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CURRENCY UNIONS: AN ANALYSIS
OF THE ISSUES**

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ABSTRACT

Common Currency Areas and Currency Unions: An Analysis of the Issues*

This paper discusses the conditions under which currency unions would be desirable and viable. We discuss and present new empirical evidence concerning the operation of existing currency unions in federal states and among regional country groupings. In particular, we examine the traditional criteria for optimal currency areas and present evidence concerning the shock-absorbing properties of federal fiscal systems and the discipline imposed on the public sector by financial markets. We also examine the implications of economic heterogeneity across a currency union, and whether or not convergence should be achieved before rather than after the union occurs. In addition, some issues relating to the possible transition towards monetary union in Europe are considered.

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NON-TECHNICAL SUMMARY

Monetary – or exchange rate – unions can be defined as areas within which exchange rates bear a permanently fixed relationship to each other and where, in the absence of capital controls, there can only be one monetary policy. In the limit, such areas of exchange rate stability might also involve the replacement of the currencies of member countries by a common currency, i.e. the formation of a common currency area or currency union. The implications for monetary policy independence are the same for monetary and currency unions, however.

This paper discusses the conditions under which currency unions would be desirable and viable, and considers the operation of existing currency unions in federal states and among regional country groupings. In addition, some issues relating to the possible transition towards monetary union in Europe are considered.

We first discuss the implications of currency unions for monetary policies and price stability. The benefits of the formation of a currency union derive from the reduction in transactions costs and uncertainty implied by the wider circulation of a single money. This is conditional, however, on promoting price stability and thus enhancing disciplined economic behaviour. To ensure that the currency region becomes a zone of monetary stability, it is essential that institutional arrangements and mechanisms are established. Otherwise the advantages from the wider use of a single currency are lost. In this regard the loss of revenue from money creation in high-inflation countries that enter a low-inflation currency union is likely to be more than offset by the advantages of price stability.

The desirable extent of a currency union has been the subject of an extensive literature on 'optimum currency areas'. Traditional criteria for the success of monetary unions in dealing with economic shocks include labour mobility, wage and price flexibility, diversification of the economies of member countries or regions and their interdependence (as measured by trade flows). We present new empirical evidence for Canada, the United States and other currency unions where requisite data are available. We also calculate the same measures for members of the European Monetary System (EMS). A more recent literature, which attempts to analyse the nature of shocks facing economies is also surveyed. Both the traditional criteria and the analysis of shocks facing regional and national economies provide new insights. The benefits of currency union among a group of countries are likely to be enhanced if they have a large amount of intra-union trade. The costs of abandoning the exchange rate instrument are likely to be smaller if labour mobility is high among member countries, if there is a high degree of nominal and price flexibility, if each constituent national economy has a diversified industrial structure and if shocks are predominantly common rather than country-specific.

Application of these criteria to prospective common currency areas reveals factors working both for and against success. In the case of the EC, for example, the large degree of internal trade, the relatively high degree of diversification of most member-country economies and the relatively symmetric nature of shocks all count as advantages. On the negative side, labour mobility seems to be lower in the EC than in North America. The same analysis suggests that Europe is much closer to an optimal currency area than a larger area consisting of say Europe, North America and Japan. When applied to the USSR, the analysis is ambiguous: inter-republican trade is high, but labour mobility and industrial diversification are low.

These general conclusions must be tempered by recognizing several limitations of the analysis. First, because the criteria are overlapping, there is no unique decision variable. Second, because currency unions also lead to other changes in the economic structure, which are typically not captured in economic models, calculated effects should be regarded as only approximations to the true effects. Third, because the formation of a currency union has political as well as economic dimensions, it interacts with other policies – in particular fiscal policy – in complex ways.

Until recently, relatively little attention has been paid to the interaction between national fiscal policies and the credibility of the commitment of the union's monetary policy to price stability. This issue is especially relevant for the design of new monetary institutions in Europe, however, and in that context it has led to heated debates. It is also relevant for federations that may create a more decentralized division of fiscal powers between central and regional governments such as the former USSR.

Fiscal policies in monetary unions raise several important issues: the shock-absorbing properties of federal fiscal systems and the discipline that financial markets impose on borrowing by member governments. Another issue is the coordination of national fiscal policies. Policy coordination may be beneficial if national policy actions have important spillover effects on other countries and if coordination internalizes these externalities. Of course, policy spillovers exist among countries irrespective of whether they are members of a currency union. The nature of these spillovers is affected by the exchange rate regime in place, however. An expansionary fiscal policy may have negative rather than positive spillover effects in a currency union. In addition, countries in a union may become more economically integrated, as well as more concerned about the welfare of their neighbours.

How might policies be coordinated in order to reduce unfavourable spillover effects? Two important sorts of spillovers are macroeconomic spillovers associated with stabilization policy and externalities related to budget discipline and monetary policy credibility. The latter externalities imply a persistent bias in

the direction of excessive deficits. In contrast, externalities related to stabilization policies in the face of shocks will depend on the sign of the shock. In one case a country's budget deficit will be excessive, while in another the problem will be over-contractionary fiscal policies. Rules or institutionalized procedures that put ceilings on deficits may therefore be the solution for the first case, but not for the second. It is very difficult to define rules that are appropriate to all situations. There are advantages to a procedure that enables fiscal policies to be coordinated in a flexible fashion to minimize the unfavourable effects of both types of externalities, but to the extent that it relies on discretion rather than rules, it may itself lead to sub-optimal behaviour. Discretionary policy coordination may not be established sufficiently quickly, it may be subject to misinterpretation, and it may be difficult to monitor.

Most federations employ a combination of rules-based and discretionary coordination. Canada for example, has rules for making equalization payments to poorer regions, but they are renegotiated every five years. Coordination among federal and provincial governments also occurs through annual conferences of first ministers. Such discretionary coordination is subject to the vagaries of successive renegotiation and so has drawbacks, compared to coordination based on clear rules defining respective powers and responsibilities.

The discussion suggests that currency unions cannot ignore the effects of fiscal policies on the exchange rate mechanism. It seems clear that in order to discipline fiscal policies and reduce unfavourable regional effects, mechanisms for achieving both fiscal transfers and enhanced fiscal policy coordination are helpful. The decision to set up the institutions of fiscal federalism, however, is essentially a political choice that balances loss of sovereignty against shared goals among members.

Another issue concerns the implications of differences among members of a monetary union. Monetary union implies similar inflation rates for member countries or regions in the long run. It is less clear, however, how much convergence must be achieved before monetary union occurs. The economic development of poorer countries and regions is a desirable feature of any monetary system, and it is thus important to assess whether currency union assists in the convergence of per capita income among the constituent parts. Such considerations are important in the EC, for example, where countries such as Greece and Portugal begin from considerably lower income levels, as well as for the former USSR, which has considerable diversity across its republics. The behaviour of regional disparities in the United States is reviewed to throw some light on this question.

Those who argue that it is unnecessarily risky to move to monetary union when nominal and real divergence among members is large, stress three points. First,

greater integration could lead to a centralization of economic activity, which could accelerate the divergence in an unsustainable way. Second, even if divergence of real variables – such as employment and per capita output – does not increase, but nevertheless remains significant, there would be political pressure on the single monetary authority that could compromise its independence. Specifically, it is alleged that large real divergences would generate tensions between parts of the union seeking easier monetary policy to ease unemployment, and other parts seeking tighter monetary policy to assure price stability. Third, it is feared that countries entering the union with weak competitive positions and high inflation rates will have to keep economic activity depressed for a long period in order to restore competitiveness. For these countries, the costs of maintaining a fixed exchange rate could exceed the efficiency gains associated with a single currency.

The opposing view that monetary union is viable before nominal and real convergence is far advanced, rests on two basic arguments. The first is that the free movement of goods and services in the absence of exchange risk will promote factor price and per capita output equalization. In other words, integration plus the imposition of precise deadlines will facilitate real convergence. It is also argued that in the long run there is no trade-off between inflation and unemployment, so that it is in the interests of all members to aim for price stability. Moreover, they note that if there is a credible commitment by the supranational monetary authorities to price stability, the terms of the shorter-run trade-off between inflation and unemployment will be improved. This argument suggests that inflation convergence should not be a precondition for joining a monetary union.

Neither economic theory nor the experiences of existing monetary unions allows us to identify a unique level of nominal and real convergence that is either necessary or sufficient for the success of a monetary union. Each case must therefore be judged on its own. What can be said is that real convergence does not seem to be impeded by monetary union; in the case of the United States, real convergence has been a slow process, but it has occurred. At the same time, it needs to be acknowledged that the existing degree of divergence of real per capita output is now about ten times larger (four times larger if Greece, Portugal, and Spain are excluded) in the EC than in the United States. Finally, the costs of disinflation should not be taken as given: they will be affected by the anti-inflation reputation and credibility of the monetary authority.

A final topic is the transition to monetary union, in particular in Europe, where various plans are currently being debated – and the first steps have already been taken – towards full monetary union between the countries of the EC.

The main argument favouring slow transition to monetary union is that time is needed to achieve the nominal and real convergence that will ultimately underpin

a common monetary policy aimed at price stability. The counter-argument is that a slow transition will be unstable because of speculative attacks on currencies and currency substitution. While concerted foreign exchange market intervention may be useful in reducing short-term exchange rate fluctuations, the route to avoiding instability arising from speculative attack is to implement coordinated and credible monetary policy among members of the arrangements.

Thus, the paper covers a range of issues relating to the value of exchange rate unions for particular groups of countries and those characteristics that are likely to make a monetary union desirable and viable. Industrial countries currently face high and increasing international financial integration and in these circumstances, some loss of monetary independence is inevitable. The fundamental question implied by membership of a currency union is whether the loss of monetary independence is likely to be more than compensated for by reductions in transactions costs and exchange rate uncertainty, and by superior inflation performance. This question is currently of most relevance to the EC, where moves towards a currency union are part of a general trend towards greater economic and political integration. It is also relevant for other potential and existing currency unions, however, as well as for the international community as a whole, since regional currency unions are likely to affect the functioning of the international monetary system.

I. Introduction

Monetary, or exchange-rate unions, can be defined as areas within which exchange rates bear a permanently fixed relationship to each other. In the absence of capital controls, there can exist only one monetary policy in such areas. 1/ In the limit, such areas of exchange stability might also involve the replacement of the currencies of member countries by a common currency, that is, the formation of a common currency area or currency union. The implications for monetary policy independence are however the same for monetary and currency unions, so the two will be treated together in what follows. 2/

Interest in currency unions has grown steadily in recent years, following German unification and other developments in eastern Europe, as well as the emerging immediacy of the prospects for European Economic and Monetary Union (EMU). In our analysis, we discuss a number of issues relating to the operation of currency unions--in particular the conditions under which currency unions would be desirable and viable--and consider the operation of existing currency unions, in federal states and among regional country groupings.

Given the enormous recent growth in the relevant literature, it is inevitable that our paper overlaps with several recent contributions, for

1/ Corden (1972, p. 3) calls areas with ostensibly fixed exchange rates but without integration of economic policies, or a common pool of foreign exchange reserves, or a single central bank, "pseudo-exchange-rate unions," because they cannot ensure the permanence of the relationship among currencies.

2/ Allen (1976, p. 4), for instance, states: "... in any monetary union either there must be a single currency, or, if there are several currencies, these currencies must be fully convertible, one into the other at immutably fixed exchange rates, creating effectively a single currency."

instance, with the very comprehensive study by the EC Commission (1990), and with Eichengreen (1990a, 1990b). Our paper is somewhat more broad-ranging than those papers, however, as we attempt to analyze the various criteria for successful currency unions using the experience of other regions and then use them to consider EMU. In addition, we consider some issues relating to the possible transition toward monetary union in Europe.

The implications of currency unions for monetary policies and price stability are discussed in the next section. The desirable extent of currency unions has been the subject of an extensive literature on "optimum currency areas," which is surveyed in Section III. Traditional criteria for the success of monetary unions in dealing with economic shocks include labor mobility, wage and price flexibility, diversification of the economies of member countries or regions, and their interdependence (as measured by trade flows). Some empirical evidence relevant to these criteria is presented for Canada, the United States, and for other currency unions where requisite data are available; the same measures are also calculated for European countries which are members of the European Monetary System (EMS). Attempts to simulate macroeconomic models in order to analyze the nature of shocks facing economies are also surveyed.

Another means of improving the shock-absorbing ability of economies is through fiscal transfers among members. Until recently, the interaction between national fiscal policies and the credibility of the commitment of the union's monetary policy to price stability has received inadequate attention. This issue is especially relevant for the design of new monetary institutions in Europe, as well as for federations which may evolve toward a

more decentralized division of fiscal powers between central and regional governments. Section IV therefore discusses some key issues related to fiscal policies in monetary unions, and presents evidence concerning the shock-absorbing properties of federal fiscal systems and the discipline imposed by financial markets on borrowing by the public sector.

Section V addresses the implications of differences among members of a monetary union. Clearly, monetary union implies similar inflation rates for member countries or regions in the long run. However, it is less clear how much convergence has to be achieved before monetary union occurs. Economic development of poorer countries and regions is a desirable feature of any monetary system, and it is thus an important question whether currency union assists in the convergence of per capita income among the constituent parts. Such considerations are important, for example, in the EC, where some countries such as Greece and Portugal start from considerably lower income levels than those enjoyed by others, as well as for the USSR, which has considerable diversity across republics. The evolution of regional disparities in the United States is reviewed in order to throw some light on this question.

Section VI considers issues that relate specifically to the transition in Europe toward Economic and Monetary Union. Topics discussed include: (1) the possible role of the "hard ECU" and competition among currencies to ease the transition; and (2) dangers of destabilizing speculation in a period in which there are no restrictions on capital movements and where parities are not viewed as irrevocably fixed. A final section presents a summary and conclusions.

II. Monetary Policy Issues

1. Facilitating transactions and ensuring price stability

Money facilitates transactions and thereby increases economic efficiency relative to a situation of barter. The social benefit derived from money is, moreover, enhanced by stability in its value, that is, by price stability. The widest possible use of a single money that exhibits such stability would minimize transactions costs and maximize its informational role. Indeed, this argument has motivated the call for a single world money, or global currency area (e.g., Cooper 1990). In the next section, criteria that define "optimum currency areas" are discussed, and reasons are offered as to why the global economy is not likely to be such an area. Nevertheless, regional groups of countries may find it to their advantage to move to a common currency in order to reduce transactions costs and to reduce the unfavorable effects of exchange rate uncertainty on trade and investment--provided that each such regional currency exhibits price stability.

