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September 8, 1986

To: Members of the Executive Board
From: The Secretary
Subject: The European Monetary System - Recent Developments

There is attached for the information of Executive Directors a paper on developments in the European Monetary System (EMS) since 1983, which updates and complements an earlier paper on the EMS (SM/83/16, 1/24/83). As with the earlier paper which was published as Occasional Paper No. 19 (see EBD/83/57, 3/4/83), it is proposed that, after suitable editing, this paper also be published in the Occasional Paper series.

In the absence of an objection from an Executive Director by noon on Wednesday, September 17, 1986, this proposal will be deemed approved by the Executive Board and it will be so recorded in the minutes of the next meeting thereafter.

Mr. Mayer (ext. 8303) is available to answer factual questions relating to this paper and to receive, prior to Wednesday, September 24, 1986, any editorial suggestions.

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INTERNATIONAL MONETARY FUND

The European Monetary System: Recent Developments

Prepared by the European Department 1/

(In Consultation with the Exchange and Trade Relations Department,
the Legal Department, the Research Department, the Treasurer's
Department, and the Office in Europe)

Approved by L.A. Whittome

September 3, 1986

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1/ This paper was prepared by H. Ungerer, O. Evans (now WHD),
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I. Introduction

The European Monetary System (EMS) came into operation in March 1979, in accordance with the Resolution of December 5, 1978 of the European Council, composed of the Heads of State and Government of the nine member countries of the European Communities (EC). ^{1/} The objective was to create "a zone of monetary stability in Europe," comprising "greater stability at home and abroad." The founding fathers of the EMS intended that, after two years, the system should proceed to a second, final phase in which it would be given a more definite institutional framework, in particular through the creation of a European Monetary Fund. This timetable proved unachievable for economic, legal, as well as political reasons. At present, there appears to be a broad consensus that significant further institutional development of the EMS would require a major political initiative and necessitate an amendment of the Treaty establishing the European Economic Community. Recent efforts to modify the operational procedures of the EMS and to increase its efficiency resulted in some changes but did not affect its basic institutional structure.

While the hopes of the optimists have been realized only in part, after more than seven years of EMS existence it has nevertheless become clear that the fears and predictions of the skeptics were not justified. The widespread expectations that a system of fixed, though adjustable, exchange rates would not hold together for long or, conversely, that it would degenerate into a system of frequent small exchange rate adjustments, akin to a crawling peg, have not materialized. The countries participating in the exchange rate mechanism (ERM) of the EMS ^{2/} have shown political determination to keep the system in operation. On a practical level, the participating central banks have demonstrated an unprecedented ability to work together in securing a smooth functioning of the system.

After some disappointing developments, in more recent years economic policies in the EMS countries have been increasingly oriented toward domestic stability and thus have facilitated a growing convergence in prices, costs, and monetary aggregates. While it may be debated whether the EMS and its constraints have been the main cause for this convergence, there is a consensus that the existence of the system has encouraged and contributed to the convergence of economic policies and developments. At the same time, the exchange rate variability of currencies participating in the ERM has significantly diminished since

^{1/} Commission of the European Communities, The European Monetary System--Commentary, Documents; European Economy, July 1979, pp. 95-97.

^{2/} At present, Belgium-Luxembourg, Denmark, France, Germany, Ireland, Italy and The Netherlands, in the following referred to as ERM or participating countries/currencies. In a more general context, the term EMS countries/currencies will be used. For further details, see Section II.1 below.

the establishment of the EMS, compared with earlier years and to other major currencies.

Other issues on the initial agenda have not been achieved: the United Kingdom is still not participating in the exchange rate mechanism, and Italy continues to avail itself of the wider fluctuation margins of 6 percent (compared to 2.25 percent for all other participants) which was intended as a transitory arrangement. By the same token, Greece which joined the EC as of January 1, 1981 and signed the EMS agreement in June 1985, is not a participant in the exchange rate mechanism; Spain and Portugal, members of the EC since January 1, 1986 are not yet participating in any aspect of the EMS.

From the outset, the EMS has shown a considerable degree of flexibility. The provisions which constitute the basis for its operation, as laid down in the Resolution of the European Council of December 5, 1978 and the Agreement between the EC central banks on the EMS of March 13, 1979, ^{1/} serve only as a framework, and do not prescribe the actual operation of the system in detail. Over time, the EMS has shown a gradual evolution in various areas such as the role of the ECU (European Currency Unit), intervention policies, financing, and significance of the divergence indicator. In many ways, this gradual evolution was a response to emerging problems and needs but points also to changing philosophies and strategies of the participating central banks. Some of these changes are at variance with the hopes and views of some advocates of European integration who consider the system as being insufficiently oriented toward promotion of European integration through institutional arrangements and commitments, and toward the goal of the European economic and monetary union. Another view is that too hasty a pace would only endanger what has been achieved so far.

From its inception in March 1979 through March 1983, the EMS experienced seven exchange rate realignments which over time became more significant in terms of the size of the exchange rate adjustments and of the number of currencies affected. During this period, the central rates of the deutsche mark rose cumulatively by about 33 percent against the French franc and by about 27 percent against the Belgian franc. The realignment of March 1983--the most comprehensive so far--was followed by a long period without changes in central rates, until July 1985 when the Italian lira was devalued relative to the other currencies participating in the exchange rate mechanism. At two years and four months, this represents the longest period of exchange rate stability under the EMS or its predecessor, the European Common Margins Arrangement ("snake"). Several factors have contributed to this development: the growing convergence of economic performance between EMS countries; the increased credibility of the system, as a result of the commitment of

^{1/} Henceforth called EMS Agreement. The complete text as amended in June 1985 is reproduced in SM/86/20, 2/3/86 ("A Comparative Analysis of the Functioning of the SDR and the ECU"), pp. 59-73.

the participating central banks to the maintenance of stable exchange rates; and lastly, developments in international exchange markets, in particular the strength of the U.S. dollar during this period. This reflected substantial capital flows to the United States, which at times exerted a downward pressure of the deutsche mark exchange rate vis-à-vis its partner currencies in the Exchange Rate Mechanism.

Following the French parliamentary elections in March 1986, a general realignment of exchange rates, initiated by the French authorities, took place in April 1986 in which the French franc was devalued by about 6 percent against the deutsche mark and the Netherlands guilder, roughly offsetting the accumulated differences in unit labor cost increases between France and Germany; the other currencies were devalued by roughly 2 to 3 percent against the deutsche mark and the Netherlands guilder. Four months later, in August 1986, the Irish pound was devalued relative to the other participating currencies.

The present paper provides a survey of recent developments in the EMS. ^{1/} In Chapter II, the paper discusses membership in the EMS and changes in the operation and in the institutional design of the system. In the next chapter, exchange rate developments over the last few years are summarized. Chapter IV analyzes the variability of exchange rates in the EMS over the period 1979-85 and compares it with earlier periods and with the experience outside the EMS. The final chapter of the paper focusses on convergence of economic developments between EMS countries and provides a comparison with other countries. Statistical information, legal texts concerning the EMS, and a short, selective bibliography are contained in appendices.

II. The System and its Development

This chapter summarizes the main characteristics and operational elements of the EMS as laid down in the EMS Agreement and surveys their evolution in the context of the actual operation of the EMS by the participating central banks over the last few years. The section also discusses efforts to adapt the written rules governing the system to changing needs and to the emerging actual management of the system, resulting in an amendment of the EMS Agreement in June 1985.

^{1/} It complements and updates an earlier paper on the EMS developments ("The European Monetary System: The Experience, 1979-1982," SM/83/16, 1/24/83) which was published in May 1983 as Occasional Paper No. 19. All reference in this paper will be to the Occasional Paper.

1. Membership in the EMS and participation in the exchange rate mechanism

When the EMS came into operation on March 13, 1979, the nine EC countries became members of the system when their central banks signed the EMS Agreement. All EC countries but the United Kingdom decided to become participants in the exchange rate mechanism of the EMS thus accepting the related obligations. The pound sterling, however, was from the beginning part of the basket of currencies forming the ECU. On July 6, 1979, the United Kingdom followed the other EMS countries and deposited, on a voluntary basis, 20 percent of its gold and gross dollar assets with the European Monetary Cooperation Fund (EMCF) ^{1/} in exchange for an equivalent amount of ECUs.

Greece became a member of the EC as of January 1, 1981 but did not join the EMS. The EC Council of Ministers decided to include the Greek drachma in the ECU basket, as of September 17, 1984, together with a general revision of the currency composition of the ECU. On June 10, 1985, Greece signed the EMS Agreement and deposited 20 percent of its gold and gross dollar reserves in exchange for ECUs on January 1, 1986, but did not become a participant in the exchange rate mechanism of the EMS. On January 1, 1986 Spain and Portugal became members of the European Communities, bringing total membership to 12. Neither joined the EMS but Spain indicated its interest in membership in due course. It was agreed that the Spanish peseta and the Portugese escudo would be included in the ECU at the latest at the occasion of the next regular revision of the ECU basket scheduled for 1989. In the case of Greece as well as Portugal and Spain, the main reasons for not joining the EMS or not becoming a participant in the exchange rate mechanism for the time being were the substantial structural differences between their economies and those of the other EC members, in particular the highly industrialized countries, and the need to allow their economies time to adjust gradually to membership in the EC without excessive constraints.

More significant for the actual functioning of the EMS as well as its international importance and weight is the fact that the United Kingdom is still not participating in the exchange rate mechanism. This means that the pound sterling continues to float independently and that U.K. exchange rate and monetary policies are not subject to the constraints of a fixed-exchange rate system and, by the same token, do not benefit from any advantages such a system may confer on participants in terms of lower exchange variability and any inherent disciplinary effects.

^{1/} The EMCF was established as an institution of the EC in April 1973 and has served as the administrator for transactions under the European Common Margins Arrangement ("snake") and the EMS as well as the very short-term financing facility and the short-term monetary support.

Ever since the establishment of the EMS, there have been calls for participation of the United Kingdom in all activities of the EMS, on economic as well as political grounds, coming from EC partner countries, the EC Commission, and from within the United Kingdom as well. British business circles, academicians and, more recently, also some government officials, have taken the view that U.K. participation in the exchange rate mechanism would on the whole be beneficial. The question has been discussed at several occasions in both houses of Parliament 1/ but, in the end, the U.K. authorities have always concluded that the time was not yet ripe for full membership.

The main arguments against full membership of the United Kingdom can be summarized as follows: 2/ The pound sterling is subject to external influences which differ substantially from those of other EC currencies, illustrated by the wide fluctuations in the sterling/deutsche mark exchange rate. Two factors account for this: First, there is the so-called "petro-currency effect" due to the United Kingdom's role as a large net exporter of oil; second, the pound and the deutsche mark have often behaved differently at times of large swings in the external value of the dollar. Since the pound is an important trading currency and exchange controls have been abolished, the volume of intervention necessary to defend the pound in case of a sustained attack could be much larger than that necessary for most other EC currencies. A large volume of intervention could, in turn, imperil the achievement of the domestic monetary objectives. More generally, it is doubted whether participation in the EMS exchange rate mechanism (ERM) would be compatible with the Medium-Term Financial Strategy of the United Kingdom. For those reasons, it is argued, ERM participation "would involve in unfavorable circumstances greater interest rate

1/ E.g., House of Commons, Treasury and Civil Service Committee, various documents from Sessions 1981-82, 1982-83, and 1984-85; for details see Selected Bibliography, Appendix III.

2/ See: Anthony Loehnis, "The EMS: A Central Banking Perspective," speech given at the Federal Trust Conference "The Time is Ripe" on June 19, 1985; in Deutsche Bundesbank, Auszüge aus Presseartikeln, July 3, 1985.

volatility and perhaps more frequent realignments than many of its advocates admit." 1/

The advocates of ERM participation have maintained that the "petro-currency" argument is becoming less important over time; that monetary targeting has already become less prominent in the U.K.'s economic strategy and that the exchange rate is receiving increasing importance in the conduct of monetary policy; and that there is now a high degree of economic convergence between the United Kingdom and Germany, the most important economy among the present ERM participants, which would facilitate U.K. participation. Past experience with exchange rate variability could not be considered a guide for the future since convergence, the very fact of ERM participation with the inherent commitment to a fixed exchange rate and a monetary policy consistent with a system of fixed exchange rates would positively influence exchange rate expectations and thus lower exchange rate variability. 2/

1/ Loehnis, *ibid.* Recently, A. Walters argued against U.K. participation in the ERM by criticizing the EMS for suffering from an inherent contradiction: as long as inflation rates differ, a fixed exchange rate system will lead to rather perverse monetary policies. Thus, if the rates of inflation are 15 percent and 3 percent in Italy and Germany, respectively, with freely mobile capital and fixed exchange rates between the two countries, nominal interest rates have to be the same, say 9 percent. This leads to real interest rates of plus 6 percent in Germany and minus 6 percent in Italy. If monetary authorities operate an interest-rate regime in controlling their domestic money supply, there will be great pressure to expand money and credit in Italy, whereas in Germany there will be a substantial financial squeeze. This was precisely the opposite monetary policy to that which would move toward convergence (see A. Walters, *Britain's Economic Renaissance*, Oxford 1986, pp. 126-127). Walters' argument is, however, based on the somewhat unrealistic premise that such a wide differential in inflation rates would not be reflected in expectations of frequent and large realignments of exchange rates. For a response to Walters' argumentation, see also M. Russo, "Why the Time is Ripe," lecture delivered to the Bow Group, House of Commons; London, May 19, 1986.

2/ For views in favor of U.K. participation, see e.g.: Federal Trust for Education and Research, "The Time is Ripe--The European Monetary System, the ECU, and British Policy," Rapporteur: Dr. David Lomax, November 1984; A. Scott, "Britain and the EMS: An Appraisal of the Report of the Treasury and Civil Service Committee," *Journal of Common Market Studies*, Vol. XXIV (March 1986), No. 3, pp. 188-201; Public Policy Centre, *The Need for an Exchange Rate Policy and the Option of Full U.K. Membership in the EMS*. London, May 1986; M. Russo, *ibid.*

2. The evolution of the system

The exchange rate and intervention mechanism

The central element of the EMS is a system of fixed but adjustable exchange rates in which each participating currency is tied to each of the other participating currencies by bilateral central rates. Around the bilateral central rates, fluctuation margins of 2.25 percent (6 percent in the case of the Italian lira) have been established which determine the bilateral intervention points for each currency against each of the other currencies. At these points, intervention in the partner currency concerned is obligatory and potentially unlimited in amount. The necessary funds for carrying out such intervention are supplied by the respective partner central banks under mutual credit lines (the "very short-term financing facility"). Claims and debts stemming from obligatory intervention are settled subject to provisions laid down in the EMS Agreement. These rules are not, however, rigid and narrow; rather they provide an overall framework and leave substantial flexibility as to the timing and means of settlement. With little exaggeration, the provisions of the agreement could thus be characterized as a fall-back-mechanism of obligations which comes into play to the extent that the partners do not agree on other ways to settle their mutual claims and debts. An important element in the initial settlement rules is that a debtor is entitled to use ECUs up to 50 percent of the amount due; use of ECUs beyond that point is subject to an agreement with the creditor. 1/

The grid of bilateral rates is supplemented by the "divergence indicator" which shows the movements of the exchange rate of each participating currency against the (weighted) average movement of the other participating currencies. The underlying idea is that the indicator would induce changes of policies at an early stage, and thus would help to keep exchange rates within the margins. Areas for possible immediate action include domestic monetary policy, and intramarginal intervention including the use of third currencies, i.e., the U.S. dollar. While at times movements of the divergence indicator have resulted in some action, the indicator has never been fully able, as had been hoped by its proponents, to assume the role of linking exchange rate developments to an increasing convergence of economic policy, e.g., by triggering restrictive measures in the case of a weak currency or expansionary measures in the case of a strong currency. 2/

Over the years, a marked shift in views has taken place regarding the relative merits of flexibility vs. stability within the margins vis-

1/ Additionally, the amendment of the EMS Agreement of June 1985 provides the possibility of mobilizing ECU holdings to obtain intervention currencies. See Section II.3 below.

2/ Some of the reasons for this development have been discussed in Occasional Paper No. 19, p. 15.

à-vis other participating currencies. On the one hand, the flexibility provided by the fluctuation margins was regarded as a cushion which could absorb or dampen some external shocks without the need for immediate changes in basic policies or central rates. Full use of the fluctuation margins would also help to limit exchange market intervention and thus avoid some of its potentially undesirable consequences. On the other hand, there were arguments in favor of keeping the exchange rate stable against other, in particular strong currencies in the system, if need be by intervening and by shifting interest rate differentials. By doing so, the authorities hope to influence market sentiments and exchange rate expectations by showing determination and by preventing the building up of a momentum for exchange rate movements. A related argument is that domestic monetary stability, in terms of actual developments and expectations, may be better served by exchange rate stability against key participating currencies.

Over time, the latter view has gained favor, and a number of EMS central banks have adopted a strategy of keeping their exchange rates well within the band of the EMS and limiting movements against key currencies of the EMS to a minimum. At times, this has required substantial intervention in the foreign exchange market and the maintenance of higher interest rates than might have been desirable from a domestic policy point of view. In this way, the countries concerned not only strengthened the confidence of the market in their own policies and the exchange rate of their currency but also contributed to a greater convergence toward domestic cost and price stability within the EMS. Thus, domestic policies of these countries became more compatible with their exchange rate objectives.

Technically, this shift in strategy implied increased intra-marginal intervention by central banks in place of intervention at the margins. While in the early years of the EMS, obligatory intervention at the margins accounted for a substantial part of total intervention, more recently, most intervention has been within the margins, which has had significant repercussions for the functioning of the EMS. As a consequence, the very short-term financing facility which applies only to obligatory intervention at the margins in participating currencies has recently been rarely used, and the role of ECU in financing intervention has been substantially reduced. In a temporary reversal of this trend, after the realignment of April 7, 1986, there was heavy intervention at the margins in support of the deutsche mark which had moved from its position at the top of the band, prior to the realignment, to the bottom. A small part of these interventions was carried out by the Bundesbank in ECUs resulting in liabilities of the Bundesbank to the EMCF at the end of May, 1986. 1/

1/ See Deutsche Bundesbank, Monthly Report June 1986, p. 44.

According to Article 15 of the EMS Agreement, participating central banks are entitled to hold only working balances in other participating currencies, and these limits can only be exceeded with the consent of the central bank concerned. This provision, however, has been applied flexibly. In particular, the Deutsche Bundesbank, the issuer of the main EMS intervention currency, has consented to other central banks holding substantial amounts of deutsche mark and, on occasion, has encouraged them to acquire deutsche mark in the market when conditions made this appropriate. Any use of partner currencies for intramarginal intervention has remained, however, subject to approval by the issuing central bank. During periods of strength of its currency, the Deutsche Bundesbank has been apparently reluctant to see larger injections of its currency into the market as this may have been in conflict with its own domestic monetary targets. Furthermore, other central banks have felt that the process of approval for the use of a partner currency for intervention purposes provided insufficient flexibility for timely and efficient action. Since similar limitations and considerations did not apply to intervention in U.S. dollars, the latter has become an important intervention currency within the EMS. ^{1/}

With a view to facilitating intramarginal intervention in EMS currencies, various proposals for rule changes have been advanced. One has been to make the automatic provision of EMS currencies for obligatory intervention under the very short-term financing facility also available for intra-marginal intervention. Another proposal has been to enable central banks in need of intervention currencies to obtain them against ECUs from other participating central banks.

After long discussions in the various competent bodies of the EC, the Monetary Committee and the Committee of the Governors of the Central Banks as well as by the Finance Ministers, a package of amendments to the EMS Agreement was adopted in June 1985, which allowed a limited possibility for the mobilization of ECUs for obtaining intervention currencies, together with other provisions designed to increase the attractiveness of the official ECU as a reserve asset; the amendments are described below, in Section II.3.

Credit facilities

Apart from the very short-term facility for the financing of obligatory intervention, other credit facilities exist, which are not, however, limited to participants in the exchange rate mechanism of the EMS but open to all EC member countries. The short-term monetary support (STMS) is a quasi-automatic short-term facility. The medium-term financial assistance (MTFA), and the Community loan mechanism are medium-term facilities, the use of which is subject to conditionality.

^{1/} More recently, for the same reasons, some EMS central banks have also used previously acquired assets in private ECUs for intervention purposes.

In contrast to the STMS and the MTFA whose credits are financed by EC partner countries, the Community Loan mechanism relies on outside borrowing. 1/

Following the general realignment of exchange rates within the EMS in March 1983, France requested a loan of ECU 4 billion 2/ under the Community loan mechanism. In May 1983, the Council of Ministers agreed to the request, on the basis of an adjustment program to which France had committed itself. 3/ The program included a reduction of the public sector deficits and of the target for the growth of the money supply, encouragement of private savings, and continued efforts to eliminate indexation both of costs and prices. While not all the objectives of the French program were attained, the improvement in the balance of payments that subsequently occurred nonetheless allowed the French authorities to make advance repayments on its loan of US\$650 million in August 1985 and of a further US\$1.8 billion in July 1986; the bulk of the remainder had been refinanced on more favorable terms earlier in 1985.

1/ The STMS was established in 1970 and enlarged when the EMS was established and in connection with the enlargement of the EC in 1973, 1981, and 1986. The facility is administered by the central banks and provides short-term financing in case of a temporary balance of payments deficit and/or a sudden decline in foreign exchange reserves. Credits are not subject to specific conditionality. The STMS was used by Italy in 1974 but has not been used since the EMS came into operation. Credits and contributions under the STMS are limited by creditor and debtor quotas (see Table 1). The MTFA was set up in 1971 and like the STMS, enlarged on several occasions. It provides credits for a period between two and five years in cases where an EC country is in difficulties or is seriously threatened with difficulties as regards its balance of payments. The Council of Ministers determines the amount and the duration of a credit and decides the applicable economic policy conditions. The facility was used by Italy in 1975 but has not been activated since the establishment of the EMS. The MTFA has a system of credit ceilings; normally no member country may draw more than 50 percent of the total credit ceiling (see Table 1). The Community loan mechanism was established in 1975. Under this facility the EC, authorized by the Council of Ministers, borrows and on-lends to member countries amounts of up to ECU 8 billion (before 1985, ECU 6 billion). The Council also determines the modalities and conditionality of any loan. Normally, any one member country may not borrow more than 50 percent of the total amount.

2/ Equivalent to US\$3.7 billion of the then prevalent exchange rates.

3/ Council Decision (EEC) of May 16, 1983, Official Journal of the European Communities No. L 153, June 11, 1983.

In December 1985, the Council of Ministers granted Greece a loan of ECU 1,750 million 1/ under the same facility. 2/ The loan was tied to a two-year recovery program which had as its main objectives a slowdown in the inflation of prices and labour costs, through a lasting adjustment of the wage indexation mechanism; a reduction in the public sector borrowing requirement, and in domestic credit expansion; and a reduction in the current account deficit. The loan is being made in two equal installments, the second of which is to be released subject to a mid-term review of the economic recovery program.

Comparison of the two loans under the Community loan mechanism and their conditionality suggests that the EC has opted for a case-by-case approach. The first loan was made in one amount while the second is being made in two installments. The program initiated by the French authorities included quantitative targets for public sector deficits and the growth of money supply while that for Greece defined quantitative targets for inflation, the PSBR, and domestic credit expansion. Both programs emphasize the elimination or modification of indexation mechanisms. In the case of France, external balance is an overall objective; in the case of Greece, the objective of reducing the current account deficit is linked to the stabilization of the external public debt.

The role of the ECU

The ECU was introduced in connection with the establishment of the EMS. It was assigned three functions, first as a means of settlement, second (with a number of qualifications) as a reserve asset, and third as a unit of account for financial transactions. In the latter capacity, the ECU serves not only as unit of account for various purposes in the EMS (central rates, reference point for the divergence indicator) or EMS-related institutions, such as the European Monetary Cooperation Fund or the various credit facilities, but also as the unit of account and value for all financial activities of the EC, such as the budget, the Common Agricultural Policy, the European Development Fund, and the European Investment Bank. 3/

As a means of settlement and reserve asset, the ECU has not acquired the prominence its creators intended. As a means of settlement, use of the ECU remained limited from the beginning. Net ECU holdings of central banks (representing the counterpart to the net use of ECUs) have never gone beyond 10 percent of the total amount of ECUs created through the swap arrangements with the EMCF; however, the use of

1/ Equivalent to US\$1.6 billion at the then prevailing exchange rates.

2/ Council Decision (EEC) of December 9, 1985, Official Journal of the European Communities No. L 341, December 12, 1985.

3/ For more details, see SM/86/20, 2/3/86 ("A Comparative Analysis of the Functioning of the SDR and the ECU").

ECUs by individual central banks has at times gone noticeably beyond 10 percent of their ECU holdings. As mentioned above, in the more recent past, the use of ECUs for settlement purposes has virtually ceased due to the changes in intervention practices. It also should be noted that--contrary to the intentions expressed in the European Council Resolution of December 5, 1978--the EMS has not evolved "into a final system ...[which] will entail the creation of the European Monetary Fund... as well as the full utilization of the ECU as a reserve asset and a means of settlement." This and the institutional limitations on the use of ECUs--it cannot be used directly for intervention, only within specified limits for the settlement of intervention debts within the EMS, and not at all outside the EMS--make the ECU less than a full reserve asset. In essence, at present it is a substitute for those reserves (gold and U.S. dollar holdings) which have been deposited with the EMCF (Table 2).

In view of this situation, proposals were put forward to expand the possibilities for use of the ECU as a means of settlement and to increase its attractiveness as a reserve asset. Other proposals aimed at a more rationally controlled process of creating ECUs. Under the present rules, the creation of ECUs is largely determined by variables outside the direct control of the EMS authorities. 1/ The main proposals were to improve the remuneration on net ECU holdings and to abolish the acceptance limit for its use in settlement of obligatory intervention debts. As already mentioned, there were also suggestions to make the Very Short-Term Financing Facility available for intramarginal intervention and thus to make ECUs eligible for the settlement of obligations stemming from this kind of intervention. 2/

The private ECU 3/

The legal texts introducing and defining the ECU stipulate its use for official purposes. No provision is made for the use of ECUs in private transactions. However, the idea of the ECU as a basket of EC currencies was so appealing to financial markets that soon after its introduction a private market for ECUs emerged which has expanded rapidly over the last four years.

As the ECU is not officially issued to the public, e.g., there are no coins or banknotes, the private ECU is essentially book money. Banks create it by crediting sums to an ECU account. Hence, the private ECU market is completely independent of official ECU creation and is not subject to national or supranational monetary control. There are, however, national regulations on the use of private ECUs.

1/ For details see Occasional Paper No. 19, p. 16; see also Table 2.

2/ The changes regarding the use and the characteristics of the ECU finally adopted are described in Section II.3.

3/ For a detailed description of the market for the private ECU see SM786/20, 2/3/86 (op. cit.).

At present, major financial instruments which are available for national currencies are also available for the ECU. Banks offer accounts for sight and time deposits in ECUs and participate in ECU bond issues. The whole spectrum of different types of loans ranging from personal to major syndicated loans are available in ECUs, and, in 1984, floating rate notes and zero coupon issues were introduced. Also, an ECU credit card and Traveller's checks denominated in ECUs are available. The relative success of the private ECU is the result of a number of favorable factors such as the attractive combination of reasonable yields and perceived low or modest risk associated with its exchange value in terms of EC currencies due to the workings of the exchange rate arrangement of the EMS; the favorable treatment given to its use in the capital controls of some EC members; and the encouragement and support given to its development by EC institutions and some European government and central banks.

3. Changes in the institutional set-up of the EMS

The EMS Agreement

Over the years the EMS has undergone a number of changes in its modes of operation. These occurred without modifications in the institutional set-up of the EMS and remained within the framework laid down in the EMS Agreement which proved to be sufficiently flexible to accommodate these changes. According to one view, however, these changes constituted a move away from the original intentions for the role and ultimate purpose of the EMS. Accordingly, various proposals were made for institutional changes and the further development of the system, dealing, inter alia, with the role and functions of a European Monetary Fund, and the scope for coordinated intervention policies vis-à-vis third currencies. However, due to the complex political, institutional, economic and technical nature of the proposals, no final agreements could be reached.

The evolution of the system also brought to the surface a number of issues which, though more operational, were by no means only technical in nature. After extensive discussions within the EC, the Committee of Governors of Central Banks adopted on June 10, 1985 the following package of amendments to the EMS Agreement intended to address these problems, which became effective on July 1, 1985. 1/

a. Central banks with a need for intervention currencies may mobilize through the European Monetary Cooperation Fund (EMCF) their net creditor positions in ECUs together with part of those ECUs allocated to

1/ Committee of Governors of the Central Banks of the Member States of the European Economic Community, Press Communiqué, June 10, 1985; see also S. Micossi, "The Intervention and the Financing Mechanisms of the EMS and the Role of the ECU," Banca Nazionale del Lavoro Quarterly Review December 1985, pp. 339-341.

them by the EMCF (against the deposit of 20 percent of their gold and dollar holdings). EMS central banks have committed themselves to cover such mobilization operations by providing dollars within specified limits. The dollars thus provided may be exchanged for participating EMS currencies with the approval of the issuing central banks. Mobilization operations will run for three months, with the possibility of renewal for a further three-month period (Article 18a of the Agreement). This provision was used for the first time by a participating central bank at the end of 1985.

b. The payments ratio which limits settlements in official ECUs of obligations arising out of the use of very short-term financing will remain at 50 percent as a general rule but this limit will be waived to the extent that the recipient central bank is itself a net debtor in ECUs (amended Article 16.1).

c. The interest rate on net positions in ECUs and of ECU-denominated claims under the very short-term financing facility (previously the weighted average of the official discount rates of the EC countries) will henceforth be based on the weighted average of representative money-market rates in those EC countries whose currencies make up the ECU basket (amended Article 8).

d. Central banks of nonmember countries and international monetary institutions, such as the Bank for International Settlements, may be accorded the status of "Other Holder" by the EMCF Board of Governors and thus enabled to obtain official ECUs from EMS central banks by means of sale and repurchase agreements or reversible swap transactions.

The latter change required a decision by the EC Council of Ministers which was taken in October 1985. ^{1/} Subsequently, the EMCF Board took a decision laying down the terms and conditions for acquisition, holding and use of ECUs by "Other holders". The Bank for International Settlements (BIS) became the first other holder of ECUs on January 14, 1986.

The composition of the ECU

As its predecessor, the EUA (European Unit of Account, introduced in 1975), the ECU was originally defined by fixed amounts of the currencies of the nine countries which in 1979 constituted the EC.

In establishing the ECU, provision was made for periodic re-examinations and revisions of its composition to take account of changes in

^{1/} Council Regulation (EEC) No. 3066/85 of October 28, 1985, Official Journal of the European Communities No. L 290, November 1, 1985.

member countries' economic situations and exchange rates. 1/ The first re-examination and, if necessary, possible revision of the ECU basket was to be made within six months after the EMS entered into force and thereafter every five years or, on request, if the weight of any currency had changed by 25 percent or more. 2/ The first re-examination took place in September 1979 and did not lead to any change in its composition since the changes in the weights of currencies in the basket had in no case reached 25 percent (Table 3). The next re-examination was therefore scheduled for September 1984.

A need for revision can also arise because of changes in the membership of the EC. When Greece joined the EC in January 1981, it was agreed that the drachma would be included in the ECU basket at the latest by December 31, 1985, and earlier if a revision of the basket took place in accordance with the above mentioned provisions.

On September 15, 1984, when the regular re-examination was due, the EC Council of Ministers decided to change the currency composition of the ECU and, at the request of the Greek government, to include the drachma in the ECU basket. The decision came into force as of September 17, 1984. 3/ According to the declaration of the Council, the revision was carried out "taking into account the underlying economic criteria, as well as the need to ensure the smooth functioning of the market." Table 4 shows the amounts of the currencies defining the ECU, and their percentage weights on March 13, 1979, when the EMS started operations, and on September 17, 1984.

The revision largely offset the effects of past realignments of exchange rates in the EMS on the percentage weights of the currencies in the ECU basket and brought them more in line with the relative economic importance of EC countries; the percentage weights of September 17,

1/ According to the Resolution of the European Council on the establishment of the EMS of December 5, 1978, revisions of the composition of the ECU have to be mutually accepted, must not by themselves modify the external value of the ECU (as expressed in any one currency), and must be made in line with underlying economic criteria. A revision requires a unanimous decision by the EC Council of Ministers, acting on a proposal from the EC Commission, after consultation with the Monetary Committee and the Board of Governors of the European Monetary Cooperation Fund.

2/ The percentage weight of currency i in the ECU basket is given by $w(i) = z(i)/x(i)$ where $w(i)$ is the percentage weight of currency i , $z(i)$ is the number of units of currency i in the ECU basket, and $x(i)$ is the external value of the ECU in terms of currency i . Thus, if currency i appreciates (depreciates) against the ECU, its percentage weight in the basket increases (decreases).

3/ Council Regulation (EEC) No. 2626/84 of September 15, 1984, Official Journal of the European Communities No. L 247, September 26, 1984.

1984, however, were different from what they were initially in 1975, when the basket was established to define the EUA (see Tables 3 and 4). Compared with March 1979, the weights of the pound sterling, the Italian lira and the Irish pound were allowed to increase. Furthermore, the Greek drachma was included in the ECU with an amount equivalent to 1.3 percent. In comparison with the percentage weights based on market exchange rates prior to the revision, on September 14, 1984, the weights especially of the deutsche mark and the Netherlands guilder were lowered while those of the French franc and the Italian lira were raised.

While the revision of the ECU basket changed the amount of each national currency in the basket, it left the external value of the ECU (i.e., the value of the ECU expressed in any one currency) unaffected at the time of transition. ^{1/} The revision did not cause any change in the ECU central rates of participating currencies nor the grid of bilateral central rates and bilateral intervention limits.

4. Future development of the EMS

There seems to be now a broad consensus within the EC that on the basis of the existing legal framework, the EMS cannot be substantially changed or further developed. Moreover, several countries have argued that changes in the system as operated now, such as the participation of the United Kingdom in the exchange rate mechanism and the narrowing of the fluctuation margin for the Italian lira as well as the liberalization of capital movements in the EC, were prerequisites for a further significant development. Some countries see still scope for more action, but others feel that such action would not be desirable and could undermine the basic objective of the EMS, i.e., to establish a "zone of monetary stability in Europe," as long as a high degree of economic convergence was still lacking. While there is now a general agreement that the system has been quite successful in providing a high degree of exchange rate stability and in fostering economic convergence, views differ as to whether or not further efforts in the immediate future to develop the system would strengthen the system and promote European economic integration.

This difference in views goes back to the first major political effort in 1969 to complement the provisions of the EEC Treaty (which basically provided for a customs union with elements of common policies in areas such as foreign trade and agriculture) by establishing an economic and monetary union within a decade. This resulted in the Werner Plan (named after Pierre Werner, then Prime Minister of

^{1/} The value of the ECU in terms of currency *i* is given by $x(i) = z(i)/w(i)$ where symbols have the same denotation as in footnote 2 on page 15. Thus, the value of the ECU in terms of say the deutsche mark was given on September 14, 1984 by $0.828 \text{ DM}/0.369 = 2.25 \text{ DM}$ and on September 17, 1984 by $0.719 \text{ DM}/0.32 = 2.25 \text{ DM}$.

Luxembourg and Chairman of a specially appointed committee). 1/ The European Common Margins Arrangement (the "snake")--in certain respects a predecessor of the EMS--was the only significant result. There was a heated debate, not limited to official circles, about the best way to achieve progress. One prevalent opinion was that major progress toward institutionalized forms of monetary integration, involving fixed exchange rates and leading ultimately to a common currency, would first require a high degree of coordination of economic policies, based on a strong political commitment. In short, a common European currency could only be the crowning achievement of the process of economic integration. The other, equally eloquently defended viewpoint was that economic and monetary integration required a strong institutional framework, which in turn would induce and promote the needed economic policy cooperation. These two basic philosophies 2/ are still at the heart of the debate about the pace and scope for monetary integration in the EC, although it is now increasingly recognized that there exists an interdependence between building institutions and achieving greater economic cooperation and, consequently, convergence in economic performance.

The view now prevails that any move toward a "second phase" of the EMS (initially envisaged two years after its coming into existence) would require a major political initiative. It would not be possible on the basis of the EEC Treaty and of existing agreements but rather would require a new legal framework, i.e., an amendment of the EEC Treaty to be ratified by national parliaments and substantial consequential national legislation. This holds in particular for such issues as a permanent pooling of reserves, the authority for the EMCF (or a future European Monetary Fund) to issue ECUs against national currency or "ex nihilo", and for empowering the EMCF to intervene directly in the exchange markets.

