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A Consumer's Guide to EMU

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rates between existing national currencies. I conclude that the advantages of monetary union relative to fixed exchange rates between national currencies are less transparent than suggested by many advocates of EMU.

Section III considers the evidence on potential costs of monetary union. The magnitude of those costs depends on the incidence of shocks and on the indispensability of the exchange rate as an instrument for adjusting to them. Alternatives to the exchange rate as an adjustment mechanism include wage and price changes, interregional migration, interregional capital flows, and interregional fiscal transfers. I consider each of these mechanisms in turn. Section IV highlights fiscal issues, since debates over the need for fiscal restraints on member countries and for fiscal federalism at the union level feature prominently in current discussion. I suggest that fiscal federalism but not formal fiscal restraints of the sort embraced at Maastricht has a role to play in monetary union.

Section V turns to the design of the European Central Bank (ECB). Key issues are structuring it so as to insure the ECB's independence from political pressure and determining whether it should share responsibility for prudential supervision. I identify some limitations of the measures in the draft statutes of the ECB designed to guarantee the independence necessary for price stability, and argue that the decision to relieve the ECB from responsibility for prudential supervision may be a serious mistake.[2]

Section VI is devoted to the transition: how Europe should get from its present system of pegged but adjustable exchange rates to a single currency and a European Central Bank. I raise questions about the advisability of the convergence criteria adopted at Maastricht for determining who will qualify

for participation in EMU.

Having focused, to this point, on European affairs, Section VII turns to EMU's impact on the rest of the world. Conventional wisdom has it that the creation of a single European currency will increase the global demand for the ECU and reduce the demand for its competitors, including the dollar. I suggest that even if EMU stimulates the demand for ECUs and reduces the demand for dollars, the net effect is likely to be small, partly because historical and institutional factors inhibit shifts among currencies, partly because the desire for diversified portfolios on the part of Europeans will stimulate the demand for non-European currencies.

Finally I consider the prospects for international policy coordination following EMU. While the reduction in the number of players in the European monetary arena from 12 to one will attenuate the free-rider problem plaguing efforts to coordinate policies, I conclude that other aspects of the EMU process do not bode well for more systematic policy coordination between Europe, the U.S. and Japan.

II. Benefits of Monetary Unification

A. Lower Transactions Costs

Tourists (and professors) changing money at airports cannot help but be impressed by the transactions costs associated with the existence of separate national currencies. Commissions averaging several per cent of the value of the transaction for customers changing money at Europe's internal borders will be eliminated by the creation of a single currency.[3] The tourist's impression overstates the magnitude of the savings, however, since commissions

on wholesale transactions for corporations and others are considerably smaller than those on retail exchanges.

Evidence on the magnitude of these savings is scanty. The European Commission (1990a) conjectures that currency conversion costs average 2.5 per cent for travelers, but that they fall to as little as 0.05 per cent for retail transactions in excess of $5 million. It contends that conversion costs absorb some 0.1 per cent of GDP for larger member states whose currencies are used extensively as a means of international payment, but rise to as much as 1 per cent of GDP for the Community's small, open, less-developed economies, averaging 0.4 per cent of GDP for the EC as a whole.[4]

Four-tenths of a percentage point of GDP seems like a small return on a process riddled with uncertainties and potential pitfalls. Even if one adds the benefits associated with simplified accounting and cash management procedures, the reduction in transactions costs is still small. Many harbor a suspicion that there exist larger gains to be reaped, but economic models of money remain insufficiently developed for rigorous analysis of the efficiency gains from substituting one money for 12.

B. Enhancing Price Stability

Inflation rates declined (and converged) throughout Europe in the 1980s. A popular presumption is that the European Monetary System (EMS) was responsible for these trends. Once the more inflation-prone countries of Europe committed themselves to pegging their currencies to the Deutsche Mark, they were forced to reduce their inflation rates to German levels. In effect, they delegated the formulation of their monetary policies to the German

Bundesbank, an institution with a credible anti-inflationary reputation. But EMS parities are not written in stone; as market participants are aware (Frankel and Phillips, 1991), countries retain the option to realign. Hence inflation-prone countries can continue to run more expansionary policies than Germany and devalue once their real exchange rates appreciate to unsustainable levels. Only monetary unification which locks in exchange rates once and for all ensures that inflation rates in other European countries will decline permanently to German levels.

Research has identified various limitations of this argument. Collins (1988) has shown that EMS membership was not in fact responsible for the decline in European inflation rates in the 1980s. After controlling for other determinants of inflation, whether or not a country was an EMS member has no residual impact on inflation performance.[5] Changing attitudes toward inflation rather than EMS membership per se account for the decline in inflation rates, as Collins and Giavazzi (1992) document. The enhanced price stability produced by this public support has made exchange rate stability and currency unification possible, not the other way around.

Collins' conclusion derived from regressions using data for a cross section of some two dozen EMS and non-EMS countries for the period 1971-1985. She regressed inflation on lagged money growth, lagged GDP growth, and changes in inflation over preceding years. Dummy variables for participation in the EMS and the Snake and for various years were also included. As soon as a dummy variable for the 1979-85 subperiod was added, whether or not a country was an EMS member between 1979 and 1985 had no discernible impact on its inflation performance.

Collins' data end in 1985, which may pre-date the period in which the EMS gained full credibility and its anti-inflationary effects became evident. Table 1 therefore updates her analysis to 1990. When EMS membership between 1986-90 but not a dummy variable for those years is added to Collins' basic specification, EMS membership appears to have been associated with significantly lower inflation. But once the 1986-90 dummy is added, the EMS effect, while still negative, loses its statistical significance.

A conceivable objection to this procedure is that the EMS variable equals unity for Germany as well as for the countries pegging their currencies to the DM. Since there is no reason to think that EMS membership reduced German inflation, that country's inclusion could bias the EMS variable against the finding of a significant anti-inflationary effect. Table 2 therefore reports the results of estimating the same equations with the omission of Germany from the cross section of countries. It shows that Germany's omission in fact does not weaken the basic result.

One of the prime motivations for EMU lies in the desire of other EC members to recapture from Germany influence over the formulation of monetary policy. Even if much of Europe brought down inflation in the 1980s by delegating authority over the conduct of their monetary policies to the Bundesbank, in democratic societies such delegation to the officials of another nation is not viable in the long run. Establishing a European central bank is a way for other European nations to recapture influence over Europe's monetary policy -- in effect to obtain representation on the board of the Bundesbank.

The argument that European countries benefitted from tying their hands -

Table 1
Inflation and the EMS
(Dependent variable is annualized rate of inflation)

	(1)	(2)	(3)	(4)	(5)	(6)
C	7.73 (15.66)	8.09 (15.45)	8.44 (12.54)	7.56 (14.65)	7.86 (14.28)	7.92 (11.15)
M1	0.39 (10.80)	0.38 (10.60)	0.38 (10.57)	0.36 (9.66)	0.36 (9.48)	0.36 (9.50)
GDP	-0.51 (-5.05)	-0.51 (-5.17)	-0.51 (-5.13)	-0.36 (-3.39)	-0.38 (-3.49)	-0.37 (-3.41)
$(\pi_t-\pi_{t-1})$	0.59 (8.63)	0.59 (8.61)	0.59 (8.63)	-	-	-
$(\pi_{t-1}-\pi_{t-2})$	-	-	-	0.48 (6.62)	0.46 (6.46)	0.47 (6.42)
EMS (74-78)	-	-	-0.66 (-0.74)	-	-	-0.77 (-0.83)
EMS (79-85)	-	-1.38 (-2.01)	-1.25 (-1.65)	-	-1.12 (-1.56)	-1.25 (-1.59)
EMS (86-90)	-1.32 (-1.37)	-1.35 (-1.41)	-1.35 (-1.41)	-1.22 (-1.22)	-1.25 (-1.25)	-1.24 (-1.24)
1979-85	-	-	-0.48 (-0.72)	-	-	0.01 (0.02)
1986-90	-5.05 (-8.11)	-5.30 (-8.39)	-5.65 (-7.45)	-4.94 (-7.64)	-5.14 (-7.81)	-5.27 (-6.66)
N	344	344	344	344	344	344
R-Squared	0.49	0.49	0.50	0.45	0.45	0.45
F-Statistic	64.57	54.96	41.16	54.74	46.22	34.65

Note: t-statistics in parentheses.
Source: see text.

Table 2
Inflation and the EMS: Germany Excluded
(Dependent variable is annualized rate of inflation)

	(1)	(2)	(3)	(4)	(5)	(6)
C	8.31 (15.67)	8.55 (12.66)	8.10 (16.01)	8.08 (14.48)	8.07 (11.24)	7.92 (14.95)
M1	0.39 (10.38)	0.38 (10.28)	0.38 (10.46)	0.35 (9.27)	0.35 (9.21)	0.35 (9.34)
GDP	-0.52 (-5.17)	-0.53 (-5.20)	-0.52 (-5.11)	-0.38 (-3.52)	-0.39 (-3.50)	-0.38 (-3.46)
$(\pi_t-\pi_{t-1})$	0.58 (8.52)	0.58 (8.47)	0.59 (8.55)	-	-	-
$(\pi_{t-1}-\pi_{t-2})$	-	-	-	0.46 (6.34)	0.46 (6.26)	0.47 (6.49)
EMS (74-78)	-	0.26 (0.28)	-	-	0.12 (0.12)	-
EMS (79-85)	-0.92 (-1.32)	-0.68 (-0.86)	-	-0.69 (-0.91)	0.68 (-0.82)	-
EMS (86-90)	-0.96 (-0.94)	-0.97 (-0.95)	-0.94 (-0.92)	-0.83 (-0.78)	-0.83 (-0.78)	-0.81 (-0.76)
1979-85	-	-0.49 (-0.73)	-	-	-0.01 (-0.01)	-
1986-90	-5.43 (-8.59)	-5.63 (-7.45)	-5.27 (-8.49)	-5.28 (-8.01)	-5.27 (-6.65)	-5.17 (-7.99)
N	327	327	327	327	327	327
R-Squared	0.50	0.50	0.49	0.45	0.45	0.45
F-Statistic	52.61	39.45	62.64	44.02	32.81	52.68

Note: t-statistics in parentheses.
Source: see text.

- that is, from delegating their monetary policies to Germany -- is difficult to reconcile with the notion that they must now be permitted to untie their hands through the establishment of a European central bank. If, as is currently envisaged, each member country has equal voice in the deliberations of the ECB, with weighted voting reserved for financial matters such as the distribution of dividends, then the German representative will be outnumbered by spokesmen for countries like Italy, France and Spain traditionally more prone to inflation. Imagine, then, that public opposition to inflation in these countries falls back toward the levels of the early 1980s. Why then would these national representatives not revert to the behavior to which they were inclined prior to delegating the formulation of their monetary policies to an outside authority?

Proponents of EMU insist that the ECB and its governors will be better insulated from political pressures than the European central bankers of the past. This will contain the threat of inflation. Thus, the ECB's effect on price stability hinges on the adequacy of the measures proposed to buttress central bank independence, an issue to which I return below.

C. Promoting Market Integration

Along with reducing transactions costs and enhancing price stability, another potential benefit of EMU is its contribution to market integration. Since the elimination of exchange rate uncertainty encourages international trade, the establishment of a single currency will promote trade among EC member countries. The vast majority of studies of exchange rate uncertainty and trade (surveyed by IMF, 1983) find little evidence, however, of an

economically important link. Sapir and Sekket (1989), in a study of trade amongst EC countries, find only a small effect. Insofar as traders can use currency diversification and forward markets to lessen the risks attendant on exchange rate changes, it is not surprising that there is little evidence of an effect.

Another variant of the argument, emphasized by McKinnon (1963), is that uncertainty in general, and exchange rate uncertainty in particular, discourage investment. But there exists little empirical support for the view that exchange-rate uncertainty depresses the level of capital formation. Kenen (1979) estimated investment equations for 16 industrial countries, including among his independent variables the month-to-month volatility of exchange rates. While the sign of its coefficient was negative, the coefficient on exchange rate variability was almost never statistically distinguishable from zero.

Rather than affecting the level of investment, exchange-rate uncertainty is more likely to influence who invests where. Although an extensive literature (viz. Cushman, 1988) examines the link between exchange rate variability and foreign investment, few of the relevant studies consider the EC in particular. One exception is Morsink and Molle (1991), who offer some evidence that exchange rate uncertainty depresses direct foreign investment within the EC. This is plausible insofar as direct investments have long half lives and forward contracts of such long duration do not exist. Yet there are other ways to minimize the risks created by exchange rate variability, notably portfolio diversification. The marginal significance of Morsink and Molle's results may indicate that these means of diversifying away exchange-rate risk

are quite effective.

A more general form of the argument is that monetary unification is a necessary prerequisite for the rest of the 1992 program.[6] The logic runs as follows. The EMS of the 1980s was a hybrid of fixed- and flexible-exchange-rate regimes. Extended periods of exchange rate stability delivered many of the benefits of fixed rates. Periodic realignments redressed the most serious competitiveness problems. But interludes of exchange rate stability punctuated by occasional realignments were possible only because of capital controls which raised the cost of running on central bank reserves in anticipation of realignment. Countries could pursue independent monetary policies now and realign later only because controls sheltered them from speculative pressures in the interim. But capital controls were incompatible with the rest of the 1992 program. It hardly was feasible to restrict the freedom for Frenchmen to maintain bank accounts in Germany, for example, at the same time all controls on intra-EC movements of portfolio capital and direct foreign investment, not to mention labor and commodities, were removed. Hence controls were a casualty of the 1992 program, and monetary unification followed inevitably.

There are two problems with this argument. First, it is far from clear that monetary unification is the only viable alternative left by the removal of capital controls. Another option, of course, is to revert to floating exchange rates. But floating within Europe has been deemed incompatible with the rest of the 1992 program.[7] Indeed, it is perplexing that there has been so little discussion of this option; free trade negotiations between the U.S., Canada and Mexico have proceeded, after all, without any discussion of

currency unification and even of exchange-rate stabilization.[8] It is not obvious that the floating exchange rate between the two North American dollars represents a significant barrier to regional integration.

A second challenge is that it is not clear that the removal of capital controls actually threatens the viability of fixed rates. To cite a counterexample, the relative price of the Belgian and Luxembourg francs has been fixed for more than 50 years, and for much of that period capital controls have played little role. The two currencies can be exchanged for one another free of transactions costs. Retail establishments and banks in Luxembourg accept Belgian francs at the same rate as local currency because the probability of exchange rate changes is regarded as minimal. The two countries reap many of the benefits of a single money simply by maintaining truly fixed rates between their respective national currencies.

Why then could the EC not also reap these benefits by firmly fixing the exchange rates between its 12 national currencies? The standard answer is that, in the absence of capital controls, pegged exchange rates between distinct national currencies are vulnerable to destabilization by speculative attacks. So long as national central banks are incompletely committed to defending the prevailing exchange rate, speculators will test their resolve. And no matter how strongly the monetary authorities assert their commitment to the existing parities, if they continue to control domestic monetary policy they retain the option of reneging on that commitment. Declarations that they are committed to the maintenance of existing exchange rates will never be regarded as fully credible. Speculative runs are inevitable, the argument concludes. The only solution to this problem is an institutional innovation,

namely a European central bank, that removes the option of reneging and guarantees that exchange rates are fixed once and for all. As the authors of the Delors Report put the point, "A new monetary institution...[is] needed because a single monetary policy cannot result from independent actions by different national central banks" (Delors et al., 1989, p.32). Institutional reform is needed for full credibility.

This conclusion has not been universally accepted. Neumann (1992) for one suggests that a sufficiently credible commitment to intra-EC exchange rate stability on the part of existing European central banks could fix exchange rates even in the absence of capital controls. Capital will move in stabilizing rather than destabilizing directions if speculators believe the authorities' stated commitment to maintain the central rate. All that is required is a firm commitment to exchange rate stability on the part of existing European central banks, which Neumann argues is preferable to the risks and uncertainties of EMU.

The history of the 19th century gold standard, the last global regime under which the exchange rates of the major industrial countries were stabilized within narrow bands absent all significant capital controls, lends some support to both positions. Because the commitment of the major European central banks to the gold standard parities was regarded as fully credible, capital flowed into countries whose exchange rates had weakened temporarily, stabilizing rather than destabilizing intra-European parities (Eichengreen, 1992c). Exchange rate stability minimized uncertainty and transactions costs, deepening the integration of international financial markets, as evidenced by the small size of international interest differentials and the large magnitude

of international capital flows (McKinnon, 1992). In this respect gold standard experience is consistent with Neumann's conclusion that formal monetary union is not needed to reap the full benefits of market integration.

But the credibility of exchange rate commitments under the 19th century gold standard was supported by a very special set of circumstances not present in the industrial countries today. The limited extent of the franchise and private-sector status of the leading European central banks insulated monetary policymakers from political pressures. Even where such pressures might in principal have been applied, in practice the connections between monetary policy and domestic macroeconomic conditions were very imperfectly understood and appreciated. These same factors were not all present in Latin America and the United States in the final decades of the 19th century. In Latin America the gold standard years were marked by recurrent bouts of exchange rate instability, as coalitions of debtors and exporters successfully pressed for the adoption of cheap-money policies. Doubts about the U.S. commitment to the gold standard in the 1890s, when the inflationist free-silver movement achieved its peak popularity and William Jennings Bryan campaigned for the presidency, disrupted the operation of the North Atlantic capital market, placing large interest differentials between assets denominated in dollars and pounds sterling.

Thus, past experience suggests that many of the benefits of currency unification can in principle be reaped through the maintenance of firmly fixed exchange rates between distinct national currencies. But it also prompts skepticism that the special circumstances that rendered past governments' commitment to those fixed rates truly credible are present in Europe today.

III. Costs of Monetary Unification for Europe

A. The Incidence and Magnitude of Shocks

Why should countries value the option to realign? The textbook answer (Mundell, 1963; Fleming, 1962) is that exchange rate changes which permit the pursuit of independent monetary (and perhaps also fiscal) policies aid the maintenance of full employment. A shift in demand from domestic to foreign products, for example, requires a reduction in domestic costs (relative to those prevailing abroad) to restore prices and demand to levels consistent with full employment. Changing the exchange rate may be a relatively efficient way of bringing this about in a decentralized market. This is the "daylight-savings-time" argument for exchange rate changes.

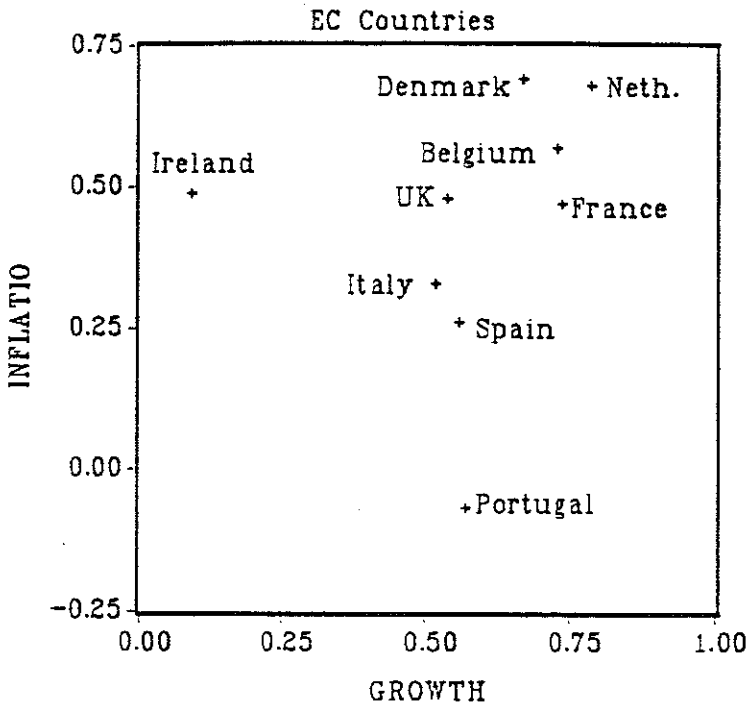
Using the theory of option pricing, Gerlach (1991) shows that realignments are especially attractive in countries where prices and costs are sticky in domestic-currency terms (allowing quantities to deviate from long-run equilibrium levels), where shocks are large and different from shocks abroad (since matching shocks can be met with matching policy responses, requiring no change in the exchange rate), and where the fixed (political) costs of realigning are small.[9] The problem is to put empirical meat on these theoretical bones. Bayoumi and Eichengreen (1992a) consider the correlation of output fluctuations (and inflation rates) across EC countries, and compare it with the correlation of output fluctuations (and inflation rates) across U.S. regions. Since for U.S. regions the option value of changing the exchange rate is dominated by the efficiency of a common currency (or so revealed-preference arguments suggest), the U.S. provides an obvious

metric for gauging the European case. The average correlation of the GDP growth rates of other EC members with Germany's growth rate over the last 30 years is 0.58, compared to a correlation of growth rates for other U.S. regions with that for the Mid-East region of 0.68.[10] (See Figure 1, where the correlations for European countries and U.S. regions are displayed. Note the different scales in the two panels, which is indicative of the higher correlations within the U.S.)

