III

Recent Changes in the European Exchange Rate Mechanism

Following a year of unprecedented turmoil, pressures within the exchange rate mechanism of the European Monetary System intensified further in July 1993, culminating in a decision to widen temporarily the bands for mandatory intervention to plus or minus 15 percent from the central parities, effective August 2 (a full chronology is given in Box 3 at the end of this Chapter).[11] It is still too early to gauge the full ramifications of the new intervention rules, but the initial reaction of financial markets suggests that most ERM countries may now be able to set interest rates in closer accordance with domestic requirements without incurring excessive depreciations of their exchange rates. This, however, will require that they move cautiously and do not jeopardize the credibility of their commitments to price stability. As governments take advantage of the greater flexibility offered by the wider bands, it seems likely—and, indeed, appropriate—that short-term interest rates in Europe will decline significantly during the period ahead. Prospects for recovery should therefore also gradually improve.

It is clear that a strategy of overly aggressive reductions in official interest rates carries significant risks, as it might induce unduly large short-term exchange rate fluctuations and could possibly undermine longer-term policy credibility. At the same time, it is essential not to underestimate the beneficial effects of reducing high real interest rates to levels appropriate to the deep recession and to the absence of inflationary pressures in many ERM countries. In addition to any direct impact of lower short-term rates on aggregate demand—which may be small and may become visible only with a substantial lag—a progressive easing of monetary conditions in general accordance with market expectations would be likely to have considerable positive effects on business and consumer confidence, particularly since it might well be perceived as a decisive departure from the policy inconsistencies that have contributed to the exchange market turmoil and to the continuing weakening of activity during the past year.

[11]The guilder and the deutsche mark will continue to operate within a 2¼ percent band, reflecting a bilateral agreement between the Dutch and German monetary authorities.

As countries use their room to lower interest rates, the recent modest exchange rate depreciations may persist for some time and, in some cases, may be accentuated somewhat. However, where underlying competitive positions are sufficiently strong, and provided that policy credibility is not jeopardized by excessive easing, such depreciations can be expected to be reversed as activity begins to recover and as policy requirements among ERM countries gradually converge. To maintain excessively high real interest rates to avert some exchange rate depreciation in the short run would further delay recovery, increase the risk of additional fiscal policy slippages, fuel protectionist pressures, and might even trigger new speculative attacks that could lead to larger exchange rate adjustments.

Factors Underlying the Exchange Market Tensions in Europe

Since its inception in 1979, the ERM has enjoyed considerable success in promoting economic convergence among the participating countries toward the objective of a common, low inflation rate. To a significant extent, this was accomplished by relying on the nominal anchor of the Bundesbank's firm commitment to maintain low inflation in Germany. Countries whose inflation rates converged to that in Germany were generally able to avoid adjustments of their official parities. Between 1979 and 1987, official parities were periodically realigned for countries that had not yet achieved the requisite degree of convergence. The success of this endeavor was reflected in a gradual—albeit not complete—narrowing of inflation differentials among the participating countries, in the broadening of the ERM to include new members (Spain, the United Kingdom, and Portugal), and in the decisions of Finland, Norway, and Sweden to peg unilaterally their currencies to the European currency unit (ECU).

In the years following the last general realignment in early 1987, the ERM appeared to be evolving more and more into a de facto fixed exchange rate system—notwithstanding some continuing differences in inflation rates and significant diver-

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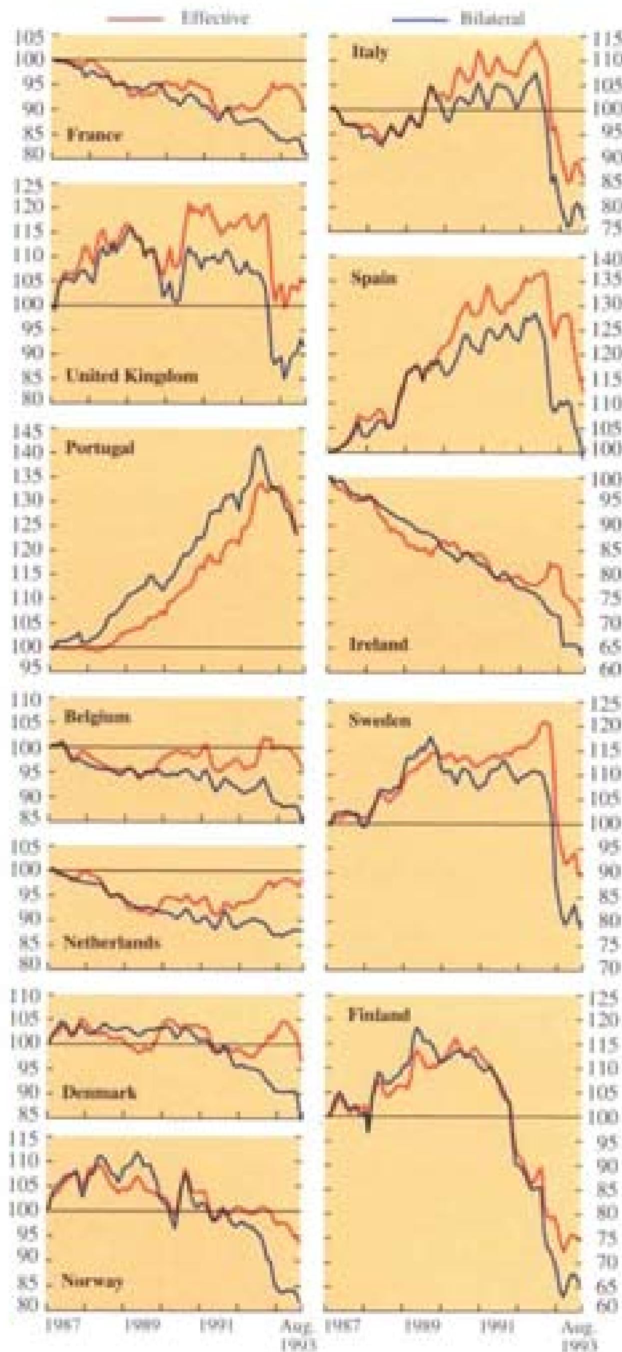
Chart 14. Selected European Countries: Real Bilateral Exchange Rates vis-à-vis the Deutsche Mark and Real Effective Exchange Rates[1]

(January 1987 = 100; an increase indicates an appreciation of the currency)



[1]Defined in terms of relative normalized unit labor costs in manufacturing using 1980 trade weights, except for Portugal, which is in terms of relative consumer prices using 1980-82 trade weights.

gences in economic performance (especially after 1990). This development was further solidified by the signing of the Maastricht Treaty in December 1991, which formally laid out the path to full monetary union and which stipulated convergence criteria for member countries of the union. In early June 1992, however, a referendum in Denmark narrowly rejected the Maastricht Treaty, creating some doubt that monetary union would occur as smoothly as had earlier been thought. During the summer, renewed doubts about the sustainability of official parities led to increasing exchange market pressure on currencies thought to be potentially weak. Uncertainty about the outcome of the French referendum on the Maastricht Treaty scheduled for September 20, 1992 provided a specific focus for these market pressures. Thus, the stage was set for the European exchange market crisis that began in the summer of 1992 and has continued, with varying intensity, through the summer of 1993.

A detailed review of events in European exchange markets from the summer of 1992 through March of 1993 has already been presented in the January 1993 *Interim Assessment* of the *World Economic Outlook*, the May 1993 *World Economic Outlook*, and the April 1993 *International Capital Markets* report.[12] The key point to recall from these previous discussions is the analysis of the underlying economic causes of the crisis for those currencies that were forced to float or to devalue before the most recent episode.

One important factor that contributed to market pressures against some currencies was the apparent deterioration of international cost competitiveness. In the years preceding the crisis, limited adjustments of parities and a lack of full convergence of inflation resulted in significant real appreciations of the lira, the escudo, and the peseta, as well as of the Swedish krona, which was unilaterally pegged to the ECU (Charts 14 and 15). Although inflation declined rapidly and the pound sterling did not appreciate substantially in real terms after the United Kingdom joined the ERM in October 1990, its central parity came to be perceived by some in the market as ambitious. The widening of current account deficits in Finland, Italy, Spain, Sweden, and the United Kingdom (although not in Portugal), given relative cyclical positions, also suggested to financial markets that exchange rate parities might eventually need to be corrected. By contrast, in Austria, Belgium, Denmark, France, Ireland, and the Netherlands, which maintained their exchange

[12]Morris Goldstein, David Folkerts-Landau, and others, *International Capital Markets: Part I, Exchange Rate Management and International Capital Flows*, World Economic Survey (IMF, April 1993).

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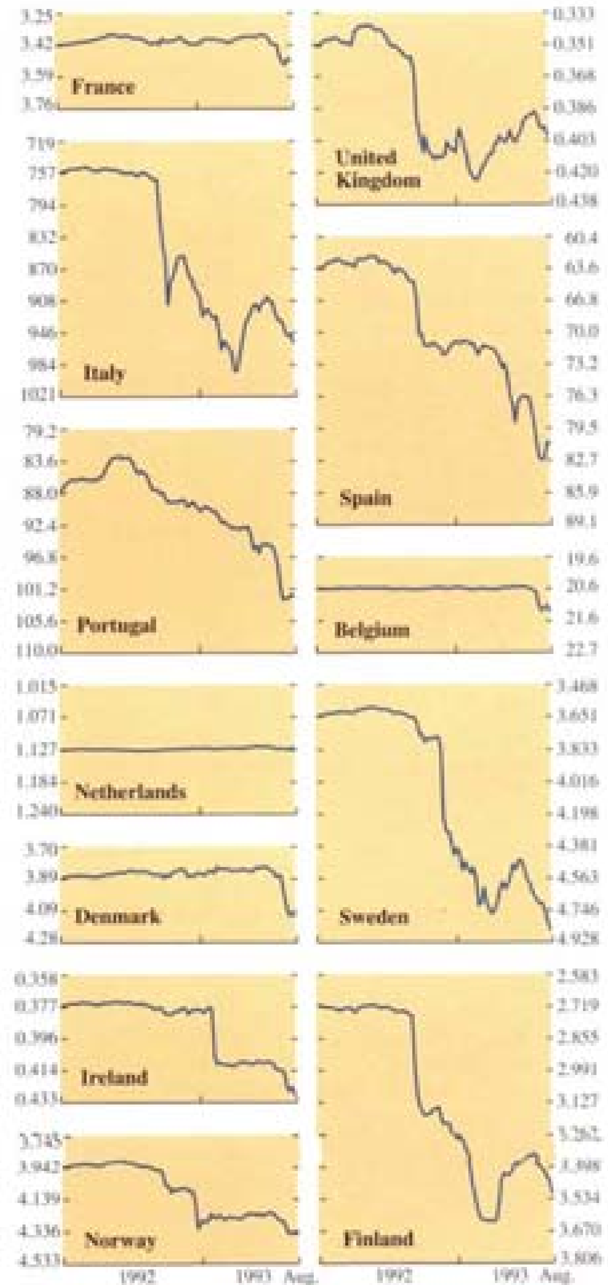
rates pegged narrowly to the deutsche mark—at least until just recently—there were no indications of fundamental problems of worsening international competitiveness either from movements in real exchange rates or from current account positions.