In June 1985, the European Council, composed of the Heads of State and Government of the EC countries, agreed at a meeting in Milan to convene an intergovernmental conference to study the implementation of institutional changes and an extension of the Community's activities with a view to amending the EEC Treaty accordingly. An agreement on those issues was reached by the European Council at its meeting in Luxembourg in December 1985. The reform package ("Single European Act") was officially signed by representatives of the EC member countries in February 1986. 3/ It is now subject to parliamentary procedures according to national laws. The intended amendments to the EEC Treaty

1/ See Official Journal of the European Communities No. C 136/1, November 11, 1970.

2/ To distinguish those two schools of thought by the terms "économistes" and "monétaristes" makes some sense in French or German but not in English.

3/ For the text of the "Single European Act" see Bulletin of the European Communities, Supplement 2/86.

include, among a broad range of other issues, the insertion of a new Article 102 A in Title II "Economic Policy" of the Treaty addressing cooperation in economic and monetary policy. The Article would make explicit reference to the EMS and the ECU and refer also to Article 236 of the EEC Treaty "insofar as further development in the field of economic and monetary policy necessitates institutional changes"; Article 236 deals with the amendment of the EEC Treaty (see Appendix II). This particular proposed amendment is seen as anchoring the principle of monetary cooperation as well as the need for a convergence of economic and monetary policies firmly in the EEC Treaty while at the same time acknowledging that substantial institutional changes must take the form of an amendment of the Treaty.

In the wake of these events, in June 1986, the EC Commission proposed a specific timetable for the progressive liberalization of capital movements within the EC with a view to furthering convergence of economic policies within the EMS. 1/ In a first step, capital transactions most directly involved in the functioning of the Common Market must be freed in 1986; in a second step, all remaining capital transactions would be liberalized by 1992. In addition, restrictions which are maintained by EC member countries under safeguard clauses in case of balance of payments difficulties would require special derogations. 2/

III. Exchange Rate Developments

1. Overview

Since its inception until 1983 the EMS was characterized by frequent periods of exchange market strain and consequent numerous realignments of central rates among participating currencies (Tables 5-10). Realignments took place in September and November 1979, March and October 1981, February and June 1982, and March 1983. The general experience in these periods of strain was that resistance of market pressure through intervention and short-term monetary measures could buy time for a weak currency by redirecting capital flows in favor of coun-

1/ For details see Commission of the European Communities, Communication to the Council--Programme for Liberalization of Capital Movements in the Community, Brussels, May 23, 1986.

2/ The initiatives for a further liberalization of capital movements within the EC have triggered a debate about the consequences it might have on the functioning and cohesion of the EMS. One view is that, given the present divergences in economic performance, in particular with regard to inflation and interest rates, any significant progress toward free mobility of capital would facilitate large scale destabilizing capital movements frustrating efforts to maintain exchange rate stability. The other view is that the liberalization of capital movements would intensify pressure on EMS countries to adopt compatible economic policies leading to convergent economic developments.

tries with high nominal interest rates, but that in the absence of appropriate and sufficient policy measures aimed at the underlying causes of weakness, exchange rate changes would eventually become inevitable. In these early years, the size and frequency of central rate realignments increased significantly, indicating that the needed drive for greater economic convergence to generate stable exchange rates had achieved only limited success (Chart 1). 1/

Since 1983, convergence of economic policies and developments among EMS countries has gradually increased laying the ground for more exchange rate stability (see Chapter V). But exchange rate developments in the EMS in the two years to mid-1985 have also to be seen in the light of the strong and rising dollar, in turn importantly influenced by the mix of financial policies in the United States, and consequent high nominal and real U.S. interest rates, both in absolute terms and relative to other countries. The value of the ECU in terms of dollars, which had been as high as US\$1.44 at the end of 1979 had fallen to a little less than a dollar per ECU by the turn of 1982, and with occasional mild interruptions continued to fall throughout 1983 and 1984 and the first two months of 1985, reaching a nadir of \$0.67 in February 1985. Subsequently, the dollar has weakened with the dollar value of the ECU rising to US\$0.83 in September, 1985. 2/ Since the Group-of-Five meeting in New York on September 22, 1985 and the announced intention of major countries to reduce the value of the dollar against other currencies, the EMS currencies have further strengthened substantially against the dollar reflecting the effects both of intervention by G-5 central banks and narrowed interest differentials. The value of the ECU advanced to US\$0.99 by July 1986.

The experience in the past had been that periods of weakness of the dollar had tended to coincide with increased tension in the EMS, as at such times, capital appeared to move disproportionately from dollars into deutsche mark. 3/ Explanations offered included the limited role played by EMS currencies other than the deutsche mark as alternative reserve and investment currencies, along with the general perception of Germany as a low inflation country. By contrast, a strong dollar had in the past often been coincident with a lack of tension in the system. Against the background of this experience, it came as a surprise that the weakening of the dollar initially created only limited tension within the EMS. When it became clear, however, that the period of strength of the dollar was over, difficulties began to re-emerge.

1/ For more details see Occasional Paper No. 19, pp. 5-7.

2/ Figures for the U.S. dollar value of the ECU are monthly averages.

3/ M. Sarcinelli for example attributes a great weight to the dollar in explaining developments in the EMS. See M. Sarcinelli, "The EMS and the International Monetary System: Toward Greater Stability," Banca Nazionale del Lavoro Quarterly Review, March 1986, pp. 57-83.

2. Exchange rate developments in the EMS since 1983

In early 1983, there was widespread speculation of a possible realignment, directed particularly against the Belgian and also the French currencies and significant intervention was required by several central banks to support these currencies. Speculative activity increased after parliamentary elections in Germany and municipal elections in France in March necessitating further intervention in support of the French and Belgian francs and the Italian lira. The Belgian, Danish, and Irish central banks raised key interest rates, and in France, short-term interest rates were encouraged to rise substantially. Belgium also announced emergency exchange controls. Over the weekend March 19-20, official discussions took place, but agreement was not reached and a realignment was effectively kept in abeyance.

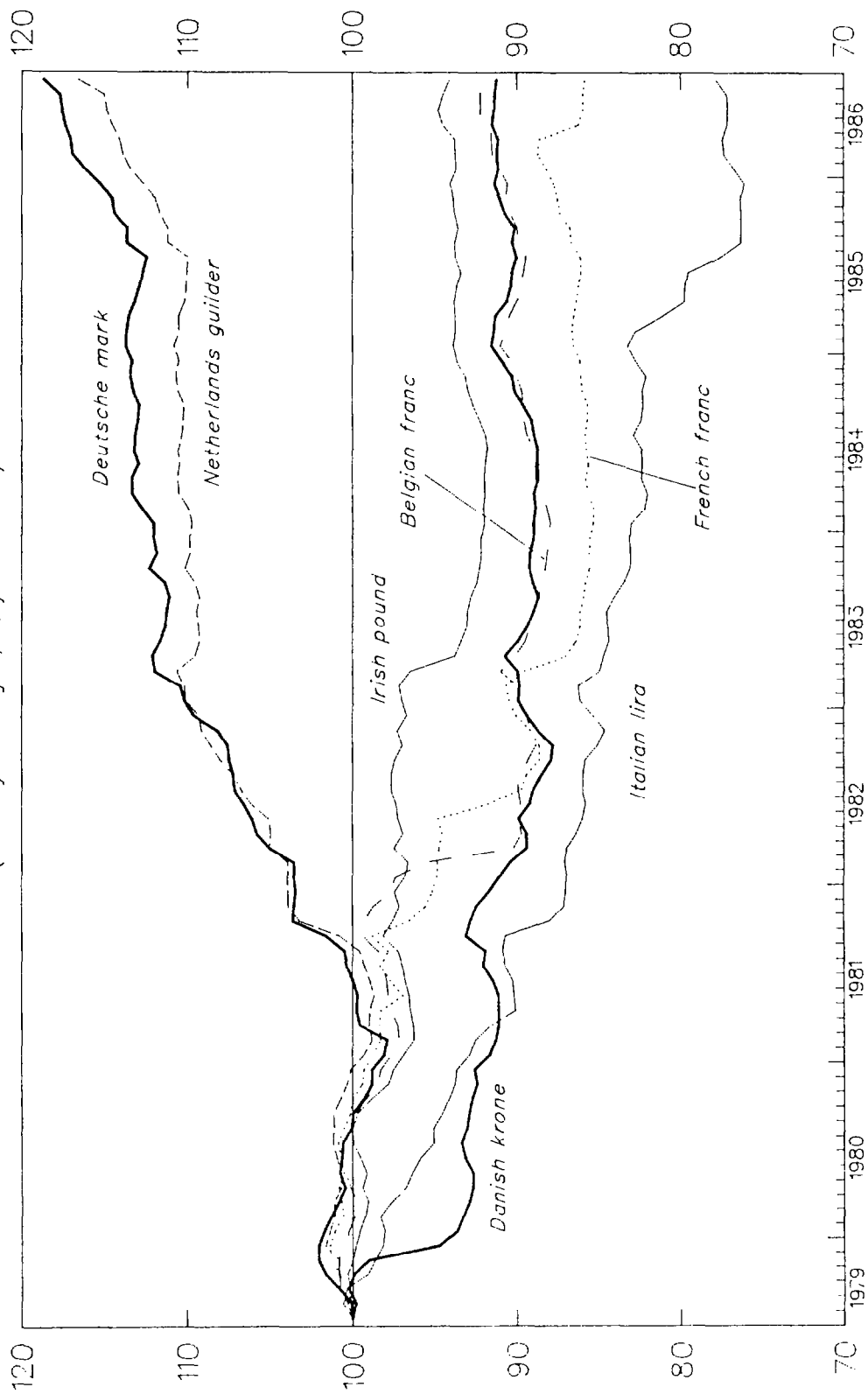
On Monday, March 21, many European central banks suspended trading. Announcement of the agreed realignment was made in the afternoon of March 21 in Europe, and became effective on March 22. The deutsche mark was revalued by 5.5 percent, the Netherlands guilder by 3.5 percent, the Danish krone by 2.5 percent and the Belgian and Luxembourg francs by 1.5 percent, while the French and Italian currencies were devalued by 2.5 percent and the Irish pound by 3.5 percent. ^{1/} Like previous realignments, it had become necessary as a result of the continued differences in the underlying strength of the participating countries' external positions, which reflected in turn divergences in economic policies and cost-price performance. These differences had generated expectations of exchange rate changes and led to large speculative capital flows.

After the realignment, and as the result of a reversal of earlier capital flows, the deutsche mark and the Netherlands guilder moved to the bottom of the parity grid, while the French franc, the Irish pound and the Danish krone went to the top, with the Belgian franc in the middle. Interest rates returned to more normal levels, and suspicions that the French devaluation might have been too small subsided after the French authorities announced a program of restrictive financial measures.

From the March 1983 realignment until February 1985, the U.S. dollar gradually appreciated relative to European currencies, and the EMS experienced a period of relative internal stability. In spite of the favorable current account and price developments in Germany, the deutsche mark did not come under upward pressure within the EMS largely because of the strength of capital flows to the United States. The exchange rates of other participants did not fall under pressure either, in spite of considerable, though significantly reduced, divergences in cost and price performance among EMS countries.

^{1/} See SM/83/57, 4/1/83.

CHART 1
MOVEMENT OF EMS CURRENCY EXCHANGE
RATES AGAINST THE ECU
(Monthly averages, July 1979=100)



Source: IMF, Data Funa.



After reaching a peak of DM 3.47 per US\$1 on February 26, 1985, the U.S. dollar has been depreciating vis-à-vis the European currencies (Chart 2). The gradual depreciation of the dollar did not significantly affect the relative position of currencies within the EMS band in the first half of 1985: the Danish krone and the Irish pound remained in the upper half of the narrow band, while the Netherlands guilder and the deutsche mark remained in the lower half (Chart 3); however, the French franc appreciated gradually and moved into the upper half of the narrow band in the second quarter of 1985, while the Italian lira, which had been in the upper half of the wide band in January-February 1985, moved to the lower part in March and remained there until July (Chart 4).

The performance of the Italian economy deteriorated markedly in the first half of 1985, especially in the fiscal and external accounts. The marked worsening of the current account reflected primarily the maintenance of a rate of growth in domestic demand higher than that of Italy's partners as well as the lagged effects of a significant loss of competitiveness vis-à-vis other EMS countries over the previous two years. To halt the deterioration of the external position, in July 1985 the Italian authorities called for a realignment of exchange rates within the EMS. Effective July 22, the lira was devalued by 6 percent and the other participating currencies revalued by 2 percent, implying a devaluation of the lira by 7.8 percent in terms of foreign currency per lira. 1/

The July 22 realignment was not preceded by substantial pressures on the exchange rate of the lira or on reserves, except on July 19, 1985 when, with the Bank of Italy abstaining from intervention in anticipation of a realignment over the weekend, a thin market was temporarily upset by a sizeable transaction; at this point, the authorities decided to close the market early. Following the realignment, the Italian lira was kept in the upper half of the wide band until April, 1986.

Toward the end of July 1985 and in early August, there was some speculation of a further realignment, directed against the French and Belgian francs. This speculation pushed forward discounts of those two currencies up substantially and the respective central banks intervened to support their currencies. After these periods of tension, the French franc continued its upward movement in the band, but the Belgian franc remained at the bottom of the narrow band, though well within the permitted range, reflecting the continuing policy of intramarginal intervention. In contrast to developments after previous, general realignments, the deutsche mark and the Netherlands guilder moved to the upper part of the narrow band in August.

The exchange market reaction to the G-5 communiqué of September 22, 1985 was swift. The EMS currencies appreciated by 6 percent against the U.S. dollar on September 23, and by a further 1/2 percent the following

1/ See SM/85/213, 7/29/85.

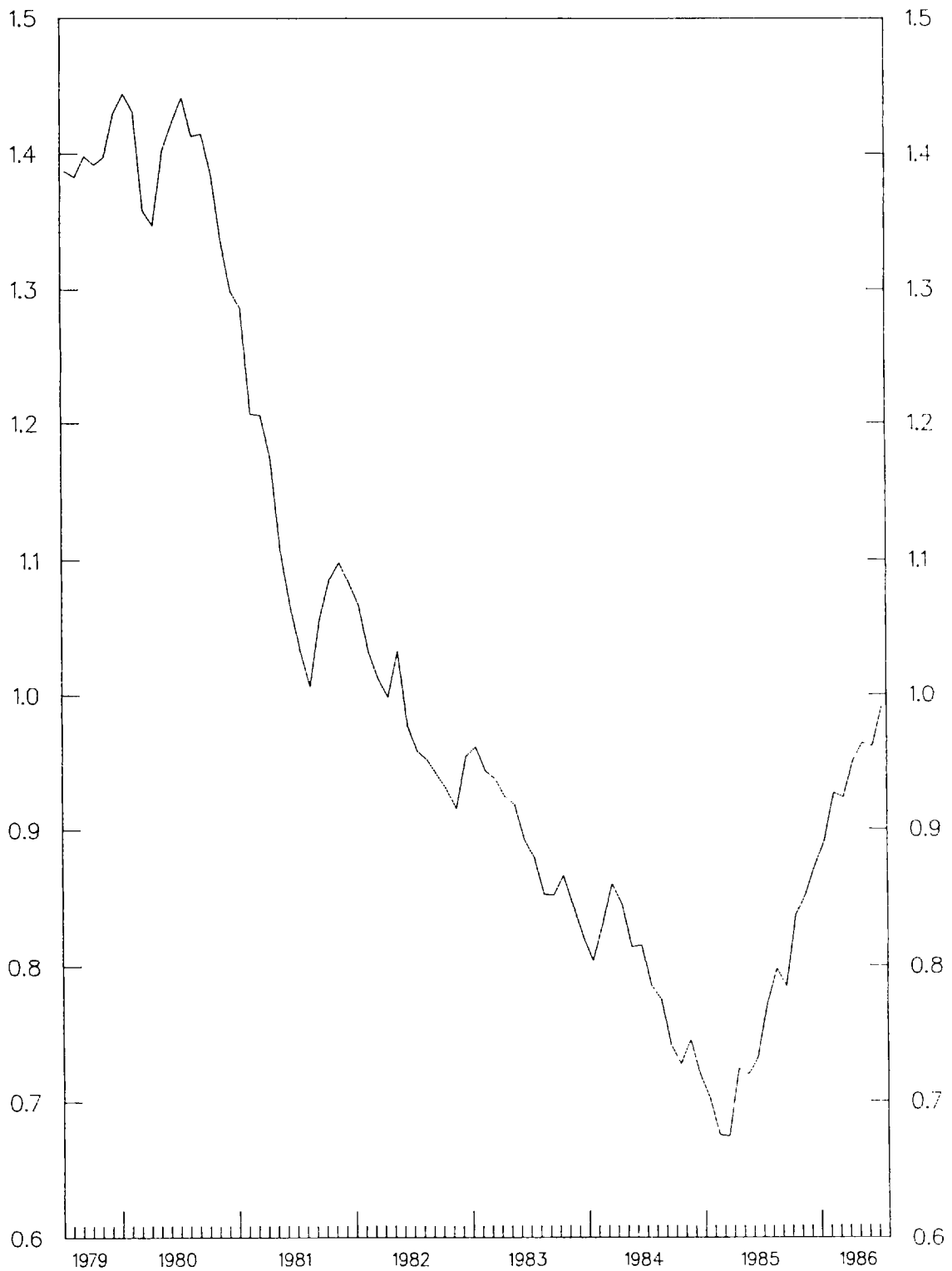
day. By the end of September, the joint float had appreciated by 7 1/2 -8 percent against the dollar compared with September 20. The continuous downward movement of the dollar did not affect the relative position of EMS currencies until about December 1985, when foreign exchange market participants apparently became convinced of the determination of G-5 central banks to lower the dollar and also began to take account of the improved growth prospects for Europe, in particular for Germany. As has been the case before when the U.S. dollar has depreciated, the deutsche mark, together with the Netherlands guilder, moved sharply upward in the narrow band and the currencies of the smaller EMS members, such as the Danish krone and the Irish pound, weakened significantly. While the Belgian franc remained in the lower part of the narrow band, the French franc remained strong, reflecting the improvement of the external position of the French economy, increased confidence in the anti-inflationary policies of the French Government, and the expectation that no realignment would take place until after the parliamentary elections in France in March 1986.

During the last few weeks of 1985 and in early 1986, the Belgian franc, the Irish pound, and the Italian lira came under renewed downward pressure. To defend the franc, which had been at the bottom of the narrow band since March, 1985, the Belgian National Bank increased interest rates in December 1985 and intervened substantially in foreign exchange markets. The Italian authorities tightened monetary policy and reinstated some previously abolished foreign exchange control measures in January 1986 to ease pressure on the lira. To stem the private capital outflows and relieve pressures against the Irish pound, the Central Bank of Ireland raised the interest rate at which it provides short-term support to the money market in the course of the first quarter of 1986. As a result of these measures, as well as continuing sizeable intramarginal intervention, the Belgian franc and the Irish pound remained above the lower intervention limit while the lira remained in the upper half of the wide band throughout the first quarter of 1986.

Exchange markets were generally calm in the remainder of the first quarter of 1986. The French franc weakened somewhat but remained in the upper half of the narrow band, while the Belgian franc and the Irish pound alternated at the bottom of the band. The Danish krone stabilized somewhat below its central rate, but well above the lower intervention limit. The deutsche mark and the Netherlands guilder were at the top of the band. The Italian lira, too, remained in the upper part of the wide band. Following the French elections on March 16, it appeared that markets considered an early exchange rate realignment and a devaluation of the French franc less likely, as the three-month forward discount of the franc fell from an average of 6 percent per annum during the week before the elections to 4 percent per annum in the week thereafter.

On Friday, April 4, 1986, EMS central banks suspended their official currency dealings after the Banque de France had informed them that it would not continue to support the franc. This created consid-

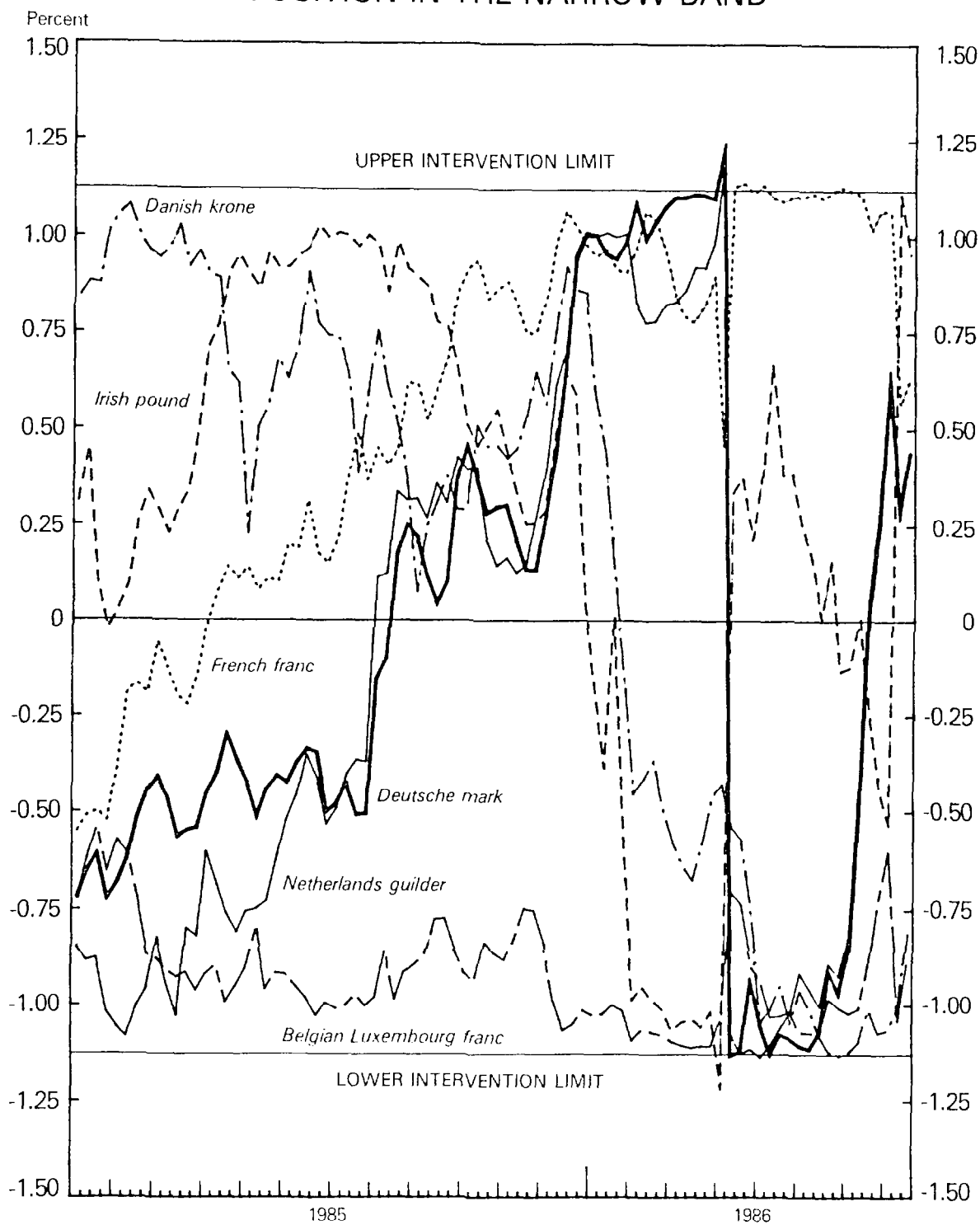
CHART 2
MOVEMENTS OF THE EUROPEAN CURRENCY UNIT
AGAINST THE U.S. DOLLAR
(U.S. dollar per ECU, monthly averages)



Source: IMF, *Data Fund*.



CHART 3
EMS
POSITION IN THE NARROW BAND¹



Sources: IMF, Data Front, and staff estimates.

¹Weekly averages. Italian lire not included; the chart measures deviations of currencies from their bilateral central rates in terms of logarithmic differences between spot exchange rates and bilateral central rates multiplied by hundred.

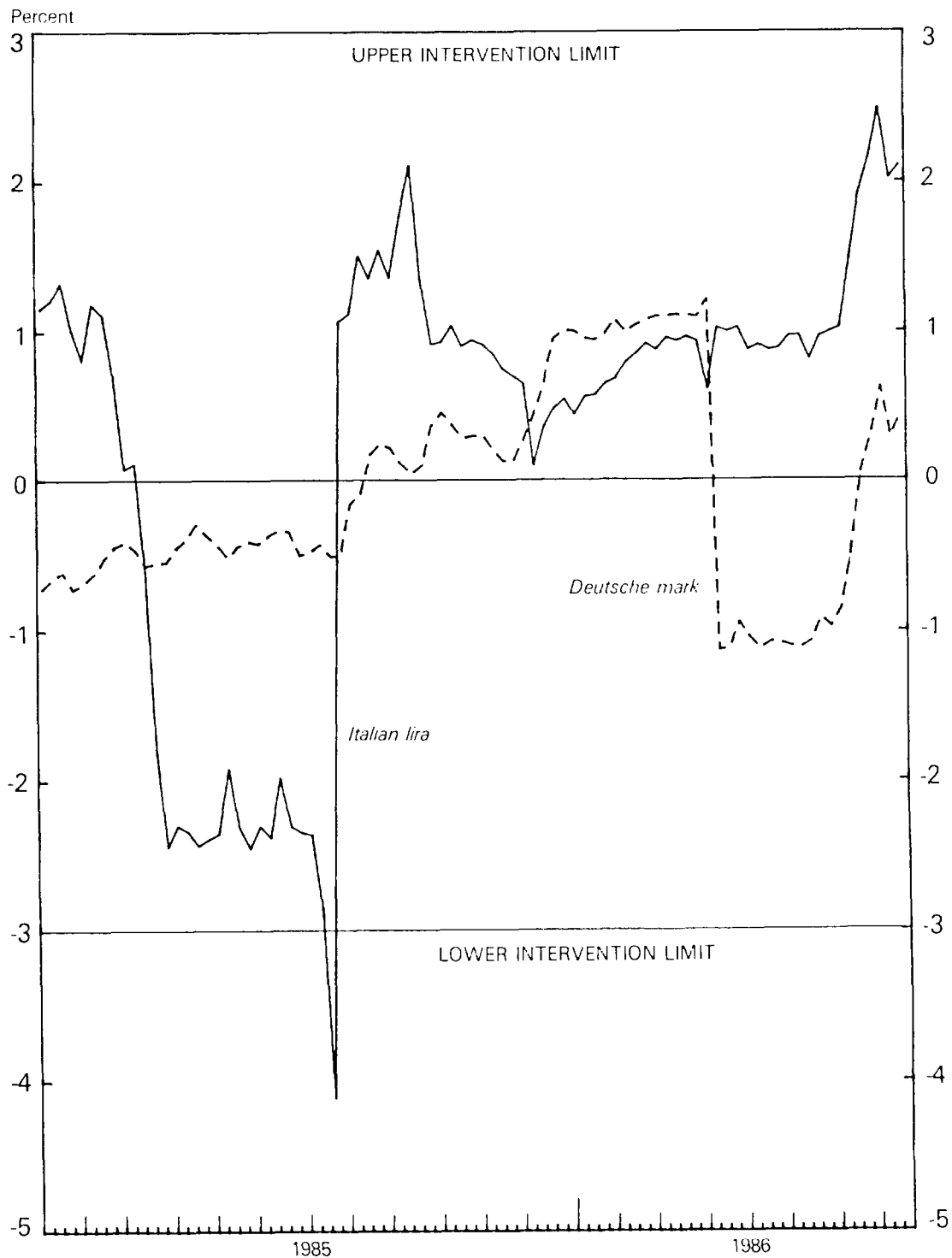
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CHART 4
EMS
POSITION IN THE WIDE BAND



Sources: IMF, *Data Front*, and staff estimates.

Weekly averages: the chart measures deviations of currencies from their bilateral central rates in terms of logarithmic differences between spot exchange rates and bilateral central rates multiplied by hundred.



erable movements in foreign exchange markets and caused the French franc and the Irish pound to fall below their lower intervention limits while the deutsche mark and the Netherlands guilder broke the upper intervention limits. Trading was thin on that day and the spread between buying and selling rates widened sharply. On April 6, 1986 the Ministers of Finance and Economics and the Central Bank Governors of the EC member countries decided on an adjustment of central rates within the EMS which became effective on the following day. The deutsche mark and the Netherlands guilder were revalued by 3 percent, the Belgium/Luxembourg franc and the Danish krone were revalued by 1 percent while the French franc was devalued by 3 percent. The Irish pound and the Italian lira did not move. 1/

The realignment took place at the initiative of the French authorities, who sought a devaluation of the French franc as part of a package of measures designed to liberalize the French economy and strengthen its competitiveness. In support of the exchange rate adjustment, the French authorities took steps to slow nominal wage growth and to reduce the budget deficit and announced their objective of eliminating the non-interest component of the central government deficit in the course of the next three years. The target of containing the growth of M3 below 5 percent throughout the year was reasserted, and the authorities indicated their intention to support this target with a prudent interest rate policy, even though this implied continued relatively high real interest rates. Exchange controls were to be further relaxed, especially for business transactions, and the remaining price controls on industrial products were to be abolished.

When foreign exchange markets reopened after the realignment, the deutsche mark and the Netherlands guilder moved to the lower part of the narrow band--as usual in these circumstances--while the Italian lira moved to the upper part of the wide band and the French franc and the Irish pound moved to the upper part of the narrow band. The Belgian franc and the Danish krone remained in the lower part of the narrow band. In the wake of the realignment, interest rates fell in several countries as speculative trends have been halted or reversed. The Central Bank of Ireland lowered the interest rate at which it provides short-term support to the money market by 1 1/4 percentage points immediately after the realignment, thus partly reversing an earlier increase. In Belgium, official rates were reduced in several steps in April through May. In Italy, the authorities lifted the foreign exchange restrictions introduced earlier to defend the lira and took additional measures to liberalize international capital movements. For several months following the realignment, the French franc remained strong with its divergence indicator above its upper threshold while the deutsche mark and the Netherlands guilder alternated at the bottom of the narrow band. This opened in May the possibility for lower interest rates in France but also required at times sizable obligatory

1/ For details see SM/86/82, 4/21/86.

exchange market interventions at the margin in support of the deutsche mark. ^{1/} The Belgian franc and the Danish krone remained in the lower part of the narrow band in the three months after the realignment; the Irish pound, which had moved to the upper part of the narrow band, weakened subsequently while the Italian lira remained almost unchanged in the upper part of the wide band. At the end of June, the deutsche mark and the Netherlands guilder began to strengthen and moved to the upper part of the narrow band in July. The Danish krone remained weak while the Belgian franc moved somewhat higher.

On August 2, 1986, the Irish authorities requested a devaluation of the Irish pound by 8 percent vis-à-vis the other participating currencies, which became effective on August 4. The Irish authorities had viewed with concern the decline in external competitiveness stemming from the sizeable appreciation of the Irish pound against the currencies of the United Kingdom and the United States since the April realignment, which together account for about 50 percent of Ireland's total external trade. Significant capital outflows occurred from late June onwards and gross official reserves declined. Conditions in financial markets were somewhat unsettled in the period immediately preceding the realignment and money market interest rates, which had fallen considerably between April and June, tended to firm. In the first (nine) days following the realignment, the Irish pound moved to the top of the narrow band and its exchange rate fell by 4 1/2 percent against sterling and around 5 percent against the U.S. dollar.

IV. Variability of Exchange Rates

1. Introduction

An assessment of exchange rate variability must be judgmental, and is necessarily fraught with a variety of technical and conceptual difficulties. In this chapter, overall performance in terms of exchange rate variability is reviewed; the technical aspects are dealt with in a technical note at the end of this chapter. In order to assess the performance of the currencies participating in the EMS exchange rate mechanism (ERM), it would be desirable in principle to compare actual performance with estimated performance given the same exogenous world events, but in the absence of the EMS institutional apparatus. However, the requirements for constructing such a "counterfactual" experiment are daunting. Therefore, assessment has to be somewhat more limited and based on several elements, namely first a comparison of exchange rate variability among the ERM currencies before and after the system's inception; second a comparison of exchange rate variability between

^{1/} Only a small part of the debt stemming from these interventions was settled by the Bundesbank in official ECUs; the majority of the debt was settled later by the Bundesbank in U.S. dollars.

participating and nonparticipating currencies; 1/ and third, an assessment of changes in exchange rate variability over time among the nonparticipating currencies. To the extent that a variety of different approaches all point in the same direction, some confidence can be placed in the results.

In a previous analysis of exchange rate variability, 2/ the broad conclusion was that "...it appears that the exchange rate variability of the EMS currencies has diminished since the introduction of the system... In contrast, the exchange rate variability of the major currencies not tied to the EMS (the pound sterling, the U.S. dollar, and the Japanese yen) appears to have risen significantly." The present analysis differs from the former in four ways. First, the data used to perform the calculations have been extended by some three years. Second, the number of measures used to calculate variability has been increased (from one to three). Third, the changes in variability have been tested for statistical significance. 3/ Fourth, several frequencies of exchange rate data (daily, weekly, and monthly) were examined to test the effect of data frequency on the measures of variability. This extended approach has broadly confirmed and strengthened the previous conclusions.

2. Conceptual considerations

Interest in exchange rate variability arises from the belief that such variability imposes costs on economic agents. The nature of these costs is difficult to specify precisely, thus making agreement on an appropriate definition of variability also problematic. One argument is that exchange rate variations impose costs when they constitute variations away from equilibrium, in which case variation around an equilibrium is the appropriate measure; there are of course great difficulties in attempting to define and measure equilibrium. It has been suggested that short-term swings of exchange rates around equilibrium are of minor importance, as the risks involved can be hedged, whereas medium- and long-term movements away from equilibrium may impose costly shifts in capital and labor resources between the tradable and nontrad-

1/ "Nonparticipating currencies" were selected on the basis of the importance of a currency in the international financial and trade system and the exchange rate regime of a country. The resulting group of eight currencies may, however, not be fully representative for all currencies outside the ERM of the EMS; this should be taken into account in the following comparison of exchange rate variability between the two groups. "Nonparticipating currencies" also refers to EC currencies not participating in the ERM, in particular the pound sterling (see also section II.1).

2/ Occasional Paper No. 19, May 1983, p.8-9.

3/ An alternative approach would be an analysis of variance. The F-test used here is intended to supplement the descriptive statistics on exchange rate variability provided in the Appendix Tables.

able goods sectors, only for these shifts to be reversed as the exchange rate ultimately moves back. Indeed, much of the recent concern about exchange rate variability has, implicitly or explicitly, reflected a concern with the costs imposed by persistent and substantial deviations (overshooting or misalignments) of exchange rates from long run equilibrium positions. Another argument is that unexpected exchange rate changes impose the most severe costs, in which case the relevant concept would be variation around an expected path, which poses difficulties of measurement and interpretation. Measurement of the equilibrium exchange rate is beyond the scope of this study. ^{1/} Instead, three different measures of exchange rate variability are employed, each with its own merits and drawbacks. The three measures are: the weighted average of the coefficient of variation ^{2/} of bilateral exchange rates, the weighted average of the standard deviation of changes in the natural logarithm of bilateral exchange rates; and the standard deviation of changes in the natural logarithm of an effective exchange rate. ^{3/} The properties of these measures are discussed further in the technical note at the end of this Chapter.

The three measures are all calculated using nominal and real exchange rates (CPI based ^{4/}); and variability of exchange rates is compared against ERM and non-ERM currencies. If bilateral rates move to offset relative inflation differentials, then variability of real exchange rates may capture more accurately the true risk to individuals than would variability of nominal rates. On the other hand, a major objective of the ERM has been to stabilize bilateral nominal exchange rates among participating currencies, with the hope that the discipline of such a mechanism would lead to converging inflation rates and thus more stable real exchange rates as well. From this vantage point, the variability of actual nominal exchange rates is the more relevant approach in assessing the immediate success of the EMS. In a sense, the behavior of the real exchange rate over time provides a composite indicator of the behavior both of nominal exchange rates and relative inflation. Increased stability of real exchange rates could thus be an indication that nominal rate stability had been achieved and that there had been some convergence of inflation performance or that nominal

^{1/} See, however, D. Gros, "On the Volatility of Exchange Rates" (mimeo), March 7, 1986 (to be issued as DM) for an attempt to determine overshooting of exchange rates.

^{2/} Standard deviation divided by the mean.

^{3/} In the second measure, the weighting is over the standard deviations whereas in the third, the overall standard deviation is taken of an (already weighted) effective exchange rate. These measures of exchange rate variability do not, however, indicate whether the variability is the result of a large number of smaller changes or of only a few larger changes.

^{4/} For Ireland, wholesale price data were used for lack of monthly consumer price data.

exchange rate variations had closely matched divergence in inflation performance.

