (1.5, 1.3 and 1% yearly averages), with a marked slowdown with respect to the performance of the seventies. In the Netherlands domestic demand grew at a rate lower than 1% yearly.

Current account developments have also reflected fiscal divergences. During the EMS period the relative current account positions have been widely modified (Tab. 3). In 1979, while France and Italy were in surplus by over 5 billion dollars, Germany, Belgium and Denmark were in deficit by 5.4, 3.1 and 3 billion dollars, respectively. Ten years later, in 1988, the first group of countries turned into deficit, of 5 and 8 billion dollars, respectively, while Germany, the Netherlands and Belgium turned into surplus of 47, 4.5 and 3.3 billion dollars, respectively. In the entire period the net foreign asset position of Germany and the Netherlands improved by about 142 and 34 billion dollars (11 and 15% of GNP), while that of France and Italy

TABLE 3

BALANCE ON CURRENT ACCOUNT
(billion dollars)

Countries	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Germany	−5.4	−13.8	−3.6	5.1	5.3	9.7	16.2	37.9	44.3	47.0
France	5.2	− 4.2	−4.7	−12.1	−4.7	−0.8	−0.4	2.9	−4.5	−5.0
Italy	5.5	− 9.9	−9.0	− 6.2	1.6	−2.4	−3.6	2.8	−0.7	−8.0
Netherlands	0.2	− 1.0	3.6	4.5	4.9	5.1	5.3	4.6	3.2	4.5
Belgium	−3.1	− 4.9	−4.2	− 2.4	−0.4	0.0	0.7	2.9	2.5	3.3
Denmark	−3.0	− 2.5	−1.9	− 2.2	−1.2	−1.6	−2.7	−4.3	−2.9	−1.2

Source: OECD.

deteriorated by about 28 and 30 billions; that of Belgium has remained more or less unchanged.

Part of the factors underlying the growing imbalances in the system are of external origin.[17] However, the main explanation of the different external performance of member countries arises from intra-ERM trade relations.

Intra-ERM trade flows (Tab. 4) show that during the 1979-88 period Germany's surplus with respect to partner countries increased by about 21 billion dollars. In the meanwhile France's deficit deteriorated from 7 billion in 1979 to 22 in 1988, and Italy's from 1 billion in 1979 to about 9 billion in 1988. A recent research has examined the main factors underlying the growing trade imbalances among ERM countries.[18] The study shows that an important role has been played by differences in the rate of growth of domestic demand in the various countries that followed divergences in fiscal policies.

These widening imbalances represent a major source of tensions on foreign exchange markets and create obstacles to the stability of the ERM. In the last few years, monetary policy coordination allowed ERM member countries to maintain relatively stable exchange rates and to limit the recourse to realignments. However, the financing of imbalances within the ERM have required widening real interest rate differentials (Tab. 5); by 1988 the French and Italian real interest rates have risen over 2 percentage points above Germany's, against a differential that fell short of 1 percentage point in 1982-83, and even showed negative values in the earlier period of the EMS. This trend is clearly unsustainable in a medium term perspective.

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[17] An evaluation of this effect is found in BINI SMAGHI and VONA (1988).
[18] See BINI SMAGHI and VONA (1989).

TABLE 4

INTRA-ERM TRADE BALANCES
(billion dollars)

Countries	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988(*)
Germany	5.6	7.9	7.3	11.1	4.8	7.1	8.9	16.3	24.1	26.5
France	−7.1	−10.4	−11.9	−17.2	−13.2	−12.3	−12.4	−17.1	−21.0	−21.9
Italy	−0.9	− 7.0	− 5.9	− 3.4	− 1.5	− 3.5	− 3.6	− 3.8	− 6.7	− 8.6
Netherlands	5.2	9.5	11.4	11.2	10.9	10.6	10.6	8.0	5.5	5.7
Belgium	−0.9	0.7	0.2	− 1.1	− 1.0	− 1.6	− 2.0	− 0.9	− 1.2	− 3.4
Denmark	−2.0	− 1.2	− 1.3	− 1.2	− 0.8	− 1.5	− 2.0	− 3.0	− 2.2	− 1.8

(*) Based on first three quarters.
Source: OECD.