Movements in output growth rates are not the same thing as shocks, of course, since fluctuations in growth rates reflect both disturbances and subsequent adjustments. Our response is to use the technique of Blanchard and Quah (1989) to recover temporary and permanent disturbances from time series of output and prices. This involves transforming the residuals from regressions of growth and inflation rates on lagged values of themselves, subject to the assumption that permanent disturbances affect both output and prices in the long run but temporary disturbances have no long-run output effect.[11] Using this procedure, the average correlation of other EC countries' permanent disturbances with Germany's is only 0.33 (compared to 0.46 in the United States), while the correlation of other EC countries' temporary disturbances with Germany's is an even smaller 0.18 (compared to 0.37 in the U.S.).[12]

Correlation coefficients for individual countries and regions are displayed in Figure 2. The more idiosyncratic nature of shocks in Europe strengthens the case for policy autonomy, enhancing the option value of separate currencies. Other things equal, it suggests that Europe may find it more difficult to operate a monetary union than does the United States.

Correlation of Growth and Inflation Rates with Anchor Country or Region



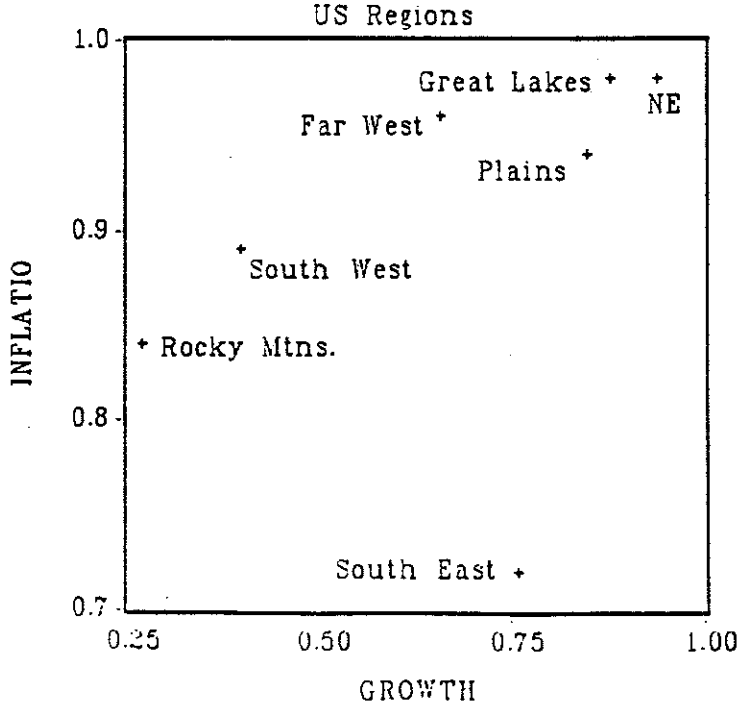
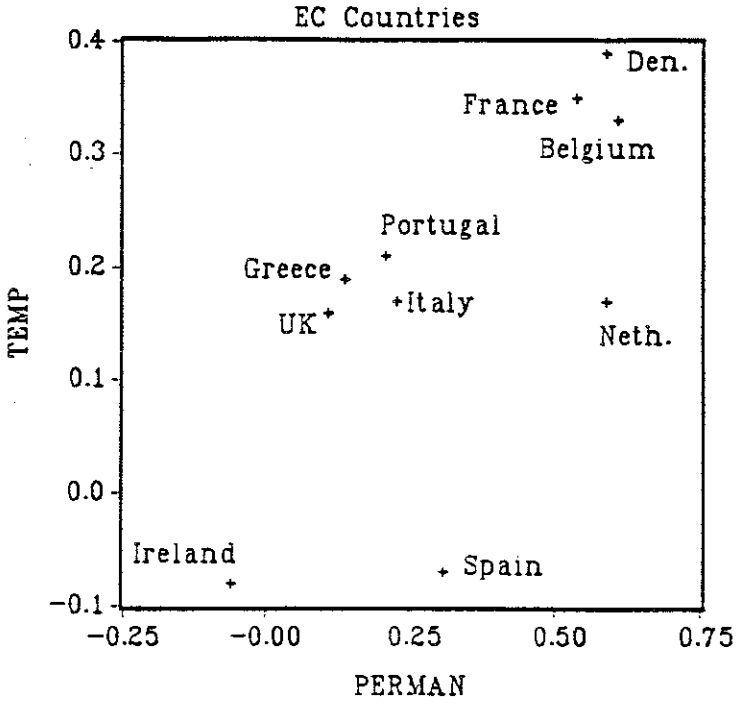


Figure 1

Correlation of Permanent and Temporary Disturbances with Anchor Country or Region



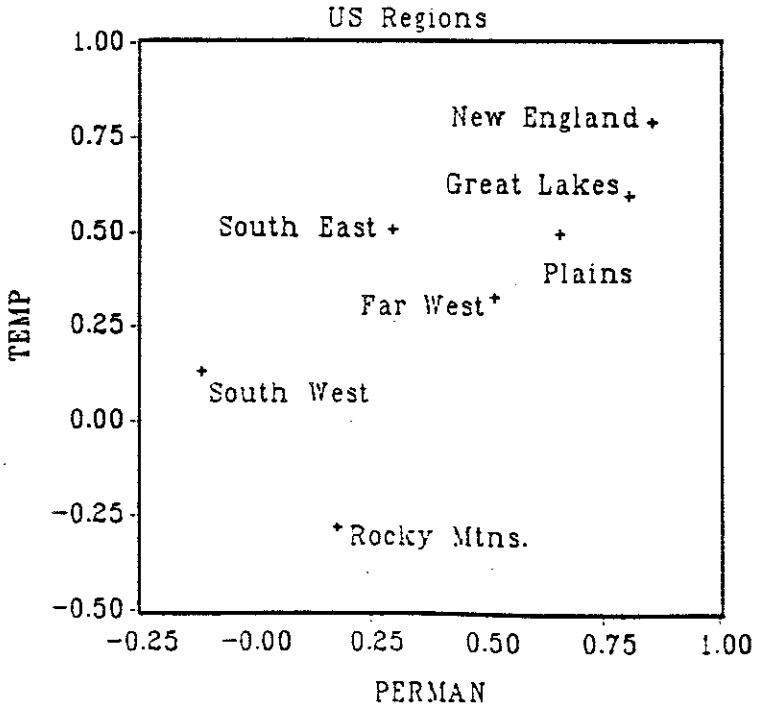


Figure 2

The same methodology can be used to estimate the magnitude of shocks, another criterion for gauging the option value of policy autonomy.[13] Here the evidence is less clear-cut. Permanent disturbances are larger for EC countries than U.S. regions, reinforcing the preceding conclusion. Their standard deviation is 2.1 per cent for EC countries compared to 1.5 per cent for U.S. regions.[14] Temporary disturbances, in contrast, are larger in the U.S. (with a standard deviation of 2.1 per cent) than in Europe (where the comparable statistic is 1.7 per cent).

In Bayoumi and Eichengreen (1992a) we speculate that temporary shocks are larger in U.S. regions than EC countries because of greater regional specialization of production within the U.S.[15] Because the U.S. market is so integrated, regions specialize more completely than in Europe in products in which they have a comparative advantage. (Table 3 shows that the variance across U.S. states in the sectoral composition of manufacturing production is twice the variance across EC members nations.) Thus, a cyclical downturn which has a disproportionate effect on the demand for consumer durables will have a larger impact on the Great Lakes region of the U.S., which specializes in the production of automobiles and other durable goods. In Europe, in contrast, transactions costs and government policy support market segmentation and lower levels of specialization. European nations' greater diversification thereby diminishes the magnitude of temporary region-specific shocks.[16]

But regional specialization surely will increase with the completion of the 1992 program, amplifying region-specific shocks. It is often argued that with the completion of EMU monetary and fiscal policies will grow increasingly synchronized across European countries, eliminating policy-induced region-

Table 3
COMPOSITION OF MANUFACTURING PRODUCTION
(Percentage Points)

Areas / Sectors		EC		EC10		EC6		USA	
		Mean	Variance	Mean	Variance	Mean	Variance	Mean	Variance
Food, Beverages and Tobacco	1980	11.3	11.2	12.2	12.0	10.2	10.2	10.8	15.3
	1989	11.2	11.3	11.1	10.5	10.3	10.3	8.3	3.9
Textiles, Clothings and Leather	1980	10.0	30.3	9.6	26.2	9.4	27.4	6.5	30.0
	1989	8.1	25.9	7.7	21.8	7.5	24.6	4.8	15.9
Wood and Wood Products	1980	4.4	1.6	4.4	1.5	4.9	1.3	4.9	8.0
	1989	3.8	1.4	3.9	1.4	4.2	1.5	4.3	3.1
Paper and Paper Products	1980	6.7	6.1	6.7	6.2	5.5	3.3	9.8	10.8
	1989	7.4	5.9	7.4	6.0	6.3	3.1	8.8	8.6
Chemicals and Chemical Products	1980	15.7	2.5	15.7	2.6	15.7	3.4	14.2	28.3
	1989	17.0	5.8	16.9	5.6	16.9	7.8	17.1	33.9
Non-Metallic Mineral Products	1980	5.4	1.1	5.4	0.9	5.4	1.1	3.3	0.7
	1989	4.8	1.4	4.6	0.8	4.6	1.0	2.7	0.3
Basic Metals	1980	6.9	4.2	7.0	4.2	7.2	3.7	7.5	9.5
	1989	6.2	2.4	6.2	2.3	6.4	1.6	4.1	3.7
Metals Products, except Machinery and Equipment	1980	9.9	3.9	10.0	3.7	11.1	0.7	8.4	4.8
	1989	9.3	2.9	9.4	2.6	10.3	1.2	7.4	5.0
Machinery, except Electrical	1980	9.3	12.9	9.5	12.0	9.8	11.2	13.5	20.3
	1989	10.1	12.9	10.3	11.4	10.6	10.9	19.8	27.2
Electrical Machinery	1980	9.2	5.3	9.3	4.7	9.8	3.9	9.9	6.3
	1989	10.5	8.6	10.6	7.8	10.8	9.6	10.3	9.6
Transport Equipment	1980	11.2	6.1	11.2	6.1	11.0	7.2	11.3	27.8
	1989	11.7	7.5	11.8	6.7	12.2	7.5	12.5	26.4
Average (1)	1980		8.39		7.72		7.07		16.71
	1989		8.38		7.51		7.85		17.97

Luxembourg is excluded from EC aggregates.
(1) The average variances have been computed using the corresponding mean values as weights.
Source: Bini-Smaghi and Vori (1992).

specific disturbances. The literature on regional specialization points out that there are important forces working in the opposite direction. They will tend to increase the cost of eliminating the exchange rate as an instrument of adjustment.

B. Speed of Adjustment

Imagine that demand shifts away from products of a particular country. Unemployment rises there. If changing the exchange rate is an option, policymakers can devalue it to enhance the competitiveness of domestic goods on international markets; simultaneously they can initiate expansionary policies to stimulate domestic spending. But if European nations, like the states of the U.S.A., do not possess a domestic currency, neither devaluation nor independent monetary expansion is possible. What other mechanisms substitute in bringing about a reduction of unemployment?

A list of the most important mechanisms includes: (1) domestic wage and price adjustments, (2) interregional migration, (3) interregional capital flows (private and public), and (4) interregional fiscal transfers. Reduced-form evidence on how powerfully these mechanisms operate can be gleaned from simulations of Bayoumi and Eichengreen's (1992a) inflation and output growth regressions. The simulated impulse-response functions are shown in Figure 3 (for permanent disturbances) and in Figure 4 (for temporary ones). The faster speed of response of U.S. regions is apparent. In Figure 3, output in most U.S. regions jumps almost immediately to its new long-run level; that of EC countries climbs much more gradually to its new baseline. In Figure 4 where, in response to a temporary shock, output jumps up initially but then falls

Figure 3

Impulse response functions
Supply shocks

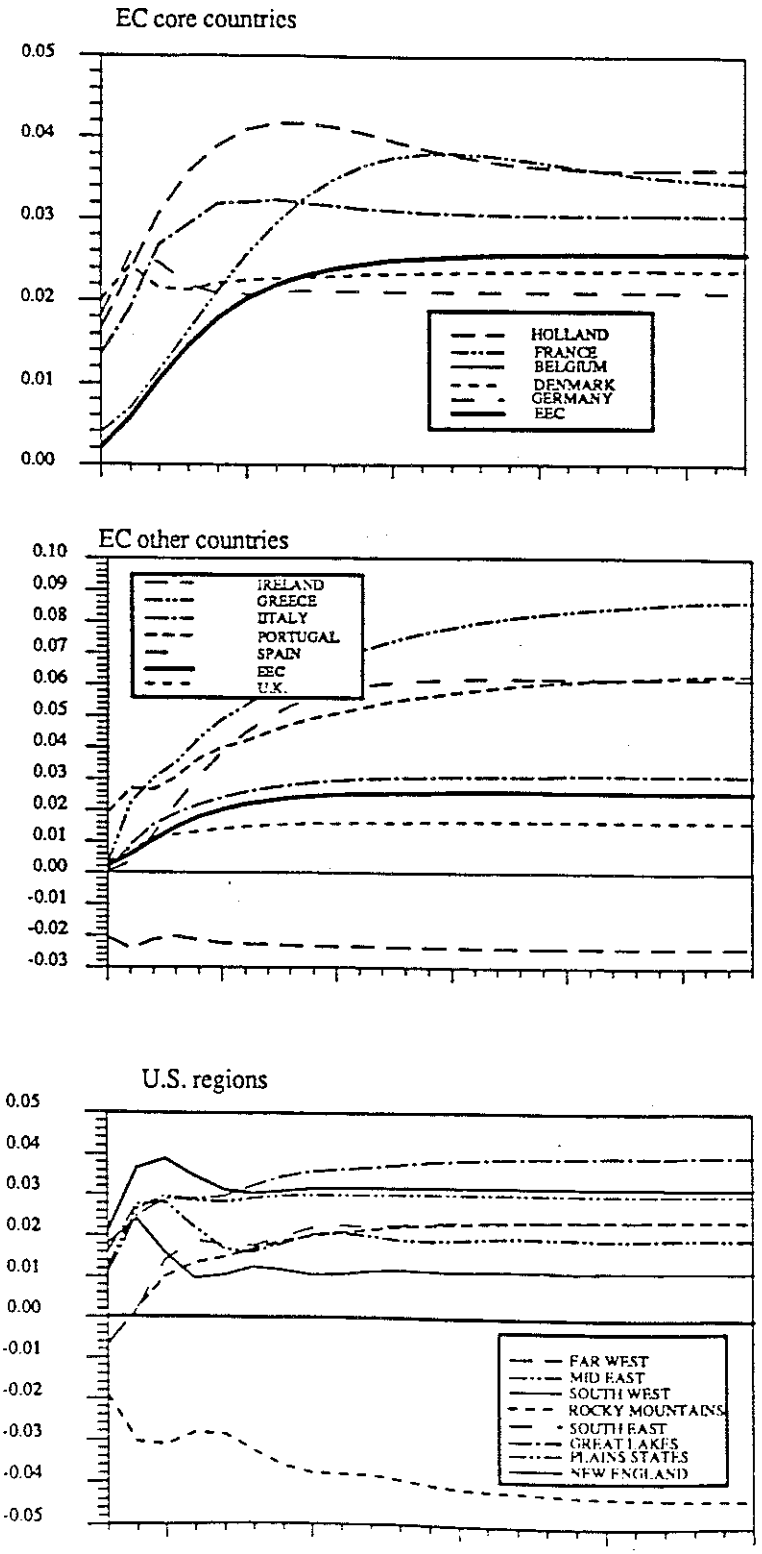
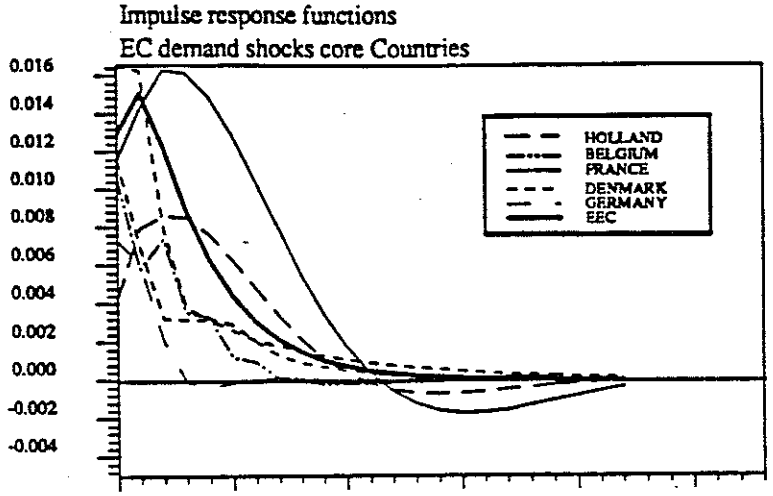
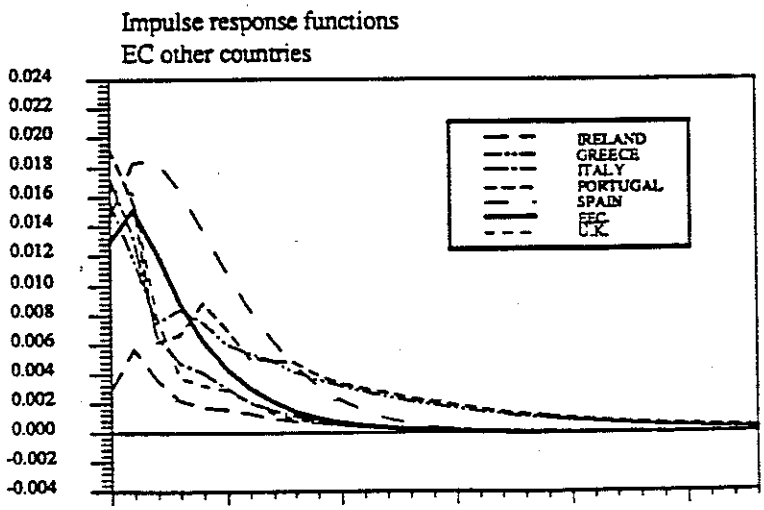
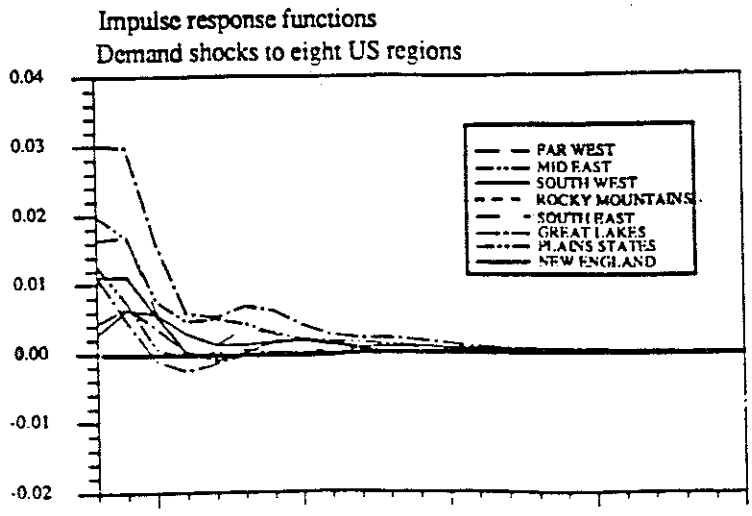


Figure 4

Impulse Response Functions to a Demand shock







back (by construction), the more gradual response of EC countries is again evident. Not only are shocks less correlated in Europe than in the U.S., these results suggest, but responses are more sluggish.