The other important factor in generating pressures against official exchange rate parities was the clear market perception of serious inconsistencies between, on the one hand, the domestic requirements for monetary policies in a number of countries with lackluster economic activity, rising unemployment, limited inflationary pressures, and, in some cases, strained banking systems; and, on the other hand, the external requirements, largely determined by German monetary policy. From a macroeconomic perspective, German unification initially entailed a substantial expansionary impulse to domestic demand because of the investment undertaken to modernize the economy and infrastructure of eastern Germany and because of the substantial transfer payments from the west to the east to support living standards during the transition period.[13] This impulse could have been attenuated by fiscal consolidation and by an appreciation of the deutsche mark; but instead, the German budgetary situation deteriorated sharply and a change in the parity of the deutsche mark was resisted by ERM countries. In response to the resulting inflationary pressures, the Bundesbank progressively tightened monetary conditions through the summer of 1992 and subsequently eased short-term interest rates only gradually as activity declined and wage pressures eased, but consumer price increases and monetary growth remained uncomfortably high.

For the Netherlands, the Bundesbank's policy response to inflationary pressures was not particularly discomforting. Economic activity in the Netherlands benefited from the expansionary effects of German unification, unemployment was low by European standards and falling, but inflation was somewhat above desired levels. The Netherlands had no apparent competitiveness problem; and, given the firm and long-standing commitment of the Dutch authorities to a fixed parity vis-à-vis Germany, the guilder was subject to persistent upward pressure along with the deutsche mark during the exchange market crises of the past year. Austria and Belgium were in much the same situation as the Netherlands, although Belgium with its large public debt and with an unemployment rate above that of

Chart 15. Selected European Countries: Bilateral Exchange Rates vis-à-vis the Deutsche Mark[1]

(In units of national currency per deutsche mark; an increase indicates an appreciation of the currency)



[1]Equal percentage changes are represented by equal vertical distances. Weekly averages.

[13]For an analysis of the macroeconomic consequences of unification, see Paul R. Masson and Guy Meredith, "Domestic and International Consequences of German Unification," in *German Unification: Economic Issues*, edited by Leslie Lipschitz and Donogh McDonald, Occasional Paper 75 (IMF, 1990), pp. 93–114.

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the Netherlands (and rising), was less well-positioned to endure prolonged periods of high interest rates. In the event, the exchange rate of the Austrian schilling was not challenged in the market, and the Belgian franc came under only limited and infrequent downward pressure before the crisis of July 1993.

Exchange rate pressures were initially felt by those countries where the longer-run sustainability of the central rate was in doubt because convergence with the low-inflation ERM countries was still unsatisfactory, or because the initial choice of the rates had been too ambitious. Although these factors may by themselves have resulted in a crisis, these countries were also by 1992 experiencing weakening economic activity and, accordingly, faced great difficulties in raising short-term interest rates when their exchange rate parities were challenged in the market. For Italy, the problem of nominal convergence was closely associated with large and continuing fiscal deficits. In addition, the large outstanding stock of public debt meant that interest rate increases to defend the parity of the lira worsened the already huge fiscal deficit and further called into question Italy's capacity to meet the Maastricht convergence criteria. Given the perception of a significant loss of cost competitiveness, it is not surprising that the parity of the lira was the initial focus of market pressure in the ERM during the summer of 1992.

Even by early 1992, Finland and Sweden both faced clear problems associated with cost competitiveness, the collapse of the world market for forest products, and, in the case of Finland, the collapse of trade with the former Soviet Union. In both countries these problems were exacerbated by a severe crisis in the financial system. By the summer of 1992, these countries, as well as the United Kingdom, were already in deep and prolonged recessions. Thus, large and sustained interest rate increases needed to defend exchange rate parities clearly contradicted the pressing domestic requirements of monetary policy, including the need to lower interest rates to ameliorate the effect of real estate price deflations. It is therefore understandable that these currencies came under particularly intense pressure at an early stage of the exchange market crisis, with the authorities eventually being forced to float the exchange rates of their currencies—the Finnish markka on September 8, the British pound (and the Italian lira) on September 17, and the Swedish krona on November 19 (with the Norwegian authorities floating the krone on December 10).

Spain, which also appears to have had a perceived competitiveness problem, was forced to devalue the peseta in September 1992, and again in November 1992; the escudo was also devalued in November. Renewed market pressures stimulated by the combination of rising unemployment and imminent parliamentary elections in Spain forced a further devaluation of the peseta and of the escudo in May 1993.

The increase in already high levels of unemployment in Denmark, France, and Ireland contributed to a perceived tension between the domestic needs of monetary policy and the ability to endure high interest rates to defend official parities (Chart 16; see also Chart 24). Ireland was forced to devalue the pound at the end of January 1993, after the depreciation of the pound sterling raised doubts about Irish competitiveness and thus heightened concerns about the sustainability of high interest rates to defend the parity. Despite weakening activity and rising unemployment, France and Denmark successfully resisted pressures against their currencies through the crises of the summer and autumn of 1992 and the winter and spring of 1993. Substantial increases in interest rates, large-scale official intervention in foreign exchange markets, support from partners (especially from Germany), as well as the general perception of great determination to hold their parities, all contributed to the successful defense of the franc and the krone.

Aside from the crisis affecting the peseta and the escudo in May 1993, visible tensions in European exchange markets eased substantially during the period from March through June of 1993. This easing of market tensions reflected the apparent changes in underlying economic conditions that had generated the crises of the preceding nine months. Exchange rate adjustments appeared to have substantially corrected the cost-competitiveness problems that had accumulated since the realignment of 1987. Parities that had not been adjusted appeared to be in line with the fundamental requirements of longer-term competitiveness. For countries that had moved to floating rates, the short-run policy dilemma was significantly eased, although only the United Kingdom—and to a lesser extent Norway—felt free to cut short-term interest rates to well below German levels.

The actual and expected future easing of German interest rates also contributed in important ways to the decline of exchange market tensions during the period from March through June. On the basis of earlier successful efforts to curtail upsurges in German inflation extending back to the 1960s, it was widely anticipated in financial markets—as indicated notably in the interest rate futures market and in the slope of the yield curve—that, in the face of a weakening economy, the Bundesbank would reduce short-term interest rates substantially once it became clear that inflationary pressures were abating. This process of German interest rate reductions actually began in September 1992, but progress

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through January 1993 was somewhat less than expected in financial markets, as the Bundesbank remained concerned about rapid money growth, high budget deficits, and continuing high year-on-year consumer price inflation. Subsequently, in response to favorable news on monetary growth and wage pressures, the Bundesbank accelerated somewhat the pace of reductions in short-term interest rates, beginning with reductions in the Lombard and discount rates on February 4.

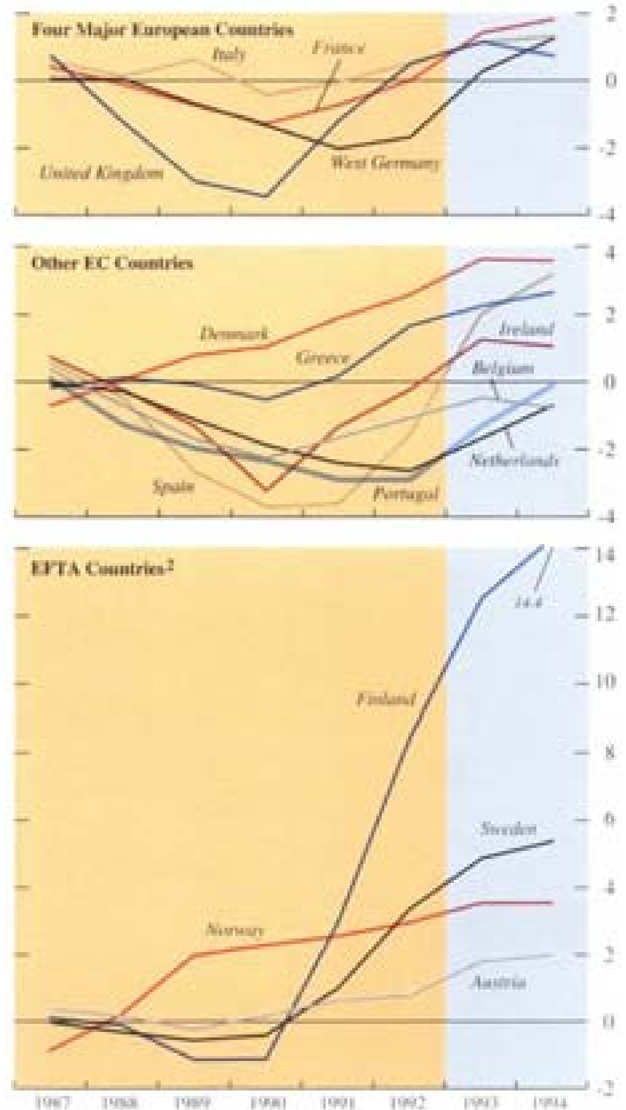
As upward pressures on the deutsche mark receded with the actual and prospective lowering of German short-term interest rates, partner countries found room to cut their own short-term rates without endangering their exchange rate parities (Chart 17). Indeed, during the spring of 1993 short-term interest rate differentials against Germany, which had widened substantially during the earlier crisis, narrowed sharply as markets perceived that economic forces underlying the crisis had diminished and were widely expected to recede further (Chart 18). In particular, short-term rates in France, which had been 3½ percentage points above German rates in mid-March, fell below German rates by early June. The series of European exchange market crises that began during the summer of 1992 seemed finally to be at an end.