3. Possible explanations of fiscal divergence in the EMS

The different degree of monetary and fiscal convergence in the ERM originates in the particular adjustment policies adopted in the member countries. It is important in this respect to remind that the ERM started off in a period of wide nominal divergences; in 1979 France, Italy and Denmark recorded relatively high inflation rates (10.8, 15.7 and 9.6% respectively), while in Germany, the Netherlands and Belgium prices were increasing at a much lower level (4.1, 4.5 and 4.2% respectively). The ERM membership induced all countries to accept the reduction of inflation rates, both in terms of differentials and average levels, as the main policy objective for the whole area.

TABLE 5

REAL INTEREST RATE DIFFERENTIAL
WITH RESPECT TO GERMANY[1]

		1980	1981	1982	1983	1984	1985	1986	1987	1988
France	a)	−4.9	−3.7	−1.1	0.3	0.2	0.7	0.1	1.2	2.0
	b)	−4.5	−4.3	−3.4	0.8	1.2	0.3	0.4	2.3	2.2
Italy	a)	−8.1	−5.2	−0.9	0.2	0.6	1.0	0.4	2.1	2.6
	b)	−6.4	−5.5	−1.2	−0.3	0.8	1.9	1.1	2.9	3.2

[1] Short term rates
a) Calculated on the basis of the inflation rate over the previous year
b) Calculated on the basis of the inflation rate forecast of the OECD outlook for the coming year (average of July and December issues).

The exchange rate has been used as a main policy instrument for price discipline, and has been adjusted only *ex post* with respect to relative price developments.[19] Consequently, the exchange rate in high inflation countries tended to appreciate in real terms. With respect to 1979, the intra-ERM real exchange rate of France and Italy, based on manufacturing producer prices, appreciated in 1988 by 7 and 12%, respectively. The real effective exchange rate of the DM returned in 1987 at its 1979 level, after having stayed below it for the first six years. On a bilateral basis Germany recorded an improvement of its competitiveness with respect to France and Italy, by 4 and 10 percentage points, respectively, while suffering a loss with respect to the Netherlands and Belgium, by 12 and 28%, respectively.

As mentioned previously, the System was originally based on an exchange rate agreement and on a set of policy measures aimed at easing the adjustment process, especially in the less developed regions. The objective underlying this double policy agreement was to reduce the redistributive effects produced by the reduction of inflation differentials and ensure an equal burden sharing of adjustment costs.[20] The goal was to avoid that high income countries could benefit, in terms of economic growth, from the ERM membership at the expense of lower income countries, through the gains in competitiveness obtained by the lower domestic price dynamics. Therefore, these countries would have been expected to adopt measures aimed at expanding their domestic demand, so as to give a positive contribution to growth in the rest of the area, and thereby reduce the output cost of disinflation.

This policy adjustment principle has remained only theoretical, since no explicit economic policy framework was designed for fiscal policy. The 1974 Community directive, the only one concerning fiscal policy, does not identify rules of behaviour nor procedures that entail an effective coordination. Therefore, national fiscal policies have been directed mostly at the attainment of domestic objectives, that differed among countries and were often not fully compatible with the adjustment of external imbalances, necessary for the sustainability of the ERM. The most developed countries, such as Germany, the Netherlands and Belgium, that gained competitiveness

[19] For a description of the evolution of the ERM, see BINI SMAGHI and MASERA (1987).
[20] See MASERA (1987).