One might argue that barriers to adjustment will be eroded by EMU and by the rest of the 1992 program, rendering Europe more similar to the U.S. in its response to disturbances. Evaluating this hypothesis requires considering the impact of economic and monetary union on each adjustment mechanism in turn.

C. Wage Adjustments

The textbook prescription for an economy suffering a negative shock to output is a reduction in real wages sufficient to price workers back into employment. If real wages are flexible, labor markets will undertake the necessary adjustments without policy intervention. In some economies, however, concern over relative wages, defined over time and across workers, may prevent real wages from adjusting. This is the basis for the "daylight-savings-time" argument for exchange rate changes. By jumping up the price level through depreciation of the exchange rate, policymakers may solve the coordination problem that inhibits real wage adjustment.

Real wages have long been regarded as less flexible in Europe than in North America (see for example Bruno and Sachs, 1985). Table 4 summarizes some evidence on real wage flexibility. It shows that the elasticity of wages with respect to unemployment is lower in every one of the eight EC countries considered than in the U.S. or Canada. That wages in Europe have a weaker tendency to decline in response to unemployment means that this alternative adjustment mechanism operates less powerfully there.

Table 4
SUMMARY MEASURES OF WAGE FLEXIBILITY

Countries	Elasticity of Nominal Wage With Respect to: Unemployment Rate	Prices
Belgium	-.25	.25
Denmark	-.10	.25
France	-.29	.50
Germany	-.11	.75
Italy	-.39	.60
Netherlands	-.27	.50
Spain	-.20	.25
U.K.	-.15	.33
USA	-.61	.14
Canada	-.51	.18
Japan	-1.87	.66

Source: Bini-Smaghi and Vori (1992), based on OECD (1989).

But does it follow necessarily that monetary cum exchange rate policy can facilitate labor-market adjustment? If real wages are completely rigid, not even monetary policy can offer a solution. The analysis summarized in the second column of Table 4 confirms that real wages are in fact less responsive to price changes in Europe that in North America. Whereas in North American only 14 to 18 per cent of price increases are passed through to nominal wages, one to three quarters of the price increase is passed through in the various European countries. Thus, the effect of monetary policy on real wages is less powerful than in the Unites States. Still, all the passthrough coefficients are less than unity: even in Germany, where it is highest, the elasticity of real wages with respect to inflation is a quarter.

To recapitulate, although real wages are less responsive to monetary cum exchange rate policy in Europe than in North America, they are still responsive; the monetary initiatives made possible by an independent exchange rate can facilitate adjustment. Monetary unification, by eliminating this option, will leave European labor markets own their own. That these markets adjust wages to macroeconomic shocks less adeptly than labor markets in existing currency unions like the U.S. and Canada implies the existence of higher costs from the sacrifice of monetary autonomy.

Perhaps the very reason European wages have exhibited such inflexibility, however, is labor's awareness that adjustment can take place on other fronts, notably through changes in exchange rates and monetary/fiscal policies. As soon as these other margins of adjustment are eliminated, workers may acknowledge the new reality and accept greater wage flexibility. German economic and monetary unification (GEMU) in 1990-91 provides one test

of this counterfactual. Under GEMU, all capacity to adjust relative labor costs by changing the exchange rate was eliminated by monetary unification. According to the null hypothesis, higher levels of unemployment in eastern lander, in conjunction with removal of the exchange rate as an adjustment mechanism, should have prompted wage reductions. Instead, German unions pushed for wage increases for eastern workers with the explicit goal of achieving wage parity between east and west within five years. One motive was the fear that wage reductions in the east would undermine the wage standards of workers in the west. Another was concern that low wages in the east would unleash a socially-disruptive migration to the high-wage west. Thus, GEMU provides no support for the hypothesis that monetary union enhances the flexibility of relative wages between participating regions.

One can imagine that the same motives will operate even more powerfully at the Community level (Doyle, 1989). Labor leaders and government officials may work hard, therefore, to limit adjustment through wage flexibility.

D. Interregional Migration

According to Mundell's (1961) seminal article on optimum currency areas, so long as labor is mobile between them, two nations or regions may wish to share a common currency despite experiencing different disturbances. Imagine again that demand shifts from products of one member of a monetary union to the products of another. The consequent rise in unemployment in the depressed area will be minimized insofar as labor flows toward the booming region. Thus, the benefits of a common currency may exceed the costs if labor is mobile within the monetary union.

There is reason to doubt that adjustment to regional disturbances following EMU will be accomplished through American-style labor mobility. Though border controls and other statutory restrictions on labor flows will be eliminated by the 1992 program, cultural and linguistic barriers will remain. U.S. experience demonstrates that barriers to the movement of labor, even when formally dismantled, can have effects that persist for many decades.[17]

In contrast to the situation confronting potential migrants between European countries, there exist no formal barriers to migration within those countries. Cultural and linguistic impediments to migration within Britain or Italy, for example, are minor compared to the obstacles to migration between them. Yet, by U.S. standards, labor mobility is low within European countries. Table 5, reproduced from Eichengreen (1990b), suggests that mobility within the U.S. is two to three times as high as mobility within European states. In 1980, for example, 6.2 per cent of the U.S. population changed its county of residence, 3.3 per cent its state of residence. In contrast, 1.1 per cent of Englishmen and Welshmen moved between standard census regions, and 1.3 per cent of Germans moved between <u>lander</u>.[18]

These data may reflect the incentive to move rather than willingness to do so. If shocks to U.S. regions are larger and less correlated than shocks to regions within European countries, the larger observed flows of workers within the U.S. may not reflect greater intrinsic mobility.[19] I have therefore estimated migration equations for Britain, Italy and the U.S., relating labor flows to the incentive to move, as proxied by relative wage and unemployment rates.[20] Only if the elasticity of interregional migration with respect to these variables differs across countries is it safe to conclude

Table 5

GEOGRAPHIC MOBILITY -- PROPORTION OF POPULATION WHO CHANGED REGION OF RESIDENCE
(Percentage)

Country	Regional units (number of regions)	Reference population	Multi-year period data 1965-70	1970-75	1975-80	1970	1975	1980	1981	1982	1983
Australia	Inter-states(8)	Pop. 15 yrs+				1.7	1.9(c)	1.8	1.8	1.1	1.1
	Inter-states	Labor force(a)				5.6(b)	5.0(c)				4.9
	Inter-states	Labor force(a)				21.6(b)	18.7(c)				17.6
Canada	Inter-provinces(12)	Total population	4.3	4.3	5.1	1.9	1.9	1.8	1.9		
	Inter-provinces	Labor force			6.0						
	Intra-provinces	Total population	14.0	16.5	15.1						
		Labor force			16.7						
United States	Inter-states(51)	Total population	8.6		9.7	3.4		3.3			
	Inter-counties	Total population	17.1		19.5	6.5		6.2			
Japan	Inter-prefectures(47)	Total population			7.7	3.6		2.6			
	Intra-prefectures	Total population			24.1	3.7		6.9			
England and Wales	Inter-regions(8)	Total population				1.5		1.1			
Finland	Inter-counties(12)	Total population				2.5	1.7(c)			1.5	
	Inter-communes	Total population				5.8	4.4(c)	4.1	4.0	3.9	
France	Inter-regions(21)	Total population	6.5(d)	8.7(e)	7.9(f)						
	Inter-regions	Labor force	6.4(d)	8.9(e)	8.3(f)						
Germany	Inter-Länder(11)	Total population				1.8	1.3	1.3	1.3		
Norway	Inter-counties(19)	Total population				3.0	2.5	2.3	2.2	2.1	2.0
Sweden	Inter-counties(24)	Total population				2.4(g)	2.4	2.1	1.7	1.7	1.7
	Inter-communes	Total population				4.8(g)	4.7	4.0	3.5	3.5	3.5
Switzerland	Inter-cantons(26)	Total population	7.6	6.3							

a) Employed population at the time of the survey who changed jobs during the previous year and changed usual residence when changing jobs.
b) 1972
c) 1976
d) 1962-68
e) 1968-75
f) 1975-82
g) 1973

Source: OECD (1986)

that labor mobility differs.

My point of departure is the Pissarides-McMaster (1990) migration model for Britain. The first column of Table 6 reports my estimate of their basic regression. As in their paper, immigration responds positively to changes in local wages relative to national wages, negatively to local unemployment relative to national unemployment. There is considerable persistence in migratory patterns, as reflected in the coefficient on the lagged dependent variable.[21]

The second column presents estimates for nine regions of the U.S. While most of the coefficients have the same signs and the same significance levels as in Britain, the economic implications are different. The elasticity of immigration with respect to the change in relative wages is an order of magnitude larger.[22] The elasticity with respect to relative unemployment rates is twice as large, although the standard errors suggest caution when comparing elasticities. In contrast to the result for Britain, there is little persistence in U.S. migratory patterns after controlling for wage and unemployment differentials. (The coefficient on the lagged dependent variable is essentially zero.) All this suggests that migration is more responsive to current economic conditions in the U.S. than in Britain.

The Pissarides-McMaster specification performs poorly on data for six Italian regions.[23] Neither the change in the relative wages of industrial and agricultural workers nor relative unemployment rates has much impact on Italian migration, which displays even more persistence than in Britain. It could be that Italian labor simply does not respond to these variables. But the explanatory power of Italian migration equations can be enhanced by

Table 6

Basic Migration Models for Britain, the U.S. and Italy
(dependent variable is immgration scaled by population)

	(1)	(2)	(3)
	Britain (1961-82)	U.S. (1962-88)	Italy (1962-85)
Constant	0.12	1.50	0.01
	(2.32)	(5.76)	(0.06)
Change in log wages lagged	0.42	15.13	0.23
	(1.76)	(2.52)	(0.30)
Unemployment lagged	-0.17	-0.37	-0.04
	(2.87)	(1.92)	(0.48)
Migration lagged	0.58	-0.05	0.73
	(9.56)	(0.77)	(21.82)
number of obs.	180	243	144

Notes: t-statistics in parentheses. Change in wages and unemployment variables both denote ratio of local value to national average. Dummy variables for regions are included in each regression but not reported.

Source: See text.

substituting the level of the wage differential for its first difference.[24] The first column of Table 7 displays the results of estimating this variant of the model. When the log of the local-national wage differential is entered in levels rather than changes, it has a significant positive impact on immigration. Still, the wage elasticity of migration is only half that for Britain and less than a tenth that for the United States. The unemployment differential enters with the anticipated sign, but its coefficient is small relative to that for the U.S. and Britain and statistically indistinguishable from zero.

The second and third columns of Table 7 substitute an alternative definition of Italian wages. Previous regressions used the effective daily wage paid to industrial and agricultural employees, a series that excludes the service sector and includes only firms covered by the provisions of the public insurance system. The series used in the second and third columns is the compensation of all employees, inclusive of social security contributions. When this series is entered in difference form, the results are essentially identical to those in Table 6. When it is entered in level form, its point estimate is slightly smaller; in addition, however, the unemployment differential is statistically different from zero at standard confidence levels. The point estimate on the unemployment differential is comparable to that for Britain, which means that it is little more than half that for the United States.

Thus, if labor mobility within European countries is an upper bound on labor mobility between them, there is little reason to expect that it will play as important a role in post-EMU Europe as in the United States.

Table 7

Alternative Migration Models for Italy
(dependent variable is immgration scaled by population)

	First Wage Series	Second Wage Series	Second Wage Series
	(1)	(2)	(3)
Constant	0.18	0.01	0.37
	(1.49)	(5.76)	(2.70)
Level of log wages lagged	1.35		1.07
	(3.71)		(4.43)
Change in log wages lagged		0.22	
		(0.45)	
Unemployment lagged	-0.11	-0.04	-0.20
	(1.27)	(0.50)	(2.31)
Migration lagged	0.63	0.73	0.62
	(15.37)	(21.98)	(16.01)
number of obs.	144	144	144

Notes: t-statistics in parentheses. Sample period is as in Table 6. Change in wages and unemployment variables both denote ratio of local value to national average. Dummy variables for regions are included in each regression but not reported. Column 1 utilizes the same definition of wages as in the previous table, while columns 2 and 3 use the alternative definition.

Source: Author's estimates, as described in the text.

E. Interregional Capital Flows

Even if labor fails to flow out of depressed regions, capital can flow in, stabilizing economic activity. The very stability of exchange rates within a monetary union, by eliminating one source of risk, encourages capital mobility. Eichengreen (1990), comparing data for Puerto Rico and Portugal, shows that stabilizing capital flows initiated in response to disturbances to a region's balance of payments operate much more powerfully within the United States than across EC countries. When Puerto Rico's balance of payments weakens and the loss of domestic credit causes interest rates to rise relative to elsewhere in the United States, capital flows into Puerto Rico in large amounts to take advantage of the incipient interest differential, financing the payments imbalance. When Portugal's balance of payments deteriorates, in contrast, there is the risk of currency devaluation, which limits capital inflows. Domestic interest rates rise and investment is crowded out.

Whereas stabilizing capital inflows are likely to be forthcoming in response to a balance-of-payments shock, they are less likely to be provided in response to problems of a depressed region. When such a region, be it Puerto Rico or Portugal, experiences a depression relative to its neighbors, local demands for credit and capital will fall. Interest rates will decline rather than rising, providing capital no incentive to flow in. Idle labor may be abundant in the depressed region, but barring downward wage adjustments it is not cheap. Hence the shock to the regional economy that produced the slump in output and employment in the first place will limit potential capital inflows. Downward adjustments in the wages of unemployed workers may make inward investment more attractive, but they also make it less necessary.[25]

IV. Fiscal Policy and EMU

A. Excessive or Inadequate Government Borrowing?

Might not government borrowing substitute for private borrowing? National governments of European countries suffering temporary declines in the demand can bolster domestic spending by running budget deficits. So long as the sovereign borrower is expected to pay the money back, capital will flow in to finance those budget deficits, sustaining activity in the temporarily depressed region.[26] Discretionary fiscal policy can be thus substituted for monetary-cum-exchange-rate policy in a monetary union.

Yet the capacity of European governments to run budget deficits and borrow externally will be limited by the rise in factor mobility associated with the 1992 program. The borrowing in which governments can engage today is limited by the taxes they can raise tomorrow (taxes which will be used to service the accumulated debt). If capital is freely mobile within the currency union, higher borrowing today which implies higher taxes tomorrow may induce footloose factors of production to flee to lower-tax jurisdictions, eroding the local tax base. Since local authorities' ability to borrow today is limited by their ability to tax tomorrow, investors will refuse to lend to governments attempting to exceed their capacity to borrow. The higher factor mobility, the earlier this will occur.[27]

Evidence from the state and municipal bond markets in the U.S. suggests that such limitations, while operative, do not quickly become binding. In Eichengreen (1990) I provide evidence from bond yields that the interest rates charged state governments rise with the ratio of state debt to state income. Goldstein and Woglom (1991), employing a larger sample of municipal bonds,

confirm that the market disciplines local jurisdictions by raising the cost of capital as their borrowing rises. Neither study finds, however, that state and local jurisdictions are quickly rationed out of capital markets.[28] In other words, while factor mobility within the U.S. currency and customs union encourages tax convergence, it does not require tax equalization.[29] All mobile factors of production do not flee from Massachusetts to New Hampshire, for example, in response to the absence of a state income tax. In part, the incentive to migrate is limited by relocation costs; in part, it is diminished by the capitalization in housing prices of differences in local services and tax burdens, as Bayoumi and Gordon (1991) show. The elasticity of factor flows with respect to tax differentials, though positive, is not infinite. Since states retain some scope for levying different tax rates, they can service different levels of debt and hence run different deficits. Still, even if mobility is less than perfect, this argument suggests that the increased mobility of factors of production once the Single Market Program is complete will tighten the constraints on the use of fiscal policy. It may limit deficit spending for stabilization purposes more than European governments prefer.[30] From the point of view of stabilization, fiscal policy may prove to be an imperfect substitute for the relinquished monetary instrument.

Much of the discussion in Europe focuses not on whether post-EMU governments will have adequate freedom to vary fiscal policy over the cycle, but whether economic and monetary integration will bias deficit spending toward the excessive, irrespective of cyclical conditions. Consider the economic and monetary aspects in turn.[31] Assume that deficit spending leads

to the accumulation of debt that must be serviced through the imposition of distortionary taxes. If capital is imperfectly mobile internationally, that debt will be held at home; only domestic interest rates will rise as a result of additional public spending, and only domestic residents will suffer additional distortionary taxation. A government wishing to maximize domestic welfare will take into account the consequences for future distortionary taxation of its current spending and set the level of government expenditure accordingly. But as financial markets become integrated internationally as a result of economic union, interest rates will move together at home and abroad. Deficit spending which drives up interest rates at home will drive up interest rates abroad as investors shift from assets with low yields to assets with higher ones. Some of the costs of additional spending by the domestic government will be borne by foreign residents, since foreign governments will also be forced to levy additional distortionary taxes to pay now higher interest charges on their outstanding debt. In noncooperative equilibrium, as a result of economic integration, public spending will be too high.[32]

Once monetary union is added to the analysis, member states may have an even stronger incentive to spend and borrow excessively, insofar as they can anticipate a bailout from the new monetary authority. Imagine a situation where a state has spent excessively and is confronted with the need to impose costly distortionary taxes.[33] The central bank, in deciding the amount of seigniorage revenues to contribute to that state's budget, will solve the Ramsey-Phelps optimal taxation problem, equalizing on the margin the costs of distortionary taxes and seigniorage revenues (where the cost of additional seigniorage is the deadweight loss associated with agents' reduction in

holdings of real money balances due to inflation). Faced with a government engaged in high levels of spending, it will create additional inflation.[34]

In principle, this same problem arises with existing national governments and national central banks, but it is more severe in a monetary union (where the jurisdiction of the central bank encompasses several national governments). In a monetary union, some of the deadweight loss associated with seigniorage will be borne by the residents of other states, which encourages state governments to reduce distortionary taxes and to finance their deficits with additional seigniorage.[35] If the governments of several member states play this game noncooperatively, each will increase its deficit spending in an effort to secure a larger share of the common central bank's seigniorage resources, producing not only larger overall deficits but higher levels of inflation.