3. Patterns of variability

The empirical results are presented in Tables 11-17, with Table 11 providing an overall summary. There are three versions of Tables 12-15 (a, b, c) representing each of the three measures. There are two versions of Table 16 (a, b) which are based on MERM effective exchange rates. For these tables, monthly data were used while Table 17 employs daily data. Overall the picture that emerges is one of a decline, since 1979, in variability among the ERM currencies, an increase in variability among the non-ERM currencies and also an increase in variability between the ERM and non-ERM currencies. Of course, within this overall picture there are diverging patterns.

a. Nominal exchange rate variability

In Tables 12a, 12b, and 12c, where nominal exchange rate variability against ERM currencies is calculated, intra-ERM variability (for all ERM currencies) declined between the pre-EMS and EMS periods. ^{1/} The drop in variability is particularly pronounced in the years 1983-85, as would be expected because of the more than two years which passed without a realignment. The changes in variability were statistically significant ^{2/} for all ERM currencies except the Belgian/Luxembourg franc--this is a rather strong result.

For those countries not participating in the ERM, the variability of nominal exchange rates generally went up between the pre-EMS and EMS periods. In Table 12c, six of eight non-ERM currencies showed an increase in variability, which was statistically significant for Sweden, the United Kingdom, and the United States--the latter showing the most pronounced rise of all. The Austrian schilling and Swiss franc were the two European non-ERM currencies to exhibit significant declines in nominal exchange rate variability against ERM currencies. For Austria, this probably reflects the authorities' aim of maintaining a close link between the schilling and the deutsche mark. Although the Swiss authorities have not targeted the exchange rate, the Swiss franc has in practice closely followed the deutsche mark. The pound sterling which is a freely floating currency, not linked to any of the ERM currencies, showed significant increases in nominal exchange rate variability against the ERM currencies.

In terms of nominal variability versus non-ERM currencies, almost all ERM currencies showed an increase in the ERM period, regardless of the measure chosen (Tables 14a-14c). Five of seven changes in nominal

^{1/} The period average is calculated as the average of yearly measures of variability.

^{2/} The 5 percent confidence level is used, unless otherwise stated.

variability were statistically significant (excluding only Germany and Italy). When non-ERM currencies were compared to other non-ERM currencies, the pattern was less definitive. The United States, United Kingdom, and Japanese currencies all showed increases in nominal variability, which were statistically significant in the first two cases. Tables 16a and 16b show the variability of effective exchange rates against a wider group of currencies (those included in the IMF Multilateral Exchange Rate Model (MERM)--that is, the 15 countries already included in the earlier tables plus Australia, Finland, and Spain). When the exchange rate variability of non-ERM currencies was measured against this larger group, the number of currencies indicating an increase in variability fell somewhat; two exhibited a significant increase--the United States and the United Kingdom. Of the ERM currencies, only France and Denmark exhibited an increase in variability of nominal effective exchange rates. None of the ERM currencies experienced a significant increase in variability.

As mentioned earlier, data frequency was also considered as a factor which might influence measured patterns of variability. Table 17 provides the same set of computations as Table 12a, but relies on daily instead of monthly exchange rate data; comparison makes it clear that data frequency has very little effect on measures of variability. Weekly data were also checked; the results (not reported here) were essentially the same as when daily data were used.

b. Real exchange rate variability

Real exchange rate variability against ERM currencies is displayed in Tables 13a-13c. For the ERM currencies, real exchange rate variability against their own group fell for all currencies by all three measures, which is a strikingly uniform result. Only that for the Belgian /Luxembourg franc was not statistically significant, as had been the case for nominal exchange rate variability as well. A particularly noteworthy feature is the more clearly pronounced decline in intra-ERM real variability, compared to the previous study, which reflects the addition of the 1983-85 period, when there was greater convergence of inflation rates (see Chapter V).

For those countries not participating in the ERM, the variability of real exchange rates against ERM currencies went up between the pre-EMS and EMS periods. The same six countries which exhibited a rise in nominal exchange rate variability also saw real variability increase, with that of the U.S. dollar again most pronounced. As with nominal variability, the Austrian schilling and the Swiss franc were the two European non-ERM currencies to exhibit significant declines in real exchange rate variability.

ERM currencies all showed an increase in variability of real exchange rates against non-ERM currencies between the pre and post-1979 periods, irrespective of the measure used (Tables 15a-15c). The changes were, however, statistically significant only for Belgium, France, and

The Netherlands. Virtually all non-ERM currencies (excepting only Canada) showed an increase in real variability against their own group--with changes for Austria, Japan, United Kingdom, and United States statistically significant.

4. Conclusions

The aim was to examine whether or not the establishment of the EMS has coincided with a reduction in variability of exchange rates amongst ERM currencies. This question was assessed by an examination of several measures of variability before and after the establishment of the system for currencies inside and outside of the exchange rate mechanism and for both nominal and real exchange rates.

The strongest conclusion to be drawn from the study is that variability of bilateral exchange rates among ERM currencies has fallen since 1979, regardless of the measure chosen and irrespective of whether nominal or real rates were used in the calculations. In six of seven cases, the decline in measured variability was significant at the one percent confidence level (Tables 12c and 13c). ^{1/} This means that not only has the EMS succeeded in generating greater stability of nominal exchange rates but also that to an increasing extent, cost and price developments have converged (see also Chapter V).

Predictably, the pattern was less striking with respect to the non-ERM currencies--both against ERM and against other non-ERM currencies. While intra-ERM variability appears to have decreased, the same cannot be said for intra-non-ERM variability. This is not all that surprising due to the relative lack of homogeneity among the non-ERM countries as against the ERM countries. In Table 15c, half of the non-ERM currencies showed a statistically significant increase in variability against other non-ERM currencies.

It is evident that the existence of the EMS since 1979 has coincided with a marked reduction in the variability of nominal and real exchange rates within the ERM. This was one major goal of the system, for which purpose the intervention arrangements and other elements of the exchange rate mechanism were established. This trend toward greater stability, already evident in the earlier study undertaken in late 1982, has been substantially reinforced in the last three years, as there has been relative calm in the EMS exchange markets, and also significant progress toward the goal of convergence of inflation rates.

By contrast, the variability of nominal and real exchange rates of participating versus nonparticipating currencies, and vice versa, has by

^{1/} This conclusion is all the more striking since some of the ERM currencies were participating in the European Common Margins Arrangement ("snake") before 1979, which should also have had a constraining effect on variability in the earlier period.

and large stayed constant or risen. The nominal and real exchange rate variability of nonparticipating currencies against one another has shown no pronounced overall trend since 1979. Thus it does not seem to be the case that events exogenous to the EMS have led to the decline in exchange rate variability among participating currencies, since no such trend is evident elsewhere. ^{1/} The clear diminution of exchange rate variability within the system together with the absence of such a trend elsewhere is certainly consistent with the view that the system has been successful in contributing to exchange rate stability among participating countries.

5. Technical note: methods of measurement of exchange rate variability

This note presents the details of the measures of variability employed and other aspects of the empirical work. One approach used is to examine stability around the average, i.e., with no trend, which may be appropriate since a major aim of the system is to stabilize bilateral nominal rates. Another approach used is to assume that economic agents expect an underlying trend to continue in the near future. This allows the use of the variability of changes in the natural logarithm of the spot rate to be a proxy for "unexpected" changes.

Three measures of variability are employed: The weighted average of the coefficient of variation ^{2/} of bilateral exchange rates, the weighted average of the standard deviation of changes in the natural logarithm of bilateral exchange rates, and the standard deviation of changes in the natural logarithm of an effective exchange rate. These three measures will be discussed in more detail below.

Any measure or definition of variability involves implicit assumptions which may be reasonable in some circumstances and not so reasonable in others. The choice is necessarily a matter of judgment, and will, of course, depend on the notion of uncertainty that one has in mind. The three measures all have advantages and disadvantages, so that no single construct was relied upon. To the extent that several different measures indicate similar broad conclusions, it should be reasonable to judge that the conclusions have at least some robustness

^{1/} This conclusion depends, however, on the assumption that the introduction of the EMS has not significantly affected exchange rate variations among nonparticipating countries.

^{2/} Standard deviation divided by the mean.

and validity. A serious attempt was also made to assess the statistical significance of changes in exchange rate variability. ^{1/}

a. Weighted average of the coefficients of variation
(CV) of the bilateral exchange rates

If the bilateral exchange rate varies around a constant level, then the coefficient of variation may be an appropriate measure of predictability, as it represents a measure of dispersion around the mean. In the ERM of the EMS, one of the goals is to keep relative nominal bilateral rates broadly constant, so that in this context also, the CV may be appropriate as it measures the degree of success in achieving this goal.

b. Weighted average of the standard deviation of changes
in the natural logarithm of the exchange rate (SD1)

If the exchange rate contains a trend, then the SD1 measure may be more appropriate. This could happen when, for example, a currency continuously depreciates to offset an inflation differential. If market participants expect the exchange rate to follow a trend, then

^{1/} Several earlier studies had shown exchange rate distributions to be leptokurtic--that is, more massive tails and a sharper peak than the normal distribution, which tends to invalidate many statistical procedures. However, Rogoff ("Can Exchange Rate Predictability be Achieved Without Monetary Convergence? Evidence from the EMS" European Economic Review, pp. 93-115, Vol. 28, 1985) has indicated that "when mean absolute deviations rather than variances are used as a measure of variability, the comparisons across subperiods are qualitatively unaffected." Rogoff uses an F-statistic to test differences in conditional variances between subperiods. The same approach is employed here.

variability around an expected trend captures best the risk to these traders. Clearly, variability around the mean, in this case, would be an inappropriate measure of risk. 1/

- c. Standard deviation of changes in the natural logarithm of a weighted average of bilateral rates (SD2)

The SD2 measure differs from the SD1 measure in that it takes account of the covariance of bilateral rates. 2/ Inclusion of the covariance of bilateral rates can increase or decrease the measure of variability. For example, if two variables are positively (negatively) correlated then the variance of the sum of those two variables will be greater (less) than the sum of the variances of the two individual variables. Lanyi and Suss (1982) noted that when trying to capture changes in competitiveness a trade weighted VEER (variability of effective exchange rate) index was probably better than an EV (effective variability) index, since it took into account the correlations in competitiveness among trading partners. 3/ Since emphasis is being placed on predictability, and the cost of unexpected changes, if economic agents are aware of the covariances of bilateral exchange rates (as portfolio theory would suggest), then this information should be taken into account when defining a measure of variability.

V. Economic Convergence Among EMS Member Countries

1. Conceptual problems

In general terms, economic convergence can be defined as the narrowing of international differences in the development of economic variables. In the European context, the concept of economic convergence has been used in different ways with not always the same implications

1/ However, it is possible for an exchange rate to follow a medium-term trend away from the equilibrium or expected path, in which case the SD1 measure would be inappropriate. It is also possible for the determinants of the equilibrium to change quickly--for example, if there were an oil price shock--a case not allowed for by use of a smooth trend.

2/ The covariance is a measure of the extent to which two time series move together. The role of the covariance in the SD2 measure can be illustrated as follows:

$$\text{VAR}(\sum_j W_{ij} \text{LN}(S_{ij})) = \sum_j W_{ij}^2 \text{VAR}[\text{LN}(S_{ij})] + 2 \sum_j \sum_k W_{ij} W_{ik} \text{COV}[\text{LN}(S_{ij}), (S_{ik})]$$

where VAR=variance, COV=covariance, LN=natural logarithm, W_{ij} is the weight of currency j in the index of currency i , and S_{ij} is the bilateral rate between countries i and j .

3/ See A. Lanyi and E. Suss, "Exchange Rate Variability: Alternative Measures and Interpretation," IMF Staff Papers, pp. 527-560, Vol. 29, December 1982.

for the performance of economic variables. When referring to the ultimate objective of a fully economically integrated Europe, economic convergence has often been considered tantamount to convergence in living standards in EC member countries. 1/ Although major differences in economic variables between European regions are expected to have diminished in an integrated Europe, differences in economic developments may be essential, even necessary, on the way to the final goal. It is, for example, unavoidable that relatively weaker regions maintain higher rates of real growth during the process of integration if they are to catch up with the relatively stronger regions.

On the other hand, economic convergence has been demanded in order to establish a sound basis for stable exchange rates among EC member countries, which is often considered as a prerequisite for further economic integration. Real growth differentials may, however, cause current account differentials which could require changes in exchange rates. Hence, it appears that requirements to achieve the intermediate objective of stable exchange rates may not always be consistent with those for reaching the final goal of full European economic integration. 2/ In practice, priority has been given to the achievement of the intermediate objective. Thus, economic convergence would in the first place imply a narrowing of international differences in the development of those economic variables which have a direct impact on exchange rate stability. This is the EMS concept of economic convergence.

There are two dimensions to this understanding of economic convergence: the narrowing of international differences in actual developments and the convergence of economic policy objectives. In general, the latter is a prerequisite for the former. Convergence of certain economic variables, such as inflation rates and growth of money supply, may sometimes appear more important than that of others, such as fiscal balances, for achieving stability in exchange rates. Also, the effects on exchange rates of divergences in some areas, e.g., inflation rates, current account and fiscal balances, can - at least in the short run - be neutralized by divergences in others, e.g., interest rates and capital account balances. A scenario could be constructed in which international divergences in these variables offset each other such that exchange rate stability would not be affected. Situations like the above could, however, only be considered as stable and sustainable in the longer run if divergences in fiscal and current account balances were supported by consistent differences in the underlying saving-

1/ See Preamble to EEC Treaty; see also Occasional Paper No. 19, p. 10.

2/ See also H. Ungerer, "The European Monetary System and the International Exchange Rate System," DM/84/3, 1/19/84, pp. 5-6.

investment balances. 1/ From this point of view, convergence of not only monetary variables but also to a certain degree of fiscal and current account balances appears to provide the best basis for stable exchange rates and consequent steps toward the final goal of economic integration. Other economic variables, such as real GDP growth and investment, however, can only be expected to converge if divergences are due to differences in monetary and fiscal policies and do not reflect differences in underlying economic fundamentals (e.g., factor endowments, rate of technical progress, etc.).

There is an ongoing debate about the line of reference to which economic variables should converge. Although no unanimously accepted formula exists, there appears to be a consensus for "monetary stability at home" to imply that economic variables, in particular inflation rates, should not simply converge toward the EC average, but rather move in a direction consistent with a high degree of price stability. 2/ In practice, this implies that the country with the lowest rate of inflation sets the standards which other countries have to use for orientation. 3/

From the above considerations it follows that an empirical investigation of economic convergence among countries participating in the exchange rate mechanism of the EMS over the recent years should address two main questions:

1. Has convergence of monetary and real variables as well as policy variables which have a bearing on exchange rate stability improved among these countries?
2. Have there been any slippages in the attempt to contain inflation as a result of the pursuit of exchange rate stability?

Answers to these questions would allow an assessment whether the EMS has provided a sound basis for exchange rate stability among its member countries.

Economic analysis of these questions should ideally attempt to establish some "counterfactual" evidence to the actual developments, i.e., provide estimates of economic developments in EMS countries under the assumed absence of the exchange rate mechanism. By comparing actual with "counterfactual" variables, the contribution of the EMS to economic convergence and price stability could be assessed. However, detailed modelling of EMS economies, which would allow simulation of "counterfactual" developments is difficult, perhaps even impossible with the presently available analytical tools.

1/ See V. Tanzi and T. Ter-Minassian, "The European Monetary System and Fiscal Policies," paper presented to the conference on tax coordination in the EEC held in Rotterdam, August 22-24, 1985.

2/ See Occasional Paper No. 19, p. 10.

3/ See Russo, *ibid.*

Widely used and simple techniques to study the effects of economic policies are to compare developments in economic variables before and after the implementation of measures and/or between economies affected and those not affected ("control group") by these measures. Obviously, a major shortcoming of the first technique is the assumption that in the period of investigation no other factors influenced economic developments than the change in economic policy. The second technique rests on the equally not very realistic assumption that differences in the developments of economies affected by the policy and the control group are only due to the policy measures taken in the group under study. While results obtained with either one of these techniques may not appear very convincing, some confidence can perhaps be placed in results which are supported by both approaches. Effects of an economic policy would then be assessed on the basis of observed differences in economic developments between both the time periods before and after the measures were implemented, and the group of countries affected by these measures and a control group.

This technique is applied to investigate whether the introduction of the EMS has been followed by improved economic convergence among countries participating in the exchange rate mechanism (ERM) of the EMS. The time period 1974-84/85 is split into a pre-EMS period (1974-78) and an EMS period (1979-84/85). ^{1/} The control group comprises--dependent on data availability--15 industrial countries including the United Kingdom, Greece, Spain, and Portugal, which, although they are members of the EC, do not participate in the ERM. The monetary variables considered are changes in consumer prices, GDP deflators, unit labor costs, domestic credit, narrow and broad money (both in nominal and real terms), and interest rates. Also, central government budget balances and external current account balances are compared. Real sector variables considered are real GDP growth and gross fixed capital formation. Among these variables, nominal domestic credit and money, fiscal balances and interest rates are sometimes regarded as policy instruments or intermediate policy targets by national authorities.

The following reviews price, monetary, fiscal, external current account, and real sector developments in ERM and other industrial countries. Occasional Paper No. 19 (1983) investigated economic convergence in EMS countries in the period 1974-81, and came to the following conclusion:

"It had been hoped that the EMS would promote greater convergence of economic policies and developments and

^{1/} This implies a certain simplification of historical developments which cannot easily be pressed into two distinct time periods. Convergence in economic developments may have already existed between some participants in the European Common Margins Arrangement ("snake") before 1979. Also, economic convergence may have improved more recently as compared with the early years of the EMS.

eventually facilitate economic integration. So far, however, such hopes have not been fulfilled as convergence of policies, particularly budgetary and monetary policies, has been insufficient to maintain a high degree of exchange rate stability. The lack of coordination of policies has been reflected in a lack of convergence of economic performance and, in particular, of cost and price developments. An opinion held by many, however, is that the existence of and the constraints imposed by the EMS have helped to prevent a greater divergence of economic developments in the participating countries." ^{1/}

2. Price developments

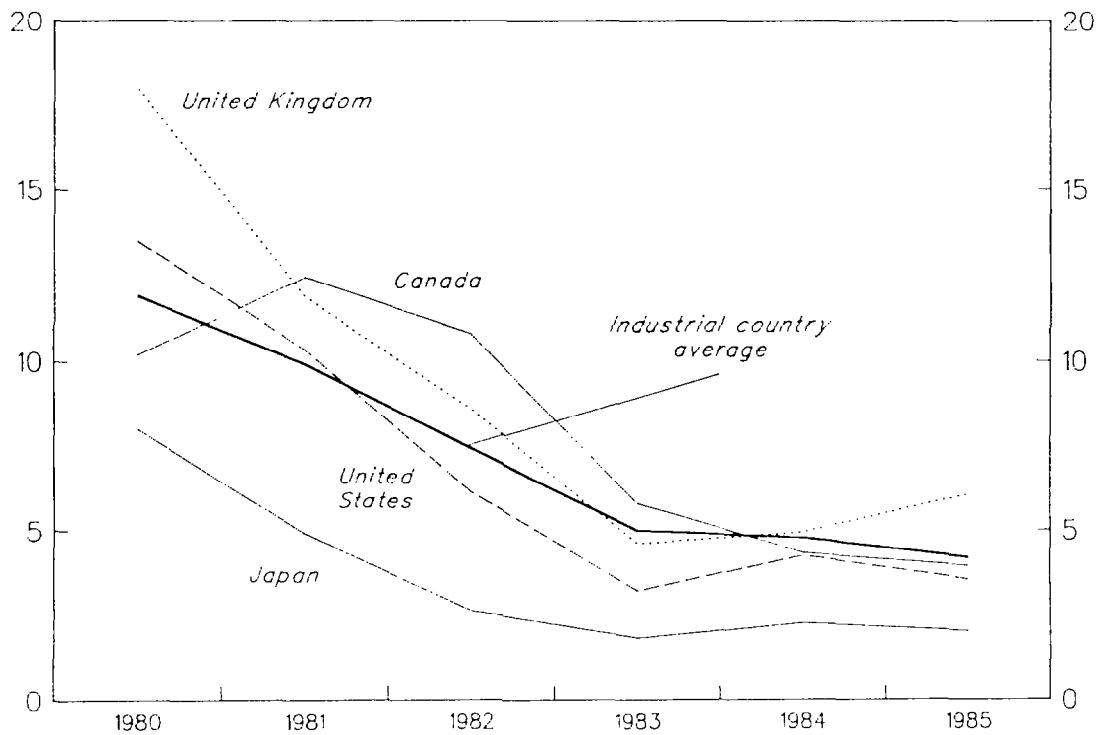
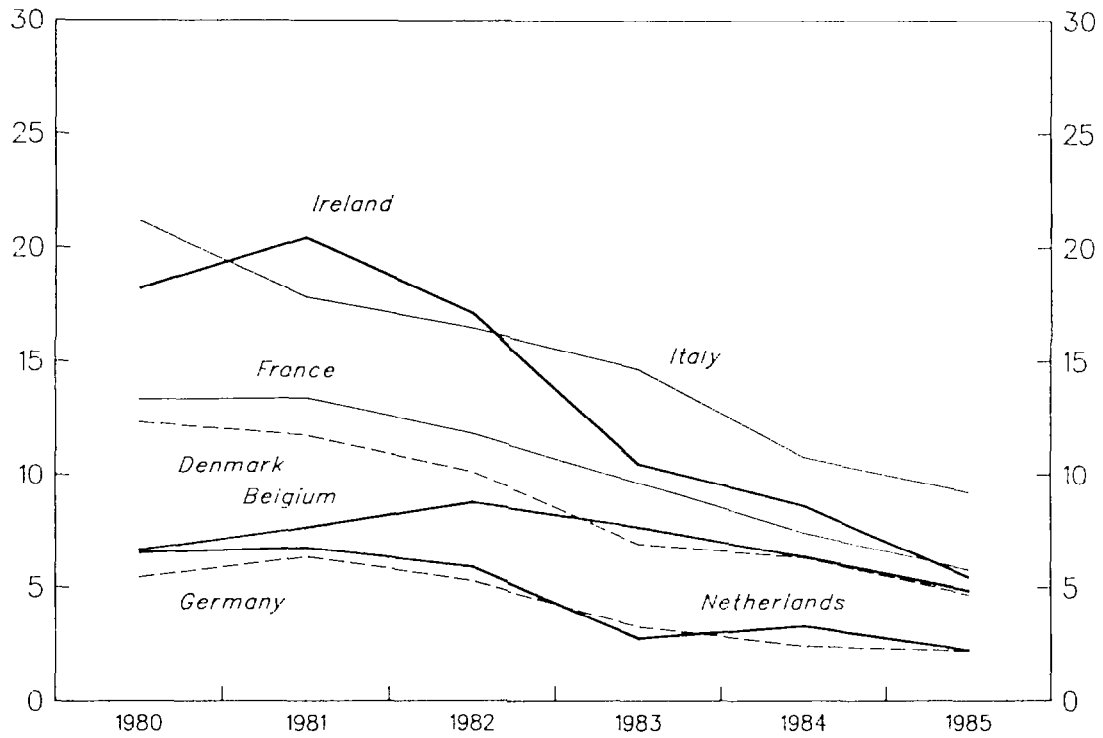
Price developments, measured as annual percentage changes of consumer price indices and GDP deflators, follow the same pattern in ERM and non-ERM countries during the period 1974 to 1984 and 1985, respectively (Tables 18 and 19). There was a general surge in inflation rates after the first round of oil price increases which then subsided in the period 1976-79. The second jump in oil prices in 1979 accelerated inflation until around 1980, before it receded again.

After the first round of oil price increases of 1973/74 had worked its way through the economies of future ERM member countries, inflation differentials narrowed at least in absolute terms (see standard deviations and differences between highest and lowest price changes within ERM countries in Tables 18 and 19). But the launching of the EMS in 1979 roughly coincided with the second increase of oil prices, which caused an intensification of inflationary pressures. The response to these pressures varied considerably between ERM countries, leading to a renewed increase in inflation differentials in the following year. The difference between the highest and the lowest rate of inflation peaked in 1980 when consumer prices rose by only 5 percent in Germany as against 21 percent in Italy. However, from around 1981 onwards inflation differentials narrowed in absolute terms (Chart 5). In 1985, Germany's inflation rate was only 2 percent, down from 6 percent in 1981, while that of Ireland and Italy decreased to around 5 and 9 percent, down from more than 18 and 21 percent, respectively, in 1980. Hence, in 1985, inflation differentials between ERM countries reached their lowest value since 1974.

The development of inflation differentials in selected countries outside the ERM was somewhat different. Altogether, inflation differentials did not narrow, neither in absolute nor in relative terms, on

^{1/} See p. 10. Further empirical evidence on these issues can, inter alia, be found in A. Steinherr, "Convergence and Coordination of Macroeconomic Policies: Some Basic Issues," European Economy No. 20 (July 1984), pp. 71-110, M. Wegner, "Das EWS - ein Teilerfolg," IFO-Schnelldienst 17-18/85, pp. 15-25, and the studies quoted in Occasional Paper No. 19.

CHART 5
RATES OF INFLATION¹ IN EMS AND SELECTED
OTHER INDUSTRIAL COUNTRIES



Source: IMF, Data Fund.

¹ Measured as percentage changes in consumer prices.

average in the 1974-85 period, although there was improved convergence in more recent years. A regional breakdown shows that inflation differentials even widened in the groups of southern European countries (Greece, Portugal, and Spain) and countries in the Pacific area (Australia, Japan, and New Zealand). They narrowed, however, between countries of the Atlantic area (Canada, United Kingdom, and United States, see Chart 5) and between central European and Scandinavian countries (Austria, Finland, Norway, Sweden, and Switzerland). ^{1/} It is noteworthy that inflation rates of central European and Scandinavian countries moved closer in line with those of ERM countries than with inflation rates of "Atlantic" countries. This reflects the rather strong orientation of economic policies of central and northern European countries with those of ERM countries, while Canada and the United Kingdom seem to have followed policies more similar to policies of the United States. Taken together, it appears that the desire for convergence in inflation rates was somewhat stronger in ERM countries (and in countries which followed economic policies similar to policies of ERM countries) than in countries outside the ERM, ^{2/} but this tendency might, at least to some extent, already have existed before the EMS was formally launched. ^{3/}

The average rate of inflation in ERM countries was lower than that of those non-ERM countries examined here throughout the 1974-85 period. Also, inflation fell somewhat more in ERM countries on average in the second sub-period, in particular in more recent years, than in non-ERM countries. While this observation by itself cannot be taken to imply that the EMS has fostered price stability in participating countries, it certainly weakens the arguments of those who predicted that anti-inflationary policies would become less effective in the framework of the EMS. A more formal, even though rather crude, test of the inflationary effects of the EMS was performed by estimating a simple annual inflation model in a pooled time series-cross section analysis for the complete group of 22 industrial countries, including countries participating in ERM, for the period 1974-84 and including a dummy variable which takes the value of 1 for every observation (country/year)

^{1/} Due to its persistent high rate of inflation and special features of its economy, Iceland was not included in any of the four regional groupings of non-ERM countries.

^{2/} There was, however, a rather close convergence of inflation rates between the United States, United Kingdom, and Canada in 1979-84.

^{3/} An exchange rate arrangement similar to the EMS - the European Common Margins Arrangement ("snake")--already existed between several European countries before 1979. This might have constrained domestic monetary policies in some countries and contributed to convergence of inflation rates in 1974-78.

under the ERM and 0 otherwise. 1/ The dummy variable appeared in all estimated equations with a negative coefficient, which was statistically significant at the 5 percent or 1 percent level in most cases (Tables 20-22). 2/ This exercise seems to support the hypothesis that the EMS has not laid the ground for looser monetary policies, but rather provided a framework in which anti-inflationary policies could be pursued more effectively. 3/

The development in unit labor costs was rather similar in ERM and other countries (Table 23). In both groups, unit labor costs increased less on average in 1979-85 than in 1974-78; but the reduction was higher in the group of other countries than in ERM countries. Moreover, international differences in unit labor cost developments narrowed significantly in absolute terms in other countries but only slightly in ERM countries.

1/ The model used was of the following form:

$$p = a_0 + a_1 \text{ gdp} + a_2 m + a_3 \text{ pe} + a_4 \text{ dummy}$$

where p = rate of inflation, gdp = growth of real GDP/GNP, m = growth of (narrow/broad) money, pe = expected rate of inflation, dummy = EMS dummy variable, and a_2, a_3 are assumed to be positive while a_1 is assumed to be negative. This model is based on a very simple demand for money function, which does not take into account portfolio decisions, and on the assumption of exogenous money supply and endogenous prices. While the latter assumption may seem appropriate for countries with flexible exchange rates, its validity can be questioned for EMS countries. Indeed, if the EMS would be regarded as a fixed exchange rate system, it could be argued that the above model would be misspecified for EMS countries. There are, however, at least two reasons why it was felt that the model was also appropriate for EMS countries: (1) the EMS was not designed as and has never become a fixed exchange rate system in the classical sense; in fact, it was characterized by periodical realignments. (2) There are still substantial restrictions of international capital flows between major EMS member countries which allow a certain degree of independence--and divergence--in monetary policies.

2/ Regressions were run over (1) all observations, i.e., the pooled time series-cross section data for the 22 countries in 1974-84, (2) observations for all countries in 1979-84, and (3) observations for ERM countries in 1974-84. Overall, econometric estimates of the model of inflation seemed satisfactory given the crude nature of the exercise.

3/ Before firm conclusions can be drawn, this illustrative exercise should be complemented by more detailed country studies of the constraints from the EMS on domestic monetary policies. This would, however, go beyond the scope of this paper.

3. Monetary developments

In ERM countries, monetary expansion slowed down in the 1980s; growth rates for narrow and broad money fell by about 4 to 5 percentage points on average in 1979-84 as compared to 1974-78 (Tables 24 and 25). Monetary restraint was most pronounced in Belgium, Germany, and Netherlands; it was less strict in France and Italy, where both narrow and broad money grew by more than 10 percent in the annual average in 1979-84. In Denmark, monetary expansion even accelerated in recent years reaching a peak in 1984 (Chart 6). This was facilitated by a relaxation of exchange controls on capital inflows.

Other countries, taken together, experienced broadly unchanged narrow money and even higher broad money growth on average in 1979-84 as compared to 1974-78. The regional breakdown shows that narrow money growth was somewhat smaller on average in central European and Scandinavian countries and countries in the Pacific area than in Southern European countries and countries in the Atlantic area. Broad money expanded on average at almost the same rate in the two time periods in the group of central European and Scandinavian countries. Growth of broad money was, however, higher in the more recent period in southern European countries and countries in the Atlantic area while it was lower on average in countries of the Pacific area.

Differences in narrow money expansion were somewhat higher in ERM countries in 1979-85 as compared to 1974-78. However, they almost doubled in the group of other countries. On a regional basis, international differences in narrow money growth increased on average in the groupings of central European and Scandinavian countries, southern European countries, and countries in the Pacific area, but they narrowed significantly between the United States, United Kingdom, and Canada. Differences in broad money expansion between ERM countries declined in 1979-84 at least in absolute terms (as measured by average standard deviations). They widened significantly, however, between other countries. Within this group, only central European and Scandinavian countries experienced less differences in broad money developments between each other during the more recent period.

A better measure of convergence in monetary policies is perhaps the spread in nominal domestic credit expansion since it excludes largely the frequently offsetting influence of the external sector. In ERM countries absolute differences declined on average in 1979-84 as compared to 1974-78 (Table 26). Moreover, Belgium, Germany, and the Netherlands achieved almost the same rate of domestic credit expansion in 1984. However, while France slightly reduced domestic credit in that year, Denmark, Ireland, and Italy followed policies expanding domestic credit by double digit rates.

The spread in nominal domestic credit expansion increased sharply in the group of other countries. However, as the regional breakdown shows, there were more similarities within regional groupings than

across country groups. In almost all groups, with the exception of southern European countries, international differences in domestic credit expansion narrowed in absolute as well as relative terms in 1979-84 as compared to 1974-78.

Monetary variables deflated by the consumer price index combine features of monetary policy variables with the induced actual price developments. While there was a sharp reduction of growth of real narrow and broad money as well as real domestic credit expansion in ERM countries in 1979-84 over 1974-78, real money and credit growth changed only slightly or accelerated in other countries (Tables 27-29). Differences in real narrow money growth did not diminish - neither in ERM nor in other countries - but there appeared to be some narrowing of differences of real broad money and real domestic credit growth in other (though not in ERM) countries.

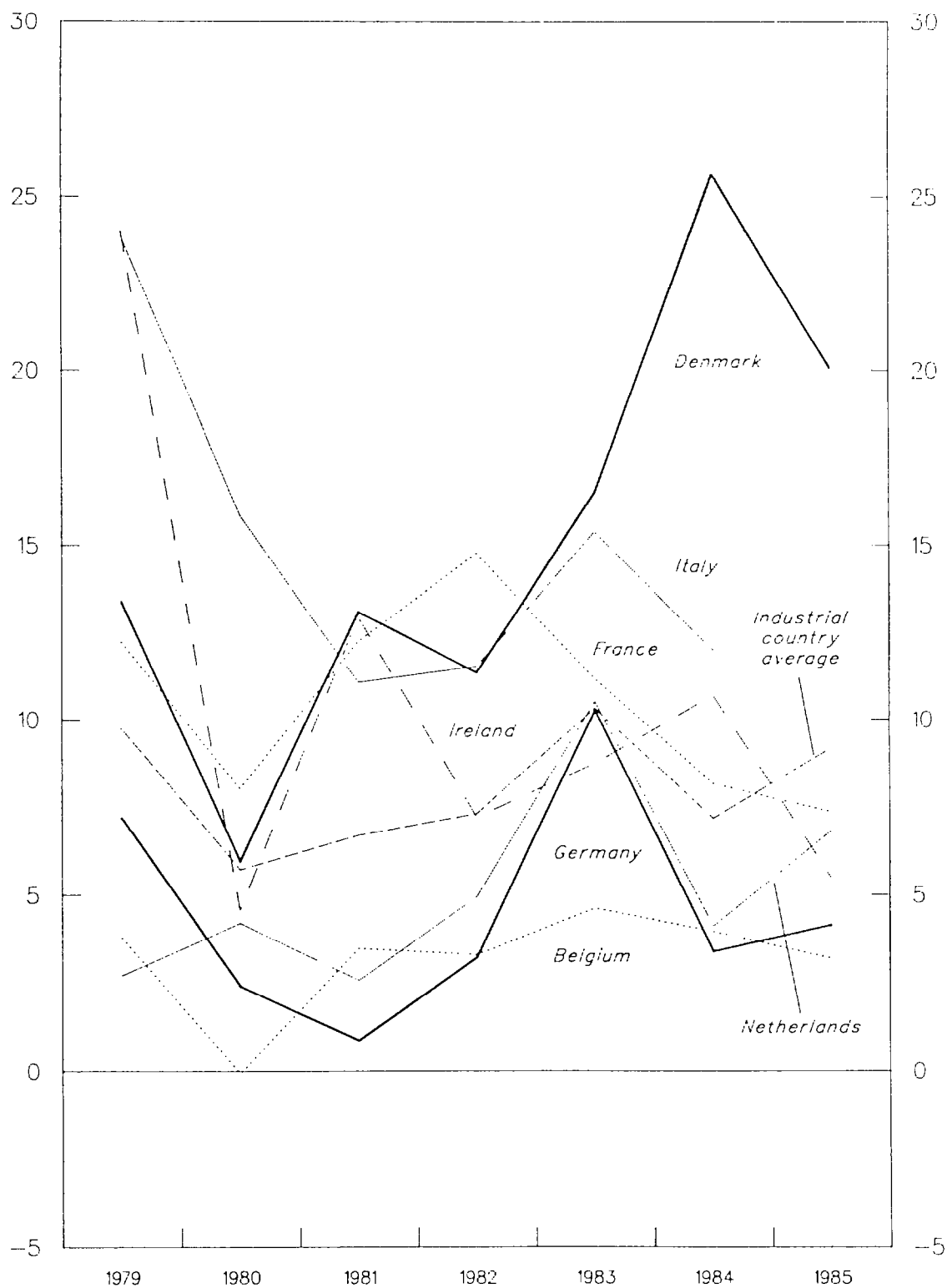
Both short-term and long-term interest rates increased and interest differentials widened in ERM and other countries in 1979-84 as compared to 1974-78 (Tables 30 and 31). While short-term interest rate differentials appeared to have narrowed in ERM countries--in absolute as well as in relative terms--in 1984, the opposite seems to have occurred in selected other countries (but the sample size is too small to give much weight to this finding).

Differences between ERM and non-ERM member countries are less pronounced with regard to long-term interest rates. Interest rate differentials increased moderately in both groups in relative as well as in absolute terms in 1979-84 as compared to 1974-78.