The reduction of short-term interest rates in Europe during the spring of 1993 was particularly welcome in view of the deepening European recession that was pushing unemployment rates to new postwar highs in many countries. Countries that had fought hard to defend their currencies with interest rate increases during the preceding year—and had endured the painful short-term domestic economic consequences of that endeavor for its prospective longer-term benefits—now had more room to direct monetary policy to other objectives. Indeed, the readiness of central banks outside Germany to utilize their enhanced room for maneuver indicated the clear importance of lower short-term interest rates for key domestic economic policy objectives. It also conveyed another message: in economic conditions that had worsened considerably over the preceding year, it would be far more difficult to raise interest rates substantially and durably to combat renewed exchange market pressures. This, however, did not appear to be a matter of great concern so long as German interest rates maintained their anticipated downward course.

As events developed, weak economic data reported in June and early July, combined with downward revisions to widely watched economic forecasts, put increased pressure on several governments to ease monetary conditions still further to spur economic recovery. For Germany, weakening of activity, declining producer prices, abating wage pressures, announcements of further measures to

Chart 16. European Countries: Divergences in Unemployment Trends[1]

(Deviation of actual unemployment rate from average rate of each country, 1985–89; in percentage points)



[1]Blue shaded areas indicate staff projections.
[2]European Free Trade Association.

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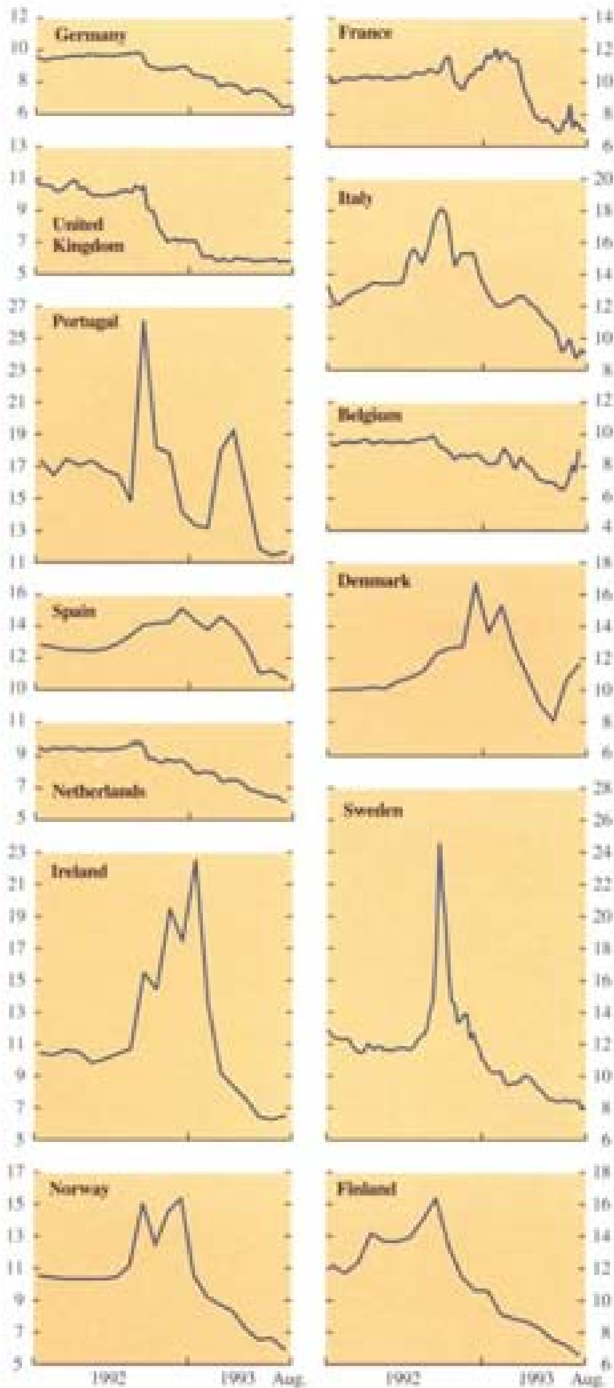
Chart 17. Selected European Countries: Short-Term Interest Rates[1]
(In percent)



[1]Weekly averages for Belgium, France, Germany, Netherlands, United Kingdom, and Sweden; monthly averages for others.

rein in the budget deficit, and the usual lag of consumer price inflation in responding to monetary tightening also suggested further room for short-term interest rate reductions. Other factors, however, suggested caution. Specifically, the Bundesbank became concerned about the possibility that a significant weakening of the deutsche mark might exert upward pressure on prices. German M3 growth picked up sharply in May and June and, despite encouraging inflation numbers for June, the twelve-month inflation rate for consumer prices showed little improvement. There was also an uptick in German long-term interest rates in May that could have been interpreted as an adverse financial market reaction to the earlier easing of German short-term rates. All things considered, by June the Bundesbank had concluded that it was desirable to slow the pace of reductions in the securities repurchase rate, which influences the evolution of short-term market rates in Germany. As prospects for further cuts in German short-term rates dimmed, markets became increasingly concerned about the conflict between the Bundesbank's perception of the domestic needs of German monetary policy and the desire of partner countries to reduce interest rates and, even more, to avoid substantial and sustained interest rate increases to defend exchange rate parities.

With unexpected suddenness, as this policy dilemma again came into sharp relief, pressures against most ERM currencies re-emerged during the second week of July. These pressures intensified rapidly—in part because the experience of the previous twelve months had raised the sensitivity of markets to potential weaknesses in exchange rate defenses. By Monday, July 26, the central banks of Denmark, France, Belgium, and Portugal had all raised official interest rates, and substantial intervention was being carried out in support of their currencies. Market attention focused on the Bundesbank Council meeting scheduled for Thursday, July 29—the last meeting of the Council until August 26. The widespread expectation was that the Bundesbank would have to make a meaningful cut in its discount rate in order to send a signal of its willingness to allow further reductions in German interest rates as part of the means for resolving the renewed exchange market crisis. A cut of 20 basis points in the Bundesbank's securities repurchase rate on Wednesday, July 28, was reported in the financial press to have strengthened expectations of such a cut in official German interest rates.

In the event, the Bundesbank Council decided to cut the Lombard rate by 50 basis points but to leave the discount rate unchanged. The reaction in financial markets was immediate: massive downward pressure against the Belgian franc, the Danish krone, the French franc, the peseta, and the escudo;

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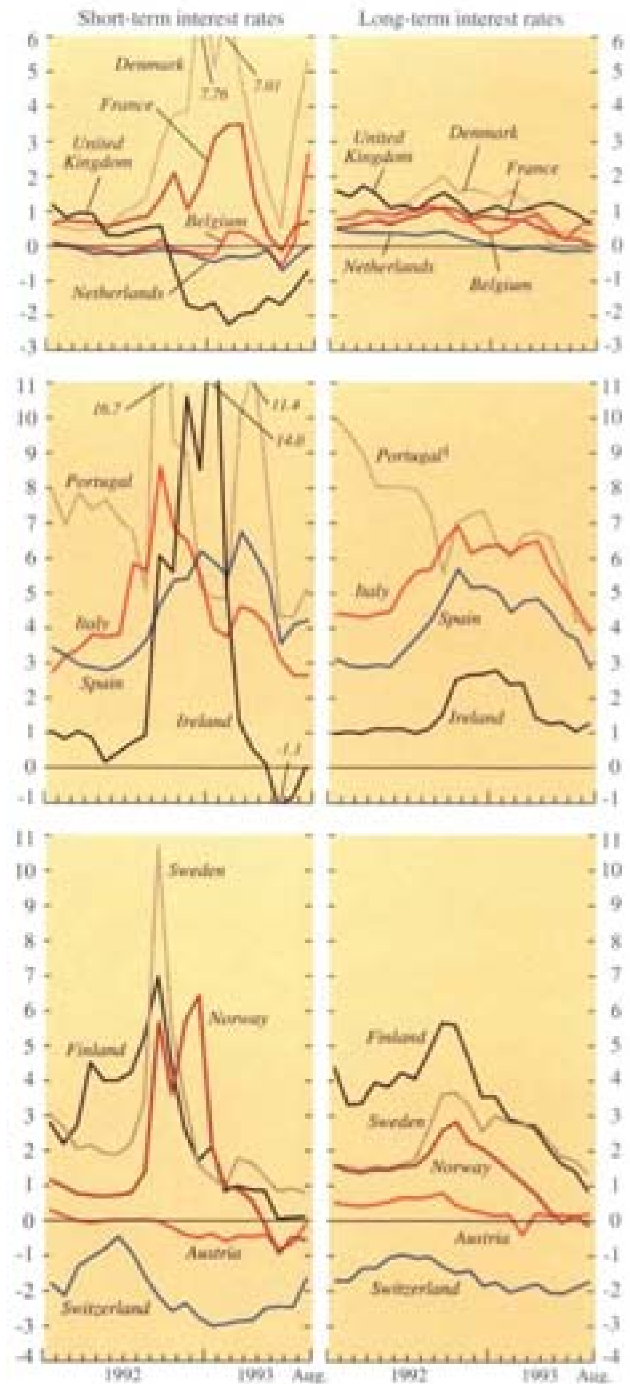
and upward pressure against the deutsche mark, the guilder, and, as safe-haven currencies, the Swiss franc, the U.S. dollar, and especially the yen. The pressures in European exchange markets were met by massive official intervention, by increases in overnight interest rates for some currencies under downward pressure, by a modest reduction in Dutch short-term interest rates, and by an announcement by the Bundesbank that it would allow short-term market interest rates to fall below the floor normally set by the discount rate.

All of this was not enough. On Friday, July 30, the Belgian franc, the Danish krone, and the French franc were pushed below their ERM floors despite official intervention, reportedly of unprecedented magnitude. Markets seemed to sense that, although longer-term competitiveness considerations might not require any further adjustment of ERM parities, there was no way out of the immediate monetary policy dilemma consistent with the maintenance of these parities. Indeed, the exchange market crisis itself made that dilemma more acute and clearly unendurable. For the Bundesbank, massive intervention was likely to boost the German money supply, thereby making the prospect for an accelerated pace of German interest rate reductions doubtful. For the countries whose currencies were under downward pressure, matching the expected slow pace of German interest rate reductions might have been bearable, despite high and rising unemployment, but raising and holding interest rates sufficiently high to ward off another intense and prolonged exchange market crisis was no longer a feasible option, particularly in view of the large loss of reserves already incurred.