FIGURE 2

DOMESTIC DEMAND AND COMPETITIVENESS
(percentage rates of charge; yearly average 1979-87)
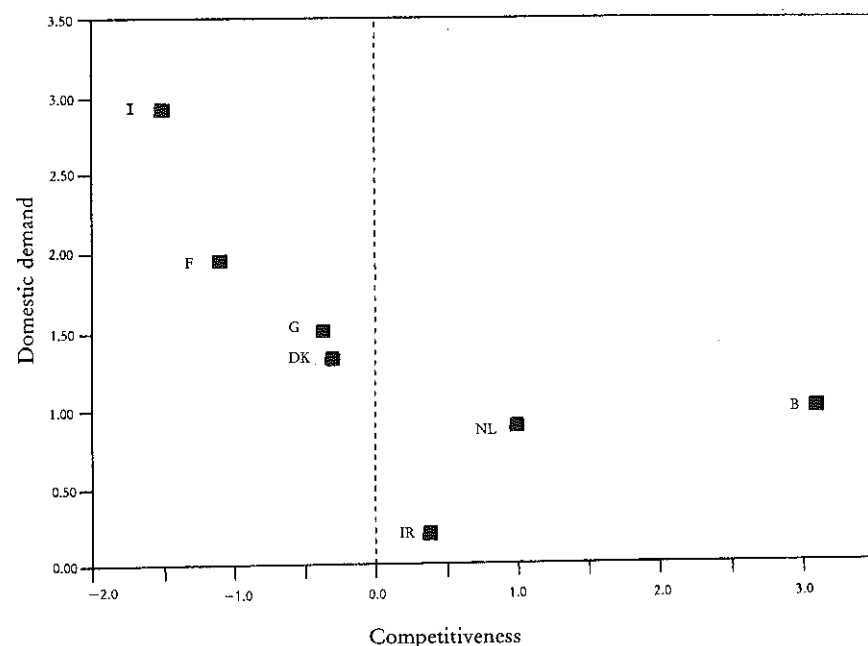
with respect to their ERM partners, did not experience a higher growth of their domestic demand (Fig. 2). On the contrary, as seen in the previous section, they tended to adopt contractionary fiscal policies, aimed especially at structural objectives, in particular that of reducing the burden of the public debt.

In the high inflation countries of the ERM, the contractionary effect originating from the loss of competitiveness has further been stressed by the slowdown of economic growth in the ERM partners. The output cost of disinflation proved therefore to be higher than expected; to reduce this cost, and counteract the negative external impulses, fiscal policies have tended to become more expansionary. This contributed to stimulate domestic demand, directly affecting external imbalances.

Overall, the adjustment mechanism adopted in the ERM area has not ascribed to the fiscal and monetary instruments a complementary role in order to reduce the distributive effects of the exchange rate stabilization strategy in the presence of high initial inflation differentials. Consequently, the convergence of inflation rates has been accompanied by fiscal divergence, that produced increasing real imbalances in the area.

4. What strategy for fiscal adjustment?

As shown in the previous section, the combination of economic policies followed by ERM member countries, though contributing to stabilize exchange rates and reduce inflation differentials, still produced wide real imbalances. On the other hand, inflation differentials have not been eliminated, and therefore it is not possible yet to move rapidly towards fixed exchange rates and full monetary unification, which, as suggested in the first section, would in part allow to overcome the problems related to fiscal divergence and to the existence of payments imbalances. The delay in the process of monetary unification renders the objective of reducing fiscal divergences more urgent.

However, as economic growth is progressively slowing down in Europe, and unemployment remains at relatively high levels, fiscal adjustment may reveal particularly costly. In particular, the harmonization of budget policies, based on restriction in deficit countries and expansion in the others, is likely to create an excess supply in the first group of countries, with strong negative repercussions on domestic prices and income, and an excess demand in the second group of countries, with potentially inflationary effects. In the new equilibrium domestic prices would have to adjust to induce the change in the real exchange rate between two groups of countries required to eliminate the respective excess supply and demand; this adjustment would inevitably cause relevant output effects.[21]

A way to reduce the output and nominal price effects of the fiscal adjustment strategy may consist in provoking the real exchange rate adjustment through a change in the nominal exchange rate rather than through a change in the respective domestic nominal price levels. In this way the domestic price levels would remain unchanged

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[21] KRUGMAN (1987) examines analytically this aspect.

and the adjustment of the excess supply in the first group of countries and of the excess demand in the second group would have limited output effects on the respective economies.