Another important reason for a country to join a monetary union with a low-inflation country is to enhance the anti-inflationary credibility of its own monetary policy (Artis and Currie, 1983). The choice of exchange rate regime necessarily conditions the choice of monetary policy. In a setting of high capital mobility--the situation facing most industrial countries--exchange rate and monetary policies are closely linked. Therefore, fixing the exchange rate against a dominant currency means adopting monetary policies that are consistent with those of the country issuing the dominant currency. Tying the hands of the domestic monetary authority in this

fashion may enhance its anti-inflationary credibility--provided of course that the monetary union is formed with a "hard" currency, so that price stability ensues. The credibility gain for the non-German members of the EMS is often cited as one of the important features of the Exchange Rate Mechanism (ERM) of the EMS, by which other central banks import the inflation stability of the Bundesbank. 1/

2. Monetary policy institutions in a currency union

Experience suggests that monetary policy in a currency union can be framed and implemented under several alternative institutional arrangements. If there is a dominant country, then that country's currency may or may not circulate in other countries. In either case, its central bank would in some degree set monetary policy for the union as a whole. As discussed above, advantages for other countries would clearly be enhanced if that currency were the most stable in value in terms of goods. The deutsche mark is an example of such a currency, and the countries of the EMS have gained credibility for their own monetary policies by being associated with those of Germany (albeit until now in a looser arrangement than that of currency union). The success of the Bundesbank in managing a stable currency is no doubt in large part a result of its formal independence from the Finance

1/ The issue then arises as to what makes it attractive for Germany to participate. Méritz (1988) argues that Germany has gained competitiveness (and hence higher exports) because realignments have not completely offset inflation differentials. However, data for unit labor costs and value-added deflators suggest that, if anything, German competitiveness has deteriorated relative to its ERM partners since the formation of the EMS (Ungerer and others 1990, p. 26). Giavazzi and Giovannini (1989) suggest that German participation increases the stability of Germany's overall effective exchange rate due to negative covariance between the EMS and non-EMS components. There is of course also the common political objective, which Goodhart (1990) argues is all too often ignored by economists.

Ministry (aside from the general prescription that it should support government policy) and its legal responsibility to ensure the stability of the currency. 1/

The monetary policy of a currency union could alternatively be set by a supra-national institution. The CFA 2/ Franc Arrangements, for instance, are composed of two groups of countries, the West African Monetary Union (WAMU) and the Central African Monetary Area (CAMA). Each of the areas has a central bank which sets, or coordinates, monetary policy for the area; given the exchange rate arrangement followed, the room for maneuver of monetary policy is slight. 3/ In the European Community, an Intergovernmental Conference on EMU is currently engaged in negotiating an amendment to the Treaty of Rome that would lay down the principles of a common European monetary policy. A key requirement in establishing a European central bank would be to ensure an effective commitment to price stability. The ability to resist inflationary pressures would no doubt be enhanced by independence of the central bank from national governments (ruling out monetization of government debt or indirect financing of national governments through interest subsidies, for instance) and by enshrining the target of price stability in the central bank's

1/ This has both internal and external dimensions, but is primarily an injunction to maintain price stability. Government policy has also been strongly supportive of price stability.

2/ CFA stands for "Communauté Financière Africaine."

3/ Both areas use the same currency, the CFA franc, which is pegged to the French franc.

statutes. 1/ It is not clear, however, that such statutory guarantees of independence from fiscal policies are in fact sufficient, since indirect pressure can also be exerted. A further important question, which is discussed in Section IV below, is therefore whether constraints are also needed on the fiscal policies of member countries.

3. Seignorage

It is sometimes suggested that the goal of price stability may conflict with an attempt to use monetary expansion to finance government expenditure, as an alternative to raising revenue by conventional forms of taxation or issuing debt. This is the familiar case for an "inflation tax." Most forms of taxation produce distortions; moreover, the degree of distortion typically rises with the tax rate. Optimal tax policy is therefore said to imply "tax spreading," that is, equating the marginal costs of the various taxes--rather than relying solely on one or another form of taxation. Since countries face different collection costs for conventional taxes, their optimal inflation rates would, so the argument goes, differ; in some cases, the optimal inflation rate is argued to be non-zero. Others have however taken the view that the distortions associated with inflation are so high that it is apt to be optimal not to use it at all. 2/

The reliance on issuing money as a means of financing government expenditure varies considerably across European countries. Dornbusch

1/ Eleven of the 12 member states agreed on these points at the Rome meeting of the European Council, October 27-28, 1990; the United Kingdom disputes the premise that a single currency is the ultimate goal, and argues for competition among currencies, focused on a "hard ECU" (see Section VI.4 below).

2/ Canzoneri and Rogers (1990).

(1988), Grilli (1989), and Giavazzi (1989) have all argued that the "southern tier" of EC countries--Portugal, Spain, Italy, and Greece--may face severe fiscal problems if they are forced to lower their rates of monetary expansion--and hence their rates of inflation--to the German level. 1/ Dornbusch (1988, p. 26) estimates seignorage to be of the order of 3 percent of GDP in these countries over the period 1976-84, as measured by the change in reserve money. However, with declines in inflation, seignorage revenues have also declined. The EC Commission's estimate for the same four countries in 1988 is lower: ranging from 1.1 percent of GDP for Italy to 2.75 percent for Greece (EC Commission 1990, p. 122). 2/

The assumption that inflation rates, and hence seignorage revenues, are optimally chosen is dubious. In many cases, inflation is an unintended consequence of undisciplined policies. The bias to over-expansionary monetary policies, whether for the purpose of increasing economic activity or for public finance reasons, is likely to be strong. 3/ Furthermore, even if collection costs and distorting effects of conventional taxes might in principle justify some use of seignorage, there is no presumption that these factors outweigh the costs of a significantly positive rate of inflation. On the contrary, the gains from price stability--assuming that the currency union establishes mechanisms to ensure it--are likely to dominate.

1/ See also Xafa (1990) for an analysis of the Greek case.

2/ Measured somewhat more precisely as the difference between the market interest rate and the rate paid on central bank liabilities, if any, multiplied by the monetary base.

3/ Barro and Gordon (1983) and Gros (1989).

III. Traditional Criteria for Successful Currency Unions

1. Factor mobility

The superiority of monetary exchange over barter is enhanced by widening the domain over which any single currency can be utilized. Nevertheless, as Mundell (1961) pointed out in a pathbreaking article, there are reasons related to macroeconomic shocks that constrain the size of an optimal currency area. In particular, Mundell argued that unless factors of production--labor and capital--can freely move between regions, shifts in demand facing one region relative to another may lead to unemployment in the absence of flexibility of the nominal exchange rate. ^{1/} If wages and prices are sticky, real exchange rate depreciation can only be accomplished through nominal exchange rate changes. However, depreciation would be ruled out if the two regions were part of a currency union. Therefore, the criterion that Mundell proposed for an "optimum currency area" was a country or region in which factor mobility was high.

It is hard to obtain direct information on labor mobility. Barriers to migration may include formal immigration restrictions, social services or pensions that are not immediately available to migrants, and language or cultural differences. If employment were the only motive for migration, then mobility should narrow differences among unemployment rates. ^{2/} Chart 1 presents data for the dispersion of unemployment rates across nine U.S. census regions and 10 Canadian provinces. Despite absence of formal barriers to mobility, the dispersion of unemployment rates is large in

^{1/} Clearly, wage and price flexibility makes exchange rate flexibility unnecessary. See Section III.4 below.

^{2/} Eichengreen (1990a).

Canada--over 3 percentage points, or about 1/3 of the mean unemployment rate. 1/ In contrast, dispersion has averaged a little over 1 percent in the United States, or 1/5 of mean unemployment. Furthermore, deviations from the average by individual states or provinces exhibit persistence. In the United States, the Pacific Northwest region is consistently above the national average, while the West North Central region is consistently below. 2/ In Canada, the Maritime provinces (Newfoundland, Nova Scotia, New Brunswick and Prince Edward Island) exhibit persistently higher unemployment, and Ontario, Manitoba, and Saskatchewan, generally lower unemployment. However, it is also the case that different regions have experienced a boom and a subsequent bust, leading their unemployment rates to dip below, and then rise substantially above, the national average. 3/ Correspondingly, this would suggest that flows of population to and from these areas have on occasion been high.

In Europe, national unemployment rates exhibit greater dispersion than in either the United States or Canada, at least since 1979 (Chart 1). 4/ The greater dispersion in the EC may to some extent be attributed to the fact that migration among EC countries is clearly less substantial than within either the United States or Canada. A study cited by Eichengreen

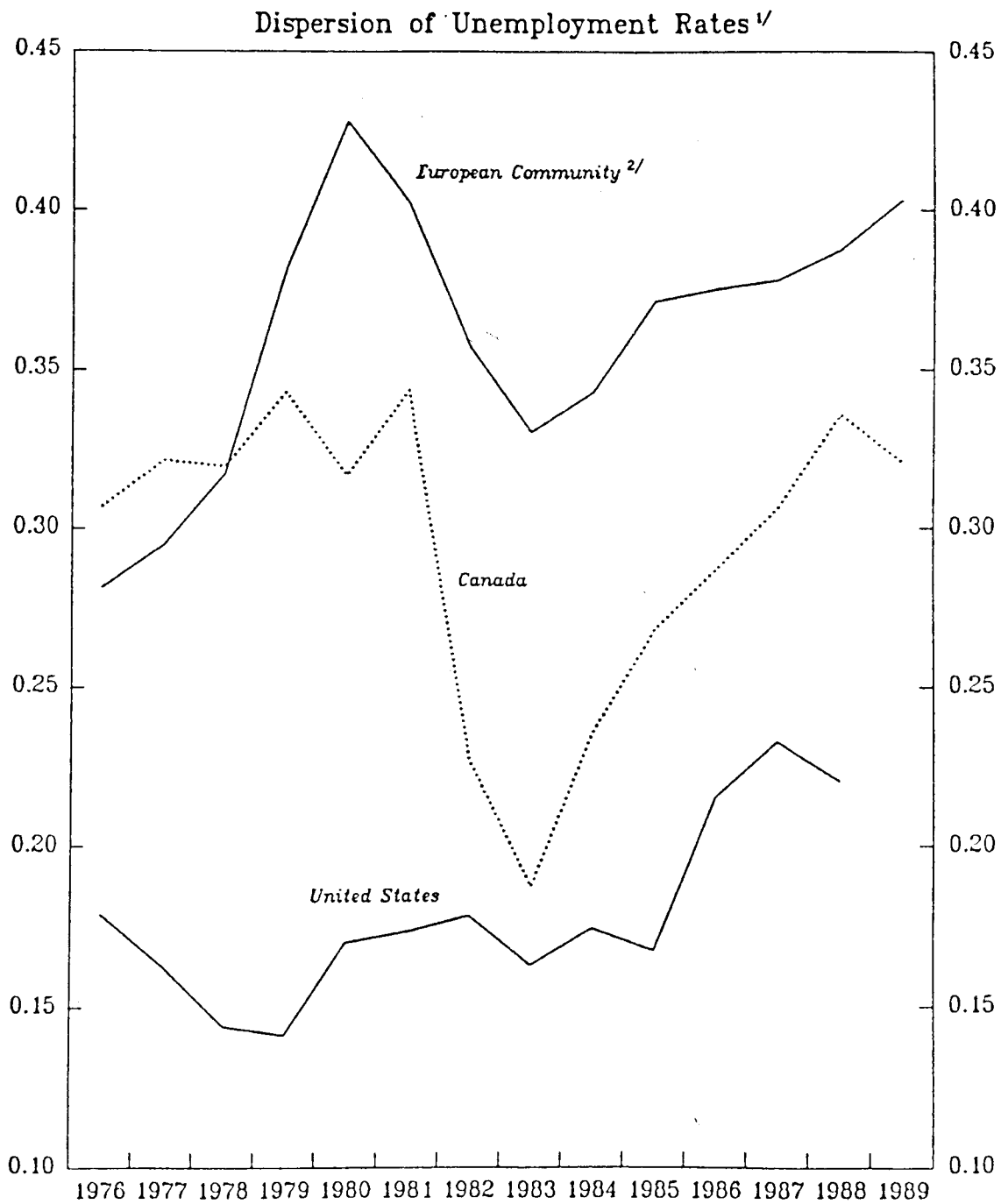
1/ To some extent this has reflected unemployment insurance provisions that have been more generous in the less prosperous provinces.

2/ The Pacific Northwest region consists of Alaska, Idaho, Montana, Oregon, Washington, and Wyoming. The West North Central region consists of Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.

3/ Most notably, in the United States the West South Central region which consists of Arkansas, Louisiana, Oklahoma, and Texas, and (in Canada) Alberta, related to oil price increases.

4/ Estimates of dispersion of unemployment rates for German Länder however are similar to those for the 12 EC countries. See EC Commission (1990, p. 151).

Chart 1



1/ Coefficients of variation, i.e. standard deviations of unemployment rates, scaled by the mean (components are weighted by population).
2/ 12 current members, excluding Luxembourg, for which data were not available.

(1990b, p. 9) concluded that mobility in the United States was roughly 2 to 3 times as high as mobility within European states, as measured by the proportion of the population that changed region of residence; 1/ migration between European states is no doubt much lower still. Relatively low mobility of labor is thus a potential handicap for the EC as it progresses toward monetary union.

When considering capital mobility, a distinction should be made between financial capital and physical capital. While expected rates of return on financial assets, such as bonds, tend to be equalized across countries, the same may not be true of expected returns on physical capital. 2/ If a claim on physical capital in one country or region is not a perfect substitute for such claims in another country or region, then arbitrage need not ensure that their expected returns are the same. In fact, lack of such arbitrage may explain the observed close correlation of savings and investment in individual countries (Dooley, Frankel, and Mathieson 1987).

For industrial countries without exchange controls, mobility of financial capital is generally thought to be very high. Countries participating in the Exchange Rate Mechanism of the EMS, for instance, abolished any remaining exchange controls by July 1990, the date fixed by the Delors Report for passage to Stage 1 of economic and monetary union (see Section VI below). High mobility of financial capital allows, in principle, for financing differences between national saving and investment. But if

1/ See also EC Commission (1990, p. 151).

2/ This is not to deny that equity prices (i.e., claims to physical capital) may vary in response to changes in the profitability of the capital stock; however, various lags and installation costs will make physical investment slow to adjust.

adjustment requires private sector investment, the issue of mobility of physical capital comes into play once again.