These problems, which are familiar from the literature on international policy coordination, are best solved by coordinated reductions in government spending. The question is whether such coordinated reductions can be achieved. Article 103 of the Maastricht Treaty instructs member states to "coordinate [their economic policies] within the Council." The Council, acting by a qualified majority on a recommendation from the Commission, is to draft guidelines for the economic policies of member countries, and to submit its recommendations to the European Parliament. The Council will then monitor economic developments in member countries and make recommendations to national governments in the event that the latter's policies are inconsistent with those guidelines.

The issue is whether mere "recommendations" will suffice to compel

policy coordination or more concrete sanctions are required. In fact, the Maastricht Treaty empowers the Council to do more. To prevent "large and persistent budget deficit[s]" from placing a "disproportionate burden on monetary policy" (in the words of Delors et al., 1989), in Stage III (completed EMU) the Council may sanction countries failing to correct excessive budget deficits by instructing the European Investment Bank to halt lending to the country concerned, by requiring the country to make non-interest-bearing deposits with the Community, and by imposing fines. Still, the question remains whether these measures will be sufficient to produce policy coordination, or whether formal fiscal restraints are necessary. And if formal fiscal restraints are applied, are the likely to be effective?

B. The Debate Over Fiscal Restraints

Fiscal restraints are widespread in existing monetary unions. Two types are prevalent in the U.S.: so-called balanced-budget requirements limiting the deficits that state governments are permitted to run, and public debt ceilings that limit debts that states are permitted to accumulate. As of 1987, 46 states had balanced-budget requirements of some sort, while the constitutions of some 30 states limit the power to issue debt.

It is not obvious that these restrictions, whether statutory or constitutional, effectively limit the deficits or debts they are designed to control, or that either type of restriction reduces the rate of return public obligations command. Most studies of fiscal restraints in fact conclude that they have little if any impact on fiscal performance. In the most recent such study, von Hagen (1991) compares levels of state debt per capita and

debt/income ratios in states with and without debt limits, finding that the differences between the two groups are statistically insignificant. He finds similarly that balanced-budget requirements do not have a statistically significant impact on state debt per capita.

There are good reasons to reconsider this question. For one, most work on the issue, including that of von Hagen, utilizes bivariate tests in which the level of debt in states with and without fiscal restraints is compared without controlling for other determinants. Indeed, the one recent study which considered the question in a multivariate framework (ACIR, 1987) reported statistically significant effects on both deficit spending and debt per capita. Moreover, von Hagen considered the impact of balanced-budget restrictions on the level of debts, not on the budget deficits to which they are most immediately directed. Finally, the data on state general obligation yields recently obtained by Goldstein and Woglom (1991) allows us to analyze for the first time the impact of fiscal restrictions on the cost as well as the quantity of borrowing, providing a check on the robustness of the results.

The econometric analysis reported here utilizes pooled time series-cross section data for the 50 states for the years 1985 through 1989 (the most recent five years for which data are currently available). I employed the specification estimated by ACIR (1987) on state level data for 1983.[36] The per capita general fund surplus (or deficit) is assumed to depend on agricultural output per capita ("agripe"), the per cent of state population aged 54 or older ("elders"), federal aid to the state per capita ("grant") and a dummy variable equalling one for states in the south. Grants should enter with a positive sign insofar as they permit politicians to replace deficit

Table 8

The Effect of Fiscal Restraints on the General Fund Budget Balance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
C	41.93	46.23	25.30	-50.46	58.13	0.34	3.13	28.83	27.75
	(1.10)	(1.02)	(0.52)	(-0.53)	(0.51)	(31.19)	(0.19)	(1.46)	(1.38)
BALNC1	-	23.43	-	-	23.81	-	-	24.15	-
		(2.06)			(1.97)			(2.00)	
BALNC2	-	-	3.16	-	-	3.44	-	-	3.34
			(1.63)			(1.68)			(1.63)
BALNC3	19.65	-	-	20.45	-	-	20.98	-	-
	(2.13)			(2.19)			(2.26)		
ELDERS	-5.01	-2.08	-1.48	-4.48	-2.10	-1.62	-5.83	-2.92	-2.33
	(-2.05)	(-0.74)	(-0.53)	(-1.82)	(-0.73)	(-0.56)	(-2.30)	(-0.99)	(-0.79)
GRANT	0.12	0.02	0.02	0.13	0.02	0.02	0.12	0.01	0.02
	(3.15)	(0.37)	(0.46)	(3.30)	(0.41)	(0.49)	(3.19)	(0.31)	(0.39)
ITEM	-	-	-	-4.53	-2.10	-6.14	-10.56	-5.99	-9.47
				(-0.36)	(-0.14)	(-0.39)	(-0.81)	(-0.38)	(-0.59)
SOUTH	-28.38	-40.38	-36.45	-24.33	-44.54	-40.82	-15.33	-39.30	-36.16
	(-2.55)	(-2.91)	(-2.67)	(-1.86)	(-2.90)	(-2.66)	(-1.11)	(-2.45)	(-2.26)
TEL	-	-	-	-9.47	-12.80	-12.31	-5.95	-10.62	-10.36
				(-0.96)	(-1.07)	(-1.02)	(-0.59)	(-0.87)	(-0.85)
YEAR	-	-	-	0.04	0.01	0.01	0.01	0.003	0.01
				(0.97)	(0.15)	(0.18)	(0.84)	(0.06)	(0.11)
YPC	-	-	-	0.002	-0.001	-0.001	0.004	0.0003	-0.0003
				(0.67)	(-0.37)	(-0.48)	(1.46)	(0.08)	(-0.09)
AGRIPC	0.01	0.01	0.01	-	-	-	0.01	0.01	0.01
	(1.56)	(1.31)	(1.18)				(1.94)	(1.16)	(1.03)
1986	-12.94	-10.92	-11.12	-13.27	-10.43	-10.34	-14.00	-10.78	-10.60
	(-0.92)	(-0.65)	(-0.66)	(-0.92)	(-0.61)	(-0.60)	(-0.98)	(-0.63)	(-0.62)
1987	-9.21	-2.92	0.17	-11.53	-1.86	2.28	-13.68	-2.94	1.27
	(-0.64)	(-0.17)	(0.03)	(-0.79)	(-0.11)	(0.13)	(-0.94)	(-0.17)	(0.07)
1988	2.37	18.53	19.60	-1.40	21.06	22.77	-6.72	17.98	20.12
	(0.17)	(1.10)	(1.16)	(-0.09)	(1.16)	(1.26)	(-0.44)	(0.98)	(1.10)
1989	15.56	29.21	26.74	9.94	33.01	31.19	3.13	28.83	27.75
	(1.10)	(1.71)	(1.56)	(0.61)	(1.70)	(1.58)	(0.19)	(1.46)	(1.38)
N	242	250	250	242	250	250	242	250	250
R-Squared	0.14	0.09	0.08	0.17	0.09	0.08	0.18	0.09	0.09
F-Statistic	5.34	2.58	2.39	3.91	1.88	1.78	3.94	1.84	1.73

Note: t-statistics in parentheses.
Source: see text.

spending with spending out of federal aid. The dummy variable for southern states should enter negatively if the region, as sometimes asserted, is fiscally conservative. Agricultural output should similarly display a negative sign if farm states are fiscally conservative.

As shown in Table 8, the signs of the coefficients on these variables are as predicted, although statistical significance varies. A number of the alternative measures of balanced-budget restrictions are significantly associated with larger surpluses (smaller deficits). Three such measures are considered. The first is a dummy variable equalling one for states prohibited from carrying over a deficit into the next fiscal year ("Balance1"). The second is an index (ranging from 1 to 10) constructed to capture the relative stringency of state balanced-budget requirements ("Balance2").[37] The third, not considered by ACIR, is a dummy variable equalling one for states whose governors must sign a balanced-budget by statutory or constitutional law ("Balance3"). The first two equations of Table 8 show that "Balance1" and "Balance3" have a significant effect on budget deficits. Their coefficients differ from zero at the 95 per cent confidence level. Their positive signs suggest that states whose governors must sign balanced budgets and states that cannot carry over deficits run larger surpluses. The coefficient on "Balance2," in the third equation, while also positive is not significantly different from zero. Since this index is an increasing function of "Balance1," "Balance3" and other weaker fiscal requirements as well, its insignificance suggests that it is mainly the more stringent restrictions that have noticeable effects on deficits.

The next three equations report the ACIR's alternative specification,

which drops the insignificant measure of agricultural production and adds three additional regressors. The first is a dummy variable for states with tax and/or expenditure limitations ("Tel"), which typically limit appropriations to a share of personal state income. These limitations should enter with a negative sign unless they are set at such high levels as to be inoperative. The second new variable, the year in which statehood was granted ("Year"), should enter positively if special interest groups grow more entrenched over time and their lobbying leads to larger deficits.

The coefficients on the additional variables are consistent with these predictions, although none is significantly different from zero at standard confidence levels. None of the coefficients on the balanced-budget restrictions is much affected by the addition of these variables. "Balance1" and "Balance3" remain significant at the 95 per cent level, while "Balance2" is now also significantly different from zero (at the 90 per cent level). When agricultural output is added to this augmented specification, however, the coefficient on "Balance2" slips back below the 90 per cent confidence level.[38] Thus, I conclude that balanced-budget restrictions are in fact conducive to budget balance, but only if they are relatively stringent.

Some advocates of restrictions on deficit spending argue that these laws are important for limiting the level of public expenditure as well as the size of the deficit.[39] I therefore estimated the determinants of own-source spending per capita, again utilizing a specification that follows ACIR (1987). Additional determinants of spending include a dummy variable for states whose governors have line-item vetoes ("Item"), assumed to have a negative effect on the level of spending, and the size of the state legislature ("Size"),

included on the grounds that larger legislatures experience higher transactions costs. If transactions costs have a negative effect on legislative output and it is assumed that the lower the legislative output the higher the budget deficit, this variable should enter negatively.

Both predictions are supported by the point estimates in Table 9, although the coefficient on "Item" is not significantly different from zero. Importantly, none of the balanced-budget restrictions has a significant effect on the level of per capita spending. Although the coefficients for states whose governors must sign a balanced budget and on the ACIR index are negative as predicted, neither differs significantly from zero. Thus, even if balanced-budget restrictions, when sufficiently stringent, are in fact conducive to budget balance, they do not affect the level of public spending, implying that their impact on policy operates mainly on the tax side.

Table 10 turns from balanced-budget requirements to debt limits, again employing a variant of the ACIR specification. The dependent variable is the full faith and credit debt of state governments. Contrary to the bivariate comparisons of von Hagen (1991), these multivariate tests indicate that constitutional debt limits exert a downward influence on state debts per capita. The coefficients on the debt-limit variable are significantly less than zero at the 99 per cent confidence level; a point estimate of -250 implies that the presence of a debt limit reduces state debt per capita by $250 dollars.

Table 11 shifts the focus from quantities to prices, considering the impact of debt and deficit limits on the yields on state bonds (rather than on stock or flow supplies). A previous study by Goldstein and Woglom (1991)

Table 9

The Effect of Fiscal Restraints on Own-Source Spending

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
C	-253.67	281.72	366.47	-390.63	196.42	307.48	-238.51	295.20	406.45
	(-1.23)	(0.98)	(1.18)	(-1.80)	(0.65)	(0.96)	(-1.08)	(0.94)	(1.23)
BALNC1	-	50.10	-	-	57.58	-	-	50.95	-
		(0.72)			(0.83)			(0.74)	
BALNC2	-	-	-2.46	-	-	-4.19	-	-	-4.46
			(-0.21)			(-0.36)			(-0.38)
BALNC3	-12.40	-	-	-11.49	-	-	-15.39	-	-
	(-0.28)			(-0.25)			(-0.34)		
ELDERS	-23.38	-101.23	-98.46	-33.60	-108.85	-105.77	-24.88	-103.96	-100.85
	(-1.97)	(-6.70)	(-6.60)	(-2.89)	(-7.31)	(-7.15)	(-2.08)	(-6.76)	(-6.62)
ITEM	-	-	-	66.41	77.13	76.54	100.85	97.14	98.26
				(1.06)	(0.88)	(0.87)	(1.60)	(1.09)	(1.09)
SIZE	-1.81	-2.65	-2.73	-1.61	-2.51	-2.67	-1.83	-2.68	-2.84
	(-4.53)	(-4.60)	(-4.76)	(-3.83)	(-4.19)	(-4.42)	(-4.31)	(-4.37)	(-4.61)
SOUTH	95.29	155.43	165.28	132.00	171.46	185.31	75.60	141.51	152.54
	(1.53)	(1.80)	(1.93)	(2.20)	(2.04)	(2.23)	(1.20)	(1.62)	(1.76)
TEL	-	-	-	-42.08	-61.64	-63.36	-70.70	-79.20	-81.81
				(-0.87)	(-0.91)	(-0.93)	(-1.44)	(-1.14)	(-1.16)
YPC	0.10	0.15	0.14	0.11	0.15	0.15	0.10	0.15	0.14
	(7.33)	(7.90)	(7.75)	(8.83)	(8.80)	(9.54)	(7.10)	(7.83)	(7.60)
AGRIPC	-0.05	-0.03	-0.03	-	-	-	-0.07	-0.04	-0.05
	(-2.02)	(-0.85)	(-0.91)				(-2.58)	(-1.24)	(-1.31)
1986	-20.82	-66.01	-64.01	-23.04	-66.96	-64.48	-19.73	-65.59	-63.20
	(-0.30)	(-0.69)	(-0.67)	(-0.33)	(-0.70)	(-0.67)	(-0.29)	(-0.69)	(-0.66)
1987	-21.45	-82.77	-81.69	-30.04	-86.50	-86.64	-17.81	-80.75	-81.21
	(-0.31)	(-0.85)	(-0.84)	(-0.43)	(-0.89)	(-0.89)	(-0.26)	(-0.83)	(-0.83)
1988	-59.22	-185.61	-179.67	-80.03	-195.28	-189.21	-47.64	-177.51	-171.16
	(-0.80)	(-1.82)	(-1.76)	(-1.09)	(-1.93)	(-1.87)	(-0.65)	(-1.73)	(-1.68)
1989	898.09	724.98	736.64	868.05	708.88	722.85	909.91	733.61	748.19
	(11.40)	(6.60)	(6.67)	(11.16)	(6.55)	(6.62)	(11.58)	(6.67)	(6.76)
N	241	249	249	241	249	249	241	249	249
R-Squared	0.70	0.61	0.61	0.70	0.61	0.61	0.70	0.61	0.61
F-Statistic	53.09	36.72	36.60	47.41	33.44	33.31	45.09	30.86	30.77

Note: t-statistics in parentheses.
Source: see text.

Table 10

The Effect of Fiscal Restraints on the Levels of Debt

	(1)	(2)	(3)
C	964.39	-1153.36	-1084.98
	(2.26)	(-1.45)	(-1.39)
DBTLIM	-293.95	-255.19	-224.90
	(-3.11)	(-2.81)	(-2.53)
ELDERS	-107.23	-53.51	-34.47
	(-5.39)	(2.54)	(-1.61)
GRANT	-	1.57	1.66
		(5.11)	(5.60)
ITEM	-	-147.69	-85.16
		(-1.26)	(-0.73)
SIZE	-	-1.88	-2.32
		(-2.45)	(-3.06)
SOUTH	-62.78	282.96	201.12
	(-0.53)	(2.42)	(1.72)
TEL	-	81.64	24.17
		(0.91)	(0.27)
YEAR	-	0.18	0.22
		(0.53)	(0.67)
YPC	0.10	0.15	0.13
	(3.74)	(6.36)	(5.34)
AGRIPC	-0.09	-	-0.15
	(-1.87)		(-3.21)
1986	63.62	4.28	5.28
	(0.53)	(0.04)	(0.05)
1987	135.02	66.23	77.34
	(1.09)	(0.58)	(0.69)
1988	-147.80	-301.42	-255.90
	(-1.23)	(-2.46)	(-2.12)
N	200	200	200
R-Squared	0.34	0.44	0.47
F-Statistic	12.06	12.29	12.69

Note: t-statistics in parentheses.
Source: see text.

Table 11

The Effects of Fiscal Restraints on State Bond Yields

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
C	-14.13	-48.70	-47.22	-11.56	-17.56	-2.51	-53.16	-40.54	-29.61	-52.77	-34.55	-27.73
	(-1.23)	(-2.04)	(-1.97)	(-1.02)	(-1.70)	(-0.23)	(-2.14)	(-1.85)	(-1.30)	(-2.12)	(-1.61)	(-1.22)
BALNC1	-	-	-	-	-12.52	-	-	-14.64	-	-	-17.55	-
					(-4.75)			(-5.77)			(-6.63)	
BALNC2	-	-	-	-	-	-1.53	-	-	-2.03	-	-	-2.08
						(-3.62)			(-4.88)			(-4.97)
BALNC3	-	-	-	-0.14	-	-	0.14	-	-	0.15	-	-
				(-0.05)			(0.05)			(0.05)		
DBTLIM	0.16	-2.68	-2.96	-	-	-	-	-	-	-	-	-
	(0.06)	(-1.00)	(-1.09)									
ELDERS	0.94	1.20	1.29	0.73	1.48	1.03	1.25	1.71	1.47	1.30	2.13	1.61
	(1.43)	(1.89)	(2.00)	(1.05)	(2.39)	(1.66)	(1.84)	(2.94)	(2.49)	(1.87)	(3.65)	(2.68)
GRANT	0.04	0.03	0.03	0.04	0.04	0.03	0.03	0.04	0.03	0.03	0.04	0.03
	(3.72)	(3.20)	(3.29)	(2.73)	(4.56)	(3.53)	(2.50)	(4.34)	(3.13)	(2.51)	(5.02)	(3.29)
ITEM	-	0.80	1.31	-	-	-	0.34	0.92	3.65	0.60	2.62	4.35
		(0.24)	(0.38)				(0.10)	(0.30)	(1.13)	(0.17)	(0.85)	(1.32)
SOUTH	3.89	1.32	0.78	4.19	9.53	5.87	2.18	5.64	2.07	1.92	4.75	1.43
	(1.24)	(0.38)	(0.22)	(1.28)	(2.99)	(1.91)	(0.59)	(1.74)	(0.64)	(0.51)	(1.49)	(0.44)
TEL	-	6.53	6.29	-	-	-	6.58	5.79	6.58	6.44	4.80	6.25
		(2.45)	(2.35)				(2.41)	(2.36)	(2.62)	(2.33)	(1.98)	(2.48)
YEAR	-	0.03	0.03	-	-	-	0.03	0.02	0.03	0.03	0.03	0.03
		(2.52)	(2.57)				(2.36)	(2.57)	(2.55)	(2.38)	(2.79)	(2.61)
YPC	-	-0.001	-0.002	-	-	-	-0.001	-0.002	-0.002	-0.001	-0.003	-0.002
		(-1.95)	(-2.15)				(-1.35)	(-3.48)	(-3.06)	(-1.38)	(-4.63)	(-3.30)
AGRIPC	0.0002	-	-0.002	0.0008	-0.002	0.0007	-	-	-	-0.001	-0.007	-0.003
	(0.12)		(-0.89)	(0.33)	(-0.74)	(0.35)				(-0.38)	(3.13)	(-1.23)
1986	-1.04	0.90	0.96	-0.99	-1.35	-0.94	0.68	1.10	1.24	0.71	1.33	1.31
	(-0.26)	(0.23)	(0.25)	(-0.24)	(-0.35)	(-0.25)	(0.17)	(0.31)	(0.34)	(0.17)	(0.38)	(0.36)
1987	-0.26	1.40	1.65	-0.13	-0.47	-1.92	0.89	1.98	-0.44	1.01	2.85	0.21
	(-0.06)	(0.35)	(0.41)	(-0.03)	(-0.12)	(-0.49)	(0.21)	(0.54)	(-0.12)	(0.24)	(0.80)	(0.06)
1988	-3.26	-0.28	0.33	-3.41	-3.41	-4.22	-1.45	1.10	-0.41	-1.17	3.32	0.30
	(-0.81)	(-0.07)	(0.08)	(-0.82)	(-0.90)	(-1.08)	(-0.33)	(0.29)	(-0.11)	(-0.26)	(0.88)	(0.08)
1989	-6.74	-2.43	-1.62	-6.27	-7.27	-5.62	-3.41	-0.74	0.64	-3.10	2.17	1.65
	(-1.64)	(-0.54)	(-0.36)	(-1.43)	(-1.89)	(-1.42)	(-0.73)	(-0.18)	(0.15)	(-0.65)	(0.53)	(0.38)
N	200	200	200	192	200	200	192	200	200	192	200	200
R-Squared	0.08	0.17	0.17	0.06	0.18	0.14	0.14	0.29	0.26	0.14	0.33	0.27
F-Statistic	1.90	3.21	3.02	1.23	4.63	3.48	2.43	6.44	5.49	2.24	6.98	5.20

Note: t-statistics in parentheses.
Source: see text.

examined the effect of debt limits on yield spreads, finding that debt limits reduced borrowing costs. The other principal variable included in their analysis was the outstanding debt. A problem with this approach, as these authors note, is simultaneity bias: the level of debt is likely to affect the cost of borrowing, but the cost of borrowing is also likely to influence the decision to borrow. Adequate instruments are difficult to obtain. Hence rather than attempting to estimate a pair of structural equations representing the influence of the debt burden on the cost of borrowing and the cost of borrowing on the quantity of borrowing, I estimate the associated reduced forms. I solve the structural equations for the quantity of borrowing and the yield and relate these reduced forms to other (exogenous) variables utilized in the ACIR study. This approach is more likely to produce an unbiased point estimate of the central relationship, namely the impact of fiscal restrictions on interest rates.[40]

The dependent variable in this analysis is the difference in basis points between the yield on 20 year general obligation bonds for a specific date and that on a 20 year New Jersey general obligation bond for the same date, again for the years 1985 through 1989. The debt limit variable, in the first three columns of Table 11, has the anticipated negative sign in two of three cases but is indistinguishable from zero. Thus, while debt limits influence the quantity of debt outstanding, they do not appear to influence the required rate of return.[41] The balanced-budget variables, in the remaining columns, generally have a negative impact on yields. In contrast to debt limits, then, balanced-budget requirements significantly affect both yields and borrowing on the margin.[42]

Thus, the results for U.S. states generally confirm that fiscal restrictions can have a significant impact on fiscal outcomes.