This framework is considered by Krugman (1987) for the adjustment of the payment imbalances among the major industrial countries.[22] Following his approach, the reduction of the US current account deficit would follow a joint rebalancing of fiscal positions, contractionary in the US and expansionary in the other countries, accompanied by a modification of relative prices through an exchange rate depreciation of the dollar with respect to the yen and the European currencies.

The same type of strategy, based on a joint use of the fiscal instrument and of exchange rate change, may be considered in the ERM to reduce external imbalances. However, exchange rate modifications within the ERM may jeopardize the maintainment of monetary discipline and price stability in the area. An exchange rate change may in effect give rise to price increases in the devaluing country and ignite inflationary pressures, with disruptive effects on the system (Bini Smaghi and Vona, 1989). The objective of fiscal convergence would in this case be incompatible with price convergence and exchange rate stability.

However, the inflationary effect of a once-and-for-all exchange rate adjustment in the ERM depends on a wide set of internal and external factors. The first includes the accompanying policies adopted by the authorities of the devaluing country, and the degree of labour cost indexation. The second concerns the modification of exchange rates with respect to external currencies, in particular the dollar.

To assess the effect of these factors on the outcome of an intra-ERM exchange rate modification, a trade and inflation model has been developed in Bini Smaghi and Vona (1988). This model allows to examine the effects, in terms of prices and trade flows, of alternative exchange rate and domestic demand policies. The structural equations and the values of the main parameters are shown in the Appendix. We mention here that the model concentrates on the manufacturing sector, which is the most important for intra-ERM trade flows. The model is of a partial equilibrium nature, and

exchange rates and domestic demand are considered as exogenous variables. Therefore, it only allows to examine the impact effect of alternative exogenous policy impulses.

For the analysis of intra-ERM relations the structure of the model presents several advantages with respects to other more complex models. The dynamic interactions between exporters and domestic producers, in particular in the pricing strategy following exchange rate changes are taken into account, while being ignored in most national macroeconometric models. Further, this model allows to examine the pass-through from exchange rates to prices and trade flows within a small set of equations, that can be easily used in simulation exercises, without resorting to complicated calibration requirements. The results need in any case to be assessed with caution.

We have conducted six different exercises. Their purpose is to examine the effect of an intra-ERM exchange rate change, under different assumptions concerning: (a) the degree of responsiveness of labour costs; (b) the evolution of currencies not participating to the ERM; (c) the development of domestic demand in the various countries. France and Italy are assumed for simplicity to follow the same behaviour, in particular with respect to the exchange rate modifications. The assumptions are the following:

(i) in the first exercise (S1), the French franc and lira are assumed to devalue both with respect to the other ERM currencies and with respect to the non-ERM currencies, with full unit labour cost adjustment to domestic price changes;

(ii) the second exercise (S2) is similar to the first, but the labour cost adjustment coefficient is reduced at 50 per cent;

(iii) the third exercise (S3) is similar to the second, but is accompanied by a contraction of the French and Italian domestic demand (with respect to their trend) by an amount (in percentage points) equal to the devaluation;[23]

(iv) the fourth exercise (S4) assumes a revaluation of the DM, guilder and Belgium franc with respect to both the French franc and the lira on the one hand, and the non-ERM currencies on the other, with complete labour cost adjustment;

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[22] See also BRANSON (1988).

[23] For instance a 1 per cent devaluation of the French franc and lira is accompanied by a 1 per cent reduction of the French and Italian domestic demand (with respect to its trend).

(v) the fifth exercise (S5) assumes that the French franc and the lira depreciate with respect to the non-ERM currencies by half the size of the devaluation with respect to the DM, guilder and Belgian franc, with complete labour cost adjustment;

(vi) the last exercise (S6) is similar to the previous one, but accompanied by a simultaneous contraction of domestic demand in France and Italy and by an expansion in the other three countries (with respect to their trend), by an amount (in percentage points) equal to half the bilateral intra-ERM exchange rate change.