Mobility of physical capital is typically higher within than between countries, for a number of reasons: absence of exchange rate risk, uniformity of tax codes, similarity of regulations, common national characteristics (language, political goals, etc.). The well-known result of Feldstein and Horioka (1980)--which has been confirmed by others using alternative data sets and techniques--points to the high correlation between national saving and investment ratios as evidence of relatively low international capital mobility. ^{1/} In contrast, Bayoumi and Rose (1991) find no correlation between regional saving and investment for Britain, suggesting perfect capital mobility. Identifying the separate effect of a common currency on capital mobility is difficult. However, some evidence is provided by saving/investment correlations of countries within the EMS, which are substantially lower than those of non-EMS countries; this suggests that exchange rate stability tends to enhance capital mobility (Bhandari and Mayer 1990). Moreover, the liberalization of trade in goods and financial services associated with the EC 1992 program should work to increase capital mobility further.

Capital accumulation may in principle substitute for labor mobility in accommodating some demand shifts and income shocks. However, given the lags involved in the installation of plant and equipment, capital mobility is likely to be helpful mainly for narrowing persistent regional disparities

^{1/} Other reasons may explain this correlation, for instance deliberate government policy to limit current account imbalances, and shocks that have common effects on saving and investment.

rather than for offsetting short-term shocks. A case in point is Germany, where one of the objectives of currency union was to encourage the capital flows needed to modernize the east German economy, and thereby stem massive migration to the west of the country.

Even within countries, movements of physical capital are often insufficient to ensure development of depressed areas, as witnessed by the persistence of low relative per capita income in the south of Italy, the north of England, the maritime provinces of Canada, and West Virginia in the United States (see the discussion of convergence in Section V below). In a situation of regional specialization in goods which are no longer in high demand, there may not be incentives for productive investment. In these circumstances, labor and capital may both move out. ^{1/} It is therefore doubtful that formation of a currency union can, in and of itself, lead to a sufficient mobility of physical capital either to cushion shocks completely or to lead to quick elimination of underdevelopment.

2. Openness and regional interdependence

Since one benefit of extending the use of a common currency is the reduction in transactions costs, the greater is the volume of inter-regional trade within a common currency area, the greater is the cost saving, other things equal, from the currency union. McKinnon (1963) also showed that the usefulness of exchange rate flexibility to achieve external balance, without inducing large internal price level changes, is greater when an economy is relatively closed. In order to maintain external balance in the face of a

^{1/} Fiscal incentives may however be put in place to encourage investment and/or discourage outward migration.

fall in the real demand for the country's exports, resources in a fully employed economy must be shifted toward production of traded goods and away from non-traded goods sectors. The smaller the non-traded goods sector the larger the exchange rate change needed to transfer a given amount of resources, and the larger the movement in internal prices that would result. Given the objective of price stability, therefore, very open economies (in the sense of having a relatively large tradables sector) are good candidates for fixed exchange rates against their trading partners. This includes possibly joining with them in a currency union, provided that the policies of their neighbors are consistent with price stability.

A comparison of the degree of openness between countries inside and outside existing currency unions is hampered by a relative paucity of data on trade flows within currency unions. ^{1/} One can nevertheless examine the trade patterns of groups of countries, and calculate the proportion of their trade that is internal to the group. Some illustrative data are presented in Table 1. It can be seen that the twelve EC countries, taken as a group, have a high proportion of internal, relative to external trade--as do the ten present participants of the Exchange Rate Mechanism of the EMS. Moreover, while all individual EC economies have a high degree of openness, the European Community as a whole is relatively closed to the rest of the world--with about the same ratio of external trade to GDP as the United States or Japan. On this criterion, the EC would seem to have the makings of natural common currency area.

^{1/} See below, however, for a discussion of data for inter-republican trade within the USSR.

Table 1. Selected Country Groupings: Intra-Area Trade
as a Share of Total Trade

(Average, 1982-85)

	<u>Percent of Exports</u>	<u>Percent of Imports</u>	<u>Percent of Total trade</u>
<u>European Community</u>			
EC 12 <u>1/</u>	54.3	51.4	52.8
ERM 10 <u>2/</u>	52.7	50.6	51.6
<u>North America</u>			
Canada and the United States	37.4	34.5	35.7
Canada, the United States and Mexico	39.0	35.5	37.0
<u>CFA Franc Zone</u>			
African countries only <u>3/</u>	6.6	10.7	8.6
African countries including trade with France	27.9	38.6	37.8
CFA Franc Zone plus France	2.1	2.4	2.3

1/ Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, and the United Kingdom. Data for Belgium and Luxembourg are consolidated.

2/ EC 12 minus Greece and Portugal.

3/ Benin, Burkina Faso, Côte d'Ivoire, Mali, Niger, Senegal, Togo, Cameroon, Central African Republic, Chad, Congo, Gabon, and Equatorial Guinea.

Other European countries (for instance members of EFTA) also have close trading ties with EC countries, suggesting that even a wider currency area might be desirable. The importance of trade with EC countries no doubt is a primary reason for the explicit policy of "shadowing" of the deutsche mark by Austria, and of recent decisions by Norway, Sweden, and Finland to peg their currencies to the ECU. In the future, trade flows between Eastern European countries and the EC may also expand, raising the possibility of closer monetary integration.

Within the United States and Canada, states and provinces no doubt have a large amount of trade among themselves. One effect of currency union is to encourage integration. Looking at the two countries together, the United States and Canada also have a large proportion of bilateral trade, and this proportion may well increase as the Free Trade Agreement between the two countries comes into full force. However, the importance of the United States to Canada is much greater than the reverse. A North American free trade area that included these two countries plus Mexico would, on the basis of existing trade patterns, be more open than Europe.

Turning to the CFA franc zone, the extent of intra-union trade depends heavily on whether and how trade of the African countries with France is treated in the calculations (Table 1). If only trade among African countries is considered, intra-union trade turns out to be relatively low. A larger proportion of trade is "internal" when trade with France is included in the numerator (but French overall exports and imports are not included in the denominator). The explanation lies in the fact that France is a much more important trading partner for each of the African countries

than those countries are for France. As noted in Table 1, once African countries and France are treated as a group, the share of internal trade is much reduced. Another currency union, that among Eastern Caribbean countries, also exhibits only a small amount of intra-regional trade; exports, which consist mainly of primary commodities, are directed primarily to the rest of the world. 1/

Clearly, in the cases of the CFA franc zone and the East Caribbean currency union, the size of intra-regional trade has not been the main motivation for currency union. More important has been the objective of enhanced monetary stability through a supra-national monetary institution. 2/ This issue is discussed further below in Section IV.

The USSR provides yet another example of a currency union. Data for trade among republics of the USSR confirm that production of particular goods is concentrated to a relatively high extent in single firms that supply the whole of the Soviet market, implying a high degree of inter-republic integration. Excluding the Russian Republic, the share of net material product of each republic delivered to the other republics ranges from 31 to 67 percent. For the Russian Republic, the share was 18 percent in 1988 (IMF 1990). The high degree of integration suggests that proposals by certain republics for separate currencies might, if exchange rates against the ruble varied sharply, greatly increase the uncertainty faced by producers. On the other hand, if the ruble continued to be associated with

1/ The East Caribbean Currency Area includes Antigua, Dominica, Grenada, Montserrat, St. Kitts, and St. Lucia.

2/ Since 1983, the institutions of the East Caribbean currency union have included a common central bank.

actual or repressed inflation resulting from monetary financing of central government deficits, pressures for republic currencies might intensify.

3. Industrial and portfolio diversification

The likelihood that an adverse shock would have a major impact on an economy will depend to some extent on how diversified is the economy's production structure. 1/ If a country exports a wide variety of goods, and if shocks are primarily either to supply (i.e., technology) or to consumers' preferences (affecting relative demands for different goods), then the effect of any shock on output in the whole economy will be less (even in absolute terms) than the effect on individual industries. Other things equal, a diversified economy, therefore, has less need to retain exchange rate flexibility in order to mitigate the effects of shocks. 2/

Countries whose production is not diversified, but instead is concentrated in a few goods, include a number of primary commodity exporters. Though industrial countries typically export a wider range of goods, there are some countries among them that are highly dependent on primary commodities: Australia for mineral resources and cereals, and Portugal, Greece, and New Zealand for agricultural products. Thus, Blundell-Wignall and Gregory (1990) argue, in the context of large and persistent commodity price fluctuations of the past two decades, that macroeconomic stabilization--in particular, the objective of price stability--calls for exchange rate flexibility for Australia. Increases in

1/ Kenen (1969).

2/ However, avoiding unemployment would depend on the existence of inter-sectoral factor mobility, so that sectors facing adverse demand shocks contract, and sectors with increased demand expand.

world commodity prices raise domestic output prices, to a greater extent, the greater is the share of commodities in output; this pressure can be mitigated by exchange rate appreciation. However, the appreciation will tend to crowd out other tradables production, in particular, manufactures, so that such sectoral considerations, to the extent they are judged important, may weigh against an appreciation. In addition, exchange rate flexibility in the face of a negative commodity price shock may, through exchange rate depreciation, increase the consumer price index by an amount proportional to the share of importables in consumption, and thereby exacerbate inflationary pressures. There thus are some qualifications to the argument for exchange rate flexibility, even in this case; its relative advantages would depend on both the nature of shocks and the precise objectives of policy.

Canada and the United Kingdom are substantial exporters of energy, but in fact their net exports of energy goods are modest as a proportion of total exports (Table 2). A broad impression of the diversification of domestic production can be obtained from industry output shares for a number of industrial countries (Table 3). For the major industrial countries and for the other European countries for which data were available, the manufacturing sector constitutes between 1/5 and 1/3 of production. 1/ Reliance on production of primary commodities (roughly agriculture, energy, and mining) is relatively small, except for Greece (where it is 22 percent of GDP), and, to a lesser extent, the Netherlands, Portugal and Canada

1/ Of course, within the manufacturing sector, countries differ greatly in the range of goods produced, and also whether the goods produced are exported.

Table 2. Selected Industrial Countries: Shares of Exports
by Commodity Categories

Country	Agricultural Products <u>1/</u>	Energy <u>2/</u>	Other
Canada	19	9	72
United States	16	3	82
Japan	1	-- <u>3/</u>	99
France	17	2	81
Germany	6	1	93
Italy	7	2	91
United Kingdom	8	7	85
Australia	34	18	48
New Zealand	61	1	38

Sources: World Bank Trade System and Fund staff estimates. Based on data for 1988.

1/ Food, Beverages, and Tobacco; Agricultural Non-Food (SITC 0, 1, 2, 4, less SITC 27, 28, 233, 244, 266, and 267).

2/ Mineral Fuels, etc. (SITC 3).

3/ Less than 1 percent.

Table 3. Selected Industrial Countries: Shares of Production
by Category in 1986 ^{1/}

(In percent)

	Agriculture ^{2/}	Construction	Energy and Mining ^{3/}	Manufac- turing	Services
Canada	4.0	7.6	9.0	23.4	56.0
United States	2.3	5.5	5.8	22.2	64.2
Japan	3.1	8.1	4.2	31.4	53.3
France	4.7	6.6	3.8	27.8	57.0
Germany	2.1	6.1	4.2	38.3	49.4
Italy	5.0	6.7	5.7	27.2	55.5
United Kingdom	2.1	6.7	7.8	27.6	55.9
Belgium	2.5	5.8	4.1	25.4	62.2
Denmark	6.6	8.3	3.0	24.6	57.5
Greece	17.3	7.4	5.1	21.1	49.1
Netherlands	5.2	6.3	9.1	23.4	56.0
Portugal	8.6	6.4	3.6	33.8	47.5
Spain	6.1	7.5	3.4	31.2	51.8

Source: OECD National Accounts.

^{1/} GDP at current prices. Shares are scaled to sum to 100.

^{2/} Including hunting, fishing, and forestry.

^{3/} Mining and quarrying (including petroleum and natural gas production), plus electricity generation and gas and water distribution.

^{4/} Excluding government services.

between 12 and 14 percent of GDP). For the most part, the EC includes countries with a well diversified structure of production. An interesting question is whether this diversification will continue with the abandonment of remaining trade barriers, making EC economies even more similar, or whether instead increased specialization will result, making the countries more dissimilar. Which of the two occurs will depend in large part on whether increased trade takes the form of inter- or intra-industry trade. In the latter case, specialization may occur, but with countries remaining diversified, so that shocks to the demand for a particular industry's product should not affect countries asymmetrically. The EC Commission (1990, p. 142) estimates that between 57 percent and 83 percent of intra-EC trade excluding Portugal and Greece was intra-industry. On the other hand, a comparison of regional output variability (within a given European country) with variability across European countries suggests that economic integration does not make the occurrence of asymmetric shocks less likely, and that divergence across countries may actually increase as a result of EMU (De Grauwe and Vanhaverbeke 1991).

Another aspect to the issue is portfolio diversification. Adverse shocks to incomes in particular regions can be cushioned by holdings of assets which are claims to outside income streams. In principle, such diversification could provide insurance against purely regional shocks, and could make consumption independent of those shocks (Cochrane 1988). Unfortunately, little is known about how widespread such portfolio diversification is in practice. There are likely to be great differences in the abilities of individuals and particular firms to hold diversified

portfolios, due for instance to capital market imperfections (preventing borrowing against future income) or transactions costs.

4. Wage/price flexibility

Implicit in the early literature on "optimum currency areas," which considered the value of exchange rate adjustments for achieving internal and external balance, was the assumption that wages and domestic output prices were fixed, at least in the short run. It is now usual practice to regard wages and prices as "sticky" rather than fixed and to expect this stickiness to recede in the long run. Short-run stickiness may differ across countries. In some countries the response of wages and prices to nominal exchange rate changes could be large enough to limit the usefulness of nominal exchange rate changes as an instrument of adjustment.

It is important to distinguish between two types of wage and price flexibility: real and nominal. Changes in a nominal price like the nominal exchange rate are a substitute for domestic price or wage changes, and may facilitate real adjustment. In the limiting case of real wage rigidity (for instance, due to complete indexation of wages), employment and net exports would however be unaffected by nominal exchange rate changes, because rigidity of the real wage is tantamount to rigidity of the real exchange rate. In the other limiting case of perfect flexibility of real wages, the freedom to modify the nominal exchange rate can be helpful if nominal wages are sticky but redundant if nominal wages or prices are themselves flexible enough to do the job of altering real exchange rates.