During the weekend of July 31 to August 1, EC finance ministers, central bank governors, and other officials met to consider possible means of dealing with the crisis. After considering a variety of alternatives, it was decided to widen the bands around ERM central parities to plus or minus 15 percent, but to reaffirm the existing central parities and to assert the intention of returning to a system with narrower bands as soon as circumstances permitted. The width of the new band presumably reflects the room for maneuver that some ERM participants felt might be useful to avoid any threat of a renewed confrontation with market pressures, especially in view of the uncertain economic situation, the low levels of official reserves, and the highly sensitized state of the exchange markets. On the basis of policy statements and actual behavior, however, it is clear that ERM participants do not generally intend to use the full width of the exchange rate bands.

It is still too early to assess the effects of the wider bands on currency and other asset markets; in any case, much will depend on the conduct of macroeconomic policy. However, the initial market re-

Chart 18. European Monetary System: Interest Rate Differentials vis-à-vis Germany



[1]The interest rate refers to the before-tax yield on twelve-month treasury bills.

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action appears to have been generally favorable. European stock markets have risen on the expectation that the wider bands will permit lower interest rates and a more rapid economic recovery. Moreover, the behavior of long-term interest rates, which have generally fallen, points to little perceived risk of excessive monetary easing that could lead to higher inflation in the future. Initially, some pressure in foreign exchange markets persisted, and governments were reluctant to lower short-term official interest rates more than marginally because of fears that this might lead to marked depreciation of their currencies and make it difficult to reconstitute their foreign exchange reserves. As of early September, however, interest rates have started to decline, especially in France but also in other countries, and exchange rates have stabilized.

A cautious approach toward lowering interest rates has been appropriate in order to avoid giving destabilizing signals to markets about the longer-term direction of policy. Given the weakness of activity and the pervasive market expectations that interest rates will decline, however, it would seem only a matter of time until monetary conditions begin to ease significantly. Conditions in Germany would appear to permit a gradual reduction of interest rates as illustrated by the cut in official interest rates on September 10. However, with the widening of the fluctuation band, the other ERM countries may now take the lead through a process of cautious easing.

Monetary Policy in the New Framework

The adoption of 15 percent fluctuation bands between the currencies in the ERM implies significant leeway for individual member countries to deviate, at least temporarily, from the level of short-term interest rates in the anchor country. Care will have to be exercised when easing monetary policies in the short run to ensure that these adjustments do not cause market participants to question the commitment of the authorities to sound policies. At the same time, it is necessary to take into account that policy credibility also depends on the consistency of economic policies with domestic requirements and on the market's perception of an appropriate and sustainable balance between external and domestic objectives and between monetary and fiscal policies.

In this regard, it is noteworthy that on the Friday immediately preceding the decision to widen the ERM bands, European equity and bond prices moved sharply upward apparently in anticipation of imminent decisions that would lead to a significantly lower course for European short-term interest rates. This market assessment of the desirable direction of short-term interest rate adjustments was confirmed on the following Monday by further sharp increases in European equity and bond prices in reaction to the increased room for maneuver for domestic monetary policies provided by wider exchange rate bands. Subsequently, as the actual pace of official interest rate reductions proved somewhat disappointing relative to market expectations, European equity and bond prices retraced some of their earlier upward movements. This latter development underlines that overly cautious official actions carry a risk that market expectations concerning the desirable course for short-term interest rates will be disappointed and, accordingly, that confidence might be undermined and recovery further delayed. This, of course, does not imply that market expectations of interest rate changes should be the main guide to adjustments of official interest rates. Rather, the point is that the state of market expectations is an important factor in judging the likely reaction to policy actions (or lack of policy actions) and, therefore, that such expectations need to be taken appropriately into account in making policy decisions.

Given high international capital mobility, the level of the exchange rate depends largely on two factors: expectations about the long-term value of the exchange rate and about future short-term interest rate differentials. With the prolonged crisis in European exchange markets and, more recently, with the widening of the ERM bands, longer-term market expectations concerning exchange rates among the ERM currencies have undoubtedly become somewhat less firmly anchored than before the crisis first erupted. The degree of fluctuation in these longer-term expectations, however, is clearly limited by the commitment to retain the existing central parities, by the alignment of these parities with the economic fundamentals of longer-term cost competitiveness, and by the demonstrated reluctance of the authorities to permit unreasonably large short-term deviations of actual exchange rates from their prescribed longer-term parities.

Indications of market perceptions of this long-term stability of exchange rates can be seen from comparisons of long-term interest rates across countries. If the exchange rate between two countries' currencies is expected to stay unchanged, then their long-term interest rates should be very similar. The steady erosion of long-term interest rate differentials between Germany and most of the other current members of the ERM, which appears to have recommenced after a temporary upsurge starting in September 1992, illustrates the progress made over the past few years in convincing investors of the soundness of future monetary policies. Long-term interest rate differentials will continue to be a useful measure of market expectations with the new wider

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exchange rate bands, and any significant relative rise in long-term interest rates might indicate that market confidence about future policy is being eroded by current actions.

The other major determinants of exchange rates are short-term interest rate differentials and their expected duration. High international capital mobility implies that the deviation of the exchange rate from its expected long-run value depends on the sum of the annualized expected interest rate differentials.[14] In theory, if short-term interest rates in one country are expected to be 3 percent lower than those in a second country for one year and 2 percent lower in the next year before returning to zero thereafter, then the bilateral exchange rate of the first country will fall about 5 percent below its long-term value. In this case, the gain from the expected appreciation of the currency of the first country will be offset by the lower interest earnings over the two years. In this example, the deviation in short-term interest rates would have been inconsistent with a 2¼ percent band. Indeed, in practice, because the creation of an initial interest rate differential as large as 3 percent might generate doubts about the longer-term orientation of monetary policy and thus about the longer-run equilibrium exchange rate, the initial exchange-market reaction could well exceed the theoretical 5 percent of this example. More modest shifts in interest rate differentials would clearly entail significantly less danger of provoking serious exchange market reactions, although their effects might still breach a 2¼ percent exchange rate band. A band as wide as 15 percent should be more than ample to contain the effect of shifts in interest rate differentials among ERM participants that might plausibly and prudently be considered in present circumstances.

The new wider exchange rate bands therefore offer individual national authorities more autonomy over the current stance of monetary policy. It is important to note, however, that even if the fundamentals (in this case the expected long-run exchange rate parity) are sound, moderate interest rate reductions are likely to be associated with moderate depreciations in the exchange rate. The monetary authorities need not resist such moderate depreciations, but should pursue interest rate adjustments prudently while monitoring exchange market reactions. Provided that longer-run fundamentals are consistent with the established central parities, such short-term depreciations should naturally be reversed as monetary conditions move back into closer alignment in different countries. Moreover, improved prospects for economic recovery may also help to limit any short-run tendency for currencies to depreciate as countries proceed with monetary easing.

Indeed, financial markets have already provided important evidence that moderate but significant reductions of short-term interest rates relative to those in Germany will induce only limited depreciations of partner country currencies relative to the deutsche mark. Specifically, in the case of France, data from the futures markets show that, subsequent to the widening of the ERM bands, financial markets were anticipating that three-month French interest rates would fall below comparable German rates by early autumn and remain approximately a percentage point below German rates through the following year (Chart 19). This anticipated movement in French relative to German short-term interest rates is already reflected in the exchange rate that the market has established between the French franc and the deutsche mark, which as of August 10 (the date of Chart 19) had depreciated only 2½ percent below the franc's previous ERM floor. While futures market data are not generally available for other countries, the slopes of yield curves suggest that significant reductions in short-term interest rates in other ERM countries have already been priced into market exchange rates subsequent to the widening of the ERM bands. So long as actual reductions of short-term interest rates relative to German rates do not exceed what financial markets already anticipate, there is no reason to expect that exchange rate depreciations vis-à-vis the deutsche mark should much exceed the relatively limited depreciations that have already occurred. A somewhat more rapid pace of interest rate reductions than markets anticipate would presumably imply somewhat greater depreciation than has already occurred. Only in the case of an aggressive strategy of interest rate cuts that unhinged market confidence about the longer-term course of monetary policy would large exchange market reactions be expected.

In assessing the appropriate stance for monetary policy within the new framework, the experience of other countries indicates that a wide range of indicators should probably be taken into account, including inflation, economic growth, the exchange rate, short- and long-term interest rates, futures rates, and the growth of the money supply.[15] One

[14] Empirical research has shown that foreign exchange markets appear to be affected by risk premia and, accordingly, that short-term interest differentials are not unbiased predictors of future exchange rate changes. Changes in risk premia provide a theoretical mechanism through which shifts in interest rate differentials might induce exchange rate changes larger than what would otherwise be the theoretical norm.

[15] Some countries with floating exchange rates, such as Canada, use a weighted average of movements in short-term interest rates and of the exchange rate as a guide to monetary conditions.

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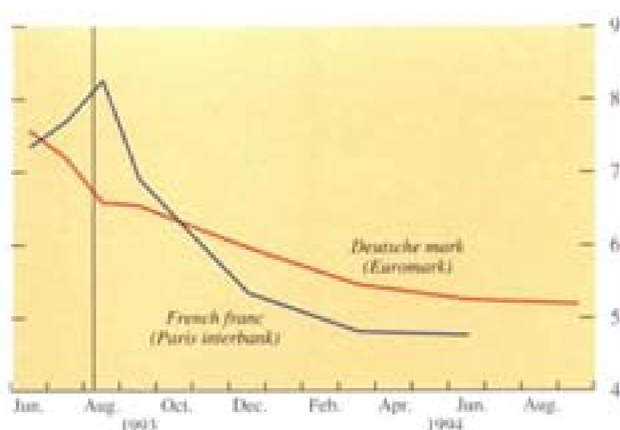
Chart 19. Projected Deutsche Mark and French Franc Interest Rates Based on Futures Market Quotes
(Three-month interest rates in percent a year; August 10, 1993)[1]



Source: *Financial Times* (London).
[1]Data before August 1993 are actual interest rates.

useful indicator of the monetary stance is the slope of the yield curve. Before the new arrangement, many ERM countries were faced with downward-sloping yield curves, with short-term interest rates higher than long-term interest rates. Such an "inverted" relationship is generally indicative of relatively tight monetary conditions. Given the weak cyclical position and low inflation in many ERM countries, moves toward a positively sloped yield curve, with short-term interest rates below long-term rates, would be appropriate. However, the experience of countries with floating exchange rates also indicates that it is difficult to limit short-term movements in the exchange rate unless the authorities are willing to show significant flexibility in the conduct of monetary policy. Hence, while the widening of the ERM bands does provide significantly more monetary autonomy, policy may still be constrained by exchange rate considerations.