C. The Debate Over Fiscal Federalism

Whether borrowing by states within a monetary union throws off negative externalities and therefore must be restrained, or the mobility of factors of production within the union limits the borrowing capacity of state and local jurisdictions, alternative mechanisms for transferring resources to depressed regions may be warranted. Herein lies the case for fiscal federalism. Sachs and Sala-i-Martin (1990) have revived the argument, due to Ingram (1959), that fiscal federalism is an important concomitant of monetary union in the United States, and that its absence in Europe will imply regional problems following the transition to EMU. They estimate that the federal fiscal system in the U.S., by reducing federal tax liabilities and increasing inward transfers, offsets roughly 35 per cent of a state's income loss when it experiences a recession. Purchasing power is stabilized, diminishing regional problems that can no longer be redressed using the exchange rate.

Using data for U.S. census regions, Sachs and Sala-i-Martin estimate regressions relating tax and transfer payments to movements in pretax personal income (both measured relative to the national average). The elasticities from these regressions are then used to estimate the size of the stabilization effect on income.[43] They find that federal tax liabilities decline by roughly 25 cents for every dollar by which regional income falls short of national income, and that inward transfers rise by roughly 10 cents. Thus, the stabilization effect occurs mainly on the tax side. It is substantial.

These results have been challenged on a variety of grounds. von Hagen (1990) emphasizes the need to distinguish transfers extended in response to temporary and permanent declines in state incomes. Most inter-state transfers in the U.S., he argues, are permanent transfers designed to offset long-standing differences in state incomes, not temporary transfers extended for cyclical reasons. Once permanent and temporary transfers are distinguished, he suggests, one finds that transfers extended in response to cyclical fluctuations in state income are relatively small.

Bayoumi and Masson (1991) have considered this refinement using data for Canada as well as the U.S. They regress each region's per capita personal income net of taxes and transfers on its per capita personal income inclusive of taxes and transfers.[44] Both regressors are normalized by the analogous national average. This equation measures the relationship between personal income before and after federal fiscal flows, with the slope coefficient capturing the size of the offset. For the U.S., the estimated coefficient of 0.80 indicates that, on average, federal fiscal flows reduce regional income inequalities by 20 cents on the dollar. Thus, Bayoumi and Masson's estimate, while smaller than that of Sachs and Sala-i-Martin, still suggests a substantial stabilization effect.

To get at the different response to temporary and permanent income fluctuations, they then estimate the same regression on detrended data (first differencing all variables to remove the trend). Regressions on differenced data produce a coefficient of 0.72, suggesting that the stabilization of short-term fluctuations, which comes to 28 cents on the dollar, is even larger than the overall effect. This plausibly reflects the linkage between federal

transfers and poverty, which is correlated with the cycle. That the largest change in coefficients when detrended rather than trended data are used occurs when personal income is adjusted not for taxes but for social insurance, transfers and grants is consistent with the notion that the grant and transfer component of federal programs is particularly responsive to the cycle.

A similar analysis for Canada yields evidence of an even larger response to permanent income differentials. Personal direct taxes provide an estimated 5 cents on the dollar of redistribution, while transfers and grants provide 15 cents each. Thus, the offset to long-term income differentials is 35 per cent, nearly twice the figure produced by analogous estimates for the United States. This large transfer and grant effect reflects Canada's more extensive social service and regional equalization mechanisms.

In contrast to the results for the U.S., the response in Canada to short-term personal income fluctuations is smaller -- almost exactly half the response to long-term differentials. Thus, equalization payments, which reflect the unusual extent of regional inequality and are extended in response to long-term rather than temporary income differentials, play a larger role in the Canadian fiscal system than in the United States. Offset of temporary income fluctuations, though still substantial, is less important than in the United States.

While documenting the need to distinguish equalization payments designed to moderate persistent income differentials from stabilization or insurance effects, this research affirms the importance in existing monetary unions of fiscal transfers extended in response to temporary income fluctuations. Does the EC have the capacity to undertake comparable functions? So long as the

Community budget remains little more than 1 per cent of EC GNP, it is hard to see how it could evolve into a fiscal mechanism with the redistributive capacity of the U.S. and Canadian federal budgets. As far back as 1977 the MacDougall Report suggested, on essentially these grounds, that an EC budget of no less than 5 per cent of Community GNP was needed for the viability of monetary union (European Commission, 1977). Another relevant comparison, federal government spending as a share of consolidated government expenditure, is 69 per cent in Belgium, 64 per cent in the U.S., 61 per cent in Germany, 42 per cent in Canada and 30 per cent in Switzerland; by comparison, the EC budget is no more than 5 per cent of the consolidated government spending of member countries.[45] Again, the implication is that the EC budget, as it presently stands, possesses very limited redistributive capacity.

If the case for fiscal federalism is granted, which of the many EC programs should take up the slack? Williamson (1990) has proposed an EC-wide unemployment insurance system as a means of regional coinsurance. This may create a number of problems, however. Consider the following example (from Eichengreen, 1992a). National labor unions seeking to maximize the wage bill set the level of real wages, subject to which firms then choose the level of employment. Unions will trade additional unemployment for higher wages when their unemployed members receive more generous unemployment benefits. If the cost of those benefits is shifted from the national level to the Community, it is no longer a transfer exclusively from employed to unemployed residents of a given country. The union has an incentive to raise its wage demands, producing more unemployment. Not only does insurance thereby encourage the outcome, unemployment, whose effects it is designed to mitigate, but the

magnitude of the distortion increases with the extent of fiscal federalism.

The structure of unemployment insurance funds in the U.S. minimizes this problem. Each state administers its own insurance trust fund. States also pay a fraction of their payroll taxes into a Federal Unemployment Trust Fund, from which they are permitted to draw when their own trust funds move into deficit. Significantly, however, states must pay interest on the funds they borrow. This minimizes their the capacity to shift the cost of unemployment benefits onto neighboring jurisdictions within the federal system.

Another potential conduit for fiscal transfers is the EC's Structural Funds. Targeted at depressed regions within the Community, these funds were recently doubled in size. Spain and other Mediterranean members of the EC have lobbied for expanding them further as a precondition for EMU. However, the principal function of the Structural Funds is transferring resources to regions where incomes are persistently below the EC average. Structural Fund receipts are inelastic with respect to temporary disturbances. Using historical data, Gordon (1991) estimates that a $1 fall in a member state's per capita income increases Structural Fund transfers by at most 1 U.S. cent. Since the size of the Structural Funds has recently been doubled, one might wish to double this estimated effect. Still, unless their administration is fundamentally reformed, they are an unlikely source of regional coinsurance. For them to substitute for U.S.-style fiscal federalism, it will be necessary to increase not only the scale of the Structural Funds but also their elasticity with respect to current income fluctuations. This, however, would fundamentally alter their raison d'etre, something that the current recipients would resist.

One skeptical reaction to all these arguments is that monetary unions like the United States acquired a common currency long before they developed fiscal federalism. That U.S. fiscal federalism is a 20th century innovation raises the question of whether fiscal federalism really an essential concomitant of monetary union.

Advocates of fiscal federalism would respond that the economic conditions that make fiscal coinsurance a necessary concomitant of monetary union were not as prevalent a century ago. This case is not as straightforward as it might seem. One such argument, that 19th century labor markets were less structured and wages more flexible, reducing the unemployment response to cyclical fluctuations, finds little support in the data.[46] Nor is it plausible that regional disturbances were less idiosyncratic before the 20th century. The 19th century U.S. economy's regional specialization and dependence on interregional trade heightened the scope for shocks to affect different regions differently. For example, shocks to the price of primary commodities (like cotton and tobacco) relative to that of manufactures had very different effects on New England and the South.

Perhaps the main difference between the pre- and post-fiscal-federalism eras lies in the extent of interregional labor mobility. Because of high transport costs (compared to the 20th century), the migratory response to temporary fluctuations in one region's fortunes relative to another's was small by today's standards. Regional problems could be severe, but until the dust bowl days of the 1930s they did not unleash large-scale migrations. The social and political strains associated with large-scale migrations were minimized. The need for fiscal transfers to reduce the incentives for

migration was consequently diminished.

For connoisseurs of the literature on optimum currency areas, this is an ironic conclusion. Mundell argued that exchange rate changes (and by implication, fiscal federalism) were least necessary where a high degree of labor mobility facilitated adjustment. The conclusion here is that high labor mobility may make fiscal federalism more rather than less desirable when the decision is made to give up the exchange rate as an instrument of adjustment. In the absence of both exchange rate changes and fiscal transfers, adjustment could take place through labor mobility, but only at high political and social cost. Hence the argument for fiscal federalism to limit labor flows and the associated costs.

V. Maximizing Benefits and Minimizing Costs of EMU

A. Designing the ECB

Inflation performance and central bank structure vary across industrial countries. That there exists a strong correlation between suggests that the ECB's design will have important implications for monetary policy outcomes under EMU.

One explanation for why central bank independence is conducive to price stability is the political business cycle -- the tendency prior to elections for central banks dependent on the good will of incumbents increase inflation in an effort to stimulate demand (Alesina, 1989). Another is the time-consistency problem of Kydland and Prescott (1977) and Barro and Gordon (1982). If workers have to commit to wage demands before the money supply is set, a central bank with discretionary powers has the incentive to produce a

surprise inflation to raise demand, profitability, output and employment. Workers cognizant of the incentive central bankers face will increase their wage demands, neutralizing the employment effects. Central bankers, to achieve their goals, will have to inflate even more, and workers will raise their wage demands accordingly. This cycle will continue until the cost to the central bank of additional inflation just matches the benefit of additional output. Output is no different than if the central bank could precommit to a zero-inflation rule, but welfare is lower because inflation is higher.

A binding zero-inflation rule is one conceivable response to the political-business-cycle and time-consistency problems. But not only may a binding rule be politically infeasible, it may be undesirable to limit monetary policymakers' discretion so completely. Rules with clearly-specified contingencies, or escape clauses, are preferable in theory (see Grossman and Van Huyck, 1988; Flood and Isard, 1989; Giovannini, 1992). But in practice the relevant contingencies are likely to be based on private information, in which case they may lack credibility (Canzoneri, 1985) and discretion may be the preferable second-best alternative.

Another alternative to rules, as Rogoff (1985) has shown, is appointment of a conservative central banker who is more inflation adverse than the public. This will bias policy toward lower inflation which, in the presence of time inconsistency, is welfare improving.

A conservative central banker can only influence policy, of course, if he or she is independent of the government. Grilli, Masciandaro and Tabellini (1991) construct measures of the political and economic independence of

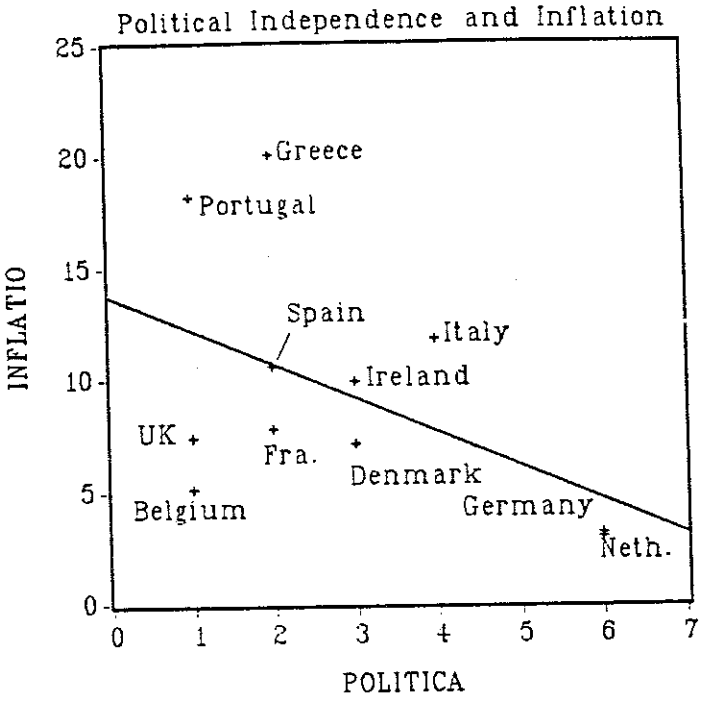
central banks. Political independence -- the ability of a central bank to choose its policy objectives without constraints or influence from the government -- depends on three factors: whether or not the Governor and the Board are appointed by elected officials and for how long their appointments run; whether a government representative sits on the Board and government approval of the Board's decisions is required; and whether statute requires the central bank to pursue monetary stability or, alternatively, creates scope for conflicts between the bank and government over issues like debt management. As shown in the top panel of Figure 5, of European central banks those of Germany and the Netherlands are the most independent politically, those of Belgium and the UK the least. There is a significant negative correlation between political independence and the average annual inflation rate in the 1980s (shown on the vertical axis).

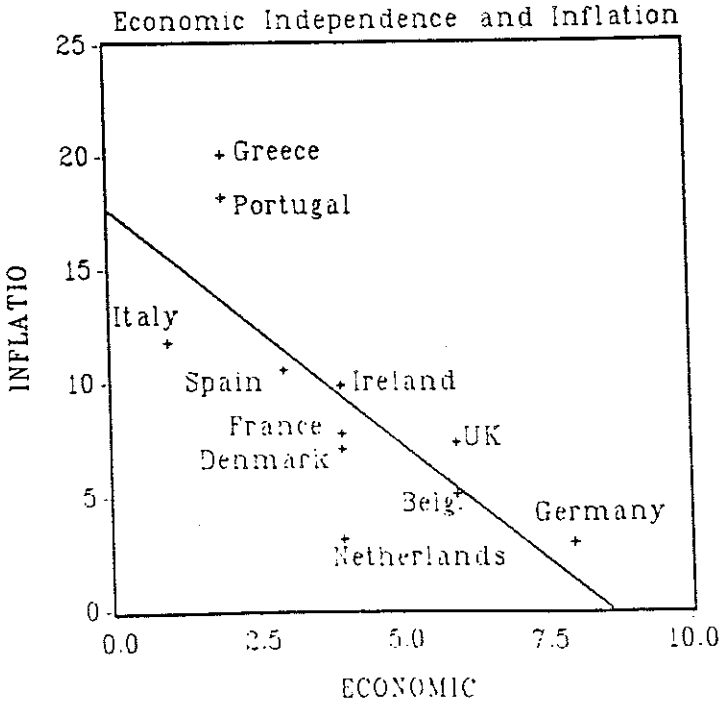
Grilli et al. also construct measures of economic independence, or the freedom the central bank enjoys to use monetary policy instruments to achieve monetary policy goals. Their index is a function of any limits placed on monetary financing of budget deficits and of constraints on the central bank's ability to discount commercial paper, purchase public debt or extend loans (all of which should enhance a central bank's economic independence). As shown in the bottom panel of Figure 5, the German Bundesbank is the most independent European central bank economically, the Banca d'Italia the least. Again, there is a negative correlation between economic independence and inflation performance.

This evidence, though impressive, has limitations. It is clear from Figure 5 that other factors besides central bank independence influence

Figure 5

Central Bank Independence and Inflation





Source: Alesina and Grilli (1991) and Grilli, Masciandaro and Tabellini (1991).

inflation performance. Belgium's inflation rate in the 1980s was consistently below the EC average, for example, despite the Belgian National Bank's lack of political independence. The R-squared from a regression of inflation on a constant term and both measures of central bank independence is only two thirds, confirming that these measures leave a significant portion of the variation in inflation rates unexplained.[47] Moreover, other authors paint a somewhat different picture of the degree of independence of various central banks, Kennedy (1991) and Neumann and von Hagen (1992) for example, providing a more cautious assessment of the political independence of the German Bundesbank.[48]

Where would the ECB lie along these dimensions? Alesina and Grilli (1991) suggest that its draft statute positions it alongside the Bundesbank as the most independent of European central banks. Its economic independence will be enhanced by a provision in its draft statute forbidding the ECB from providing lines of credit to EC or national public institutions. The draft statute prohibits representatives of the European Council from serving on the ECB's Governing Council. Governing Council members are prohibited under the draft statute from receiving instructions from their national governments. Neither national governments nor other EC bodies must approve monetary policy decisions.

Procedures for appointing the President and Board of Directors of the ECB are consistent with high levels of political independence. The President's term of office will be eight years, as with the Bundesbank. The 6 members of the ECB's Executive Board (a subset of the Governing Council, comprised of the president, the vice-president and four additional members)

will be elected by the European Council for eight year terms. The Governing Council itself will include both the Executive Board and the 12 governors of national central banks. The draft statute specifies that, irregardless of national statutes determining national central bank governors' terms of office, they shall serve on the ECB's council for a minimum of five years.[49] Executive Board members cannot be reappointed nor dismissed arbitrarily.

All of these factors will buttress the independence of the ECB and enhance its commitment to price stability. Nonetheless, questions can be raised about how independent and committed to price stability the new institution will actually be. For example, under Article 109 of the Maastricht Treaty, the President of the EC Council of Ministers and a member of the EC Commission are permitted to participate in the Governing Council of the ECB. Though not entitled to vote, the President of the Council of Ministers may submit a motion for deliberation to the ECB's Governing Council. One can imagine that these representatives of political interests in the Community will thereby influence the deliberations of the Governing Council.