On the spectrum stretching from perfect rigidity to perfect flexibility, evidence presented in Bruno and Sachs (1985) suggests that

Europe is closer than the United States to the real wage rigidity end, while the reverse obtains for nominal wage rigidity. 1/ This implies both that nominal exchange rate changes would be a more effective tool in North America, and that the existence of higher real wage rigidity in Europe places a premium on other instruments to counter real shocks and well as on measures to improve labor market flexibility.

5. An overview of the traditional criteria and the response to shocks

It is clear from the above discussion that there is no single overriding criterion that could be used to assess the desirability or viability of a currency union. Some of the traditional flexibility criteria are favorable to existing and/or prospective currency unions, while others are adverse. Increasing analytical attention has therefore turned to analyses of shocks affecting economies since shock-absorption combines the net influence of several of the traditional criteria. 2/ 3/

One central aspect of the question is whether shocks are symmetric or asymmetric (i.e., hit countries differently). Similar industrial structures

1/ Studies of relative price flexibility that compare data for individual countries with those for Europe include Vaubel (1976), Poloz (1990), and Eichengreen (1990b). Though Vaubel concludes that the EC is in greater need of real exchange rate adjustment than Germany, Italy, or the United States taken individually, the latter two studies are inconclusive as to whether the United States and Canada exhibit more relative price flexibility than Europe. The comparison is complicated by the fact that countries/regions differ in the extent to which price levels include traded goods (whose price may vary little relative to external prices) as opposed to nontraded goods (for which no arbitrage that would tend to equalize prices exists).

2/ A critique of the single-criterion approach is given in Argy and De Grauwe (1990).

3/ Attempts to provide a general theoretical framework are made by Ishiyama (1975), Tower and Willett (1976), and Argy (1990). Boyer (1978), Henderson (1979), Flood and Marion (1982), and Aizenman and Frenkel (1985) all examine the question of the optimal degree of exchange rate flexibility in response to shocks, using simple theoretical models. However, they do not attempt to quantify the relative variances, nor do they consider the benefits of a currency union in lowering transactions costs.

may imply that real shocks facing industrial countries are symmetric. Another aspect is whether shocks are temporary or permanent. Temporary shocks may in principle be cushioned by financing, while permanent shocks require adjustment. A third issue is the origin of shocks: whether they are primarily nominal (i.e., to the price level) or real, domestic or foreign. Nominal exchange rate flexibility is likely to do the best job in insulating the domestic economy from foreign, nominal disturbances. Fourth, there is the question of whether financial market shocks occur primarily in demands for money, or across domestic interest-bearing assets, or for foreign assets. ^{1/} For example, if shocks occur in foreign exchange markets and are unrelated to economic fundamentals, then fixing the exchange rate may be the best solution.

Cohen and Wyplosz (1989) analyze shocks to real GDP, to the GDP deflator, to real wages, and to the current account ratio, for both France and Germany. They decompose these shocks into permanent and temporary components, and also examine their degree of symmetry. They find that symmetric shocks to the two economies dominate the asymmetric ones; however, the same is not true when "Europe" (i.e., France and Germany taken together) is compared to the United States. Also, they find that symmetric shocks to France and Germany tend to be permanent, not temporary. Cohen and Wyplosz (1989) conclude from these results that monetary integration between France and Germany may be more viable than between Europe and the United States.

A recent study (Bayoumi, 1991) examines the nature of shocks hitting ERM countries since 1982 (arguably, the year when realignments became less

^{1/} See Henderson (1979), Alexander and Henderson (1989).

frequent and the commitment to exchange rate fixity was reinforced--Giavazzi and Spaventa, 1990), and compares responses to shocks of ERM countries to those of selected non-ERM countries. The main conclusions are as follows: (i) constraining the flexibility of exchange rates tends to produce a more drawn out response to shocks; (ii) price responses (in either direction) to shocks tend to be larger for ERM countries (aside from Germany) than for non-ERM countries; (iii) a comparison of the 1970s with the period since 1982 suggests that the formation of the ERM has made the responses of participating economies to shocks more similar; (iv) in contrast, the ERM does not seem to have increased the correlation across countries of the shocks themselves; and (v) already in the 1970s, shocks hitting ERM countries tended to be more symmetric than the shocks hitting non-ERM countries.

A complementary method for assessing the response to shocks within a currency union is to do stochastic simulations of an empirically based macroeconomic model. Repeated drawings are made from the estimated joint probability distribution of the shocks, the model is solved under different assumptions concerning the policy regime in place, and variances of variables of interest--for instance output and inflation--are calculated. This methodology was employed by Frenkel, Goldstein, and Masson (1989), using the International Monetary Fund's MULTIMOD model. They considered the use of both monetary and fiscal policy instruments to hit various intermediate targets. Shocks were applied to all the behavioral equations

of the model, consistent with their historical distribution. 1/ The results of that exercise suggested that fixing exchange rates among the United States, Japan, and Germany would lead to larger variances for key macroeconomic variables than maintaining flexible exchange rates accompanied by either monetary targeting or nominal GNP targeting. Again, these findings are consistent with the conclusion that the three largest economies may not constitute an optimal currency area.

A similar methodology was used by the EC Commission to analyze fixed exchange rates within the EMS. 2/ Chart 2, which summarizes their results, is taken from that study. It suggests that a move from free floating of European currencies to the EMS system of infrequent and partial realignments increased average output variability in member countries, while reducing inflation variability. 3/ The reduction in inflation variability is due to a reduction in asymmetric exchange rate shocks and to an enhancement of price discipline in EMS countries other than Germany. Output variability increases outside of Germany because of the need to devote monetary policy in these countries to limiting currency movements against the deutsche mark (EC Commission 1990, p. 154). A further move

1/ Except for shocks to the interest rate parity condition, which were set to zero in the fixed exchange rate regime.

2/ EC Commission (1990), Chapter 6 and Annex E. The simulations were also performed using the Fund's MULTIMOD model (see Masson, Symansky, and Meredith, 1990), by the staff of the EC Commission. The model does not include all the EMS members separately; results apply to Germany, France, Italy, the United Kingdom, and the Smaller Industrial Country Region. Implicitly, then, all EC member countries are assumed to participate in EMU.

3/ Variability is an appropriate criterion if shocks do not affect long-run values of variables, so that the purpose of economic policy is to smooth the transition back to an unchanged long-run equilibrium. It is implicitly assumed that in the long run, growth rates of monetary aggregates, and hence inflation rates, are unaffected.

toward monetary union with irrevocably fixed exchange rates is argued to reduce both output and inflation variability. This would result from the disciplinary effects of narrower exchange rate margins and from the implementation of a cooperative symmetric monetary policy. The EC Commission study highlights the following potential positive effects of currency union: (i) intra-EMS exchange rate shocks (i.e., shocks to interest rate parity) disappear; (ii) the elimination of expected devaluations dampens inflationary pressures; 1/ and (iii) by enforcing coordination of monetary policies (making them identical, as a result of sharing the same currency), monetary union would reduce costs related to the attempt to use the exchange rate within the EC in a beggar-thy-neighbor fashion. 2/ The negative effects of currency union are those associated with the loss of exchange rate flexibility, as discussed above.

Despite the attractions of the simulation methodology, it is important also to recognize its limitations. First, the reduction in transactions costs resulting from introduction of a common currency is not captured in such macroeconomic models. 3/ Second, a comparison of different policy regimes, assuming that the structure of the rest of the economy is unaffected, may give misleading results. For instance, the degree of labor mobility or wage/price flexibility may respond endogenously to the

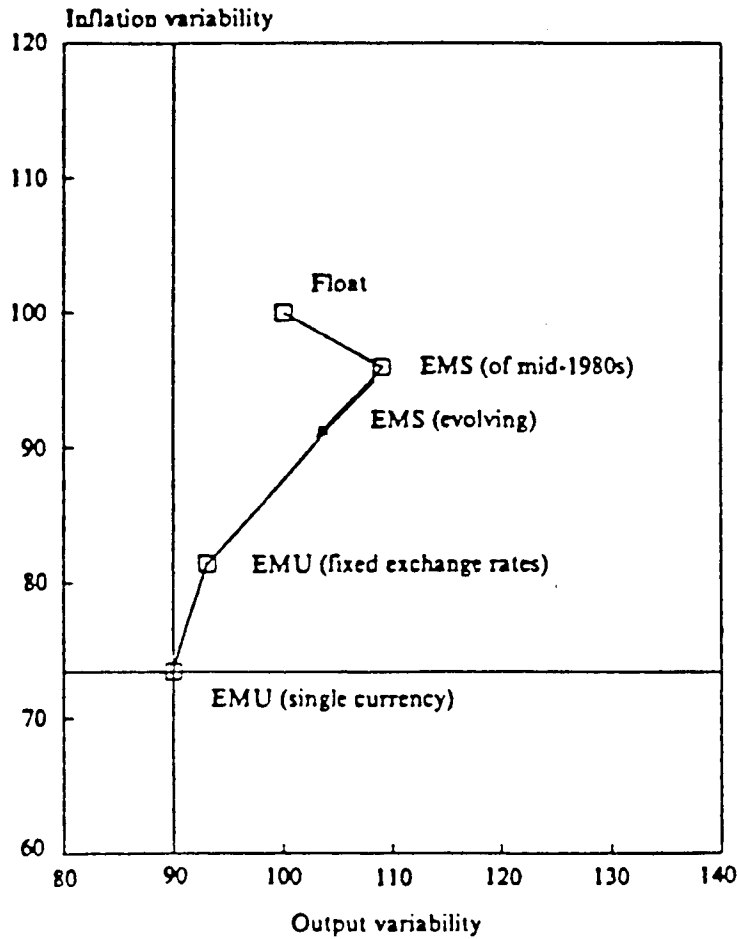
1/ This effect depends on some "forward-looking" behavior in wage setting.

2/ See, for instance, Oudiz and Sachs (1984).

3/ A more microeconomic approach was used to analyze the benefits of creating the single European market: see "The Economics of 1992," European Economy, No. 35 (March 1988).

Chart 2

Macroeconomic stability of EMU



Indices EC average, free float = 100

This graph plots the combinations of variability of output (GDP) and inflation for the Community average in index form as resulting from the stochastic simulations. The position of each of the four regimes ('free float', 'EMS', 'asymmetric EMU', and EMU) corresponds to an intersection between a regime-dependent output-inflation trade-off curve and a shifting preference curve.

Source: Stochastic simulations with the Multimod model of the IMF under the responsibility of the Commission services. GDP is measured as a percentage deviation from its baseline value, inflation is measured in percentage point differences with respect to baseline inflation rates. The indices used in the graph are obtained by averaging, first, the squares of the deviations for 43 simulations over the period 1990-99 and by taking the square root. Dividing by the root mean-squared deviations for the free float regime and multiplication by 100 then gives the indices.

From EC Commission (1990), p. 154

elimination of exchange rate fluctuations. 1/ Third, there are other issues, concerning the credibility of the commitment to price stability and the need to discipline fiscal policy, that go beyond the scope of most empirical macro models.

IV. Fiscal Policy within Currency Areas

Though a currency union makes monetary policy independence of member countries impossible, the same is not obviously true of fiscal policies. 2/ If a well developed financial market exists on which governments can borrow, they need not resort to monetary financing; hence it is sometimes argued that even independent and divergent fiscal policies will not disturb monetary conditions. However, the danger exists that governments would accumulate so much debt that they would not be able to service it or to borrow further at acceptable cost, and that as a result they would put pressure on the central bank to monetize that debt or to finance deficits through money creation. In these circumstances, the central bank could not credibly commit itself to price stability, and the private sector, recognizing this, would incorporate inflation into its expectations. Labor would demand higher wage settlements, and purchasers of government debt would demand higher interest rates to be compensated for expected inflation. The advantages of a stable currency would be lost.

1/ A preliminary attempt to endogenize the degree of labor mobility in a theoretical model is made by Bertola (1989).

2/ The term "fiscal policies" is used in its general sense to include both tax and spending policies; in Bovenberg, Kremers and Masson (1991), which forms the basis of much of the material in this section, the term "budgetary policies" is used instead.

It is useful in this context to consider more generally the role of fiscal policy in a currency union. 1/

1. Spillovers from national fiscal policies

The nature of the spillovers from national fiscal policies is likely to be different within a currency union than when countries are linked by flexible exchange rates. In the Mundell-Fleming model with perfect capital mobility and flexible exchange rates, a bond-financed increase in domestic government spending in the home country has positive transmission effects on output abroad because the domestic currency appreciates owing to a rise in domestic interest rates, leading to higher net exports in foreign countries. In contrast, under fixed exchange rates and in the absence of other structural changes, transmission effects are likely to be negative, since a fiscal expansion raises world interest rates, crowding out investment both at home and abroad, while foreign countries are likely to benefit much less from higher exports. 2/

Elaborations of the Mundell-Fleming model produce less clear-cut conclusions, as the channels of influence become more complicated. 3/ However, the basic insights of the simpler model seem to be borne out by empirical estimates and simulations. For instance, simulations of fiscal

1/ These issues are discussed in a European context by Bovenberg, Kremers, and Masson (1991). An early discussion of the role of fiscal policies in this context is given by Corden (1972); however, he does not consider possible effects on the credibility of the commitment to price stability.

2/ A hybrid system in which some exchange rates are fixed, but others are flexible, might be expected to lead to a combination of positive and negative transmission effects.

3/ Frenkel and Razin (1987) provide a detailed analysis of the various spillover effects in an expanded Mundell-Fleming model; transmission effects are shown to be uncertain as to sign.

stimulus using MULTIMOD suggest that increased government spending in Germany leads to increases in output in that country but to falls in output in EMS countries whose currencies are assumed to be tied to the deutsche mark. 1/ In contrast, positive fiscal stimulus by the United States or Japan, whose currencies are modeled as being free to move flexibly against other currencies, generally cause output to expand in other countries initially--including the EMS countries. In a currency union, therefore, the absence of exchange rate flexibility may "bottle up" to some extent the expansionary effects in the country undertaking fiscal stimulus--unless trade linkages are very strong or capacity utilization is very high. Also, the effects of higher interest rates will be spread to other member countries. In addition, if the temporary fiscal stimulus produces appreciation of the common currency, as implied by models with perfect capital mobility and rational expectations, 2/ the other countries share in the appreciation, which tends to reduce their net exports. A mitigating effect results however from potentially tighter trade links between

1/ This property of negative output transmission within the EMS is also evident in simulations reported in Roubini (1989). Similarly, analysis in Masson and Meredith (1990) of the increased demand emanating from east Germany (two-thirds of which is assumed directed to west Germany, the rest to other countries) suggests that it would reduce output in other EMS countries. This results from their real exchange rate appreciation and higher real interest rates, which dominate the effects of increased demand from Germany.