In most ERM countries, with the exception of France and Italy, short-term interest rates moved more closely with those of partner countries in 1979-84 than in 1974-78 (Table 32). It is noteworthy that the smaller countries, i.e., Belgium, Denmark, and The Netherlands, all followed policies which brought their short-term interest rates closer in line with German interest rates while for some of these countries the relationship with French and Italian rates loosened. Regarding long-term interest rates, correlation was in all cases substantially stronger in 1979-85 than in 1974-78 (Table 33). Although interest rate developments in the United States played a significant role, ^{1/} a large part of the closer relationship of interest rates between ERM countries can be attributed to the way monetary policy has been conducted following the establishment of the EMS. Germany and other larger ERM countries have used the rate of growth of monetary aggregates as an intermediate objective of monetary policy. Smaller ERM countries with very open

^{1/} Indeed, with exceptionally high U.S. interest rates over the recent years, European countries had to choose a trade-off between the objectives of stimulating investment and growth by lower interest rates and of containing capital outflows and strengthening their currencies against the U.S. dollar in order to lower inflationary pressures.

CHART 6
GROWTH OF NARROW MONEY IN EMS
AND OTHER INDUSTRIAL COUNTRIES



Source: IMF, Data Fund.

economies and the determination to contain inflation have often targeted the deutsche mark exchange rate with the result that their interest rate developments converged with German developments; monetary expansion in these countries, on the other hand, has remained largely outside the control of the national authorities. More recently, France has sought to follow similar policies.

4. Fiscal and external current account developments

In contrast to some improvements in economic convergence among ERM countries in price and some monetary variables, differences in fiscal policies and developments do not seem to have been overcome. On average, fiscal deficits widened in ERM countries in 1979-84 as compared to 1974-78 (Table 34). The major reasons for this development were increasing deficits in Italy and Belgium and continuing high deficits in Ireland. The increase in average deficits was accompanied by an increase in differences in fiscal balances. On average, standard deviations and differences between highest and lowest deficits were somewhat higher in 1979-84 than in 1974-78. This was mainly due to the fact that Germany succeeded in reducing its central government budget deficit to 1.6 percent of GDP in 1984 while the Italian government boosted its deficit to almost 16 percent.

Deficits increased also in other countries, from around 3 1/2 percent on average in 1974-78 to about 4 percent in 1979-84. However, the increase was much smaller than in the ERM group and budget deficits remained well below the levels reached in some ERM countries. Also, the international spread of budget deficits rose only slightly in absolute terms and remained constant in relative terms in this country grouping.

The external current account performance worsened significantly in ERM countries in 1979-84 as compared with 1974-78. While average current account balances were in surplus in the earlier period, they were in deficit by about US\$2 billion in the more recent period (Table 35). Only the Netherlands succeeded in improving its average current account balance in 1979-84 over 1974-78, in large part due to its special situation as an energy exporter. Other countries, notably Germany, on average experienced a severe weakening in their current account performance. ^{1/} The deterioration in the external accounts of EMS

^{1/} Germany, after having agreed at the 1979 economic summit meetings to stimulate its economy, had a record current account deficit in 1980 (1.9 percent of GNP) which caused a weakening of the deutsche mark in the EMS. The authorities resisted a devaluation of the deutsche mark and tightened monetary policy instead (see Table 26). By 1982, they had succeeded in turning the current account into a sizeable and growing surplus, which reached 38.8 billion deutsche mark in 1985 (equivalent to 2.1 percent of GNP).

countries was accompanied by more uniformity; the spread between average current account positions was significantly smaller in 1979-84 as compared with 1974-78.

Countries outside the ERM, too, experienced a weakening in their average current account performance. But, while the deterioration was much smaller than for the group of EMS countries, international divergences in this group increased significantly both in absolute and relative terms (Table 35).

5. Real sector developments

Both gross fixed capital formation as a percentage of GDP and real growth was lower in ERM countries on average in 1979-84 than in 1974-78 (Tables 36 and 37). While divergences in real growth rates narrowed somewhat in absolute terms, differences in investment performance widened both in absolute and relative terms.

Developments in the control group of countries not participating in the exchange rate mechanism of the ERM were somewhat different. On average, growth rates did not change much in the two subperiods of 1974-84, but, as happened in the group of EMS countries, gross fixed capital formation as a percentage of GDP was somewhat lower in the more recent period. Also, it appears that both growth and investment differentials narrowed on average in 1979-84 as compared with 1974-78.

6. Conclusions

The above statistics and calculations have illustrated that there was some progress within the EMS toward economic convergence in domestic monetary policies and inflation rates, particularly in the more recent years. Improvement in these areas was recorded against a "control group" of countries not participating in the ERM and/or the pre-EMS period 1974-78. Moreover, better convergence among ERM countries was not accompanied by more inflationary policies. Rather, there has been a general trend toward more restrictive financial policies.

However, the recent improvement in convergence in inflation rates and monetary policies was not backed by a corresponding progress in the fiscal sector and the external current account nor with regard to real sector developments. In particular, fiscal deficits in ERM countries widened on average in the early 1980s and differences between ERM countries increased. The apparent lack of progress toward economic convergence in these areas introduces an element of uncertainty into the EMS and in the medium run may jeopardize its main objective, i.e., to provide members with reliable and stable exchange rate relationships.

Table 1. Quotas and Ceilings Under the
Short-Term Monetary Support and Medium-Term
Financial Assistance Facilities

Countries	Debtor and creditor quotas under short-term monetary support			Commitment (creditor) ceilings under medium-term financial assistance	
	Debtor (in millions of ECUs)	Creditor (in millions of ECUs)	Percentage distribution	(in millions of ECUs)	Percentage distribution
Belgium/Luxembourg	580	1,160	6.50	1,035	6.50
Denmark	260	520	2.91	465	2.92
France	1,740	3,480	19.51	3,105	19.50
Germany	1,740	3,480	19.51	3,105	19.50
Greece	150	300	1.68	270	1.69
Ireland	100	200	1.12	180	1.13
Italy	1,160	2,320	13.00	2,070	13.00
Netherlands	580	1,160	6.50	1,035	6.50
Portugal	145	290	1.63	259	1.63
Spain	725	1,450	8.13	1,294	8.13
United Kingdom	1,740	3,480	19.51	3,105	19.50
Total EEC	8,920	17,840	100.00	15,923	100.00

Sources: Committee of the Governors of the Central Banks of the Members States of the European Economic Community - European Monetary Cooperation Fund; and Texts concerning the European Monetary System, Brussels 1985.

Table 2. The Creation of ECUs by Swap Operations, 1979 II - 1986 II

Swap Operations		Gold Transfers (million ounces)	U.S. Dollar Transfers (billions)	Gold Price (ECUs per ounce)	US\$1 = ...ECU	Counterpart in ECUs (billions)		
Starting In						Gold	U.S. dollars	Total
1979	II	80.7	13.4	165	0.75	13.3	10.0	23.3
1979	<u>1/</u> III	85.3	15.9	185	0.73	15.8	11.6	27.4
1979	IV	85.3	16.0	211	0.70	18.0	11.3	29.3
1980	I	85.5	15.5	259	0.69	22.2	10.7	32.9
1980	II	85.6	14.4	370	0.77	31.7	11.1	42.8
1980	III	85.6	13.7	419	0.70	35.9	9.6	45.5
1980	IV	85.6	13.9	425	0.71	36.4	9.9	46.3
1981	I	85.6	14.5	447	0.75	38.3	10.9	49.2
1981	II	85.7	14.2	440	0.84	37.7	12.0	49.7
1981	III	85.7	12.7	406	0.97	34.8	12.3	47.1
1981	IV	85.7	11.5	402	0.91	34.5	10.5	45.0
1982	I	85.7	11.7	368	0.92	31.6	10.7	42.3
1982	II	85.7	10.5	327	1.00	28.0	10.5	38.6
1982	III	85.7	9.9	324	1.04	27.8	10.3	38.1
1982	IV	85.7	10.0	367	1.08	31.5	10.8	42.3
1983	I	85.7	10.0	429	1.02	36.7	10.2	47.0
1983	II	85.7	10.5	452	1.07	38.8	11.2	50.0
1983	III	85.7	10.5	465	1.13	39.9	11.8	51.7
1983	IV	85.7	10.6	477	1.15	40.9	12.2	53.1
1984	I	85.7	10.6	461	1.24	39.5	13.1	52.6
1984	II	85.7	10.8	452	1.17	38.7	12.7	51.4
1984	III	85.7	10.6	460	1.26	39.5	13.3	52.8
1984	IV	85.7	10.1	454	1.35	39.0	13.6	52.6
1985	I	85.7	10.2	434	1.42	37.2	14.5	51.7
1985	II	85.7	9.0	449	1.40	38.5	12.6	51.1
1985	III	85.7	10.0	429	1.35	36.8	13.5	50.3
1985	IV	86.5	10.5	396	1.19	34.0	12.5	46.5
1986	I	86.5	10.6	368	1.13	31.8	12.0	43.8
1986	II	86.5	11.2	373	1.09	32.3	12.3	44.6

Source: Commission of the European Communities.

1/ The Bank of England transferred 20 percent of its gold and U.S. dollar reserves from July 1979.

Table 3. Percentage Weights of Member Currencies in the ECU 1/

	April 21 1975 <u>2/</u>	Average during the second quarter of each year							
		1979	1980	1981	1982	1983	1984	1985	1986
Belgian franc	8.0	9.1	9.1	8.8	8.1	8.1	8.0	8.2	8.4
Danish krone	3.0	3.0	2.8	2.7	2.7	2.7	2.6	2.7	2.8
French franc	21.7	19.7	19.7	19.1	18.3	16.9	16.7	19.2	19.1
Deutsche mark	26.9	32.8	32.9	32.7	34.7	36.5	37.0	32.0	33.3
Irish pound	1.4	1.1	1.1	1.1	1.1	1.1	1.0	1.2	1.2
Italian lira	13.3	9.7	9.2	8.6	8.2	8.1	7.9	9.8	9.5
Luxemburg franc	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Netherlands guilder	9.1	10.4	10.3	10.2	10.8	11.2	11.4	10.1	10.6
Pound sterling	16.1	13.8	14.5	16.5	15.7	15.1	14.8	15.1	13.7
Greek drachma	--	--	--	--	--	--	--	1.2	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum item:									
Value of 1 ECU									
in terms of									
Belgian franc	45.53	40.34	40.36	41.43	45.10	45.23	45.61	45.12	43.94
Danish krone	7.16	7.15	7.83	7.97	8.13	8.08	8.21	8.05	7.84
French franc	5.29	5.83	5.85	6.03	6.29	6.81	6.87	6.83	6.85
Deutsche mark	3.08	2.52	2.51	2.54	2.38	2.27	2.24	2.25	2.16
Irish pound	0.55	0.66	0.67	0.69	0.69	0.72	0.73	0.72	0.71
Italian lira	819.45	1128.65	1182.76	1263.36	1321.97	1346.57	1382.75	1429.76	1475.67
Luxemburg franc	45.53	40.34	40.36	41.43	45.10	45.23	45.61	45.12	43.94
Netherlands guilder	3.14	2.75	2.76	2.81	2.64	2.55	2.52	2.53	2.42
Pound sterling	0.55	0.64	0.61	0.54	0.56	0.59	0.59	0.58	0.64
Greek drachma	--	--	--	--	--	--	--	98.54	135.01
U.S. dollar	1.29	1.33	1.39	1.12	1.00	0.91	0.83	0.73	0.96
Japanese yen	292.40	290.06	322.39	245.41	244.66	216.65	189.48	182.17	163.24
Swiss franc	2.57	2.28	2.34	2.27	2.00	1.89	1.85	1.88	1.79

Sources: IMF, International Financial Statistics; Data fund; and staff calculations.

1/ Calculations of percentage weights are based on New York noon quotations. The weights may not add up due to rounding.

2/ Weights are those of the European Unit of Account (EUA) which was introduced in certain areas of EC activities as of April 21, 1975. The EUA is defined as a basket of all EC currencies; this basket was also used for defining the ECU in 1979.

Table 4. Composition of the ECU

	National Currency Units		Percentage Weights 1/		
	March 13, 1979- September 14, 1984	September 17, 1984	March 13, 1979	September 14, 1984	September 17, 1984
Belgian franc	3.66	3.71	9.3	8.1	8.2
Danish Krone	0.217	0.219	3.1	2.7	2.7
French franc	1.15	1.31	19.8	16.7	19.0
Deutsche mark	0.828	0.719	33.0	36.9	32.0
Irish pound	0.00759	0.00871	1.1	1.0	1.2
Italian lira	109	140	9.5	7.9	10.2
Luxemburg franc	0.14	0.14	0.4	0.3	0.3
Netherlands guilder	0.286	0.256	10.5	11.3	10.1
Pound sterling	0.0885	0.0878	13.3	15.1	15.0
Greek drachma	--	1.15	--	--	1.3
			100.0	100.0	100.0

Sources: Council Regulation (EEC) No. 3180/78 of December 18, 1978; and Council Regulation (EEC) No. 2626/84 and Council Declaration of September 15, 1984; and staff calculations.

1/ Based on market rates.

Table 5. EMS: Periods of Strain 1/ 2/

No.	Period	Source of Strain	Signaled by		Remedies Adopted
			Divergence indicator	Parity grid	
1	May-June 1979	D. Widening CA deficits and deficient capital inflow. B: Continued lack of confidence.	DKr: - 75	DM/BF	Intervention to support both BF and DKr. B: Discount rate up from 6 to 9 percent. D: Discount rate up from 8 to 9 percent.
2	Aug.-Sept. 1979	D and B: Capital inflows induced by earlier increases in nominal interest rates dry out in both countries.	DKr: - 75 BF: - 75	DM/DKr	Intervention to support both BF and DKr. D: Discount rate up from 9 to 11 percent on Sept. 17 after which date intervention stops. B: Discount rate up from 9 to 10 percent. Realignment I: DM up, DKr down relative to other EMS currencies.
3	Nov. 1979	Uncertainty after parliamentary election in late October puts pressure on the DKr.	DKr: slightly negative few days before realignment		Intervention in support of DKr. Realignment II: DKr devalued against all other EMS currencies.
4	Dec. 1979-March 1980	D: Deficient capital inflow because of uncertainty about DKr in view of two recent realignments and because of increasing international nominal interest rates. B: Deficient capital inflow to finance CA deficits.		FF/BF (in March)	Intervention keeps DKr in the middle of the band. Discount rate up from 11 to 13 percent. B: Intervention majority in EMS currencies to support BF. Discount rate up from 10 to 14 percent.
5	Oct. 1980	G. Weak CA position relative to U.S. and major EMS countries plus interest differential disfavoring DM denominated investments.	DM: - 70	FF/DM	Intervention in support of DM. F: Loosening of credit market. G: Slight tightening of credit market.
6	Feb. 1981	G: As U.S. interest rates surge and uncertainty about G's strategic (Poland) and economical position increases, pressure on DM becomes heavy.	DM: - 60's FF: touching + 75 occasionally in Jan. and Feb.	FF/BF and FF/BF	Intervention in \$ and FF to support DM. G: Special Lombard rate introduced; substantial tightening of monetary policy.
7	March 1981	BF and Lit exposed at bottom of band subsequent to DM firming. After devaluation of Lit, BF remains under heavy pressure.	BF: - 75 Lit: - 75 (briefly)	DM/BF and FF/BF	I: Intervention followed by increase in discount rate from 16.5 to 19 percent. Realignment III: Devaluation of Lit. B: Intervention followed by increase in the discount rate from 12 to 16 percent. F: Intervention. Interest rate and exchange control measures
8	May 1981	Presidential election in France (5/10/81).	FF: - 75 (two weeks from 5/11/81)	DM/FF	
9	Aug.-Sept. 1981	On the background of pessimism as to the devaluation of the FF, DM gains strength on improving external performance, and FF and BF have problems following DM up against \$.	DM: + 75 (last two weeks of Sept.). BF: not past - 75 but most "diverging" of weak currencies.	DM/BF	Intervention in support of weak EMS currencies. Realignment IV: DM and f. revalued and FF and Lit devalued against DKr, BF, £Ir.

Table 5 (Concluded). EMS: Periods of Strain 1/ 2/

No.	Period	Source of Strain	Signaled by		Remedies Adopted
			Divergence indicator	Parity grid	
10	Nov. 1981	Brief pressure on BF when negotiations to form a government break down.	BF: once below - 75 on Dec. 10.		Intervention in support of BF. B: Discount rate from 13 to 15 percent.
11	Feb. 1982	Diminishing confidence in the future performance of the Belgian economy.	BF: close to, but not past - 75 DKr: slightly negative		B: Intervention. Realignment V: Devaluation of BF and DKr against other EMS currencies.
12	March 1982	F: Widening inflation differential with G. DKr and BF lose strength acquired in previous realignments.	FF: one flash (-76) on March 23; otherwise well within bounds.	DM/FF and f./FF	F: Intervention, tightening of monetary policy, exchange controls, budget tightening.
13	May-June 1982	"The weekend syndrome": pressure on BF, FF, Lit, especially late in week. Persistent realignment rumors.	DM: above +75 from end-April. BF: most "diverging" currency at bottom	DM/BF	Intervention. Realignment VI: Revaluation of DM and F. and devaluation of Lit and FF against DKr, BF, and £Ir.
14	Dec. 1982-March 1983	Deteriorating trade balance and inflation in France. Increasing pressure on FF, especially late in week; persistent realignment rumors; anticipation of realignment after March elections in Federal Republic of Germany, France.	BF: frequently below in January, February; FF: below in March	DM/FF f./BF	Substantial intervention in support of BF and FF, interest rate measures in Belgium, Federal Republic of Germany, Netherlands. Emergency foreign exchange measures in Belgium. Realignment VII: Revaluation of DM, F., DKr, BF, and devaluation of FF, Lit, £Ir.
15	March-July 1985	Significant deterioration in performance of the Italian economy in the fiscal and external accounts puts Lit under pressure.	Lit: -40 Movement of the Lira to the lower part of the wide band.	DKr/Lit	Realignment VIII: Devaluation of Lit by about 8 percent against other participating currencies.
16	Dec. 1985-Jan. 1986	Weak performance of the Italian and Belgian economies and realignment rumors; decline of sterling against participating currencies.	£Ir: From 0 to -60 BF: -75 Drop of £Ir to bottom of narrow band; further downward pressure on BF; decline of Lit from its strong position after realignment VIII.	DM/BF	Substantial intervention in support of BF; increase in Belgian and Irish interest rates; tightening on monetary policy and foreign exchange restrictions in Italy.
17	April 4, 1986	F: Widening inflation differential particularly with Germany; realignment initiated by new government.	FF and £Ir fall below their lower intervention limits, DM and f. rise above their upper intervention limits.	...	Realignment IX: Revaluation of DM, f., BF and DKr; devaluation of FF.
18	August 2, 1986	Ire: Depreciation of \$ and sterling against ERM currencies endangers competitive position of the Irish economy.	£Ir: from 16 to -37	FF/DKr	Realignment X: Devaluation of £Ir by about 8 percent against other participating currencies

Source: Fund staff estimates and calculations.

1/ Defined as periods with reports of substantial interference in the exchange market by intervention, capital and exchange controls, or measures of monetary policy motivated by exchange rate developments.2/ Notation: B-Belgium; BF-Belgian franc; D-Denmark; DKr-Danish krone; F-France; FF-French franc; G-Federal Republic of Germany; DM-deutsche mark; Ire-Ireland; £Ir-Irish pound; I-Italy; Lit-Italian lira; N-Netherlands; f.-Netherlands guilder; U.S.-United States; \$-U.S. dollar; CA-current account.

Table 6. Bilateral Central Rates ^{1/}

Currency units	100 Belgian/ Luxembourg francs	100 Danish kroner	100 Deutsche mark	100 French francs	100 Italian lire	100 Irish pounds	100 Netherlands guilders
Belgian/Luxembourg francs							
Mar. 13, 1979		556.852	1,571.64	680.512	3.43668	5,954.71	1,450.26
Sept. 24, 1979		540.942	1,603.07	680.512	3.43668	5,954.71	1,450.26
Nov. 30, 1979		515.186	1,603.07	680.512	3.43668	5,954.71	1,450.26
Mar. 23, 1981		515.186	1,603.07	680.512	3.23048	5,954.71	1,450.26
Oct. 5, 1981		515.186	1,691.25	660.097	3.13355	5,954.71	1,530.03
Feb. 22, 1982		546.154	1,848.37	721.415	3.42466	6,507.92	1,672.16
June 14, 1982		546.154	1,926.93	679.941	3.33047	6,507.92	1,743.23
Mar. 21, 1983		551.536	2,002.85	653.144	3.19922	6,187.32	1,777.58
July 22, 1985		551.536	2,002.85	653.144	2.94831	6,187.32	1,777.58
Apr. 7, 1986		551.536	2,042.52	627.278	2.19120	6,126.06	1,812.78
Aug. 4, 1986		551.536	2,042.52	627.278	2.19120	5,635.98	1,812.78
Danish kroner							
Mar. 13, 1979	17.9581		282.237	122.207	0.617161	1,069.35	260.439
Sept. 24, 1979	18.4862		296.348	125.801	0.635312	1,100.81	268.098
Nov. 30, 1979	19.4105		311.165	132.091	0.667078	1,155.84	281.503
Mar. 23, 1981	19.4105		311.165	132.091	0.627052	1,155.84	281.503
Oct. 5, 1981	19.4105		328.279	128.128	0.60824	1,155.84	296.986
Feb. 22, 1982	18.3098		338.433	132.09	0.62705	1,191.59	306.171
June 14, 1982	18.3098		352.817	124.496	0.609804	1,191.59	319.183
Mar. 21, 1983	18.1312		363.141	118.423	0.580057	1,121.84	322.297
July 22, 1985	18.1312		363.141	118.423	0.534563	1,121.84	322.297
Apr. 7, 1986	18.1312		370.332	113.732	0.529268	1,110.72	328.676
Aug. 4, 1986	18.1312		370.332	113.732	0.529268	1,021.86	328.676
Deutsche mark							
Mar. 13, 1979	6.36277	35.4313		43.2995	0.218668	378.886	92.2767
Sept. 24, 1979	6.238	33.7441		42.4505	0.21438	371.457	90.4673
Nov. 30, 1979	6.238	32.1373		42.4505	0.21438	371.457	90.4673
Mar. 23, 1981	6.238	32.1373		42.4505	0.201518	371.457	90.4673
Oct. 5, 1981	5.9128	30.4619		39.0302	0.185281	352.09	90.4673
Feb. 22, 1982	5.41018	29.5479		39.0302	0.185281	353.09	90.4673
June 14, 1982	5.18961	28.3433		35.2863	0.172839	337.736	90.4673
Mar. 21, 1983	4.99288	27.5375		32.6107	0.159733	308.925	88.7526
July 22, 1985	4.99288	27.5375		32.6107	0.147205	308.925	88.7526
Apr. 7, 1986	4.8959	27.0028		30.7109	0.142917	299.926	88.7526
Aug. 4, 1986	4.8959	27.0028		30.7109	0.142917	275.934	88.7526
French francs							
Mar. 13, 1979	14.6948	81.8286	230.95		0.505013	875.034	213.113
Sept. 24, 1979	14.6948	79.4905	235.568		0.505013	875.034	213.113
Nov. 30, 1979	14.6948	75.7054	235.568		0.505013	875.034	213.113
Mar. 23, 1981	14.6948	75.7054	235.568		0.474714	875.034	213.113
Oct. 5, 1981	15.1493	78.047	256.212		0.474714	902.098	231.789
Feb. 22, 1982	13.8616	75.706	256.212		0.474714	902.098	231.789
June 14, 1982	14.7072	80.3239	283.396		0.489818	957.129	256.38
Mar. 21, 1983	15.3106	84.4432	306.648		0.489819	947.313	272.158
July 22, 1985	15.3106	84.4432	306.648		0.451402	947.313	272.158
Apr. 7, 1986	15.9419	87.9257	325.617		0.465362	976.610	288.991
Aug. 4, 1986	15.9419	87.9257	325.617		0.465362	898.480	288.991

Table 6 (Concluded). Bilateral Central Rates ^{1/}

Currency units	100 Belgian/ Luxembourg francs	100 Danish kroner	100 Deutsche mark	100 French francs	100 Italian lire	100 Irish pounds	100 Netherlands guilders
Italian lire							
Mar. 13, 1979	2,909.79	16,303.3	45,731.4	19,801.5		173,270.0	42,199.5
Sept. 24, 1979	2,909.79	15,740.3	46,646.0	19,801.5		173,270.0	42,199.5
Nov. 30, 1979	2,909.79	14,990.7	46,646.0	19,801.5		173,270.0	42,199.5
Mar. 23, 1981	3,095.51	15,947.6	49,623.2	21,065.3		184,329.0	44,893.0
Oct. 5, 1981	3,191.26	16,440.9	53,972.2	21,065.3		190,031.0	48,827.2
Feb. 22, 1982	2,920.0	15,947.70	53,972.2	21,065.3		190,031.0	48,827.2
June 14, 1982	3,002.58	16,398.7	57,857.4	20,415.7		195,405.0	52,341.9
Mar. 21, 1983	3,125.76	17,239.7	62,604.3	20,415.7		193,401.0	55,563.0
July 22, 1985	3,191.77	18,706.9	67,932.5	22,153.2		209,860.8	60,291.5
Apr. 7, 1986	3,425.70	18,894.0	69,970.6	21,488.6		209,860.8	62,100.2
Aug. 4, 1986	3,425.70	18,894.0	69,970.6	21,488.6		193,071.0	62,100.2
Irish pounds							
Mar. 13, 1979	1.67934	9.35146	26.3932	11.4281	0.0577136		24.3548
Sept. 24, 1979	1.67934	9.08424	26.921	11.4281	0.0577136		24.3548
Nov. 30, 1979	1.67934	8.65169	26.921	11.4281	0.0577136		24.3548
Mar. 23, 1981	1.67934	8.65169	26.921	11.4281	0.0542508		24.3548
Oct. 5, 1981	1.67934	8.65169	28.4018	11.0853	0.052623		25.6944
Feb. 22, 1982	1.53659	8.39216	28.4018	11.0853	0.052623		25.6944
June 14, 1982	1.53659	8.39216	29.6090	10.4479	0.05111758		26.7864
Mar. 21, 1983	1.61621	8.91396	32.3703	10.5562	0.0517061		28.7295
July 22, 1985	1.61621	8.91396	32.3703	10.5562	0.0476508		28.7295
Apr. 7, 1986	1.63237	9.00315	33.3416	10.2395	0.0476508		29.5912
Aug. 4, 1986	1.77431	9.78604	36.2405	11.1299	0.0517943		32.1644
Netherlands guilders							
Mar. 13, 1979	6.89531	38.3967	108.37	46.9235	0.23697	410.597	
Sept. 24, 1979	6.89531	37.2998	110.537	46.9235	0.23697	410.597	
Nov. 30, 1979	6.89531	35.5237	110.537	46.9235	0.23697	410.597	
Mar. 23, 1981	6.89531	35.5237	110.537	46.9235	0.222752	410.597	
Oct. 5, 1981	6.53583	33.6716	110.537	43.1428	0.204804	389.19	
Feb. 22, 1982	5.98027	32.6615	110.537	43.1428	0.204804	389.190	
June 14, 1982	5.73646	31.3300	110.537	39.0045	0.191051	373.324	
Mar. 21, 1983	5.62561	31.0273	112.673	36.7434	0.179976	348.075	
July 22, 1985	5.62561	31.0273	112.673	36.7434	0.165861	348.075	
Apr. 7, 1986	5.51640	30.4251	112.673	34.6032	0.161030	337.938	
Aug. 4, 1986	5.51640	30.4251	112.673	34.6032	0.161030	310.903	

Sources: Commission of the European Communities; and Fund staff calculations.

^{1/} Expressed as the price of 100 units of the currency on top of the column in the currency in front of the row.

Table 7. EMS Realignments: Percentage Changes in Bilateral Central Rates 1/

	Sept. 24, 1979	Nov. 30, 1979	Mar. 23, 1981	Oct. 5, 1981	Feb. 22, 1982	June 14, 1982	Mar. 21, 1983	July 22, 1985	April 7, 1986	Aug. 4, 1986
Belgian and Luxembourg francs					-8.5		+1.5	+2.0	+1.0	
Danish krone	-2.9	-4.8			-3.0		+2.5	+2.0	+1.0	
Deutsche mark	+2.0			+5.5		+4.25	+5.5	+2.0	+3.0	
French franc				-3.0		-5.75	-2.5	+2.0	-3.0	
Italian lira			-6.0	-3.0		-2.75	-2.5	-6.0		
Irish pound							-3.5	+2.0		-8.0
Netherlands guilder				+5.5		+4.25	+3.5	+2.0	+3.0	

Sources: Commission of the European Communities; and Fund staff calculations.

1/ Calculated as the percentage change against the group of currencies whose bilateral parities remained unchanged in the realignment, except for the realignments (3/21/83, 7/20/85) in which all currencies were realigned--for this the percentages are shown as in the official communique.

Table 8. ECU Central Rates ^{1/}

	Mar. 13, 1979	Sept. 24, 1979	Nov. 30, 1979	Mar. 23, 1981	Oct. 5, 1981	Feb. 22, 1982	June 14, 1982	Mar. 21, 1983	July 22, ^{2/} 1985	Apr. 7, 1986	Aug. 4, 1986
Belgian/Luxembourg franc											
Units of national currency per ECU	39.4582	39.8456	39.7897	40.7985	40.7572	44.6963	44.9704	44.3662	44.8320	43.6761	43.1139
Percentage change from previous central rate		0.98	-0.14	2.54	-0.10	9.66	0.61	-1.34	-0.15	-2.58	-1.29
Percentage change from initial central rate		0.98	0.84	3.40	3.29	13.28	13.97	12.44	13.62	10.69	9.26
Danish krone											
Units of national currency per ECU	7.08592	7.36594	7.72336	7.91917	7.91117	8.18382	8.2340	8.04412	8.12857	7.91896	7.81701
Percentage change from previous central rate		3.95	4.85	2.54	-0.10	3.45	0.61	-2.31	-0.15	-2.58	-1.29
Percentage change from initial central rate		3.95	9.00	11.76	11.65	15.49	16.20	13.52	14.71	11.76	10.32
Deutsche mark											
Units of national currency per ECU	2.51064	2.48557	2.48208	2.54502	2.40989	2.41815	2.33379	2.21515	2.23840	2.13834	2.11083
Percentage change from previous central rate		-1.00	-0.1	2.54	-5.31	0.34	-3.48	-5.08	-0.15	-4.47	-1.29
Percentage change from initial central rate		-1.00	-0.1	1.37	-4.01	-3.68	-7.04	-11.77	-10.84	-14.83	-15.92
French franc											
Units of national currency per ECU	5.79831	5.85522	5.84700	5.99526	6.17443	6.19564	6.61387	6.79271	6.86402	6.9628	6.87316
Percentage change from previous central rate		0.98	-0.14	2.54	2.99	0.34	6.75	2.70	-0.15	1.44	-1.29
Percentage change from initial central rate		0.98	0.84	3.40	6.49	6.85	14.07	17.15	18.38	20.08	18.54
Italian lira											
Units of national currency per ECU	1,148.15	1,159.42	1,157.79	1,262.92	1,300.13	1,305.13	1,350.27	1,386.78	1,520.60	1,496.21	1,476.95
Percentage change from previous central rate		0.98	-0.14	9.1	2.99	0.34	3.46	2.70	8.34	-1.60	-1.29
Percentage change from initial central rate		0.98	0.84	10.00	13.28	13.67	17.60	20.78	32.44	30.31	28.64
Irish pound											
Units of national currency per ECU	0.662638	0.669141	0.668201	0.685145	0.684452	0.686799	0.691011	0.71705	0.724578	0.712956	0.764976
Percentage change from previous central rate		0.98	-0.14	2.54	-0.10	0.34	0.61	3.77	-0.15	-1.60	7.30
Percentage change from initial central rate		0.98	0.84	3.40	3.29	3.65	4.28	8.21	9.35	7.59	15.44
Netherlands guilder											
Units of national currency per ECU	2.72077	2.74748	2.74362	2.81318	2.66382	2.57971	2.49587	2.49587	2.52208	2.40935	2.37833
Percentage change from previous central rate		0.98	-0.14	2.54	-5.31	0.34	-3.49	-3.25	-0.15	-4.47	-1.29
Percentage change from initial central rate		0.98	0.84	3.40	-2.09	-1.76	-5.18	-8.27	-7.30	-11.45	-12.59

Source: Commission of the European Communities.

^{1/} The change of any central rate expressed in terms of ECUs implies a simultaneous change of all other ECU central rates, since the ECU is made up of a basket of currencies. Positive sign indicates depreciation relative to the ECU.^{2/} Percentage change from central rate as of May 1983, when the notional central rate of the pound sterling was revalued and the other central rates devalued as part of a package to arrive at new common agricultural prices. No change in bilateral central rates and intervention limits of participating currencies occurred at this time.

Table 9. Interest Differentials for
Three-Month Deposits 1/, 1979-86

	France		Germany	
	Uncovered <u>2/</u>	Covered <u>3/</u>	Uncovered <u>2/</u>	Covered <u>3/</u>
1979 Q1	-2.60	1.03	-6.81	-1.54
1979 Q2	-1.39	-0.46	5.17	-1.01
1979 Q3	0.25	1.38	5.09	0.07
1979 Q4	-1.66	0.53	-6.15	-0.49
1980 Q1	-2.57	3.19	-7.46	2.00
1980 Q2	-0.50	-3.05	-3.85	-3.81
1980 Q3	0.62	2.38	-2.60	2.32
1980 Q4	-5.45	0.40	-7.92	0.25
1981 Q1	-4.92	-2.82	-5.71	-3.47
1981 Q2	0.63	0.60	-4.75	0.59
1981 Q3	5.83	5.18	-6.04	-0.61
1981 Q4	3.63	3.63	-3.42	-0.26
1982 Q1	1.69	0.92	-5.64	0.35
1982 Q2	7.02	7.90	-6.23	0.57
1982 Q3	5.14	2.62	-4.16	-0.42
1982 Q4	10.81	7.30	-2.63	0.65
1983 Q1	14.20	11.69	-4.03	0.34
1983 Q2	4.64	1.89	-4.22	0.17
1983 Q3	4.65	1.75	-4.66	-1.00
1983 Q4	3.73	1.36	-3.57	0.36
1984 Q1	4.70	2.80	-4.41	0.37
1984 Q2	1.62	1.60	-5.61	0.74
1984 Q3	-0.16	0.22	-6.21	-0.75
1984 Q4	1.16	-0.85	-4.19	-1.27
1985 Q1	1.99	0.25	-2.92	0.05
1985 Q2	2.28	-0.21	-2.53	-0.34
1985 Q3	2.82	0.58	-3.32	0.11
1985 Q4	2.38	1.38	-3.33	-0.36
1986 Q1	5.59	4.72	-3.44	-0.76

Source: IMF, Data Fund.

1/ London Interbank offer rates on three-month deposits.2/ London Interbank offer rate minus corresponding London Interbank offer rate on U.S. dollar deposits.3/ Uncovered interest rate differential plus discount or premium on three-month forward exchange rates against the U.S. dollar.