Moreover, national representatives will outnumber members at large on the Governing Council, in contrast to the situation on the Federal Reserve System's Open Market Committee, where members at large constitute a majority.[50] Insofar as a common monetary policy is a blunt instrument for dealing with the problems of particular regions, one can imagine that national representatives will be less inclined to push for an activist policy response than members at large. This has traditionally been true of the Federal Open Market Committee in the United States, where representatives of regional reserve banks have been less activist than members of the Board of

Governors.[51] But one can also imagine that, when regional conditions coincide, the dominance of national representatives, as opposed to members at large, could make it easier to form a majority coalition of regional interests responsive to political pressures (say, countries with heavy debt burdens whose representatives would favor a more inflationary stance for monetary policy).

Another potential problem is that an ECB president or executive board member may cater to the wishes of a political constituency as the end of his or her term of office nears. This issue is addressed by a clause in the draft statute prohibiting reappointment of members of the executive board. But so long as executive board members harbor domestic political ambitions, they still may become increasingly responsive to political pressures as expiration of their term looms and they contemplate moving laterally into domestic political office.

Finally, the Maastricht Treaty contains some rather complex provisions on the division between monetary and exchange rate functions. Insofar as the draft statute of the ECB is inspired by the Bundesbank law, this is understandable. German law gives the Bundesbank responsibility for monetary policy but vests authority over exchange rate policy with the finance minister and the federal cabinet. But in a world of high capital mobility and asset substitutability, of course, distinct monetary and exchange rate targets cannot be achieved.

The Maastricht Treaty empowers the Council of Ministers, not the ECB, to conclude agreements on an exchange rate system linking the ECU to non-EC currencies. Acting by a qualified majority, the Council may change central

rates for the ECU within such a system. Its decisions will bind the ECB, which will be compelled to implement them even if they conflict with its other objectives. One is reminded of the one-for-one conversion of German currencies, implemented in 1990 over the Bundesbank's objection. Yet the ECB may ultimately have more say over exchange rate policy than the Bundesbank. The Council can act only after receiving a recommendation from the Commission or the ECB. Fratianni, von Hagen and Waller (1992) argue that a "politically weak Council will not want to go against the recommendation of the ECB, especially if departing from such a recommendation would publicly comprise price stability." On the other hand a politically strong Council might attempt to do exactly that, compromising the ECB's independence in much the manner government-central bank conflicts have challenged the Bundesbank's.

B. Responsibility for the Financial System

According to the principal of subsidiarity on which the process of European unification is based, responsibility for bank surveillance and regulation should devolve to national authorities. A striking feature of the Maastricht Treaty is the limited scope it provides the ECB to engage in bank regulation. The ECB may undertake only such tasks of prudential supervision as are conferred on it by the European Council, which itself must act unanimously on a proposal from the European Commission and receive the assent of the European Parliament.

The implications for policy depart from those in monetary unions like the United States, where the central bank possesses extensive regulatory power. In the U.S., the lender-of-last-resort function is utilized more

heavily than in Europe. The Federal Reserve System, which periodically invests in the financial system, monitors and regulates the institutions to which it lends. In Europe, where lender-of-last-resort facilities are less important, greater emphasis is placed on prudential supervision by regulators independent of the central bank. If this tradition is maintained, the ECB is less likely than the Fed to extend credit to illiquid banks; hence there is less reason to give it regulatory power.

Behind the scenes is a belief that maintaining this tradition is not only feasible but desirable. If the ECB is made responsible for the stability of Europe's financial system, it may find itself torn between two incompatible objectives. At the same time it wishes to regulate the quantity of credit so as to maintain price stability, it may be pressed to provide however much credit is required by illiquid intermediaries, notwithstanding the inflationary consequences. Lender-of-last-resort activities and responsibility for prudential supervision may compromise the ECB's commitment to price stability. Hence the desire to build a fire wall between monetary policy and bank regulation, insulating the ECB from responsibility for the financial system. Proposed arrangements are not unlike those in Germany, where the provision of temporary financial assistance is largely independent of the central bank.[52]

There are three reasons why the separation of monetary policy from prudential supervision may be undesirable. One is the danger that it will encourage competitive bank deregulation. European banks have traditionally enjoyed a favored position in their home markets. The 1992 program will intensify international competition and allow intermediaries to more fully

exploit economies of scale and scope, ultimately driving some banks out of business.[53] To protect their market share, national authorities will have an incentive to provide domestic banks with regulatory advantages. This creates externality problems insofar as the benefits from deregulation, in the form of profitability, accrue to bank shareholders and employees who are still primarily domestic while the costs in the form of financial instability are incurred by the Community as a whole.

One potential form of competitive deregulation is lower capital requirements. Table 12 suggests that regulators in Italy and Spain, where capital requirements are highest, may come under the greatest pressure to reduce them. Another potential form of competitive deregulation is the reduction or elimination of restrictions on the ratio of short-term bank assets to liabilities, like those in place in France, where short-term assets with a maximum maturity of one month must represent at least 100 per cent of liabilities of the same maximum maturity.[54]

Competitive deregulation is a familiar problem. The 1988 Basle Accord, negotiated under the auspices of the Bank for International Settlements, proposed the adoption of uniform risk-weighted capital requirements. With minor modification it provides the basis for the European Community's Directives on Solvency Ratios and Own Funds, which address the problem of competitive deregulation.[55] The EC's Second Banking Directive requires minimum capital requirements of at least 5 million ECU and prohibits banks from holding more than 15 per cent of their own funds in investments in non-banks.

According to the Banking Directives, while capital requirements and

Table 12

Minimum Capital Requirements of Banks

Country	Million ECUs
Belgium	1.182
France	2.149
Germany	2.927
Italy	16.287
Spain	11.719
United Kingdom	7.143

Source: Chiapori (1991), p.82.

liquidity ratios should be standardized, regulations can still be enforced at the national level. This leaves open the possibility that common rules will be interpreted and enforced with varying degrees of stringency.[56] Lax enforcement of uniform regulations may thereby reintroduce all of the problems of different common regulatory standards. Observers who take this problem seriously recommend centralizing surveillance and enforcement at the Community level.

A second problem with subsidiarity is that market integration will blur the borders between national banking systems. As more banks come to operate in several European countries, it will be less clear what national authority is responsible for oversight. In an effort to insure a clear division of labor, the EC's Second Banking Directive states that credit institutions should be supervised by their home countries, while host countries should be responsible for liquidity standards. This home-country principle applies only to branches of foreign banks, however, not to subsidiaries which are separately incorporated under the laws of host countries. Only greater centralization of regulatory functions, perhaps in the hands of the ECB, is guaranteed to eliminate confusion over the division of responsibilities.

A third problem with subsidiarity is that changes in the structure of European banking may heighten the need for a lender of last resort. As European banks branch across national borders, they create new opportunities for banking panics to cross borders as well. As banks open branches in foreign countries, the information costs facing depositors seeking to distinguish solvent from insolvent banks will increase. "Life-boat operations," in which consortia of domestic banks aid their illiquid domestic

counterparts, will become increasingly difficult to arrange as more of the relevant banks have their principal interests outside the country. All this may create an expanding need for central bank intervention.

The securitization of financial assets and liabilities may also contribute to the need for a lender of last resort. European countries, aside from Great Britain and to a lesser extent France, have lagged behind the United States in the securitization of credit claims, ownership claims and derivative contracts. Securitization, while solving one problem by enhancing the liquidity of banks' assets, creates another when traders and brokers in security markets, in the event of a crash, find themselves exposed. Folkerts-Landau and Garber (1991) argue that financial systems with liquid, securitized money and capital markets are even more likely than bank-intermediated financial systems to experience liquidity crises. Such systems have a greater need for a lender of last resort in the event of settlement failure.

The point is illustrated by the 1987 Wall Street crash, during which lender-of-last-resort intervention by the Federal Reserve System is credited with preventing U.S. financial markets from seizing up. Given the tendency as financial systems mature for securitized credit to be substituted for bank credit, securitization in Europe will continue to increase.[57] Hence there may be a growing need for lender-of-last-resort intervention even in countries like Germany where it has traditionally been absent.

In many respects, then, the structure of European financial markets will come to resemble that of the United States. It is worth considering therefore how bank regulation is reconciled with monetary union in the U.S. A first implication of this comparison is that monetary union requires regulatory

coordination but not uniformity and centralization. The U.S. regulatory system is administered by both state and federal agencies; and at the federal level responsibility is divided between the central bank and other entities. For many years capital requirements differed across jurisdictions. Until recently, smaller banks had to meet higher capital standards on the grounds that they were riskier by virtue of their less diversified portfolios. (Uniform capital requirements were substituted in the 1980s because of small banks' improved access to financial markets.) Enforcement of regulatory standards differs across jurisdictions: some regulators employ broad measures of capital, including long-term debt instruments such as subordinated notes and debentures, that other regulators disavow.

Figure 6 (from U.S. Senate, 1973) summarizes the division of responsibilities among the various regulators. The Fed possesses some regulatory authority over all banks, including noninsured state banks, to which it may have to provide lender-of-last-resort facilities. But the Fed does not examine these banks, and the reports they must submit are limited. Thus, U.S. arrangements are consistent with the case for locating some but not all regulatory functions in the ECB.

Equally striking is that regulatory responsibility for even national banks that are members of the Federal Reserve System is divided between the Fed and the Comptroller of the Currency, an autonomous agency within the Treasury. The Comptroller, not the Fed, charters such banks, admits them to FDIC insurance, and even screens them for membership in the Federal Reserve System.

Federal deposit insurance is provided and administered not by the

central bank but by a separate entity, the Federal Deposit Insurance Corporation (FDIC). The rationale for this separation is that lender-of-last-resort facilities are designed for illiquid banks, closure and deposit insurance for insolvent ones. Since the two categories are distinct, the relevant services can be provided by different agencies. The FDIC rather than the Fed examines, requires corrections and approves mergers of state banks receiving federal insurance. Thus, U.S. experience suggests that, even if deposit insurance regulations are harmonized across European countries, there is no reason why responsibility for examination, for example, need be placed in the hands of the ECB rather than national authorities.

Another notable feature of U.S. arrangements is that deposit insurance is provided at both the federal and state levels. State- as well as federally-chartered banks can apply for federal deposit insurance, in which case they come under the surveillance of the FDIC and the Comptroller. Banks and near banks chartered by states can also be covered by state insurance funds, in which case no federal oversight is required. Though this supports the feasibility of providing and administering deposit insurance in post-EMU Europe at the national level, two problems remain. First, if the administration of deposit insurance is decentralized, incentives to provide risk-based deposit-insurance premiums may run up against the competitive deregulation problem described above. Second, foreign residents are more likely to bear some of the costs of a bank failure in Europe than are residents of other states in the U.S. U.S. banks and near-banks have traditionally been barred from branching across state borders. Few residents of other states were affected, for example, by the recent failure of

cooperative savings banks in Rhode Island. Things could be very different in post-1992 Europe.

That Figure 6 is entitled "The Regulatory Tangle" reflects the view that decentralization in the U.S. has gone too far. This degree of decentralization, to the extent that it is a legacy of history rather than a rational construct, might be an undesirable model for Europe. Prohibitions in interstate branching long justified the delegation of regulatory powers to state authorities. In the U.S. as in Europe, this may have to change. In any case, there is no reason why regulatory authority in Europe must be divided between four distinct agencies, as in the U.S.

In addition to being undesirable, a fire wall between monetary policy and prudential supervision may be unnecessary. The main argument against making the ECB responsible for the stability of the banking system -- that this creates conflicts with the goal of price stability -- is not supported by U.S experience. Lending of last resort in response to major financial problems occurs when other monetary assets are being liquidated. Hence it need not have inflationary consequences. In 1929 the Federal Reserve Bank of New York provided extensive liquidity to American financial markets in response to the Wall Street crash. Since this action was superimposed on a shift out of deposits and into currency, it had little impact on broad measures of the money supply, much less on the price level. In 1987 the Fed again provided extensive liquidity in the wake of a stock market crash without discernible inflationary consequences. In both cases the additional liquidity was removed once the crisis had passed. If lending of last resort is limited to exceptional crises, then it is hard to see why it should be any more of a

threat to price stability in Europe than in the United States.

VI. Transitional Issues

A. The Rationale for Preconditions

If during Stage II of the EMU process, starting in 1994, the European Council decides that a majority of member countries meet the preconditions for monetary union, it may inaugurate Stage III, establishing the ECB and issuing the single currency. This requires the assent of a qualified majority of national representatives at an extraordinary session of the Council attended by Heads of State or Government. To prevent the indefinite continuation of Stage II, the Maastricht negotiators also specified a terminal date. The EC Heads of State or Government must meet no later than December 31st, 1997 to assess whether a majority of EC member countries satisfy the entry conditions and to set a date for the beginning of Stage III. If no date has been set by the end of 1997, Stage III will begin no later than January 1st, 1999. In this case EMU may go forward with the participation of only a minority of EC countries.

What preconditions need a majority of countries meet for the Council to set an earlier date? The treaty specifies four. First, countries must achieve a high degree of price stability and inflation convergence, defined as an average rate of CPI inflation over the preceding 12 months that does not exceed the inflation rates of the three lowest-inflation member states by more than 1-1/2 percentage points. Second, they must have maintained stable exchange rates (within the normal EMS fluctuation bands) for the two preceding years. Third, their long-term interest rates over the preceding year must

have been no more than 2 percentage points above those of the three best performing member states. Fourth, they must have achieved a "sustainable fiscal position," defined in a protocol to the treaty as a budget deficit of no more than 3 per cent and a gross public debt of no more than 60 per cent of GDP.

The economic rationale for these criteria is not clear. Possibly it can be justified on the grounds that there exist two types of governments -- those possessing and lacking fiscal discipline -- and that a smoothly-functioning monetary union requires the exclusion of governments lacking discipline, whose identity the Maastricht criteria are sufficient to distinguish.

Canzoneri and Diba (1991) model a situation in which there exist two types of governments: one whose preference for government spending coincides with the public's, a second which attaches a greater utility to its spending than the public at large. The second government -- the one lacking fiscal discipline -- will engage at the expense of public welfare in a higher level of public spending financed by a higher level of distortionary taxation. The central bank, even if it is interested in the utility of the public rather than that of the government, will increase the rate of money creation, since it maximizes public welfare by properly solving the Ramsey-Phelps optimal public finance problem, balancing the costs of higher distortionary taxation against the deadweight loss from additional seigniorage. It will print more money and turn the proceeds over to the government in order to moderate the extent to which distortionary taxes have to rise.

Thus, whether or not the central bank is independent, it will not find it optimal to follow a zero inflation policy, and any claim to this effect on

its part will not be credible. Even an independent central bank will fail to achieve price stability in the presence of a government that lacks fiscal discipline.

If the independent central bank could credibly precommit to zero inflation, welfare would be enhanced. The deadweight loss associated with the reduction in real money balances would be eliminated, and additional fiscal discipline would be imposed on the government, since the cost of financing its expenditure (through distortionary taxation alone) will have been raised. In these circumstances, the government's lack of fiscal discipline is diminished rather than exacerbated by the establishment of a European Central Bank, and inadequate fiscal discipline has no implications for the efficiency of monetary policy. Thus, in the presence of a binding commitment to zero inflation on the part of the ECB, there is no need to impose additional preconditions, fiscal or otherwise, on participating governments.

The case for preconditions must rest, therefore, on the notion that a binding zero-inflation rule is impractical.

Assume, then, that rules are impractical for reasons detailed in Section IV.A. above and that, for reasons just described, it is desirable to form a monetary union only of governments possessing fiscal discipline. Do the Maastricht criteria adequately distinguish such governments from their undisciplined counterparts? Since undisciplined governments will be inclined to run larger deficits, fiscal criteria defined in terms of the deficit share of GNP are the obvious way of distinguishing them from their more disciplined counterparts. There is no reason, however, why governments possessing fiscal discipline (with the same taste for government expenditure as the public)

would be expected to keep their deficit spending below any arbitrary fraction of GNP. They will wish to run deficits in periods when the marginal utility of both public and private spending is relatively high. When the marginal utility of private spending is high, the marginal cost of taxation is high as well, and governments wishing to maximize the welfare of domestic residents will run deficits, accumulating debt that is serviced and/or repaid in subsequent periods when the marginal utility of public and private spending is low (Frenkel and Razin, 1987). From this perspective, a 3 per cent deficit limit is entirely arbitrary. If the marginal utility of spending rises dramatically (if, for example, incomes fall dramatically), it may be optimal for even a disciplined government to run larger deficits than this.

The same argument applies to the public debt limit of 60 per cent of GNP. The appeal of this criterion, relative to the deficit threshold, is that it allows governments to run deficits in some periods and surpluses in others, as fiscally disciplined governments facing stochastic shocks to national income will wish to do. It attempts to distinguish disciplined and undisciplined governments according to the magnitude and persistence of those deficits, as reflected in the level of public debt.[58] Once again, however, the particular threshold selected at Maastricht -- 60 per cent -- is entirely arbitrary. There is no reason that a fiscally disciplined government faced with a run of bad realizations of a stochastic income process would not choose to run deficits that cumulatively exceeded this threshold.

Even if all observers could agree on the appropriate levels at which to set these debt and deficit ratios, these simple criteria still might be inadequate to differentiate between governments possessing and lacking fiscal

discipline. As Backus and Driffill (1985) show, when the public is imperfectly capable of distinguishing between disciplined and lax governments, a government lacking fiscal discipline may have an interest in masquerading as its more disciplined counterpart.[59] It may emulate the policies followed by more disciplined governments, until a final period (in this context, the moment when it is irrevocably determined who qualifies for participation in EMU) when it reveals its true type by pursuing undisciplined policies.

Under what conditions is this masquerade most likely to occur? In the Backus-Driffill model, governments lacking discipline are most likely to continue emulating their more disciplined counterparts if they begin with a good reputation. Since the public believes with high probability that the government possesses fiscal discipline, it will not demand higher wages and higher interest rates on government debt in anticipation of higher future public spending and inflation until the government reveals its true type. The better the government's initial reputation, the longer the public will confer on it these benefits, and the longer the government is likely to delay in revealing its true type. Thus, convergence criteria like those adopted at Maastricht are likely to be relatively efficient at ascertaining the true type of governments currently possessing questionable reputations, but much less capable of providing useful information about governments whose current reputations are relatively good.

To recapitulate, economic theory provides a justification for admitting to EMU only countries exhibiting adequate fiscal discipline. But the specific convergence criteria adopted at Maastricht are arbitrary and might well be violated by governments possessing the desired fiscal discipline. Even when

fiscally-disciplined governments have no desire to violate those criteria, their undisciplined counterparts, especially if they possess relatively favorable reputations, may succeed in masquerading as disciplined. Hence the Maastricht criteria may well fail to achieve the objectives for which they were set.

B. Timing the Transition

Leaving aside their desirability, what are the odds that the convergence criteria can be met by a majority of member countries? Forward-looking variables like exchange rates, interest rates and inflation rates can be altered quickly by a convincing shift in regime. It is the fiscal criteria that pose a serious problem.

Table 13 shows the recent history of debts and deficits as percentages of GDP in member countries. Table 14 provides additional detail on the structure of the debts. These figures are only approximate; they fail to net out capital expenditure from government deficits, for example, as the convergence criteria allow. But they show nonetheless that some countries have a long way to go. As of 1991, only 2 of the 11 members (excluding Luxembourg) clearly met the fiscal criteria. The UK, hardly a steadfast proponent of monetary union, was one of the two qualifiers (along with France).