In most of the countries that left the ERM—the United Kingdom and Italy—or recently abandoned their exchange rate pegs against the ECU—such as Sweden and Finland—bilateral exchange rates against the deutsche mark initially fell rapidly and continue to be significantly below their original parities. At least in some cases, this reflects the overvaluation of the initial parities as well as the severity of the exceptionally unfavorable shocks some of these countries have been experiencing. In Norway, however, the floating of the exchange rate was followed by only a small depreciation, reflecting stronger fundamentals. At the same time, some countries—most notably the United Kingdom—have been able to use their new monetary freedom to lower short-term interest rates in order to stimulate activity. For the United Kingdom, this was achieved without any noticeable widening of the long-term interest rate differential with Germany, which, if anything, has narrowed somewhat. Hence, it appears that the new policy did not cause markets to revise upward significantly their expectations about the future path of inflation. Similarly, the reaction of long-term interest rates in ERM countries to the widening of the intervention bands should reveal—and indeed has already revealed—that this action implies no weakening of established commitments to conduct monetary policies in a manner consistent with the objective of maintaining reasonable price stability.

Although monetary policy should respond to domestic priorities in the short term, it is also important for national authorities to take account of the impact of their actions on other countries, given the highly integrated nature of the EC economy. In particular, progress toward European economic integration would be fostered by exchange rate stability within the ERM. This implies continued coordination between individual national authorities on

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monetary policy, which could easily be accommodated using existing institutions. In addition to reducing the likelihood that countries may appear to be engaging in competitive devaluations against each other, such coordination would provide a strong signal to markets that the new, wider ERM bands do not imply an end to monetary policy coordination, or to the eventual goal of economic and monetary union (EMU).

The primary beneficial effects of monetary policy adjustments facilitated by the widening of the ERM intervention bands will, of course, be felt by the countries that now find—and appropriately exploit—the increased room for maneuver for domestic monetary policy provided by the wider bands. However, as with the adverse effects of the series of European exchange market crises and related developments that preceded the decision to widen the ERM bands, the beneficial effects of enhanced monetary policy flexibility will spread well beyond the countries still participating in the ERM. In particular, an earlier and more pronounced downward course for short-term interest rates for the remaining ERM participants will contribute to similar developments in other western European countries. This effect is already apparent in the favorable reaction of bond yields and equity prices throughout western Europe to the anticipated consequences of the widening of the ERM bands. These gains are especially important and welcome because they signal what the economies of western Europe urgently require: a mutually reinforcing process of economic recovery in which the restoration of confidence and rebound of activity in each country supports similar gains in the others.

Moreover, as recognized in the Interim Committee's *Declaration on Cooperation for Sustained Global Expansion*, a general reduction of interest rates in western Europe ". . . will constitute an important element for economic recovery . . ." for the entire world. This benefit will be greatest for those countries—especially in central and eastern Europe and in Africa—that have the strongest trade and financial links to western Europe and that face the greatest threat from the growing protectionist sentiment associated with the rising trend of unemployment in western Europe.

Options for the Future

Because the principal cause of the foreign exchange market disturbance in July appears to have been the mismatch between the domestic requirements for monetary policy in Germany on the one hand and the domestic requirements of some other ERM countries on the other hand, the prospects for stability will be improved as these policies converge. If, as is widely anticipated, countries other than Germany make use of the opportunities afforded by the new, wider ERM bands to bring down their own interest rates, and as interest rates in Germany resume their earlier downward trajectory, greater consistency in the stances of policy should gradually be re-established. Cuts in interest rates will support recovery in Europe and, in conjunction with more determined implementation of structural policies, should reduce unemployment. Lower interest rates and economic recovery will also help to reduce the fiscal deficits and debt overhang with which most European countries are now burdened. This would not only be an encouraging factor in itself, but it would also support the stated goal of ERM countries to continue progress toward EMU.

When they adopted the wider 15 percent band, the EC governments reaffirmed their determination to attain a sufficient degree of convergence to realize EMU. The second stage of EMU is due to begin, now that the Maastricht Treaty has been ratified by all member countries (although it is still subject to the decision of the German Constitutional Court), on January 1, 1994. A determined attempt to meet the objectives of the Maastricht Treaty and to pass from the second to the third and final stage of EMU will have important consequences for the conduct of policy. In particular, it would mean that countries agree to respect the convergence criteria spelled out in the Treaty. These pertain to inflation, long-term interest rates, fiscal positions, and ERM participation. It is with respect to the third criterion—fiscal convergence—that countries currently face the greatest challenges (Table 5). Commitment and discipline will also be needed to maintain the achievements already made in terms of the other criteria.

In the past, adherence to narrow bands of fluctuation within the ERM has been an important source of discipline and an expression of policy commitment. Countries now must balance an emphasis on convergence in terms of the first three criteria—in which event exchange rate stability would eventually follow—and the maintenance of exchange rate stability in order to use the discipline that this imposes to further full convergence. This kind of choice is not new to EMS countries, and the success of the ERM was seen until recently as a testimonial to the effectiveness of exchange rate discipline. Nevertheless, the crises of the past year have underlined the need to undertake timely adjustments of exchange rates as warranted by losses of competitiveness or otherwise justified by circumstances. In the absence of such adjustments, a fixed exchange rate system is vulnerable to exchange market speculation.

The crises of September 1992 through August 1993 have left the foreign exchange market highly

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Table 5. European Countries: Convergence Indicators for 1993 and 1994
(In percent)

	1992 GDP Weights		Consumer Price Inflation		General Government Balance/GDP		Gross Government Debt/GDP[1]	Long-Term Interest Rates
	In EC	In world	1993	1994	1993	1994	1992	August 1993
EC countries								
France	19.2	3.6	2.2	2.2	−6.0	−5.9	52.6	6.4
Germany	23.2	4.3	4.6	2.9	−4.8	−3.5	42.5	6.4
Italy	18.4	3.4	4.5	4.6	−10.3	−9.2	115.1	10.3
United Kingdom[2]	17.7	3.3	3.2	3.8	−8.6	−7.4	35.1	7.0
Largest four countries[3]	78.5	14.6	3.7	3.3	−7.3	−6.3	60.3	7.4
Belgium	3.1	0.6	2.8	2.9	−6.7	−5.6	121.0	7.1
Denmark[4]	1.7	0.3	1.1	1.8	−3.5	−4.2	71.3	6.7
Greece[5]	1.7	0.3	14.3	9.5	−12.9	−13.3	108.6	20.3
Ireland	0.7	0.1	2.0	3.0	−3.4	−3.8	95.9	7.6
Luxembourg	0.1	—	4.0	3.3	0.1	—	5.8	6.8
Netherlands	4.7	0.9	2.0	2.8	−3.9	−3.9	79.0	6.2
Portugal	1.5	0.3	6.3	5.6	−6.4	−5.4	63.7	10.5
Spain	8.1	1.5	4.7	4.1	−6.3	−7.1	47.9	9.2
Smallest eight countries[3]	21.5	4.0	4.3	3.9	−6.0	−6.2	74.3	8.9
All EC[3]	100.0	18.6	3.8	3.5	−7.0	−6.3	63.4	7.8
Maastricht convergence criteria[6]	...	...	**3.2**	**3.8**	**−3.0**	**−3.0**	**60.0**	**8.8**
Non-EC countries								
Austria	...	0.4	3.7	2.5	−3.4	−3.0	49.4	6.5
Finland	...	0.3	2.8	4.1	−12.2	−9.5	39.5	7.7
Norway	...	0.3	2.5	2.3	−3.6	−3.4	43.0	6.2
Sweden	...	0.5	5.0	3.7	−13.5	−11.5	55.0	7.7
Switzerland	...	0.7	3.6	2.3	−2.4	−2.5	34.3	4.6
Five non-EC countries[3]	...	2.3	3.7	2.9	−6.6	−5.7	43.9	6.3

Sources: National sources and staff projections.

Note: The table shows the convergence indicators mentioned in the Maastricht Treaty. The relevant convergence criteria are (1) consumer price inflation must not exceed by more than 1½ percentage points the average for those three member states with the lowest inflation rates; (2) interest rates on long-term government securities must not be more than 2 percentage points higher than those in the same three member states; (3) the currency must have been held within the narrow band of the ERM for two years without a realignment at the initiative of the member state in question; and (4) the financial position must be sustainable, which is defined as a general government deficit no greater than 3 percent of GDP and a public debt-GDP ratio of no more than 60 percent. The Treaty requires a substantial and continuous decline of fiscal deficits toward the reference value, and the debt-GDP ratio must be approaching the benchmark at a "satisfactory pace." See "The Maastricht Agreement on Economic and Monetary Union," Annex II in the May 1992 *World Economic Outlook*, pp. 52–55.

[1]Debt data refer to end of year. They relate to general government but may not be consistent with the definition agreed at Maastricht.
[2]Retail price index excluding mortgage interest.
[3]Average weighted by 1992 GDP shares.
[4]The debt-GDP ratio would be below 60 percent if adjusted in line with the definition agreed at Maastricht.
[5]General government balance includes capitalized interest; long-term interest rate is twelve-month treasury bill rate.
[6]Unweighted averages. The Treaty does not indicate precisely how these indicators should be weighted across the reference countries.

sensitized to policy imbalances and conflicts among and within countries. Financial capital is highly mobile and exchange markets will clearly react to obvious conflicts between domestic and external policy requirements. These circumstances, which are different from those facing the system in earlier years, suggest that an early return to a narrower ERM band in the absence of convincing convergence efforts and stronger commitments to policy cooperation may well be tested by the market. But without the discipline of the narrow band, convergence will still need to continue to be strengthened, raising the issue of policy credibility that gave rise to the ERM in the first place. In this context, it may well be questioned whether, for some countries, the Maastricht criterion for fiscal deficits is sufficiently ambitious.[16] Adoption of determined and credible

[16]For countries with currently high ratios of government debt to GDP, the Maastricht criterion on the public debt ratio already generally implies more ambitious efforts to reduce fiscal deficits over the next few years. For countries with relatively low ratios of public debt, however, a 3 percent of GDP fiscal deficit would generally be above the level that would stabilize the public debt-GDP ratio, especially if this deficit was achieved only when the economy was performing above its cyclical norm.