2/ See Dornbusch (1976). MULTIMOD has the property that fiscal expansion produces initial appreciation of the currency, but a long-run depreciation to bring about an improvement in competitiveness required to offset the deterioration in the country's interest service account. If the fiscal expansion also increases fears of monetization, it is quite possible that the currency could depreciate initially.

countries in a currency union, which would tend to increase trade elasticities and thereby spread the demand stimulus more widely.

Another spillover associated with monetary union concerns possible effects on the credibility of the joint monetary policy. In a country with a separate currency, the inflation problems associated with undisciplined fiscal policies that lead to unsustainable debt accumulation and eventual monetization are borne within the country itself. In a currency union, there is an externality from unsustainable fiscal deficits if they induce fears of monetization, since threats to price stability have consequences for all the countries in the union. How important this possibility is, of course, depends on the institutional structure, and in particular on the status of the union's central bank and its vulnerability to pressures from individual governments. There is an extensive literature on national central banks that suggests that the greater their independence from their fiscal authorities, the more successful they are in achieving low inflation. ^{1/} The situation of a central bank in a monetary union is different, since it faces many national fiscal authorities: this may enhance its independence (Mélitz, 1991). Such reasoning would suggest that a European central bank might have a similar relationship with national fiscal authorities as the Federal Reserve vis-à-vis U.S. state governments.

Unsustainable fiscal deficits in one country may however lead to pressures on other countries in the currency union to subsidize the errant government, either through monetary expansion, explicit fiscal transfers

^{1/} For recent contributions see Goodman (1989), Alesina (1989), and Grilli, Masciandaro and Tabellini (1991), among others.

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from other members, implicit interest subsidies, or loan guarantees. Monetary expansion may ensue, or at least be feared by the private sector, either because the profligate country may be able to exert pressure on the union's central bank, or because the objectives of the central bank may include employment and economic activity in member countries, which would tend to be adversely affected by the debt-servicing difficulties of the profligate member or by high interest rates. Given that solidarity among member countries is likely to be associated with the formation of a currency union, the pressures on the central bank to assist a country in difficulty may be quite strong. 1/

Ideally, the statutory position of the central bank would make it immune from such pressures. It has been argued that effective independence of a central bank from political authorities (including the personal independence of members of the governing bodies) is a necessary condition for monetary stability, and that in addition the central bank must be given the necessary instruments to achieve a monopoly over monetary creation. 2/ However, it may be difficult to guarantee by statute alone that monetary policy is immune from pressures arising from lax budget discipline. A concern for other objectives in addition to price stability on the part of central bankers may lead them to respond to such pressures; this is the argument for making sure that central bankers are more "conservative" than other policymakers. That is, by choosing officials who emphasize the goal

1/ The availability of external financing to Greece despite unsustainable fiscal policies may be evidence that private capital markets expect an EC "bailout" in some form (see Xafa 1990).

2/ Pöhl (1990a).

of price stability (more than does society as a whole), governments may help to ensure that the temptation to engage in self-defeating monetary expansion is minimized. ^{1/} Alternatively, a currency union may need to place some restrictions on the borrowing of member countries. This issue is considered in the next sub-section.

2. Prospects for budget discipline

There is the danger, raised by the Delors Committee Report, that in the absence of supranational controls, fiscal deficits might be excessive, endangering monetary discipline. The tendency toward excessive deficits is modified by the formation of a currency union, in ways that are discussed below. However, it has also been argued that well-functioning capital markets should prevent such excessive borrowing. Well-informed investors in a free capital market impose discipline by raising the interest rates at which they are willing to lend, and by eventually cutting off lending to governments with unsustainable debt accumulation. This should occur before the problem becomes unmanageable, so the argument goes. ^{2/} The experience of existing fiscal federations is relevant in assessing this argument.

a. Incentives for excessive deficits

Will the incentives to undertake unsustainable fiscal policies be modified in a currency union relative to a situation in which a country has its own currency? A number of factors come into play in addressing this

^{1/} Rogoff (1985) has argued that appointing a "conservative" central banker may increase the welfare of society, because it may help to avoid the time-inconsistency problem facing monetary policy (see Barro and Gordon 1983).

^{2/} See Bishop, Damrau, and Miller (1990). However, these authors also discuss an example of failure of market discipline, the 1975 New York City debt crisis.

question, some of which are hard to distinguish from those that result from greater integration generally, that is, from the creation of a common "economic space." First, a currency union, if it increases integration among member countries, may reduce the ability of countries to raise revenues. Factor mobility will make tax bases more mobile, and make it more difficult to levy non-benefit taxes, that is, taxes that are not linked to particular services. 1/ As a result, shocks to the budget are more likely to lead to unsustainable deficits. On the other hand, increased factor mobility makes adjustment less difficult, reducing the need for structural fiscal policies. Second, currency union will remove the freedom to use seignorage as a flexible revenue source; as a result, it may force countries to rely more on issuing government debt, with dangers of unsustainable borrowing. 2/ Third, if a country switches from borrowing in its own currency to borrowing in a common currency, debt-servicing costs may be affected. A larger capital market in the common currency may make interest costs less sensitive to the country's budgetary position; and nominal and real interest rates may also be lower if the common currency exhibits more price level stability. At the same time, the country concerned may no longer have the same captive market for its debt, for instance by issuing government securities to banks with high secondary reserve requirements or

1/ See Tanzi and Bovenberg (1990). However, incentives to migration in response to differences in local services or in taxation levels will be reduced if the latter are capitalized in house prices. See Bayoumi and Gordon (1991), who examine the relationship between U.K. local authority spending and house prices.

2/ See Dornbusch (1988, 1989) and Giavazzi (1989). Alternatively, there may be pressures to cut government expenditures.

to individuals without access to other saving instruments. 1/ Fourth, by increasing the effectiveness of fiscal expansion at home (see above), it may also increase the tendency to resort to fiscal stimulus. Fifth, by removing the very visible sanction of exchange rate depreciation (though replacing it by the sanction of higher interest costs), currency union might decrease the political disincentives toward imprudent policies.

b. Government borrowing in fiscal federations

The experience of fiscal federations may provide some useful insights for other monetary unions. A preliminary empirical analysis of U.S. data on state borrowing costs suggests that there is some evidence that higher debt burdens increase the cost of borrowing. 2/ States typically run surpluses or small budget deficits, but it is not clear whether this is the result of market discipline or of constitutional provisions or statutes that aim at budget balance. Bishop, Damrau, and Miller (1990) argue that the Canadian example is more relevant for the operation of a currency union of independent countries, since Canada has a looser federal system than the United States, Australia, or Germany. In the latter countries, control over junior levels of governments by the federal government and restrictions on regional governments are both greater than in Canada. Moreover, the

1/ If monetary union is accompanied by free competition in financial services (as will be the case in Europe with the Single Market from the end of 1992), then countries with high reserve requirements may have to lower them to sustain the competitiveness of domestic banks.

Capital controls in Italy until July 1990 limited the ability of domestic residents to acquire foreign currency assets. Giavazzi and Giovannini (1989) argue that this tended to keep down interest costs on government borrowing. Subsequent removal of capital controls has not, however, had an appreciable effect on borrowing costs.

2/ Goldstein and Woglom (1991).

likelihood that the Government of Canada would feel obliged to honor provincial debts may be lower: "The lack of an explicit Federal Government guarantee to come to the assistance of a financially distressed province ...has ensured that the market continues to send signals on the appropriateness of provincial budgetary policies" (Bishop, Damrau, and Miller, 1990, p. 13). However, in Canada fiscal transfers, or "equalization payments," to poorer regions are institutionalized to a greater extent than in the United States, and are larger in size than the EC Structural Funds (this is discussed more fully below), which may reduce the tendency for provinces to run excessive deficits. In addition, the mere fact that borrowing costs rise with increased deficits does not prove that those borrowing costs enforce discipline on the governments concerned; the latter would require that governments rein-in errant fiscal policies in response to increases in their borrowing costs.

The judgment that the market is always able to discipline governmental borrowers within a union seems too sanguine. More relevant perhaps than the experience within fiscal federations is the issuance of debt of independent states in foreign currency--for which there is no possibility for the country to reduce its real value through inflation. The experience of developing countries in the 1970s and 1980s suggests that market discipline is only applied after debt accumulation has reached clearly excessive levels; this is also suggested by examples of industrial countries, such as Ireland and Denmark, which incurred large foreign-currency debts in the late 1970s and early 1980s.

The CFA franc zone also provides some insights concerning the interaction of monetary and fiscal policies in a currency union. Unsustainable public sector imbalances in these countries have resulted in an overhang of external debt, in cost pressures, and in appreciation of real exchange rates relative to other Sub-Saharan countries. This has occurred despite the absence of monetization; statutory ceilings have allowed only limited access of governments to monetary financing, and these ceilings have been respected.

In sum, market forces do seem to play some role in disciplining governments' deficit spending. However, there does not appear to be a good case for arguing that problems of fiscal discipline disappear within currency unions in the absence of firm surveillance over policies or rules for limiting budget deficits. The next section considers the opposite question, namely whether the need for fiscal flexibility also increases within currency unions.

3. Fiscal flexibility and inter-regional transfers

In Section III we discussed several characteristics that are helpful for the smooth functioning of currency unions, namely: labor mobility, industrial diversification, and wage and price flexibility. If these features are not present to a sufficient extent, then the fiscal instrument may be an especially important tool to cushion individual countries or regions from shocks, given the absence of the exchange rate instrument for

that purpose. ^{1/} Such fiscal flexibility need not involve discretionary policy--often associated with the term "fine tuning"--but rather can be the result of the operation of automatic stabilizers. To the extent that fiscal policy is oriented toward medium-term objectives, however, the scope for fiscal flexibility is lessened.

An alternative (or possible complement) to larger national or regional deficits and surpluses for shock-absorbing purposes is a system of fiscal taxes and transfers between members of a currency union--a form of fiscal federalism. Such a mechanism is a feature of all political federations, to a lesser or greater extent. There is disagreement, however, on whether it is necessary for the successful operation of currency unions. Sachs and Sala-i-Martin (1989) show that in the United States, the federal tax and transfer system serves as an important shock absorber by increasing federal tax payments from, and lowering transfer payments to, those regions that are prospering relative to the national average, and conversely for those that are relatively depressed. The federal tax system and outright transfers to states are estimated to cushion over one-third of the effects of region-specific shocks on disposable income.

Sachs and Sala-i-Martin (1989) conclude that the success of EMU requires a system of taxes and transfers on a similar scale in Europe. It is estimated that at present, Community taxes compensate for no more than 1 percent of an income loss from an unfavorable shock hitting any member

^{1/} Corden (1972, p. 37) points out that aside from those policies that encourage labor mobility, fiscal flexibility will provide financing, not adjustment, and hence is only a temporary solution. The use of fiscal flexibility is illustrated in the European context by Masson and Méritz (1990).

country. ^{1/} A contrasting view is that even though transfers among EC countries are much lower than in the United States or Canada, the doubling of the size of structural funds by 1992 agreed in 1988 will provide sufficient fiscal resources to disadvantaged countries in the EC. ^{2/}

It is also important to distinguish between income transfers induced by short-run effects of shocks from those that are related to persistent differences in prosperity--i.e., from richer to poorer regions. Von Hagen (1991) shows that if the latter are omitted, and the effects of purely transitory shocks isolated, the stabilizing function of the U.S. federal fiscal system is very small.

Canada also provides an interesting case study of federal taxes and transfers within a currency union, and we replicated the calculations of Sachs and Sala-i-Martin for this country, with results shown in the top panel of Table 4. The table reports, in the columns labelled "elasticity," the coefficients α_1 and α_2 on relative real personal income in the following regressions:

$$\log(\text{RFTAX}) = \alpha_1 \log(\text{RPI}) + \beta_1 \text{TIME} + \gamma_1$$

$$\log(\text{RFTR}) = \alpha_2 \log(\text{RPI}) + \beta_2 \text{TIME} + \gamma_2,$$

where RFTAX represent real, per capita tax payments to the federal government by individual residents of the province concerned; RPI is real,

^{1/} See Eichengreen (1990a), p. 142.

^{2/} Bishop, Damrau, and Miller (1990, p. 24) estimate that the size of transfers to the 4 least-advanced EC members (Greece, Ireland, Portugal, and Spain) could be in the order of 2 percent of their combined GDP in 1992-93. This would constitute about 5 percent of those countries' government expenditures. In the United States, state receipts from the federal government were estimated by Eichengreen (1990a, p. 140) to be 21 percent of state expenditures in 1987.

Table 4. Canada: Response of Federal Taxes and Transfers to Real Per Capita Income by Province ^{1/}

	<u>Federal Taxes</u>		<u>Federal Transfers</u>		<u>Combined</u>
	Effect of a Dollar Decline in		Effect of a Dollar Decline in		Offset to a Dollar Decline in
<u>Elasticity</u>	<u>Income</u>	<u>2/</u>	<u>Elasticity</u>	<u>Income</u>	<u>2/</u>
					<u>Income</u>
					<u>2/</u>
<u>Federal Taxes from, and Transfers to, Households Only</u>					
New Foundland	1.24*	-0.11	1.78	-0.26	-0.15
Prince Edward Island	0.56	-0.05	0.39	-0.06	-0.01
Nova Scotia	0.89*	-0.10	-0.16	0.02	0.12
New Brunswick	1.08*	-0.10	-0.10	0.01	0.11
Quebec	1.37*	-0.11	2.56*	-0.19	-0.08
Ontario	1.62*	-0.18	0.07	--	0.18
Manitoba	0.84*	-0.08	0.77	-0.06	0.02
Saskatchewan	1.13*	-0.10	-0.30*	0.02	0.12
Alberta	1.95*	-0.22	-1.76*	0.10	0.32
British Columbia	1.39*	-0.16	-1.37*	0.10	0.26
Yukon and N.W.T.	0.24	-0.04	-0.90*	0.10	0.14
Pooled regression ^{3/}	1.06*	-0.11	-0.31*	0.02	0.13
<u>Federal Taxes from, and Transfers to, both Households and Businesses, and Transfers to Other Levels of Government</u>					
Newfoundland	0.72*	-0.08	0.91*	-0.30	-0.22
Prince Edward Is.	0.45	-0.05	0.31	-0.11	-0.06
Nova Scotia	1.04*	-0.14	-3.38*	0.91	1.05
New Brunswick	1.13*	-0.13	-3.50*	1.06	1.19
Quebec	0.22	-0.02	3.08*	-0.15	-0.13
Ontario	2.16*	-0.31	0.91*	-0.08	0.23
Manitoba	0.16	-0.02	0.16*	-0.03	-0.01
Saskatchewan	1.25*	-0.15	-0.89*	0.17	0.32
Alberta	3.85*	-0.70	-2.27*	0.25	0.95
British Columbia	1.51*	-0.21	-1.65*	0.19	0.40
Yukon and N.W.T.	-0.12	0.02	-0.27	0.13	0.11
Pooled Regression ^{3/}	1.14*	-0.15	-0.71*	0.09	0.24

* Significant at 5 percent level.