The results are presented in figures 3 to 5. The first four exercises consider an asymmetric adjustment of the ERM exchange rates with respect to the external currencies. In the first three exercises the exchange rates of the non-ERM currencies are unchanged with respect to the DM, guilder and Belgian franc (while revaluing with respect to the French franc and lira), while in the fourth they are unchanged with respect to the French franc and lira (while devaluing with respect to the DM, guilder and Belgian franc).[24]
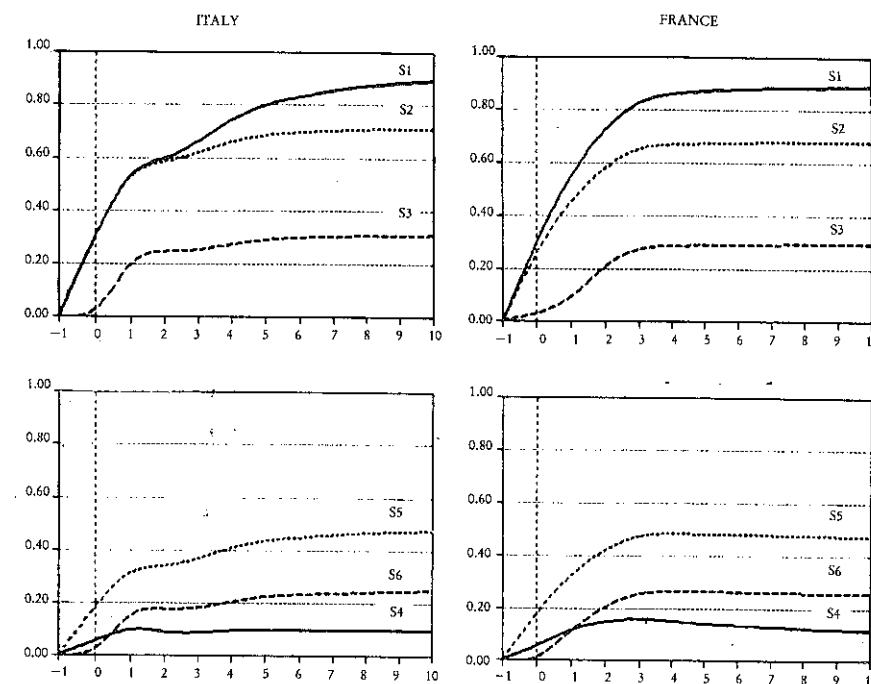
The results of simulations S1 and S4, in which full labour cost adjustment and no accompanying domestic demand measures are assumed, show that the effects of the intra-ERM exchange rate change on domestic prices strongly depend on the behaviour of non-ERM currencies. In the first exercise (S1), in which the French and Italian currencies depreciate with respect to those of both the ERM partners and the other main countries, the repercussion on the two countries' domestic producer prices is nearly proportional to the exchange rate variation (Fig. 3). The effect on the trade account is practically nil for both countries (Fig. 4). On the contrary, the fourth exercise (S4) in which the exchange rate of non-ERM currencies remains unchanged with respect to the French franc and the lira, the inflationary effect of the devaluation is rather small, less than 10% of the exchange rate change. In fact, in this latter exercise the French and Italian domestic currency prices of imported products from the non-ERM area, in particular raw materials and petroleum, remain unchanged.

This first comparison shows that the inflationary repercussions of an intra-ERM exchange rate adjustment may differ widely

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[24] The exchange rate of the Danish krone and the Irish pound is assumed unchanged with respect to non-ERM currencies.

FIGURE 3

PRICE EFFECT OF A JOINT EXCHANGE RATE DEVALUATION
OF THE LIRA AND FRENCH FRANC WITH RESPECT TO THE DM[1]
(elasticities)