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medium-term consolidation programs across the ERM countries—as indeed in all countries—would offer the best prospects for substantial improvements in economic performance consistent with greater exchange rate stability over the medium term. If policymaking in the new environment succeeds in achieving convergence as effectively as under the pegged exchange rate regime, the widening of the band need not be inconsistent with the objectives of the Maastricht Treaty and with an eventual move to a single, common currency.

A high degree of convergence in economic performance among ERM countries and across all EMS participants is a necessary condition for greater exchange market stability in the future. To achieve such convergence, economic policies must remain properly attuned to the longer-term goal of price stability and must adjust both to achieve sustainable fiscal positions and to remove structural barriers to the growth of output and employment. In addition, and as a matter of great urgency, economic policies must move to support durable recoveries, without which reductions of unemployment and of fiscal deficits will be impossible and economic convergence would be meaningless.

At this stage, with little clear evidence of the beginning of a sustainable European recovery, it is too early to assess when shorter-term economic conditions and longer-term economic convergence will allow and induce market exchange rates to move to within narrow ranges of their economically appropriate parities. Without further analysis, it is also too early to discuss modifications to the European monetary system and its exchange rate mechanism that would support enhanced exchange market stability in the future. However, from the persistent crises of the past year, it is clear that significant modifications of the old system will merit serious consideration. More timely adjustment of exchange rate parities when warranted by underlying economic conditions is already an agreed element of the required reforms. At the most general level, improved policy cooperation and greater attention to the spillover effects of national policies would appear to be important for enhanced exchange rate stability in an environment of improved economic performance. Such improved cooperation would be consistent both with the progressive convergence toward very low inflation rates in several EMS countries and with the obviously heightened sensitivity of financial markets to the appearance of significant divergences in domestic policy requirements. More specifically, among the reforms that will merit future evaluation is the possibility of greater symmetry of interest rate adjustments in the face of market pressures against exchange rate parities that have been agreed to be in line with economic fundamentals. As the second stage of EMU takes effect on January 1, 1994, it also will be natural to consider the usefulness of broader sets of indicators for monetary policies, beyond purely national indicators, especially in view of the increasing degree of financial market integration in the European Community.[17] Looking further forward to the third and final stage of EMU, attention will ultimately need to focus on the means and mechanisms for conducting a common monetary policy and for implementing an appropriate mix of fiscal and structural policies both to achieve desired aggregate objective and to assure acceptable performance at the national and regional level.

[17]These issues were discussed in detail in the May 1993 *World Economic Outlook*, Chapter III, pp. 35–38. The second stage of EMU will see several institutional developments that should help to strengthen the consistency of policies across the EC and thus promote greater stability in the EMS. The creation of the European Monetary Institute (EMI) should strengthen cooperation among central banks and facilitate coordination of monetary policies. Monetary policy will continue to be the responsibility of national central banks (until the third stage of EMU, when the European Central Bank will assume authority for monetary policy), but the EMI will have the mandate to make recommendations regarding the conduct of monetary policy in individual countries. The Maastricht Treaty also incorporates provisions that prohibit monetary financing of fiscal deficits and privileged access to financial institutions by public entities. At the same time, the Community's surveillance process will begin to tighten rules for fiscal deficits (although sanctions against countries with excessive deficits will not be imposed until the third stage of EMU). The second stage will require governments to initiate the process of granting central banks independence, which should strengthen the credibility of price and exchange rate objectives.

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Box 3. Chronology of Events in the Recent Crisis in the European Monetary System

1992

June 2. Danish voters reject (by 50.7 percent) the Treaty on European Union (Maastricht Treaty). Subsequently, tensions within the ERM increase significantly, leading to sharp increases in short-term interest rates, particularly in Italy, as the lira comes under downward pressure.

June 3. France announces a September 20 national referendum on the Maastricht Treaty.

July 2. Board of Governors of the U.S. Federal Reserve System reduces discount rate by $\frac{1}{2}$ of 1 percentage point, to 3 percent, and eases reserve pressures by a similar reduction in the federal funds rate.

July 16. Bundesbank raises discount rate by $\frac{3}{4}$ of 1 percentage point, to a record high of $8\frac{3}{4}$ percent, but leaves the Lombard rate at $9\frac{3}{4}$ percent. The short-term interest rate differential between Germany and the United States widens to $6\frac{3}{4}$ percentage points and puts further downward pressure on the dollar.

July 20. Major industrial countries intervene to prevent the U.S. dollar from declining further.

July 27. Bank of Japan lowers discount rate by $\frac{1}{2}$ of 1 percentage point, to $3\frac{1}{4}$ percent.

August 14. Pound sterling falls to a new low against the deutsche mark.

August 20. Unexpectedly high growth in German M3 announced. Sterling falls to within 1 pfennig of its ERM floor (DM 2.788), and the U.S. dollar reaches an all-time low against the deutsche mark.

August 27. Record levels of intervention fail to lift sterling significantly. Swedish central bank raises marginal lending rate by 3 percentage points to 16 percent.

August 28. Italian lira dips below its ERM floor for the first time, reflecting growing concern over the budgetary situation and the loss of reserves.

September 2. U.S. dollar declines to a new historic low against the deutsche mark (DM 1.3862).

September 3. Bank of England augments reserves by borrowing $14.5 billion in deutsche mark, lifting the value of pound sterling above DM 2.8.

September 4. U.S. dollar drops almost 4 pfennigs as the Federal Reserve lowers its target for the federal funds rate by $\frac{1}{4}$ of 1 percentage point, to 3 percent, in response to unexpectedly poor employment data. Italian lira remains below its ERM floor despite large-scale intervention and increases in the Italian discount rate and in the Lombard rate of $1\frac{3}{4}$ percentage points (the largest increase in eleven years), to 15 percent and $16\frac{1}{2}$ percent, respectively.

September 5–6. Meeting in Bath of EC ministers of finance and central bank governors to discuss contingency plans in the event of a negative French vote on Maastricht Treaty, German monetary policy, and ERM tensions. Participants agree on a four-point official statement including a strong reaffirmation of the existing EMS parities and a pledge by the Bundesbank not to raise interest rates "in present circumstances."

September 8. Finnish authorities float the markka, which declines 13 percent against the deutsche mark. Swedish central bank raises marginal lending rate to 24 percent and, effective September 10, to 75 percent. Weaker ERM currencies depreciate further against the deutsche mark. U.S. dollar appreciates.

September 10–11. Italian lira remains below its ERM floor despite massive intervention by the Bundesbank and the Bank of Italy.

September 12–13. Official discussions about ERM tensions lead to a decision and announcement on September 13 by the EC Monetary Committee that the Italian lira would be devalued 7 percent and that there was a commitment by the Bundesbank to lower interest rates.

September 14. Bundesbank lowers discount rate by $\frac{1}{2}$ of 1 percentage point, to $8\frac{1}{4}$ percent, and lowers the Lombard rate by $\frac{1}{4}$ of 1 percentage point, to $9\frac{1}{2}$ percent. Devaluation of the lira and the reduction in German interest rates move the lira to the top of the EMS grid, and sterling appreciates. Swedish central bank cuts marginal lending rate from 75 percent to 20 percent.

September 15. Italian lira drops below new central ERM parity, and sterling falls to a new low against the deutsche mark. Spanish peseta drops below central ERM rate, which had been the intervention level for the Bank of Spain.

September 16. Heavy pressure on sterling leads to an early morning increase in the Bank of England's minimum lending rate from 10 percent to 12 percent. A further increase to 15 percent for the following day is announced. Despite heavy intervention by the Bank of England, the Bundesbank, and the Banque de France, sterling falls nearly 3 pfennigs below its ERM floor at the close of trading in London. In the evening, the government announces that participation in the ERM will be temporarily suspended on September 17 and rescinds the previously announced increase in the Bank of England's minimum lending rate. Intervention in support of the Italian lira fails to hold the currency above its new ERM floor. Sweden raises its marginal lending rate to 500 percent.

September 17. The lira's participation in the ERM is suspended, with the intention of rejoining soon. Spanish peseta is devalued by 5 percent within the ERM. French franc, Danish krone, and Irish pound all fall to

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their ERM floors. Bank of England cuts its minimum lending rate from 12 percent to 10 percent. Central Bank of Ireland intervenes to support the Irish pound.

September 18. Pressure against ERM currencies continues. Overnight rates in Ireland reach 300 percent. The value of the pound falls further. In Italy, the government enacts the bulk of the fiscal package for 1993 through a set of emergency decrees.

September 19. United Kingdom announces that it will not return to the ERM until the ERM has been reformed and until Denmark clarifies how it will proceed after its rejection of the Maastricht Treaty.

September 20. France narrowly (by 51.1 percent) affirms the Maastricht Treaty. French franc rises against the deutsche mark.

September 21. Closeness of the vote in France raises doubts about Maastricht Treaty. French franc falls to near the bottom of its ERM band despite concerted intervention by the Banque de France and the Bundesbank. Italy announces that the lira will not immediately rejoin the EMS. Sweden lowers marginal lending rate from 500 percent to 50 percent.

September 22. Further pressure on the French franc, Spanish peseta, Portuguese escudo, and Irish pound. Spain intervenes for the first time since the devaluation of the peseta. Bank of England cuts minimum lending rate from 10 percent to 9 percent. Central Bank of Ireland intervenes to support the Irish pound, which trades below its ERM floors against the deutsche mark, the Dutch guilder, and the Belgian franc.