^{1/} All variables are per capita and are deflated by provincial Consumer Price Indices. They are calculated relative to the Canadian average, and are in logs. Sample period is 1965-88.

^{2/} Holding constant Canadian totals for income, taxes, and transfers.

^{3/} Separate intercepts and time trends.

per capita personal income in the province; and RFTR is real, per capita transfer payments from the federal government to households resident in the province. All variables are relative to Canadian averages. The coefficients β for the time trend and the intercept γ are not reported in the table; they are included to adjust for structural differences across provinces. The coefficients α_1 and α_2 attempt to capture the stabilization role of federal fiscal transfers and taxes, through their responses to short-run fluctuations in income.

The estimated elasticities shown in the upper panel of Table 4 are positive for taxes for all provinces/territories (but not significantly so for Prince Edward Island or the two territories combined), as expected, but the elasticities for transfers have the expected negative sign for only 6 of the 11 provinces/territories; this α_2 coefficient is significantly negative for only 4, and is significantly positive for one of them, Quebec. The effects of taxes and transfers on disposable income depend not only on these elasticities, however, but also on the magnitudes of federal personal income taxes and transfers to households; they average about 10 percent and 7 percent of GDP for Canada as a whole, over the period 1965-88.

The cushioning effects of taxes on disposable income are larger for taxes than for transfers, as in Sachs and Sala-i-Martin (1989), but magnitudes of both are lower in Canada than in the United States. A one dollar negative shock to personal income lowers taxes by between 4 and 22 cents (averaging 12 cents when weighted by population), and raises transfers by between -26 and 10 cents (averaging close to zero). When the provinces/territories are pooled to impose common relative income

elasticities, but not the same intercepts or time trends, the common coefficients are close to their average values and imply a combined offset on disposable income of just 13 cents. This compares to the 35 cents estimated by Sachs and Sala-i-Martin for the United States, most of which (about 30 cents) is the result of federal taxes.

Thus, when only taxes from, and transfers to, households are considered the conclusions for Canada depart significantly from those for the United States. 1/ However, shock absorbing properties of the federal tax and transfer system may also operate through corporate taxes and transfers to businesses and to provincial and local governments. Shocks to provincial income may be offset through these channels; effects may show up in household income, if only indirectly. For instance, transfer payments to provincial governments may allow them to continue to provide the same level of government services without raising provincial taxes. Indeed, the recently revised Canadian constitution enshrines the principle of equalization payments by the Government of Canada to ensure that comparable public services can be provided at "reasonably comparable levels of taxation." 2/

1/ The methodology used also differs in some respects from that in Sachs and Sala-i-Martin. In particular, those authors were unable to obtain regional data on prices for the United States, so used relative nominal variables (or, equivalently, divided all variables by a national price index); the estimates of Table 4 use provincial consumer price indexes from 1979-88, and the CPI for Canada before 1979.

Sachs and Sala-i-Martin use instrumental variables to account for possible simultaneity; however, their ordinary least squares estimates were almost identical. Here, ordinary least squares were used, rather than instrumental variables.

2/ Quoted in Graham (1982).

In the bottom panel of Table 4, regressions are reported for a wider category of federal taxes and transfers. The results suggest a somewhat stronger role for the federal tax and transfer system in Canada--absorbing on average about one-quarter of an adverse shock to provincial income. 1/ This is still considerably less than in the United States. While it is true that transfers to poorer provinces are a feature of Canadian fiscal federalism to a much greater extent than in the United States, 2/ these transfers are intended to serve longer-run structural purposes rather than to offset cyclical fluctuations. These findings for the Canadian system suggest that though the magnitude of the cushioning of shocks is somewhat smaller in Canada, the conclusion of Sachs and Sala-i-Martin, that a strong federal tax and transfer system is a key feature of viable currency unions, seems to be borne out. 3/

However, the smaller cushioning of shocks in Canada relative to the United States has as its counterpart greater fiscal stabilization powers for provincial governments relative to state governments. Thus, provincial governments, unlike most U.S. states, are not subject to balanced-budget limitations, and they have on occasion run substantial deficits. For example, in fiscal year 1987, the consolidated fiscal balance of all

1/ On the basis of the results of the pooled regression. The regression results by province do not always have the expected negative sign. Changes in tax provisions, social security benefits, and equalization formulas (see Graham, 1982) could well cause the coefficients to shift over time. As a result, regressions over such a long time period should be treated with caution.

2/ See Blank and Stanley (1990) and Boadway (1986).

3/ Other federations, for instance Switzerland, Australia, and Germany, also have important inter-regional transfer mechanisms: it is interesting to see to what extent they offset regional shocks. See EC Commission (1990, pp. 166-68), and Bishop, Damrau, and Miller (1990).

Canadian provinces amounted to 12 percent of provincial revenues. ^{1/} Nevertheless, transfers from the federal government do provide a safety net. It can be argued that those transfers decrease the likelihood of financial crises and enable the fiscally weaker provincial governments to access global capital markets. ^{2/} Without such transfers, the borrowing capacity of members of a currency area may be quite limited; individual states may not be able to commit themselves credibly to raising future taxes (to service borrowing) if factors of production are mobile. ^{3/}

Such tax and transfer mechanisms are likely to be useful for reducing the costs of absorbing shocks. As noted in earlier sections, these costs are largest if shocks are asymmetric, if factor mobility is low, and if wages and prices are inflexible. To some extent, regional governments may be able to cushion shocks themselves, through running deficits and surpluses.

The issue of fiscal federalism is important not only for Europe, but also for federations that are transferring fiscal powers from the federal authority to regional governments. In Yugoslavia, fiscal federalism takes a highly decentralized form, with considerable spending undertaken by the republics and provinces. The tax resources of the central (federation) government are limited to a portion of indirect tax revenues. The federation has financed its expenditures in areas of defence, federal

^{1/} Figure cited by Bishop, Damrau and Miller (1990, p. 13). Balanced-budget changes in fiscal stance are of course still possible, but in practice do not seem to have been used for stabilization purposes by U.S. states. An analysis of government spending in Canada by province and by category is contained in Horry and Walker (1991).

^{2/} Bishop, Damrau, and Miller (1990, p. 12).

^{3/} See Section IV.2 above, and Eichengreen (1990a).

administration, veterans' and disability insurance, and financing of less-developed republics and the province of Kosovo, partly through "upward" transfers from the republics. 1/ Transfers from the republics are determined in annual negotiations, and agreements must be ratified by the assemblies of all republics and autonomous provinces--an arduous process. From the Yugoslav experience, it appears that, in the context of a high degree of fiscal decentralization, the presence of upward transfers means that the effectiveness of federal fiscal policy is considerably reduced as an instrument of stabilization policy; moreover, fiscal decisions by individual republics can undermine federal monetary policy. Excessive fiscal decentralization may thus remove an instrument for cushioning regional shocks, as well as reducing the main advantage of a currency area--the wider circulation of a stable currency.

In the USSR, a new Union Treaty is currently being debated. Proposals call for the retention by the Union of responsibility for monetary policy based on a common currency, for the Union budget, for safekeeping of gold and diamond reserves, and for levying taxes. 2/ Though ownership of natural resources is to be ceded to the republics, the Union government is to administer a common energy policy and to control the energy distribution network. Republics would have powers to tax and spend, but would share these powers with the Union government. The Union Treaty is vague on the precise division of powers, but some degree of decentralization is inevitable relative to the existing very centralized system.

1/ The proportion of central government revenues accounted for by upward transfers was 14 percent in 1990.

2/ See IMF and others (1991).

The experience of other currency unions thus suggests that there are probably limits to the decentralization of fiscal powers beyond which an economic and monetary union would not be viable, or at least not maintainable at an acceptable cost. Without the taxing powers sufficient to cover the basic responsibilities of a federal authority, pressures for monetary financing at the Union level would probably lead to macroeconomic instability, vitiating the advantages of a currency union. Moreover, the access to capital markets of individual republics would probably be limited. If the federal authority did not have redistributive powers (through both taxes and transfers), regions suffering adverse shocks would have little scope to cushion effects on income and employment. In those circumstances, the currency union itself would cease to fulfill its intended purposes.

4. The case for fiscal policy coordination

The basic rationale for policy coordination is that national policy actions have nontrivial "spillover" effects on other countries; policy coordination is a mechanism for internalizing these externalities. Of course, policy spillovers exist among countries irrespective of whether they are members of a currency union. ^{1/} However, the nature of these spillovers is affected by the exchange rate regime in place; as pointed out above, for example, an expansionary fiscal policy may be negatively, not positively transmitted in a currency union. In addition, countries in a

^{1/} Bredenkamp and Deppler (1990) argue that the externalities related to the use of fiscal policy for stabilization purposes are no more serious in a currency union.

currency union may become more integrated economically, as well as more concerned about the welfare of their neighbors. ^{1/}

The question arises as to the form that policy coordination should take to reduce unfavorable spillover effects. Two sorts of spillovers were discussed above: (i) macroeconomic spillovers associated with stabilization policy, and (ii) externalities related to budget discipline and credibility of monetary policy. The latter externalities imply a persistent bias in the direction of excessive deficits. In contrast, externalities related to stabilization policies in the face of shocks will depend on the sign of the shock: in one case a country's budget deficit will be excessive, while in another, the problem will be over-contractionary fiscal policies (for instance, in the case of higher oil prices discussed above). Therefore, rules or institutionalized procedures that put ceilings on deficits may be the solution for the first case, but not the second. It may be very difficult to define rules that are appropriate to all situations. A procedure that enables fiscal policies to be coordinated in a flexible fashion to minimize the unfavorable effects of both types of externalities has its advantages, but to the extent that it relies on discretion rather than rules, it may itself build in suboptimal behavior. Discretionary policy coordination may not be put in place sufficiently quickly, may be subject to misinterpretation, and may be difficult to monitor.

^{1/} Masson and Mélitz (1990) present a simulation of the response of two members of a currency union to an external oil price shock, which suggests that such a shock might lead to excessively tight policies in a currency union. Given a sufficient concern for negative effects on the trade balance or on inflation of higher oil prices, each country would tighten fiscal policy, exacerbating unfavorable effects on the other country (as captured by those targeted variables).

Most federations have a combination of rule-based and discretionary coordination. For example, Canada has rules for making equalization payments to poorer regions, but they are renegotiated every five years. Coordination among federal and provincial governments also occurs through annual conferences of first ministers. ^{1/} Such discretionary coordination has the drawback, compared to clear rules defining respective powers and responsibilities, that it is subject to the vagaries of successive renegotiation.

The discussion above suggests that currency unions cannot ignore the effects of fiscal policies on the exchange rate mechanism. It seems clear that in order to discipline fiscal policies and reduce unfavorable regional effects, mechanisms for achieving both fiscal transfers and enhanced fiscal policy coordination are helpful. However, the decision to set up the institutions of fiscal federalism is essentially a political choice that balances loss of sovereignty against shared goals among members.

V. Convergence Issues

Issues of real and nominal economic convergence are central to any discussion of the formation of monetary unions. ^{2/} It is perhaps intuitively obvious that monetary union implies convergence of inflation rates--at least in the long run. Indeed, convergence of both inflation rates and monetary policy has been a feature of the European Monetary System, particularly since 1982, despite some recent widening of the spread

^{1/} The federal prime minister and provincial premiers.

^{2/} EC Commission (1990).

of inflation rates; see Chart 3. ^{1/} On the other hand, it is not clear whether real convergence is a prerequisite or a consequence of closer economic integration.

The view that real convergence is a prerequisite for monetary and customs union would follow from the belief that the geographical location of economic activity is subject to centripetal forces arising from closer economic integration. Such forces might be due, for example, to the attractiveness of an already highly industrialized center--with an established infrastructure and other positive external economies--for the location of new activity (Myrdal 1957; Perroux 1959).

The opposing view--that closer economic and monetary integration is likely to lead to greater real economic convergence--follows from the neoclassical view that the free movement of goods and services in an environment not subject to exchange rate risk will lead to an equalization of factor prices and per capita output.

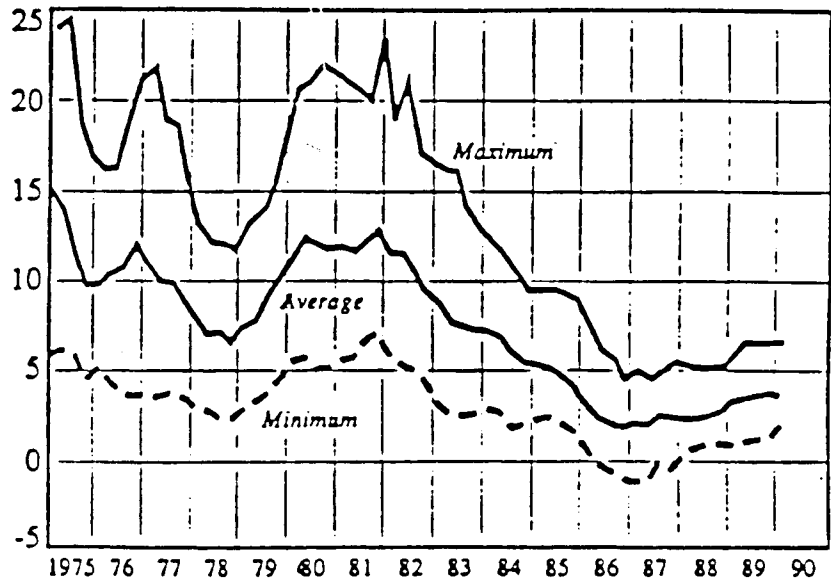
Some clarification of the issues involved in this literature can be found in recent work by Krugman (1990) and Krugman and Venables (1990). They confirm two intuitive conclusions: (i) centralization is more likely the greater the size of available economies-of-scale and the greater the size of the mobile manufacturing sector; and (ii) it is less likely the greater the size and importance of transport costs.