[1] The Dutch guilder and Belgian franc are assumed to follow the DM.
S1 = The exchange rate of non-ERM countries remains unchanged with respect to the DM; complete indexation of labour costs. S2 = Similar to S1 but 50 per cent indexation. S3 = Similar to S2 with reduction of domestic demand of an amount similar to the devaluation. S4 = The exchange rate of non-ERM currencies remains unchanged with respect to French franc and lira. Complete indexation. S5 = The exchange rate of non-ERM currencies depreciates with respect to the DM and appreciates with respect to the French franc and lira by an equal amount. Complete indexation. S6 = Similar to S5 with reduction of domestic demand in France and Italy and increase in Germany by half the amount of the bilateral exchange rate change.
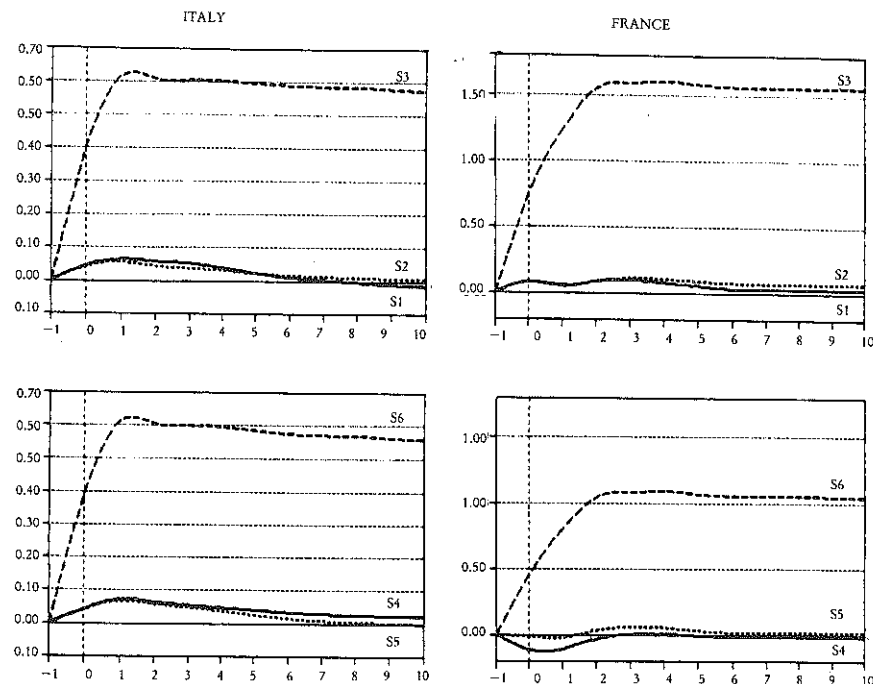
depending on external circumstances. In particular, there are situations in which the inflationary effect is nearly negligible.[25]

The second (S2) and third (S3) exercises examine the sensitivity

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[25] This result seems to apply to the recent experience of Italy, where the rate of inflation was cut in half between 1984 and 1986, although the lira depreciated by 10% with respect to the DM, while contemporaneously appreciating by 15% with respect to the dollar.

FIGURE 4

INTRA-ERM TRADE BALANCE EFFECT OF A 1 PER CENT JOINT
DEVALUATION OF THE FRENCH FRANC AND LIRA
WITH RESPECT TO THE DM[1]
(billion dollars)

[1] The Dutch guilder and Belgian franc are assumed to follow the DM.
S1 = The exchange rate of non-ERM countries remains unchanged with respect to the DM;
complete indexation of labour costs. S2 = Similar to S1 but 50 per cent indexation. S3 = Similar
to S2 with reduction of domestic demand of an amount similar to the devaluation. S4 = The
exchange rate of non-ERM currencies remains unchanged with respect to French franc and lira.
Complete indexation. S5 = The exchange rate of non-ERM currencies depreciates with respect
to the DM and appreciates with respect to the French franc and lira by an equal amount.
Complete indexation. S6 = Similar to S5 with reduction of domestic demand in France and Italy
and increase in Germany by half the amount of the bilateral exchange rate change.

of the previous results with respect to different hypothesis regarding
the degree of adjustment of labour costs and the dynamics of
domestic demand. In the first exercise (S1) unit elasticity of labour
cost to domestic prices was assumed. This hypothesis is rather
extreme, since it presupposes both constant productivity and full
wage indexation, which may not be realistic in a less than full
employment situation. In fact, in the last few years the correlation
between domestic producer prices and unit labour costs was less than
unity, both in France and Italy (around 0.8%). In the S2 exercise a
0.5 correlation is assumed.[26] With this new assumption, the increase
in domestic prices produced by the devaluation is reduced by about
20% in both countries.