September 23. Pressure on the French franc intensifies. Banque de France raises short-term repurchase rate by 2½ percentage points, to 13 percent, and German short-term market rates decline by about 50 basis points. Banque de France and the Bundesbank engage in massive intramarginal intervention. Spain introduces exchange controls to defend the peseta. Central Bank of Ireland repeatedly intervenes to support the Irish pound, which continues to trade below its ERM floors against the Dutch guilder and the Belgian franc.

September 24. French franc stabilizes above its ERM floor. Ireland introduces new exchange controls. Swiss National Bank cuts its discount rate by ½ of 1 percentage point, to 6 percent. Central Bank of Ireland intervenes to support the Irish pound, which continues to trade below its ERM floors against the Dutch guilder and the Belgian franc.

September 25. Central Bank of Ireland intervenes to support the Irish pound.

September 28. Ireland raises base rate by 3 percentage points to 13¾ percent. Pound sterling drops to a new low against the deutsche mark (in London) of DM 2.508.

September 30. Swedish central bank cuts marginal lending rate by 16 percentage points, to 24 percent, in response to an all-party agreement to reduce public spending in 1993 by SKr 20 billion. Canadian banks raise prime lending rates by 2 percentage points, to 8¼ percent, in reaction to the Bank of Canada's efforts to support the Canadian dollar.

October 1. Italian Cabinet approves the 1993 budget calling for spending cuts and revenue increases of Lit 93 trillion (5.8 percent of GDP) relative to trend. Banque de France weekly report indicates that the central bank spent about F 80 billion to defend the franc during the currency crisis.

October 2. Italian government begins discussions with EC partners about a stand-by loan of ECU 9 billion to strengthen the lira and to sustain confidence in returning the lira to the ERM. Pound sterling closes the week at a new low against the deutsche mark of DM 2.43.

October 3. Swedish central bank cuts marginal lending rate to 20 percent.

October 5. Spain lifts some of the exchange controls imposed in September. Pound sterling closes the trading day in London below DM 2.40.

October 7–31. Official interest rates are gradually reduced in most countries affected by the crisis, although rates remain somewhat above pre-crisis levels.

October 14. Finnish government announces plans to cut spending by Fmk 54.2 billion ($11.6 billion) over the next three years and to restore calm in exchange markets following the floating of the markka on September 8. Portuguese government unveils a budget for 1993 that provides for a reduction of the deficit to less than 4 percent of GDP.

October 16. Bank of England cuts its minimum lending rate by 1 percentage point, to 8 percent.

October 20. Italian Parliament begins debate on spending cuts and tax increases worth Lit 93 trillion (including a freeze on early retirement and public sector pay in 1993, higher marginal income tax rates, stricter limits on income tax allowances, a new tax on real estate, and a minimum tax for the self-employed), and the government asks EC partners for a special stand-by loan of ECU 8 billion ($11.2 billion), the maximum funding possible from its partners, to offset the loss of reserves from intervention in September and to provide external fiscal discipline.

October 21. Bundesbank announces a reduction of 15 basis points in the minimum securities repurchase

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Box 3 (*continued*)

rate, to 8¾ percent, which is smaller than widely expected. Bond yields rise in the United States, Japan, and Germany and fall in France and the United Kingdom.

October 23. Italian Parliament approves four mandate laws to implement structural reforms in key areas of public expenditure. Bank of Italy reduces the discount rate by 1 percentage point, to 14 percent.

November 1–30. Official interest rates reduced further in countries affected by the crisis, although they remain above pre-crisis levels.

November 5. Banque de France lowers short-term repurchase rate by 2½ percentage points, to 10½ percent, reversing the September 23 increase and coinciding with the full recovery of reserve losses sustained during the crisis.

November 13. Bank of England cuts its minimum lending rate by 1 percentage point, to 7 percent.

November 19. Swedish central bank increases marginal lending rate, from 11½ percent to 20 percent, to defend the krona. Later in the day, the Swedish authorities float the krona, which declines 9 percent against the deutsche mark, and the central bank reduces the marginal lending rate to 12½ percent.

November 22. Spanish peseta and Portuguese escudo are devalued by 6 percent within the ERM. Spain lifts special capital controls imposed during the September crisis.

November 23. Norwegian central bank raises its overnight lending rate from 17 percent to 25 percent. Central Bank of Ireland raises its short-term facility rate from 13¾ percent to 30 percent. Bank of Spain raises its money rate from 13 percent to 13¾ percent.

November 26. Central Bank of Ireland raises its overnight rate to 100 percent.

December 2. Central Bank of Ireland cuts its overnight rate from 100 percent to 30 percent.

December 3–28. Continued market pressures against the French franc, the Danish krone, and the Irish pound. Official interest rates reduced further in Italy, the Netherlands, Belgium, Denmark, Sweden, and Norway.

December 10. Bundesbank announces that it will raise its target range for growth in M3 in 1993 to 4½–6½ percent from the target range in 1992 of 3½–5½ percent. Norwegian authorities float the Norwegian krone, which declines 5 percent against the deutsche mark. Norwegian central bank cuts its key overnight lending rate by 5 percentage points, to 11 percent.

December 13. EC heads of state meet in Edinburgh and adopt a growth initiative, including ECU 5 billion for the European Investment Bank and ECU 2 billion in capital for a new European Investment Fund that will guarantee bank loans to private industry. Participants also agree to grant Denmark legally binding exemptions from the Maastricht Treaty.

December 16. Portugal removes all capital controls.

December 23. Bank of Italy lowers official rates by 1 percentage point. Bundesbank and Banque de France reportedly intervene to support the franc.

1993

January 5. Banque de France raises official interest rates by introducing a new facility for banks to borrow overnight funds at 12 percent, while suspending the five-to-ten-day rate of 10 percent, and continues to intervene to support the franc. Bundesbank intervenes to support the French franc.

January 6. Central Bank of Ireland raises its overnight rate from 14 percent to 50 percent. Norwegian central bank cuts its overnight lending rate ½ of 1 percentage point, to 10½ percent. Central banks in the Netherlands and Belgium lower official rates.

January 7. Irish pound trades below its ERM floor. Bundesbank announces that its next securities repurchase agreement will be offered at a fixed rate of 8.6 percent, 15 basis points lower than its previous (variable rate) repurchase agreement. Swiss National Bank lowers its discount rate by ½ of 1 percentage point, to 5½ percent.

January 8. Central Bank of Ireland raises its overnight rate to 100 percent. Austrian central bank lowers its discount rate.

January 12–15. Central Bank of Ireland cuts its overnight rate in three steps, to 15 percent. Norwegian central bank cuts its overnight rate by ½ of 1 percentage point, to 9½ percent.

January 21–25. Central banks in the Netherlands, Belgium, Austria, and Ireland cut their key lending rates. Bank of Spain cuts its money repurchase tender rate by ½ of 1 percentage point, noting the recent period of relative stability in foreign exchange markets.

January 26. Bank of England reduces minimum lending rate by 1 percentage point, to 6 percent, resulting in a 1 percentage point cut in base rates to their lowest level since 1977.

January 28. Irish pound trades below its ERM floor, and the Central Bank of Ireland raises the official interest rate to 100 percent.

January 30. Irish pound devalued by 10 percent within the ERM.

February 1. Official interest rate in Ireland cut to 14 percent. French money market interest rates rise. Overnight interest rates rise above 100 percent in

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Denmark as the Danish central bank raises official and market interest rates.

February 3. Bank of Italy cuts its official rates by ½ of 1 percentage point. Banque de France suspends its overnight funds facility and reopens its five-day lending facility, effectively raising the rate from 10 percent to 12 percent.

February 4. Bundesbank cuts Lombard rate by ½ of 1 percentage point, to 9 percent, and its discount rate by ¼ of 1 percentage point, to 8¼ percent.

February 8. Minutes of the December meeting of the U.S. Federal Open Market Committee indicate that the Federal Reserve shifted away from a bias toward easing short-term interest rates. Banque de France cuts overnight rate by ⅛ of 1 percentage point.

February 10. Deutsche mark and dollar weaken against yen in anticipation of the possibility of a Group of Seven (G-7) accord on the Japanese trade surplus.

February 18. Central bank of Sweden intervenes as krona hits all-time low against the deutsche mark.

February 19. Announcement that German M3 fell by 2¼ percent in January.

February 24–26. Official interest rates increase in Spain and Portugal to support currencies.

March 3. Central Bank of Ireland reduces official rates by 1 percentage point.

March 4. Bundesbank does not change official rates. French franc and Danish krone weaken.

March 5. Bundesbank reduces its repurchase rate by almost ¼ of 1 percentage point.

March 10. Central banks in the Netherlands and Belgium lower official interest rates. Danish central bank lowers its securities repurchase rate by ½ of 1 percentage point.

March 13. Agreement in Germany on Solidarity Pact, which is expected to reduce the budget deficit by 1.4 percent of GDP by 1995.

March 18. Bundesbank lowers discount rate by ½ of 1 percentage point to 7.5 percent; Lombard rate is left unchanged at 9 percent. Afterward, central banks in the Netherlands, Belgium, Denmark, and Austria cut official interest rates. Money market interest rates rise in France as the franc falls below DM 3.4. Swiss National Bank cuts the discount rate by ½ of 1 percentage point.

March 25. Bundesbank lowers the rate at which it stands ready to sell three-day paper from 8.4 percent to 7.5 percent. The National Bank of Belgium raises official interest rates. Strong selling of the Belgian franc.

March 29–30. Lira weakens, reflecting political uncertainty.

March 29. Central banks in Denmark and Ireland cut official interest rates.

March 30. Bank of Spain reduces the daily intervention rate by ½ of 1 percentage point, to 14¼ percent.

March 31. Bundesbank lowers the securities repurchase rate from 8.25 percent to 8.17 percent. Central banks in Belgium and Norway cut official rates.

April 1. Dollar falls sharply following the release of a disappointing set of U.S. economic indicators—including an increase in unemployment—and the Bundesbank decision at its weekly council meeting to leave official interest rates unchanged.

April 9. Yen strengthens against European currencies and the dollar amid anticipations of a fiscal stimulus package in Japan.

April 13. General election called for June 7 in Spain. Peseta comes under pressure on expectation that interest rates might be cut after the election. Banque de France reopens its five-to-ten-day lending facility, effectively lowering the rate to 10 percent.

April 19. Banque de France cuts its five-to-ten-day rate to 9¾ percent.