Taking real output per capita (as a percentage of the national average) as the measure of real economic performance, Chart 4 presents some evidence on the degree of real convergence during the last thirty years in a monetary

^{1/} See also MacDonald and Taylor (1990).

Chart 3

ERM: Maximum and Minimum Rates of Inflation
(Consumer price indices)

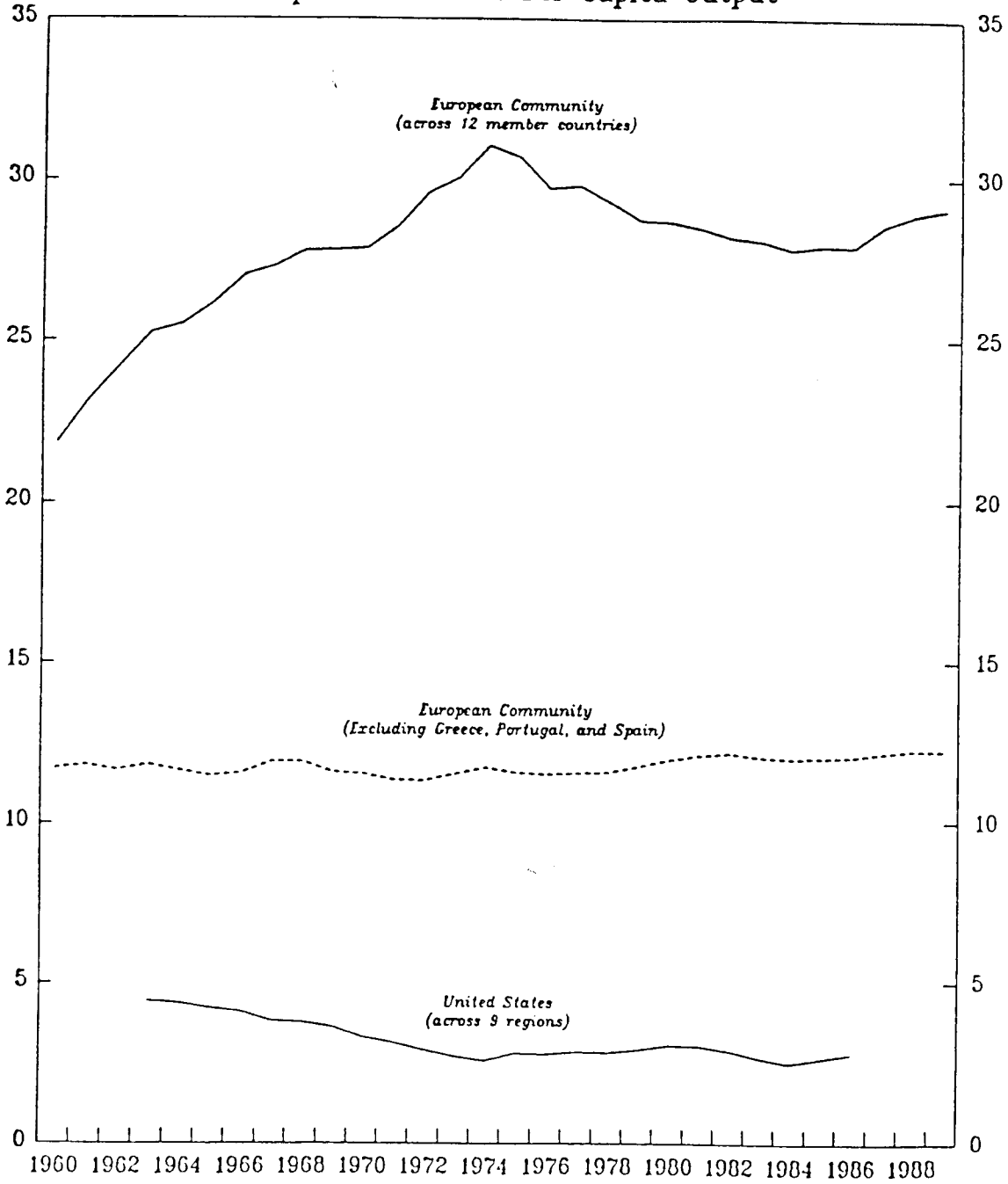


Source: International Monetary Fund, *International Financial Statistics*.

From Ungerer and others (1990), p.25

Chart 4.

Dispersion of Real Per Capita Output ^{1/}



^{1/} Coefficients of variation, i.e. standard deviations of real per capita output, scaled by the mean (components are weighted by population).

union--the United States--and the European Community. It shows the cross-sectional standard deviation of regional real product per capita for U.S. regions and of real GDP per capita for members of the European Community, including and excluding Greece, Portugal, and Spain, relative to the mean. ^{1/} The chart suggests a significant degree of real economic convergence across the United States during this period, which concurs with the results of Barro and Sala-i-Martin (1990), who examine data for U.S. states since 1840. The results of similar calculations using data for the countries of the European Community are interesting for a number of reasons. First they show that, on this measure, much of the dispersion in real economic performance across the EC is due to the southern countries--i.e., Greece, Portugal, and Spain. Excluding these countries, the standard deviation has remained reasonably constant at around 12 percent since the early 1960s, but including them causes the standard deviation to rise to between some 25 percent and 30 percent. There is some sign of real convergence across the EC in the 1970s; a comparison of the two lines suggests that this is due to faster growth in Greece, Portugal, and Spain.

Apart from these absolute differences in the patterns of real economic behavior across the two areas, the relative orders of magnitude are also worth noting. Thus, while the standard deviation of U.S. regional real product per capita as a percentage of the national average varies between some 3 and 5 percent, the corresponding range for the European Community as

^{1/} These dispersion measures were calculated as the square root of the weighted variation around the weighted mean, with weights equal to the percentage of the total (i.e., EC or U.S.) population in each country or region.

a whole is between 22 and 35 percent or, excluding the southern countries, around 12 percent. There is certainly no presumption from the U.S. data that currency union makes convergence of living standards difficult. However, how much of the convergence was facilitated by fixity of exchange rates--encouraging both capital and labor mobility--and how much was due to fiscal transfers from richer to poorer regions (discussed in Section IV above), is unclear.

Since monetary union implies intense pressure for convergence of inflation rates, a related question concerns the output costs of disinflation and whether or not nominal convergence should be achieved before or after monetary union. In a neoclassical framework, the output costs of disinflation are viewed as temporary, with output and employment returning in the medium term to the equilibrium, constant-inflation rate level (Friedman 1968). Recent work, however suggests that European output and employment levels may display "hysteresis" effects (Blanchard and Summers 1986, Gordon 1988)--that is to say, the equilibrium level of unemployment or output is not independent of its time path. There are many competing theories of output and unemployment hysteresis, one of which is that the human capital--vocational skills and knowledge--of workers decays rapidly, making them difficult to re-employ and much less efficient workers after a certain period of unemployment. If this is the case, then it becomes dangerous to treat the output costs of disinflation as temporary. If output is reduced in order to disinflate, then in the absence of exogenous shocks and/or technological innovations, it may stick at or near the new lower level until the authorities reflate. Evidence that reductions

in inflation may generate permanent increases in unemployment is given by Sachs (1987) and Gordon (1988), both of whom employ European price and wage data.

Given, however, the perceived desirability of low inflation, the question is whether or not the output costs--temporary or permanent--of bringing down inflation are higher within monetary union than outside it. In large measure, the answer hinges on the credibility of the supra-national monetary authority to pursue the objective of price stability. If the commitment to price stability is perceived as strong and credible, then there may be a marked improvement in the output-inflation trade-off inside the monetary union as inflationary expectations are lowered--at least in countries with higher inflation rates. ^{1/} This underlines the case for carefully examining the role and constitution of the European central bank or European Monetary Fund.

VI. Monetary Union-Transitional Issues

1. European Monetary Union

Previous sections have considered a number of issues concerning currency unions, including: traditional criteria for their success, the conformity of existing unions to these criteria, the convergence of real economic performance before and after their establishment, and implications for fiscal policy. In this section, some of the issues concerning the

^{1/} Giavazzi and Giovannini (1988) argue that ERM members may have improved the output-inflation trade-off by importing monetary policy credibility from the Bundesbank. Dornbusch (1989) and Weber (1991) however question whether costs of disinflation--especially in the early 1980s--were substantially reduced by EMS membership.

transition to monetary union are discussed. The overwhelming case in point in this context is Europe, where various plans are currently being debated-- and the first steps have already been taken--towards full monetary union between the countries of the EC.

a. The Delors Plan

In order to motivate and organize discussion of the main issues, it is convenient to consider the plan--or rather, broad framework--set out in the Delors Committee Report (1989) for accomplishing the transition to full Economic and Monetary Union (EMU). The broad essence of the Delors plan, which was discussed at the Madrid meeting of the Council of Ministers in June 1989, is a three-stage procedure, as follows:

Stage 1: All remaining exchange controls are removed and the single European financial area is completed. All countries become members of the Exchange Rate Mechanism (ERM) with narrow bands of ± 2.25 percent for all currencies in the central grid (see Bank of England 1990a for a brief outline of the mechanics of the ERM). 1/ Mutual, voluntary economic surveillance is initiated by the Council of Economic and Finance Ministers (ECOFIN) and coordination of monetary policy is facilitated by a consultative Committee of Central Bank Governors. The report also stated that a number of members of the Delors Committee suggested that ERM members should pool 10 percent of their foreign exchange reserves to form a European Reserve Fund empowered to intervene in the foreign exchange markets.

1/ The major European capital controls had been removed by July 1, 1990. Greece and Portugal are the only EC members who do not currently participate in the ERM. Spain and the United Kingdom currently avail themselves of a ± 6 percent band of fluctuation.

Stage 2: A European System of Central Banks is established with the aim of gradually taking over the formulation and implementation of monetary policy. The ERM is hardened so that realignments are allowed only under "exceptional circumstances," and the bands within which rates are allowed to fluctuate are possibly narrowed.

Stage 3: Full European Monetary Union is effected with exchange rates irrevocably fixed and a single European currency ultimately introduced. The European central bank takes charge of the Community's monetary policy.

b. The speed of transition

The Delors Report does not set out a blueprint for managing the various stages of the transition or specify in any detail how long each stage should last. In particular, a major area of contention concerns the speed with which stage 2 of the Delors plan should be achieved. However, at the European Council meeting in Rome in October 1990, 11 of the 12 member countries (i.e., excluding the United Kingdom) agreed that stage 2 should begin on January 1, 1994 ^{1/} and that a decision on the implementation of stage 3 be taken at the latest within three years from the start of the second phase.

A fundamental issue concerning the appropriate speed of transition towards full monetary union concerns whether or not it is necessary or desirable to achieve economic convergence before monetary union, or whether it can follow. This issue was discussed in Section V. Another issue concerns whether or not, in stage 3, the supra-national authority

^{1/} Subject, inter alia, to further advances in economic and monetary integration and "further lasting and satisfactory progress towards real and monetary convergence" (see Ungerer and others 1990, Appendix II).

responsible for monetary policy can be counted on to ensure price stability (Section II above). A concern in progressing to stage 3 involves foregoing the monetary discipline presently imposed by the Bundesbank amongst the members of the ERM. While it may be argued that the existing members of the ERM have revealed a preference for price stability (Artis and Taylor 1990), unless one can be sure that any new supra-national authority will do at least as well as the Bundesbank in this respect, there may be reasons for extending the transition period to full monetary union. The British hard ECU proposal (see below) is intended to address just this concern.

There are, clearly, two basic options available for the speed of transition--fast and slow. A third alternative (the so-called "two-track" approach) would be for an inner core group of countries to move rapidly to EMU with the remaining countries progressing towards monetary union less rapidly (see e.g., Wolf 1990). A major argument against such a scenario is that the outer core group may find themselves "outsiders" when they eventually come to full monetary union--i.e., a pattern of trading and other economic relationships may develop within the inner core, which members of the outer core may later find it hard to penetrate (see e.g., Artis and Taylor 1990). The slow option would allow time for the convergence of real and nominal economic variables and the development of other "prerequisites" of an optimal currency area. The argument against a slow transition, however, is based largely on the view that it is likely in some sense to be unstable.

Since the start of the Intergovernmental Conference on EMU in December 1990, debate has proceeded on the length of the transition period and on the

nature of stage 2. A number of countries now seem to have concluded that a lengthy transition may be unavoidable. The issue of explicit constraints on national budgets divides those countries like Germany and The Netherlands, which are in favor of them, from others who prefer to rely on multilateral surveillance. The exact powers of a European central bank are still under discussion; for instance, whether it should have ultimate responsibility for foreign exchange market interventions.

2. Sources of instability in the transition

There are at least two sources of instability which can threaten the transitional phase: instability arising from currency substitution and instability arising from speculative attack.

a. Currency substitution

In the absence of capital controls, it seems likely that a fully credible exchange rate union will lead to a concentration of cash balances-- especially those held by large corporations--in a small number of currencies in order to achieve benefits similar to some of those which accrue in monetary union (Giovannini 1990; U.K. Treasury 1990). This may generate large shifts in the demand for individual member currencies in the short run, with the instability becoming increasingly significant as the degree of European economic and financial integration rises. ^{1/}

While these effects would not affect the overall stance of monetary policy across the exchange rate union, they would make the interpretation of national monetary aggregates more difficult. Indeed, one recent study

^{1/} The discussion in this section is concerned with substitutability between national monies, as opposed to interest-bearing assets denominated in different currencies; on the latter see Artis and Taylor (1989).

(Kremers and Lane 1990) has produced econometric evidence that a single, stable aggregate demand function for narrow money expressed in a common currency already exists for the ERM membership as a whole, suggesting that problems arising from the imposition of a common set of parameters across the whole range of countries are more than compensated for by internalizing the effects of currency substitution and portfolio diversification.

b. Speculative attack

The possibility of instability arising from speculative attacks on the exchange rate relates to the markets' belief in the authorities' ultimate commitment--and ability--to maintain a certain parity. If successful, a speculative attack will be self-fulfilling in the sense that it will lead to a realignment of the currency.