Certain other countries could qualify easily. Spain's public debt is below the Community average, and her budget deficit is within hailing distance of the Maastricht ceiling. Although Germany appears to violate the 3 per cent deficit rule, reflecting the impact on public expenditure of GEMU, the large

Table 13
MAIN INDICATORS OF NOMINAL CONVERGENCE PROBLEMS IN THE COMMUNITY IN 1992

	INFLATION		PUBLIC FINANCES			EXTERNAL ACCOUNTS		INTEREST RATES*	
	Deflator of Private Consumption	Nominal Unit Labour Costs	General Government Net Borrowing Requirement (% of GDP)	Public Debt as a Percentage of GDP 1992	Change From 1991	Current account balance (% of GDP)	National Savings (% of GDP)	Short Term	Long Term
Belgium	3.4	3.6	6.3	129.6	+0.2	1.1	21.1	9.5	9.2
Denmark	2.2	0.5	1.5	65.8	-0.9	2.2	19.8	9.1	10.0
Germany	4.2	4.6	3.4	48.7	+2.5	-0.9	24.5	9.4	8.6
Greece	14.3	10.2	14.4	99.0	+2.6	-3.4	14.5	18.7	...
Spain	5.6	5.1	3.6	46.4	+0.8	-3.2	22.2	12.7	11.8
France	2.9	1.5	1.7	47.5	+0.3	-0.8	20.1	9.6	8.8
Ireland	3.0	3.9	4.1	100.4	-2.4	2.0	20.9	10.2	9.1
Italy	5.2	5.2	9.4	103.9	+2.7	-1.5	19.2	11.8	12.5
Luxembourg	3.7	2.6	[-2.0]	6.5	-0.4	26.1	54.8	...	...
Netherlands	3.5	3.5	4.1	79.5	+1.1	4.4	24.2	9.4	8.9
Portugal	9.5	12.5	4.6	62.7	-2.0	-1.5	26.4	17.7	16.6
United Kingdom	4.6	3.0	3.6	45.6	+1.8	-2.4	13.4	10.5	9.7
EC	4.5	3.9	4.3	63.3	+1.5	-0.5	20.2	10.7	10.1

*Figures for November 1991; October 1991 for Greece.
The figures on public finance and current account for Germany relate to the new German state.

Source: Dixon (1992), p.6.

Table 14

SIZE, COMPOSITION AND MATURITY OF PUBLIC DEBT IN EUROPE IN 1987

	Total Debt As % of GDP	T-Bills and Other Short-Term Debt as As % of Domestic Market Debt	Central Bank Loans to the Treasury As % of Total Debt	Foreign Currency Debt As % of Total Debt	Average Residual Maturity (Years)
	(1)	(2)	(3)	(4)	(5)
Belgium	122.2	21.8	2.8	16.5	3.6
Denmark	59.6	14.5	-13.7	30.9	3.6
Germany	42.2	1.8	0.0	na	na
Greece	69.0	92.5	14.6	33.5	na
Spain	48.5	60.8	7.2	2.5	1.5
France	24.5	45.3	-5.3	3.3	4.0
Ireland	124.5	6.5	0.0	39.7	7.8
Italy	92.6	30.3	7.2	2.5	3.5
Netherlands	72.9	9.1	na	na	5.9
Portugal	72.2	62.5	32.8	22.4	na
United Kingdom	48.0	30.3	na	9.2	8.2-10.9
United States	53.1	59.8	0.0	0.2	5.7

Notes: 1987 data, end-of-year figures (except for the UK, where they refer to March).

Source: Giavazzi and Pagano (1990), p.130.

share of capital spending in the federal government budget means that relatively small adjustments in spending and taxes will allow her to meet this test. Though Denmark violates the 60 per cent debt-as-a-share-of-income rule, three years of normal economic growth could bring that ratio below the Maastricht ceiling so long as the government succeeds in eliminating its budget deficit. Portugal's budget deficit is larger but her growth is faster; if the budget deficit share of GDP is reduced to less than 3 per cent, growth in excess of that rate would succeed in reducing the debt ratio to 60 per cent.

Thus, 6 member states might realistically satisfy the Maastricht preconditions for monetary union by 1997. They constitute a majority if the decision to initiate Stage III is allowed to turn on the participation of Luxembourg. The Netherlands might also qualify if the budget deficit were eliminated and growth proceeded at a 3 per cent annual rate despite the contractionary fiscal shift. But there is little reason to anticipate that the other countries would meet both fiscal preconditions. Belgium's budget remains in substantial deficit, and normal economic growth alone could hardly halve a debt ratio of 130 per cent of GDP by 1997. Not even a shift from deficits of 6 per cent of GDP to surpluses of the same magnitude would suffice. The situation in Ireland is not much happier. The Italian debt is a "mere" 100 per cent of GDP, but the budget would have to swing from a deficit of 10 per cent of GDP to substantial surplus, and do so without interrupting economic growth, for the debt ratio to be reduced to 60 per cent by the second half of the decade. In Greece, with a debt-to-income ratio approaching 100 per cent, normal economic growth could not reduce the ratio to 60 per cent in

a mere 5 years; in addition, substantial deficits would have to be replaced with surpluses in a way that did not interrupt growth even temporarily.

Thus, none of these countries is likely to meet the 60 per cent debt/GDP requirement merely by eliminating budget deficits and allowing economic growth to erode the ratio. An EMU with 12 participants hardly seems feasible before 1999, assuming no change in the conditions laid down at Maastricht.

But should an EMU of the 7 be established before 1999, assuming that the Netherlands qualifies for participation and either the UK or Denmark wish to join? Some observers like Dornbusch (1990) urge two-speed or two-track EMU, with the fast track to commence as soon as possible. A problem with this strategy is that the efficiency gains from a single currency are an increasing function of the number of countries that share it. If the benefits of EMU decline when fewer countries participate, why rush if doing so means limiting the number of participants? Only if the costs of EMU decline faster than the benefits when membership is limited does there exist a coherent case for a two-speed EMU.

Bayoumi and Eichengreen (1992a) have considered whether EC countries can be sorted into two groups according to the incidence and magnitude of disturbances and the speed of adjustment. We identified two distinct groups of EC countries, one group -- the EC "core" comprised of Germany, France, Belgium, Denmark and the Netherlands -- in which aggregate supply and demand disturbances were highly correlated across countries and speed of adjustment was relatively fast, and a second group -- the EC "periphery" -- characterized larger, more idiosyncratic shocks and slower adjustment. (See Figures 3-4 above.) The core countries would incur a relatively low cost of forsaking the

exchange rate instrument as the price for joining Germany in a monetary union at an early date.

Note, however, that the core countries we identified as candidates for joining at the first stage are not those that would be singled out by Maastricht's fiscal conditions. Countries experiencing small shocks correlated with Germany's include France, which already satisfies the Maastricht criteria, and Denmark and the Netherlands, which conceivably might. But they also include Belgium, whose high debt ratio would bar its early entry.

Furthermore, compared to these members of the EC core, shocks to the U.K., Spanish, and Portuguese economies are larger and less well correlated with shocks to Germany. For them the cost of forsaking exchange rate changes against the DM will be relatively high. Maastricht's fiscal criteria nonetheless identify them as candidates for early EMU membership. This too suggests that the fiscal conditions adopted at Maastricht are a suboptimal way of identifying potential participants.

One way of increasing the scope of the monetary union would be to admit more countries to the Community, assuming that the new members are fiscally conservative. Austria, Sweden, Norway and Finland all have debt/GDP ratios below 60 per cent. Except for Finland, their 1991 budget deficits were all less than 3 per cent of GDP. All these countries have expressed an interest in joining the Community. Expanding the EC to 16 countries thus could produce a majority of members that satisfied the fiscal conditions at an early date.[60] However, initiating a two-speed EMU in 1996 through the inclusion of these countries would not necessarily be desirable on optimum currency area

grounds. Bayoumi and Eichengreen (1992b) analyze the incidence and magnitude of shocks to these economies, finding that Austria and Sweden belong with the EC core, whereas Norway and Finland more closely resemble the EC periphery. Once again it does not seem that Maastricht's fiscal conditions discriminate ideally among potential participants.

A further reason to resist the temptations of two-speed EMU is that starting the process with the participation of only certain countries may create barriers to the participation of the rest. The Community's painstaking efforts at constituting the Governing Council of the ECB, for example carefully balancing the number of central bank governors against members at large, would be disrupted each time new countries were admitted. Existing members might hesitate to reopen such contentious issues each time additional countries applied. They would therefore have an incentive to make it difficult to qualify on the second track.

A more constructive reaction would be to anticipate such difficulties and build into the statutes of the ECB clauses providing the flexibility to easily accommodate new members. This would also make it easier to accommodate subsequent applications by other countries (Czechoslovakia? Hungary? Poland? The Baltics?). Those concerned about the prospects of these countries may favor two-speed EMU for the favorable precedent that might be set by the phased membership of other countries.

C. The Danger of a Last-Minute Realignment

Another transitional issue, along with convergence, is the possibility of a last-minute realignment. What is the incentive to realign on the eve of

Stage III? And why should we be concerned?

There are two rationales for a last-minute realignment.[61] One lies in the desire to eliminate divergences in real exchange rates that arise during the transition to EMU. Nominal exchange rates in Europe have essentially been locked in since 1989, and by the start of Stage III they may have been fixed for a decade. With inflation proceeding at different rates in different countries, real exchange rates have diverged considerably from the levels of the late 1980s. CPI inflation in 1990 was nearly four percentage points higher in Italy than in Germany. For the period 1987-1990, the cumulative change in Italy's CPI against Germany's amounted to 15 percentage points (Froot and Rogoff, 1991, p.277). Since the productivity growth differential vis-à-vis Germany is small in comparison, the cumulative change in relative CPI's handicaps Italian producers. Producers in other countries, including Denmark, Ireland and Spain, are experiencing the same problems, although not to the same extent. A last-minute devaluation of their currencies might rectify competitive imbalances and redress unemployment problems that could otherwise undercut support for the policies of the ECB.

A second argument for a last-minute realignment lies in its capacity to reduce debt burdens in countries that would otherwise enter Stage III with debt ratios well above the Community average. If the exchange rate is devalued and the price level jumps up discretely, nominally-denominated public debt as a share of national income will decline. This policy would be most effective in countries where public debt is long term -- that is, in countries without recent histories of inflation. The prevalence of short-term debt may therefore limit the effectiveness of the policy in high-inflation countries

like Greece whose debt burdens are particularly heavy. But as Table 13 shows, most of the EMS countries with high debt burdens (including Belgium, Ireland and Italy) have relatively little short-term debt. Thus, the same arguments that are invoked in support of a public debt ceiling as a precondition for Stage III can be invoked in support of a last-minute realignment.

Note that these two arguments for devaluing on the eve of Stage III are quite incompatible. The second one is predicated on the notion that prices will respond quickly to nominal exchange rate depreciation, allowing a higher price level to erode the real value of the debt. The first one assumes that domestic prices and costs will respond only partially to nominal depreciation, so that a change in the nominal exchange rate also alters the real exchange rate. Both premises cannot be correct.

Yet both rationales seem logical enough. Why then should we be concerned about the temptation to realign on the eve of Stage III? One answer is that we should not be concerned -- that the preceding arguments provide ample justification. Yet the Maastricht negotiators were sufficiently worried to adopt two years of exchange rate stability as one of the preconditions for initiating Stage III. They may have had in mind that a last-minute devaluation would undermine the credibility of governments' commitment to price and monetary stability. If policymakers manipulated exchange rates on the eve of Stage III, who would then believe statements that they would never manipulate monetary policy again? Thus, a last-minute devaluation could neutralize the signals that the lengthy convergence process had been designed to transmit.

Any final realignment would have to be the subject of extended

discussions in policymaking circles. If word leaked out, as seems inevitable, the change in exchange rates would be anticipated by the markets. Speculators would move to sell the currencies of countries with overvalued exchange rates before the final realignment took place, creating a race among market participants to get out first. Exchange rates would grow increasingly unstable and pressure on foreign exchange reserves would intensify as Stage III approached. Investors in public debt, anticipating a last minute devaluation, would liquidate their holdings of long-term bonds, provoking a debt run. Workers would demand wage increases to compensate for the higher prices expected to prevail following the devaluation. These market responses would tend to neutralize the potential benefits of a final realignment, at the same time increasing the need for last-minute changes in exchange rates to reduce debt burdens and labor costs in countries with overvalued currencies. Europe would incur none of the benefits of a last-minute realignment, but all of the costs, notably growing exchange-market pressures and diminished credibility.

Are the measures adopted at Maastricht sufficient to eliminate these dangers? Though the requirement of two years of exchange rate stability prior to Stage III, if enforced, would prevent countries from unilaterally realigning before entering the EMU, nothing would prevent European Council from declaring a special set of conversion rates upon announcing the initiation of Stage III. Since the Council's deliberations are far from secret, this reintroduces all of the dangers cited above. A more effective means of eliminating the temptation to realign might be for countries to index their debt to the ECU, as recommended by Froot and Rogoff (1991), and to index

wages in similar fashion.

VII. Impact on the Rest of the World

Compared to its impact on Europe, EMU's implications for the rest of the world have attracted little attention.[62] These implications can be considered under two headings: implications for the demand for currencies, and implications for international policy coordination.

A. Implications for the Demand for Currencies

A popular presumption is that creation of a single European currency will significantly increase the global demand for the ECU and reduce the demand for its competitors. In this section I challenge this presumption. My argument is that even if EMU stimulates the demand for ECUs and reduces the demand for dollars, the net effect is likely to be small, partly because historical and institutional factors inhibit shifts among currencies, partly because the desire for diversified portfolios should stimulate the demand for non-European currencies.

Money has three uses: as a store of value, a unit of account, and a medium of exchange. The ECU should be more attractive than existing European currencies on all three grounds. If the ECB's commitment to price stability is honored, as a store of value the ECU will be no less attractive than the DM and more attractive than other European currencies. Residents of parts of the world (like Eastern Europe) who had previously acquired dollars as a store of value and a medium of exchange will increasingly utilize ECUs instead. The ECU will be the logical unit of account for residents of the Community who

previously quoted prices and denominated contracts in one of the 12 existing EC currencies. Insofar as creation of the Single Market stimulates European economic growth, the zone within which the ECU serves as unit of account will expand relative to other parts of the world. The ECU should emerge as an increasingly attractive medium of exchange for residents of other countries who trade with this rapidly expanding European market. For all these reasons, one result of EMU may be an ECU that grows in importance relative to the dollar and even the yen.

At the same time it is important not to overlook the fact that the desirability of an asset as a vehicle currency in international trade is partly a function of how many other traders already use it.[63] This network externality tends to lock in vehicle currencies long after the historical circumstances that first led to their emergence have disappeared. The British pound, for example, retained disproportionate importance as a vehicle currency long into the post-World War II period despite that Britain lost her status as one of the world's predominant trading nations. The same is now true of dollars, in which 45 per cent of industrial country imports and exports were invoiced as recently as 1987 (when the U.S. share of their commodity exports was only half that large). Currently, about a fifth of the EC's trade is invoiced in dollars. So long as other traders continue to use dollars as a medium of exchange, each individual will hesitate to switch to the ECU. U.S. financial markets have been open to foreigners for many years; the sheer volume of business has driven transactions costs to low levels. The ECU may gradually acquire greater importance relative to the dollar as a medium of exchange in extra-European transactions. European Commission (1990)

conjectures that perhaps half of that fifth of European trade currently invoiced in dollars will eventually be invoiced in ECUs instead, increasing the demand for ECUs for transactions purposes by $60 billion. This number would be larger still if the countries of Eastern Europe adopted the ECU as their vehicle currency. But the tendency for network externalities and economies of scale to lock in existing vehicle currencies will slow the transition.

The aspect of the problem that is most difficult to forecast is the demand for ECU-denominated financial assets as investments. In 1988, fully half of global private sector wealth denominated in foreign currencies was held in dollars, only a quarter in EC currencies, despite that the two economies accounted for comparable shares of global GNP. Such demands depend on the risk and return characteristics of the competing assets. There is no obvious reason to think that the real rate of return on ECU-denominated assets will be significantly different than the real returns on DM or, for that matter, other European currencies. True, financial liberalization and increased competition among financial intermediaries in Europe may reduce the spread between bank deposit and loan rates and bid-ask spreads on other financial assets, raising the returns to private investors, but any change is likely to be small.

Trends in the demand for European financial assets will hinge rather on the ECU's risk characteristics relative to existing European currencies. Most discussion of this question proceeds on the assumption that the ECB will honor its commitment to price stability, eliminating one traditional source of risk. If the ECB achieves this goal, the asset demand for ECU will be stimulated,

raising its share in private portfolios by as much as five percentage points according to EC Commission estimates. But investor behavior is influenced not simply by the risk of unforeseen changes in returns, but also by the covariance of those changes across assets. Investors hold diversified portfolios to limit risk. Thus, the demand for ECU-denominated assets may fall relative to the demand for assets denominated in existing national currencies insofar as investors are no longer able to diversify away risk by holding portfolios containing several different European currencies. Traditionally, when the dollar is strong, the DM has been weak relative to other European currencies, whereas when the dollar is weak the DM has been strong in the EMS.[64] From the vantage point of a French investor with the bulk of her portfolio in francs, when the dollar falls the DM rises, creating an incentive to hold both in order to diversify away some risk. Following EMU, investors in countries like France will have most of their wealth denominated in units of the single European currency. To minimize the risks caused by its fluctuation, they may find it attractive to hold additional dollars. In other words, those who previously limited risk by holding a diversified portfolio of several European currencies may wish to supplement their ECU with dollars instead. Contrary to the conventional wisdom, the demand for the major non-European currencies may thereby be stimulated by EMU.

B. Implications for Policy Coordination

Will EMU make international macroeconomic policy coordination easier or more difficult to achieve? Replacing 12 European central banks with a single ECB will reduce the number of players in the international policy game,

diminishing the free-rider problem that complicates efforts to arrange pareto-improving policy trades. Although not all 12 EC member-country central banks are critical to the G-7's policy coordination efforts, substituting a single ECB for the Bank of England, the Bank of France, the Bank of Italy and the Bundesbank might be sufficient to effectively transform the G-7 into a G4 when the leading industrial-country monetary policymakers meet.

As discussed above (in Section VI.A), however, lines of authority over policies affecting the EC's monetary relations with the rest of the world are far from clearcut. The European Council is responsible for exchange-rate policy vis-à-vis the rest of the world, the ECB for monetary management. Are exchange rate changes undertaken in concert with the U.S., Canada and Japan an instance of the former or the latter? The Maastricht Treaty, while emphasizing the need for the Community to speak with a single voice, does not specify who shall represent it in the G-7's discussions of exchange rate management.[65]

Matters will be complicated further if EMU proceeds at two speeds. The subset of EC members participating initially will then be represented on the ECB's Governing Council, but not the others, possibly including Britain and Italy, both of whom belong to the G-7. In response to this problem, the Maastricht Treaty makes provision for another decision-making body in addition to the Governing Council, the General Council, which is comprised of the President and Vice-President of the ECB and all 12 EC central bank governors, irrespective of whether their countries currently participate in EMU.[66] The General Council of the 12, rather than the Governing Council of the 7, could conceivably speak for Europe's central banks in negotiations with the U.S.,

Canada and Japan. Once more, however, the Maastricht Treaty does not specify under what conditions it might do so.

In addition to blurring lines of authority, the transition to Stage III creates other problems that may complicate efforts to coordinate policies between Europe, the U.S. and Japan. If the ECB is concerned to signal the priority it attaches to price stability, it may hesitate to engage in a simultaneous adjustment of monetary policies with the U.S. and Japan if that adjustment entails loosening European monetary policy and thereby sending mixed signals. If national governments are prevented by binding fiscal restraints from running budget deficits larger than 3 per cent of GDP, the scope for coordinating fiscal policies with the U.S. and Japan may be restricted.