April 22. Bundesbank cuts the discount rate by ¼ of 1 percentage point and the Lombard rate by ½ of 1 percentage point. The Bank of Italy cuts its official rates by ½ of 1 percentage point, to 11 percent.

April 23. Peseta falls sharply against the deutsche mark. Six European central banks intervene to support the peseta. Banque de France lowers its five-to-ten-day rate to 9½ percent.

April 28. German repurchase rate cut from 8.09 percent to 7.75 percent, but deutsche mark remains strong against the dollar and European currencies.

April 29. Banque de France cuts its five-to-ten-day rate further, to 9¼ percent. French franc continues to strengthen against the deutsche mark, and the spread between three-month interest rates in France and Germany falls to 18 basis points.

May 5. Deutsche mark weakens against most European currencies.

May 6. Banque de France lowers its five-to-ten-day rate to 9 percent.

May 11. Bank of Spain intervenes repeatedly as the peseta comes under heavy selling pressure.

May 13. Peseta and escudo are devalued by 8 percent and 6½ percent, respectively. Bundesbank cuts its repurchase rate by 11 basis points. Banque de France

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Box 3 (*concluded*)

cuts its five-to-ten-day rate to $8^{3}/_{4}$ percent. Bank of Spain cuts its intervention rate by $1^{1}/_{2}$ percentage points, to 11.5 percent.

May 18. Denmark ratifies the Maastricht Treaty.

May 20–24. Deutsche mark weakens; lower official interest rates follow the Danish ratification of the Maastricht Treaty. Italian government issues a supplementary budget for 1993 to reduce the deficit by 0.8 percent of GDP in compliance with the conditions set in the EC loan.

May 25. Banque de France lowers its five-to-ten-day rate to $8^{1}/_{2}$ percent.

May 27. Peseta weakens in advance of the Spanish elections on June 7.

May 28. Bundesbank council members suggest that monetary growth in Germany may not warrant interest rate cuts for some weeks. U.S. dollar weakens vis-à-vis the deutsche mark and yen.

June 1. Yen reaches postwar high (¥106.55) against the dollar.

June 3. Bank of Spain cuts repurchase rate by $^{1}/_{4}$ of 1 percentage point, to $11^{1}/_{4}$ percent.

June 7. Government returned to power in Spain. Peseta rallies strongly.

June 11. Bank of Italy cuts its official rates by $^{1}/_{2}$ of 1 percentage point, to 10 percent, the lowest level in seventeen years.

June 14. Banque de France cuts its five-to-ten-day rate to $8^{1}/_{4}$ percent.

June 18–23. Deutsche mark weakens against most European currencies as concern increases about the deteriorating state of the German economy and the budget deficit.

June 21. Banque de France lowers its five-to-ten-day rate to 8 percent.

June 24. French economics minister calls for the meeting of the Franco-German economic and finance council to discuss concerted interest rate reduction, but the German finance minister cancels the meeting. The deutsche mark falls against almost all the major currencies, including the French franc.

July 1. Bundesbank cuts its key discount rate by $^{1}/_{2}$ of 1 percentage point, to $6^{3}/_{4}$ percent, and its Lombard rate by $^{1}/_{4}$ of 1 percentage point, to $8^{1}/_{4}$ percent; the repurchase rate is cut by 28 basis points, to 7.3 percent. Central banks in the Netherlands, Belgium, Denmark, Ireland, and Austria lower official interest rates; deutsche mark strengthens against other European currencies.

July 2. Banque de France cuts its five-to-ten-day rate to $7^{3}/_{4}$ percent.

July 4. G-7 meeting in Tokyo focuses on salvaging the Uruguay Round of multilateral trade negotiations; currency cooperation is not discussed.

July 5. Bank of Italy cuts its official rates by 1 percentage point, to 9 percent, following agreement reached by social partners on a new framework for wage bargaining and the definite abolition of wage indexation.

July 6. The statement by a Bundesbank official that German inflation was only 2.7 percent at an annual rate in the past quarter leads to hopes of a further interest rate cut and boosts German and French bond markets. The Balladur bond issue is oversubscribed by F 70 billion beyond the initial F 40 billion target.

July 8. Positive German economic data strengthen deutsche mark; the French franc moves close to its ERM floor of 3.40 against the deutsche mark.

July 9. Banque de France intervenes as franc comes under strong pressure.

July 12. French franc falls to within a centime of its ERM floor. German finance minister offers verbal support, and the Bundesbank claims it has intervened to support the franc. Banque de France reportedly attempts to support the franc by draining liquidity from the banking system at its weekly repurchase agreement auction.

July 14. Bundesbank cuts its repurchase agreement rate by 2 basis points; French franc and Danish krone continue to come under strong selling pressure.

July 15. Danish central bank raises its two-week repurchase agreement rate by 1.2 percentage points to defend the krone.

July 16. Central banks in Germany, France, Spain, and Belgium join the central banks in Denmark and the Netherlands in supporting the Danish krone.

July 21. Vote on Maastricht Treaty passes in the British House of Commons.

July 22. Speculative pressure rises against the French franc, Spanish peseta, Portuguese escudo, and Danish krone in response to the possibility that the Bundesbank might not cut interest rates at its council meeting on July 29. Bundesbank intervenes to support the French franc. Banque de France suspends its five-to-ten-day facility and reopens its overnight fund facility, raising the 24-hour lending rate by $2^{1}/_{4}$ percentage points, to 10 percent.

July 26. Central banks in Portugal and Belgium raise official interest rates as continuing tensions in the ERM put their currencies under pressure.

July 27. Bundesbank announces its repurchase rate will be variable. Peseta, escudo, and Danish krone come under strong selling pressure. Peseta falls to the bottom of the currency grid, and the French franc weakens slightly.

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July 28. Bundesbank cuts its repurchase rate by 20 basis points, to 6.95 percent. Markets anticipate that German official rates will be cut on July 29.

July 29. Lombard rate is cut by ½ of 1 percentage point, but financial markets react strongly to the Bundesbank decision to leave the discount rate unchanged. Several ERM currencies are pushed close to their ERM floors. The French franc, peseta, escudo, Belgian franc, and Danish krone are buoyed by central bank intervention but remain close to their floors, with the krone falling below its ERM floor against the guilder at one point. Netherlands central bank cuts three key interest rates by ¼ of 1 percentage point in an attempt to ease pressures in the ERM.

July 30. French franc, Belgian franc, and Danish krone fall below their ERM floors.

July 31–August 1. EC finance ministers and central bank governors decide to widen the currency fluctuation bands of the ERM to plus or minus 15 percent, effective August 2.

August 2. European stock markets rally. Decision to widen the current fluctuation bands of the ERM is seen as paving the way for interest rate cuts across Europe.

August 3. Bundesbank cuts repurchase rate by 15 basis points to 6.8 percent, boosting European bond markets on expectations that interest rates will fall across Europe. Bank of Spain cuts its benchmark interest rate, but Banque de France holds its interest rates unchanged. French franc stabilizes against the deutsche mark, closing in London at F 3.485 from a previous F 3.505. Central banks in Denmark and Belgium continue to take active measures to support their currencies. Sterling unchanged. U.S. dollar continues to fall, perhaps because of sales by central banks in order to repay the Bundesbank with deutsche mark for its help with intervention.

August 6. Banque de France reintroduces its five-to-ten-day facility, at a 10 percent rate.

August 9–23. Banque de France cuts its overnight lending rate five times—on the 9th, 11th, 17th, 19th, and 23rd—by a total of 2¼ percentage points, to 7¾ percent, but leaves its five-to-ten-day rate unchanged at 10 percent. The French franc weakens slightly and then recovers.

August 11. Japanese yen rises to a postwar high of ¥103.5 to the dollar following news that Japan's trade surplus has widened to nearly $12 billion, from $9½ billion a year earlier.

August 12. French franc and Danish krone weaken, following the release of figures suggesting that large quantities of reserves had been used to support the currencies.

August 13. Bank of Spain cuts its repurchase rate by ¼ of 1 percentage point, to 11 percent.

August 16. Yen reaches a new high of ¥100.8 to the dollar.

August 19. Federal Reserve intervenes four times in the foreign exchange markets in support of the dollar. The yen's rise against the dollar is reversed as it falls from ¥101.7 to ¥104.5 to the dollar.

August 23. Danish central bank cuts its two week certificate of deposit rate, for the first time since the widening of the ERM bands, from 11.1 percent to 10.5 percent. Banque de France suspends its overnight lending facility at the close of the day. There is little effect on the two currencies.

August 26. At its first council meeting since the widening of the ERM fluctuation bands, the Bundesbank does not lower its official interest rates, and raises its repurchase rate by 10 basis points to 6.9 percent, effective until September 1. Other European currencies, including the French and Belgian francs and the Danish krone, weaken against the deutsche mark. The U.S. dollar also begins to depreciate against the deutsche mark.

August 4–31. The French franc, Spanish peseta, Portuguese escudo, Belgian franc, and Danish krone fluctuate somewhat and at the end of the month are slightly weaker than on August 4.

September 1. Bundesbank re-establishes its repurchase rate at 6.8 percent.

September 2. Belgian central bank raises its discount rate and central rate by one percentage point each, to 7 percent and 10½ percent, effective September 3.

September 3. Bank of Spain cuts its repurchase rate by 50 basis points to 10 percent.

September 8. Danish central bank cuts its two week certificate of deposit rate by ½ of 1 percentage point, to 10 percent, but leaves its discount and key deposit rates unchanged at 9¼ percent.

September 9. Bundesbank cuts its discount and Lombard rates by 50 basis points each, to 6¾ and 7¼ percent, and cuts its repurchase rate by 10 basis points, to 6.7 percent. Austrian central bank cuts its discount rate from 6 percent to 5¾ percent and its Lombard rate from 7¼ percent to 6¾ percent. Banque de France cuts its five-to-ten-day rate to 7¾ percent from 10 percent, but leaves the intervention rate unchanged at 6¾ percent. Bank of Italy cuts its discount rate by 50 basis points, to 8½ percent.

September 10. The Belgian central bank cuts its discount rate by 50 basis points, to 6½ percent, and its central rate by 25 basis points, to 10¼ percent. Netherlands central bank cuts three key rates by ¼ of 1 percentage point each, and reduces the special advances rate by 10 basis points, to 6.4 percent. The changes in interest rates on September 9 and 10 have little impact on ERM currencies.

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