One obvious scenario in which such an attack might occur is where the competitiveness of a high inflation member country has clearly been eroded by holding the nominal exchange rate parity. This will therefore generate speculation that the currency will be devalued which, if it is intense, may lead to an eventual exhaustion of the authorities' foreign exchange reserves, so that they are then indeed forced to devalue. As noted by Giovannini (1990), such a situation may be exacerbated if price setters, producers and unions "pencil in" a devaluation in their pricing and bargaining procedures, thereby adding further inflationary pressure. In this respect, it is worth noting that only a very small perceived probability of a sizable devaluation may be necessary to generate a

significant skew in the distribution of expectations (a phenomenon related to the so-called "peso problem"). 1/

A second scenario would be where a country has a very large stock of public debt, a substantial proportion of which is due to be refinanced (Giavazzi and Pagano, 1989). The markets may then perceive a reluctance on the part of the authorities to raise short term interest rates in order to defend its currency because of the concomitant increase in debt service, and may believe that it would prefer, in the final analysis, to allow the debt to be eroded through a devaluation of the domestic currency. This perception may generate a capital flight from such a country which would initially lead to foreign intervention by the authorities and a consequent loss of reserves. The loss of reserves might then strengthen the perception that the parity cannot be held and so lead to an intensification of the attack.

As noted by Artis and Taylor (1988a), it may be possible, at least in principle, to deter speculative attacks in the absence of capital controls by an appropriate design and mix of other measures such as realignment procedures, the degree of monetary policy convergence, and the intervention mechanism. 2/

With respect to realignment procedures, in the transition to monetary union, the option of frequent and "timely" realignments which avoid allowing

1/ Krasker (1980).

2/ An additional means of raising policy credibility and thereby deferring speculative attack would be to manage the term structure of public debt such that the costs of renegeing are very high (Calvo and Guidotti 1990).

rates to hit outer fluctuation limits and so offer speculators one-way bets is clearly not available.

With respect to foreign exchange market intervention arrangements, the literature on speculative attacks clearly identifies the trigger for an attack as the perception that reserves will be exhausted and the currency devalued. ^{1/} While capital controls can limit the amount of speculative currency sales--preventing the trigger from being pulled by keeping the safety catch on--appropriate intervention arrangements can provide an assurance that reserve exhaustion will not occur--thereby alleviating pressure on the trigger. Thus, borrowing rights are a deterrent to attack and the limiting case--infinite borrowing rights--is indeed indistinguishable from an indissoluble exchange rate union. The 1987 Basle-Nyborg Agreement, by increasing the availability of the "very short-term financing facility," was thus significant in reducing the vulnerability of the system to attack by increasing the funds immediately available to central banks in defence of their currency. To a large extent, however, the efficacy or otherwise of foreign exchange market intervention is an empirical question. (Unsterilized intervention, by definition, cannot be seen as independent of monetary policy.)

Sterilized foreign exchange market intervention can, in principle, be effective in stemming an attack in two ways. First, it alters the composition of the market portfolio and thereby its risk characteristics and so the equilibrium exchange rate (Branson and Henderson 1985). Clearly, the effectiveness of such intervention will be weakened as interest-earning

^{1/} See e.g. Buitert (1986), Driffill (1988), and Obstfeld (1988).

assets denominated in the various ERM currencies become closer substitutes for one another. Secondly, intervention may act as a signaling device (Mussa 1981): If the authorities, acting on inside information, are prepared to bet against the market then intervention becomes a signal of future monetary policy (to the extent that the profitability of official intervention is publicly scrutinized).

The last official study of intervention, the Jurgensen Report (1983), concluded that sterilized intervention was a relatively weak instrument of exchange rate policy. More recent empirical studies, in particular by Dominguez (1990) and Obstfeld (1990) (see Edison 1990 for a survey) essentially conclude that broad movements in exchange rates in the latter half of the 1980s have been largely attributable to monetary and fiscal policy developments rather than sterilized intervention; that the scale of sterilized intervention in recent years has generally been too small relative to the magnitude of outstanding asset stocks to have had significant portfolio effects (with the possible exception of 1987); that the signaling effect of sterilized intervention has only been effective when reinforced simultaneously by monetary policy or coincident news events (such as unexpectedly good trade figures); and that insofar as intervention does have any effect, it is likely to be considerably enhanced when undertaken by several countries in a concerted fashion.

This evidence therefore suggests that, notwithstanding the scope for concerted intervention to iron out short-term market fluctuations, the major route to avoiding the instability arising from speculative exchange rate

attacks in a transition to monetary union must be primarily via monetary policy coordination.

3. Arguments for and against a rapid transition

In the light of the above discussion, one can list at least four attractions of taking the fast route to monetary union: (i) maximum credibility to exchange rate stability is generated since exchange rates are effectively eliminated; (ii) more of the efficiency gains associated with a single currency are obtained immediately; (iii) a central monetary authority may have more success in implementing area-wide monetary policy than individual country monetary authorities; and (iv) it could also avoid "beggar-thy-neighbor" interest rate and other policies.

The major argument against a rapid transitional phase is exactly that which is used in support of gradualism: it may be advisable to allow time for the "sufficient" convergence of economic performance and other conditions of successful monetary union, as discussed in Section V. In the presence of persistent divergence of real economic indicators (such as per capita unemployment output) across Europe, some potential members may view the economic costs of joining EMU as outweighing the political costs of staying outside it.

A related argument is that by imposing an administered, centralized approach to monetary management, there is the risk of achieving an average overall economic performance rather than the potential benefits of converging on "the best in the community" which a more autonomous, competitive approach may yield (U.K. Treasury 1989). An alternative plan

for a competitive, rather than administered, approach to the management of stage 3 has been put forward by the United Kingdom.

4. The Hard ECU Proposal

The British alternative to the Delors approach, the hard ECU proposal, is seen by the U.K authorities as a market-oriented alternative to the administrative approach to stage 2 contained in the Delors Report, predicated on a belief in the efficiency of market forces and on the presumption that the path to monetary union should be gradual and evolutionary rather than rapid. The central element of their proposal is that a new parallel currency be introduced (presently referred to as the hard ECU) with its own central parity and intervention bands against each of the other ERM countries. The hard ECU would move with the strongest currency in any realignment of central parities--i.e., it would never be devalued against an ERM currency. A new community institution, the European Monetary Fund (EMF) would manage the hard ECU and would also be empowered to issue the new currency against national EC currencies. The EMF would, at least initially, back its hard ECU liabilities one for one with national currencies 1/ and would set the rate on its deposits. It would also be empowered to demand that, in the event of a devaluation of a currency or its contact with the lower intervention points of the grid, the national monetary authority repurchase its currency from the EMF for hard currencies at the rates prevailing when the balances were acquired--thereby subjecting

1/ This provision is designed to circumvent one of the arguments against the introduction of a parallel currency given in the Delors Committee Report: "an additional source of money creation without a precise linkage to economic activity could jeopardize price stability."

the monetary authorities in weak-currency countries to corrective pressures induced by reserve losses and by a shrinking monetary base.

The advantages of the hard ECU proposal, as envisaged by the U.K. monetary authorities, are that it would add counter-inflationary discipline to national monetary policies; that "it would significantly strengthen the forces leading to the convergence of economic conditions in the community;" that it would reduce the degree of German dominance and "bring an element of collective decision-making to the ERM;" and that it would introduce the idea of a new currency to consumers and producers (Bank of England 1990c). In addition, the proposal is seen as a way of avoiding full monetary union before an adequate degree of real economic convergence has been achieved and also as a means of providing community-wide experience in the joint management of a common currency within the existing, tried and tested framework of the EMS (Crockett 1991).

In gauging the attractiveness of the hard ECU, it is useful to distinguish between tangible, noninterest-bearing currency and interest-bearing assets denominated in that currency.

With respect to the former, it seems likely that any substitution away from the domestic currency as a means of payment would be slow and modest under most circumstances. Part of the explanation appears to lie in simple habit and custom. Part of it also relates to the costs of switching, be it in the form of bid-ask spreads, menu costs, or adapting say, ATM units for a parallel currency. And part of it is uncertainty. Even if one believes that the hard ECU would be a superior means of payment than one's national currency, the return one can achieve by switching depends on how many other

residents also switch. This is the so-called "networking problem" that can prevent a new currency from reaching a critical mass of use. These factors inhibiting currency substitution would be mitigated somewhat by making the hard ECU legal tender throughout the EC and by the development of an effective cross-country payments and settlement system.

Turning to interest-bearing assets denominated in hard ECUs, their attractiveness would be less obvious since any reduced inflation or exchange rate risk would presumably be compensated in the market by a lower nominal interest rate. In this sense, the 13th currency might not add much to the asset portfolios that can already be constructed using available financial options and internationally diversified mutual funds. It is true that the current, basket, ECU has become an important investment currency--but not to the extent of eliminating other European currencies. If hard ECU currency caught on, then the demand for interest-bearing hard ECU assets might well grow in parallel with it, since monetary history reveals a tendency for mediums of exchange to also be used as units of account.

Even if the hard ECU did not soon become a major transactions medium, its supporters argue that this would not undermine the case for its introduction since its primary importance in the early stages would be as a non-inflationary standard for the ERM. 1/

As outlined earlier, the hard ECU proposal envisages that monetary authorities with weak currencies would be required to repurchase their currency balances from the EMF at an earlier, more appreciated exchange rate. One possible complication is the fact that the position in the ERM

1/ Crockett (1991).

band--at least in the short run--has generally been an unreliable indicator of the domestic inflation rate performance of a currency, so that even countries with low inflation might have to repurchase their currencies if they went to the bottom of the band. Over the longer run, however, one should expect high-inflation currencies to depreciate towards the lower intervention points.

A last point concerns the monetary policy behavior of the EMF itself. During the (initial) stage when the EMF acts merely as a currency board, there is little danger that its own monetary actions could affect the inflation rate since it could change the composition of the EC money supply but not the total money supply. Thus, if the EC money supply were appropriate in relation to EC money demand before the EMF, it should be appropriate after the EMF. But this need not be the case in the stage when the EMF expands its functions to include engaging in open-market operations, interest rate leadership, and exchange market intervention. At the final stage of monetary union, many of the questions about "average" versus "best practice" that have emerged in the design of a single European central bank emerge here as well. How, for example, could one be sure that the EMF would use its interest rate leadership to give primacy to price stability? The satisfactory performance of the EMF during stage 2 would not provide a guide to its performance in stage 3 for the following reason: since the hard ECU derives its "hardness" from the guarantee that it would depreciate against EC currencies, if it were to become the single European currency, it would lose this anchor at the same time (Issing 1991). That anchor would then reside solely with the EMF.

Also at issue are the ways in which the monetary policies of the EMF and of national central banks would interact during the transition to EMU. A 13th monetary authority, operating in the presence of twelve national central banks, could tax the limits of monetary policy coordination-- particularly in an environment where there are no capital controls, where realignments are a rarity, and where the Single European Market and Financial Area is a reality. ^{1/}

VII. Summary and Conclusions

The paper has highlighted a number of the issues that arise in monetary unions, or common currency areas. The value of such unions clearly derives from the wider circulation of a stable currency; major benefits include reducing transactions costs, lowering price and exchange rate variability, and enhancing the anti-inflationary credibility of monetary policy. For the latter to result from currency union, it is crucial that the proper incentives be provided for disciplined monetary policies. In this context, the institutional design of the central bank is of crucial importance. In particular, it seems likely that price stability is enhanced by de facto independence from fiscal authorities. Such independence may result from statutory provisions, but such provisions may not be sufficient if governments can exert indirect pressure on the central bank for easier monetary policy. The latter possibility is the reason for the argument,

^{1/} The Delors Committee Report argues: "... the addition of a new currency, with its own independent monetary implications, would further complicate the already difficult effort of coordinating different national monetary policies."

made in the Delors Committee Report, that constraints on fiscal policies are also needed in the context of economic and monetary union in Europe.

The costs of currency union for a given country involve the loss of exchange rate flexibility, which can be seen as providing an instrument to cushion "shocks" to the economy. The traditional literature on optimal currency areas considers the circumstances in which the loss of this instrument is the least costly: within currency unions exhibiting high factor mobility and wage/price flexibility, for economies that are relatively open, and for countries with a high degree of industrial diversification. Since these criteria are partial ones, an overall assessment requires a macroeconomic model and knowledge of the incidence of various shocks; some of this literature was surveyed above.

Another important macroeconomic tool is fiscal policy in its various aspects. It is possible that demands for the use of this tool might increase within a currency union, since the exchange rate instrument is no longer available for cushioning shocks--at the risk, raised above, of interfering with monetary policy's objective of price stability. Even if the increased use of fiscal flexibility were desirable, the ability to service the debt resulting from large fiscal deficits incurred to cushion asymmetric national shocks might diminish in a currency union, especially if accompanied by increased economic integration and factor mobility, leading to mobility of tax bases. The fiscal issue is of considerable importance for Europe--hence the debate on whether monetary union needs to be accompanied by greatly expanded fiscal transfers or even a Community-wide system of taxation. In practice, there are relatively few examples of

currency unions that are not also accompanied by some degree of political union. Evidence from existing federations (including new evidence provided in the paper) suggests an important role for fiscal federalism in cushioning shocks, but the evidence is not conclusive as for the need for this feature, and more research is no doubt warranted. It seems likely, however, that for a currency union to be durable it must be accompanied by a degree of solidarity among member countries, and one manifestation of this solidarity is the willingness to make payments to members suffering from adverse circumstances.

Whether the exchange rate is an effective tool to cushion shocks has its counterpart in the debate on convergence: whether inherited nominal or real disparities--in rates of inflation, in levels of productivity and real per-capita incomes--need to be reduced before currency union occurs, or instead are reduced as a consequence of it. Evidence for the United States suggests that the forces for regional economic convergence are strong despite fixity of exchange rates between regions, but how much of this convergence is due to labor mobility or fiscal transfers is hard to assess. The experience of the former GDR in adopting the deutsche mark provides a cautionary example of the effects of lack of convergence--albeit an extreme one, given that the economic systems in the two parts of Germany were completely different.

A final issue treated in the paper is how to assure a transition from a system of exchange rate flexibility to a currency union; this issue is of direct relevance for Europe, where the actual EMS already contains some of the features of a currency union, including a fledgling European currency,

the ECU. An important unresolved issue in the context of negotiations currently underway among EC members concerns the speed and form of the transition to full monetary union. The transitional period is seen as needed to achieve greater economic convergence and to build new monetary institutions; however, the dangers from an extended transitional period include the possibility of speculative attacks and the need to avoid sharing ultimate responsibility for monetary policy. The British hard ECU, to be managed by a European Monetary Fund, can be seen as a proposal for using market forces to accommodate these various requirements on the transitional period, while leaving open the ultimate objective of a common currency. However, it is not at all clear that the hard ECU proposal would ensure a smooth transition; moreover, the final stage to currency union would require a fundamental change in the nature of the monetary fund, in order to turn it into a European central bank.

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