These problems are tractable. Once the ECB's commitment to price stability is firmly established, it can exercise discretion without irreparably damaging its reputation. The Maastricht Treaty allows the fiscal ceilings to be interpreted flexibly, which the European Council presumably will be prepared to do once the ECB has established its unwillingness to bail out fiscally insolvent governments.

The question then becomes how monetary unification will affect the cooperation in practice. In Eichengreen (1992c) I identify three fundamental obstacles to international policy coordination: domestic political constraints, international political disputes, and incompatible analytical frameworks. Frankel (1988) has emphasized the importance of the last factor. It is only by the sheerest coincidence, he shows, that policymakers in different countries will be able to agree on a concerted response to their

common economic problems if they cannot agree on a diagnosis. The popularity of the EMU process itself reflects a convergence of economic thinking in Europe, and the continual interaction of national officials on the ECB's Governing Council should serve to solidify this common analytical outlook. Whether this common model will converge to or diverge from the models that prevail in other countries is more difficult to say. To the extent that the European model comes to resemble that of Germany, it will tend to diverge from that of the U.S. German authorities, in contrast to the dominant strand of thinking in the U.S., deny that monetary expansion can effectively stimulate economic activity, and argue that fiscal expansion tends to weaken the exchange rate and the balance of payments, again the opposite of prevailing opinion in the U.S.

Domestic political constraints have repeatedly interfered with governments' efforts to arrange mutually-beneficial adjustments in policies with their foreign counterparts.[67] Recently, the problem has been evident in the context of the GATT negotiations, where the European agricultural lobby has resisted reductions in agricultural protection. The same problem exists in the realm of monetary policy, since for example debtors tend to benefit from lower interest rates, creditors from higher ones. Insofar as Stage II requires that the independence of existing central banks be strengthened, and insofar as the ECB will enjoy even greater insulation from domestic political pressures than have national central banks, domestic political constraints on policy coordination may become less binding.

Finally, international disputes over matters other than macroeconomic policy may sour the climate of good will that facilitates macroeconomic policy

coordination. Trade conflicts between Europe and the U.S., for example, would discourage the harmonization of Trans-Atlantic monetary policies. The prospect that the transition to EMU will give rise to adjustment problems characterized by pockets of high unemployment, in response to which Europe may be tempted to limit competition from abroad by putting up its common external tariff, does not bode well therefore for policy coordination.

VIII. The Agenda for Research

In lieu of a conclusion, I close with suggestions for research.

The shortcoming of theoretical economics that most severely handicaps analyses of European monetary unification is its failure to provide a rigorous basis for calculating the efficiency gains from a common currency. The two dominant approaches to modeling money, placing it in the utility function and positing cash-in-advance constraints, are ad hoc and unsatisfactory. Since transactions services are what we are concerned to understand, placing money in the utility function simply evades the question. Cash-in-advance models speak more directly to the issue of transactions services but force holdings of different national monies to be a rigid proportion of agents' consumption of the goods produced by that nation. Recent work modeling money as a good exhibiting network externalities (Kiyotaki and Wright, 1989; Matsuyama, Kiyotaki and Matsui, 1991) provides a more promising theoretical basis for analyzing the benefits of monetary unification, although it is not yet clear how this class of models might be implemented empirically.

Empirical analyses of the costs of monetary unification are necessarily based on evidence derived from historical data. This is true, for example, of

the literature in which the incidence and magnitude of macroeconomic disturbances in Europe are compared with those in existing monetary unions like the U.S. and Canada. A central question is how the structure of the European economy and hence the incidence of disturbances will change as economic integration proceeds. How much more concentrated regionally will the different industries vulnerable to different disturbances become? To what extent will the regional specialization of different European countries come to resemble that of the census divisions of the United States? Recent work by Krugman (1991) and others, synthesizing the literatures on location theory and international trade, suggests ways of forecasting how the geographical structure of European industry will change.

Similarly, existing analyses of alternatives to the exchange rate as mechanisms for adjusting to shocks extrapolate from historical experience. Even if labor mobility, for example, will remain lower in Europe than in the United States, it is still important to be able to estimate by how much it will rise. Our ability to forecast would benefit from research on the reasons for Europe's observed low levels of labor mobility. Does the explanation lie in cultural and historical factors (that Europeans were less mobile in the past and hence retain a stronger sense of geographical identity in the present)? Or does it lie in government policies (ranging from council housing in Britain to regional employment subsidies in Italy) that work to discourage mobility? Immobility reflecting current policy rather than ancient history is presumably more susceptible to change.

Finally, research is needed on what kind of Community-wide fiscal institutions are needed to support a smoothly-operating monetary union. Those

who embrace the case for fiscal federalism as a concomitant of monetary union have not provided concrete suggestions of how the requisite fiscal institutions might be structured. Moreover, there is the issue of whether fiscal federalism within European states might substitute, at least in part, for fiscal federalism among them. National fiscal systems transfer resources between Northern and Southern Britain and between Northern and Southern Italy, for example. Regions within countries experiencing desynchronized income fluctuations can thereby coinsure one another. Determining the extent to which fiscal federalism within existing European states can substitute for fiscal federalism at the Community level requires evidence on both the correlation of shocks to different regions within European countries, and on the elasticity of the taxes, transfers and grants extended in response.

NOTES

1. When this paper was initially drafted, I could assert that it was the first comprehensive overview of the literature on EMU. Since then, Peter Kenen's authoritative survey (Kenen, 1992) has become available. Compared to Kenen, I focus more on theoretical issues and less on the Maastricht Treaty and the Draft Statute of the ECB.

2. The Statute of the ECB and of the European System of Central Banks is contained in Title VI of the Amendments to the EEC Treaty as agreed in the European Council of Maastricht on December 10, 1991. See Conference of the Representatives of the Governments of the Member States (1991).

3. European Commission (1990) cites a study by the Bureau European des Unions de Consummateurs from 1988 showing that a traveller starting out in Brussels on a clockwise tour of Community capitals will have paid 47 per cent of his cash in commissions if he changes it into local currency at each border.

4. Others (e.g. Dowd, 1990) arrive at even smaller estimates of the overall savings.

5. Grilli, Masciandaro and Tabellini (1991) similarly find no impact of EMS membership on inflation after controlling for its other determinants. In contrast, Ungerer et al. (1988) find some evidence of an effect.

6. See for example European Commission (1990). There is no consensus on the magnitude of the benefits from 1992. The most widely cited studies (Emerson et al., 1988; Baldwin, 1989) can be regarded as providing upper bound estimates.

7. For a forceful expression of the prevailing European position (not however grounded in specifics), see Giovannini (1992b). One explanation is that floating rates disrupt the EC's Common Agricultural Policy, which supports the domestic-currency prices of agricultural commodities in member countries. With domestic-currency prices fixed, exchange-rate changes within the Community create an incentive to ship these commodities from one member country to another, disrupting attempts to maintain an "orderly market." The irony of this explanation is that opposition to a return to floating in Europe is grounded not in the desire to liberalize markets but in an effort to support restrictions on freedom of agricultural production and trade.

8. On the North American case, see however McLeod and Welch (1991a, b). For an empirical analysis of this issue, see Bayoumi and Eichengreen (1992c).

9. Gerlach's analysis assumes away credibility and time consistency problems. As Obstfeld (1992) demonstrates, a public aware of the incentive for policymakers to realign will incorporate anticipated devaluations into wage demands, neutralizing their potential real effects but raising the equilibrium inflation rate.

10. These are unweighted averages from Bayoumi and Eichengreen's Table 1. We treat Germany and the U.S. Mid-East as the center (or "anchor") regions of the respective economic groups.

11. Temporary shocks are allowed to affect output as well as prices in the short run. Some who make use of these techniques go on and interpret permanent disturbances as aggregate supply shocks and temporary disturbances as aggregate demand shocks. For discussion, see Bayoumi and Eichengreen (1992a).

12. These are arithmetic averages of the correlation coefficients for individual countries.

13. For details on the methodology, see Bayoumi (1991).

14. These are again unweighted averages, this time from Bayoumi and Eichengreen (1992a), Table 6.

15. That sectoral diversification reduced the costs of monetary union was first emphasized by Kenen (1969).

16. Other authors have reached similar conclusions. Krugman (1992) predicts that, as market integration proceeds, Europe should see the emergence of large region-specific shocks comparable to those experienced by the U.S. But in contrast to Bayoumi and Eichengreen, he argues that region-specific shocks will be of a predominantly permanent nature. Appealing to evidence provided by Blanchard and Katz (1992), he argues that shocks in the U.S. have tended to alter regional conditions permanently. Whether such shocks are termed permanent or temporary is a matter of semantics. It hinges on the distinction between level and growth effects. According to Blanchard and Katz, a negative shock to the products of New England industry, like that experienced in recent years, reduces the level of regional GDP and employment permanently. Workers migrate out until the region's unemployment rate falls to national levels; owing to this emigration, the level of employment declines permanently relative to what it would have been otherwise. But once the migrants have left and unemployment has declined to the national average, the region's output and employment growth rates are restored to their previous trend. In terms of the <u>level</u> of output and employment, the effect of the shock is permanent. In terms of the <u>growth rate</u> of output and employment, the effect is temporary.

17. Eichengreen (1990b) analyzes the legacy of slavery and the American Civil War for North-South migration, showing that mobility between these regions remained low for fully 75 subsequent years.

18. In addition, interregional mobility is much lower in Southern Europe (Italy, Spain) than in Northern European countries such as Germany, France and the UK. See De Grauwe and Vanhaverbeke (1991).

19. Bayoumi and Eichengreen's (1992a) estimates of shocks do not speak to this question, since evidence comparable to that for U.S. regions is not available for regions within European countries.

20. The analysis and results reported in this subsection are drawn from Eichengreen (1992b). The reader is referred to that paper for additional description of the data used in this analysis.

21. The only respect in which my estimates differ from those of Pissarides and McMaster is in the coefficient on relative wages. My point estimate is smaller than theirs' and is statistically different from zero at the 90 rather than the 95 per cent level.

22. According to my point estimates, the elasticity for the U.S. is about 25 times as large as for Britain. If that of Pissarides and McMaster is used instead, the U.S. wage elasticity is larger by a factor of five.

23. The six regions are Northeast (Tre Venezie, Veneto, Trentino-Alto, Adige, Friuli-Venezia Giulia), Northwest (Piedmonte, Valle d'Aosta, Lombadia, Liguria), Center (Emilia-Romagna, Toscana, Umbria, Marche), Lazio, Southeast (Abruzzo, Molise, Puglia), and Southwest (Calabria, Basilicata, Campania, Sicilia, and Sardegna).

24. This has been shown previously by Attanasio and Padoa Schioppa (1991) and A'Hearn (1991).

25. Blanchard and Katz (1992) document that these conclusions hold for the various regions of the United States.

26. Masson and Melitz (1991) demonstrate that the free use of fiscal policy can be of considerable value in a monetary union.

27. Glick and Hutchinson (1992) show that, in the presence of high international capital mobility, fixed exchange rates or monetary union imposes tight constraints on the present value of the future time path of government spending, which is exactly the point made in the text.

28. In both papers, the test of whether borrowers are rationed out of the market is whether the interest rate charged is increasing in the debt or deficit and the debt or deficit squared. Eichengreen (1990) finds no evidence that the squared term matters. Goldstein and Woglom generally find that the squared term is insignificant or incorrectly signed.

29. Note that rising debt levels could increase the likelihood of default for reasons other than the tendency for heavy tax burdens to provoke capital and labor flight. Heavy taxes may lead to evasion or prompt political resistance to debt service, with the same result.

30. The same can be said of local jurisdictions within existing monetary unions like the United States. But, as we shall see below, in these unions there exist alternative sources of fiscal transfers, notably fiscal federalism.

31. This analysis is drawn directly from Canzoneri and Diba (1991).

32. One possible objection to this analysis is that it is based on over-strong assumptions about international transmission. Canzoneri and Diba, in the model from which this discussion is drawn, assume perfect substitutability of goods produced at home and abroad. In alternative models with imperfect substitutability (viz. van der Ploeg, 1989), fiscal policy in noncooperative equilibrium may be inadequately rather than excessively expansionary. If fiscal expansion leads to real appreciation (as it will upon relaxing the assumption of perfect substitutability), it will stimulate exports and increase employment in neighboring countries, swamping the negative effect of higher interest rates. Empirical studies (Roubini, 1989; Masson and Melitz, 1991) suggest that fiscal spillovers are predominantly negative: that the interest rate effects emphasized in the text dominate.

33. This example and the accompanying analysis is drawn from Canzoneri and Diba (1991).

34. Specifically, the bailout will take the form of central bank purchases of the debt of the government in question, financed by money creation.

35. Since the seigniorage is spread over a larger number of agents, its marginal cost is lower (the cost of reducing real money balanced by the first dollar is lower than the second, etc.); an optimizing government will reduce distortionary taxes to match this marginal cost.

36. One variable considered by the ACIR, mineral production per capita, is omitted because it is not available for the entire sample period.

37. This index is constructed by assigning point values to balanced-budget restrictions of two sorts and summing the totals for the two categories: the first category assigns one point if the requirement is a statutory provision, two points if it is constitutional; the second category assigns values to the specific features of the requirement (one point if the Governor only has to submit a balanced budget, two points if the legislature only has to pass a balanced budget, four points if the state may carry over a deficit but it must be corrected in the next fiscal year, six points if the state cannot carry over a deficit into the next biennium, and eight points if the state cannot carry over a deficit into the next fiscal year).

38. Given this ambiguity about the significance of "Balance2," the ACIR index, I considered individually the effects of its other components, defining dummy variables equaling one for states that cannot carry over a deficit into the next biennium, for states that may carry over a deficit but must correct it in the next fiscal year, for states whose legislatures only have to pass a

balanced budget, and for states whose governor must only submit a balanced budget. Adding these variables to the basic specification, in addition and in lieu of "Balance1" and "Balance3," provided no indication that any of these measures had a discernible effect on deficit spending.

39. See ACIR (1987), p.52.

40. This conclusion follows only if fiscal restrictions are exogenous with respect to the interest rate. This assumption seems relatively innocuous, given the long-lived nature of such restrictions. Note that there is no paradox in the fact that several of the exogenous variables enter with opposite signs in the equations explaining the level of debt and the yield. Consider for example the coefficient on the share of the state population aged 65 or older, which enters negatively in the equations explaining debt per capita but positively in those for yields, and visualize a (upward sloping) supply curve and (downward sloping) demand curve stock-of-debt/yield space. If a high share of the elderly shifts the supply curve of debt to the left (on the grounds that the elderly demand fewer social services or support politicians who are fiscally conservative), but simultaneously shifts the demand-for-debt curve to the right (on the grounds that the elderly prefer government bonds to riskier assets), albeit by a relatively small amount, we would observe the variable "Elders" entering the debt and deficit equations negatively and the yield equations positively.

41. This would follow if the quantity of debt is not an important predictor of default risk.

42. This is plausible if default risk increases with the rate of growth of the debt rather than with its average level.

43. Real energy prices and a time trend are also included as determinants of state tax liabilities, and an effort is made to control for simultaneity due to the dependence of state income in taxes and transfers.

44. A constant term is also included.

45. Van Rompay, Abraham and Heremans (1991), p.115.

46. A recent contribution to this literature is Allen (1992).

47. Economic independence is the more important variable. Its coefficient is nearly twice the size of that on political independence. Economic independence is statistically significant at the 95 per cent level, while political independence just falls short of significance at the 90 per cent level.

48. Neumann (1991) emphasizes the conflict between the Bundesbank's commitment to price stability and its obligation to support the government's general economic policy. He cites 1977-78 and 1985-87 as instances when the commitment to price stability was subordinated to other objectives. Kennedy

(1991, p.37) emphasizes the government's control of exchange rate policy and the potential conflicts this creates for monetary policy. She concludes that "the government's powers over the economy mean that the Bundesbank has less real control than it appears to have formally and must seek the consent or active participation of the government on a variety of matters..." German monetary unification in 1990, which the government forced through over the central bank's objection, is a reminder that the Bundesbank's political independence is limited. It is formally responsible for monetary policy, while exchange rate policy is in the domain of the government, raising the question of who yields when the two goals come into conflict.

49. Presumably, statutes in countries like Greece and Spain where the governor's term is only four years will have to be modified.

50. None of the documents to emerge from Brussels on the design of the ECB provides a rationale for limiting to six the number of members at large, or for not adopting the same procedure as the Federal Reserve System, where only a subset of the governors of district reserve banks serve on the policymaking committee. A plausible inference is that major central banks like the Bundesbank and the Bank of France resisted provisions which would have rotated them off the Council periodically and other central banks demanded equal treatment. With all national central banks permanently represented, the Council threatened to grow so unwieldy that the number of Executive Board members had to be limited.

51. For evidence to this effect, see Puckett (1984) or Belden (1989).

52. The German Credit Law of 1961 delegated banking supervision to the Federal Credit Regulatory Agency, an autonomous body within the Ministry of Economics. Only in case of serious banking problems with potential implications for the entire German economy must the Federal Credit Regulatory Agency seek the opinion of the Bundesbank. Kennedy (1991), p.33.

53. This tendency for increased competition to reduce bank profitability is already evident. Chiappori et al. (1991), p.70.

54. Similarly, in Germany certain long-term assets must be matched by long-term liabilities, and medium-term assets must be matched with short- and medium-term liabilities. Chiappori et al. (1991), p.82.

55. For details, see Kapstein (1991).

56. As Chiappori et al. (1991, p.75) put it, "While it is possible to harmonize rules concerning regulation, it is much harder to harmonize discretion. Discretion relates to the methods by which banks are originally evaluated for authorization, their subsequent supervision and decisions to intervene to rescue banks."

57. This trend is already evident in Germany, where there has been a significant rise in the number of initial public equity offerings by mid-sized industrial companies. See Folkerts-Landau and Garber (1991).

58. Here is where the convergence criteria defined in terms of inflation and exchange rate stability presumably come into play. If only public debt and not fiscal deficit ratios were used to determine whether a country qualified for participation in EMU, governments might attempt to inflate away the debt by depreciating the exchange rate and raising the price level. I return to this issue in Subsection C below.

59. The Backus-Driffill model is specified directly in terms of inflation and output rather than in terms of the links between public spending on the one hand and these variables on the other, but this is of no consequence for the present argument.

60. Admitting the other EFTA countries -- Switzerland and Iceland -- would not tip the balance. Switzerland easily satisfies the fiscal criteria, whereas Iceland does not.

61. A third justification sometimes found in the literature (viz. Giovannini 1991) cites the difficulty of converting existing currency units into ECU. Currency reforms have traditionally been undertaken in the wake of high inflations when it has been possible to convert old currency notes into new ones by lopping off a few zeros. This is not feasible for the EC as a whole, since the currencies of member countries trade in uneven denominations against one another. Following conversion, it is sometimes asserted, citizens would be faced with bridge tolls whose prices were denominated in inconvenient fractions, or tax forms whose personal exemptions were no longer round numbers, justifying a last-minute realignment eliminate this inconvenience. In fact, it is hard to imagine that this argument carries must weight. Bridge tolls and tax deductions could simply be rounded up or down following the conversion to minimize the inconvenience.

62. See however Dornbusch (1991) and Kenen (1992).

63. See Matsuyama, Kiyotaki and Matsui (1991) and the discussion in footnote 4 above.

64. See Frankel (1986).

65. Kenen (1992), p.119-120. Though the relevant portions of the Maastricht Treaty are opaque, by my reading passages such as "The Council shall....decide...," "The Council may....formulate...." and "The Council may...adopt, adjust or abandon...." create a presumption that the Council will be the Community's representative, acting in consultation with the ECB.

66. The General Council is empowered to discuss the monetary policy decisions of the Governing Council, but does not have other obvious power to influence them.

67. This is a theme of Putnam (1988).

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