In the S3 exercise the depreciation of the French franc and lira is
accompanied by a contraction of domestic demand (with respect to
their trend), by an amount (in percentage points) equal to the size of
the devaluation. Also in this case the price effect of the devaluation is
strongly reduced: to about one third of the exchange rate change.
The French and Italian intra-ERM manufacturing trade balance
improves by half a billion dollar for every 1% bilateral depreciation;
the German one deteriorates by about the same amount (Fig. 5).

The two exercises above show, in accordance with the existing
literature,[27] that the inflationary effect of an exchange rate change
strongly depends on the accompanying policies, in particular those
affecting income and aggregate demand.

The last two exercises consider a symmetric exchange rate and
aggregate demand adjustment within the ERM. The French franc
and lira devaluation with respect to the non-ERM currencies is now
assumed to be equal to half that with respect to the other ERM
currencies. In the case of complete labour cost adjustment and no
aggregate demand change (exercise S5), the French and Italian
domestic producer prices increase by about one half the bilateral
intra-ERM exchange rate variation. The effect on trade relations with
the other ERM countries is rather small. In the sixth exercise (S6) the
exchange rate variation, similar to that assumed in S5, is accompanied
by a symmetrical aggregate demand adjustment, contractionary in
the devaluing countries and expansionary in the revaluing countries.
The price adjustment is in this case very small. Further, the French
and Italian trade balances improve by about 0.6 and 1 billion dollars,
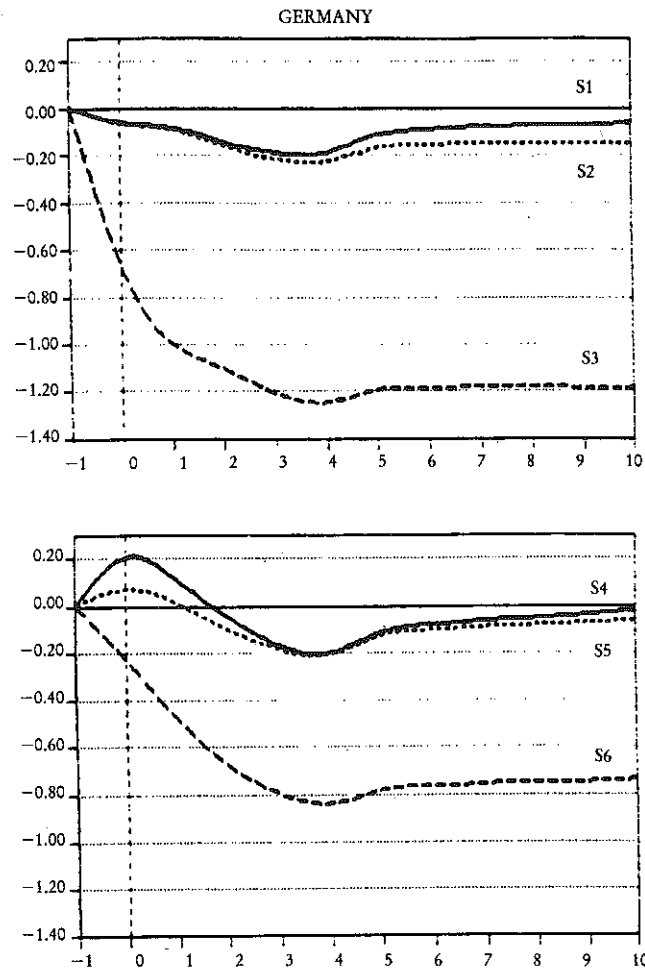for each 1% bilateral devaluation.

These exercises show that coordinated exchange rate and aggre-
gate demand policies could favour the adjustment of payments

[26] In this case it is assumed that the reduction of the unit labour costs in real terms has no
effect on the dynamics of domestic demand; this hypothesis will be partially removed in
simulation S3.
[27] See for instance CORDEN (1977).