Table 10. Economic Measures in Connection with Realignments 1/

Realignment Date	Realignment Wording Based on Official Communiqué	Major Measures in			
		Belgium	Denmark	France	Italy
September 24, 1979	Shift in cross-rate between the deutsche mark and the Danish krone of 5 percent. Shift in cross-rate between the deutsche mark and other EMS currencies of 2 percent	-	-	-	-
November 30, 1979	Devaluation of the Danish krone by 5 percent against other EMS currencies (no communiqué)	-	<ul style="list-style-type: none"> • Energy component removed from wage-regulating index • Short-term price and wage freeze measures • Increases in direct personal wealth and corporate taxes 	-	-
March 23, 1981	Devaluation of Italian lira by 6 percent against other EMS currencies	-	-	-	<ul style="list-style-type: none"> • Discount rate up 2 1/2 percent to 19 percent • Government spending cut plans
October 5, 1981	Revaluation of the deutsche mark and the Netherlands guilder by 5.5 percent against the Danish krone, the Belgian franc, the Luxembourg franc, and the Irish pound. Devaluation of the French franc and the Italian lira by 3 percent against the Danish krone, the Belgian franc, and the Irish pound.	-	-	<ul style="list-style-type: none"> • Temporary price and profit freeze • Incomes policy aiming at maintenance of average income purchasing power, narrowing of income range • F 10.15 billion government expenditure in suspense 	-
February 22, 1982	Devaluation of the Belgian franc and the Luxembourg franc by 8.5 percent and the Danish krone by 3 percent against other EMS currencies	<ul style="list-style-type: none"> • Temporary freeze of wages and longer-run measures to impede complete wage indexation • Temporary price freeze • Reduction in corporate tax burden • Measures to stimulate the stock market 	-	-	-

Table 10 (Concluded). Economic Measures in Connection with Realignments 1/

Realignment Date	Realignment Wording Based on Official Communiqué	Major Measures in			
		Belgium	Denmark	France	Italy
June 14, 1982	Change in bilateral rates: between the French franc and the Deutsche mark, f.: 10 percent; between the Italian lira and the deutsche mark, f.: 7 per- cent; between the Danish krone, the Belgian franc, the Luxembourg franc, the Irish pound and the deutsche mark, f.: 4.25 percent	-	-	<ul style="list-style-type: none"> • Temporary freeze of wages, prices, rents and dividends (except minimum wage) to be followed up by agreements on price and dividend behavior and indexation practices for wages • Revision of 1983 budget to restrict deficit to FF 120 billion (3 percent of gross national product) 	<ul style="list-style-type: none"> • Announcement of budgetary austerity measures, June 23.
March 21, 1983	Change in central rates deutsche mark +5.5 Netherlands guilder +3.5 Danish krone +2.5 Belgian franc +1.5 Luxembourg franc +1.5 French franc -2.5 Italian lira -2.5 Irish pound -3.5	-	-	<ul style="list-style-type: none"> • Package of restrictive measures in budgetary, monetary, and foreign exchange fields. 	-
July 20, 1985	Change in central rates Irish pound +2 French franc +2 Danish krone +2 Netherlands guilder +2 deutsche mark +2 Belgian franc +2 Luxembourg franc +2 Italian lira -6	-	-	-	<ul style="list-style-type: none"> • Announcement of a package of revenue raising measures aiming at containing an increase in the fiscal deficit over the target for 1985 • Modification of the wage indexation mechanism (scala mobile).
April 6, 1986	Change in central rates deutsche mark +3 Netherlands guilder +3 Belgian franc +1 Luxembourg franc +1 Danish krone +1 Irish pound 0 Italian lira 0 French franc -3	-	-	<ul style="list-style-type: none"> • Steps to slow nominal wage growth and to reduce the government budget deficit. The non-interest component of the deficit is to be eliminated in the course of the next three years. • The target to contain the growth of M3 below 5 percent in 1986 was reasserted. • Relaxation of exchange controls. 	-
August 2, 1986	Devaluation of the Irish pound by 8 percent vis-à-vis all other participating currencies	-	-	-	-

Sources: Commission of the European Communities; and IMF staff.

Table 11. Currencies for which Measure of Variability ^{1/}
Rose from the 1974-78 Period to the 1979-85 Period,
by Table and Country Group

Table	ERM Countries	Non-ERM Countries
12a	None	Japan, Sweden, United Kingdom, United States
12b	None	Canada, Japan, Sweden, United Kingdom, United States
12c	None	Canada, Japan, Norway, Sweden, United Kingdom, United States
13a	None	Japan, Sweden, United Kingdom, United States
13b	None	Canada, Japan, Sweden, United Kingdom United States
13c	None	Canada, Japan, Norway, Sweden, United Kingdom, United States
14a	All seven	Austria, Japan, Norway, Sweden, United Kingdom, United States
14b	All seven	All eight
14c	All but Italy	Austria, Japan, Switzerland, United Kingdom, United States
15a	All seven	Austria, Japan, Norway, Sweden, United Kingdom, United States
15b	All seven	All eight
15c	All seven	Austria, Japan, United Kingdom, United States
16a	Denmark, France	Austria, Japan, United Kingdom, United States
16b	Denmark	Austria, Japan, United Kingdom, United States

Source: Fund staff calculations.

^{1/} Arithmetic average of variability in each of the years within the relevant period.

Table 12a. Variability of Bilateral Nominal Exchange Rates Against ERM Currencies, 1974-85 1/

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average
Belgium	21.2	17.8	34.5	12.2	15.8	8.2	6.3	17.1	36.0	12.3	6.5	9.2	20.3	13.6
Denmark	24.5	14.6	41.3	28.1	16.3	26.3	7.8	17.7	19.4	11.7	7.6	13.5	25.0	14.8
France	32.8	26.6	57.5	15.0	26.3	9.2	7.5	21.8	35.4	19.7	3.4	14.5	31.6	15.9
Germany, Fed. Rep. of	28.9	20.8	52.9	21.8	21.8	12.2	6.6	28.0	32.1	18.7	3.8	12.9	29.2	16.3
Ireland	26.5	33.4	73.2	16.6	30.1	12.1	6.9	15.5	20.8	14.0	5.9	10.0	36.0	12.2
Italy	42.0	18.7	70.0	20.4	28.7	14.1	11.6	27.9	24.2	14.4	5.7	36.9	36.0	19.3
Netherlands	21.7	15.0	39.4	13.2	16.0	9.3	7.5	22.8	26.4	11.9	3.4	11.1	21.1	13.2
Average ERM <u>2/</u>	28.2	21.0	52.7	18.2	22.1	13.0	7.7	21.5	27.7	14.7	5.2	15.4	28.4	15.1
Austria	26.5	12.4	34.8	13.6	14.0	16.9	6.1	21.0	18.9	11.2	3.3	8.7	20.3	12.3
Canada	30.4	42.5	45.3	42.1	60.3	28.1	29.9	66.5	48.6	56.0	45.9	89.3	44.1	52.0
Japan	41.9	31.7	39.3	40.3	69.4	78.9	88.2	32.8	26.9	56.3	27.5	26.3	44.5	48.1
Norway	20.2	16.1	34.0	28.1	28.1	12.4	24.3	26.7	41.0	34.3	10.3	20.0	25.3	24.2
Sweden	19.9	14.9	33.7	65.6	17.1	13.7	22.3	48.7	67.3	29.8	17.3	22.0	30.2	31.6
Switzerland	45.8	21.5	45.0	49.0	59.0	9.8	17.0	65.7	24.3	29.2	13.9	21.4	44.0	25.9
United Kingdom	24.0	30.0	67.2	14.6	27.4	35.3	52.3	44.6	29.5	44.2	19.6	38.8	32.7	37.8
United States	32.7	44.5	38.4	19.1	38.6	23.0	40.9	71.2	52.4	58.8	58.6	84.9	34.7	55.7
Average non-ERM <u>2/</u>	30.2	26.7	42.2	34.0	39.3	27.3	35.1	47.1	38.6	40.0	24.5	38.9	34.5	35.9
Average European non-ERM <u>2/</u>	27.3	19.0	42.9	34.2	29.1	17.6	24.4	41.3	36.2	29.7	12.9	22.2	30.5	26.3

Sources: IMF, International Financial Statistics; and Fund staff calculations.

1/ Weighted average (MERM weights) of variability of bilateral nominal exchange rates against EMS currencies, with variability measured by coefficient of variation (multiplied by 1,000) of average monthly bilateral exchange rates.

2/ Unweighted average.

Table 12b. Variability of Log Changes of Bilateral Nominal Exchange Rates Against ERM Currencies, 1974-85 ^{1/}

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average
Belgium	13.6	6.9	13.6	8.0	10.7	4.8	3.9	8.5	20.3	6.4	3.3	3.9	10.6	7.3
Denmark	14.1	7.3	19.2	11.5	11.8	13.6	4.1	8.3	9.0	8.3	4.5	4.8	12.8	7.5
France	19.9	11.0	23.5	8.6	21.1	5.1	5.2	11.1	14.0	9.5	3.1	5.3	16.8	7.6
Germany, Fed. Rep. of	18.9	8.8	20.8	10.4	14.6	5.4	4.1	11.9	10.0	8.7	3.8	5.0	14.7	7.0
Ireland	14.4	14.9	29.9	12.2	20.5	8.5	4.8	7.9	9.8	6.9	4.7	4.5	18.4	6.7
Italy	17.4	10.6	40.6	11.3	16.3	8.7	5.9	12.8	9.2	8.5	5.7	10.6	19.3	8.8
Netherlands	12.5	7.5	16.0	8.4	11.1	5.7	3.7	10.8	9.8	5.8	2.9	4.3	11.1	6.1
Average ERM ^{2/}	15.8	9.6	23.4	10.1	15.1	7.4	4.5	10.2	11.7	7.8	4.0	5.5	14.8	7.3
Austria	13.1	5.7	14.0	7.2	9.6	6.7	3.1	8.6	6.1	5.7	2.6	3.4	9.9	5.2
Canada	17.5	24.2	25.3	13.2	32.1	18.4	20.2	29.9	30.8	14.5	30.5	26.7	22.5	24.4
Japan	19.7	19.2	19.2	16.7	30.6	20.0	27.4	30.7	19.7	11.4	18.7	24.1	21.1	21.7
Norway	12.9	9.2	14.6	12.6	17.3	8.7	11.6	18.7	21.1	11.5	9.8	8.9	13.3	12.9
Sweden	13.1	7.8	14.2	24.5	13.5	8.2	8.6	31.4	41.6	9.2	10.6	10.9	14.6	17.2
Switzerland	18.8	11.6	20.0	16.4	35.8	9.3	11.1	20.2	16.5	12.3	10.7	11.3	20.5	13.1
United Kingdom	13.3	13.5	27.4	11.1	18.6	22.1	13.1	27.7	23.9	24.1	12.0	23.7	16.8	20.9
United States	19.9	22.5	17.2	10.8	23.7	14.5	27.7	36.9	31.5	16.0	30.2	35.2	18.8	27.4
Average non-ERM ^{2/}	16.0	14.2	19.0	14.1	22.6	13.5	15.4	25.5	23.9	13.1	15.6	18.0	17.2	17.9
Average European non-ERM ^{2/}	14.2	9.6	18.0	14.4	18.9	11.0	9.5	21.3	21.8	12.5	9.1	11.6	15.0	13.9

Sources: IMF, International Financial Statistics; and Fund staff calculations.

^{1/} Weighted average (MERM weights) of variability of bilateral nominal exchange rates against ERM currencies, with variability measured by the standard deviation (multiplied by 1,000) of changes in the natural logarithm of average monthly bilateral exchange rates.

^{2/} Unweighted average.

Table 12c. Variability of Log Changes of Nominal Effective Exchange Rates Against ERM Currencies, 1974-85 ^{1/}

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average	F probabil- ities ^{2/}
Belgium	9.4	4.4	8.9	5.8	9.0	3.4	2.9	4.3	19.4	4.3	2.4	2.6	7.5	5.6	0.832
Denmark	10.2	4.1	14.5	9.7	7.4	13.0	2.8	3.7	5.5	7.0	3.5	3.1	9.2	5.5	--
France	18.1	9.9	16.8	5.1	19.8	3.2	4.7	8.6	12.7	8.6	1.2	3.9	13.9	6.1	--
Germany, Fed. Rep. of	17.4	6.6	17.2	9.2	12.4	4.1	2.6	10.5	6.5	7.8	3.5	3.8	12.6	5.5	--
Ireland	9.3	14.1	25.5	10.7	17.8	7.2	4.0	3.6	7.3	5.5	4.0	3.6	15.5	5.0	--
Italy	13.3	9.2	39.9	10.7	12.0	8.3	5.6	11.6	6.6	6.7	5.6	10.5	17.0	7.8	--
Netherlands	6.9	5.3	9.1	6.0	9.0	4.3	2.3	9.3	7.1	2.1	2.0	3.4	7.3	4.4	0.001
Average ERM ^{3/}	12.1	7.7	18.9	8.2	12.5	6.2	3.5	7.4	9.3	6.0	3.2	4.4	11.8	5.7	n/a
Austria	9.5	3.3	8.6	5.4	5.6	5.7	1.9	7.4	3.7	4.7	2.0	2.4	6.5	3.9	--
Canada	13.5	23.7	20.6	11.8	30.5	17.9	20.0	29.2	30.0	13.5	30.4	26.4	20.0	23.9	0.096
Japan	16.2	18.6	14.0	15.6	29.0	19.5	27.2	30.0	18.2	10.1	18.6	23.8	18.7	21.1	0.095
Norway	7.4	7.3	9.1	11.1	13.8	7.1	11.2	17.3	20.1	10.3	9.4	7.8	9.7	11.9	0.075
Sweden	8.3	5.3	6.9	23.7	8.8	6.3	8.0	30.7	41.0	7.7	10.3	10.1	10.6	16.3	0.001
Switzerland	15.4	10.3	14.0	15.4	34.2	8.3	10.8	19.2	15.1	11.2	10.4	10.9	17.9	12.3	0.006
United Kingdom	8.5	12.8	23.2	9.8	16.1	21.8	12.8	26.8	22.9	23.6	11.7	23.4	14.1	20.4	0.003
United States	16.9	22.0	9.9	10.1	21.4	13.8	27.6	36.3	30.8	15.2	30.1	34.9	16.0	27.0	--
Average non-ERM ^{3/}	12.0	12.9	13.3	12.9	19.9	12.5	14.9	24.6	22.7	12.0	15.4	17.4	14.2	17.1	n/a
Average European non-ERM ^{3/}	9.8	7.8	12.3	13.1	15.7	9.8	8.9	20.3	20.6	11.5	8.8	10.9	11.7	13.0	n/a

Sources: IMF, International Financial Statistics; and Fund staff calculations.

^{1/} Variability of weighted average (MERM weights) of bilateral nominal exchange rates against ERM currencies, with variability measured by the standard deviation (multiplied by 1,000) of changes in the natural logarithm of the effective exchange rate index.^{2/} Probability that the variance of the change in the natural logarithm of the effective exchange rate index in period 1 (January 1974 to February 1979) is equal to corresponding variance in period 2 (March 1979 to December 1985), where the effective exchange rate index is a weighted average of the given country's exchange rate with respect to the ERM currencies; MERM weights were used.^{3/} Unweighted average.

Table 13a. Variability of Bilateral Real Exchange Rates Against ERM Currencies, 1974-85 ^{1/}

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average
Belgium	31.6	19.4	31.4	8.5	19.0	17.2	14.1	10.9	34.7	7.2	9.5	8.4	22.0	14.6
Denmark	28.9	24.3	43.7	14.6	18.5	22.1	15.0	12.6	18.4	9.3	10.3	10.1	26.0	14.0
France	29.3	30.9	48.1	10.2	32.9	15.7	19.5	11.9	38.1	11.9	10.0	17.5	30.3	17.8
Germany, Fed. Rep. of	36.8	32.2	37.2	11.7	22.4	16.6	25.6	13.2	23.3	9.4	14.7	11.9	28.0	16.4
Ireland	25.5	29.3	46.1	11.8	25.4	22.1	16.8	15.5	20.8	11.6	9.8	13.5	27.6	15.7
Italy	25.1	25.1	48.4	10.9	21.4	22.8	23.8	12.6	25.7	12.9	11.2	23.3	26.2	18.9
Netherlands	22.6	19.9	35.6	11.3	16.3	19.3	14.9	15.3	18.6	7.3	10.4	9.8	21.1	13.6
Average ERM ^{2/}	28.6	25.9	41.5	11.3	22.3	19.4	18.5	13.1	25.7	9.9	10.9	13.5	25.9	15.9
Austria	24.7	18.9	29.2	8.4	15.7	14.2	15.3	9.9	14.9	6.9	9.1	8.4	19.4	11.3
Canada	32.3	50.1	38.6	38.7	57.2	32.4	32.8	67.9	49.5	51.7	43.2	88.2	43.4	52.2
Japan	31.1	34.3	35.2	34.8	66.3	85.1	83.3	26.7	26.2	45.1	25.6	26.3	40.3	45.5
Norway	21.1	19.3	29.6	27.2	26.5	20.7	31.7	24.7	40.0	32.0	11.8	14.5	24.8	25.1
Sweden	21.7	18.9	28.5	52.8	18.9	14.4	29.5	53.6	67.0	32.1	22.9	16.6	28.2	33.7
Switzerland	38.3	23.5	32.7	36.2	47.8	19.3	18.2	52.3	24.5	17.0	19.5	16.2	35.7	23.9
United Kingdom	22.7	23.1	54.5	16.1	24.4	56.6	60.6	43.8	29.9	43.0	18.9	45.9	28.1	42.7
United States	34.6	45.4	30.8	21.6	32.9	21.2	43.8	69.2	46.7	52.6	57.4	83.5	33.1	53.5
Average non-ERM ^{2/}	28.3	29.2	34.9	29.5	36.2	33.0	39.4	43.5	37.3	35.1	26.0	37.5	31.6	36.0
Average European non-ERM ^{2/}	25.7	20.7	34.9	28.1	26.7	25.0	31.1	36.9	35.3	26.2	16.4	20.3	27.2	27.3

Sources: IMF, International Financial Statistics; and Fund staff calculations.

^{1/} Weighted average (MERM weights) of variability of bilateral real exchange rates (nominal exchange rates adjusted for relative consumer price movements - wholesale prices for Ireland) against ERM currencies, with variability measured by the coefficient of variation (multiplied by 1,000) of average monthly bilateral exchange rates.

^{2/} Unweighted average.

Table 13b. Variability of Log Changes of Bilateral Real Exchange Rates Against ERM Currencies, 1974-85 ^{1/}

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average
Belgium	14.8	8.5	14.0	9.5	12.3	6.2	5.1	8.4	22.9	6.6	4.5	5.3	11.8	8.4
Denmark	15.6	13.7	24.7	15.4	14.7	17.3	6.5	9.6	10.7	9.4	5.9	5.9	16.8	9.3
France	20.3	10.9	21.9	10.4	22.7	5.7	7.9	11.9	16.6	7.6	3.8	6.6	17.2	8.6
Germany, Fed. Rep. of	20.7	9.7	20.3	12.1	15.8	6.0	6.8	11.9	12.3	7.5	4.5	6.0	15.7	7.9
Ireland	14.8	23.2	28.4	12.2	21.2	13.3	12.3	11.6	12.1	9.0	7.9	14.5	20.0	11.5
Italy	20.2	10.9	36.2	13.4	17.4	8.2	7.9	13.2	11.8	7.7	5.3	11.9	19.6	9.4
Netherlands	13.5	10.3	18.0	10.9	12.1	7.0	6.1	11.4	11.6	5.4	4.2	5.5	12.9	7.3
Average ERM ^{2/}	17.1	12.5	23.4	12.0	16.6	9.1	7.5	11.1	14.0	7.6	5.2	8.0	16.3	8.9
Austria	14.5	8.0	15.1	9.5	11.0	7.3	6.2	10.2	8.8	6.6	5.7	5.1	11.6	7.2
Canada	18.7	26.4	24.6	12.6	34.5	19.5	20.3	30.9	31.3	15.4	30.0	26.6	23.3	24.9
Japan	23.1	20.4	20.9	16.6	32.0	20.9	30.0	29.0	18.7	13.4	22.9	25.3	22.6	22.9
Norway	13.5	11.8	15.2	14.2	17.3	9.3	12.4	18.1	24.0	9.7	10.1	10.8	14.4	13.5
Sweden	15.3	9.9	15.7	25.4	14.6	9.1	12.4	32.8	40.0	9.9	14.6	12.2	16.2	18.7
Switzerland	21.3	12.5	18.7	18.7	36.0	11.7	12.8	19.2	15.2	11.9	11.0	10.7	21.4	13.2
United Kingdom	15.9	12.7	27.0	12.8	19.1	29.6	14.9	29.8	24.2	25.9	13.7	27.1	17.5	23.6
United States	21.3	24.3	17.2	11.6	24.0	15.3	28.5	38.2	33.2	16.3	31.2	34.8	19.7	28.2
Average non-ERM ^{2/}	17.9	15.7	19.3	15.2	23.6	15.3	17.2	26.0	24.4	13.6	17.4	19.2	18.3	19.0
Average European non-ERM ^{2/}	16.1	11.0	18.3	16.1	19.6	13.4	11.7	22.0	22.4	12.8	11.0	13.2	16.2	15.2

Sources: IMF, International Financial Statistics; and Fund staff calculations.

^{1/} Weighted average (MERM weights) of variability of bilateral real exchange rates (nominal exchange rates adjusted for relative consumer price movements - wholesale prices for Ireland) against ERM currencies, with variability measured by the standard deviation (multiplied by 1,000) of changes in the natural logarithm of average monthly bilateral exchange rates.

^{2/} Unweighted average.

Table 13c. Variability of Log Changes of Real Effective Exchange Rates Against ERM Currencies, 1974-85 ^{1/}

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average	F probabi- lities ^{2/}
Belgium	9.6	5.8	7.2	6.7	9.9	5.0	2.8	3.6	21.7	5.1	3.8	4.3	7.9	6.6	0.540
Denmark	10.8	11.9	20.7	13.6	11.2	16.7	4.8	5.8	6.8	8.4	5.0	2.8	13.6	7.2	--
France	17.4	9.2	15.0	6.6	21.4	3.7	7.0	9.6	15.2	6.4	2.1	5.4	13.9	7.1	--
Germany, Fed. Rep. of	19.4	6.9	16.0	10.4	13.0	4.1	5.2	10.0	7.8	6.3	3.8	3.4	13.1	5.8	--
Ireland	9.4	22.4	24.4	9.7	18.1	12.3	11.6	9.1	9.3	8.1	7.4	13.8	16.8	10.2	--
Italy	17.1	9.3	35.3	12.4	12.9	7.5	7.1	11.6	8.5	6.4	4.9	11.7	17.4	8.2	--
Netherlands	6.7	8.1	13.2	8.1	9.0	5.4	4.2	9.9	8.5	2.6	3.2	4.2	9.0	5.4	--
Average ERM ^{3/}	12.9	10.5	18.8	9.6	13.6	7.8	6.1	8.5	11.1	-6.2	4.3	6.5	13.1	7.2	n/a
Austria	10.8	5.5	9.9	7.2	6.9	6.1	4.7	8.7	5.7	5.3	5.2	4.0	8.0	5.6	0.003
Canada	14.2	25.6	19.8	10.3	32.6	18.9	19.8	30.2	30.2	14.6	29.9	26.0	20.5	24.2	0.137
Japan	19.7	19.5	16.7	15.1	30.2	20.3	29.7	28.4	16.5	12.6	22.7	24.9	20.2	22.2	0.124
Norway	6.3	9.8	7.7	12.1	13.1	7.6	11.5	16.7	22.7	8.5	9.6	9.6	9.8	12.3	0.074
Sweden	10.2	7.2	7.2	24.2	9.6	6.7	11.6	32.1	39.1	8.5	14.3	11.1	11.7	17.7	--
Switzerland	17.4	10.9	12.2	17.5	34.2	10.8	12.0	17.8	13.1	11.0	10.7	10.1	18.4	12.2	0.001
United Kingdom	11.6	9.5	22.9	10.7	15.9	29.0	13.9	28.9	22.7	25.5	13.3	26.5	14.1	22.8	--
United States	18.2	23.5	9.6	10.1	21.3	14.5	28.1	37.6	32.3	15.6	31.2	34.4	16.5	27.7	--
Average non-ERM ^{3/}	13.6	13.9	13.2	13.4	20.5	14.2	16.4	25.1	22.8	12.7	17.1	18.3	14.9	18.1	n/a
Average European non-ERM ^{3/}	11.3	8.5	12.0	14.3	16.0	12.0	10.8	20.8	20.7	11.8	10.6	12.3	12.4	14.1	n/a

Sources: IMF, International Financial Statistics; and Fund staff calculations.

^{1/} Variability of weighted average (MERM weights) of bilateral real exchange rates (nominal exchange rates adjusted for relative consumer price movements - wholesale prices for Ireland) against ERM currencies, with variability measured by the standard deviation (multiplied by 1,000) of changes in the natural logarithm of the effective exchange rate index.

^{2/} Probability that the variance of the change in the natural logarithm of the effective exchange rate index in period 1 (January 1974 to February 1979) is equal to corresponding variance in period 2 (March 1979 to December 1985), where the effective exchange rate index is a weighted average of the given country's exchange rate with respect to the ERM currencies; MERM weights were used.

^{3/} Unweighted average.

Table 14a. Variability of Bilateral Nominal Exchange Rates Against Non-ERM Currencies, 1974-1985 1/

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average
Belgium	36.6	40.8	29.4	31.1	45.7	33.8	43.9	53.1	57.1	52.3	36.1	57.0	36.7	47.6
Denmark	32.6	33.6	25.5	30.6	39.0	30.3	38.8	53.7	45.9	47.3	34.0	55.9	32.3	43.7
France	34.1	34.5	47.8	27.0	45.9	35.6	44.4	60.7	57.6	65.1	39.7	61.8	37.8	52.1
Germany, Fed. Rep. of	34.3	35.1	30.0	32.6	46.4	39.3	45.9	48.1	33.1	38.6	36.3	53.5	35.7	42.1
Ireland	18.1	47.5	61.4	25.7	32.3	29.1	43.4	57.7	36.8	63.9	39.2	65.4	37.0	47.9
Italy	24.8	28.7	70.4	26.3	39.9	32.0	53.9	65.0	39.9	55.6	39.2	50.0	38.0	47.9
Netherlands	35.4	38.9	35.4	28.8	45.7	32.5	40.6	57.6	33.1	45.8	42.2	66.5	36.8	45.5
Average ERM <u>2/</u>	30.8	37.0	42.8	28.9	42.1	33.2	44.4	56.6	43.4	52.6	38.1	58.6	36.3	46.7
Austria	44.0	38.0	33.4	35.3	46.9	49.9	45.5	51.5	35.3	43.1	40.7	62.5	39.5	46.5
Canada	12.9	16.7	17.0	34.1	36.1	18.3	18.3	17.0	24.6	7.3	23.5	26.8	23.4	19.4
Japan	33.3	22.1	22.1	59.5	96.7	68.3	64.7	48.5	54.5	18.4	33.6	84.8	46.7	53.3
Norway	30.5	40.2	30.7	34.4	42.4	29.9	30.0	42.9	61.1	22.7	42.3	51.7	35.6	40.1
Sweden	33.4	37.3	25.8	64.2	38.7	30.6	28.2	65.5	79.7	24.4	30.3	48.8	39.9	43.9
Switzerland	63.1	28.1	18.7	57.4	72.8	38.1	43.0	62.1	46.4	29.1	44.2	72.4	48.0	47.9
United Kingdom	25.7	56.4	82.5	34.4	48.8	54.0	34.4	79.9	43.7	26.4	51.1	75.7	49.6	52.2
United States	24.3	24.7	22.2	41.3	58.2	37.2	38.2	40.5	43.5	14.8	35.2	59.5	34.2	38.4
Average non-ERM <u>2/</u>	33.4	32.9	31.5	45.1	55.1	40.8	37.8	51.0	48.6	23.3	37.6	60.3	39.6	42.8
Average European non-ERM <u>2/</u>	39.3	40.0	38.2	45.1	49.9	40.5	36.2	60.4	53.2	29.2	41.7	62.2	42.5	46.2

Sources: IMF, International Financial Statistics; and Fund staff calculations.

1/ Weighted average (MERM weights) of variability of bilateral nominal exchange rates against non-ERM currencies, with variability measured by coefficient of variation (multiplied by 1,000) of average monthly bilateral exchange rates.2/ Unweighted average.

Table 14b. Variability of Log Changes of Bilateral Nominal Exchange Rates Against Non-ERM Currencies, 1974-85 1/

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average
Belgium	17.2	17.5	13.2	15.0	26.6	15.7	23.0	30.8	32.4	14.2	21.9	26.2	17.9	23.4
Denmark	17.5	17.2	12.7	15.7	21.8	18.1	21.1	31.4	28.8	14.5	19.5	25.4	17.0	22.7
France	18.2	23.2	15.8	11.7	24.5	15.6	22.8	31.4	31.1	15.1	22.8	26.9	18.7	23.7
Germany, Fed. Rep. of	19.3	17.3	12.7	15.3	25.6	15.0	21.4	31.9	23.5	14.8	21.7	25.3	18.0	21.9
Ireland	10.9	12.1	21.2	9.4	18.3	16.2	23.2	31.3	23.7	17.4	21.8	28.4	14.4	23.1
Italy	16.8	14.0	39.1	10.0	20.8	14.4	22.2	27.1	24.5	11.6	20.0	25.5	20.1	20.8
Netherlands	16.8	19.2	14.9	14.5	26.7	16.2	22.8	35.2	24.1	14.7	23.7	28.1	18.4	23.6
Average ERM <u>2/</u>	16.7	17.2	18.5	13.1	23.5	15.9	22.4	31.3	26.9	14.6	21.6	26.5	17.8	22.7
Austria	19.0	18.5	13.1	15.8	26.5	18.1	24.1	35.0	25.5	16.0	24.5	27.9	18.6	24.4
Canada	8.6	9.7	14.4	12.9	16.4	14.1	13.2	10.8	17.8	5.4	11.5	14.6	12.4	12.5
Japan	20.0	12.8	11.3	18.5	37.7	23.3	36.9	21.6	40.1	16.9	19.4	31.7	20.1	27.1
Norway	15.8	21.9	13.5	17.8	24.8	13.3	18.1	20.7	26.6	13.1	18.4	22.9	18.7	19.0
Sweden	16.5	18.9	12.3	26.9	18.3	12.1	17.6	17.7	42.7	10.0	16.7	20.3	18.6	19.6
Switzerland	24.7	19.5	9.9	21.8	41.9	16.3	28.5	40.8	28.3	12.8	19.7	33.3	23.6	25.7
United Kingdom	14.3	14.8	26.6	13.6	25.1	25.2	21.3	24.6	25.7	19.6	19.7	34.7	18.9	24.4
United States	15.3	12.3	12.6	15.1	25.0	18.2	24.6	18.6	27.8	11.8	17.1	25.3	16.0	20.5
Average non-ERM <u>2/</u>	16.8	16.0	14.2	17.8	26.9	17.6	23.1	23.7	29.3	13.2	18.4	26.3	18.4	21.7
Average European non-ERM <u>2/</u>	18.1	18.7	15.1	19.2	27.3	17.0	21.9	27.8	29.7	14.3	19.8	27.8	19.7	22.6

Sources: IMF, International Financial Statistics; and Fund staff calculations.

1/ Weighted average (MERM weights) of variability of bilateral nominal exchange rates against non-ERM currencies, with variability measured by the standard deviation (multiplied by 1,000) of changes in the natural logarithm of average monthly bilateral exchange rates.

2/ Unweighted average.

Table 14c. Variability of Log Changes of Nominal Effective Exchange Rates Against Non-ERM Currencies, 1974-85 1/

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average	F probabi- lities 2/
Belgium	13.6	15.3	11.5	10.2	20.0	11.2	17.3	27.2	26.0	11.4	20.1	21.6	14.1	19.2	0.008
Denmark	15.0	14.7	9.7	10.0	15.7	14.4	16.5	28.7	21.3	11.9	17.3	21.0	13.0	18.7	0.003
France	14.7	21.7	13.1	5.4	15.9	10.4	16.4	27.8	25.1	12.4	21.2	21.8	14.1	19.3	0.007
Germany, Fed. Rep. of	16.4	15.3	10.0	10.5	18.5	9.8	15.1	28.9	13.9	12.4	20.2	20.2	14.2	17.2	0.029
Ireland	8.2	10.3	20.8	6.3	14.1	9.9	19.5	28.3	17.6	15.1	19.9	27.9	11.9	19.0	0.005
Italy	12.6	10.2	37.7	5.8	9.8	7.2	15.3	22.2	15.2	7.1	17.2	18.3	15.2	14.6	0.301
Netherlands	13.7	17.4	12.6	10.0	20.9	11.4	17.6	33.0	15.2	12.2	22.3	23.9	14.9	19.4	0.010
Average ERM 3/	13.5	15.0	16.5	8.3	16.4	10.6	16.8	28.0	19.2	11.8	19.7	21.4	13.9	18.2	n/a
Austria	16.1	16.4	10.5	10.6	19.3	13.9	18.2	32.4	15.5	13.7	23.1	23.1	14.6	20.0	0.006
Canada	5.1	8.3	13.9	11.8	14.8	12.4	8.1	6.4	14.2	3.5	9.2	9.2	10.8	9.0	0.116
Japan	18.7	10.2	9.2	17.0	36.4	22.0	36.0	18.7	38.7	15.8	17.1	29.0	18.3	25.3	0.017
Norway	12.4	20.9	10.8	13.4	18.3	6.4	11.0	15.8	16.5	9.2	15.8	15.3	15.2	12.8	0.244
Sweden	13.4	16.8	9.9	25.2	5.2	4.7	9.8	11.1	38.7	4.1	12.3	12.0	14.1	13.2	0.541
Switzerland	22.5	17.3	8.0	18.9	38.2	12.2	23.5	39.2	20.3	10.4	17.2	30.9	21.0	22.0	0.615
United Kingdom	8.3	11.0	25.9	8.2	17.1	22.7	13.4	20.2	17.7	17.7	16.8	30.7	14.1	19.9	0.031
United States	13.6	8.7	6.4	8.9	16.8	13.0	22.1	16.5	21.8	9.8	14.0	22.0	10.9	17.0	--
Average non-ERM 3/	13.8	13.7	11.8	14.3	20.8	13.4	17.7	20.0	22.9	10.5	15.7	21.5	14.9	17.4	n/a
Average European non-ERM 3/	14.6	16.5	13.0	15.3	19.6	12.0	15.2	23.7	21.7	11.0	17.0	22.4	15.8	17.6	n/a

Sources: IMF, International Financial Statistics; and Fund staff calculations.

1/ Variability of weighted average (MERM weights) of bilateral nominal exchange rates against non-ERM currencies, with variability measured by the standard deviation (multiplied by 1,000) of changes in the natural logarithm of the effective exchange rate index.

2/ Probability that the variance of the change in the natural logarithm of the effective exchange rate index in period 1 (January 1974 to February 1979) is equal to corresponding variance in period 2 (March 1979 to December 1985), where the effective exchange rate index is a weighted average of the given country's exchange rate with respect to the ERM currencies; MERM weights were used.

3/ Unweighted average.

Table 15a. Variability of Bilateral Real Exchange Rates Against Non-ERM Currencies, 1974-85 ^{1/}

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average
Belgium	42.8	35.7	31.0	27.9	40.8	36.6	50.6	56.4	50.5	44.6	36.0	55.9	35.6	47.2
Denmark	38.7	41.5	38.7	28.9	38.3	35.2	40.9	50.0	41.9	44.2	32.7	54.4	37.2	42.7
France	34.7	31.1	38.5	27.2	44.8	41.3	41.7	52.6	51.7	51.0	36.2	64.2	35.3	48.4
Germany, Fed. Rep. of	29.1	43.4	24.3	27.8	38.7	35.8	58.9	50.1	33.8	42.2	40.5	49.9	32.7	44.5
Ireland	25.3	49.3	36.7	25.6	29.6	29.6	44.5	52.4	37.1	52.6	38.7	65.8	33.3	45.8
Italy	26.4	23.9	49.2	26.4	36.0	48.6	38.1	51.1	34.6	36.5	34.1	50.4	32.4	41.9
Netherlands	30.6	36.6	38.4	25.4	39.8	35.1	48.9	61.4	34.6	48.3	44.9	63.1	34.2	48.0
Average ERM ^{2/}	32.5	37.3	36.7	27.0	38.3	37.5	46.2	53.4	40.6	45.6	37.6	57.7	34.4	45.5
Austria	34.9	42.5	30.4	29.6	39.2	43.3	56.4	55.2	36.9	46.0	42.8	59.3	35.3	48.6
Canada	14.0	14.8	17.2	26.5	36.4	22.8	18.3	22.1	25.3	8.4	25.1	26.4	21.8	21.2
Japan	30.6	21.4	28.1	52.6	84.9	84.6	57.0	59.7	59.6	21.9	37.6	82.0	43.5	57.5
Norway	23.2	36.5	28.5	30.3	39.3	35.9	29.8	43.2	53.1	20.4	40.7	54.2	31.6	39.6
Sweden	28.6	32.7	28.8	48.0	32.1	33.2	29.8	66.8	73.7	18.7	29.1	49.6	34.0	43.0
Switzerland	53.6	36.4	14.8	50.1	61.1	33.8	52.8	62.7	42.8	33.2	48.2	67.2	43.2	48.7
United Kingdom	30.0	30.4	62.6	33.3	43.0	77.2	36.8	69.8	42.6	25.5	47.6	81.9	39.9	54.5
United States	24.9	21.1	23.6	35.9	51.8	46.5	36.7	47.1	44.7	16.6	37.6	58.6	31.4	41.1
Average non-ERM ^{2/}	30.0	29.5	29.2	38.3	48.5	47.2	39.7	53.3	47.3	23.9	38.6	59.9	35.1	44.3
Average European non-ERM ^{2/}	34.1	35.7	33.0	38.3	42.9	44.7	41.1	59.5	49.8	28.8	41.7	62.5	36.8	46.9

Sources: IMF, International Financial Statistics; and Fund staff calculations.

^{1/} Weighted average (MERM weights) of variability of bilateral real exchange rates (nominal exchange rates adjusted for relative consumer price movements - wholesale prices for Ireland) against non-ERM currencies, with variability measured by the coefficient of variation (multiplied by 1,000) of average monthly bilateral exchange rates.

^{2/} Unweighted average.