FIGURE 5

INTRA-ERM TRADE BALANCE EFFECT OF A 1 PER CENT JOINT
DEVALUATION OF THE FRENCH FRANC AND LIRA
WITH RESPECT TO THE DM[1]
(billion dollars)

GERMANY

[1] The Dutch guilder and Belgian franc are assumed to follow the DM.
S1 = The exchange rate of non-ERM countries remains unchanged with respect to the DM;
complete indexation of labour costs. S2 = Similar to S1 but 50 per cent indexation. S3 = Similar
to S2 with reduction of domestic demand of an amount similar to the devaluation. S4 = The
exchange rate of non-ERM currencies remains unchanged with respect to French franc and lira.
Complete indexation. S5 = The exchange rate of non-ERM currencies depreciates with respect
to the DM and appreciates with respect to the French franc and lira by an equal amount.
Complete indexation. S6 = Similar to S5 with reduction of domestic demand in France and Italy
and increase in Germany by half the amount of the bilateral exchange rate change.

imbalances in the ERM while not jeopardizing price stability in the
area. This suggests that the reduction of fiscal divergences, if
accompanied by adequate adjustments in relative prices, might help
improve both the real and nominal convergence in the system.

However, there are large risks associated with this strategy. In
particular, if the fiscal action is not undertaken in a symmetric way,
and jointly with the exchange rate change, the adjustment might
occur differently than expected, and could entail negative inflation-
ary repercussions that would be highly damaging. The risk is that the
outcome be that of the first simulation, instead of the sixth, with
minimal effects on trade imbalances and huge repercussions on
inflation differentials. This outcome would jeopardize ERM sta-
bility.

Conclusions

During the EMS inflation convergence has been accompanied
by a subtantial divergence of fiscal policies, that generated wide
payments imbalances in the area, thereby endangering the sustain-
ability of the system. The adjustment of these imbalances can be
brought about through two strategies. The first one consists in
progressing rapidly towards full monetary unification, with the
adoption of a single currency and of a European Central Bank, that
reduces the ability of national fiscal authorities to use monetary
policy for budgetary purposes. The second solution would be to
adopt corrective measures that reduce fiscal divergences, so as to
avoid the emergence of disgregating forces within the system that
might endanger its stability. A strategy of fiscal correction, based on
an expansionary impulse in current account surplus countries and on
a contraction in deficit countries, appears necessary. The redistribu-
tive effects of this manoeuvre on prices and income could eventually
be counteracted through a symmetric adjustment of relative prices,
to be brought about by a once-and-for-all exchange rate adjustment.
This strategy, although urgent, presents several risks. Its success
requires that action be undertaken first in the field of fiscal policy.

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APPENDIX

The trade and inflation model used in the simulations of section 4 is similar to that examined in Bini Smaghi and Vona (1988). The main equations of the model are, for the three countries considered (Germany, France and Italy):

$$X \quad = X(DA, CX) \tag{1}$$
$$M \quad = M(D, CM) \tag{2}$$
$$PX \quad = PX(PAX, PI) \tag{3}$$
$$PI \quad = PI(CL, MAT, PM, GAP) \tag{4}$$

where X and M are export and import volumes, PX and PM export and import prices, PI domestic producer prices, D domestic demand, DA domestic demand of partner countries, CX and CM export and import price competitiveness, PAX the price of competitors, CL unit labour costs, MAT the import price of raw materials, GAP the aggregate demand deviation from its trend. In the following table we reproduce the values of the coefficients of equation (1) to (4).

PARAMETER VALUES
(elasticities)

Variables	Germany	France	Italy
1. Export volume equation			
Domestic demand (DA)	1.88	1.90	2.21
Competitiveness (CX)	−.97	−.57	−.82
2. Import volume equation			
Domestic demand (D)	1.64	2.74	2.16
Competitiveness (CM)	−.89	−.58	−.98
3. Export price equation			
Price of competitors (PAX)	.37	.39	.42
Domestic prices (PI)	.63	.61	.58
4. Domestic price equation			
Unit labour cost (CL)	.34	.36	.33
Raw material import price (MAT)	.06	.08	.17
Manufacturing import price (PM)	.60	.56	.50
Domestic demand gap from trend (GAP)	.13	.28	.30

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