Table 15b. Variability of Log Changes of Bilateral Real Exchange Rates Against Non-ERM Currencies, 1974-85 1/

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average
Belgium	18.4	18.3	14.2	15.6	27.4	17.5	24.5	31.9	33.4	14.7	23.7	26.3	18.8	24.6
Denmark	18.2	20.4	19.5	19.0	24.8	22.3	23.9	31.4	28.9	15.4	21.9	25.0	20.4	24.1
France	19.4	23.1	15.6	12.2	25.1	16.7	24.6	32.1	32.4	16.0	24.5	27.9	19.1	24.9
Germany, Fed. Rep. of	21.2	19.0	14.2	16.1	26.2	16.2	23.1	32.4	23.8	14.7	23.8	25.7	19.3	22.8
Ireland	20.1	25.0	21.0	10.4	18.5	18.8	20.1	29.3	22.9	17.0	22.3	31.9	19.0	23.2
Italy	20.5	15.6	35.1	10.4	21.3	16.4	23.7	26.7	25.0	14.6	22.1	26.2	20.6	22.1
Netherlands	18.1	20.3	18.7	14.9	27.7	17.7	24.6	37.3	24.6	15.7	25.8	28.4	20.0	24.8
Average ERM <u>2/</u>	19.4	20.3	19.7	14.1	24.4	18.0	23.5	31.6	27.3	15.4	23.4	27.3	19.6	23.8
Austria	21.4	19.4	15.0	17.0	27.3	20.1	26.6	35.9	25.9	17.3	28.1	28.7	20.0	26.1
Canada	10.2	10.2	14.9	12.4	20.0	15.4	14.5	11.8	18.6	8.9	11.7	15.3	13.5	13.7
Japan	25.3	14.9	16.3	17.4	39.1	24.3	39.1	24.3	41.5	21.8	20.1	34.9	22.6	29.4
Norway	17.8	22.2	12.2	18.8	24.9	15.1	20.4	21.9	27.8	14.4	20.6	23.6	19.2	20.5
Sweden	18.7	20.5	14.6	27.8	19.0	13.7	21.2	18.5	40.3	11.7	18.2	20.8	20.1	20.6
Switzerland	26.7	21.6	10.7	24.0	41.0	17.9	30.1	38.7	28.0	13.2	23.5	32.2	24.8	26.2
United Kingdom	20.2	18.8	27.1	14.3	24.8	32.9	24.2	28.2	25.2	21.6	22.2	38.4	21.1	27.5
United States	18.8	13.7	14.7	14.5	26.8	19.7	26.3	20.5	28.9	15.1	17.5	27.0	17.7	27.1
Average non-ERM <u>2/</u>	19.9	17.7	15.7	18.3	27.9	19.9	25.3	25.0	29.5	15.5	20.2	27.6	19.9	23.3
Average European non-ERM <u>2/</u>	21.0	20.5	15.9	20.4	27.4	19.9	24.5	28.7	29.4	15.6	22.5	28.7	21.0	24.2

Sources: IMF, International Financial Statistics; and Fund staff calculations.

1/ Weighted average (MERM weights) of variability of bilateral real exchange rates (nominal exchange rates adjusted for relative consumer price movements - wholesale price for Ireland) against non-ERM currencies, with variability measured by the standard deviation (multiplied by 1,000) of changes in the natural logarithm of average monthly bilateral exchange rates.

2/ Unweighted average.

Table 15c. Variability of Real Effective Exchange Rates Against Non-ERM Currencies, 1974-85 ^{1/}

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average	F probabi- lities ^{2/}
Belgium	13.0	15.5	11.1	10.9	20.8	12.6	18.0	28.2	26.9	10.7	21.1	20.4	14.2	19.7	0.008
Denmark	14.0	17.2	16.7	14.1	19.3	17.9	18.7	28.3	21.4	11.7	19.3	18.9	16.3	19.5	0.130
France	14.5	21.3	11.8	6.1	16.2	10.5	17.6	28.2	27.0	12.0	22.1	21.9	14.0	19.9	0.004
Germany, Fed. Rep. of	17.3	16.5	10.5	11.2	19.2	9.9	15.4	28.9	14.2	10.6	21.5	19.4	14.9	17.1	0.079
Ireland	16.6	22.8	18.5	6.3	13.0	10.9	13.8	25.1	16.3	13.8	19.6	25.2	15.5	17.8	0.836
Italy	15.6	11.4	33.4	6.0	10.4	9.3	15.9	21.4	15.7	9.7	18.8	17.8	15.3	15.5	0.854
Netherlands	13.4	17.9	16.1	10.6	21.7	12.2	18.7	35.0	15.8	12.3	23.8	23.1	15.9	20.1	0.015
Average ERM ^{3/}	14.9	17.5	16.9	9.3	17.2	11.9	16.9	27.9	19.6	11.5	20.9	21.0	15.2	18.5	n/a
Austria	17.3	16.7	11.6	12.2	19.8	15.4	20.1	33.1	16.3	13.8	26.3	22.9	15.5	21.1	0.009
Canada	6.1	8.9	14.1	11.0	18.4	13.4	9.1	6.9	14.5	7.3	9.3	9.7	11.7	10.0	0.136
Japan	23.9	12.2	14.9	15.8	37.9	22.3	38.0	21.3	40.2	21.0	17.5	32.4	20.9	27.5	0.019
Norway	12.3	20.1	7.4	14.8	18.0	7.3	12.1	16.0	18.5	9.2	17.3	14.0	14.5	13.5	0.208
Sweden	14.0	17.7	12.1	26.2	7.4	6.6	13.4	11.4	35.7	4.5	13.1	10.5	15.5	13.6	0.578
Switzerland	23.6	19.4	8.3	21.5	36.9	13.8	24.4	36.6	19.7	8.3	20.8	28.9	21.9	21.8	0.838
United Kingdom	15.2	15.5	26.0	9.5	16.7	30.9	16.3	24.2	16.2	19.1	19.0	34.4	16.6	22.8	0.006
United States	16.4	9.1	7.8	8.4	17.2	14.0	23.3	18.4	23.6	11.3	13.8	13.2	11.8	18.2	--
Average non-ERM ^{3/}	16.1	15.0	12.8	14.9	21.5	15.4	19.6	21.0	23.1	11.8	17.1	22.0	16.1	18.6	n/a
Average European non-ERM ^{3/}	16.5	17.9	13.1	16.8	19.8	14.8	17.2	24.3	21.3	11.0	19.3	22.1	16.8	18.6	n/a

Sources: IMF, International Financial Statistics; and Fund staff calculations.

^{1/} Variability of weighted average (MERM weights) of bilateral real exchange rates (nominal exchange rates adjusted for relative consumer price movements - wholesale price for Ireland) against non-ERM currencies, with variability measured by the standard deviation (multiplied by 1,000) of changes in the natural logarithm of the effective exchange rate index.

^{2/} Probability that the variance of the change in the natural logarithm of the effective exchange rate index in period 1 (January 1974 to February 1979) is equal to corresponding variance in period 2 (March 1979 to December 1985), where the effective exchange rate index is a weighted average of the given country's exchange rate with respect to the ERM currencies; MERM weights were used.

^{3/} Unweighted average.

Table 16a. Variability of Nominal Effective Exchange Rates, 1974-85 1/ 2/

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average
Belgium	18.6	23.2	27.6	9.4	15.4	9.3	14.5	14.5	35.9	20.2	8.3	18.6	18.8	17.3
Denmark	21.0	18.5	24.8	18.0	14.4	17.3	20.1	24.4	19.5	27.6	14.0	32.1	19.3	22.1
France	26.3	21.9	40.3	5.4	17.0	14.9	18.3	31.5	40.8	40.4	17.4	34.6	22.2	28.3
Germany, Fed. Rep. of	25.7	23.6	36.5	20.2	20.4	23.0	23.9	22.4	15.9	15.2	18.6	30.2	25.3	21.3
Ireland	10.8	39.6	63.1	16.3	19.9	12.4	22.9	23.3	10.7	39.4	17.0	33.4	29.9	22.7
Italy	31.6	5.4	63.4	14.7	20.2	8.6	28.9	39.5	15.7	28.9	17.7	15.7	27.1	22.1
Netherlands	15.9	19.5	33.5	8.1	16.8	11.0	13.1	26.0	14.7	14.6	16.9	33.2	18.8	18.5
Average ERM <u>3/</u>	21.4	21.7	41.3	13.1	17.7	13.8	20.2	25.9	21.9	26.6	15.7	28.3	23.1	21.8
Austria	31.4	21.4	31.8	17.2	14.2	32.9	22.4	23.9	10.0	20.5	20.6	35.6	23.2	23.7
Canada	6.8	15.1	16.2	33.2	39.5	14.3	7.2	17.3	19.8	11.1	14.6	33.3	22.2	16.8
Japan	31.5	10.0	21.7	53.6	85.5	71.0	70.3	21.4	35.1	24.2	11.4	56.4	40.4	41.4
Norway	15.3	25.6	26.6	21.5	23.1	8.8	7.4	10.3	44.1	8.6	25.8	17.6	22.4	17.5
Sweden	24.4	22.8	21.2	60.7	1.9	14.6	4.3	49.6	67.1	4.3	5.3	11.8	26.2	22.4
Switzerland	54.7	13.0	24.8	54.0	59.4	18.4	18.5	55.9	24.1	6.9	25.8	48.3	41.2	28.3
United Kingdom	12.2	41.8	71.6	12.7	26.2	40.2	30.1	58.3	20.0	23.5	33.2	51.0	32.9	36.6
United States	18.7	29.9	7.5	14.3	35.7	10.3	23.6	48.8	44.3	30.4	43.6	61.1	21.2	37.4
Average non-ERM <u>3/</u>	24.4	22.5	27.7	33.4	35.7	26.3	23.0	35.7	33.1	16.2	22.5	39.4	28.7	28.0
Average European non-ERM <u>3/</u>	27.6	24.9	35.2	33.2	25.0	23.0	16.5	39.6	33.1	12.7	22.1	32.9	29.2	25.7

Sources: IMF, International Financial Statistics; and Fund staff calculations.

1/ Based on the IMF's multilateral exchange rate model (MERM) and monthly data.2/ Variability is measured by the coefficient of variation (multiplied by 1,000) of average monthly effective exchange rates.3/ Unweighted average.

Table 16b. Variability of Log Changes of Nominal Effective Exchange Rates, 1974-85 1/ 2/

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1974-78 Average	1979-85 Average	F probabil- ties <u>3/</u>
Belgium	10.6	8.0	9.2	7.3	12.5	6.4	7.4	9.7	19.5	6.2	7.2	7.7	9.5	9.2	0.877
Denmark	11.6	10.2	10.2	9.4	11.9	14.1	10.3	18.0	14.1	9.5	9.6	12.7	10.7	12.6	0.229
France	18.6	14.8	12.8	4.9	15.2	6.8	8.6	15.0	17.3	9.6	10.7	11.4	13.3	11.4	0.538
Germany, Fed. Rep. of	18.6	11.3	11.4	9.8	14.8	6.8	8.9	18.9	7.6	9.4	12.0	12.0	13.2	10.8	0.306
Ireland	7.5	8.3	22.8	8.2	15.9	7.2	11.8	15.5	8.8	10.6	11.6	12.3	12.5	11.1	0.142
Italy	19.5	4.3	36.5	7.8	7.9	5.7	8.2	10.0	7.9	5.2	7.2	9.9	15.2	7.7	--
Netherlands	8.9	15.2	9.4	7.6	13.2	7.4	7.8	17.6	5.8	6.5	9.5	10.9	10.9	9.4	0.250
Average ERM <u>4/</u>	13.6	10.3	16.0	7.9	13.1	7.8	9.0	15.0	11.6	8.2	9.7	11.0	12.2	10.3	n/a
Austria	13.4	13.8	8.2	8.7	12.7	9.9	10.9	20.1	8.3	9.6	13.2	13.3	11.4	12.2	0.264
Canada	5.1	11.0	13.3	11.9	16.8	12.9	6.5	4.8	14.5	4.4	11.3	8.7	11.6	9.0	0.106
Japan	17.1	9.6	9.7	15.1	31.9	19.6	29.6	20.7	29.7	14.3	12.1	23.3	16.7	21.3	0.066
Norway	9.9	14.9	9.0	11.9	14.8	4.5	7.3	9.2	14.8	8.2	9.2	7.5	12.1	8.7	0.022
Sweden	12.3	14.9	7.4	23.3	2.7	2.9	4.1	15.9	35.0	3.3	5.7	4.9	12.1	10.3	0.763
Switzerland	20.6	12.8	9.3	18.5	35.0	9.7	16.5	28.3	16.0	12.7	9.1	22.0	19.3	16.3	0.185
United Kingdom	8.1	8.8	24.1	9.4	17.6	20.8	10.5	21.8	17.5	22.6	9.5	26.8	13.6	18.5	0.037
United States	13.3	16.4	5.2	8.3	15.9	11.2	21.8	21.9	23.2	12.9	19.4	27.0	11.8	19.6	--
Average non-ERM <u>4/</u>	12.5	12.8	10.8	13.4	18.4	11.4	13.4	17.8	19.9	11.0	11.2	16.7	13.6	14.5	n/a
Average European non-ERM <u>4/</u>	12.9	13.1	11.6	14.4	16.6	9.6	9.9	19.1	18.3	11.3	9.3	14.9	13.7	13.2	n/a

Sources: IMF, International Financial Statistics; and Fund staff calculations.

1/ Based on the IMF's multilateral exchange rate model (MERM) and monthly data.2/ Variability is measured by the standard deviation (multiplied by 1,000) of the change in the natural logarithm of the average monthly exchange rates.3/ Probability that the variance of the change in the natural logarithm of the effective exchange rate index in period 1 (January 1974 to February 1979) is equal to corresponding variance in period 2 (March 1979 to December 1985).4/ Unweighted average.

Table 17. Variability of Nominal Exchange Rates Against ERM Currencies, 1979-1985 1/

(Based on daily data)

	1979	1980	1981	1982	1983	1984	1985	1979-85 Average
Belgium	8.2	6.5	16.9	35.6	12.4	6.5	9.2	13.6
Denmark	25.0	8.2	17.5	19.4	12.1	7.5	13.2	14.7
France	9.3	7.6	21.6	35.1	19.9	3.8	14.1	15.9
Germany, Fed. Rep. of	12.2	6.9	27.2	31.2	18.3	4.1	12.6	16.1
Ireland	12.0	7.4	15.5	20.4	14.5	5.8	9.9	12.2
Italy	14.3	11.9	27.5	23.8	14.6	6.3	35.9	19.2
Netherlands	9.3	7.4	22.4	25.6	11.9	3.5	10.8	13.0
Average ERM <u>2/</u>	12.9	8.0	21.2	27.3	14.8	5.3	15.1	15.0
Austria	16.3	6.4	20.1	18.4	10.9	3.4	8.7	12.0
Canada	27.7	30.7	65.1	47.6	54.5	45.4	86.7	51.1
Japan	76.0	85.2	35.1	28.5	54.4	28.2	27.5	47.8
Norway	12.6	24.3	26.7	40.5	33.7	10.6	19.7	24.0
Sweden	13.9	22.1	49.8	66.8	29.2	16.9	21.5	31.5
Switzerland	11.8	17.6	63.5	24.8	29.0	14.5	21.4	26.1
United Kingdom	36.1	51.6	45.1	30.2	44.2	19.9	38.7	38.0
United States	23.4	41.3	69.7	51.6	57.3	57.4	83.5	54.9
Average non-ERM <u>2/</u>	27.2	34.9	46.9	38.6	39.1	24.5	38.4	35.7
Average European non-ERM <u>2/</u>	18.1	24.4	41.1	36.2	29.4	13.1	22.0	26.3

Sources: IMF, International Financial Statistics; and Fund staff calculations.

1/ Weighted average (MERM weights) of variability of bilateral nominal exchange rate against ERM currencies, with variability measured by coefficient of variation (multiplied by 1,000) of daily bilateral exchange rates.

2/ Unweighted average.

Table 18. Consumer Price Indices, 1974-85

(Annual change in percent)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	1985	Average 1979-85
Belgium	12.7	12.8	9.2	7.1	4.5	9.2	4.5	6.6	7.6	8.7	7.7	6.3	4.9	6.6
Denmark	15.2	9.6	9.0	11.1	10.1	11.0	9.6	12.3	11.7	10.1	6.9	6.3	4.7	8.8
France	13.7	11.8	9.6	9.4	9.1	10.7	10.7	13.8	13.4	11.8	9.6	7.4	5.8	10.3
Germany	7.0	5.9	4.3	3.7	2.7	4.7	4.1	5.4	6.3	5.3	3.3	2.4	2.2	4.1
Ireland	17.0	20.9	18.0	13.6	7.6	15.3	13.2	18.2	20.4	17.1	10.5	8.6	5.4	13.2
Italy	19.1	17.0	16.8	17.0	12.1	16.4	14.8	21.2	17.8	16.5	14.7	10.8	9.2	14.9
Netherlands	9.6	10.5	9.0	6.5	4.2	7.9	4.2	6.5	6.7	5.9	2.8	3.3	2.2	4.5
Arithmetic average														
ERM	13.5	12.6	10.8	9.8	7.2	10.7	8.7	12.0	12.0	10.8	7.9	6.4	4.9	8.9
Standard deviation	3.9	4.6	4.5	4.2	3.2	3.8	4.2	5.7	5.2	4.3	3.9	2.7	2.2	3.9
Difference between highest and lowest value	12.2	14.9	13.7	13.3	9.5	11.7	10.7	15.8	14.1	11.8	11.9	8.4	7.0	10.8
Coefficient of variation	0.29	0.36	0.41	0.43	0.45	0.35	0.48	0.48	0.43	0.40	0.49	0.42	0.45	0.43
Weighted average	11.7	10.4	8.7	8.1	6.5	...	8.0	11.1	10.9	9.7	7.6	5.9	4.9	...
Australia	15.1	15.1	13.5	12.3	7.9	12.8	9.1	10.1	9.7	11.1	10.1	4.0	6.7	8.7
Austria	9.5	8.4	7.3	5.5	3.6	6.9	3.7	6.4	6.8	5.4	3.3	5.7	3.2	4.9
Canada	10.9	10.8	7.5	8.0	9.0	9.2	9.1	10.2	12.4	10.8	5.8	4.3	4.0	8.1
Finland	16.7	17.8	14.4	12.7	7.8	13.8	7.5	11.6	12.0	9.3	8.4	7.1	5.9	8.8
Greece	26.9	13.4	13.3	12.1	12.6	15.5	19.0	24.9	24.5	21.0	20.2	18.4	19.3	21.0
Iceland	43.0	49.0	32.2	30.5	44.1	39.5	45.5	58.5	50.6	49.1	86.1	30.8	32.0	49.4
Japan	24.4	11.8	9.3	8.0	3.8	11.3	3.6	8.0	4.9	2.6	1.8	2.3	2.0	3.6
New Zealand	11.2	14.5	17.1	14.4	11.9	13.8	13.6	17.2	15.3	16.2	7.3	6.2	15.4	13.0
Norway	9.4	11.6	9.2	9.1	8.0	9.5	4.8	10.8	13.7	11.4	8.4	6.3	5.7	8.7
Portugal	28.0	20.4	18.2	27.1	22.7	23.2	23.6	16.6	20.0	22.7	25.1	28.9	19.6	22.3
Spain	15.7	17.0	15.0	24.5	19.8	18.3	15.7	15.6	14.6	14.4	12.2	11.3	8.8	13.2
Sweden	9.9	9.8	10.3	11.5	9.9	10.3	7.2	13.7	12.1	8.6	8.9	8.0	7.4	9.4
Switzerland	9.8	6.7	1.7	1.3	1.1	4.1	3.6	4.0	6.5	5.7	3.0	2.9	3.4	4.1
United Kingdom	15.9	24.3	16.6	15.8	8.3	16.1	13.4	18.0	11.9	8.6	4.6	5.0	6.1	9.6
United States	11.0	9.1	5.8	6.5	7.6	8.0	11.3	13.5	10.4	6.2	3.2	4.3	3.6	7.4
Arithmetic average non-ERM	17.2	16.0	12.8	13.3	11.9	14.1	12.7	15.9	15.0	13.5	13.9	9.7	7.9	12.8
Standard deviation	9.2	9.9	6.9	8.0	10.2	8.2	10.4	12.4	10.7	11.0	20.3	8.8	8.4	11.1
Coefficient of variation	0.54	0.62	0.54	0.60	0.86	0.58	0.82	0.78	0.71	0.81	1.46	0.91	1.06	0.87
Of which:														
Central European and Scandinavian Countries ^{1/}														
Average	11.0	10.9	8.6	8.0	6.1	8.9	5.4	9.3	10.2	8.1	6.4	6.0	5.1	7.2
Standard deviation	2.8	3.8	4.1	4.2	3.2	3.3	1.7	3.6	3.0	2.3	2.7	1.7	1.6	2.2
Coefficient of variation	0.25	0.35	0.48	0.52	0.53	0.37	0.32	0.39	0.29	0.28	0.42	0.29	0.31	0.31
Southern European Countries ^{2/}														
Average	23.5	16.9	15.5	21.3	18.3	19.0	19.4	19.0	19.7	19.4	19.2	19.5	5.9	18.8
Standard deviation	5.6	2.9	2.1	6.5	4.3	3.2	3.3	4.2	4.1	3.6	5.3	7.2	5.0	4.0
Coefficient of variation	0.24	0.17	0.13	0.31	0.23	0.17	0.17	0.22	0.21	0.18	0.28	0.37	0.32	0.21
Atlantic Countries ^{3/}														
Average	12.6	14.7	9.9	10.1	8.3	11.1	11.3	13.9	11.6	8.5	4.5	4.5	4.6	8.3
Standard deviation	2.4	6.8	4.7	4.1	0.6	3.6	1.8	3.2	0.9	1.9	1.1	0.3	1.1	0.9
Coefficient of variation	0.19	0.46	0.48	0.40	0.07	0.32	0.16	0.23	0.08	0.22	0.23	0.07	0.24	0.11
Pacific Countries ^{4/}														
Average	16.9	13.8	13.3	11.6	7.9	12.6	8.8	11.8	10.0	10.0	6.4	4.1	8.0	8.4
Standard deviation	5.6	1.4	3.2	2.6	3.3	1.0	4.1	3.9	4.3	5.6	3.4	1.6	5.6	3.8
Coefficient of variation	0.33	0.10	0.24	0.23	0.42	0.08	0.47	0.33	0.43	0.56	0.54	0.39	0.69	0.46

Source: IMF, International Financial Statistics.

^{1/} Austria, Finland, Norway, Sweden, Switzerland.^{2/} Greece, Portugal, Spain.^{3/} Canada, United Kingdom, United States.^{4/} Australia, Japan, New Zealand.

Table 19. GDP Deflators, 1974-85

(Annual change in percent)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	12.6	12.2	7.7	7.4	4.3	8.8	4.6	3.9	5.4	7.1	5.9	5.5	5.4	5.3
Denmark	13.1	12.4	9.1	9.4	9.9	10.8	7.6	8.2	10.1	10.6	8.2	5.6	8.4	5.1
France	11.1	13.4	9.9	9.0	9.5	10.6	10.4	12.2	11.8	12.6	9.5	7.1	10.6	5.9
Germany	7.1	6.0	3.6	3.7	4.3	4.9	4.0	4.8	4.0	4.4	3.3	1.9	3.7	2.2
Ireland	6.3	22.6	21.0	13.3	10.5	14.6	13.7	14.7	18.2	15.9	10.4	6.6	13.2	6.3
Italy	18.5	17.5	18.0	19.1	13.9	17.4	15.9	20.6	18.7	17.2	15.2	10.7	16.3	8.8
Netherlands	9.1	10.2	8.9	6.7	5.5	8.1	3.8	5.5	5.4	6.3	1.6	2.6	4.2	2.5
Arithmetic average														
ERM	11.1	13.5	11.2	9.8	8.3	10.7	8.6	10.0	10.5	10.6	7.7	5.7	8.8	5.2
Standard deviation	3.9	4.9	5.7	4.7	3.4	3.8	4.5	5.7	5.6	4.5	4.3	2.7	4.4	2.1
Difference between highest and lowest value	12.2	16.6	17.4	15.4	9.6	12.5	12.1	16.7	14.7	12.8	13.6	8.8	12.6	6.6
Coefficient of variation	0.35	0.36	0.51	0.48	0.41	0.36	0.53	0.57	0.54	0.43	0.55	0.48	0.50	0.41
Weighted average	10.8	11.0	8.6	8.3	7.6	...	7.9	9.4	9.4	9.9	7.6	5.6	...	4.9
Australia	16.7	15.9	14.0	9.0	8.0	12.7	8.2	11.8	9.6	11.7	8.4	6.8	9.4	6.4
Austria	9.5	6.5	5.6	5.3	5.3	6.4	4.1	5.1	6.3	6.4	4.0	4.8	5.1	3.3
Canada	15.3	10.8	9.6	7.4	6.7	9.9	10.3	11.4	10.6	10.3	5.5	3.0	8.5	...
Finland	22.5	14.5	12.6	10.2	7.7	13.4	8.2	9.2	11.4	9.1	9.0	7.6	9.1	...
Greece	20.9	12.3	15.4	12.9	13.0	14.9	18.6	17.7	20.0	24.9	19.1	20.1	20.0	17.2
Iceland	41.0	39.7	34.1	35.3	46.3	39.2	40.3	52.8	50.4	54.4	79.8	26.3	49.8	...
Japan	20.6	7.8	6.4	5.7	4.6	8.9	2.6	2.8	2.7	1.7	0.5	0.5	1.8	...
New Zealand	5.7	11.6	18.4	15.8	13.5	12.9	17.3	15.1	14.9	10.6	6.2	...	...	...
Norway	10.3	10.0	7.5	8.3	6.4	8.5	6.6	14.5	14.0	10.2	6.2	6.6	9.6	5.5
Portugal	18.9	16.2	16.3	26.4	22.3	20.0	20.7	17.9	13.4	21.5	...	...	...	...
Spain	16.6	16.7	16.7	22.8	20.2	18.6	16.7	13.9	13.7	13.5	11.9	11.3	13.5	...
Sweden	9.5	14.5	11.9	10.5	9.5	11.2	7.9	11.7	9.5	8.7	9.7	7.9	9.2	6.8
Switzerland	6.9	7.1	2.7	0.3	3.6	4.1	2.0	2.7	6.9	7.3	3.3	2.5	4.1	...
United Kingdom	14.9	27.3	14.9	13.9	10.9	16.2	14.5	19.9	11.6	7.6	4.9	3.9	10.3	6.5
United States	8.8	9.3	5.2	5.8	7.4	7.3	8.7	9.2	9.6	6.0	3.8	3.8	6.8	3.5
Arithmetic average														
non-ERM	15.9	14.7	12.8	12.6	12.4	13.7	12.4	14.4	13.6	13.6	12.4	8.1	12.1	...
Standard deviation	8.5	8.4	7.4	8.9	10.5	8.7	9.4	11.4	10.6	12.3	19.2	7.1	11.7	...
Coefficient of variation	0.53	0.57	0.58	0.70	0.85	0.65	0.75	0.80	0.78	0.90	1.56	0.87	0.97	...
Of which:														
Central European and Scandinavian Countries ^{1/}														
Average	11.7	10.5	8.1	6.9	6.5	8.7	5.8	8.6	9.6	8.3	6.4	5.9	7.4	...
Standard deviation	5.5	3.5	3.8	3.8	2.0	3.3	2.4	4.3	2.9	1.3	2.6	2.0	2.3	...
Coefficient of variation	0.47	0.33	0.47	0.55	0.31	0.38	0.41	0.50	0.30	0.16	0.40	0.34	0.31	...
Southern European Countries ^{2/}														
Average	18.8	15.1	16.1	20.7	18.5	17.8	18.7	16.5	15.7	20.0	15.5	15.7	16.8	...
Standard deviation	1.8	2.0	0.5	5.7	4.0	2.2	1.6	1.8	3.0	4.8	3.6	4.4	3.3	...
Coefficient of variation	0.09	0.13	0.03	0.28	0.22	0.12	0.09	0.11	0.19	0.24	0.23	0.28	0.20	...
Atlantic Countries ^{3/}														
Average	13.0	15.8	9.9	9.0	8.3	11.2	11.2	13.5	10.6	8.0	4.7	3.6	8.5	...
Standard deviation	3.0	8.2	4.0	3.5	1.8	3.8	2.4	4.6	0.8	1.8	0.7	0.4	1.4	...
Coefficient of variation	0.23	0.52	0.40	0.39	0.22	0.34	0.22	0.34	0.08	0.22	0.15	0.11	0.16	...
Pacific Countries ^{4/}														
Average	14.3	11.8	12.9	10.2	8.7	11.5	9.4	9.9	9.1	8.0	5.0	3.7	5.6	...
Standard deviation	6.3	3.3	5.0	4.2	3.7	1.9	6.1	5.2	5.0	4.5	3.3	3.2	3.8	...
Coefficient of variation	0.44	0.28	0.38	0.41	0.42	0.16	0.65	0.53	0.55	0.56	0.66	0.86	0.68	...

Source: IMF, International Financial Statistics.

^{1/} Austria, Finland, Norway, Sweden, Switzerland.^{2/} Greece, Portugal, Spain.^{3/} Canada, United Kingdom, United States.^{4/} Australia, Japan, New Zealand.

Table 20. Generalized Least Squares Estimates of Inflation Equation for 22 Countries in 1974-84 1/

Endogenous Variable <u>2/</u>	Exogenous Variables <u>3/</u>								adj. R ²	F(4,236)	DW
	Constant	gdp _t	m1 ₁	m1 _{t-1}	m2 _t	m2 _{t-1}	delta p _t	dummy			
cp _t	12.4** (6.0)	-0.4** (-5.5)	0.1** (6.4)				0.5** 17.9	-2.1 (-1.9)	0.63	102.2	1.8
cp _t	13.7** (6.0)	-0.6** (-6.4)		0.7* (2.6)			0.5** (15.9)	2.6* (-2.2)	0.58	82.9	1.8
cp _t	11.1** (6.0)	-0.5** (-6.2)			0.2** (6.0)		0.4** (15.3)	-1.9 (-1.7)	0.62	97.5	1.8
cp _t	12.0** (5.9)	-0.5** (-6.3)				0.2** (4.6)	0.5** (16.6)	-2.1 (-1.8)	0.60	89.7	1.8
wp _t <u>4/</u>	12.1** (7.6)	-0.6** (-4.9)	0.2** (6.0)				0.6** (20.9)	-4.2** (-2.8)	0.65	111.8	1.9
wp _t <u>4/</u>	13.4** (7.6)	-0.7** (-5.6)		0.1** (3.3)			0.5** (19.6)	-4.8** (-3.0)	0.62	98.5	1.8
wp _t <u>4/</u>	10.6** (6.8)	-0.6** (-4.7)			0.3** (5.2)		0.5** (19.1)	-3.8* (-2.5)	0.63	101.8	1.9
wp _t <u>4/</u>	11.0** (6.9)	-0.6** (-5.4)				0.2** (5.2)	0.5** (19.7)	-4.0* (-2.6)	0.63	103.1	1.8

Source: Fund staff estimates on the basis of IFS data.

1/ Pooled cross-section and time series analysis. All variables (except dummy) in percentage changes (for the list of sample countries see text).

2/ cp = percentage change of consumer prices, wp = percentage change of wholesale prices.

3/ gdp = percentage change of GDP (or GNP), m1 = percentage change of m1, m2 = percentage change of M2, delta p = change in the rate of inflation (proxy for expected inflation), dummy = dummy variable which takes the value of 1 in 1979-84 for all countries participating in the EMS exchange rate mechanism and 0 otherwise. * and ** indicate statistical significance on the 5 percent and 1 percent level, respectively.

4/ Consumer prices were used in the case of Iceland.

Table 21. Generalized Least Squares Estimates of Inflation Equation for 22 Countries in 1979-84 1/

Endogenous Variable <u>2/</u>	Exogenous Variables <u>3/</u>									F(4,126)	DW
	Constant	gdp _t	m1 _t	m1 _{t-1}	m2 _t	m2 _{t-1}	delta p _t	dummy	adj.R ²		
cp _t	11.5** (4.1)	-0.6** (-4.0)	0.3** (4.0)				0.5** (14.5)	-2.3 (-0.7)	0.68	69.6	1.8
cp _t	13.2** (4.0)	-0.7** (-4.0)		0.2** (3.5)			0.5** (11.2)	-3.3 (-0.8)	0.56	42.4	1.8
cp _t	9.0** (3.8)	-0.7** (-4.5)			0.3** (6.8)		0.3** (7.6)	-0.6 (-0.2)	0.63	56.5	1.8
cp _t	10.0** (3.8)	-0.5** (-2.7)				0.3** (5.8)	0.6** (12.8)	-3.1 (-0.9)	0.61	51.8	1.8
wp _t <u>4/</u>	11.6** (4.2)	-0.5** (-3.1)	0.2** (6.9)				0.5** (15.1)	-3.9 (-1.1)	0.67	66.2	1.6
wp _t <u>4/</u>	13.9** (3.9)	-0.6** (-3.0)		0.1 (2.0)			0.5** (11.8)	-4.9 (-1.1)	0.56	42.7	1.6
wp _t <u>4/</u>	8.9** (3.7)	-0.6** (-3.1)			0.3** (6.0)		0.4** (9.9)	-1.7 (-0.5)	0.63	56.1	1.6
wp _t <u>4/</u>	11.1** (3.8)	-0.4* (-2.2)				0.2** (4.0)	0.6** (13.1)	-4.6 (-1.2)	0.59	47.9	1.6

Source: Fund staff estimates on the basis of IFS data.

1/ Pooled cross-section and time series analysis. All variable (except dummy) in percentage changes (for the list of sample countries see text).

2/ cp = percentage change of consumer prices, wp = percentage change of wholesale prices.

3/ gdp = percentage change of GDP (or GNP), m1 = percentage change of m1, m2 = percentage change of M2, delta p = change in the rate of inflation (proxy for expected inflation), dummy = dummy variable which takes the value of 1 in 1979-84 for all countries participating in the EMS exchange rate mechanism and 0 otherwise. * and ** indicate statistical significance on the 5 percent and 1 percent level, respectively.

4/ Consumer prices were used in the case of Iceland.

Table 22. Generalized Least Squares Estimates of Inflation Equation for 7 ERM Countries in 1974-84 ^{1/}

Endogenous Variable ^{2/}	Exogenous Variables ^{3/}								adj.R ²	F(471)	DW
	Constant	gdp _t	ml ₁	ml _{t-1}	m ₂ _t	m ₂ _{t-1}	delta p _t	dummy			
cp _t	12.1** (6.4)	-0.2* (-2.2)	0.1 (0.2)				0.6** (7.1)	-2.3** (-2.9)	0.46	16.9	1.3
cp _t	12.0** (6.6)	-0.3* (-2.4)		0.0 (0.7)			0.6** (7.4)	-2.3* (-3.0)	0.47	17.1	1.3
cp _t	10.4** (5.8)	-0.2* (-2.3)			0.1* (2.1)		0.6** (7.9)	-1.9* (-2.4)	0.48	18.6	1.3
cp _t	11.2** (5.9)	-0.3* (-2.6)				0.1 (1.3)	0.6** (6.7)	-2.1* (-2.6)	0.47	17.4	1.3
wp _t ^{4/}	13.2** (6.8)	-0.6** (-2.8)	0.0 (-0.3)				0.6** (11.5)	-4.5** (-3.2)	0.68	40.8	1.8
wp _t ^{4/}	12.5** (6.9)	-0.7** (-3.0)		0.1 (1.4)			0.6** (11.6)	-4.3** (-3.2)	0.68	40.1	1.8
wp _t ^{4/}	9.3** (4.5)	-0.7** (-3.1)			0.3** (2.7)		0.6** (11.6)	-3.1* (-2.2)	0.67	38.3	1.8
wp _t ^{4/}	9.9** (4.6)	-0.7** (-3.1)				0.3* (2.2)	0.6** (11.0)	-3.4* (-2.4)	0.67	39.2	1.8

Source: Fund staff estimates on the basis of IFS data.

^{1/} Pooled cross-section and time series analysis. All variables (except dummy) in percentage changes (for the list of sample countries see text).

^{2/} cp = percentage change of consumer prices, wp = percentage change of wholesale prices.

^{3/} gdp = percentage change of GDP (GNP), ml = percentage change of ml, m₂ = percentage change of M₂, delta p = change in the rate inflation (proxy for expected inflation), dummy = dummy variable which takes the value of 1 in 1979-84 for all countries participating in the EMS exchange rate mechanism and 0 otherwise. * and ** indicate statistical significance on the 5 percent and 1 percent level, respectively.

^{4/} Consumer price were used in the case of Iceland.

Table 23. Unit Labor Costs, 1974-1985

(Annual change in percent)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	1985	Average 1979-85
Belgium	15.7	15.2	2.6	5.9	1.3	8.0	3.4	4.0	5.0	3.3	1.8	2.0	2.6	3.1
Denmark	17.2	7.1	7.6	8.4	7.6	9.5	5.7	4.5	8.4	11.3	1.3	-3.2	4.4	4.5
France	14.6	18.8	7.9	6.7	7.2	10.9	9.3	12.4	11.9	11.1	7.6	1.9	1.4	7.9
Germany	9.0	10.3	0.6	5.3	5.1	6.0	2.3	7.3	5.1	4.1	-0.5	-0.3	-0.1	2.5
Italy	18.8	32.8	10.4	17.5	11.1	17.9	9.6	12.3	19.0	18.2	14.0	3.9	4.5	11.5
Netherlands	10.1	15.6	0.1	4.7	1.7	6.3	2.5	4.0	0.8	4.3	-1.5	-6.7	-1.0	0.3
Arithmetic average ERM	14.2	16.6	4.9	8.1	5.6	9.8	5.5	7.4	8.4	8.7	3.8	-0.4	2.0	5.0
Standard deviation	3.6	8.2	4.0	4.4	3.4	4.0	3.0	3.6	5.8	5.3	5.4	3.6	2.1	3.7
Coefficient of variation	0.25	0.49	0.81	0.54	0.61	0.41	0.56	0.49	0.70	0.61	1.43	-8.88	1.06	0.74
Austria	10.6	16.6	0.1	5.4	2.7	6.9	-1.2	4.9	5.7	2.5	-0.2	-1.7	2.0	1.7
Canada	13.4	16.1	8.7	7.0	5.3	10.0	7.8	12.9	13.8	13.4	0.4	-4.6	2.3	6.4
Japan	28.5	14.7	-2.4	2.3	-1.8	7.7	-2.1	-2.0	1.8	-1.8	-1.6	-3.7	0.2	-1.3
Norway	13.1	22.4	11.6	12.4	8.0	13.4	0.2	10.8	11.1	6.5	5.1	7.3	5.5	6.6
Sweden	12.9	19.9	16.6	11.2	8.4	13.7	-0.1	9.6	10.2	4.2	0.6	4.0	4.6	4.7
Switzerland	9.6	12.9	-3.9	-2.5	1.6	3.3	-0.8	1.2	7.1	5.3	-1.6	-5.9	1.8	0.9
United Kingdom	18.2	34.4	11.0	14.9	14.8	18.4	17.3	21.6	6.8	4.5	0.2	3.0	5.4	8.2
United States	13.5	8.7	3.3	5.8	7.4	7.7	9.7	11.7	7.3	6.1	-2.8	-1.2	1.7	4.5
Arithmetic average non-ERM	15.0	18.2	5.6	7.1	5.8	10.1	3.9	8.8	8.0	5.1	-0.0	-0.3	2.9	3.9
Standard deviation	5.6	7.3	6.9	5.3	4.7	4.5	6.5	6.9	3.4	4.0	2.2	4.3	1.8	3.0
Coefficient of variation	0.38	0.40	1.23	0.75	0.82	0.44	1.70	0.78	0.43	0.79	-1,381.19	-12.47	0.63	0.77

Source: IMF, International Financial Statistics.

Table 24. Rate of Growth of Narrow Money, 1974-85

(Annual change in percent)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	6.2	15.7	7.0	8.3	5.9	8.6	2.5	0.2	2.2	3.9	8.6	0.3	2.9	3.2
Denmark	4.7	30.2	6.3	8.0	16.1	12.7	9.9	10.9	11.8	13.1	8.5	34.7	14.5	27.3
France	15.2	12.6	7.5	11.1	11.1	11.5	11.8	6.4	15.9	10.9	12.5	8.9	11.0	...
Germany	10.7	14.3	3.3	12.0	14.5	10.9	2.9	3.9	-1.5	7.2	8.4	5.9	4.4	6.7
Ireland	9.0	19.9	16.9	22.5	27.6	19.0	8.1	14.0	3.4	5.4	11.4	9.6	8.6	1.9
Italy	9.4	13.5	18.9	21.4	26.6	17.8	23.7	12.9	9.8	16.8	13.2	12.4	14.7	...
Netherlands	12.2	19.7	8.2	13.2	4.2	11.4	2.8	6.0	-2.4	9.8	10.1	7.5	5.5	6.7
Arithmetic average ERM	9.6	18.0	9.7	13.8	15.1	13.1	8.8	7.8	5.6	9.6	10.4	11.3	8.8	...
Standard deviation	3.3	5.7	5.4	5.5	8.5	3.6	7.0	4.7	6.5	4.2	1.9	10.2	4.4	...
Difference between highest and lowest value	10.5	17.6	15.6	14.5	23.4	10.5	21.2	13.8	18.3	12.9	4.8	34.4	11.8	...
Coefficient of variation	0.34	0.31	0.55	0.40	0.56	0.27	0.79	0.60	1.16	0.43	0.18	0.90	0.50	...
Weighted average	11.4	14.6	7.7	13.0	14.2	...	9.1	6.4	6.3	10.3	10.7	8.9	...	...
Australia	-0.7	22.7	8.9	6.6	11.6	9.6	15.4	17.5	4.9	-0.2	15.3	8.2	10.0	3.6
Austria	5.7	14.3	8.3	1.4	8.3	7.5	-9.0	15.6	-2.4	8.2	11.2	3.5	4.2	3.1
Canada	1.5	19.0	1.5	10.4	7.0	7.7	1.4	10.1	6.2	5.3	10.4	19.7	8.7	32.3
Finland	18.9	34.5	-1.7	2.8	16.5	13.5	22.5	6.3	14.7	15.9	7.6	16.4	13.8	11.0
Greece	19.8	16.4	22.2	16.9	22.3	19.5	16.3	16.3	22.2	21.7	14.5	20.2	18.5	...
Iceland	30.1	33.6	24.7	46.9	40.8	35.0	46.5	60.4	61.2	27.5	78.2	107.5	61.7	100.6
Japan	11.5	11.1	12.5	8.2	13.4	11.3	3.0	-2.0	10.0	5.7	-0.1	6.9	3.8	3.0
New Zealand	3.6	9.3	9.2	1.9	22.3	9.0	3.4	3.1	15.4	3.5	13.1	9.8	7.9	9.1
Norway	11.9	14.6	-3.7	14.1	8.6	9.3	7.6	5.3	15.0	12.3	12.1	24.4	12.6	20.3
Portugal	10.2	24.5	12.7	11.6	14.2	14.5	36.2	13.5	8.9	15.9	7.8	16.6	16.1	...
Spain	17.3	18.7	21.9	18.5	17.3	18.7	8.5	13.5	13.0	11.4	2.3	8.6	9.5	...
Sweden	13.8	14.1	3.6	10.1	17.1	11.6	15.6	18.2	8.0	9.8	...	...	...	...
Switzerland	-3.3	4.3	11.7	0.8	23.5	7.0	-1.9	-0.1	-5.2	7.0	9.3	0.2	1.4	...
United Kingdom	10.8	18.6	11.3	20.8	16.3	15.5	9.1	4.0	17.7	11.3	11.2	15.5	11.4	18.1
United States	4.3	4.9	6.7	8.1	8.3	6.4	6.7	6.9	6.4	8.8	9.7	5.7	7.4	12.2
Arithmetic average non-ERM	10.4	17.5	10.0	11.9	16.5	13.1	12.1	12.6	13.1	10.9	13.5	17.5	12.5	...
Standard deviation	8.6	8.1	8.0	11.1	8.3	7.1	13.9	14.2	14.6	6.9	18.1	25.5	14.2	...
Coefficient of variation	0.83	0.49	0.81	0.93	0.50	0.54	1.15	1.13	1.12	0.63	1.34	1.45	1.14	...
Of which:														
Central European and Scandinavian Countries ^{1/}														
Average	7.0	12.3	5.0	6.6	14.4	8.9	3.1	9.8	3.9	9.3	10.9	9.4	6.1	...
Standard deviation	6.7	4.7	5.8	5.7	6.3	1.8	9.3	7.5	8.1	2.0	1.2	10.7	4.8	...
Coefficient of variation	0.95	0.38	1.16	0.86	0.44	0.20	3.03	0.76	2.10	0.21	0.11	1.14	0.78	...
Southern European Countries ^{2/}														
Average	15.8	19.9	18.9	15.7	17.9	17.6	20.3	14.4	14.7	16.3	8.2	15.1	14.7	...
Standard deviation	4.1	3.4	4.4	2.9	3.3	2.2	11.7	1.3	5.6	4.2	5.0	4.8	3.8	...
Coefficient of variation	0.3	0.2	0.2	0.2	0.2	0.1	0.6	0.1	0.4	0.3	0.6	0.3	0.3	...
Atlantic Countries ^{3/}														
Average	5.5	14.2	6.5	13.1	10.5	9.9	5.7	7.0	10.1	8.5	10.4	13.6	9.1	...
Standard deviation	3.9	6.6	4.0	5.5	4.1	4.0	3.2	2.5	5.4	2.5	0.6	5.9	1.7	...
Coefficient of variation	0.70	0.46	0.62	0.42	0.39	0.41	0.56	0.36	0.53	0.29	0.06	0.43	0.18	...
Pacific Countries ^{4/}														
Average	4.8	14.4	10.2	5.6	15.8	10.0	7.3	6.2	10.1	3.0	9.4	8.3	7.3	...
Standard deviation	5.1	5.9	1.6	2.7	4.7	1.0	5.8	8.3	4.3	2.4	6.8	1.2	2.6	...
Coefficient of variation	1.05	0.41	0.16	0.48	0.30	0.10	0.79	1.33	0.42	0.81	0.72	0.14	0.35	...

Source: IMF, International Financial Statistics.

^{1/} Austria, Finland, Norway, Sweden, Switzerland.^{2/} Greece, Portugal, Spain.^{3/} Canada, United Kingdom, United States.^{4/} Australia, Japan, New Zealand.

Table 25. Rate of Growth of Broad Money, 1974-85

(Annual changes in percent)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	8.7	15.3	12.6	8.4	7.5	10.5	6.2	3.3	6.3	7.2	8.3	4.5	6.0	5.3
Denmark	8.4	26.9	11.7	9.3	6.4	12.3	10.2	11.7	10.8	11.1	19.7	25.1	14.6	18.4
France	17.8	15.7	12.3	14.6	12.2	14.5	13.9	8.3	11.1	11.3	11.4	7.9	10.6	...
Germany	7.2	11.5	7.6	10.3	10.3	9.4	5.2	4.6	3.7	6.9	5.7	5.6	5.3	5.1
Ireland	19.3	21.7	13.0	20.6	23.5	19.6	13.6	20.6	10.8	6.8	6.7	9.0	11.1	5.0
Italy	15.7	24.5	21.0	22.2	23.0	21.2	19.4	12.2	10.2	17.6	13.7	10.8	13.9	...
Netherlands	16.1	12.9	17.1	12.9	11.4	14.1	11.6	5.6	7.8	5.3	5.0	7.6	7.1	7.3
Arithmetic average														
ERM	13.3	18.4	13.6	14.0	13.5	14.5	11.4	9.5	8.7	9.5	10.1	10.1	9.8	...
Standard deviation	4.7	5.5	4.0	5.1	6.5	4.1	4.5	5.5	2.6	3.9	4.9	6.4	3.5	...
Difference between highest and lowest value	12.1	15.4	13.4	13.8	17.1	11.9	14.2	17.3	7.4	12.3	14.7	20.6	9.4	...
Coefficient of variation	0.35	0.30	0.29	0.36	0.48	0.28	0.39	0.58	0.30	0.42	0.48	0.64	0.36	...
Weighted average	12.4	15.8	12.3	13.5	12.6	...	10.7	7.3	7.8	10.3	9.4	8.0	...	...
Australia	9.2	20.6	12.3	5.9	10.5	11.6	11.6	14.0	9.9	10.6	13.2	11.7	11.8	17.9
Austria	12.5	18.4	16.9	9.1	14.3	14.2	8.1	12.8	10.3	11.0	5.2	6.4	8.9	6.0
Canada	14.9	12.8	14.8	11.7	15.1	13.9	12.6	14.1	47.3	5.0	-0.9	5.9	13.0	5.9
Finland	17.6	22.3	9.3	11.4	15.2	15.1	18.1	15.1	15.9	13.4	13.3	15.6	15.2	18.1
Greece	20.4	24.1	24.1	22.6	23.8	23.0	17.3	21.0	31.3	27.0	21.1	25.2	23.7	...
Iceland	28.6	29.0	32.9	44.1	48.4	36.4	57.2	65.3	71.6	58.1	79.2	33.9	60.2	48.4
Japan	11.5	14.5	13.5	11.1	13.1	12.7	8.4	6.8	10.7	7.6	6.9	6.9	7.9	8.9
New Zealand	6.0	10.7	18.3	14.7	24.7	14.7	18.6	9.2	16.4	14.1	6.6	20.4	14.1	32.6
Norway	11.1	15.3	10.5	17.3	12.3	13.3	13.3	11.0	13.5	11.3	11.1	20.4	13.4	14.0
Portugal	13.6	12.6	20.9	16.9	20.8	16.9	37.8	24.6	23.5	23.1	15.5	24.7	24.7	...
Spain	19.1	19.0	19.3	18.7	20.3	19.3	17.9	16.7	15.8	16.1	10.0	10.8	14.5	...
Sweden	9.7	11.7	5.0	9.1	17.4	10.5	17.1	12.2	13.3	8.0	8.4	7.3	11.0	...
Switzerland	-11.9	7.5	9.0	6.8	11.3	4.2	9.5	0.5	8.4	17.7	10.2	8.2	9.0	...
United Kingdom	12.9	7.1	11.6	9.5	14.6	11.1	12.5	18.5	27.8	11.4	13.0	12.3	15.8	11.4
United States	5.4	12.7	13.7	10.6	7.7	10.0	6.2	7.1	4.7	8.7	16.3	9.0	8.6	9.2
Arithmetic average non-ERM	12.0	15.9	15.5	14.6	18.0	15.1	17.7	16.6	21.4	16.2	15.3	14.6	16.8	...
Standard deviation	8.6	6.0	6.7	9.1	9.4	7.0	12.8	14.2	17.1	12.6	17.8	8.2	12.6	...
Coefficient of variation	0.71	0.38	0.43	0.62	0.52	0.47	0.72	0.86	0.80	0.77	1.17	0.56	0.75	...
Of which:														
Central European and Scandinavian Countries 1/														
Average	7.8	15.0	10.1	10.7	14.1	11.4	13.2	10.3	12.3	12.3	9.6	11.6	11.5	...
Standard deviation	10.2	5.1	3.9	3.6	2.2	3.9	4.0	5.1	2.6	3.2	2.7	5.5	2.5	...
Coefficient of variation	1.31	0.34	0.38	0.33	0.15	0.34	0.30	0.49	0.21	0.26	0.28	0.47	0.22	...
Southern European Countries 2/														
Average	17.7	18.6	21.4	19.4	21.6	19.7	24.3	20.8	23.5	22.1	15.5	20.2	21.0	...
Standard deviation	2.9	4.7	2.0	2.4	1.5	2.5	9.5	3.2	6.3	4.5	4.5	6.7	4.6	...
Coefficient of variation	0.17	0.25	0.09	0.12	0.07	0.13	0.39	0.16	0.27	0.20	0.29	0.33	0.22	...
Atlantic Countries 3/														
Average	11.1	10.9	13.4	10.6	12.5	11.6	10.4	13.2	26.6	8.4	9.5	9.1	12.5	...
Standard deviation	4.1	2.7	1.3	0.9	3.4	1.6	3.0	4.7	17.4	2.6	7.5	2.6	3.0	...
Coefficient of variation	0.37	0.25	0.10	0.08	0.27	0.14	0.29	0.35	0.65	0.31	0.79	0.29	0.24	...
Pacific Countries 4/														
Average	8.9	15.3	14.7	10.6	16.1	13.0	12.9	10.0	12.3	10.8	8.9	13.0	11.3	...
Standard deviation	2.3	4.1	2.6	3.6	6.2	1.3	4.3	3.0	2.9	2.7	3.0	5.6	2.6	...
Coefficient of variation	0.25	0.27	0.18	0.34	0.38	0.10	0.33	0.30	0.23	0.25	0.34	0.43	0.23	...

Source: IMF, International Financial Statistics.

1/ Austria, Finland, Norway, Sweden, Switzerland.

2/ Greece, Portugal, Spain.

3/ Canada, United Kingdom, United States.

4/ Australia, Japan, New Zealand.

Table 26. Rate of Growth of Domestic Credit, 1974-85

(Annual change in percent)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	10.6	13.8	16.3	15.2	10.8	13.3	14.8	11.5	12.8	10.7	14.3	6.6	11.7	9.7
Denmark	10.4	26.7	14.7	3.4	4.2	11.6	12.3	13.3	14.5	13.3	22.2	24.7	16.6	13.8
France	18.0	18.6	21.0	20.0	8.8	17.2	14.1	12.7	13.6	16.1	13.3	-2.5	11.0	...
Germany	8.0	10.1	10.6	10.0	11.4	10.0	11.9	9.5	8.8	6.5	6.7	6.0	8.2	6.2
Ireland	19.5	18.1	12.9	20.4	30.1	20.1	30.4	15.3	15.2	27.3	11.2	12.6	18.4	3.8
Italy	23.8	23.5	21.4	16.3	17.4	20.4	16.0	16.6	12.7	17.9	14.5	13.5	15.2	...
Netherlands	16.5	14.3	19.7	23.1	21.0	18.9	17.2	10.4	5.9	4.3	4.6	5.8	7.9	5.4
Arithmetic average														
ERM	15.3	17.9	16.7	15.5	14.8	15.9	16.7	12.8	11.9	13.7	12.4	9.5	12.7	...
Standard deviation	5.3	5.3	3.9	6.3	8.1	3.9	5.9	2.4	3.1	7.1	5.3	7.9	3.8	...
Difference between highest and lowest value	15.8	16.6	10.8	19.7	25.9	10.4	18.5	7.1	9.3	23.0	17.6	27.2	10.5	...
Coefficient of variation	0.35	0.30	0.23	0.41	0.54	0.25	0.35	0.19	0.26	0.52	0.43	0.83	0.30	...
Weighted average	14.3	16.0	16.6	15.0	12.1	...	13.8	12.0	11.1	11.8	10.8	5.7	...	...
Australia	15.8	24.6	17.6	8.2	10.6	15.2	14.7	13.1	12.4	3.7	14.6	13.3	11.9	29.1
Austria	14.7	14.6	24.9	15.8	13.7	16.7	17.5	12.2	10.5	8.2	8.1	9.7	11.0	7.9
Canada	18.2	19.5	18.8	17.1	20.9	18.9	22.8	11.5	31.9	2.2	-0.5	8.3	12.1	5.9
Finland	27.9	29.7	10.2	12.6	6.6	17.0	18.8	20.6	15.0	20.3	19.6	15.2	18.2	...
Greece	23.3	24.6	26.4	26.6	23.1	24.8	21.4	21.9	36.1	26.4	18.5	19.8	23.9	...
Iceland	71.0	48.5	26.7	29.1	43.5	42.9	47.6	67.0	67.2	92.7	86.8	44.8	64.7	35.2
Japan	15.1	16.7	13.7	10.6	13.7	13.9	8.4	8.4	10.0	8.2	7.5	8.9	8.6	8.8
New Zealand	28.8	31.9	24.6	20.4	22.6	25.6	14.5	10.5	15.9	15.5	6.4	-3.9	9.6	56.4
Norway	10.8	15.5	16.0	21.4	10.5	14.8	15.6	10.8	12.7	11.8	11.4	15.9	13.0	...
Portugal	21.9	43.2	15.0	31.5	20.9	26.1	27.4	8.3	34.2	30.7	25.6	12.1	22.7	...
Spain	24.4	22.7	22.7	19.9	16.1	21.1	17.4	20.6	22.4	22.3	5.2	12.6	16.6	...
Sweden	12.8	13.6	7.8	11.5	19.5	13.0	18.2	13.4	18.6	11.2	8.2	14.2	13.9	...
Switzerland	-10.4	5.9	7.8	7.5	9.0	3.7	8.5	11.7	8.9	21.5	8.0	9.4	11.2	...
United Kingdom	17.5	8.1	13.8	6.0	10.0	11.0	9.8	14.3	20.6	16.5	13.2	19.1	15.5	11.9
United States	8.9	6.6	10.7	12.6	11.1	10.0	10.9	7.5	6.5	5.7	12.4	12.6	9.2	14.4
Arithmetic average														
non-ERM	20.0	21.7	17.1	16.7	16.8	18.3	18.2	16.8	21.5	19.8	16.3	14.1	17.6	...
Standard deviation	16.4	12.1	6.4	7.7	8.8	8.9	9.4	14.1	15.2	21.1	19.8	9.8	13.9	...
Coefficient of variation	0.82	0.56	0.38	0.46	0.53	0.48	0.52	0.84	0.70	1.07	1.21	0.69	0.79	...
Of which:														
Central European and Scandinavian Countries ^{1/}														
Average	11.2	15.9	13.3	13.8	11.9	13.0	15.7	13.7	13.1	14.6	11.1	12.9	13.5	...
Standard deviation	12.3	7.7	6.5	4.7	4.5	4.9	3.8	3.5	3.4	5.3	4.5	2.8	2.6	...
Coefficient of variation	1.11	0.49	0.49	0.34	0.38	0.38	0.24	0.26	0.26	0.36	0.40	0.22	0.19	...
Southern European Countries ^{2/}														
Average	23.2	30.2	21.4	26.0	20.0	24.0	22.1	16.9	30.9	26.5	16.4	14.8	21.0	...
Standard deviation	1.0	9.2	4.7	4.8	2.9	2.1	4.1	6.1	6.1	3.4	8.5	3.5	3.2	...
Coefficient of variation	0.04	0.31	0.22	0.18	0.15	0.09	0.19	0.36	0.20	0.13	0.51	0.24	0.15	...
Atlantic Countries ^{3/}														
Average	14.9	11.4	14.4	11.9	14.0	13.3	14.5	11.1	19.7	8.1	8.4	13.3	12.3	...
Standard deviation	4.2	5.8	3.3	4.6	4.9	4.0	5.9	2.8	10.4	6.1	6.3	4.4	2.6	...
Coefficient of variation	0.28	0.51	0.23	0.38	0.35	0.30	0.41	0.25	0.53	0.75	0.75	0.33	0.21	...
Pacific Countries ^{4/}														
Average	19.9	24.4	18.6	13.1	15.6	18.3	12.5	10.7	12.8	9.1	9.5	6.1	10.0	...
Standard deviation	6.3	6.2	4.5	5.3	5.1	5.2	2.9	1.9	2.4	4.9	3.6	7.3	1.4	...
Coefficient of variation	0.32	0.25	0.24	0.40	0.33	0.29	0.23	0.18	0.19	0.53	0.38	1.20	0.14	...

Source: IMF, International Financial Statistics.

^{1/} Austria, Finland, Norway, Sweden, Switzerland.^{2/} Greece, Portugal, Spain.^{3/} Canada, United Kingdom, United States.^{4/} Australia, Japan, New Zealand.

Table 27. Real Narrow Money Stock, 1974-85 1/

(Annual change in percent)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	-5.7	2.6	-2.0	1.2	1.3	-0.6	-1.9	-6.0	-5.1	-4.4	0.9	-5.7	-3.7	-1.6
Denmark	-9.1	18.8	-2.5	-2.8	5.4	1.5	0.3	-1.3	0.1	2.7	1.5	26.8	4.6	21.6
France	1.3	0.7	-2.0	1.6	1.9	0.7	1.0	-6.5	2.2	-0.8	2.6	1.4	-0.1	...
Germany	3.5	7.9	-1.0	8.0	11.5	5.9	-1.1	-1.4	-7.4	1.8	4.9	3.5	-0.0	4.4
Ireland	-6.8	-0.8	-0.9	7.8	18.5	3.2	-4.5	-3.5	-14.1	-10.0	0.8	0.9	-5.2	-3.3
Italy	-8.2	-3.0	1.7	3.8	12.9	1.2	7.8	-6.8	-6.8	0.3	-1.2	1.4	-1.0	...
Netherlands	2.4	8.3	-0.8	6.2	0.0	3.2	-1.4	-0.5	-8.5	3.7	7.2	4.0	0.6	4.4
Arithmetic average														
ERM	-3.2	4.9	-1.1	3.7	7.4	2.2	0.0	-3.7	-5.7	-1.0	2.4	4.6	-0.7	...
Standard deviation	5.0	6.9	1.3	3.7	6.5	2.0	3.6	2.5	5.1	4.4	2.6	9.5	2.9	...
Difference between highest and lowest value	12.6	21.8	4.2	10.8	18.5	6.5	12.3	6.3	16.3	13.7	8.4	32.5	9.8	...
Coefficient of variation	-1.6	1.4	-1.2	1.0	0.9	0.9	...	-0.7	-0.9	-4.6	1.1	2.1	-4.2	...
Weighted average	-0.1	4.0	-0.9	4.6	7.3	...	0.9	-4.0	-4.2	0.6	2.9	2.8	...	...
Australia	-13.8	6.7	-4.1	-5.0	3.4	-2.8	5.8	6.7	-4.4	-10.2	4.7	4.0	0.9	-3.0
Austria	-3.5	5.4	0.9	-3.9	4.5	0.6	-12.2	8.7	-8.6	2.6	7.6	-2.0	-1.0	-0.1
Canada	-8.5	7.4	-5.6	2.2	-1.8	-1.4	-7.1	-0.1	-5.5	-5.0	4.3	14.7	-0.1	27.3
Finland	1.9	14.2	-14.1	-8.7	8.0	-0.3	14.0	-4.7	2.4	6.0	-0.7	8.7	4.1	4.9
Greece	-5.6	2.7	7.8	4.3	8.6	3.4	-2.2	-6.8	-1.8	0.6	-4.8	1.4	-2.3	...
Iceland	-9.0	-10.3	-5.7	12.6	-2.3	-3.3	0.7	1.2	7.0	-14.5	-4.3	58.6	6.0	52.0
Japan	-10.4	-0.6	2.9	0.2	9.2	0.1	-0.5	-9.3	4.8	3.0	-1.9	4.5	-0.0	1.0
New Zealand	-6.8	-4.5	-6.8	-10.9	9.2	-4.2	-9.0	-12.0	0.1	-10.9	5.4	3.4	-4.1	-5.4
Norway	2.3	4.4	-11.8	4.6	0.5	-0.2	2.7	-4.9	1.1	0.8	3.4	17.0	3.1	13.8
Portugal	-13.9	3.4	-4.7	-12.2	-7.0	-7.1	10.1	-2.7	-9.3	-5.5	-13.8	-9.5	-5.4	...
Spain	1.4	1.5	6.0	-4.8	-2.1	0.3	-6.2	-1.8	-1.4	-2.6	-8.8	-2.4	-3.9	...
Sweden	3.6	3.9	6.1	1.2	6.6	1.3	7.9	4.0	-3.7	1.1	...	...	...	...
Switzerland	-11.9	-2.3	9.8	-0.4	22.2	2.8	-5.2	-4.0	-11.0	1.3	6.2	-6.3	-3.3	...
United Kingdom	-4.4	-4.6	-4.5	4.3	7.4	-0.5	-3.8	-11.9	5.2	2.5	6.3	10.0	1.1	11.3
United States	-6.0	-3.9	0.9	1.5	0.6	-1.4	-4.1	-5.8	-3.5	2.5	6.3	1.4	-0.6	8.3
Arithmetic average non-CPM	-5.6	1.6	-2.3	-1.2	4.5	-0.8	-0.6	-2.9	-1.9	-1.9	0.7	7.4	-0.4	...
Standard deviation	5.6	5.9	6.7	6.4	6.8	2.6	7.2	6.0	5.3	5.8	6.3	15.9	3.2	...
Coefficient of variation	-1.0	3.8	-2.8	-5.5	1.5	-3.1	-11.9	-2.1	-2.8	-3.1	9.0	2.2	-8.1	...
Of which:														
Central European and Scandinavian Countries 2/														
Average	-1.5	5.1	-4.3	-1.9	8.4	0.8	1.4	-0.2	-4.0	2.4	4.1	4.4	0.7	...
Standard deviation	5.7	5.3	8.7	4.4	7.4	1.1	9.3	5.5	5.2	1.9	3.2	9.1	3.0	...
Coefficient of variation	-3.8	1.0	-2.1	-2.3	0.9	1.4	6.4	-30.8	-1.3	0.8	0.8	2.1	4.1	...
Southern European Countries 3/														
Average	-6.0	2.5	3.0	-4.2	-0.2	-1.1	0.6	-3.8	-4.2	-2.5	-9.1	-3.5	-3.9	...
Standard deviation	6.3	0.8	5.5	6.7	6.5	4.4	6.9	2.2	3.6	2.5	3.7	4.5	1.3	...
Coefficient of variation	-1.0	0.3	1.8	-1.6	-39.1	-4.0	12.2	-0.6	-0.9	-1.0	-0.4	-1.3	-0.3	...
Atlantic Countries 4/														
Average	-6.3	-0.4	-3.1	2.7	2.1	-1.1	-5.0	-5.9	-1.3	0.0	5.6	8.7	0.1	...
Standard deviation	1.7	5.5	2.8	1.2	3.9	0.4	1.5	4.8	4.6	3.5	0.9	5.5	0.7	...
Coefficient of variation	-0.3	-15.0	-0.9	0.4	1.9	-0.4	-0.3	-0.8	-3.7	ERR	0.2	0.6	5.0	...
Pacific Countries 5/														
Average	-5.7	-1.7	-1.3	-3.6	6.1	-1.4	-3.2	-7.1	1.6	-2.6	1.2	2.6	-1.4	...
Standard deviation	2.9	4.6	4.1	4.5	2.7	1.8	6.1	8.3	3.8	6.4	3.3	0.4	2.2	...
Coefficient of variation	-0.5	-2.7	-3.1	-1.3	0.4	-1.3	-1.9	-1.2	2.3	-2.4	2.8	0.2	-1.6	...

Sources: Tables 18 and 24.

1/ Deflated by the consumer price index

2/ Austria, Finland, Norway, Sweden, Switzerland.

3/ Greece, Portugal, Spain.

4/ Canada, United Kingdom, United States.

5/ Australia, Japan, New Zealand.

Table 28. Real Broad Money Stock, 1974-85 ^{1/}

(Annual change in percent)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	-3.5	2.2	3.1	1.2	2.9	1.2	1.6	-3.1	-1.2	-1.4	0.6	-1.7	-0.9	0.4
Denmark	-5.8	15.8	2.5	-1.6	-3.3	1.2	0.6	-0.5	-0.8	0.9	12.0	17.7	4.7	13.1
France	3.6	3.5	2.5	4.8	2.9	3.5	2.9	-4.8	-2.0	-0.4	1.7	0.4	-0.4	...
Germany	0.2	5.2	3.1	6.4	7.4	4.4	1.0	-0.8	-2.5	1.5	2.4	3.1	0.8	2.9
Ireland	2.0	0.7	-4.2	6.1	14.9	3.7	0.3	2.0	-8.0	-8.8	-3.5	0.4	-3.0	-0.4
Italy	-2.9	6.4	3.6	4.5	9.7	4.2	4.0	-7.4	-6.5	1.0	-0.8	0.0	-1.7	...
Netherlands	5.9	2.2	7.4	6.0	6.9	5.7	7.1	-0.8	1.0	-0.6	2.1	4.1	2.1	5.0
Arithmetic average														
ERM	-0.1	5.1	2.6	3.9	5.9	3.4	2.5	-2.2	-2.9	-1.1	2.1	3.4	0.2	...
Standard deviation	3.9	4.7	3.2	2.8	5.3	1.5	2.2	2.9	3.0	3.3	4.5	6.1	2.4	...
Difference between highest and lowest value	11.7	15.1	11.6	8.0	18.1	4.5	6.8	9.4	9.0	10.3	15.5	19.4	7.8	...
Coefficient of variation	-54.5	0.9	1.2	0.7	0.9	0.5	0.9	-1.3	-1.0	-2.9	2.2	1.8	10.4	...
Weighted average	0.6	4.9	3.3	5.0	5.8	...	2.5	-3.3	-2.7	0.5	1.7	2.0	...	...
Australia	-5.2	4.8	-1.1	-5.7	2.4	-1.0	2.3	3.5	0.2	-0.5	2.8	7.5	2.6	10.5
Austria	2.7	9.2	8.9	3.4	10.3	6.9	4.3	6.1	3.3	5.2	1.8	0.7	3.5	2.7
Canada	3.6	1.9	6.8	3.4	5.6	4.2	3.1	3.5	31.1	-5.3	-6.4	1.6	3.9	1.9
Finland	0.8	3.9	-4.4	-1.1	6.9	1.1	9.8	3.1	3.5	3.8	4.6	8.0	5.4	11.5
Greece	-5.1	9.4	9.5	9.4	10.0	6.5	-1.4	-3.1	5.4	5.0	0.7	5.7	2.0	...
Iceland	-10.1	-13.4	0.5	10.4	3.0	-2.3	8.1	4.3	13.9	6.0	-3.8	2.3	5.0	12.5
Japan	-10.4	2.4	3.8	2.8	8.9	1.3	4.6	-1.1	5.5	4.8	5.0	4.5	3.9	6.7
New Zealand	-4.6	-3.2	1.1	0.3	11.4	0.8	4.3	-6.8	0.9	-1.8	-0.7	13.4	1.4	14.9
Norway	1.5	3.3	1.2	7.4	4.0	3.5	8.1	0.2	-0.1	-0.1	2.5	13.3	3.9	7.9
Portugal	-11.2	-6.5	2.2	-8.1	-1.5	-5.1	11.4	6.8	2.9	0.3	-7.7	-3.3	1.5	...
Spain	2.9	1.7	3.7	-4.7	0.5	0.8	1.9	1.0	1.1	1.5	-1.9	-0.4	0.5	...
Sweden	-0.2	1.7	-4.7	-2.2	6.8	0.2	9.2	-1.3	1.1	-0.5	-0.5	-0.7	1.2	...
Switzerland	-19.7	0.7	7.2	5.4	10.1	0.1	5.7	-3.4	1.7	11.4	7.0	4.0	4.3	...
United Kingdom	-2.6	-13.8	-4.3	-5.5	5.8	-4.3	-0.8	0.4	14.2	2.5	8.0	7.0	5.1	5.0
United States	-5.0	3.2	7.5	3.8	0.1	1.8	-4.6	-5.6	-5.2	2.4	12.7	4.5	0.5	5.5
Arithmetic average non-ERM	-4.2	0.4	2.5	1.3	5.6	1.0	4.4	0.5	5.3	2.3	1.6	4.5	3.0	...
Standard deviation	6.3	6.7	4.7	5.5	4.0	3.3	4.4	4.0	8.4	3.8	5.3	4.7	1.6	...
Coefficient of variation	-1.5	18.9	1.8	4.4	0.7	3.4	1.0	7.8	1.6	1.7	3.3	1.0	0.6	...
Of which:														
Central European and Scandinavian Countries ^{2/}														
Average	-3.0	3.8	1.6	2.6	7.6	2.4	7.4	0.9	1.9	4.0	3.1	5.1	3.7	...
Standard deviation	8.4	2.9	5.7	3.7	2.4	2.6	2.1	3.3	1.4	4.3	2.5	5.1	1.4	...
Coefficient of variation	-2.8	0.8	3.5	1.4	0.3	1.1	0.3	3.6	0.7	1.1	0.8	1.0	0.4	...
Southern European Countries ^{3/}														
Average	-4.5	1.5	5.1	-1.1	3.0	0.7	4.0	1.6	3.1	2.3	-3.0	0.7	1.4	...
Standard deviation	5.8	6.5	3.1	7.6	5.0	4.7	5.4	4.1	1.8	2.0	3.5	3.8	0.6	...
Coefficient of variation	-1.3	4.2	0.6	-6.7	1.7	6.8	1.4	2.6	0.6	0.9	-1.2	5.6	0.5	...
Atlantic Countries ^{4/}														
Average	-1.3	-2.9	3.3	0.6	3.8	0.6	-0.8	-0.6	13.4	-0.1	4.8	4.4	3.2	...
Standard deviation	3.6	7.7	5.4	4.3	2.6	3.6	3.1	3.8	14.8	3.7	8.1	2.2	2.0	...
Coefficient of variation	-2.7	-2.7	1.6	7.6	0.7	6.0	-4.1	-6.7	1.1	-27.4	1.7	0.5	0.6	...
Pacific Countries ^{5/}														
Average	-6.7	1.3	1.3	-0.9	7.6	0.4	3.7	-1.5	2.2	0.8	2.4	8.5	2.6	...
Standard deviation	2.6	3.4	2.0	3.6	3.8	1.0	1.0	4.2	2.4	2.9	2.3	3.7	1.0	...
Coefficient of variation	-0.4	2.5	1.6	-4.1	0.5	2.8	0.3	-2.9	1.1	3.4	1.0	0.4	0.4	...

Source: Tables 18 and 25.

^{1/} Deflated by the consumer price index.^{2/} Austria, Finland, Norway, Sweden, Switzerland.^{3/} Greece, Portugal, Spain.^{4/} Canada, United Kingdom, United States.^{5/} Australia, Japan, New Zealand.

Table 29. Real Domestic Credit, 1974-85 ^{1/}

(Annual change in percent)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	-1.8	0.9	6.5	7.6	6.0	3.8	9.9	4.6	4.8	1.8	6.2	0.2	4.5	4.6
Denmark	-4.1	15.6	5.3	-7.0	-5.3	0.6	2.5	0.9	2.5	2.9	14.3	17.3	6.6	8.8
France	3.8	6.1	10.4	9.7	-0.2	5.9	3.0	-0.9	0.2	3.8	3.4	-9.3	-0.1	...
Germany	0.9	3.9	6.0	6.1	8.5	5.0	7.5	3.8	2.3	1.2	3.3	3.5	3.6	3.9
Ireland	2.1	-2.3	-4.3	6.0	20.8	4.1	15.2	-2.5	-4.3	8.7	0.7	3.7	3.4	-1.6
Italy	3.9	5.6	3.9	-0.6	4.7	3.5	1.1	-3.8	-4.4	1.2	-0.2	2.4	-0.7	...
Netherlands	6.3	3.4	9.8	15.5	16.1	10.1	12.5	3.6	-0.8	-1.5	1.8	2.4	2.9	3.1
Arithmetic average														
ERM	1.6	4.7	5.4	5.3	7.2	4.7	7.4	0.8	0.0	2.6	4.2	2.9	2.9	...
Standard deviation	3.3	5.2	4.5	6.7	8.3	2.7	5.0	3.1	3.2	2.9	4.5	7.2	2.3	...
Difference between highest and lowest value	10.4	17.9	14.7	22.5	26.1	9.6	14.1	8.4	9.2	10.2	14.5	26.6	7.2	...
Coefficient of variation	2.1	1.1	0.8	1.3	1.2	0.6	0.7	3.8	75.4	1.1	1.1	2.5	0.8	...
Weighted average	2.3	5.0	7.3	6.5	5.5	...	5.5	1.0	0.3	1.8	3.0	-0.1	...	...
Australia	0.6	8.3	3.6	-3.6	2.4	2.2	5.2	2.7	2.5	-6.7	4.0	9.0	2.7	21.0
Austria	4.7	5.7	16.4	9.8	9.8	9.2	13.3	5.5	3.4	2.6	4.6	3.8	5.5	4.5
Canada	6.6	7.9	10.5	8.4	10.9	8.8	12.6	1.2	17.3	-7.8	-6.0	3.8	3.1	1.9
Finland	9.6	10.2	-3.6	-0.1	-1.1	2.8	10.5	8.1	2.7	10.0	10.4	7.6	8.2	...
Greece	-2.8	9.9	11.5	12.9	9.4	8.0	2.1	-2.3	9.3	4.5	-1.5	1.1	2.1	...
Iceland	19.6	-0.3	-4.1	-1.1	-0.4	2.4	1.5	5.4	11.0	29.2	0.4	10.7	9.3	2.5
Japan	-7.5	4.4	4.0	2.3	9.5	2.4	4.7	0.4	4.8	5.5	5.6	6.5	4.6	6.6
New Zealand	15.9	15.3	6.4	5.3	9.5	10.4	0.7	-5.7	0.5	-0.6	-0.9	-9.5	-2.7	35.5
Norway	1.2	3.5	6.2	11.3	2.3	4.8	10.3	0.0	-0.9	0.4	2.7	9.0	3.5	...
Portugal	-4.7	18.9	-2.8	3.5	-1.4	2.4	3.1	-7.2	11.8	6.5	0.4	-13.0	-0.1	...
Spain	7.5	4.9	6.7	-3.7	-3.1	2.3	1.5	4.3	6.9	6.9	-6.2	1.2	2.3	...
Sweden	2.6	3.5	-2.3	0.0	8.7	2.4	10.2	-0.2	5.8	2.5	-0.6	5.7	3.8	...
Switzerland	-18.4	-0.8	6.0	6.1	7.8	-0.4	4.8	7.4	2.2	14.6	5.1	6.3	6.7	...
United Kingdom	1.3	-13.1	-2.3	-8.5	1.6	-4.4	-3.2	-3.1	7.8	7.3	8.2	13.5	4.9	5.5
United States	-1.8	-2.4	4.7	5.7	3.2	1.8	-0.4	-5.3	-3.5	-0.4	8.9	8.0	1.1	10.5
Arithmetic average non-ERM	2.3	5.1	4.1	3.2	4.6	3.7	5.1	0.7	5.4	5.0	2.3	4.2	3.7	...
Standard deviation	9.0	7.4	5.9	5.9	4.8	3.8	4.9	4.7	5.2	8.6	4.8	6.9	3.0	...
Coefficient of variation	3.9	1.5	1.5	1.8	1.0	1.0	1.0	6.2	1.0	1.7	2.1	1.6	0.8	...
Of which:														
Central European and Scandinavian Countries ^{2/}														
Average	-0.1	4.4	4.5	5.4	5.5	3.8	9.8	4.2	2.6	6.0	4.4	6.5	5.5	...
Standard deviation	9.6	3.6	7.2	4.8	4.2	3.2	2.8	3.6	2.2	5.4	3.6	1.8	1.8	...
Coefficient of variation	-160.0	0.8	1.6	0.9	0.8	0.8	0.3	0.9	0.8	0.9	0.8	0.3	0.3	...
Southern European Countries ^{3/}														
Average	0.0	11.2	5.1	4.2	1.6	4.2	2.2	-1.7	9.3	6.0	-2.4	-3.6	1.5	...
Standard deviation	5.4	5.8	5.9	6.8	5.5	2.7	0.7	4.7	2.0	1.0	2.8	6.7	1.1	...
Coefficient of variation	...	0.5	1.2	1.6	3.4	0.6	0.3	-2.7	0.2	0.2	-1.1	-1.9	0.7	...
Atlantic Countries ^{4/}														
Average	2.0	-2.5	4.3	1.9	5.2	2.1	3.0	-2.4	7.2	-0.3	3.7	8.4	3.0	...
Standard deviation	3.5	8.6	5.2	7.4	4.1	5.4	6.9	2.7	8.5	6.2	6.9	4.0	1.6	...
Coefficient of variation	1.7	-3.4	1.2	4.0	0.8	2.6	2.3	-1.1	1.2	-20.5	1.9	0.5	0.5	...
Pacific Countries ^{5/}														
Average	-3.0	9.3	4.7	1.3	7.1	5.0	3.5	-0.9	2.6	-0.6	2.9	2.0	1.5	...
Standard deviation	9.7	4.5	1.2	3.7	3.3	3.8	2.0	3.5	1.8	5.0	2.8	8.2	3.1	...
Coefficient of variation	3.2	0.5	0.3	2.8	0.5	0.8	0.6	-4.1	0.7	-8.3	1.0	4.1	2.0	...

Source: Tables 18 and 26.

^{1/} Deflated by the consumer index.^{2/} Austria, Finland, Norway, Sweden, Switzerland.^{3/} Greece, Portugal, Spain.^{4/} Canada, United Kingdom, United States.^{5/} Australia, Japan, New Zealand.

Table 30. Short-Term Interest Rates, 1974-85 1/
(Monthly averages in percent)

	1974	1975	1976	1977	1978	Average 1974-78			1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	9.3	4.6	8.3	5.5	5.2	6.6	8.0	11.2	11.5	11.4	8.2	9.5	10.0	8.3		
Denmark	13.3	6.5	10.3	14.5	15.4	12.0	12.6	16.9	14.8	16.4	12.0	11.5	14.0	10.0		
France	12.9	7.9	8.6	9.1	8.0	9.3	9.0	11.8	15.3	14.9	12.5	11.7	12.5	9.9		
Germany	8.9	4.4	3.9	4.1	3.4	4.9	5.9	9.1	11.3	8.7	5.4	5.5	7.7	5.2		
Ireland	11.3	10.0	10.8	7.7	8.4	9.6	13.5	15.4	13.5	13.2	10.1	8.7	12.4	...		
Italy	14.6	10.6	15.7	14.0	11.5	13.3	11.9	17.2	19.6	20.2	18.5	17.3	17.5	15.2		
Netherlands	9.2	4.2	7.3	3.8	6.2	6.1	9.0	10.1	11.0	8.1	5.3	5.8	8.2	6.3		
Arithmetic average ERM	11.4	6.9	9.3	8.4	8.3	8.8	10.0	13.1	13.9	13.3	10.3	10.0	11.8	...		
Standard deviation	2.1	2.5	3.4	4.1	3.8	2.9	2.5	3.1	2.8	4.0	4.3	3.7	3.2	...		
Difference between highest and lowest value	5.7	6.4	11.8	10.7	12.0	8.3	7.6	8.1	8.6	12.1	13.2	11.8	9.8	...		
Coefficient of variation	0.19	0.36	0.36	0.49	0.45	0.33	0.26	0.24	0.20	0.30	0.42	0.37	0.27	...		
Weighted average	11.2	6.6	7.9	7.5	6.7	...	8.4	11.8	14.1	13.0	10.3	10.1	...	...
Japan	12.5	10.7	7.0	5.7	4.4	8.1	5.9	10.9	7.4	6.9	6.4	6.1	7.3	6.5		
Norway	8.1	7.5	7.4	9.8	9.4	8.4	8.4	11.2	12.3	13.9	12.3	12.7	11.8	...		
Sweden	7.5	7.8	7.9	10.0	7.2	8.1	8.2	12.2	14.4	13.3	10.9	11.8	11.8	13.8		
United Kingdom	11.4	10.2	11.1	7.7	8.5	9.8	13.0	15.1	13.0	11.5	9.6	9.3	11.9	11.6		
United States	10.5	5.8	5.0	5.5	7.9	6.9	11.2	13.4	16.4	12.3	9.1	10.2	12.1	8.1		
Arithmetic average non-ERM	10.0	8.4	7.7	7.7	7.5	8.3	9.3	12.6	12.7	11.6	9.7	10.0	11.0	...		
Standard deviation	1.9	1.8	2.0	1.9	1.7	0.9	2.5	1.5	3.0	2.5	2.0	2.3	1.9	...		
Coefficient of variation	0.19	0.22	0.26	0.25	0.23	0.11	0.27	0.12	0.24	0.21	0.20	0.23	0.17	...		

Source: IMF, International Financial Statistics.
1/ In general call money rates, 3-month treasury bill rates for the UK.

Table 31. Long-Term Interest Rates, 1974-85 1/
(Monthly averages in percent)

	1974	1975	1976	1977	1978	Average 1974-78		1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	8.7	8.5	9.1	8.8	8.4	8.7	8.7	9.5	12.0	13.7	13.6	11.9	12.0	12.1	10.6
Denmark	14.5	13.1	13.2	13.4	14.5	13.7	13.7	15.8	17.7	18.9	20.4	14.5	13.9	16.9	...
France	10.5	9.5	9.2	9.6	9.0	9.6	9.6	9.5	13.0	15.7	15.6	13.6	12.4	13.3	...
Germany	10.4	8.5	7.8	6.2	5.8	7.7	7.4	7.4	8.5	10.4	9.0	7.9	7.8	8.5	6.9
Ireland	16.9	14.6	15.5	11.3	12.8	14.2	14.2	15.1	15.3	17.3	17.1	13.9	14.6	15.6	12.6
Italy	9.9	11.5	13.1	14.6	13.7	12.6	12.6	14.0	16.1	20.6	20.9	18.0	14.9	17.4	...
Netherlands	9.8	8.8	8.9	8.1	7.7	8.7	8.7	8.8	10.2	11.6	10.1	8.6	8.3	9.6	7.3
Arithmetic average	11.5	10.6	11.0	10.3	10.3	10.7	10.7	11.4	13.3	15.5	15.2	12.6	12.0	13.3	...
ERM	2.8	2.3	2.7	2.8	3.1	2.5	2.5	3.2	3.1	3.5	4.3	3.3	2.7	3.2	...
Standard deviation	8.2	6.1	7.7	8.4	8.7	6.5	6.5	8.4	9.2	10.2	11.9	10.1	7.1	8.9	...
Difference between highest and lowest value	0.24	0.21	0.25	0.27	0.30	0.23	0.23	0.28	0.23	0.23	0.28	0.26	0.22	0.24	...
Coefficient of variation	10.3	9.5	9.4	9.1	8.6	...	...	9.6	11.8	14.4	13.8	12.0	11.0	...	...
Weighted average	9.1	9.8	10.2	10.3	9.1	9.7	9.7	9.8	11.6	14.0	15.3	14.3	13.8	13.1	14.1
Australia	9.7	9.6	8.8	8.7	8.2	9.0	9.0	8.0	9.2	10.6	9.9	8.2	8.0	9.0	7.8
Austria	8.9	9.0	9.2	8.7	9.3	9.0	9.0	10.2	12.5	15.2	14.3	11.8	12.8	12.8	11.0
Canada	9.3	9.2	8.7	7.3	6.1	8.1	8.1	7.7	9.2	8.7	8.1	7.4	6.8	8.0	6.3
Japan	6.1	6.3	8.3	9.2	10.0	8.0	8.0	12.0	13.3	12.8	12.9	12.2	12.6	12.6	17.7
New Zealand	7.1	7.3	7.3	7.4	8.4	7.5	7.5	8.6	...	12.3	13.2	12.9	12.2	9.9	...
Norway	...	...	9.7	10.8	16.2	7.3	7.3	16.7	...	16.7	16.8	...	21.5	14.7	...
Portugal	7.8	8.8	9.3	9.7	10.1	9.1	9.1	10.5	11.7	13.5	13.0	12.3	12.3	12.2	12.3
Sweden	7.1	6.4	5.0	4.1	3.3	5.2	5.2	3.4	4.8	5.6	4.8	4.5	4.7	4.6	4.7
Switzerland	14.8	14.4	14.4	12.7	12.5	13.8	13.8	13.0	13.8	14.7	12.9	10.8	10.7	12.7	10.6
United Kingdom	8.1	8.2	7.9	7.7	8.5	8.1	8.1	9.3	11.4	13.7	12.9	11.3	12.5	11.9	11.0
United States	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Arithmetic average	8.8	8.9	9.0	8.8	9.2	8.6	8.6	9.9	11.4	12.5	12.2	9.6	11.6	11.0	...
non-ERM	2.3	2.2	2.2	2.1	3.1	2.0	2.0	3.2	3.0	3.0	3.2	4.1	4.2	2.8	...
Standard deviation	0.26	0.25	0.24	0.24	0.34	0.23	0.23	0.32	0.27	0.24	0.27	0.42	0.36	0.25	...
Coefficient of variation	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Source: IMF, International Financial Statistics.
1/ Long-term government bond yields.

Table 32. Matrix of Correlation Coefficients Between
Short-Term Interest Rates, January 1974-March 1979
and April 1979-September 1985 1/

	Belgium	Denmark	France	Germany	Italy
Denmark	0.33 0.56				
France	0.63 0.53	0.34 0.47			
Germany	0.47 0.67	0.10 0.52	0.84 0.66		
Italy	0.58 0.46	0.25 0.28	0.48 0.79	0.25 0.48	
Netherlands	0.69 0.54	0.29 0.46	0.46 0.43	0.39 0.85	0.25 0.10

Source: IMF, International Financial Statistics.

1/ For every country, line 1 indicates the correlation coefficient for the five year period (January 1974-March 1979) prior to the introduction of the EMS and line 2 indicates the correlation coefficient for the seven year period from April 1979 to September 1985.

Table 33. Matrix of Correlation Coefficients Between
Long-term Interest Rates, January 1974-March 1979
and April 1979-September 1985

	Belgium	Denmark	France	Germany	Ireland	Italy
Denmark	-0.19 0.63					
France	0.28 0.95	-0.06 0.67				
Germany	0.14 0.75	0.04 0.68	0.61 0.78			
Ireland	0.54 0.61	-0.29 0.78	0.39 0.61	0.63 0.78		
Italy	0.33 0.83	-0.10 0.74	-0.34 0.93	-0.83 0.76	-0.25 0.63	
Netherlands	0.28 0.66	0.05 0.79	0.56 0.71	0.89 0.94	0.59 0.79	-0.63 0.72

Source: IMF, International Financial Statistics.

1/ For every country, line 1 indicates the correlation coefficient for the five year period (January 1974-March 1979) prior to the introduction of the EMS and line 2 indicates the correlation coefficient for the seven year period from April 1979 to September 1985.

Table 34. Central Government Budget Balance as a Ratio to GDP, 1974-84
(In percent)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	Average 1979-84
Belgium	-2.8	-4.7	-5.1	-5.9	-6.0	-4.9	-8.6	-13.1	-13.8	-13.7	-12.0	-11.3
Denmark	0.7	-2.0	-0.4	-1.3	-0.3	-0.7	-2.7	-6.0	-8.5	-7.2	-4.6	-5.0
France	0.5	-2.6	-1.0	-1.2	-1.4	-1.1	0.0	-2.8	-3.1	-3.6	-3.3	-2.4
Germany	-0.7	-3.6	-2.8	-2.1	-2.1	-2.0	-1.8	-2.3	-1.9	-2.0	-1.6	-1.9
Ireland	-11.7	-13.2	-10.6	-9.8	-12.8	-11.6	-13.7	-15.8	-15.3	-12.5	-11.2	-13.7
Italy	-8.1	-13.1	-9.5	-11.9	-15.4	-11.6	-10.9	-13.3	-15.4	-16.4	-15.6	-13.8
Netherlands	-0.6	-3.1	-3.6	-2.9	-3.1	-2.7	-4.5	-5.8	-7.3	-8.0	-7.6	-6.2
Arithmetic average												
ERM	-3.2	-6.0	-4.7	-5.0	-5.9	-5.0	-6.0	-8.4	-9.3	-9.1	-8.0	-7.8
Standard deviation	4.4	4.6	3.7	4.0	5.5	4.4	4.7	5.1	5.2	4.9	4.8	4.7
Difference between highest and lowest value	12.4	11.2	10.2	10.7	15.1	11.0	13.7	13.5	13.5	14.4	14.0	11.9
Coefficient of variation	-1.37	-0.76	-0.78	-0.80	-0.94	-0.88	-0.78	-0.60	-0.56	-0.55	-0.60	-0.61
Australia	-1.1	-6.2	-5.3	-2.9	-3.5	-3.8	-1.9	-0.9	-0.6	-4.4	-4.0	-2.4
Austria	-1.9	-4.7	-4.7	-3.7	-4.2	-3.8	-3.1	-2.6	-4.1	-5.3	-4.5	-3.8
Canada	-1.1	-3.7	-2.5	-4.2	-4.4	-3.2	-3.3	-2.7	-6.1	-6.7	-6.8	-4.9
Finland	1.0	-2.2	-0.2	-1.0	-1.6	-0.8	-2.1	-1.2	-2.1	-3.1	-1.1	-2.1
Greece	-3.2	-3.9	-3.8	-3.7	-3.6	-3.6	-3.1	-8.6	-6.8	-9.2	-9.3	-6.8
Japan	-1.3	-4.8	-2.0	-6.2	-6.6	-4.2	-6.2	-6.0	-6.0	-5.8	-5.6	-6.0
New Zealand	-4.1	-10.2	-4.4	-5.1	-8.6	-6.5	-6.3	-7.2	-7.4	-9.2	-6.9	-7.1
Switzerland	-0.6	-1.3	-1.0	-0.9	-0.0	-0.8	-0.0	-0.8	0.5	-0.7	-0.4	-0.5
United Kingdom	-4.2	-7.7	-5.3	-3.0	-4.9	-5.0	-4.7	-4.1	-2.8	-4.8	-3.2	-4.2
United States	-0.8	-4.9	-3.3	-2.7	-2.1	-2.8	-2.7	-2.5	-4.3	-5.8	-5.1	-3.6
Arithmetic average non-ERM	-1.7	-5.0	-3.2	-3.3	-4.0	-3.4	-3.4	-3.7	-4.0	-5.5	-4.7	-4.1
Standard deviation	1.6	2.5	1.7	1.6	2.3	1.7	1.9	2.6	2.5	2.4	2.6	2.0
Coefficient of variation	-0.91	-0.50	-0.53	-0.47	-0.59	-0.48	-0.55	-0.71	-0.64	-0.44	-0.54	-0.48

Source: IMF, International Financial Statistics; World Economic Outlook; and Fund staff estimates.

Table 35. Balance of Payments Current Account, 1974-84

(In billions of U.S. dollars)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	Average 1979-84
Belgium	0.8	0.2	0.4	-0.6	-0.8	--	-3.1	-4.9	-4.2	-2.6	-0.4	0.2	-2.5
Denmark	-1.0	-0.5	-1.9	-1.7	-1.5	-1.3	-3.0	-2.5	-1.9	-2.3	-1.2	-1.6	-2.1
France	-3.9	2.7	-3.4	-0.4	7.1	0.4	5.1	-4.2	-4.8	-12.1	-5.2	-0.9	-3.7
Germany	10.3	4.1	3.9	4.1	9.2	6.3	-6.3	-16.0	-5.4	3.2	4.2	6.1	-2.4
Ireland	-0.7	-0.1	-0.4	-0.5	-0.9	-0.5	-2.1	-2.1	-2.6	-1.9	-1.2	-0.9	-1.8
Italy	-8.1	-0.6	-2.9	2.4	6.2	-0.6	5.4	-9.8	-8.6	-5.7	0.6	-2.9	-3.5
Netherlands	2.2	2.0	2.7	1.1	-1.7	1.3	-2.1	-3.0	2.9	3.7	3.9	4.9	1.7
Arithmetic average ERM	-0.1	1.1	-0.2	0.6	2.5	0.8	-0.9	-6.1	-3.5	-2.5	0.1	0.7	-2.0
Standard deviations	5.3	1.7	2.6	1.9	4.4	2.4	4.1	4.7	3.3	5.0	3.0	3.2	1.7
Difference between highest and lowest value	18.4	4.7	7.3	5.8	10.9	7.6	11.7	13.9	11.5	15.8	9.4	9.0	5.4
Coefficient of variations	-92.1	1.5	-11.2	3.0	1.8	3.0	-4.7	-0.8	-0.9	-2.0	30.1	4.5	-0.8
Accumulated balance	-0.4	7.8	-1.6	4.4	17.6	5.6	-6.1	-42.5	-24.6	-17.7	0.7	4.9	-14.2
Australia	-2.8	-1.0	-1.9	-3.1	-4.5	-2.7	-2.6	-4.1	-8.2	-8.2	-5.9	-8.3	-6.2
Austria	-0.2	-0.2	-1.1	-2.2	-0.7	-0.9	-1.1	-1.7	-1.5	0.6	0.2	-0.6	-0.7
Canada	-1.5	-4.7	-4.2	-4.1	-4.3	-3.8	-4.1	-1.0	-5.1	2.1	1.4	1.9	-0.8
Finland	-1.2	-2.1	-1.1	-0.1	0.7	-0.8	-0.2	-1.4	-0.4	-0.8	-0.9	--	-0.6
Greece	-1.1	-0.9	-0.9	-1.1	-1.0	-1.0	-1.9	-2.2	-2.4	-1.9	-1.9	-2.1	-2.1
Iceland	-0.2	-0.1	--	--	--	-0.1	--	-0.1	-0.1	-0.3	-0.1	-0.1	0.1
Japan	-4.7	-0.7	3.7	10.9	17.5	5.3	-8.8	-10.8	4.8	6.9	20.8	35.0	8.0
New Zealand	-1.8	-1.2	-0.8	-0.7	-0.5	-1.0	-0.8	-0.8	-1.4	-1.5	-1.1	-1.4	-1.2
Norway	-1.1	-2.5	-3.7	-5.0	-2.1	-2.9	-1.0	1.1	2.2	0.7	2.0	3.2	1.4
Portugal	-0.8	-0.8	-1.3	-1.0	-0.5	-0.9	-0.1	-1.1	-2.6	-3.3	-1.0	-0.5	-1.4
Spain	-3.2	-3.5	-4.3	-2.1	1.6	-2.3	1.1	-5.2	-5.0	-4.2	-2.7	2.3	-2.3
Sweden	-0.6	-0.3	-1.6	-2.2	-0.3	-1.0	-2.4	-4.4	-2.8	-3.3	-0.9	0.4	-2.2
Switzerland	0.2	2.3	3.1	3.4	3.8	2.6	1.3	-1.6	1.5	3.9	1.2	4.0	1.7
United Kingdom	-7.7	-3.5	-1.5	0.1	2.2	-2.1	-1.4	7.5	13.1	6.9	4.7	1.4	5.4
United States	1.9	18.1	4.2	-14.5	-15.5	-1.2	-1.0	1.8	6.4	-8.0	-46.1	-107.4	-25.7
Arithmetic average non-ERM	-1.7	-0.1	-0.8	-1.4	-0.2	-0.8	-1.5	-1.6	-0.1	-0.7	-2.0	-5.1	-1.9
Standard deviation	2.2	5.1	2.5	5.0	6.4	2.2	2.4	3.8	5.1	4.4	13.1	28.4	7.0
Coefficient of variation	-1.3	-69.9	-3.3	-3.5	-26.6	-2.6	-1.5	-2.4	...	-6.3	-6.5	-5.6	-3.7
Accumulated balance	-24.8	-1.1	-11.4	-21.7	-3.6	-12.5	-23.0	-24.0	-1.5	-10.4	-30.3	-71.5	-26.2

Source: IMF, International Financial Statistics.

Table 36. Real Rates of Growth of Gross Domestic Product, 1974-1985

(Annual change in percent)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	4.2	-1.4	5.5	0.3	3.0	2.3	1.6	3.4	-1.5	1.1	0.0	1.5	1.0	0.9
Denmark	-0.9	-0.7	6.5	1.6	1.5	1.6	3.5	-0.4	-0.9	3.0	2.1	3.5	1.8	2.7
France	3.2	0.2	5.2	3.0	3.8	3.1	3.3	1.0	0.5	1.8	0.7	1.6	1.5	1.3
Germany	0.2	-1.4	5.6	2.7	3.3	2.1	4.0	1.5	0.0	-1.0	1.6	2.7	1.5	2.3
Ireland	4.1	2.3	1.4	8.2	7.2	4.6	3.1	3.1	2.6	0.8	0.0	4.4	2.3	...
Italy	4.1	-3.6	5.9	1.9	2.7	2.1	4.9	3.9	0.2	-0.5	-0.4	2.6	1.8	...
Netherlands	4.0	-1.0	5.4	2.3	2.1	2.5	2.5	0.8	-0.7	-1.7	1.3	1.7	0.6	2.0
Arithmetic average ERM	2.7	-0.8	5.1	2.9	3.4	2.6	3.3	1.9	0.0	0.5	0.8	2.6	1.5	...
Standard deviation	2.0	1.7	1.5	2.3	1.7	0.9	1.0	1.5	1.2	1.5	0.9	1.0	0.5	...
Difference between highest and lowest value	5.1	5.9	5.1	7.9	5.7	3.0	3.3	4.3	4.1	4.7	2.5	2.9	1.7	...
Coefficient of variation	0.7	-2.1	0.3	0.8	0.5	0.4	0.3	0.8	43.1	3.1	1.1	0.4	0.3	...
Australia	1.4	2.2	4.2	2.6	3.5	2.8	3.5	1.9	3.6	0.7	0.4	6.8	2.8	4.7
Austria	3.9	-0.4	4.6	4.4	0.5	2.6	4.7	3.0	-0.1	1.2	2.1	2.0	2.1	2.9
Canada	3.6	1.2	5.8	2.0	3.6	3.2	3.2	1.1	3.3	-4.4	3.3	4.7	1.8	...
Finland	3.0	1.1	0.3	0.2	2.6	1.4	7.4	5.6	1.8	2.9	2.9	3.0	3.9	3.0
Greece	-3.6	6.1	6.4	3.4	6.7	3.7	3.7	1.7	-0.3	-0.2	0.4	2.8	1.3	2.1
Iceland	3.5	-2.2	2.8	11.6	5.9	4.2	5.0	-4.2	1.6	-1.5	-5.5	2.7	-0.4	...
Japan	-1.2	2.4	5.3	5.3	5.1	3.3	5.2	4.8	4.0	3.3	3.4	5.8	4.4	...
New Zealand	4.0	3.4	2.1	-5.6	0.0	0.7	2.7	0.7	4.4	-0.2	1.6	3.9	2.2	...
Norway	5.2	4.2	6.8	3.6	4.5	4.9	5.1	4.3	0.9	0.3	4.5	5.6	3.4	4.2
Portugal	1.1	-4.3	6.9	5.7	3.2	2.4	4.5	5.5	5.1	3.8	0.0	-1.7	2.8	...
Spain	5.7	1.1	3.0	3.3	1.8	3.0	0.2	1.5	0.3	1.0	2.5	2.3	1.3	...
Sweden	3.2	2.6	1.1	-1.6	1.8	1.4	3.8	1.7	-0.3	0.8	2.4	3.4	2.0	2.3
Switzerland	1.5	-7.3	-1.4	2.4	0.4	-0.9	2.5	4.6	1.5	-1.1	0.7	2.0	1.7	3.2
United Kingdom	-1.1	-0.7	3.8	1.0	3.8	1.3	2.2	-2.3	-1.2	1.2	3.6	2.0	0.9	3.0
United States	-0.6	-1.2	5.4	5.5	5.0	2.8	2.8	-0.3	2.5	-2.1	3.7	6.8	2.2	2.2
Arithmetic average non-ERM	2.0	0.5	3.8	2.9	3.2	2.5	3.8	2.0	1.8	0.4	1.7	3.5	2.2	...
Standard deviation	2.6	3.3	2.4	3.7	2.0	1.4	1.6	2.7	1.9	2.1	2.3	2.2	1.2	...
Coefficient of variation	1.3	6.0	0.6	1.3	0.6	0.6	0.4	1.4	1.0	5.4	1.4	0.6	0.5	...

Source: IMF, International Financial Statistics.

Table 37. Gross Fixed Capital Formation, 1974-1985

(In percent of GDP)

	1974	1975	1976	1977	1978	Average 1974-78	1979	1980	1981	1982	1983	1984	Average 1979-84	1985
Belgium	22.3	22.1	21.5	21.4	21.2	21.7	20.4	20.7	17.8	16.9	15.9	15.6	...	...
Denmark	24.0	21.1	23.0	22.1	21.7	22.4	20.9	18.8	15.6	16.1	15.9	17.3	17.4	19.2
France	24.3	23.3	23.3	22.3	21.4	22.9	21.5	21.9	21.4	20.8	19.8	18.9	20.7	18.8
Germany	21.6	20.4	20.1	20.2	20.7	20.6	21.8	22.7	21.8	20.5	20.6	20.3	21.3	19.6
Ireland	25.3	23.3	24.9	24.8	27.6	25.2	30.7	29.0	29.0	25.7	22.6	21.0	26.3	...
Italy	22.4	20.6	20.0	19.6	18.7	20.3	18.8	19.8	20.2	19.0	18.0	17.9	19.0	...
Netherlands	21.9	21.1	19.4	21.1	21.3	21.0	21.0	21.0	19.2	18.2	18.1	18.4	19.3	18.4
Arithmetic average ERM	23.1	21.7	21.7	21.6	21.8	22.0	22.2	22.0	20.7	19.6	18.7	19.0	20.7	...
Standard deviation	1.3	1.1	1.9	1.6	2.5	1.6	3.6	3.1	3.9	3.0	2.3	1.3	2.8	...
Difference between highest and lowest value	3.7	2.9	5.5	5.2	8.9	4.9	11.9	10.2	13.4	9.6	6.7	3.7	8.9	...
Coefficient of variation	0.06	0.05	0.09	0.07	0.12	0.07	0.16	0.14	0.19	0.15	0.12	0.07	0.14	...
Australia	22.8	23.2	24.1	25.0	24.6	23.9	24.4	25.1	26.9	26.1	23.5	22.6	24.8	23.5
Austria	28.4	26.7	26.0	26.7	25.6	26.7	25.1	25.5	25.2	23.1	22.2	21.8	23.8	22.1
Canada	22.9	23.8	23.0	22.5	22.0	22.8	22.4	22.6	23.3	21.4	19.3	18.3	21.2	...
Finland	29.8	31.3	28.0	27.0	24.0	28.0	23.2	25.3	25.0	24.9	24.6	23.4	24.4	...
Greece	22.2	20.8	21.2	23.0	23.9	22.2	25.8	24.2	22.3	20.2	20.3	18.6	21.9	19.1
Iceland	31.6	32.2	28.5	27.9	25.4	29.1	24.5	25.3	24.8	25.1	22.5	22.2	24.1	...
Japan	34.8	32.4	31.3	30.5	30.8	32.0	32.1	32.0	31.0	29.9	28.5	28.1	30.3	...
New Zealand	25.9	27.0	24.8	22.4	20.8	24.2	18.2	18.2	21.2	23.0	22.7	21.5	20.8	...
Norway	30.5	34.2	36.3	37.1	31.8	34.0	27.7	24.8	28.0	25.5	25.7	26.0	26.3	21.7
Portugal	19.7	19.7	19.0	20.1	28.2	21.3	27.2	29.5	31.4	31.6	29.6	...	...	...
Spain	24.7	23.3	21.8	21.0	19.9	22.1	18.9	19.4	20.3	19.7	18.9	17.9	19.2	...
Sweden	21.5	20.9	21.2	21.1	19.4	20.8	19.8	20.2	19.2	18.8	18.7	18.4	19.2	19.0
Switzerland	27.6	24.0	20.6	20.7	21.4	22.9	21.8	23.8	24.1	23.1	23.3	23.3	23.2	23.8
United Kingdom	20.6	20.1	19.5	18.5	18.5	19.4	18.8	18.1	16.4	16.5	16.3	17.3	17.2	17.1
United States	18.4	17.0	17.2	18.4	20.1	18.2	20.5	19.1	18.6	17.1	...	...	...	...
Arithmetic average non-ERM	25.4	25.1	24.2	24.1	23.8	24.5	23.4	23.5	23.8	23.1	22.6	20.6	22.0	...
Standard deviation	4.7	5.1	5.0	4.9	3.9	4.4	3.8	3.9	4.2	4.2	3.6	2.7	2.6	...
Coefficient of variation	0.18	0.20	0.21	0.20	0.17	0.18	0.16	0.17	0.18	0.18	0.16	0.13	0.12	...

Source: IMF, International Financial Statistics.

I. Excerpts from: Single European Act

Preamble

...Whereas at their Conference in Paris from 19 to 21 October 1972 the Heads of State or of Government approved the objective of the progressive realization of economic and monetary union;

-Having regard to the Annex to the conclusions of the Presidency of the European Council in Bremen on 6 and 7 July 1978 and the Resolution of the European Council in Brussels on 5 December 1978, on the introduction of the European Monetary System (EMS) and related questions, and noting that in accordance with that Resolution, the Community and the Central Banks of the Member States have taken a number of measures intended to implement monetary cooperation.

Provisions amending the Treaty establishing the
European Economic Community

Section II, Subsection II - Monetary capacity

Article 20

1. A new Chapter 1 shall be inserted in Part Three, Title II of the EEC Treaty, reading as follows:

Chapter 1

Cooperation in economic and monetary policy
(Economic and Monetary Union)

Article 102A

1. In order to ensure the convergency of economic and monetary policy which is necessary for the further development of the Community, Member States shall cooperate in accordance with the objectives of Article 104. In doing so, they shall take account of the experience acquired in cooperation within the framework of the European Monetary System (EMS) and in developing the ECU, and shall respect existing powers in this field.
2. In so far as further development in the field of economic and monetary policy necessitates institutional changes, the provisions of Article 236 shall be applicable. The Monetary Committee and the Committee of Governors of the Central Banks shall also be consulted regarding institutional changes in the monetary area.

2. Chapters 1, 2, and 3 shall become Chapters 2, 3, and 4 respectively.

Source: Commission of the European Communities-Bulletin, Supplement 2/86.

II. Treaty Establishing the European Economic Community

Article 104

Each Member state shall pursue the economic policy needed to ensure the equilibrium of its overall balance of payments and to maintain confidence in its currency, while taking care to ensure a high level of employment and a stable level of prices.

Article 236

The Government of any Member State or the Commission may submit to the Council proposals for the amendment of this Treaty.

If the Council, after consulting the Assembly and, where appropriate, the Commission, delivers an opinion in favour of calling a conference of representatives of the Governments of the Member States, the conference shall be convened by the President of the Council for the purpose of determining by common accord the amendments to be made to this Treaty.

The amendments shall enter into force after being ratified by all the Member States in accordance with their respective constitutional requirements.

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